PUBLIC REVIEW DRAFT

INITIAL STUDY/ MITIGATED NEGATIVE DECLARATION

FOR THE

COSUMNES RIVER CRITICAL REPAIRS PROJECT

Sacramento County, CA

July 2020

Prepared for:

Reclamation District 800
2151 River Plaza Drive
Sacramento, CA 95833

Prepared by:

BaseCamp Environmental, Inc.
115 S. School Street, Suite 14
Lodi, CA 95240
209-224-8213

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Prepared for:

RECLAMATION DISTRICT 800
c/o Wagner & Bonsignore, District Engineers
2151 River Plaza Drive
Sacramento, CA 95833
916-441-6850

Prepared by:

BASECAMP ENVIRONMENTAL, INC.
115 S School Street, Suite 14
Lodi, CA 95240
209-224-8213

RECLAMATION DISTRICT NO. 800
NOTICE OF INTENT TO ADOPT MITIGATED NEGATIVE DECLARATION
AND NOTICE OF PUBLIC MEETING
COSUMNES RIVER CRITICAL REPAIRS

Notice is hereby given that Reclamation District No. 800 (RD 800) has prepared an Initial Study (IS) of environmental effects and intends to adopt a Mitigated Negative Declaration (MND) for proposed levee repairs located along the Cosumnes River in southeastern Sacramento County, California. The project sites are in an unincorporated area that is generally east of the City of Elk Grove, near the communities of Wilton and Sloughhouse.

The project proposes repairs of approximately 3,370 linear feet of levees that have severely eroded at nine separately accessed locations along the Cosumnes River. Proposed repair work would consist of re-grading and reconstruction of the existing levee sections to correct past erosion, and the placement of new rock slope protection (RSP) to prevent future erosion. The project would require permit authorizations from the U.S. Army Corps of Engineers (Corps), the California Department of Fish and Wildlife (CDFW), and the Central Valley Regional Water Quality Control Board (RWQCB).

The IS/MND has analyzed the potential environmental effects of the project as required by the California Environmental Quality Act (CEQA) and the CEQA Guidelines. On the basis of this analysis, the IS/MND finds that the project would not involve any significant environmental effects, provided that the mitigation measures described in the IS/MND are implemented. RD 800, the project proponent, will implement the mitigation measures. There are no sites enumerated under Section 65962.5 of the Government Code located on or near the project site.

Copies of the IS/MND are available for public review at the office of the RD 800 District Engineer, Wagner & Bonsignore, Consulting Civil Engineers at the address below. The IS/MND will also be available for review at www.basecampenv.com . RD 800 will accept public and agency comments on the IS/MND during a 30-day review period that will begin on July 13, 2020 and end on August 12, 2020. Comments may be sent via email to Patrick Ervin, at pwervin@wbecorp.com or via mail or hand-delivery to:

Reclamation District No. 800
c/o Wagner & Bonsignore, Consulting Civil Engineers
2151 River Plaza Drive, Suite 100
Sacramento CA 95833
Attn: Patrick W. Ervin, P.E.

RD 800's Board of Directors will hold a public meeting to consider adoption of the IS/MND on September 3, 2020 at 9:00 a.m. via teleconference. The public is welcomed to join the call by calling 877 853 5247, entering meeting ID 953 6198 0754.

Brian Takemori, President
Reclamation District No. 800

7-10-2020
Date

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LIST OF ACRONYMS AND ABBREVIATIONS USED IN THIS DOCUMENT

AB	Assembly Bill
APN	Assessor's Parcel Number
ARB	California Air Resources Board
BMP	Best Management Practice
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CNDDB	California Natural Diversity Database
CO_2e	carbon dioxide equivalent
Corps	U.S. Army Corps of Engineers
dB	decibel
dBA	decibel, A-weighted
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
EIR	Environmental Impact Report
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act (federal)
FEMA	Federal Emergency Management Agency
GHG	greenhouse gas
IS/MND	Initial Study/Mitigated Negative Declaration
KSN	Kjeldsen, Sinnock and Neudeck (engineering firm)
L_{eq}	equivalent sound level
NAHC	Native American Heritage Commission
NO_x	nitrogen oxide
OHWM	ordinary high water mark
$PM_{2.5}$	particulate matter 2.5 micrometers or less in diameter
PM_{10}	particulate matter 10 micrometers or less in diameter
RCEM	Road Construction Emissions Model
RD 800	Reclamation District No. 800
ROG	reactive organic gases
RSP	rock slope protection
RWQCB	Regional Water Quality Control Board
SACOG	Sacramento Area Council of Governments
SB	Senate Bill
SMAQMD	Sacramento Metropolitan Air Quality Management District
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
VMT	vehicle miles traveled

NEGATIVE DECLARATION

A General Project Information

Project Title:	Cosumnes River Critical Repairs Project
Lead Agency Name and Address:	Reclamation District 800 2151 River Plaza Drive Sacramento, CA 95833
Contact Person and Phone Number:	Patrick Ervin Wagner and Bonsignore, District Engineers 2151 River Plaza Drive Sacramento, CA 95833 916-441-6850
Project Location:	Cosumnes River, vicinity of Wilton and Sloughhouse, southeastern Sacramento County, California
Project Sponsor Name and Address:	Reclamation District 800 2151 River Plaza Drive Sacramento, CA 95833
General Plan Designations:	General Agriculture, Natural Preserve, Agricultural Cropland, Agricultural-Residential
Zoning:	AG-80, AG-20 (both General Agriculture), A-10 (Agriculture)
Description of Project:	The project proposes a total of 3,370 linear feet of levee repairs at nine sites along the Cosumnes River. At each site except one, the project would involve regrading of the existing levee and placement of compacted soil and rock slope protection (RSP) on the waterside of the levee. The one exception would involve landside repair only. At another site, in addition to the waterside repair, the levee top would be removed and subsequently recompacted.
Surrounding Land Uses and Setting:	All the proposed repair sites consist of existing levees adjacent to the Cosumnes River. The areas contained by the levees consist of channel areas flood plains, riparian vegetation and levee slopes with upland vegetation and levee slopes with

	upland vegetation. The areas outside the levees are rural and predominantly used for agriculture. Sites 3 through 9 are located in the vicinity of Wilton but are separated from the developed portions of the community by existing agricultural lands. Sites 1 and 2 are located in the general vicinity of Sloughhouse.
Other Public Agencies Whose Approval is Required:	The project will require permits from the U.S. Army Corps of Engineers (Section 404) and the California Department of Fish and Wildlife (Streambed Alteration Agreement). Section 401 Water Quality Certification from the Regional Water Quality Control Board is required in conjunction with Section 404 approval.
Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code Section 21080.3.1? If so, has consultation begun?	No tribes have requested consultation. Tribal Cultural Resources are addressed in Section 3.18.

B. Environmental Factors Potentially Affected

The environmental factors checked below may be significantly affected by this project, involving at least one impact that is a "Potentially Significant Impact" prior to mitigation. Mitigation measures have been prescribed that would avoid potential effects or reduce them to a less-than-significant level, as described in the checklist and narrative on the following pages, and in the Summary Table at the end of Chapter 1.0.

	Aesthetics		Agriculture/Forestry Resources		Air Quality
✓	Biological Resources	✓	Cultural Resources		Energy
✓	Geology/Soils		Greenhouse Gas Emissions		Hazards/Hazardous Materials
	Hydrology/Water Quality		Land Use		Mineral Resources
	Noise		Population/Housing		Public Services
	Recreation		Transportation	✓	Tribal Cultural Resources
	Utilities/Service Systems		Wildfire	✓	Mandatory Findings of Significance

C Lead Agency Determination

On the basis of this initial evaluation:

- ☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- ✓ I find that, although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- ☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- ☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- ☐ I find that, although the proposed project could have a significant effect on the environment, nothing further is required because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project.

RECLAMATION DISTRICT NO. 800

Brian Takemori, President

7-10-2020
Date

1.0 INTRODUCTION

1.1 Project Brief

This document is an Initial Study/Mitigated Negative Declaration (IS/MND) for the Cosumnes River Critical Repairs Project (project). The project is located along the Cosumnes River near the communities of Wilton and Sloughhouse in unincorporated Sacramento County, California. (Figures 1-1 and 1-2). The IS/MND has been prepared in compliance with the requirements of the California Environmental Quality Act (CEQA). The project proponent is Reclamation District No. 800 (RD 800), which is also the CEQA lead agency for the project.

The project proposes repairs of approximately 3,370 linear feet of levees that have severely eroded at nine separately accessed locations along the Cosumnes River. Proposed repair work would generally consist of re-grading and fill of the existing levee sections to correct past erosion, and the placement of new rock slope protection (RSP) to prevent future erosion. The project would require permit authorizations from the U.S. Army Corps of Engineers (Corps), the California Department of Fish and Wildlife (CDFW), and the Central Valley Regional Water Quality Control Board (RWQCB).

1.2 Purpose of Initial Study

CEQA requires that public agencies document and consider the potential environmental effects of the agency's actions that meet CEQA's definition of a "project." Briefly summarized, a "project" is an action that has the potential to result in direct or indirect physical changes in the environment. A project includes the agency's direct activities as well as activities that involve public agency approvals or funding. Guidance for an agency's implementation of CEQA is provided in the CEQA Guidelines (California Code of Regulations Title 14, Chapter 3).

Provided that a project is not exempt from CEQA, the first step in the agency's consideration of the potential environmental effects of a project is the preparation of an Initial Study. The purpose of an Initial Study is to determine whether the project would involve "significant" environmental effects, as defined by CEQA, and to describe feasible mitigation measures that would avoid significant effects or reduce them to a level that is less than significant. If the Initial Study does not identify significant effects of the project, or identifies significant effects but also describes mitigation measures that would reduce these effects to a level that is less than significant, then the agency would prepare a Negative Declaration or a Mitigated Negative Declaration, respectively. If the project would involve significant effects that cannot be mitigated readily, or there is public controversy or disagreement among experts about the potential effects of the project, then the agency must prepare an Environmental Impact Report (EIR). The agency may also decide to proceed directly with the preparation of an EIR without conducting an Initial Study.

The proposed project is a "project" as defined by CEQA and is not exempt from CEQA consideration. RD 800 has determined that the project involves the potential for significant environmental effects and thus requires preparation of this Initial Study. The Initial Study describes the proposed project and its environmental setting, analyzes the potential environmental effects of the project, and where necessary, identifies feasible mitigation measures that would avoid the potentially significant environmental effects of the project or reduce them to a level that is less than significant. The Initial Study considers the project's potential for significant environmental effects in the following subject areas:

- Aesthetics
- Agricultural Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Geology and Soils
- Greenhouse Gases
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation/Traffic
- Tribal Cultural Resources
- Utilities and Service Systems
- Wildfire
- Mandatory Findings of Significance

The Initial Study for this project concludes that the project would have significant environmental effects in some of the above issue areas, but mitigation measures identified in the Initial Study would avoid these effects or reduce them to a level that would be less than significant. As of the distribution of this IS/MND for public review, RD 800 has accepted all the recommended mitigation measures. As a result, RD 800 has prepared a Mitigated Negative Declaration and has notified the public of the District's intent to adopt the IS/MND. The time available for comment on the project IS/MND is shown in the Notice of Intent inside the front cover of this document.

1.3 Project Background

RD 800, created in 1907, is a flood protection district that serves lands along both sides of the Cosumnes River in southeastern unincorporated Sacramento County, generally east of the City of Elk Grove. Originally covering 2,136 acres, RD 800 was expanded after the 1997 floods to 25,435 acres by State legislation. The expanded RD 800 includes additional lands on both the right (north) bank of the Cosumnes River and lands on the left (south) bank (Sacramento County 2016). RD 800 currently maintains a total of approximately 34.05 miles of levees along the Cosumnes River.

The RD 800 area is considered at high risk for flooding, along with levee failure and riverbank erosion. The 1997 flood was associated with multiple sites of levee embankment failure, resulting in extensive damage to nearby agricultural lands. Damage consisted of agricultural land erosion, deposition of sands and debris, and destruction of vineyards and irrigation systems (Sacramento County 2016). The 1997 flood damage between

Sloughhouse and Wilton required considerable levee repair work. In 2017, storms in January and February led to multiple levee breaches along the Cosumnes River, causing flood damage. Flooding occurred in the communities of Wilton and Point Pleasant (Sacramento County 2017a). The specific purpose of the proposed project is to repair portions of levees that have been severely eroded by the 2017 storms. The erosion at these sites is so severe that levee integrity has been compromised, and further erosion could lead to a breach during a major storm event, causing flooding of adjacent lands.

Six of the nine proposed project sites would have repair work conducted by RD 800 as funding becomes available; work at the remaining three sites is eligible for funding from the U.S. Department of Agriculture (USDA). The nine sites are briefly listed and described in Table 2-1 in Chapter 2.0.

1.4 Environmental Evaluation Checklist Terminology

The project's potential environmental effects are evaluated in the Environmental Evaluation Checklist shown in Chapter 3.0. The checklist includes a list of environmental considerations against which the project is evaluated. For each question, RD 800 determines whether the project would involve: 1) a Potentially Significant Impact, 2) a Less Than Significant Impact with Mitigation Incorporated, 3) a Less Than Significant Impact, or 4) No Impact.

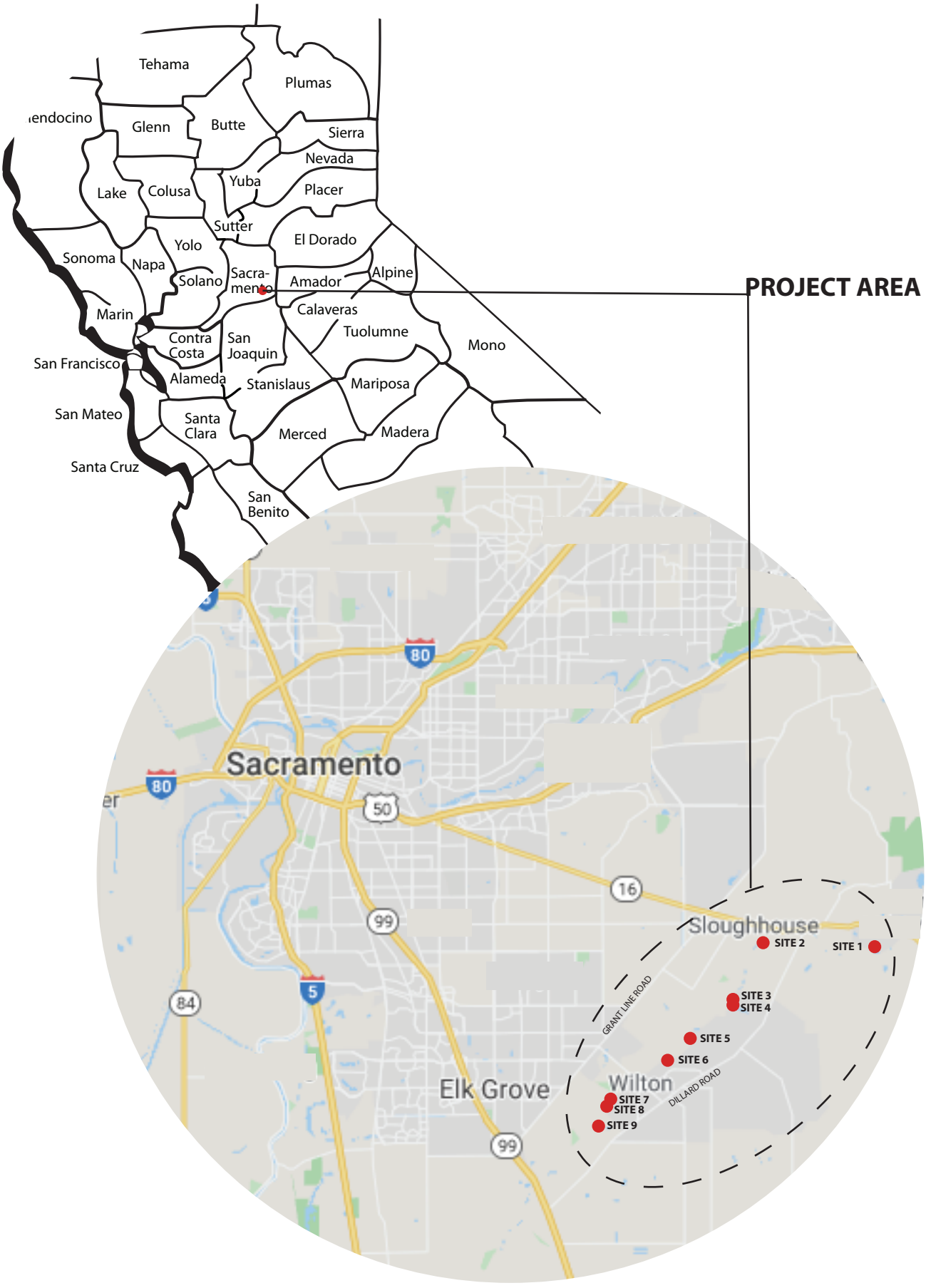
> A Potentially Significant Impact occurs when there is substantial evidence that the project would involve a substantial adverse change to the physical environment, i.e., the environmental effect may be significant, and feasible mitigation measures have not been defined that would reduce the impact to a level that would be less than significant. If there is a Potentially Significant Impact entry in the Initial Study, then an EIR is required. However, no Potentially Significant Impacts have been identified in this IS/MND.
>
> An environmental effect of the project that is Less Than Significant with Mitigation Incorporated is a Potentially Significant Impact that can be avoided or reduced to a level that is less than significant with the application of mitigation measures described in the Initial Study. This Initial Study identifies several impacts that are Less than Significant with Mitigation Incorporated.
>
> A Less Than Significant Impact occurs when the project would involve an environmental impact, but the impact would not cause a substantial adverse change to the physical environment that would require mitigation. This Initial Study identifies numerous impacts that are considered Less than Significant.
>
> A determination of No Impact is self-explanatory. This Initial Study identifies several areas of environmental concern in which the project would have No Impact on the physical environment.

In its analysis of the potentially significant effects of the project, the IS/MND takes into account environmental protections that are established in existing statutes, regulations and uniformly-applied development policies or standards that avoid or substantially mitigate

the potential environmental effects of the project. Where these protections are not sufficient to reduce potential environmental effects to a less than significant level, CEQA requires that other feasible mitigation measures be identified in the Initial Study. Mitigation measures that are required to address the potential effects of the project are described in Chapter 3.0 and in Table 1-1, following.

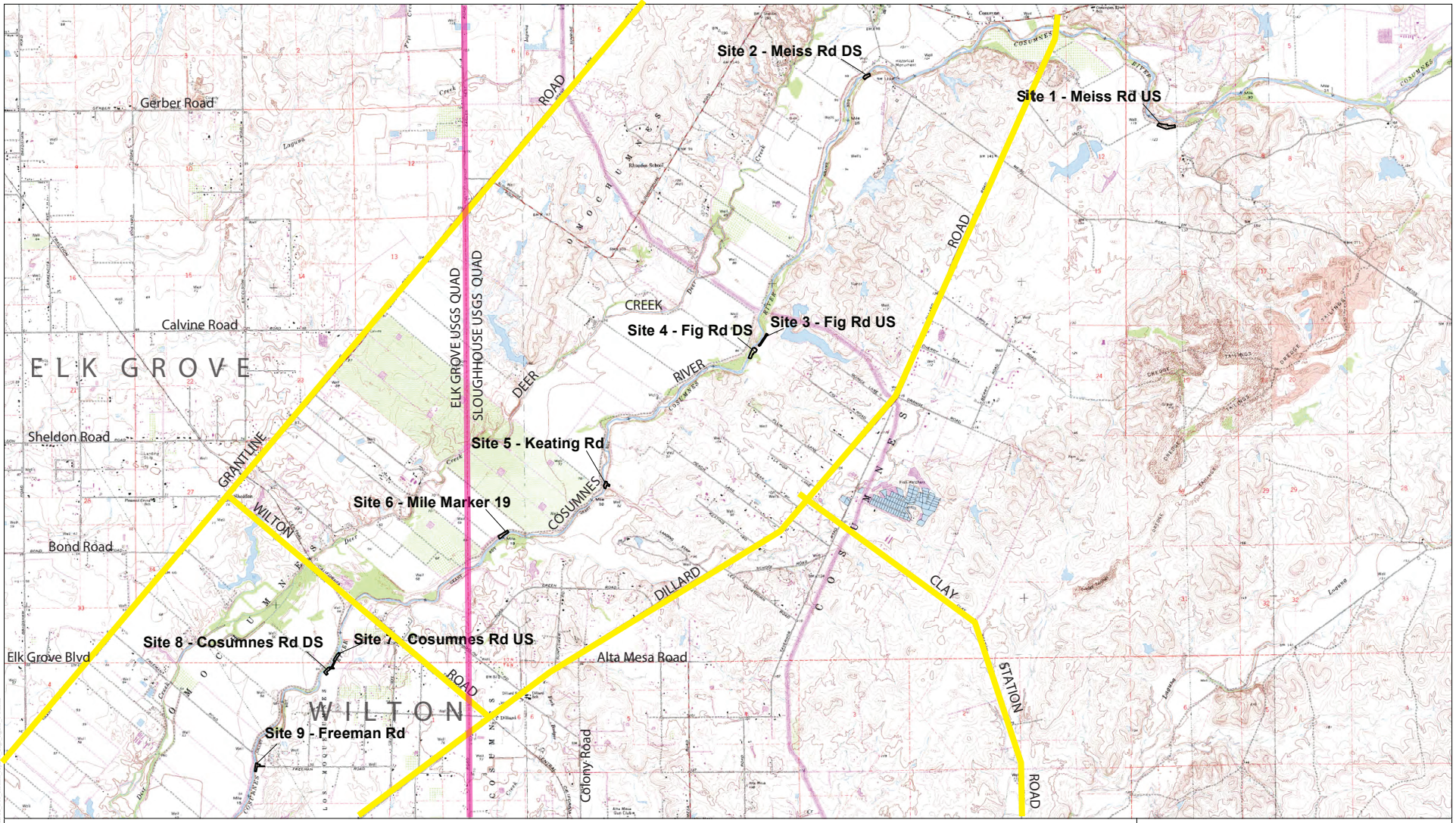
1.5 Summary of Environmental Effects and Mitigation Measures

Table 1-1, at the end of this chapter, is a summary of the environmental impacts of the proposed project and mitigation measures. The table summarizes the results of the Environmental Checklist Form and associated narrative discussion in Chapter 3.0. The potential environmental impacts are listed in the left-most column of this table. The level of significance of each impact is indicated in the second column. Mitigation measures proposed to minimize potentially significant impacts, if necessary, are shown in the third column, and the significance of the impact after mitigation measures are applied is shown in the fourth column.



BaseCamp Environmental

Figure 1-1
REGIONAL LOCATION MAP



SOURCE: Freemont Environmental

0 4,000 8,000
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Map Date: 04/22/20
Aerial Source: Google Earth (08/16/2018)

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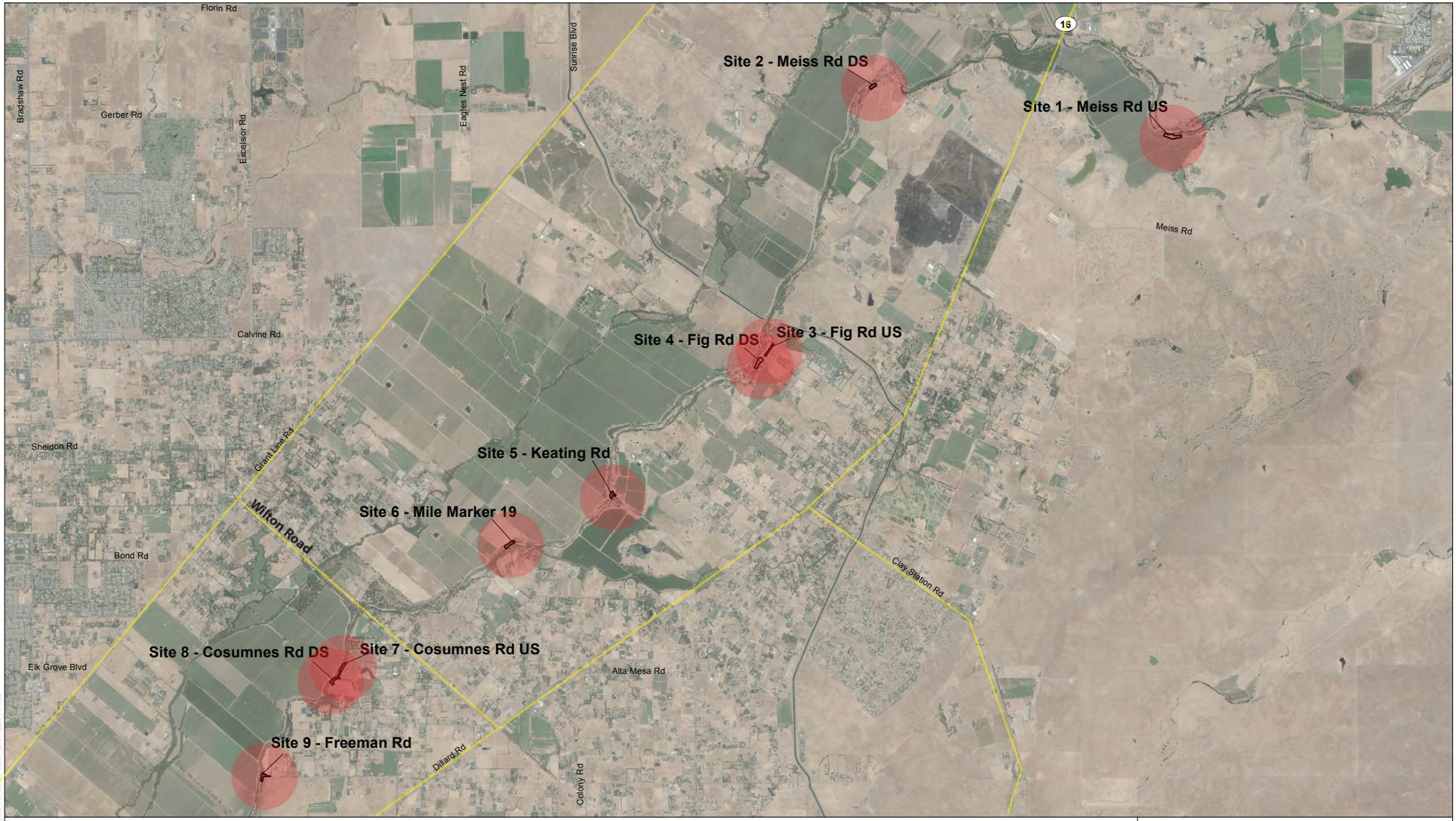
Figure 1-2
USGS MAP AND PROJECT SITES



SOURCE: Freemont Environmental

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Feet

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BaseCamp Environmental

Map Date: 4/22/20
Aerial Source: Google Earth (08/16/2018)

Figure 1-3
AERIAL MAP

TABLE 1-1
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation Measures
3.1 AESTHETICS			
a) Scenic Vistas	NI	None required	-
b) Scenic Resources and Highways	LS	None required	-
c) Visual Character and Quality	LS	None required	-
d) Light and Glare	NI	None required	-
3.2 AGRICULTURE AND FORESTRY RESOURCES			
a) Agricultural Land Conversion	NI	None required	-
b) Conflict with Agricultural Zoning or Williamson Act Contract	NI	None required	-
c) Conflict with Forest Land Zoning	NI	None required	-
d) Forest Land Conversion	NI	None required	-
e) Conversion or Loss of Farmland, Forestland, and Timberland	NI	None required	-
3.3 AIR QUALITY			
a) Consistency with Air Quality Plans	LS	None required	-
b) Cumulative Emissions	NI	None required	-
d) Exposure of Sensitive Receptors	LS	None required	-
e) Odors and Other Emissions	LS	None required	-
3.4 BIOLOGICAL RESOURCES			
a) Special-Status Species	PS	BIO-1: To avoid take of protected raptors and migratory birds between February 1 and August 31, a CDFW	LS

TABLE 1-1
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation Measures
		approved biologist shall conduct an initial pre-construction nest survey. The survey shall be conducted within fifteen (15) days prior to the beginning of construction activities in order to identify active nests of all species within five hundred (500) feet of the project work areas, as well as raptors' active nests within a quarter-mile (1,320 feet) of the project work areas. The surveys shall incorporate methodologies from CDFW's 1994 Staff Report regarding Mitigation for Impacts to Swainson's Hawks (Buteo swainsoni) in the Central Valley of California (CDFW 1994) and the Swainson's Hawk Technical Advisory Committee (SHTAC) survey guidelines (SHTAC 2000). If active raptor nests are found within 1,320 feet of the work area or other active nests within 500 feet of the work area, a temporary buffer of 1,320 feet and 500 feet, respectively, shall be established and RD 800 shall retain an on-site biologist/monitor experienced with raptor behavior. The biologist shall monitor the nest(s) and consult with the CDFW to determine the buffers to be applied and best course of action to avoid nest abandonment or take of individuals. The necessity and extent for temporal construction restrictions shall be determined by CDFW. CDFW may determine it is necessary for a designated biologist/monitor to be on-site daily while construction-related activities are within or near buffer areas. The on-site biologist/monitor shall have authority to stop work if raptors are exhibiting agitated behavior such as defensive flights at intruders, unusual getting up from a brooding position or unusual flying off the nest. If during the nesting season there is a lapse in project-related work of fifteen (15) days or longer, another focused survey shall be performed, and the results sent to CDFW prior to resuming work. BIO-2: Preconstruction surveys for burrowing owl shall be undertaken for construction activities between	

TABLE 1-1
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation Measures
		February 1 and August 31. The surveys shall incorporate methodologies from CDFW's 2012 Staff Report on Burrowing Owl Mitigation and the California Burrowing Owl Consortium CBOC) Burrowing Owl Survey Protocol and Mitigation Guidelines (CBOC 1993). If nesting owls are located within 250 feet of the work areas, temporal construction restrictions may be necessary to eliminate the potential for noise disturbance to the burrowing owls. The necessity and extent for temporal construction restrictions as to nesting burrowing owls is dependent upon location of the nest with respect to construction and shall be determined by CDFW as described above. BIO-3: If a western pond turtle is observed, it should be left alone to move out of the area on its own, or it may be relocated by a qualified biologist to a suitable aquatic habitat outside of the work area. RD 800 shall exercise measures to avoid direct injury to western pond turtle, as well as measures to avoid areas where they are observed to occur. Pre-construction surveys for western pond turtle and their nests will be conducted for construction during April 1 through October 31. This will involve a search for nests in uplands on the landside of the levees. If nest sites are located, the District will notify CDFW and a 50-foot buffer area around the nest shall be staked and work will be delayed until hatching is complete and the young have left the nest site. BIO-4: To compensate for potential direct impacts to valley elderberry longhorn beetle, RD 800 shall provide compensatory mitigation according to the USFWS Framework. Compensation will be provided via the purchase of 2.55 acres of credits (3:1 ratio) at an USFWS-approved mitigation bank, such as the French Camp Conservation Bank.	

TABLE 1-1
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation Measures
		BIO-5: A biological worker awareness training program shall be implemented to educate the construction crews of the biological diversity within the project area. The worker awareness program shall include a presentation on the life history and legal status of potentially occurring special-status species and distribution of informational packages to each worker. While all of the species in Table 4 of the biological assessments [see Appendix B of this IS/MND] will be at least briefly addressed, the focal species of the worker awareness training program will be Swainson's hawk, white-tailed kite, tricolored blackbird, burrowing owl, western pond turtle, valley elderberry longhorn beetle, and Central Valley steelhead.	
b) Riparian and Sensitive Habitats,	PS	BIO-6: Off-site compensatory mitigation for impacts to riverine habitats and associated special-status fish species shall be provided at an approved mitigation bank. The project is within the service area of the Cosumnes Floodplain Mitigation Bank, and the purchase of 3.86 acres of Flooded Riparian credits would provide mitigation for impacts to 1.93 acres of Waters of the U.S. and associated impacts to special-status fish and riparian habitats. In the event credits are not available at the Cosumnes Floodplain Mitigation Bank, equivalent compensatory mitigation would be provided at an alternate agency-approved bank. BIO-7: The project shall implement standard Best Management Practices for vegetation protection and management of invasive species, including fencing of avoided valley oaks and re-seeding disturbed areas with a seed-mix approved by CDFW.	LS
c) Waters of the U.S. and Wetlands	PS	BIO-8: The project shall minimize impacts to potentially jurisdictional Waters of the U.S. and wetlands by restricting all work to the project footprint and adjacent temporary construction areas, as proposed. Permits from the U.S. Army Corps of Engineers (Corps), the CDFW, and the	LS

TABLE 1-1
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation Measures
		Central Valley RWQCB shall be secured prior to the placement of any fill material within the jurisdictional Waters of the U.S. RD 800 shall implement all permit conditions and mitigation measures related to the protection of sensitive habitats and species, including any conditions resulting from Corps Section 7 consultations with the U.S. Fish and Wildlife Service (USFWS) and/or the National Marine Fisheries Service (NMFS), such as project scheduling and implementing appropriate construction Best Management Practices. BIO-9: Project construction shall be scheduled between July 1 and October 31 to reduce the potential for sedimentation of the Cosumnes River and associated impacts to aquatic resources, including special-status fish that occur in the river or downstream waterways on a seasonal basis. This work window may be adjusted through consultation with CDFW, NMFS, and/or USFWS. During the late-summer or fall work window, the lower edge of the erosion repair sites will either be dry or inundated with shallow water (estimated depth less than one foot) during construction. A silt curtain or dewatering devices (i.e., K-rail, sandbags, etc.) shall be installed during project construction to minimize the potential for sediment release into the river and protect any fish in the river from elevated levels of background turbidity in the vicinity of the repair sites.	
d) Fish and Wildlife Movement	PS	BIO-10: Any vegetation removal during the avian nesting season (February 1 through August 31) shall be immediately preceded by a survey. If active nests are found, adequate marking of the nest site shall be provided and vegetation removal in the vicinity of the nest shall be delayed until the young fledge.	LS

TABLE 1-1
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation Measures
		Also, implement Mitigation Measures BIO-5, BIO-6, and BIO-9.	
e) Local Biological Requirements	LS	None required	-
f) Habitat Conservation Plans	NI	None required	-
3.5 CULTURAL RESOURCES			
a) Historic Resources	NI	None required	-
b) Archaeological Resources	PS	CULT-1: If any subsurface cultural resources are encountered during construction of the project, all construction activities within 50 feet of the encounter shall be halted until a qualified archaeologist can examine these materials, make a determination of their significance and, if significant, recommend measures that would reduce potential effects to a level that would be less than significant. Such measures could include, but are not limited to, 1) preservation in place or 2) excavation, recovery, and curation by qualified professionals. If the resource is identified as Native American, the archaeologist shall contact the appropriate tribes, which may recommend appropriate measures on the disposition of the resource. The Reclamation District shall be responsible for retaining qualified professionals, implementing recommended mitigation measures, and documenting mitigation efforts in a written report, consistent with the requirements of the State CEQA Guidelines.	LS
c) Human Burials	PS	CULT-2: If human remains are encountered during construction work, all construction activities within 50 feet of the encounter shall be halted until a qualified archaeologist can examine the find. The archaeologist shall notify the Sacramento County Coroner per California Health and Safety Code Section 7050.5. The provisions of	LS

TABLE 1-1
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation Measures
		California Health and Safety Code Section 7050.5, California Public Resources Code Section 5097.98, and Assembly Bill 2641 shall be implemented. If the County Coroner determines the remains are Native American and not the result of a crime scene, the County Coroner shall notify the Native American Heritage Commission (NAHC), which then shall designate a Native American Most Likely Descendant for the project. The designated Most Likely Descendant will have 48 hours from the time access to the property is granted to make recommendations concerning treatment of the remains. If the landowner does not agree with the recommendations of the Most Likely Descendant, the NAHC can mediate. If no agreement is reached, the landowner must rebury the remains where they will not be further disturbed and with dignity (California Public Resources Code Section 5097.98). Reburial will include either recording the site with the NAHC or the appropriate Information Center; using an open space or conservation zoning designation or easement; or recording a re-interment document with the County, per AB 2641. Work may not resume within the no-work radius until the lead agencies, through consultation as appropriate, determine that the treatment measures have been completed to their satisfaction.	
3.6 ENERGY			
a) Consumption of Energy Resources	LS	None required	-
b) Conflict with Energy Plans	NI	None required	-
3.7 GEOLOGY AND SOILS			
a-i) Fault Rupture Hazards	NI	None required	-
a-ii) Seismic Ground Shaking	LS	None required	-

TABLE 1-1
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation Measures
a-iii) Seismic-Related Ground Failure	LS	None required	-
a-iv) Landslides	NI	None required	-
b) Soil Erosion	LS	None required	-
c) Geologic Instability	LS	None required	-
d) Expansive Soils	LS	None required	-
e) Adequacy of Soils for Sewage Disposal	NI	None required	-
f) Paleontological Resources	PS	GEO-1: If any subsurface paleontological resources are encountered during construction of the project, all construction activities in the vicinity of the encounter shall be halted until a qualified paleontologist can examine these materials, make a determination of their significance and, if significant, recommend further mitigation measures that would reduce potential effects to a level that would be less than significant. Such measures could include 1) preservation in place or 2) excavation, recovery and curation by qualified professionals. The Reclamation District shall be responsible for retaining qualified professionals, implementing recommended mitigation measures and documenting mitigation efforts in a written report, consistent with the requirements of the State CEQA Guidelines.	LS
3.8 GREENHOUSE GAS EMISSIONS			
a) Project GHG Emissions	LS	None required	-
b) Consistency with GHG Reduction Plans	NI	None required	
3.9 HAZARDS AND HAZARDOUS MATERIALS			
a) Hazardous Materials Transport, Use and Disposal	NI	None required	-

TABLE 1-1
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation Measures
b) Upset and Accident Conditions	LS	None required	-
c) Release of Hazardous Materials near Schools	NI	None required	-
d) Hazardous Materials Sites	NI	None required	-
e) Public Airports	NI	None required	-
f) Emergency Response and Evacuations	NI	None required	-
g) Wildland Fire Hazards	LS	None required	-
3.10 HYDROLOGY AND WATER QUALITY			
a) Water Quality	LS	None required	-
b) Groundwater Supplies and Recharge	NI	None required	-
c-i, ii) Drainage Patterns	NI	None required	-
c-iii) Runoff	NI	None required	-
c-iv) Flooding Hazards	NI	None required	-
d) Release of Pollutants in Flood, Tsunami, or Seiche Zones	NI	None required	-
e) Conflicts with Water Quality or Groundwater Management Plans	LS	None required	-
3.11 LAND USE AND PLANNING			
a) Division of Established Community	NI	None required	-
b) Conflicts with Land Use Plans, Policies and Regulations	LS	None required	-
3.12 MINERAL RESOURCES			

TABLE 1-1
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation Measures
a, b) Availability of Mineral Resources	NI	None required	-
3.13 NOISE			
a) Generation of Noise Exceeding Local Standards	LS	None required	
b) Exposure to Groundborne Vibrations	LS	None required	-
c) Public Airport and Private Airstrip Noise	NI	None required	-
3.14 POPULATION AND HOUSING			
a) Unplanned Population Growth	NI	None required	-
b) Displacement of Housing or People	NI	None required	-
3.15 PUBLIC SERVICES			
a-i) Fire Protection	NI	None required	-
a-ii) Police Protection	NI	None required	-
a-iii) Schools	NI	None required	-
a-iv) Parks	NI	None required	-
a-v) Other Public Facilities	NI	None required	-
3.16 RECREATION			
a, b) Recreational Facilities	NI	None required	-
3.17 TRANSPORTATION			
a) Conflicts with Transportation Programs and Plans	NI	None required	-

TABLE 1-1
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation Measures
b) Conflict with CEQA Guidelines Section 15064.3(b)	NI	None required	-
c) Traffic Hazards	NI	None required	-
d) Emergency Access	NI	None required	-
3.18 TRIBAL CULTURAL RESOURCES			
a, b) Tribal Cultural Resources	PS	Mitigation Measures CULT-1 and CULT-2.	LS
3.19 UTILITIES AND SERVICE SYSTEMS			
a) Relocation or Construction of Utility Facilities	NI	None required	-
b) Water Supplies	NI	None required	-
c) Wastewater Treatment Capacity	NI	None required	-
d, e) Solid Waste Services	NI	None required	-
3.20 WILDFIRE			
a) Emergency Response Plans and Emergency Evacuation Plans	NI	None required	-
b) Exposure of Project Occupants to Wildfire Hazards	NI	None required	-
c) Installation and Maintenance of Infrastructure	NI	None required	-
d) Risks from Runoff, Post-Fire Slope Instability, or Drainage Changes	LS	None required	-
3.21 MANDATORY FINDINGS OF SIGNIFICANCE			
a) Findings on Biological and Cultural Resources	PS	Mitigation measures prescribed in Sections 3.4 and 3.5.	LS

TABLE 1-1
SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation Measures
b) Findings on Cumulatively Considerable Impacts	LS	None required	-
c) Findings on Adverse Effects on Human Beings	NI	None required	-

Notes: NI = No Impact; LS = Less Than Significant; PS = Potentially Significant

2.0 PROJECT DESCRIPTION

2.1 Project Location

The project is located along the Cosumnes River in southeastern Sacramento County, California. The project sites are in an unincorporated area that is generally east of the City of Elk Grove, near the communities of Wilton and Sloughhouse (see Figure 1-1). They are located on separate parcels on the south bank of the Cosumnes River, except for Project Site 6 (Mile Marker 19), which is on the north bank. The project site names, the road addresses, and the Assessor's Parcel Number (APN) on which the sites are located are presented in Table 2-1, along with the funding source for proposed work. Project site numbers correspond to those in Figures 1-2 and 1-3, which depict the locations of the project sites on USGS quadrangle and Google Earth aerial photo base maps.

TABLE 2-1
PROJECT SITE NAMES AND LOCATIONS

Site No.	Site Name	APN	Address	Funding Source
1	Meiss Road Upstream	128-0070-057	14060 Meiss Road, Sloughhouse	RD 800
2	Meiss Road Downstream	126-0110-001	Dillard Rd, Rancho Murieta	RD 800
3	Fig Road Upstream	126-0300-055	12415 Fig Rd, Wilton	RD 800
4	Fig Road Downstream	126-0150-037	12319 Plum Ln, Wilton	USDA
5	Keating Road	126-0160-052	Peach Ln, Wilton	RD 800
6	Mile Marker 19	126-0030-025	Bradley Ranch Rd, Elk Grove	RD 800
7	Cosumnes Road Upstream	134-0141-027	9620 Cosumnes Rd, Wilton	RD 800
8	Cosumnes Road Downstream	134-0141-007	9500 Cosumnes Rd, Wilton	USDA
9	Freeman Road	134-0174-014, 134-0174-004	Freeman Rd, Wilton	USDA

The project sites are shown on the USGS Elk Grove, California and Sloughhouse, California 7.5-minute quadrangle maps, within Townships 6 North and 7 North and Ranges 7 and 8 East, Mt. Diablo Base and Meridian. The locations of the nine sites are shown on USGS and aerial photographic base maps on Figures 1-2 and 1-3.

2.2 Project Details

2.2.1 Proposed Levee Repair and Stabilization Work, All Sites

This section provides a detailed description of the proposed levee repairs associated with the project. The purpose of these repairs is to stabilize the eroded levees and riverbanks to avoid further erosion, potential levee breach, and subsequent flooding of nearby areas. Proposed repairs would occur primarily on the waterside of the Cosumnes River levees at the nine sites listed in Table 2-1. As indicated in Table 2-1, levee repairs at three sites would be funded through the USDA, while repair at the other six sites would be funded by RD 800 from various potential sources.

In general, at each project site, the repair work would involve regrading and placement of soil and RSP on the waterside of the existing levee. At the RD 800 project sites, compacted soil would be placed on the waterside of the existing levee, then covered by a layer of RSP. At the USDA sites, a geosynthetic fabric liner would be placed between the layers of compacted soil and RSP, in accordance with USDA requirements. The RSP would be 24-inch minus rock, and the RSP layer would be 24 inches thick. The work would involve both reconstructing the levees and repairing the riverbanks with slopes at a horizontal/vertical ratio from 1.5:1 to 2:1.

Table 2-2 shows the acres affected by construction at each project site, along with the estimated volumes of fill materials (soil and RSP) that would be used. Figures 2-1 through 2-9 shows the anticipated construction work and grading impact areas of the project at each site. More detailed plans for the project sites are available in Appendix A of this IS/MND.

2.2.2 Proposed Levee Repair and Stabilization Work, All Sites

Project Site 1 (Meiss Road Upstream) - Approximately 350 linear feet of levee crest would be excavated to a depth of approximately five feet. The excavated material would be placed and compacted on the waterside slope to restore the slope to its previous condition. The crest would be replaced using material from the adjacent borrow site. Additionally, approximately 370 linear feet of waterside levee slope would be grubbed, stripped, and prepared for material placement. RSP would be placed on the entirety of the waterside slope to protect the repair from future erosion. A two-foot deep by two-foot wide toe trench would be utilized to stabilize the rock (Figures 2-1a and 2-1b).

Project Site 2 (Meiss Road Downstream) - Approximately 230 linear feet of waterside levee slope would be grubbed, stripped, and prepared for material placement. Fill material would be imported from a local borrow site located approximately one-half mile from the project site, placed and compacted on the waterside levee slope to restore the slope to its previous condition. RSP would be placed on the entirety of the waterside slope to protect the repair from future erosion. A two-foot deep by two-foot wide toe trench would be utilized to stabilize the rock (Figures 2-2a and 2-2b).

TABLE 2-2
PROJECT SITE DISTURBANCE AND FILL VOLUMES

Site No.	Length of Levee Repair (feet)	Acres Affected			Fill Volume (cubic yards)		
		Work Area	Temporary Disturbance	Total	Soil	RSP	Total
1	370	0.81	2.14	2.95	1,280	2,507	3,787
2	230	0.40	0.73	1.13	1,046	1,276	2,322
3	520	0.29	0.77	1.06	417	0	417
4	450	0.94	1.04	1.98	4,054	2,504	6,558
5	240	0.29	0.80	1.09	698	789	1,487
6	470	0.39	1.17	1.56	1,598	1,437	3,035
7	370	1.29	0.40	1.69	1,727	1,246	2,973
8	270	0.38	0.72	1.10	1,808	912	2,720
9	450	0.41	0.77	1.18	1,820	1,258	3,078
TOTAL	**3,370**	**5.20**	**8.54**	**13.74**	**14,448**	**11,929**	**26,377**

Notes: Project site numbers correspond to those in Figures 1-2 and 1-3 of this IS/MND.
RSP – rock slope protection
Source: Wagner and Bonsignore

Project Site 3 (Fig Road Upstream) – At this site, the work is limited to strengthening the landside of the levee. Approximately 520 linear feet of landside levee slope would be grubbed, stripped, and prepared for material placement. Imported embankment fill material would be placed and compacted at a 4:1 slope to restore the slope to its previous condition (Figures 2-3a and 2-3b).

Project Site 4 (Fig Road Downstream) - Approximately 200 linear feet of levee crest would be excavated to a depth of approximately five feet. This removed soil would be stockpiled adjacent to the levee, then it would be recompacted on the levee top in conjunction with the other levee repair activities. The landside of the levee top would be graded at a slope of 3:1.

Additionally, approximately 450 linear feet of waterside levee slope would be grubbed, stripped, and prepared for material placement. Fill material from a local borrow site located approximately 1,000 feet from the project site would be placed and compacted at a 2:1 slope to restore the levee to its previous condition. RSP would be placed on the entirety of the waterside slope to protect the repair from future erosion. A two-foot deep by two-foot wide toe trench would be utilized to stabilize the rock. A layer of geosynthetic fabric will be placed between the embankment and the rock slope protection to provide additional rock stabilization (Figures 2-4a and 2-4b).

Project Site 5 (Keating Road) - Approximately 240 linear feet of waterside and landside levee slope would be grubbed, stripped, and prepared for material placement. Imported

fill material would be placed and compacted to restore the waterside slope, landside slope and levee crest to their previous condition. The waterside of the levee would be placed at a horizontal/vertical ratio of 2:1 while the landside would be placed at 3:1. RSP would be placed on the entirety of the waterside and landside slopes to protect the repair from future erosion. A two-foot deep by two-foot wide toe trench would be utilized on the waterside slope to stabilize the rock (Figures 2-5a and 2-5b).

Project Site 6 (Mile Marker 19) - Approximately 470 linear feet of waterside levee slope would be grubbed, stripped, and prepared for material placement. Imported fill material would be placed and compacted to restore the slope to its previous condition. RSP would be placed on the entirety of the waterside slope to protect the repair from future erosion. A two-foot deep by two-foot wide toe trench would be utilized to stabilize the rock (Figures 2-6a and 2-6b).

Project Site 7 (Cosumnes Road Upstream) - Approximately 370 linear feet of waterside levee slope would be grubbed, stripped, and prepared for material placement. Imported fill material would be placed and compacted to restore the levee slope to its previous condition. RSP would be placed on the entirety of the waterside slope to protect the repair from future erosion. A two-foot deep by two-foot wide toe trench would be utilized to stabilize the rock (Figures 2-7a and 2-7b).

Project Site 8 (Cosumnes Road Downstream) - Approximately 270 linear feet of waterside slope would be grubbed, stripped, and prepared for material placement. Imported embankment fill material would be placed and compacted at a 1.5:1 slope to restore the levee to its previous condition. RSP would be placed on the entirety of the waterside slope to protect the repair from future erosion. A two-foot deep by two-foot wide toe trench would be utilized to stabilize the rock. A layer of geosynthetic fabric will be placed between the embankment and the rock slope protection to provide additional rock stabilization (Figures 2-8a and 2-8b).

Project Site 9 (Freeman Road) - Approximately 450 linear feet of waterside levee slope would be grubbed, stripped, and prepared for material placement. Imported embankment fill material would be placed and compacted at a 1.5:1 slope to restore the levee to its previous condition. RSP would be placed on the entirety of the waterside slope to protect the repair from future erosion. A two-foot deep by two-foot wide toe trench would be utilized to stabilize the rock. A layer of geosynthetic fabric will be placed between the embankment and the rock slope protection to provide additional rock stabilization (Figures 2-9a and 2-9b).

2.3 Project Construction

2.3.1 Construction Methods

Construction access to the nine sites would be provided mostly by existing local roads and unpaved farm, field and levee access roads, including levee-top access roads; access routes would range from 0.4 (Sites 3 and 4) to 4 (Site 1) miles in length. Access to Project Site 9 (Freeman Road) would require construction of a new 400-foot temporary

access road. Easements or rights-of-entry will be obtained for access roads crossing private property prior to start of construction.

The project proposes the establishment of temporary staging areas in existing disturbed upland areas on the levee landside where equipment and materials would be placed during construction. Equipment and materials staging activity would occur within the temporary disturbance areas, or specified staging areas shown on Figures 2-1a through 2-9a. Permission for use of staging areas on private property would be obtained prior to the start of construction. Private land used for access roads and staging would be restored to their existing condition upon project completion.

The proposed levee repairs would use conventional equipment, including excavators, trucks, compactors, loaders, and graders. Construction is expected to be managed largely from the levee road and would occur entirely within the waterside portion of the levee, except at Project Sites 3 and 4, which would involve work on the landside of the levee. However, landside work would occur entirely within the existing levee footprint. Construction time at each site is anticipated to be approximately 1½ weeks, except at Project Site 6 (Mile Marker 19), where construction time is anticipated to take three weeks due to the greater number of on-site trees requiring removal.

RSP and fill material would be obtained from off-site commercial sources, except for Sites 1, 2, and 4. Materials needed for these sites would be obtained from nearby borrow sites (see Figures 2-1a, 2-2a and 2-4a). Borrow sites for Sites 1 and 2 are adjacent to proposed work areas or accessible from existing dirt roads. These borrow sites are previously disturbed low hills covered in non-native grasses and weeds. The Site 4 borrow site, which is in the middle of an agricultural field, would be accessed by a temporary road approximately 30 feet wide extending south from the job site access road (Figure 2-4a). These borrow sites would be grubbed and stripped to remove existing vegetation; scrapers would remove the upper few inches of soil as required to provide the needed fill. The borrow sites would be hydroseeded for erosion control after the needed fill material is removed.

Project equipment and construction materials would be staged in highly disturbed upland areas on the landside levee at each of the erosions repair sites. The project sites are expected to be dry during construction, and construction vehicle or equipment use would not occur in the water. However, if work is required in the wetted area, construction crews would install a siltation screen or dewatering devices to prevent sediment release, as discussed in the Avoidance and Minimization Measures section, below.

2.3.2 Avoidance and Minimization Measures

The project would incorporate measures that would avoid or minimize impacts on biological resources resulting from construction work at the project sites. Proposed avoidance and minimization measures include the following:

- Construction access via existing farm roads.
- Minimization of overall construction disturbance area.

- Minimization of project footprint in jurisdictional Waters of the U.S.
- Staging areas located in existing disturbed areas.
- Protection of oak trees to be retained with construction fencing in or near construction areas.
- Construction scheduling during late summer or fall to avoid potential impacts to special-status fish species.
- If work is required in the wetted area of the Cosumnes River, installation of siltation screen or dewatering devices to prevent sediment release.
- Pre-construction surveys for potentially occurring special-status species (e.g., Swainson's hawk, burrowing owl, western pond turtle).

The potential biological effects of the project and mitigation measures for these effects are discussed in detail in Section 3.4, Biological Resources, as well as in the Biological Assessments prepared for the USDA-funded Project Sites 4, 8 and 9 and the projects that will be funded by other agencies: Sites 1, 2, 3, 5, 6, and 7. The project as a whole will result in the placement of fill in 1.93 acres of Waters of the U.S. and temporary construction disturbance to approximately 1.70 acres of Waters of the U.S. associated with personnel and construction equipment access to the work areas.

The project would require the removal of several valley oaks, black walnuts, Fremont's cottonwood, Oregon ash, and a few trees of other species. A few blue elderberry shrubs would also be removed. The project would result in the removal of approximately 2.29 acres of riparian forest vegetation.

As described in the Biological Assessments, the implementation of the above-described Avoidance and Minimization Measures will assure the protection of sensitive habitat and species and the maintenance of biological functions and values. In addition, the project will offset unavoidable impacts to biological resources via the following proposed mitigation measures:

- Reseeding disturbed areas with native non-invasive erosion control mix following construction.
- Purchasing elderberry mitigation credits from a mitigation bank or banks acceptable to the permitting agencies.
- Mitigation for impacts to jurisdictional Waters of the U.S., riverine habitats, and associated special-status fish species at an approved mitigation bank.

2.4 Permits and Approvals

RD 800 is the Local Maintaining Agency for the Cosumnes River levee located within the District boundaries; it is the agency responsible for levee maintenance and repair. Approval from the RD 800 Board of Trustees will be required to proceed with the

project. The approval must be preceded by adoption of this IS/MND, along with a Mitigation Monitoring and Reporting Program to ensure implementation of the mitigation measures described in the IS/MND.

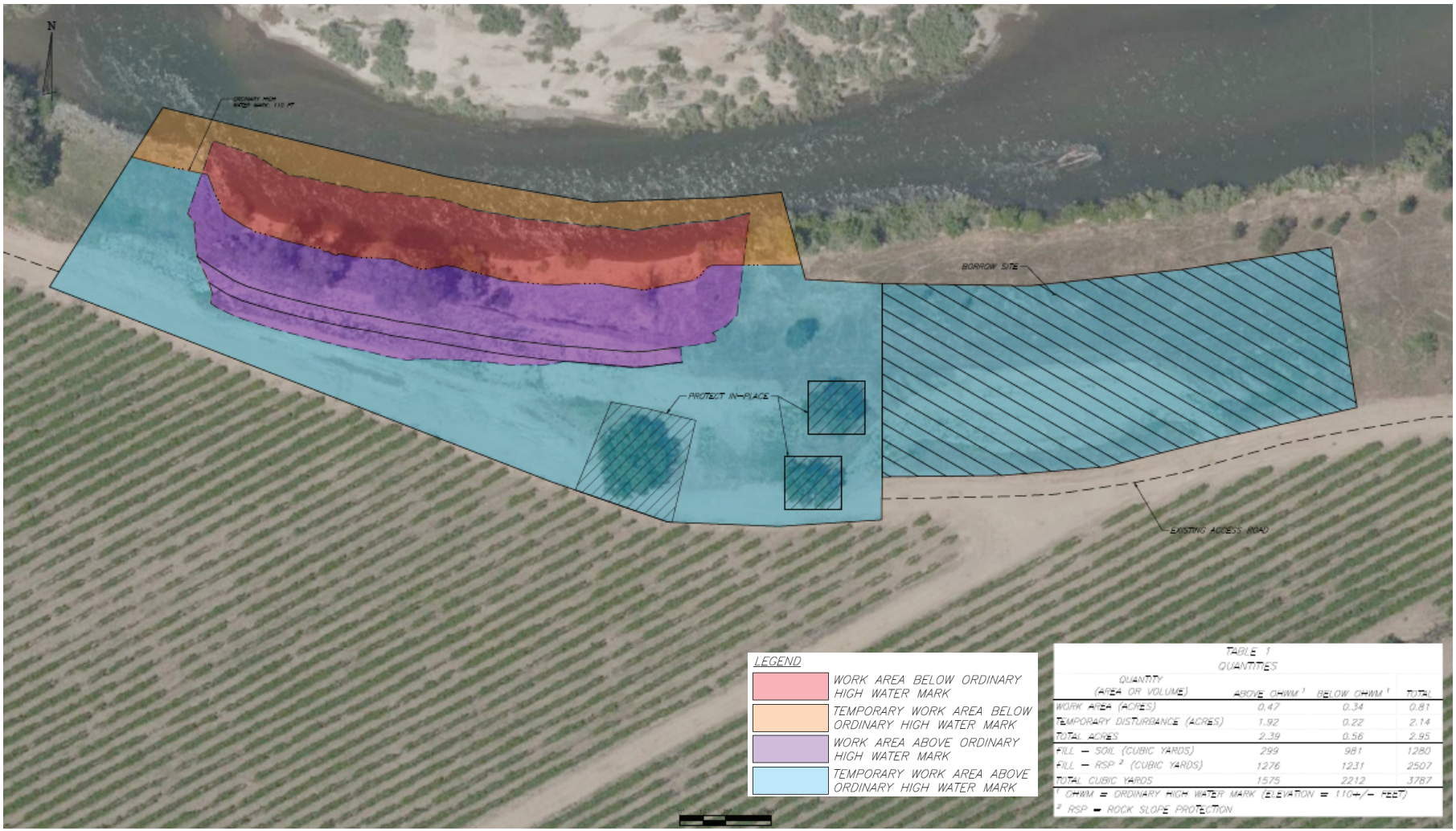
Project approval will be required from federal and State funding agencies including the US Department of Agriculture, Natural Resource Conservation Service. Other potential funding agencies for the project will be defined as time goes on. These may include other agencies with environmental review responsibilities under CEQA as well as the National Environmental Policy Act (NEPA).

Project construction and operation also would require permits and approvals from the agencies listed below:

U.S. Army Corps of Engineers (Corps). Clean Water Act Section 404 permit for dredging and/or placement of fill in Waters of the United States. The project would involve work below the OHWM, which defines the upper boundary of Corps jurisdiction.

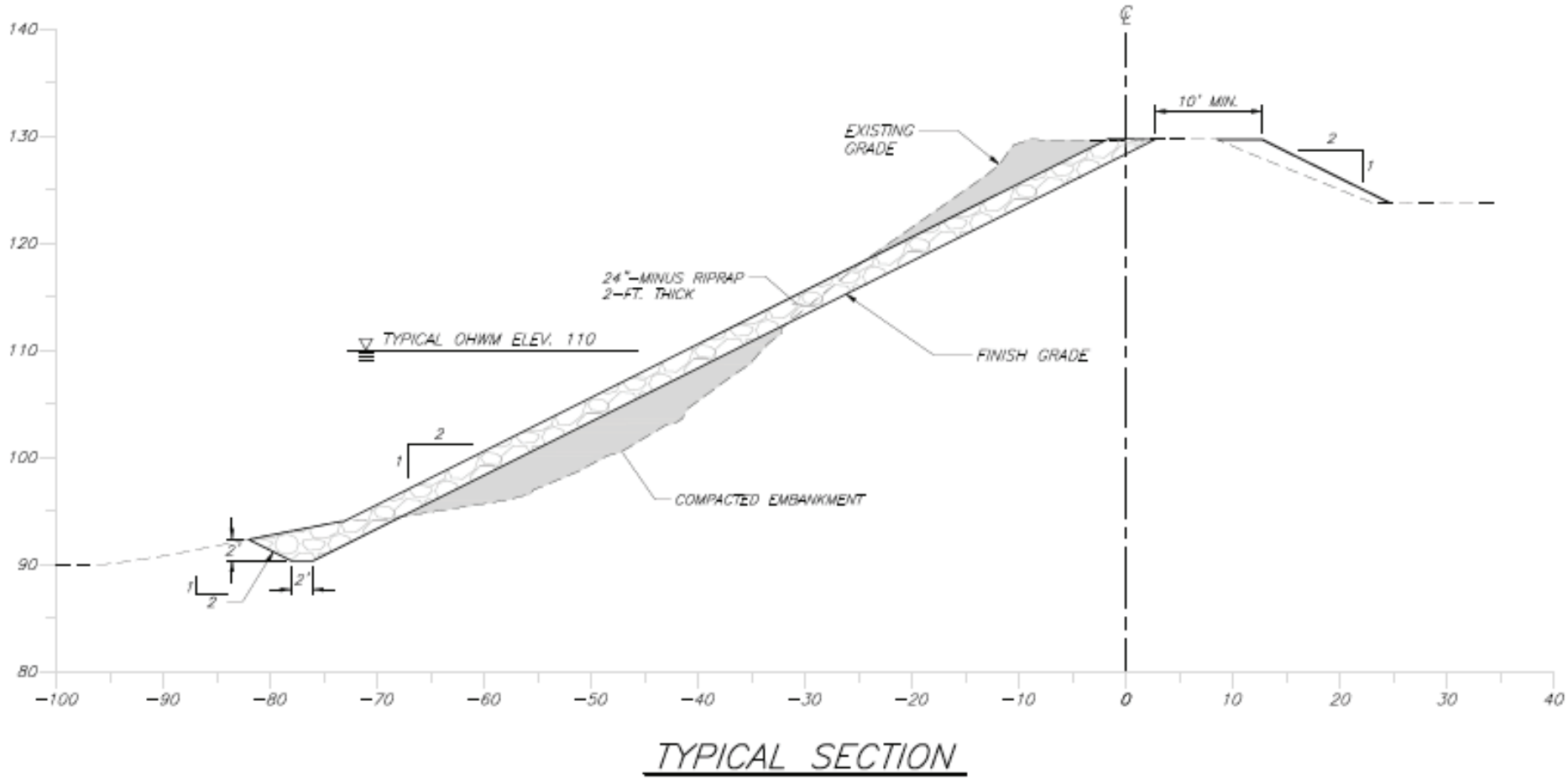
California Department of Fish and Wildlife (CDFW). Fish and Game Code Section 1600 Streambed Alteration Agreement for work in the channel, bed and/or banks of a State-regulated waterway.

Regional Water Quality Control Board (RWQCB), Central Valley Region. Water Quality Certification under Section 401 of the federal Clean Water Act, required whenever a Section 404 permit is obtained.



SOURCE: Wagner & Bonsignore

Figure 2-1a
SITE 1 REPAIR PLAN



SOURCE: Wagner & Bonsignore

Figure 2-1b
SITE 1 TYPICAL SECTION

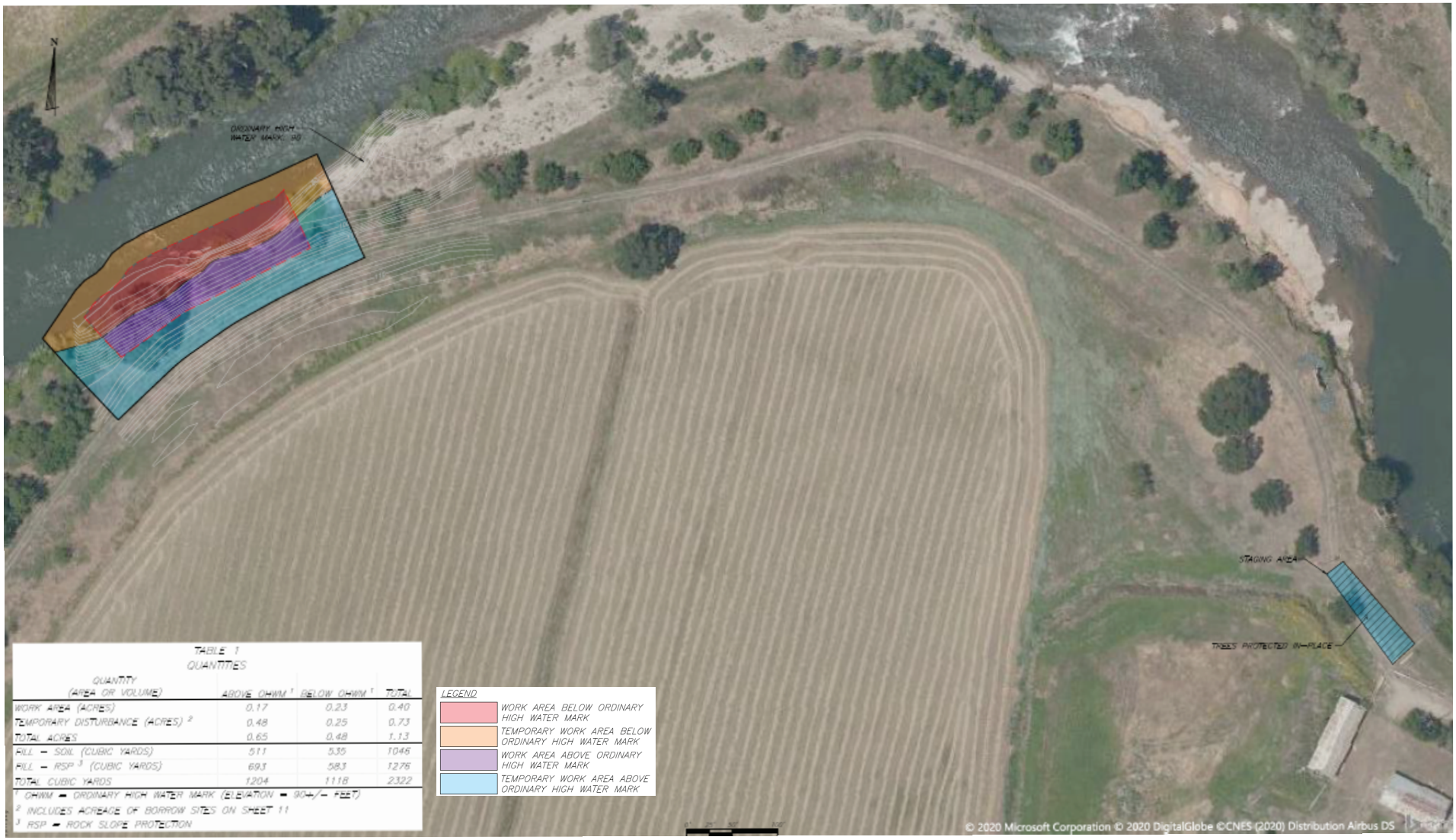


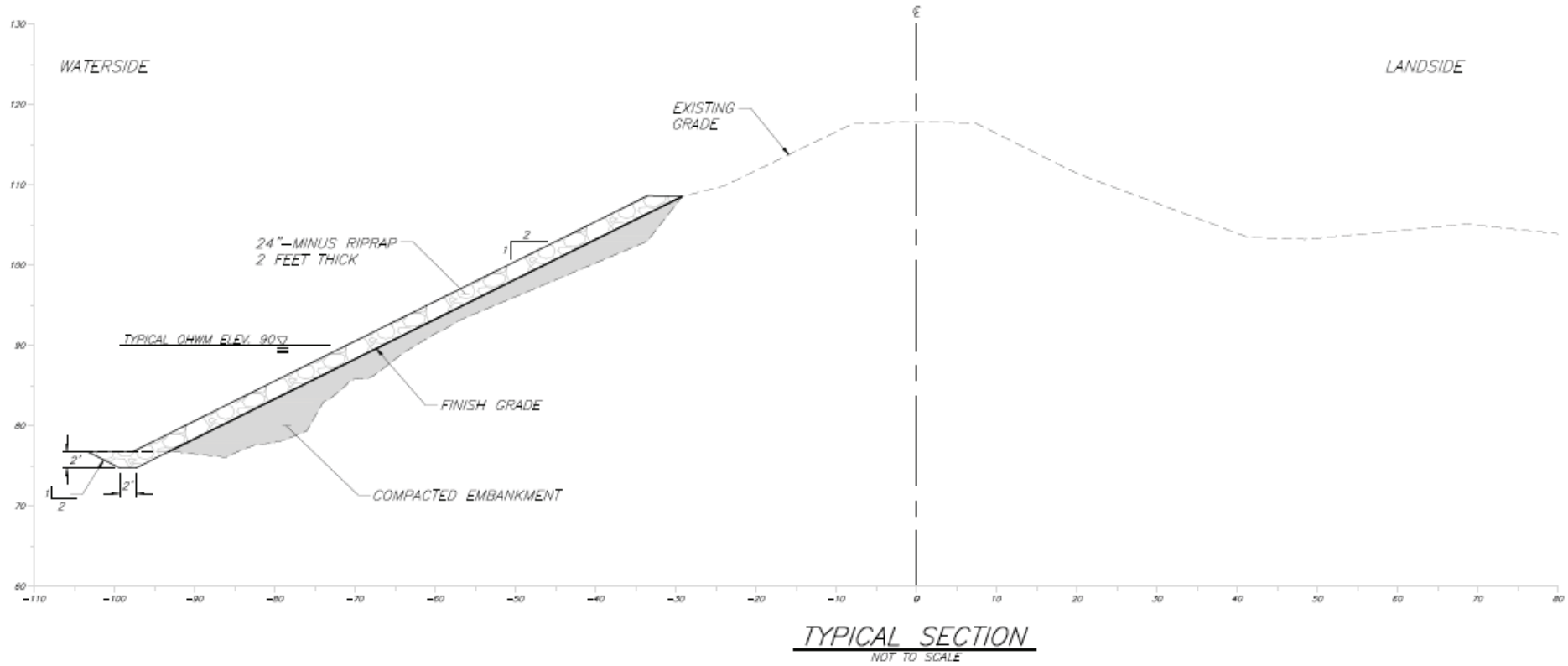
TABLE 1
QUANTITIES

QUANTITY (AREA OR VOLUME)	ABOVE OHWM [1]	BELOW OHWM [1]	TOTAL
WORK AREA (ACRES)	0.17	0.23	0.40
TEMPORARY DISTURBANCE (ACRES) [2]	0.48	0.25	0.73
TOTAL ACRES	0.65	0.48	1.13
FILL – SOIL (CUBIC YARDS)	511	535	1046
FILL – RSP [3] (CUBIC YARDS)	693	583	1276
TOTAL CUBIC YARDS	1204	1118	2322

[1] OHWM = ORDINARY HIGH WATER MARK (ELEVATION = 904+/- FEET)
[2] INCLUDES ACREAGE OF BORROW SITES ON SHEET 11
[3] RSP = ROCK SLOPE PROTECTION

SOURCE: Wagner & Bonsignore

Figure 2-2a
SITE 2 REPAIR PLAN



SOURCE: Wagner & Bonsignore

Figure 2-2b
SITE 2 TYPICAL SECTION

SOURCE: Wagner & Bonsignore

Figure 2-2c
MEISS ROAD-BORROW SITES

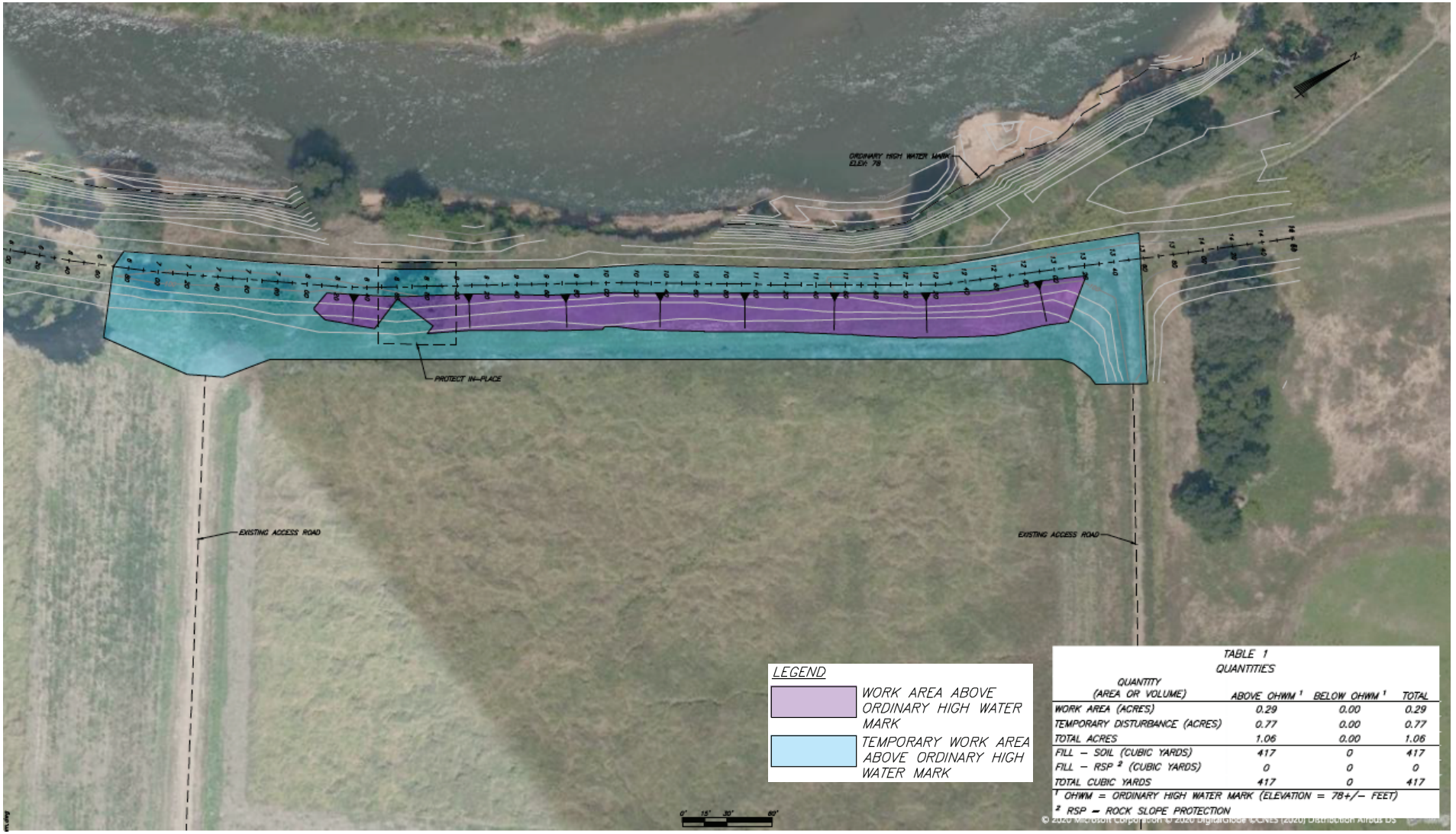


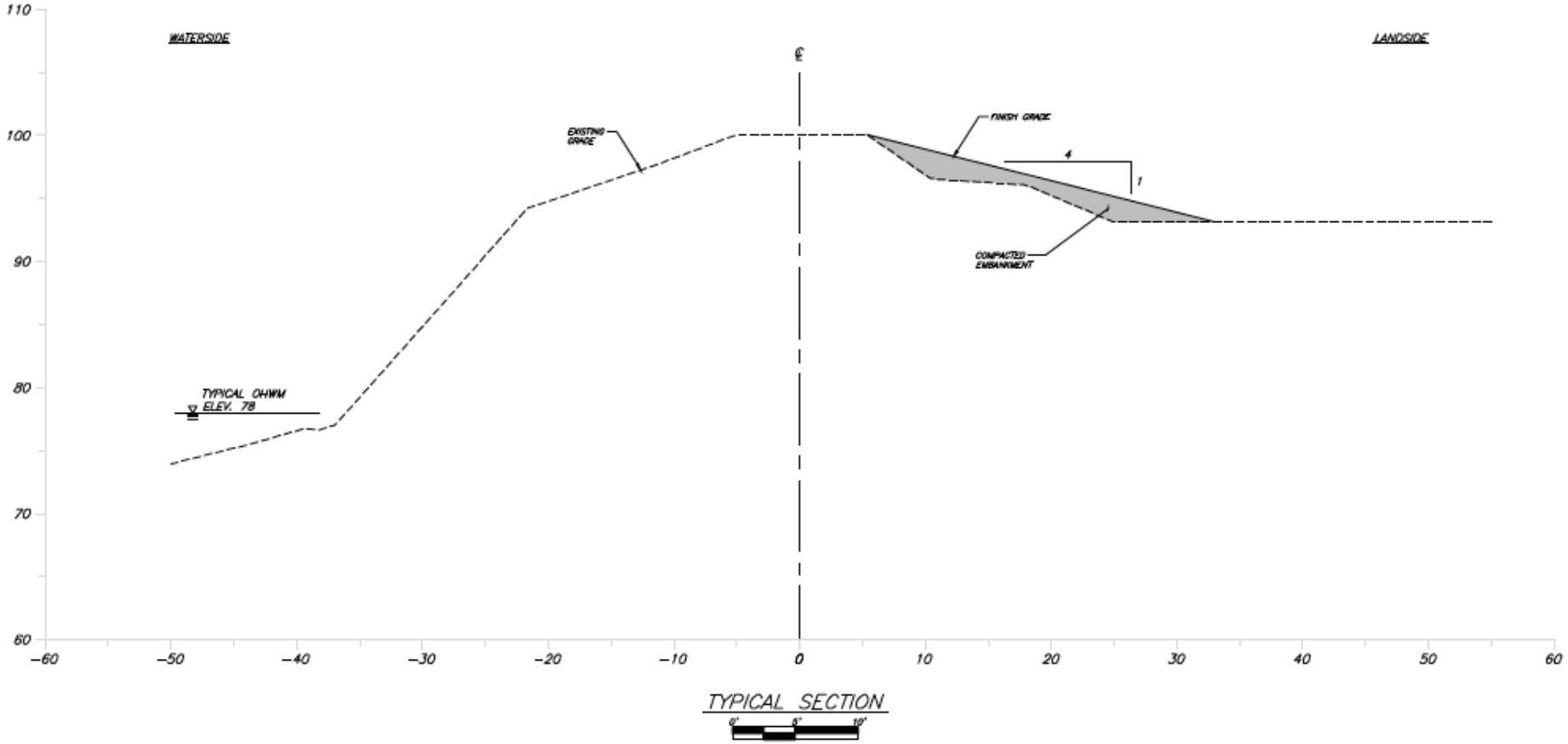
TABLE 1
QUANTITIES

QUANTITY (AREA OR VOLUME)	ABOVE OHWM [1]	BELOW OHWM [1]	TOTAL
WORK AREA (ACRES)	0.29	0.00	0.29
TEMPORARY DISTURBANCE (ACRES)	0.77	0.00	0.77
TOTAL ACRES	1.06	0.00	1.06
FILL – SOIL (CUBIC YARDS)	417	0	417
FILL – RSP [2] (CUBIC YARDS)	0	0	0
TOTAL CUBIC YARDS	417	0	417

[1] OHWM = ORDINARY HIGH WATER MARK (ELEVATION = 78+/– FEET)
[2] RSP – ROCK SLOPE PROTECTION

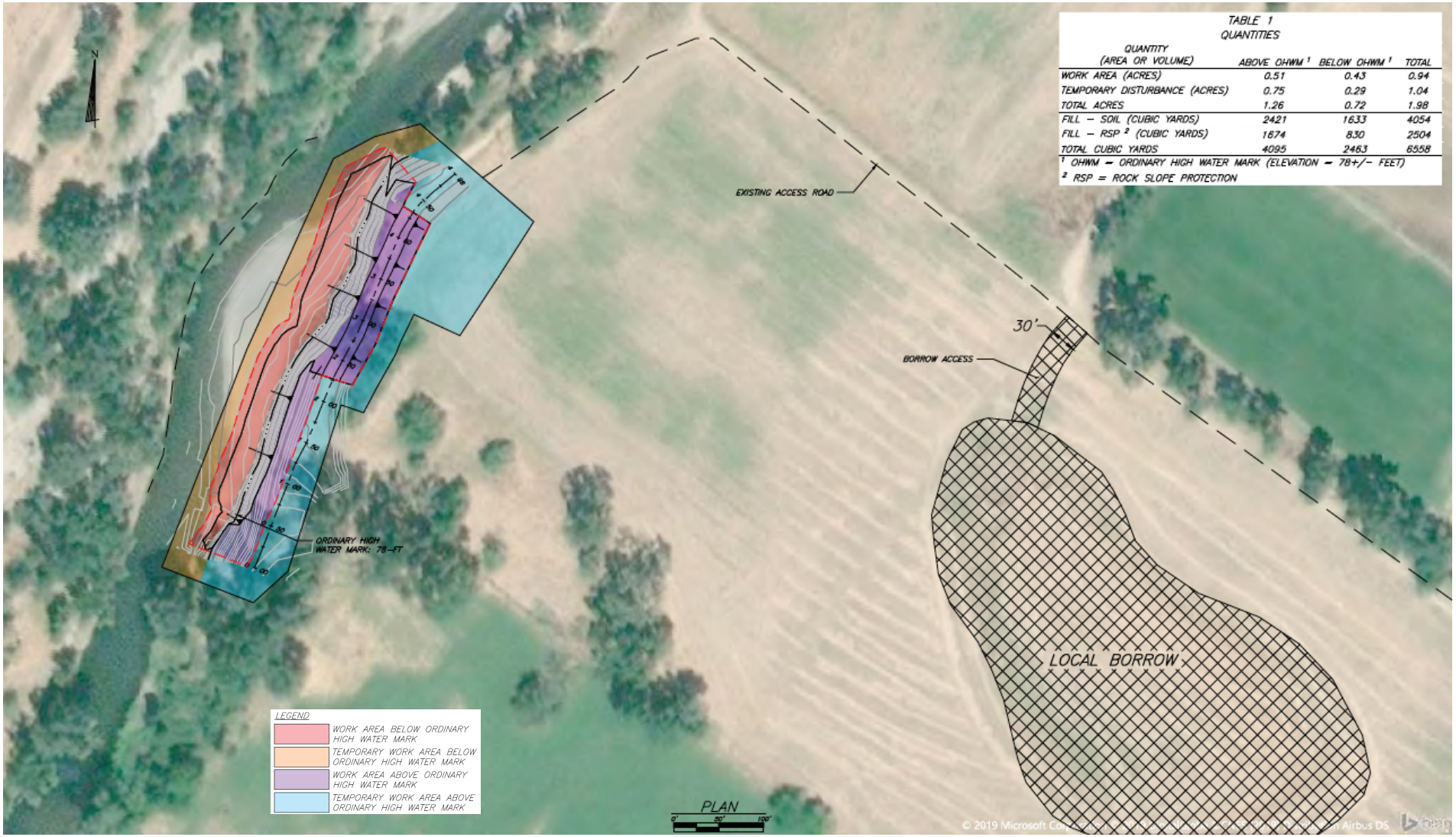
SOURCE: Wagner & Bonsignore

Figure 2-3a
SITE 3 REPAIR PLAN



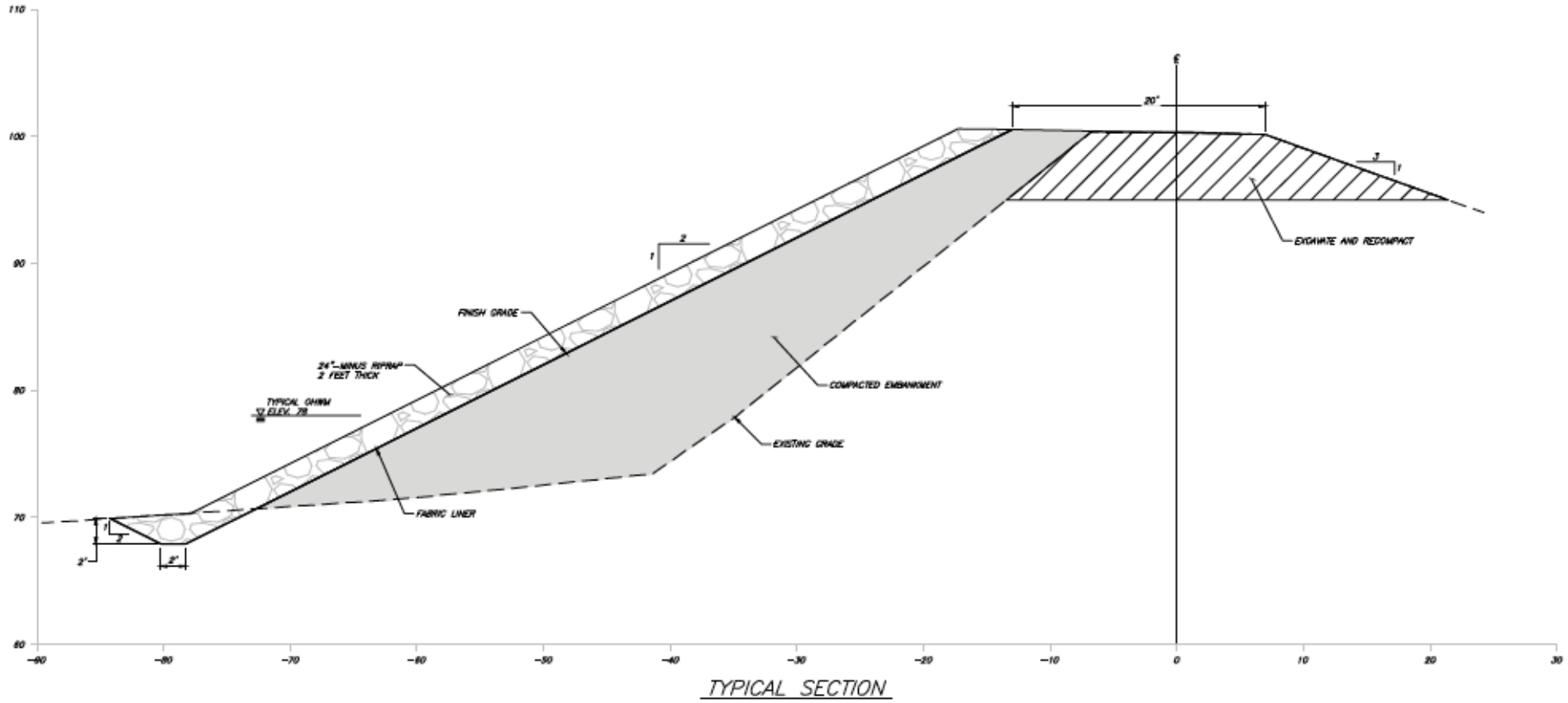
SOURCE: Wagner & Bonsignore

Figure 2-3b
SITE 3 TYPICAL SECTION



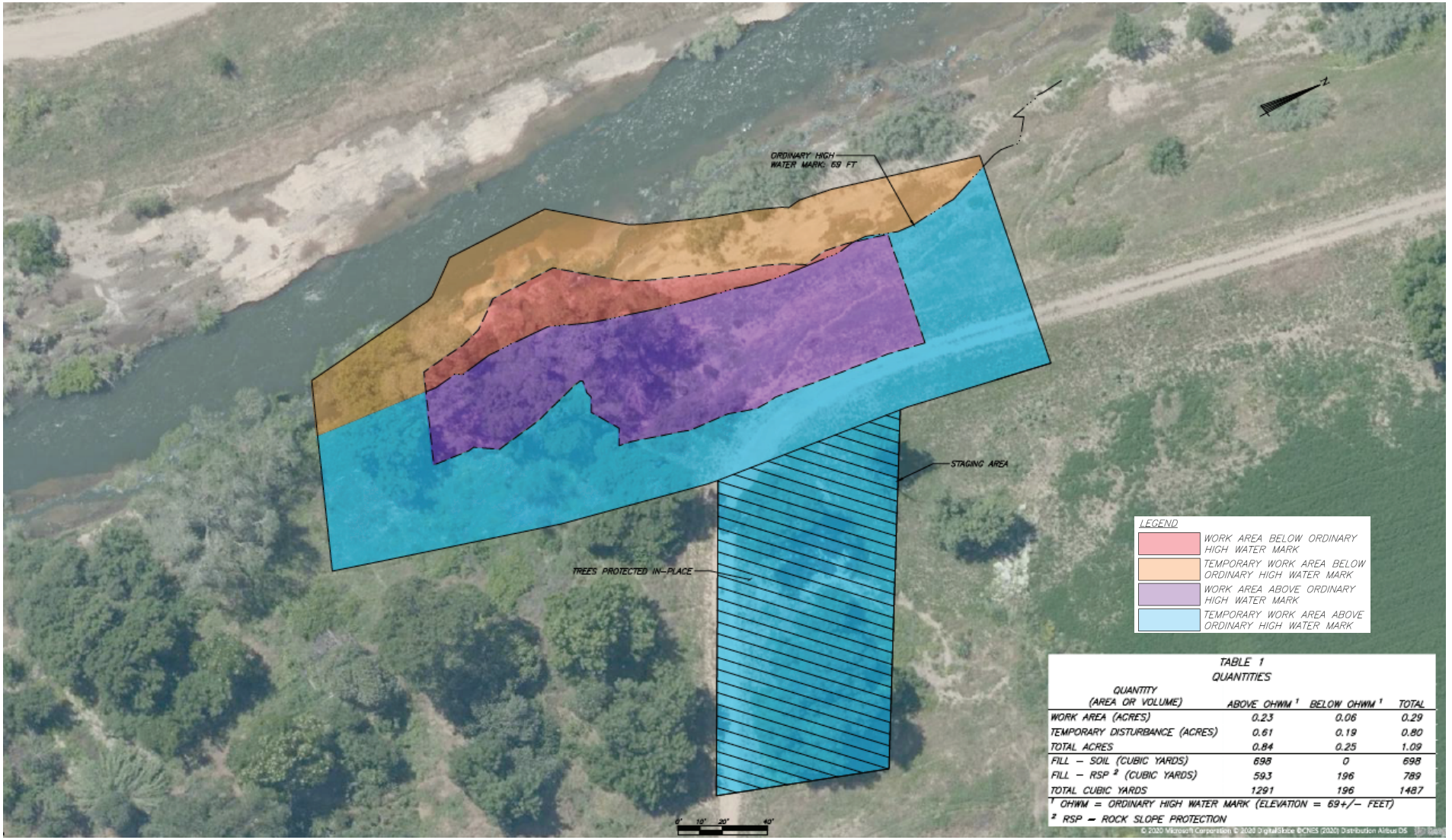
SOURCE: Wagner & Bonsignore

Figure 2-4a
SITE 4 REPAIR SECTION



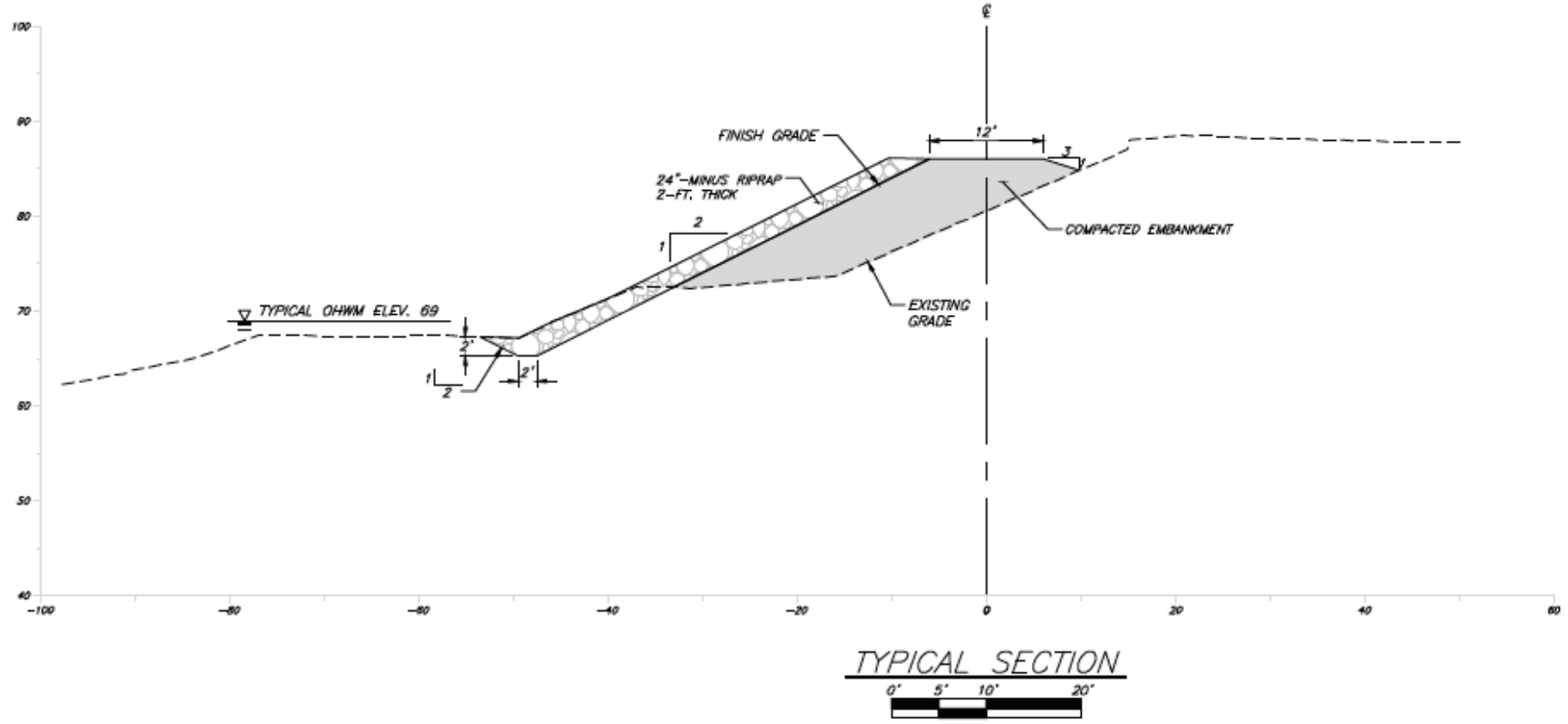
SOURCE: Wagner & Bonsignore

Figure 2-4b
SITE 4 TYPICAL SECTION



SOURCE: Wagner & Bonsignore

Figure 2-5a
SITE 5 REPAIR SECTION



SOURCE: Wagner & Bonsignore

Figure 2-5b
SITE 5 TYPICAL SECTION

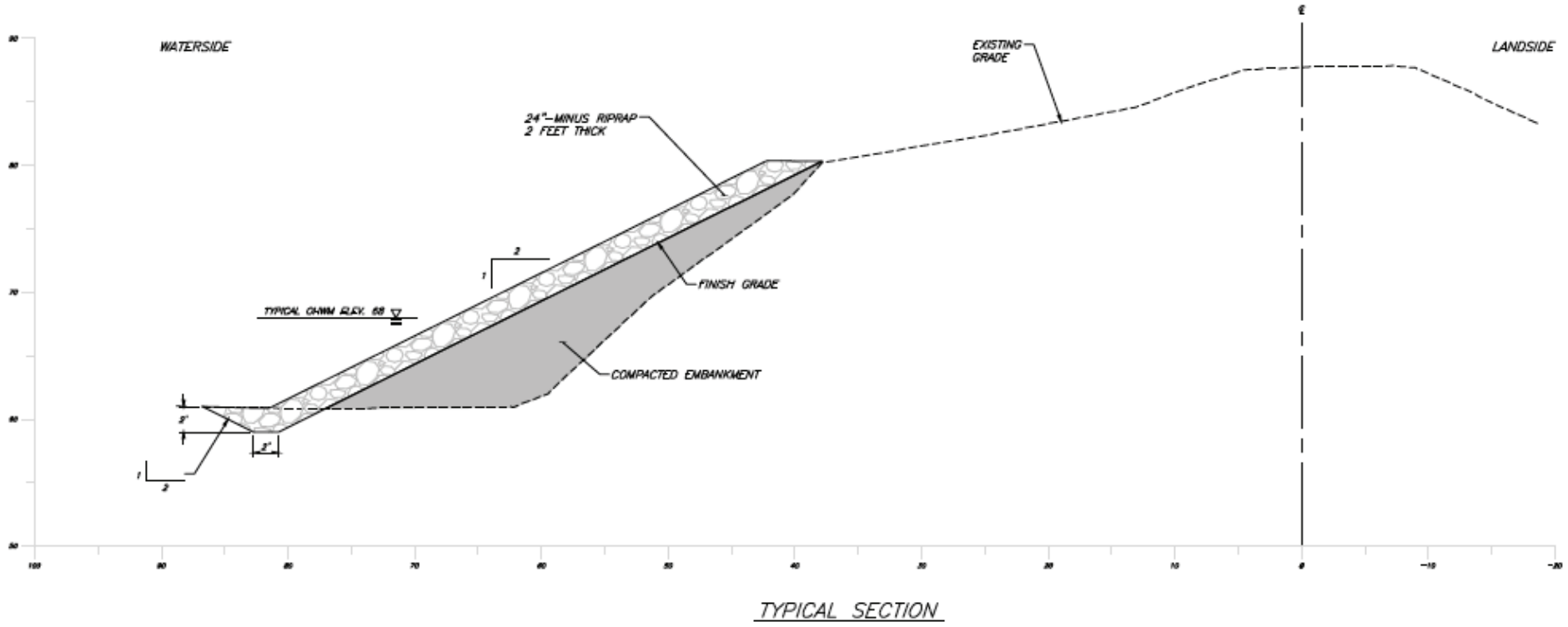
TABLE 1
QUANTITIE'S

QUANTITY (AREA OR VOLUME)	ABOVE OHWM [1]	BELOW OHWM [1]	TOTAL
WORK AREA (ACRES)	0.11	0.28	0.39
TEMPORARY DISTURBANCE (ACRES)	0.94	0.23	1.17
TOTAL ACRES	1.05	0.51	1.56
FILL – SOIL (CUBIC YARDS)	487	1111	1598
FILL – RSP [2] (CUBIC YARDS)	544	893	1437
TOTAL CUBIC YARDS	1031	2004	3035

[1] OHWM = ORDINARY HIGH WATER MARK (ELEVATION = 68+/– FEET)
[2] RSP = ROCK SLOPE PROTECTION

SOURCE: Wagner & Bonsignore

Figure 2-6a
SITE 6 REPAIR PLAN



SOURCE: Wagner & Bonsignore

Figure 2-6b
SITE 6 TYPICAL SECTION

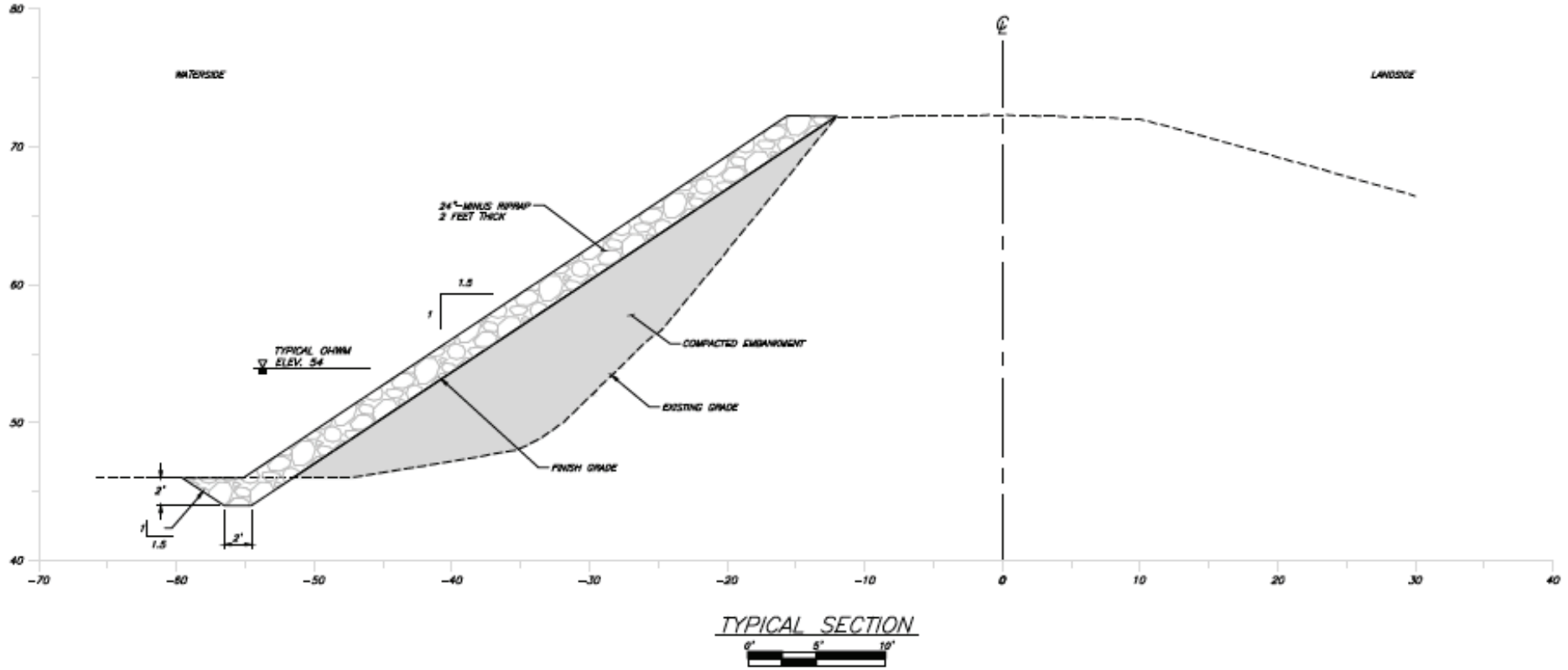
TABLE 1
QUANTITIES

QUANTITY (AREA OR VOLUME)	ABOVE OHWM [1]	BELOW OHWM [1]	TOTAL
WORK AREA (ACRES)	1.09	0.20	1.29
TEMPORARY DISTURBANCE (ACRES)	0.16	0.24	0.40
TOTAL ACRES	1.25	0.44	1.69
FILL – SOIL (CUBIC YARDS)	1043	684	1727
FILL – RSP [2] (CUBIC YARDS)	772	474	1246
TOTAL CUBIC YARDS	1815	1158	2973

[1] OHWM = ORDINARY HIGH WATER MARK (ELEVATION = 54+/– FEET)
[2] RSP – ROCK SLOPE PROTECTION

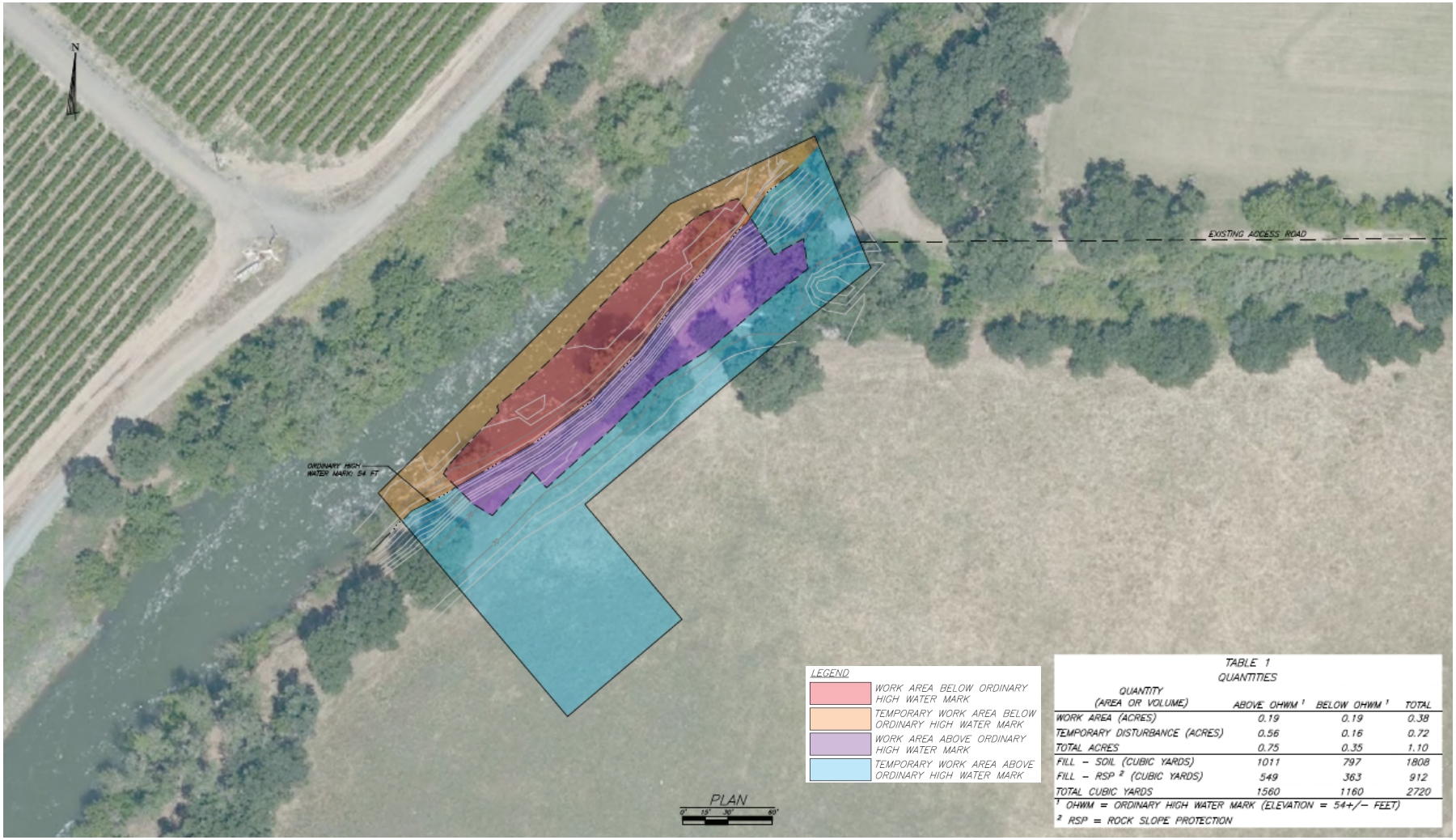
SOURCE: Wagner & Bonsignore

Figure 2-7a
SITE 7 REPAIR PLAN

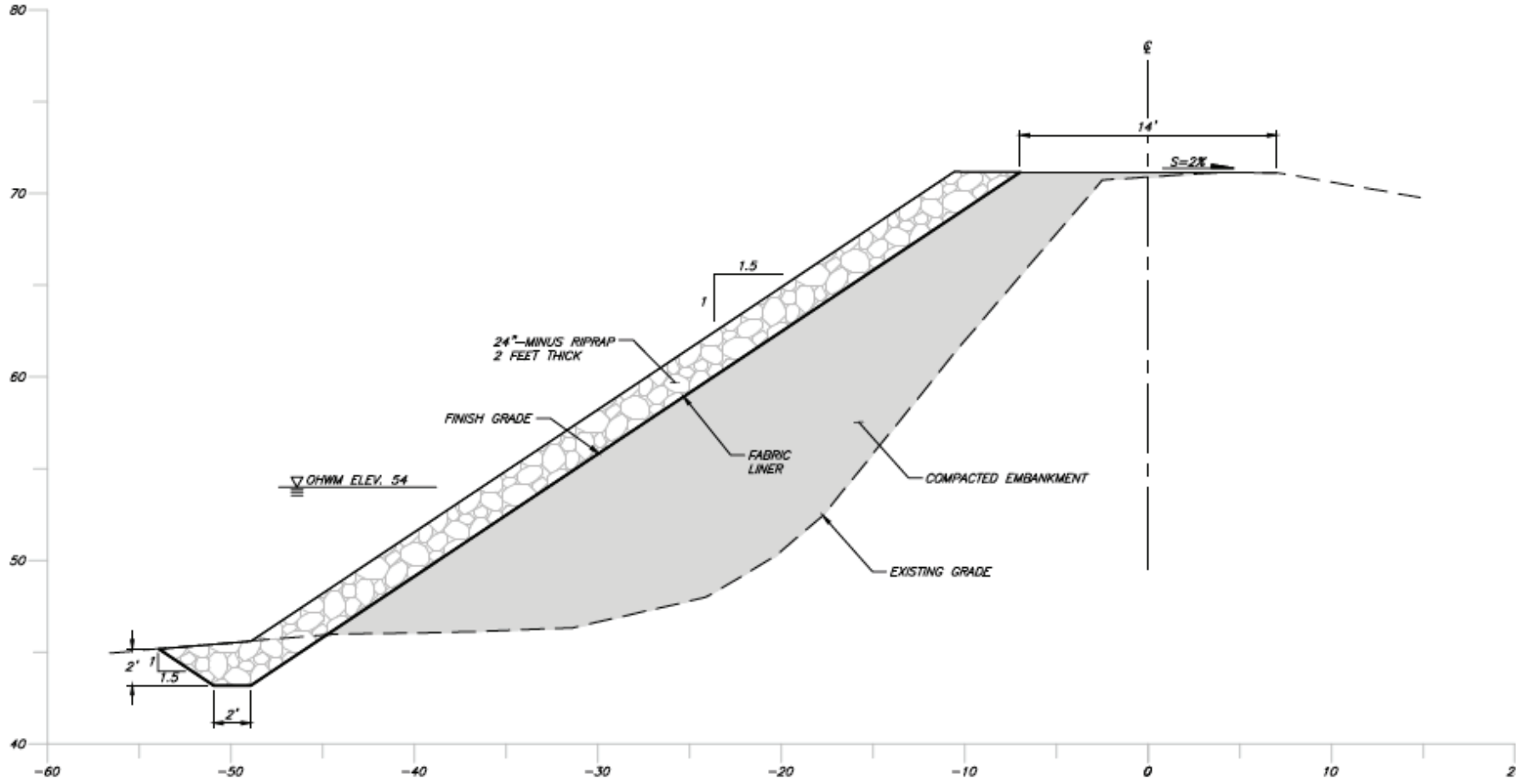


SOURCE: Wagner & Bonsignore

Figure 2-7b
SITE 7 TYPICAL SECTION

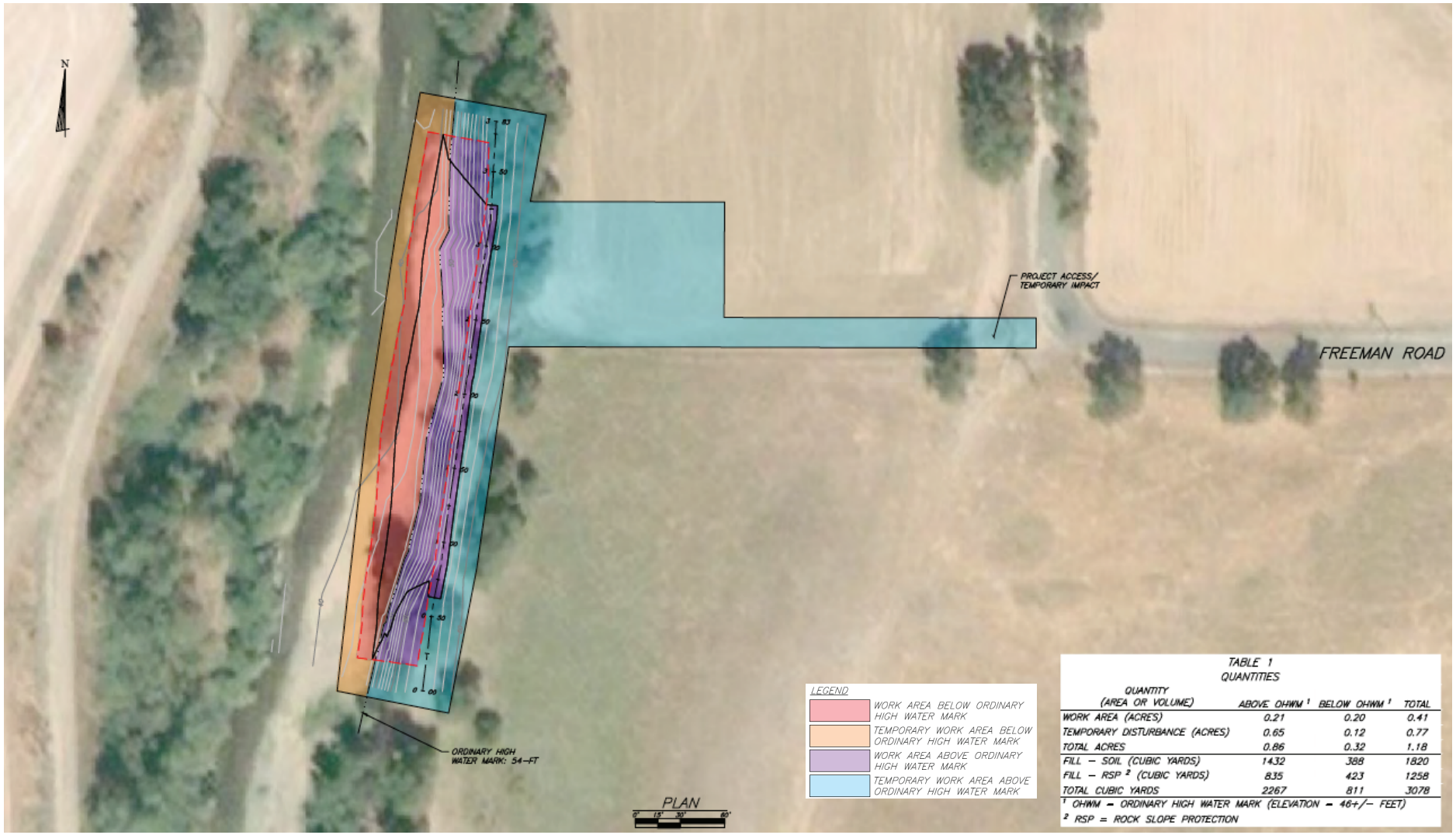


SOURCE: Wagner & Bonsignore



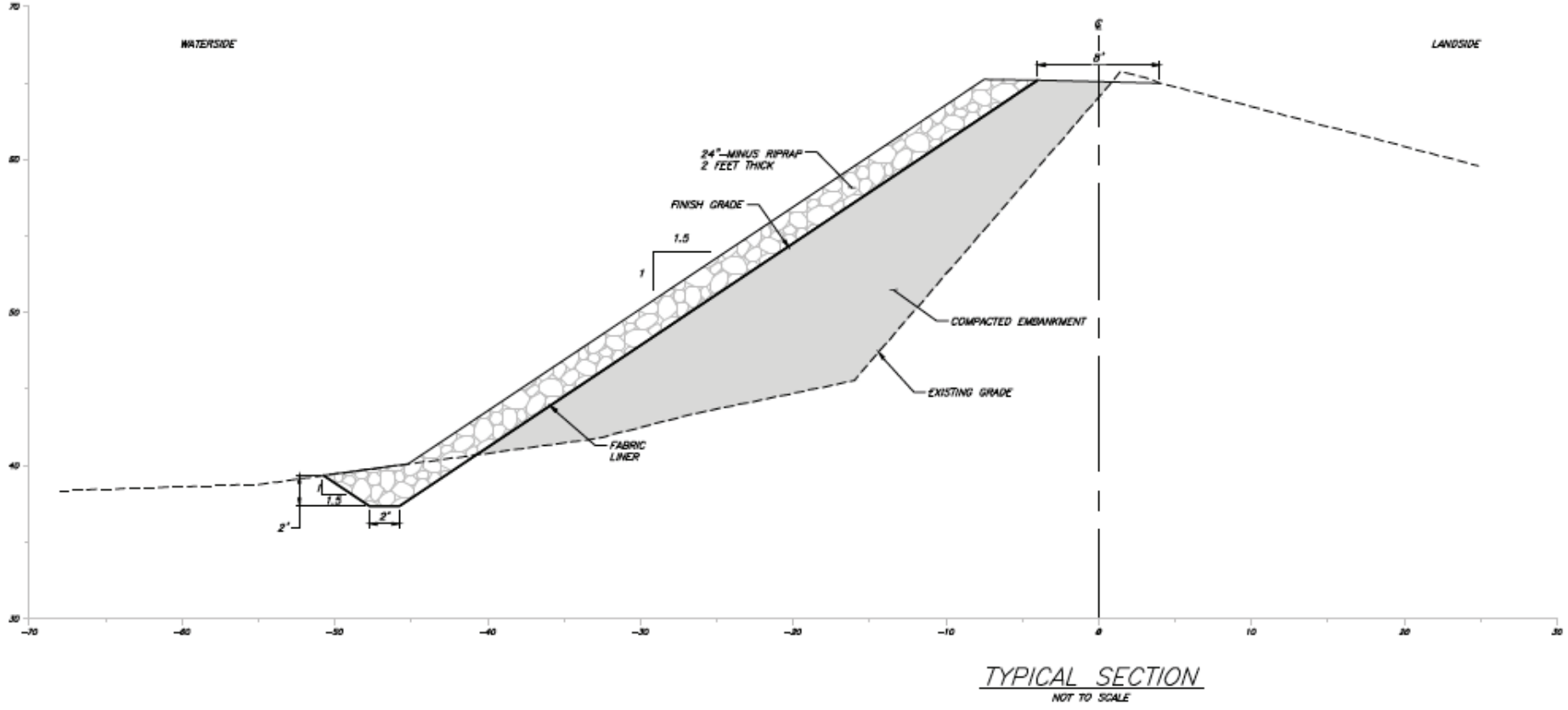
SOURCE: Wagner & Bonsignore

Figure 2-8b
SITE 8 TYPICAL SECTION



SOURCE: Wagner & Bonsignore

Figure 2-9a
SITE 9 REPAIR PLAN



TYPICAL SECTION
NOT TO SCALE

SOURCE: Wagner & Bonsignore

Figure 2-9b
SITE 9 TYPICAL SECTION

3.0 ENVIRONMENTAL CHECKLIST FORM

3.1 AESTHETICS

Except as provided in Public Resources Code Section 21099, would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?				✓
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?			✓	
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage points.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?			✓	
d) Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area?				✓

NARRATIVE DISCUSSION

Environmental Setting

The project sites are in a predominantly rural area of southeastern Sacramento County, in the floodplain of the Cosumnes River. The area near the project sites is a mix of agricultural fields, scattered rural residences, and farm buildings. More urbanized development is in the community of Wilton, and the central portion of the floodplain area has been developed with low-density rural residences. Rural development is concentrated along both sides of Dillard Road and adjacent to Wilton, Colony Alta Mesa, and Clay Station Roads. The surrounding topography is grassy low rolling hills. In the distance, views of the Sierra Nevada and foothills to the east constitute the major scenic vista, when visibility conditions permit.

The Cosumnes River is the main scenic resource in the area, although public access to and views of the river are limited primarily to the County road crossings. The landscape along the river is typical of Central Valley riparian areas - trees of varying maturity are interspersed among shrubs and grasses. Along the river, bends with sand deposits alternate with segments that have steep banks. The composition and lushness of the riparian vegetation varies along the river. Views of the riparian area are available

primarily to the adjacent landowners working within the levee system. Because of screening by the levees themselves and the predominance of private ownership along to the river, these areas are not visible to the general public except at road crossings.

The lack of public views also applies to the proposed project sites, which are typically separated from public roads by one-quarter mile or more. Work would mostly occur on the far side of the levee as viewed from public roads. Some staging areas might be visible, although at a considerable distance. Even at Project Site 9 (Freeman Road), the proposed work area would not be visible from the west end of Freeman Road, as work would take place on the west side of the levee. However, equipment and materials stored in the staging area would be visible during the construction period.

California Public Resources Code Section 21099 states that the aesthetic and parking impacts of residential, mixed-use residential, or employment center projects on an infill site within a transit priority area shall not be considered significant. The project does not meet the criteria of Section 21099, so the aesthetic impacts of the project are analyzed below.

Environmental Impacts and Mitigation Measures

a) Scenic Vistas.

The project would not interfere with, or make permanent or long-term changes to, scenic vistas in the vicinity of the project sites. Proposed levee work would involve restoration of the pre-existing levee, addition of RSP on the levee waterside, and revegetation of disturbed areas on both the waterside and landside with non-invasive species. Following construction, the general appearance of the levees as viewed from public areas would be the same as existing conditions. The project would not raise the height of the existing levees or interfere with existing distance views of the Sierra Nevada. The project would have no impact on scenic vistas.

b) Scenic Resources.

According to the Caltrans list of designated scenic highways under the California Scenic Highway Program, the only officially designated state scenic highway within Sacramento County is State Route 160 in the Delta region, 13-15 miles west of Wilton. Sacramento County has not designated any local scenic highways.

The project would require the removal of some trees, including valley oaks. Section 3.4, Biological Resources, discusses tree removal in more detail. The removal of several trees from a few relatively small sites along the Cosumnes River corridor would not significantly alter the overall river landscape. No other scenic resources are located on the project sites. Impacts on scenic resources are considered less than significant.

c) Visual Character and Quality.

As noted, public views of the project sites generally are not available. Most sites are accessible only by private farm roads and RD 800 maintenance roads, which are not open to the public. Access of this segment of the Cosumnes River by boat is limited, as there

are no boat launches or other recreational facilities adjacent to the river, and the river is very low or dry for much of the year (Sloughhouse Resource Conservation District 2003).

Most project work would be on the waterside of the levees, which would not be visible to public areas with views from the landside. At Project Sites 1 (Meiss Road Upstream) and 4 (Fig Road Downstream), excavation and recompacting of the levee top would occur. However, the nearest public views of the Project Site 1 work would be from Meiss Road approximately 0.85 miles to the south. The nearest public views of the Project Site 4 work would be from Fig Road, which ends approximately 0.4 miles from Project Site 4. At both sites, views would be limited due to distance and the intervening landscape.

Staging areas may temporarily affect the visual landscape in these areas. As noted above, these areas would be distant from public views. Site plans indicate that most trees in designated staging areas would be protected in place. Equipment and materials placed in the staging areas would be removed after project work is completed. Existing landscapes at staging areas would be minimally affected.

Use of the borrow sites may also affect the visual landscape. These sites are piles or hills that would be stripped of vegetation, then reduced in height as soil is taken as fill material. However, only a few inches of soil would be taken from these sites, so the appearance of these sites would not be substantially altered. Also, the project proposes to hydroseed these sites after the fill material is taken, so vegetation would be restored. As with the levee repair sites and staging areas, the borrow sites would be distant from public views. Overall, visual character impacts are considered less than significant.

d) Light and Glare.

There are no existing sources of light at the project sites, nor are there any existing structures that may produce glare by reflecting any light. The project would not install lighting or structures with reflective materials or coatings. The project would have no impact related to light or glare.

3.2 AGRICULTURE AND FORESTRY RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				✓
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				✓
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code				✓

Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?				
d) Result in the loss of forest land or conversion of forest land to non-forest use?				✓
d) Involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland to non-agricultural use?				✓

NARRATIVE DISCUSSION

Environmental Setting

Agriculture is a significant land use in Sacramento County; approximately 42.1% of the County's land area is in farms (U.S. Department of Agriculture 2019). Most of the agricultural land is in southern and eastern Sacramento County including the Cosumnes River plain where the project sites are located. Agricultural uses in the vicinity of the project sites consist mainly of irrigated row and field crops, with some orchards.

The Important Farmland Maps, prepared by the California Department of Conservation as part of the Farmland Mapping and Monitoring Program, designate the viability of lands for farmland use, based on the physical and chemical properties of the soils. The maps categorize farmland, in decreasing order of soil quality, as "Prime Farmland," "Farmland of Statewide Importance," and "Unique Farmland." Collectively, these categories are referred to as "Farmland" in the Environmental Checklist in CEQA Guidelines Appendix G projects resulting in substantial losses of Farmland are considered significant effects under CEQA. According to the 2018 Important Farmland Map of Sacramento County, agricultural lands in the vicinity of the project sites are classified as Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance, and Other Land (i.e., land not otherwise classified) designations (FMMP 2019). None of the project sites are classified as Farmland.

Although there are trees along the Cosumnes River, there are no forest lands designated by public agencies either on the project sites or in Sacramento County. Because of this the project will have no effects on forestry, and forestry resources will receive only limited discussion in this document.

Environmental Impacts and Mitigation Measures

a) Agricultural Land Conversion.

The project proposes to repair and stabilize levees along the banks of the Cosumnes River. Proposed work would be confined to the existing levee footprints, which are not suitable for agriculture, and the repair footprint would not encroach upon any Farmland adjacent to the project sites. Staging areas for construction materials and equipment would be in existing disturbed areas that could be considered agricultural land. However, such use would be temporary; these areas would be restored to their pre-construction

condition. The use of staging areas would not result in the permanent conversion of these areas to a non-agricultural use.

The purpose of the project is to repair existing levee sections such that breaches of these sections would be unlikely to occur. This would increase protection of adjacent land uses and improvements. More specifically for this issue, the project would lower the probability of adjacent Farmland being flooded and therefore taken out of agricultural production. The project would maintain the existing agricultural use of Farmland near the project sites. The project would have no impact related to conversion of Farmland to non-agricultural use, and it would provide a benefit for existing agricultural activities.

b) Agricultural Zoning and Williamson Act.

All the parcels on which the project sites are located are zoned for agricultural use (see Section 3.11, Land Use). No agricultural operations occur at the project sites themselves, as they are levees or areas within levees. Levees and other flood protection improvements are essential to maintaining ongoing agricultural use of lands in the project vicinity. Flood protection improvements are specifically permitted uses in the prevailing AG zone for the project area.

The Williamson Act is State legislation that seeks to preserve farmland by offering property tax breaks to farmers who sign a contract pledging to keep their land in agricultural use. Project Sites 1, 3, 4, and 5 are on parcels that are under a Williamson Act contract. As noted in a) above, the purpose of the project is to permit ongoing agricultural use of lands along the Cosumnes River plain. As the project would not encroach on any Farmland, it would not conflict with the purpose of the Williamson Act contracts. The project would not conflict with agricultural zoning or a Williamson Act contract, and so would have no impact on this issue.

c, d) Forest Land Conversion and Zoning.

As noted above, there are no designated forest lands on the project sites or in the vicinity, nor are there any lands zoned for forest uses. The project would have no impact on forest lands.

e) Indirect Conversion of Farmland and Forest Land.

Project activities would be confined mostly to the levee footprint and would protect ongoing agricultural activities in the project vicinity. Therefore, the project would not conflict with or have an adverse effect on the use of agricultural land in the project vicinity. The project would not install any new urban infrastructure such that conversion of surrounding agricultural lands to urban uses would be facilitated. One of the purposes of the project is to protect agricultural land from flooding and its potential adverse impacts on such land. As such, the project would encourage the continued use of nearby land for agricultural purposes. The project would have no impact on indirect conversion of Farmland.

As there are no forest lands in the area, the project would not convert forest land to non-forest use. The project would have no impact on indirect conversion of forest land.

3.3 AIR QUALITY

Where available, the significance criteria established by the applicable air quality management district or air pollutant control district may be relied upon to make the following determinations. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable Air Quality Attainment Plan?			✓	
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?				✓
c) Expose sensitive receptors to substantial pollutant concentrations?			✓	
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?			✓	

NARRATIVE DISCUSSION

Environmental Setting

The project is within the Sacramento Valley Air Basin, an area that encompasses all or part of eleven counties, including all of Sacramento County. The Sacramento Metropolitan Air Quality Management District (SMAQMD) has jurisdiction over most air quality matters in Sacramento County. The SMAQMD is tasked with implementing programs and regulations required by the federal and California Clean Air Acts. Under their respective Clean Air Acts, both the federal government and the State of California have established ambient air quality standards for six criteria air pollutants: ozone, particulate matter, carbon monoxide, nitrogen dioxide, sulfur dioxide, and lead. Under its Clean Air Act, California has established air quality standards for four additional pollutants: hydrogen sulfide, sulfates, vinyl chloride, and visibility-reducing particles.

Table 3-1 shows the status of the Sacramento Valley Air Basin in attaining these ambient air quality standards. As shown in Table 3-1, the Sacramento Valley Air Basin is considered a non-attainment area for ozone under both State and federal standards. The U.S. Environmental Protection Agency (EPA) has designated the Sacramento Federal Ozone Nonattainment Area, which consists of Sacramento and Yolo Counties, the eastern portion of Solano County, the southern portion of Sutter County, and the western portions of El Dorado and Placer Counties up to the Sierra crest (SMAQMD 2013). The Air Basin is a non-attainment area for the State standard for particulate matter less than 10 micrometers in diameter (PM_{10}) and for the federal standard for particulate matter less than 2.5 micrometers in diameter ($PM_{2.5}$). The Air Basin is in attainment of, or unclassified for, all other federal and State pollutant standards.

TABLE 3-1
SACRAMENTO VALLEY AIR BASIN ATTAINMENT STATUS

	Designation/Classification	
Criteria Pollutant	**Federal Primary Standards**	**State Standards**
Ozone - One hour	No Federal Standard	Nonattainment
Ozone - Eight hour	Nonattainment/Severe	Nonattainment
PM_{10}	Attainment	Nonattainment
$PM_{2.5}$	Nonattainment	Attainment
Carbon Monoxide (CO)	Attainment	Attainment
Nitrogen Dioxide (NO_x)	Unclassified/Attainment	Attainment
Sulfur Dioxide (SO_x)	Unclassified/Attainment	Attainment
Lead	Attainment	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particles	No Federal Standard	Unclassified
Vinyl Chloride	No Federal Standard	Unclassified

Source: SMAQMD 2020.

In addition to the criteria pollutants, the California Air Resources Board (ARB) has identified other air pollutants as toxic air contaminants (TACs) - pollutants that cause cancer or may cause other adverse short-term or long-term health effects. Diesel particulate matter, considered a carcinogen with prolonged exposure, is the most common TAC, as it is a product of combustion in diesel engines. Other TACs are less common and are typically associated with industrial activities.

As previously noted, the SMAQMD has jurisdiction over most air quality matters in Sacramento County. It implements the federal and California Clean Air Acts, and the applicable attainment and maintenance plans, through local rules and regulations. Applicable attainment plans include the Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan, with 2013 revisions, for attainment of the 2008 federal 8-hour ozone standard (SMAQMD 2013). An SMAQMD rule that would be applicable to the project is Rule 403 - Fugitive Dust. Rule 403 requires that every reasonable precaution be taken not to cause or allow the emissions of fugitive dust from being airborne beyond the property line from which the emission originates; from any construction, handling or storage activity; or from any wrecking, excavation, grading, clearing of land, or solid waste disposal operation.

Environmental Impacts and Mitigation Measures

The SMAQMD has prepared a Guide to Air Quality Assessment in Sacramento County, originally adopted in 2009 and subsequently amended, most recently in July 2019. The Guide defines significance thresholds to be used in CEQA analysis of air quality impacts.

Table 3-2 below shows the CEQA significance thresholds for construction pollutant emissions within the SMAQMD. No construction significance threshold has been established for ROG; most ROG emissions are from the application of architectural coatings, which are regulated by SMAQMD Rule 442 (SMAQMD 2019). The project would not generate any air pollutant emissions once construction work is completed, so the SMAQMD's significance thresholds for operational emissions are not applicable.

TABLE 3-2
ESTIMATED CONSTRUCTION AIR POLLUTANT EMISSIONS

Pollutant	SMAQMD Significance Threshold (lbs/day)	Project Emissions (lbs/day)	Exceeds Threshold?
ROG	None	1.36	N/A
NO_x	85	15.23	No
PM_{10}	80*	0.68	No
$PM_{2.5}$	82*	0.68	No

* If Best Available Control Technology/Best Management Practices are applied.
Sources: Road Construction Emissions Model v. 9.0.0; SMAQMD 2019.

Construction of the proposed project would involve the use of heavy equipment powered by diesel or other internal combustion engines. The Road Construction Emissions Model (RCEM) was used to estimate the pollutant emissions that would result from such equipment use. Although originally developed for road projects, the RCEM has been modified to provide emission estimates for projects that are linear in character, such as levee repair. The equipment expected to be in use throughout the construction period include an excavator, bulldozer, compactor, and water truck, with a scraper to be used at Project Sites 1 and 4. The project engineer stated that each repair project, which would likely be undertaken individually, would involve a typical construction time of about 1½ weeks except at Project Site 6 (Mile Marker 19), which would take three weeks. The total construction period would therefore be approximately four months. This was entered in the RCEM run. The full RCEM results are shown in Appendix A of this document, and a summary is presented in Table 3-2 above.

a) Air Quality Plan Consistency.

As noted, the project would not involve any operational emissions. As shown in Table 3-2, the estimated air pollutant emissions generated by project construction would be below the applicable significance thresholds adopted by the SMAQMD. Project construction may generate localized dust emissions at levels above existing ambient conditions. These emissions would be reduced through the implementation of Basic Construction Emission Control Practices set forth by SMAQMD. These practices include the following fugitive dust controls (SMAQMD 2019):

- Control of fugitive dust is required by District Rule 403 and enforced by District staff.

- Water all exposed surfaces two times daily. Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads.

- Cover or maintain at least two feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered.

- Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.

- Limit vehicle speeds on unpaved roads to 15 miles per hour (mph).

- All roadways, driveways, sidewalks, parking lots to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.

In addition, the following practices describe existing diesel exhaust emission controls working at a construction site. California regulations limit idling from both on-road and off-road diesel-powered equipment. The ARB enforces idling limitations and compliance with diesel fleet regulations.

- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to five minutes [California Code of Regulations, Title 13, sections 2449(d)(3) and 2485]. Provide clear signage that posts this requirement for workers at the entrances to the site.

- Provide current certificate(s) of compliance for CARB's In-Use Off-Road Diesel-Fueled Fleets Regulation [California Code of Regulations, Title 13, sections 2449 and 2449.1]. For more information contact CARB at 877-593-6677, doors@arb.ca.gov, or www.arb.ca.gov/doors/compliance_cert1.html.

The SMAQMD states that project construction in compliance with these Basic Construction Emission Control Practices would have dust emissions that do not exceed screening levels, thereby having impacts that are less than significant (SMAQMD 2019). Since particulate matter and other emissions from project construction would not exceed significance thresholds, project impacts on air quality plans would be less than significant.

b) Cumulative Emissions.

Levees do not generate any air pollutant emissions, other than indirectly from occasional trips by maintenance vehicles. These emissions would be incidental and would cease once the vehicle leaves. The project would not generate any pollutant emissions after completion of levee work. Therefore, the project would have no cumulative impact on air pollutant emissions in the Sacramento Valley Air Basin.

c) Exposure of Sensitive Receptors.

As defined by SMAQMD, "sensitive receptors" are facilities that house or attract children, the elderly, and people with illnesses or others who are especially sensitive to the effects of air pollutants. Hospitals, schools, convalescent facilities, and residential areas are examples of sensitive receptors (SMAQMD 2019). Significant health impacts associated with exposure of sensitive receptors to pollutants generally occur with long-term exposure.

The nearest sensitive receptors to any of the project sites are a residence approximately 725 feet east of Project Site 9 (Freeman Road) and another at the same distance from Project Site 2 (Meiss Road Downstream). It is expected that project construction emissions, including criteria pollutants and diesel particulate matter (a TAC), would be dispersed over uninhabited agricultural and natural lands before reaching these residences or any other sensitive receptor.

Residences near access roads (see Table 3-5 in Section 3.13, Noise) could be exposed to tailpipe emissions from construction and employee vehicles. Some of these emissions may include the TAC diesel particulate matter. However, as noted above, each individual repair project would typically take about 1½ weeks. Therefore, exposure of these residences to vehicle emissions would be limited and unlikely to produce significant health effects.

No exposure of sensitive receptors to pollutant emissions would occur after construction work is completed. Project impacts on sensitive receptors are considered less than significant.

d) Odors.

Emissions from construction equipment are a potential source of odors. There are no land uses sensitive to such odors close to the project sites. As noted in c) above, the nearest sensitive land uses are approximately 725 feet away, and any odors from construction activities would dissipate before reaching these land uses. Odors generated by construction activities would cease when work is done. Levees do not generate odors or other emissions of concern. Project impacts related to odors would be less than significant.

3.4 BIOLOGICAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife		✓		

Service?				
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?		✓		
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?		✓		
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?		✓		
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?			✓	
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan?				✓

NARRATIVE DISCUSSION

Environmental Setting

This section relies primarily on two biological assessment of the project sites – one for the USDA sites and the other for the RD 800 sites. Both assessments were prepared by Moore Biological Consultants, which conducted field surveys and searches of biological resource databases such as the California Natural Diversity Database (CNDDB) for information (Moore Biological Consultants 2020a, 2020b). The biological assessments were supplemented by fisheries assessments by FISHBIO. All assessments are available in Appendix B of this document.

Existing Biological Resource Conditions

Vegetation

Vegetation communities at the sites include annual ruderal grassland, riparian forest, and riparian scrub. The project sites, staging areas, and ruderal areas along the edges of fields and levee and farm roads are vegetated with highly disturbed and routinely maintained patches of grasses. These include oats, soft chess brome, ripgut brome, foxtail barley, and perennial ryegrass. Other grassland species such as black mustard, bull thistle, yellow star-thistle, morning glory, wild radish, prickly lettuce, Italian thistle, dove weed, miniature lupine, miner's lettuce, rose clover, and filaree are intermixed with the grasses.

Dominant trees in the riparian forest and scrub vegetation include valley oak, black walnut, Fremont's cottonwood, and Oregon ash. Narrow-leaved willow, Gooding's black willow, Himalayan blackberry, California wild rose, Pacific poison oak, and California wild grape are the dominant shrubs and vines. The understory is comprised of grasses and weeds typical of the nearby annual grasslands. The Cosumnes River at and near the waterline supports a generally narrow and discontinuous fringe of willow seedlings, umbrella sedge, annual rabbit's foot grass, and other emergent wetland vegetation.

Blue elderberry shrubs provided habitat for the valley elderberry longhorn beetle, which is a species listed under the Endangered Species Act (see below). Three blue elderberry shrubs were identified at Project Site 2 (Meiss Road Downstream). There is one blue elderberry shrub near the south edge of Project Site 4 (Fig Road Downstream), and there is one blue elderberry shrub in the east part of Project Site 6 (Mile Marker 19). A cluster of blue elderberry shrubs in a patch of oak woodland vegetation was identified in the proposed access and staging area of Project Site 8 (Cosumnes Road Downstream). Many other blue elderberry shrubs have been identified near the project sites.

Wildlife

The ruderal grasslands on the levee crown and slopes and in the proposed staging areas primarily provide foraging habitat for a variety of bird species. In contrast, the riparian woodlands and riparian scrub associated with the Cosumnes River corridor provide habitat for a wide variety of wildlife species.

A variety of bird species were observed during the field surveys; most of these are common species found in agricultural and riparian areas of southern Sacramento County. Mallard, great egret, turkey vulture, red-tailed hawk, Swainson's hawk, American crow, northern mockingbird, western kingbird, California scrub jay, black phoebe, Brewer's blackbird, and red-winged blackbird are representative of the avian species observed at the sites. There are several potential nest trees in and near the site that are suitable for nesting raptors and other protected migratory birds, including Swainson's hawk.

A variety of mammals common to agricultural areas likely occur at the project sites; however, California ground squirrel, California mule deer, and coyote were the only mammals observed during the surveys. Signs of raccoon were also observed. Black-tailed hare, striped skunk, desert cottontail, and Virginia opossum are a few mammals expected to occur in the area. Species of small rodents, including mice and voles, also likely occur.

Based on habitat types present, a variety of amphibians and reptiles may use habitats at the site. Western fence lizard, western skink, Northern alligator lizard, redeared slider, and Pacific chorus frog were observed during the surveys. American bullfrog, common garter snake, and gopher snake are known to occur in the greater project vicinity and may occur on the project sites on occasion. Although not observed during the surveys, the Cosumnes River provides suitable habitat for western pond turtle.

According to the FISHBIO assessments, native fish known to occur currently or that were historically present near the project area include multiple runs of Chinook salmon, Central Valley steelhead, hardhead, threespine stickleback, prickly sculpin, riffle sculpin,

Sacramento blackfish, Sacramento perch, Sacramento pikeminnow, speckled dace, Sacramento splittail, Sacramento sucker, thicktail chub, and western brook lamprey. Non-native species that may be present include black bullhead, bluegill sunfish, brown bullhead, brown trout, common carp, golden shiner, goldfish, green sunfish, largemouth bass, redear sunfish, redeye bass, smallmouth bass, spotted bass, wakasagi, western mosquitofish, and white crappie (FISHBIO 2020a, 2020b). The Cosumnes River varies widely in flow from year to year and is often dry for part of the year (see Section 3.10, Hydrology and Water Quality). Thus, the river does not always provide habitat for fish.

Waters of the U.S. and Wetlands

The Cosumnes River flows through the project sites. The Cosumnes River is unique among Central Valley tributaries in that it has not been substantially altered by large-scale water development. However, due to several small dams and water diversions along the channel, surface water flows are routinely reduced or even eliminated in the lower reaches between spring and early winter. Also, the Cosumnes River is primarily a rain-fed system, as only 16% of the watershed originates at elevations greater than 5,000 feet on the western slope of the Sierra Nevada Mountain range. Because of this, temperatures and flow have large fluctuations during the year; flows typically decline throughout the spring and summer, and often are reduced to zero between August and October

The Cosumnes River is a Water of the U.S.; as such, construction activities within the river are subject to permits required under Section 404 of the Clean Water Act. Section 404 prohibits the discharge of dredged or fill material into waters of the United States without a permit from the U.S. Army Corps of Engineers (Corps). The Corps administers the Section 404 permit program in conjunction with the EPA. The limit of federal jurisdiction is the “ordinary high water mark” (OHWM), which is legally defined by 33 CFR 328.3(e) as "that line on the shore established by the fluctuations of water and indicated by 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, or other appropriate means that consider the characteristics of the surrounding areas.” Table 3-3 indicates the amount of project area that is below the OHWM and therefore subject to Section 404 jurisdiction. This includes both the work areas and the temporary disturbance areas.

The Cosumnes River corridor in and adjacent to the project sites consists of an alluvial channel associated with a broad floodplain. The open water habitat is primarily low-gradient run and pool habitats with gravel, cobble, and clay substrates. The edges of the Cosumnes River and low areas in the floodplain support riparian vegetation, which includes a tree layer dominated by willows, Fremont cottonwood, and black walnut. This generally describes the areas below the OHWM at each of the project sites, although actual conditions vary by site.

The Cosumnes River also falls under the jurisdiction of the CDFW and the RWQCB. Each of these agencies has its own permitting program for wetlands and waters. The CDFW requires a Streambed Alteration Agreement (California Fish and Game Code Section 1600 *et seq.*) for projects that alter stream channels, beds, and banks. The RWQCB is responsible for the Clean Water Act Section 401 Water Quality Certification

that would be required along with the Section 404 permit. No other wetlands or Waters of the U.S. were observed on or near the project sites.

TABLE 3-3
PROJECT WORK ABOVE AND BELOW OHWM

Site No.	Site Name	Acres Affected			Fill Volume (cubic yards)		
		Above OHWM	Below OHWM	Total	Above OHWM	Below OHWM	Total
1	Meiss Road Upstream	2.39	0.56	2.95	1,575	2,212	3,787
2	Meiss Road Downstream	0.65	0.48	1.13	1,204	1,118	2,322
3	Fig Road Upstream	1.06	0	1.06	417	0	417
4	Fig Road Downstream	1.26	0.72	1.98	4,095	2,463	6,558
5	Keating Road	0.84	0.25	1.09	1,291	196	1,487
6	Mile Marker 19	1.05	0.51	1.56	1,031	2,004	3,035
7	Cosumnes Road Upstream	1.25	0.44	1.69	1,815	1,158	2,973
8	Cosumnes Road Downstream	0.75	0.35	1.10	1,560	1,160	2,720
9	Freeman Road	0.86	0.32	1.18	2,267	811	3,078
TOTAL		**10.11**	**3.63**	**13.74**	**15,255**	**11,122**	**26,377**

Notes: Project site numbers correspond to those in Figures 1-2 and 1-3 of this IS/MND.
OHWM – ordinary high water mark; RSP – rock slope protection
Source: Wagner and Bonsignore.

Biological Resource Ordinances

Sacramento County has a Tree Preservation and Protection Ordinance (Sacramento County Code Chapter 19.12). This ordinance seeks to protect any living native oak tree having at least one trunk of six inches or more in diameter measured four and one-half feet above the ground, or a multi-trunked native oak tree having an aggregate diameter of ten inches or more, measured four and one-half feet above the ground. No trees covered by the ordinance that are on public lands shall be removed without a tree removal permit issued by the County. A permit typically has conditions of approval attached that are intended to minimize the impacts of tree removal.

Environmental Impacts and Mitigation Measures

a) Special-Status Species.

The project proposes to repair and stabilize existing levees along the Cosumnes River. Project work would likely involve the removal of trees and other vegetation, which could provide breeding and foraging habitat for birds and other wildlife. Work may also occur

on the riverbanks and bed, which could disturb habitat for fish and other wildlife species dependent on water. Some of these potentially affected species may be considered "special-status species."

Special-status species are plants and animals that are legally protected under the federal Endangered Species Act (ESA), the California Endangered Species Act (CESA), or other statutes. Special-status species also include those considered rare enough by the scientific community and Trustee Agencies (e.g., CDFW) to warrant special consideration, particularly with regard to protection of isolated populations, nesting or denning locations, communal roosts, and other essential habitat.

Table 4 of the terrestrial biological assessments (see Appendix B) list the special-status plant and wildlife species that could potentially occur on the project sites. The identified special-status plants generally occur in relatively undisturbed areas and are primarily found within unique vegetation communities such as vernal pools, chenopod scrub, chaparral, marshes and swamps, and areas with unique soils. The site does not provide highly suitable habitat for any of the species listed in the tables, and the site is entirely unsuitable for most of the plants. Based on present habitats, the potential for any special-status plants to occur on the project sites is very low.

While the project vicinity may have provided habitat for several special-status wildlife species in the past, agriculture, development, and construction and maintenance of levees in and adjacent to the project sites have modified the natural habitats and their potential to support special-status wildlife species. The potential for intensive use of habitats within the project site by special-status wildlife species is generally low.

Of the wildlife species identified in the biological assessments, Swainson's hawk, white-tailed kite, tricolored blackbird, western pond turtle, and valley elderberry longhorn beetle are the only species with potential to occur in the site on more than a transitory or very occasional basis. These species are discussed below. Also, while burrowing owl is considered unlikely to occur in the area, it is also discussed below as it is a species of concern in this portion of the Central Valley. Other special-status birds may fly over or forage in the area on occasion but are not expected to nest or extensively utilize the habitats within the project sites. Impacts on fish species are discussed in d) below.

> *Swainson's Hawk*: The Swainson's hawk is a migratory hawk listed as a threatened species under CESA. The Migratory Bird Treaty Act and California Fish and Game Code protect Swainson's hawks year-round, as well as their nests during the nesting season (March 1 through September 15). The sites are in the nesting range of Swainson's hawk, and the nearby agricultural fields and grasslands provide high-quality foraging habitat. The larger valley oaks, cottonwoods, willows, and other trees in and near the sites provide suitable nesting habitat for this species. Several Swainson's hawks were observed along the river and circling over the project sites and adjacent agricultural areas during the field surveys. Swainson's hawks could be adversely affected by construction noise and disturbance if they nested in or near the sites during construction.

White-Tailed Kite: White-tailed kite is a State of California Species of Concern, but it is not a listed species under ESA or CESA. The Migratory Bird Treaty Act and Fish and Game Code protect white-tailed kite year-round and their nests during nesting season, which peaks from May to August. White-tailed kite may nest in large trees in the general project vicinity and may forage in habitats nearby. The nearest occurrence of white-tailed kite recorded in the CNDDB is approximately three miles northeast of Project Site 4 (Fig Road Downstream). No white-tailed kites were observed in or near the sites during the field surveys. White-tailed kites could be adversely affected by noise and disturbance related to construction activities if they nested near the project sites during the construction period. However, project construction would occur in the late summer or fall, outside of the nesting period of this species.

Tricolored Blackbird: The tricolored blackbird is listed as a threatened species under CESA. It is also protected by the Migratory Bird Treaty Act and the Fish and Game Code. Tricolored blackbirds are colonial nesters requiring very dense stands of emergent wetland vegetation and/or dense thickets of wild rose or blackberries for nesting. The willows, wild rose, blackberry brambles, and other suitable patches of vegetation along the edges of the river provide suitable nesting habitat for this species. Within the project sites, nesting habitat is limited and fragmented. Several occurrences of tricolored blackbird in the project vicinity have been recorded in the CNDDB; however, none were observed in or near the sites during the field surveys. Project construction would occur in the late summer or fall, outside of the nesting season for this species.

Western Pond Turtle: The western pond turtle is a State Species of Special Concern but is not a listed species under ESA or CESA. Western pond turtles are associated with permanent or nearly permanent bodies of water with adequate basking sites such as logs, rocks, or open mud banks. Pond turtles construct nests in sandy banks along slow-moving streams and ponds in the spring, and the young usually hatch in 2 to 3 months. The nearest occurrence of western pond turtle recorded in the CNDDB is approximately 4.5 miles northwest of Project Sites 8 and 9. No western pond turtle was observed in or near the sites during the field surveys. However, the Cosumnes River provides suitable habitat for this species.

Valley Elderberry Longhorn Beetle: The valley elderberry longhorn beetle is listed as a threatened species under ESA. Its host plant is the blue elderberry shrub. Eggs are laid on the leaves or stems of the shrub. Upon hatching, the larvae bore into the stem, where they remain for approximately two years feeding on the interior portions of the stems. Afterwards, the larvae chew an exit hole in the stem, pupate, and emerge after approximately a month as adults. The nearest occurrence of valley elderberry longhorn beetle in the CNDDB search area is one mile southwest of Project Site 4 (Fig Road Downstream). One blue elderberry shrub would be removed by work at Project Site 4, and other shrubs may be affected by work in riparian areas.

Burrowing Owl: The Migratory Bird Treaty Act and California Fish and Game Code protect burrowing owls year-round, as well as their nests during the nesting

season (February 1 through August 31). Burrowing owls are a year-long resident in a variety of grasslands as well as scrub lands that have a low density of trees and shrubs with low-growing vegetation. The primary habitat requirement of the burrowing owl is small mammal burrows for nesting. Burrowing owls are not known to occur in southern Sacramento County, but they do rarely occur in riparian corridors. The nearest occurrence of burrowing owl is approximately four miles northwest of Project Site 4.

The biological assessments recommend mitigation measures to further reduce impacts, which are presented below. These measures expand on the avoidance and minimization measures described in Chapter 2.0, Project Description. Implementation of these mitigation measures would reduce potential impacts on special-status species to a level that would be less than significant.

Level of Significance: Potentially significant

Mitigation Measures:

BIO-1: To avoid take of protected raptors and migratory birds between February 1 and August 31, a CDFW-approved biologist shall conduct an initial pre-construction nest survey. The survey shall be conducted within fifteen (15) days prior to the beginning of construction activities in order to identify active nests of all species within five hundred (500) feet of the project work areas, as well as raptors' active nests within a quarter-mile (1,320 feet) of the project work areas. The surveys shall incorporate methodologies from CDFW's 1994 Staff Report regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California (CDFW 1994) and the Swainson's Hawk Technical Advisory Committee (SHTAC) survey guidelines (SHTAC 2000).

If active raptor nests are found within 1,320 feet of the work area or other active nests within 500 feet of the work area, a temporary buffer of 1,320 feet and 500 feet, respectively, shall be established and RD 800 shall retain an on-site biologist/monitor experienced with raptor behavior. The biologist shall monitor the nest(s) and consult with the CDFW to determine the buffers to be applied and best course of action to avoid nest abandonment or take of individuals. The necessity and extent for temporal construction restrictions shall be determined by CDFW. CDFW may determine it is necessary for a designated biologist/monitor to be on-site daily while construction-related activities are within or near buffer areas. The on-site biologist/monitor shall have authority to stop work if raptors are exhibiting agitated behavior such as defensive flights at intruders, unusual getting up from a brooding position or unusual flying off the nest. If during the nesting season there is a lapse in project-related work of fifteen (15) days or longer, another focused survey shall be performed, and the results sent to CDFW prior to resuming work.

BIO-2: Preconstruction surveys for burrowing owl shall be undertaken for construction activities between February 1 and August 31. The surveys shall incorporate methodologies from CDFW's 2012 Staff Report on Burrowing Owl Mitigation and the California Burrowing Owl Consortium CBOC) Burrowing Owl Survey Protocol and Mitigation Guidelines (CBOC 1993). If nesting owls are located within 250 feet of the work areas, temporal construction restrictions may be necessary to eliminate the potential for noise disturbance to the burrowing owls. The necessity and extent for temporal construction restrictions as to nesting burrowing owls is dependent upon location of the nest with respect to construction and shall be determined by CDFW as described above.

BIO-3: If a western pond turtle is observed, it should be left alone to move out of the area on its own, or it may be relocated by a qualified biologist to a suitable aquatic habitat outside of the work area. RD 800 shall exercise measures to avoid direct injury to western pond turtle, as well as measures to avoid areas where they are observed to occur. Pre-construction surveys for western pond turtle and their nests will be conducted for construction during April 1 through October 31. This will involve a search for nests in uplands on the landside of the levees. If nest sites are located, the District will notify CDFW and a 50-foot buffer area around the nest shall be staked and work will be delayed until hatching is complete and the young have left the nest site.

BIO-4: To compensate for potential direct impacts to valley elderberry longhorn beetle, RD 800 shall provide compensatory mitigation according to the USFWS Framework. Compensation will be provided via the purchase of 2.55 acres of credits (3:1 ratio) at an USFWS-approved mitigation bank, such as the French Camp Conservation Bank.

BIO-5: A biological worker awareness training program shall be implemented to educate the construction crews of the biological diversity within the project area. The worker awareness program shall include a presentation on the life history and legal status of potentially occurring special-status species and distribution of informational packages to each worker. While all of the species in Table 4 of the biological assessments [see Appendix B of this IS/MND] will be at least briefly addressed, the focal species of the worker awareness training program will be Swainson's hawk, white-tailed kite, tricolored blackbird, burrowing owl, western pond turtle, valley elderberry longhorn beetle, and Central Valley steelhead.

Significance After Mitigation: Less than significant

b) Riparian and Other Sensitive Habitats.

Approximately 2.29 acres of the riparian forest and scrub-shrub vegetation on the project sites would be directly impacted by project work. The remaining 0.84 acres of the riparian vegetation are within the construction access and staging areas and are expected to be retained. Impacts would include the removal of several valley oaks, black walnuts, Oregon ash trees, and blue elderberry shrubs.

Also, disturbance of riparian vegetation could lead to the introduction of non-native invasive species of plants, which would disrupt the existing riparian ecosystem. Invasive plant species tend to occupy areas disturbed by construction and other earth-moving activities. Seeds of such species carried in construction equipment can be inadvertently introduced in a construction area.

Mitigation Measure BIO-4 would address impacts on blue elderberry shrubs. Other mitigation, described below, would reduce the impacts of the project on riparian vegetation to a level that would be less than significant. No other sensitive habitats have been identified on the project sites. As noted in Chapter 2.0, Project Description, vegetation would be removed at the borrow sites, but this vegetation consists of common grasses and weeds. The borrow sites are not part of any sensitive habitats.

Level of Significance: Potentially significant

Mitigation Measures:

BIO-6: Off-site compensatory mitigation for impacts to riverine habitats and associated special-status fish species shall be provided at an approved mitigation bank. The project is within the service area of the Cosumnes Floodplain Mitigation Bank, and the purchase of 3.86 acres of Flooded Riparian credits would provide mitigation for impacts to 1.93 acres of Waters of the U.S. and associated impacts to special-status fish and riparian habitats. In the event credits are not available at the Cosumnes Floodplain Mitigation Bank, equivalent compensatory mitigation would be provided at an alternate agency-approved bank.

BIO-7: The project shall implement standard Best Management Practices for vegetation protection and management of invasive species, including fencing of avoided valley oaks and re-seeding disturbed areas with a seed mix approved by CDFW.

Significance After Mitigation: Less than significant

c) Wetlands and Waters of the U.S.

The project would involve grading, placement of fill and placement of RSP at the project sites. Construction would occur in and adjacent to the existing river channel, bed, and banks, which have been eroded during high flow events. Work would also occur along the waterside levee slopes, portions of which are below the OHWM.

As indicated in Table 3-3, portions of work at all the project sites (except for Project Site 3, Fig Road Upstream) would occur below the OHWM, which marks the jurisdiction

boundary of the Section 404 permitting program. A total of approximately 3.63 acres disturbed at the project sites would be below the OHWM, including temporary construction disturbance, and approximately 11,122 cubic yards of fill materials would be placed below the OHWM. In the event dewatering is necessary, temporary cofferdams (i.e., K-rail, sandbags, etc.) would also be located within the temporary construction disturbance areas. The placement of fill within 1.93 acres below the OHWM would be subject to the Section 404 permitting procedure of the Corps. In conjunction with the Section 404 permit, the project would require Section 401 Water Quality Certification from the RWQCB.

Work on the waterside levee would also be subject to the Section 1600 permit requirements of the CDFW. Project work would disturb the river bank and bed, both of which are subject to CDFW jurisdiction. The precise extent of this disturbance has not been determined, but it is expected to include the area below the OHWM and a portion of the area above it. Compliance with Corps, CDFW, and RWQCB permitting conditions would be achieved with implementation of the mitigation measures described below. With mitigation and compliance with conditions of required permits, impacts on Waters of the U.S. would be less than significant.

Level of Significance: Potentially significant

Mitigation Measures:

BIO-8: The project shall minimize impacts to potentially jurisdictional Waters of the U.S. and wetlands by restricting all work to the project footprint and adjacent temporary construction areas, as proposed. Permits from the U.S. Army Corps of Engineers (Corps), the CDFW, and the Central Valley RWQCB shall be secured prior to the placement of any fill material within the jurisdictional Waters of the U.S. RD 800 shall implement all permit conditions and mitigation measures related to the protection of sensitive habitats and species, including any conditions resulting from Corps Section 7 consultations with the U.S. Fish and Wildlife Service (USFWS) and/or the National Marine Fisheries Service (NMFS), such as project scheduling and implementing appropriate construction Best Management Practices.

BIO-9: Project construction shall be scheduled between July 1 and October 31 to reduce the potential for sedimentation of the Cosumnes River and associated impacts to aquatic resources, including special-status fish that occur in the river or downstream waterways on a seasonal basis. This work window may be adjusted through consultation with CDFW, NMFS, and/or USFWS. During the late-summer or fall work window, the lower edge of the erosion repair sites will either be dry or inundated with shallow water (estimated depth less than one foot) during construction. A silt curtain or dewatering devices (i.e., K-rail, sandbags, etc.) shall be installed during project construction to minimize the potential for sediment release into the river and protect

any fish in the river from elevated levels of background turbidity in the vicinity of the repair sites.

Significance After Mitigation: Less than significant

d) Fish and Wildlife Movement.

As noted, there are several potential nest trees in and near the project sites that are suitable for nesting raptors and other protected migratory birds; that is, birds protected under the Migratory Bird Treaty Act. Given the presence of large trees and raptor foraging habitat such as open fields, it is likely one or more pairs of raptors, plus a variety of songbirds, nest in trees in or near the project sites each year. Project construction work could directly affect active nests or disrupt brooding activities of migratory birds. Mitigation described below would ensure nests or brooding activities would not be disrupted, thereby reducing impacts to a level that would be less than significant.

As noted, the Cosumnes River in the project area is often dry for part of the year. Thus, fish may not occur in the river when the project is constructed. Nevertheless, potential impacts on migratory fish species were analyzed. The FISHBIO assessments focused on three special-status fish species that could potentially occur in the Cosumnes River at the project sites: Central Valley steelhead (federal threatened), Central Valley Chinook salmon (spring-run federal and State threatened; winter-run federal and State endangered), and green sturgeon (federal threatened). The proposed project is highly unlikely to impact green sturgeon, as little to no spawning of this species occurs in the San Joaquin Basin, and the project sites are located well outside the primary Sacramento River migratory corridor used by both juveniles and adults. Likewise, Chinook salmon are unlikely to occur, as the project sites offer low habitat value for rearing and little potential spawning habitat for anadromous salmonids, and both listed runs of Chinook salmon are reliant upon the Sacramento River system for spawning, rearing, and migration (FISHBIO 2020a, 2020b).

Project impacts on Central Valley steelhead would be low to none. There is little documentation of steelhead adults utilizing the Cosumnes River, and no data are available on juveniles using the river. In addition, the habitat available for spawning and rearing in the project area is of poor quality. If steelhead were to occur in the area, the adult and intermediate life stages of these fish are active swimmers and would likely avoid any area impacted by erosion repair activities (FISHBIO 2020a, 2020b). Nevertheless, there is a potential for steelhead to be present in the Cosumnes River during project construction activities. Mitigation Measures BIO-5, BIO-6 and BIO-9 have specific provisions addressing potential impacts on fish species, particularly Central Valley steelhead, which would reduce potential impacts to a level that would be less than significant.

Level of Significance: Potentially significant

Mitigation Measures:

BIO-10: Any vegetation removal during the avian nesting season (February 1 through August 31) shall be immediately preceded by a survey. If

active nests are found, adequate marking of the nest site shall be provided and vegetation removal in the vicinity of the nest shall be delayed until the young fledge.

Significance After Mitigation: Less than significant

e) Local Biological Requirements.

As noted in b) above, the project would involve the removal of several valley oak trees. Removal of these trees would be subject to the County's Tree Preservation and Protection Ordinance. The Ordinance requires a tree removal permit before any trees in public lands shall be removed. The tree removal permit typically has conditions of approval attached that are intended to minimize the impacts of tree removal, such as planting of replacement trees of a size, number, and location to be determined by the County. Compliance with the Tree Preservation and Protection Ordinance and with conditions of the tree removal permit would reduce impacts on oak trees to a level that would be less than significant.

f) Conflict with Habitat Conservation Plans.

There are no Habitat Conservation Plans, Natural Community Conservation Plans, or similar conservation plans that apply to the project sites. Therefore, the project would not conflict with any habitat conservation plans. The project would have no impact on this issue.

3.5 CULTURAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?				✓
b) Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 15064.5?		✓		
c) Disturb any human remains, including those interred outside of formal cemeteries?		✓		

NARRATIVE DISCUSSION

Environmental Setting

This section relies primarily on a Cultural Resource Inventory and Evaluation Report prepared by ECORP. The inventory included a records search, literature review, and a field survey in April 2019. Because the report contains sensitive information, it is not included in this document, but it is available to qualified reviewers at the offices of

District Engineers Wagner and Bonsignore, 2151 River Plaza Drive, Suite 100, Sacramento, California.

The project area is at the confluence of the ethnographic territories of the Nisenan to the north and the Plains Miwok to the south. Section 3.18, Tribal Cultural Resources, discusses these tribes in more detail.

Colonization of California began with the Spanish Portolá land expedition in the 18th century. Missions and settlements were established along the coast, but none were established in the Central Valley. After Mexico gained independence from Spain in 1821, much of the land along the coast and in the interior valleys became part of Mexican land grants, or "ranchos." The project area is located within unsectioned portions of three separate Mexican land grants: Rancho Omochumnes, Rancho Cosumnes, and Rancho Sanjon de los Moquelumnes.

The discovery of gold in California in 1848 attracted fortune seekers. Numerous claims were worked along the Cosumnes River; however, the area in the vicinity of the project sites was largely ignored due to the extremely deep alluvial deposits. The area around what is today the communities of Sloughhouse, Wilton, and Sheldon played mostly a supporting role for the mining activities taking place in the nearby foothills. Agriculture – ranching and farming – was historically the primary activity in the area and was especially productive in the rich bottomlands between the Cosumnes River and Deer Creek.

The land in the project area passed from the public domain to private ownership in the 1850s and 1860s. Although there were sporadic attempts at commercial farming around 1850, successful endeavors were limited along the river, where vast tracts of land were prone to flooding and overgrown with tules. The concerted efforts of farmers and landowners, at first acting independently and then in cooperative ventures, were required to reclaim the land and make it suitable for intensive cultivation.

The construction history of the levees within the current project area is not well documented. According to the site record for the Cosumnes River Levee North, the levees were constructed and maintained by private landowners before RD 800 was established in March 1907. The original RD 800 land consisted of 2,136 acres of land located between Deer Creek and the Cosumnes River, east of Elk Grove. After a flood in 1997, the RD 800 boundaries were modified to include additional land on the northern bank of the Cosumnes River and on the southern bank of the river near Wilton (see Chapter 1.0, Introduction).

ECORP conducted a records search for historical resources at the project sites. The records search determined that 23 previously recorded pre-contact and historic-era cultural resources are located within 0.5 mile of the project sites. ECORP followed up the records search with field surveys of the project sites on April 9, 2019. Due to the nature of the project, a river levee encompassed most of each portion surveyed. The surveys resulted in the identification of three historic-period resources; no pre-contact resources were found.

a) Historical Resources.

The ECORP report indicated the presence of three historical resources in the project area. Two were segments of levees, and the third was an isolated pipe segment. These resources were evaluated for eligibility for inclusion on the National Register of Historic Places and the California Register of Historical Resources. None of the identified resources were considered eligible for inclusion on either register. Based on these results, the project would have no impact on historical resources.

b) Archaeological Resources.

The ECORP inventory found no records of archaeological resources within the project area. However, archaeological resources have been recorded within one-half mile of the project area. Most of the project area has soils dating to the Holocene epoch (the most recent geological epoch), which have a higher potential for containing buried archaeological deposits. The project area is adjacent to the Cosumnes River, and pre-contact archaeological sites are often found near waterways. Also, the nature of levee construction often leads to many pre-contact archaeological sites being buried along their reaches.

Given this, it is conceivable that construction work associated with the project, including work at the borrow sites, could unearth archaeological materials of significance. The establishment of procedures to address archaeological discoveries if they should occur would reduce any potential impacts to a level that would be less than significant. These procedures are set forth in the following mitigation measure. Implementation of this mitigation measure would reduce impacts on inadvertently discovered archaeological resources to a level that would be less than significant.

Level of Significance: Potentially significant

Mitigation Measures:

CULT-1: If any subsurface cultural resources are encountered during construction of the project, all construction activities within 50 feet of the encounter shall be halted until a qualified archaeologist can examine these materials, make a determination of their significance and, if significant, recommend measures that would reduce potential effects to a level that would be less than significant. Such measures could include, but are not limited to, 1) preservation in place or 2) excavation, recovery, and curation by qualified professionals. If the resource is identified as Native American, the archaeologist shall contact the appropriate tribes, which may recommend appropriate measures on the disposition of the resource.

The Reclamation District shall be responsible for retaining qualified professionals, implementing recommended mitigation measures, and

documenting mitigation efforts in a written report, consistent with the requirements of the State CEQA Guidelines.

Significance After Mitigation: Less than significant

c) Human Burials.

The ECORP report did not note the presence of any human burials at the project sites; however, it did find records of burials in the project vicinity. Given this and the location near the Cosumnes River, it is conceivable that construction work associated with the project could uncover previously unknown burials, particularly those of Native American origin.

CEQA Guidelines Section 15064.5(e) describes the procedure to be followed when human remains are uncovered in a location outside a dedicated cemetery. All work in the vicinity of the find shall be halted and the County Coroner shall be notified to determine if an investigation of the death is required. If the County Coroner determines that the remains are Native American in origin, then the County Coroner must contact the Native American Heritage Commission within 24 hours. The Native American Heritage Commission is required to identify the most likely descendants of the deceased Native American, and the most likely descendants may make recommendations on the disposition of the remains and any associated grave goods with appropriate dignity. If a most likely descendant cannot be identified, the descendant fails to make a recommendation, or the landowner rejects the recommendations of the most likely descendant, then the landowner shall rebury the remains and associated grave goods with appropriate dignity on the property in a location not subject to further disturbance.

The provisions of CEQA Guidelines Section 15064.5(e), along with other applicable codes, are contained in the mitigation measure below. Implementation of this mitigation measure would ensure that impacts on any human remains encountered during project construction would be less than significant.

Level of Significance: Potentially significant

Mitigation Measures:

CULT-2: If human remains are encountered during construction work, all construction activities within 50 feet of the encounter shall be halted until a qualified archaeologist can examine the find. The archaeologist shall notify the Sacramento County Coroner per California Health and Safety Code Section 7050.5. The provisions of California Health and Safety Code Section 7050.5, California Public Resources Code Section 5097.98, and Assembly Bill 2641 shall be implemented.

If the County Coroner determines the remains are Native American and not the result of a crime scene, the County Coroner shall notify the Native American Heritage Commission (NAHC), which then shall designate a Native American Most Likely Descendant for the project. The designated Most Likely Descendant will have 48 hours from the

time access to the property is granted to make recommendations concerning treatment of the remains. If the landowner does not agree with the recommendations of the Most Likely Descendant, the NAHC can mediate. If no agreement is reached, the landowner must rebury the remains where they will not be further disturbed and with dignity (California Public Resources Code Section 5097.98). Reburial will include either recording the site with the NAHC or the appropriate Information Center; using an open space or conservation zoning designation or easement; or recording a re-interment document with the County, per AB 2641. Work may not resume within the no-work radius until the lead agencies, through consultation as appropriate, determine that the treatment measures have been completed to their satisfaction.

Significance After Mitigation: Less than significant

3.6 ENERGY

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?			✓	
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?				✓

NARRATIVE DISCUSSION

Environmental Setting

Electricity and natural gas are major energy sources for residences and businesses in California. In Sacramento County, based upon the most recent information available, electricity consumption in 2018 totaled approximately 10,897 million kilowatt-hours, of which approximately 6,184 million kilowatt-hours were for non-residential uses and the remainder for residential uses (CEC 2020a). In 2018, natural gas consumption in Sacramento County totaled approximately 305 million therms, of which approximately 111 million therms were for non-residential uses and the remainder for residential uses (CEC 2020b). Motor vehicle use also accounts for substantial energy usage. The Sacramento Area Council of Governments (SACOG) estimated that motor vehicles in its planning area, a six-county region including Sacramento County, consumed approximately 985 million gallons of gasoline and 187 million gallons of diesel fuel in 2016 (SACOG 2019).

a) Project Energy Consumption.

Project construction would involve fuel consumption and use of other non-renewable resources. Construction equipment typically runs on diesel fuel or gasoline. The same fuels typically are used for vehicles that transport equipment and workers to and from a construction site. However, construction-related fuel consumption would be short-term and consistent with construction activities of a similar character. This energy use would not be considered wasteful, inefficient, or unnecessary.

Levees do not consume any energy, other than indirectly by maintenance vehicles making incidental visits that would consume minimal amounts of fuel. Overall, project construction and operations would not consume energy resources in a manner considered wasteful, inefficient, or unnecessary. Project impacts related to energy consumption would be less than significant.

b) Energy Efficiency and Renewable Energy Plans.

The levees would not use any energy once construction work is completed. As such, the project would not conflict with State or local energy efficiency plans or renewable energy plans. The project would have no impact related to energy plans.

3.7 GEOLOGY AND SOILS

Would the project:

a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to Division of Mines and Geology Special Publication 42.)				✓
ii) Strong seismic ground shaking?			✓	
iii) Seismic-related ground failure, including liquefaction?			✓	
iv) Landslides?				✓
b) Result in substantial soil erosion or the loss of topsoil?			✓	
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?			✓	

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?			✓	
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				✓
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		✓		

NARRATIVE DISCUSSION

Environmental Setting

The project area is located on geologically recent alluvial deposits of the Cosumnes River plain at the margin of the Central Valley. At State Route 16, immediately north of the project area, the Cosumnes River exits the Pleistocene and Pliocene sandstones, shales, and gravels of the Sierra Nevada and enters the Central Valley. River alluvium is underlain and bordered by the lower member of the Modesto Formation, consisting of slightly weathered gravel, sand, silt, and clay of late Pleistocene age. In many areas, cemented deposits, called duripan, outcrop along the bed and banks of the Cosumnes River and create local control points of erosion-resistant material (Sloughhouse Resource Conservation District 2003).

A custom soil survey, based upon previous work in Sacramento County by the Natural Resource Conservation Service, indicates the project sites and vicinity are underlain by relatively coarse soils, mainly sandy loams and silt loams typical of floodplains. Other soil types include clays, loams, riverwash, and xerofluvents (NRCS 2020). As discussed in Section 3.2, Agriculture and Forestry Resources, soils in the vicinity of the river are productive for agriculture. Soils between the Cosumnes River and Deer Creek are predominantly prime agricultural soils.

The geological literature indicates that no major active faults transect the County, although there are several subsurface faults in the Delta region. No Alquist-Priolo Earthquake Fault Zones, designated by the State Geologist as areas of potential surface fault rupture, are in the project area or the County as a whole. There are several active faults in the vicinity of Sacramento County, including the Foothill Fault Zone to the east and the Vaca, Greenville, Concord, Green Valley, Calaveras, and Hayward Faults to the west. Although Sacramento County has experienced ground shaking from earthquakes outside the County, the County itself has experienced relatively little seismic activity (Sacramento County 2017a).

Paleontological resources include fossil remains, as well as fossil localities and formations that have produced fossil material. A search of the University of California Museum of Paleontology collections database identified paleontological resources in southern Sacramento County and the City of Elk Grove. These paleontological resources

primarily consist of vertebrates that are associated with the geological formation known as the Riverbank Formation. Geologic units sensitive for paleontological resources are mostly located around the Sacramento and Cosumnes Rivers (City of Elk Grove 2008). Three paleontological resources were identified along the Cosumnes River; however, their locations are not known.

Environmental Impacts and Mitigation Measures

a-i) Fault Rupture Hazards.

As noted, there are no active faults in the project area or Sacramento County as a whole, nor are there Alquist-Priolo Earthquake Fault Zones. The project would have no impact related to fault rupture.

a-ii, iii) Seismic Hazards.

The project sites, along with the rest of Sacramento County, are subject to seismic shaking from fault features located to the east and west of the County. Project work is engineered to provide a stable surface for proposed erosion protection and to stabilize existing over-steepened riverbanks that have resulted from past erosion. Because of the nature of the project, it is unlikely to be substantially affected by seismic shaking or other seismic hazards.

Soil compaction and settlement can result from ground shaking. If the sediments that compact during an earthquake are saturated, water from voids is forced to the ground surface, where it emerges in the form of mud spouts or sand boils – a process called liquefaction. Sacramento County has two areas that have been suggested as posing potential liquefaction problems – the downtown Sacramento area and the Delta (Sacramento County 2017a). The project sites are outside areas identified as those that may experience liquefaction. Project impacts related to seismic hazards would be less than significant.

a-iv) Landslides.

The project sites are in areas that relatively are flat and thus not prone to landslides. Although the levee banks that make up the project site are sloped, proposed levee work is engineered to provide a stable surface for proposed erosion protection and to stabilize existing over-steepened riverbanks that have resulted from past erosion. The project would have no impact related to landslides.

b) Soil Erosion.

Levee grading, placement of RSP, removal and recompaction of levee tops, construction staging, and other activities associated with levee repair and stabilization would expose soils to potential water and wind erosion.

Sacramento County has adopted a Land Grading and Erosion Control Ordinance (Sacramento County Code Chapter 16.44). The ordinance requires a Grading and Erosion Control Permit for projects that grade, fill, excavate, store or dispose of 350 cubic yards

or more of soil or earthly material; or clear and grub one acre or greater of land within the unincorporated area of the County. Projects requiring the permit are required to prepare and implement an Erosion and Sediment Control Plan, in accordance with Section 11 of the 2018 County Improvement Standards, the most recent standards adopted by the County. The plan shall include erosion controls and sediment controls to minimize erosion and the transport of sediments. The project would require a Grading and Erosion Control Permit, and thus would require an Erosion and Sediment Control Plan. Implementation of the Erosion and Sediment Control Plan would minimize the potential erosion impacts of the project.

Along with the Erosion and Sediment Control Plan, Section 11 of the 2018 County Improvement Standards requires all projects to implement specified Best Management Practices (BMPs). Applicable BMPs include the following:

- Access points to the construction site shall have a Stabilized Construction Access.
- The preservation of existing vegetation shall be done in accordance with Preservation of Existing Vegetation.
- Perimeter protection along property lines shall have Preservation of Existing Vegetation, Silt Fence, or Fiber Roll.
- Slopes greater than 3 percent shall be temporarily seeded and slopes greater 3:1 (H:V) shall have Hydroseeding and Straw Mulch Stabilizers, Geotextiles, Plastic Covers, Straw Mulch Stabilizer, or Erosion Control Blankets installed.
- The toe of all slopes shall have Silt Fence and/or Fiber Roll.
- A BMP installation schedule shall be included on the plans. The schedule shall include the BMPs for both the wet season and the dry season.
- When possible, all portable toilets shall be placed at least 50 feet from drain inlets and anchored down to prevent being tipped over.

The design of the project is intended to protect against future levee erosion by incorporating several features designed to minimize erosion and sediment discharge. Proposed grading will correct existing over-steeping of levee slopes caused by past erosion and re-establish gradual levee slopes. The waterside levee slopes exposed to future peak flows will be compacted and covered with geofabric and a 24-inch layer of rock slope protection. Construction work associated with the project would be confined mainly to the existing levees and the immediate vicinity.

In addition, as described in Section 3.3, Air Quality, SMAQMD Rule 403 - Fugitive Dust requires that every reasonable precaution be taken not to cause or allow the emissions of fugitive dust from being airborne beyond the property line from which the emission originates; from any construction, handling or storage activity; or from any wrecking, excavation, grading, clearing of land, or solid waste disposal operation. This would further minimize potential soil erosion impacts from construction activities. Project impacts related to erosion would be less than significant. It should be noted that one of

the purposes of the project is to better protect nearby lands from flooding, one of the potential consequences of which is soil erosion.

c) Geologic Instability.

Soils underlying the project sites have not been identified as inherently unstable or prone to failure. The project is intended and designed to restore and stabilize pre-existing levees, reducing potential for their failure. The project would not cause nor contribute to any potential instability.

Subsidence is the gradual settling or sinking of the earth's surface with little or no horizontal motion. Sacramento County is affected by five types of subsidence: liquefaction caused by earthquake shaking, compaction by heavy structures, the erosion of peat soils, peat oxidation, and fluid withdrawal. Groundwater extraction for residential, commercial, and agricultural uses causes the greatest amount of subsidence in Sacramento County. Subsidence has created major problems for flood control, particularly in the Delta (Sacramento County 2017a). Subsidence is a concern mainly in the Delta region, generally west of Interstate 5. The project sites are not within the Delta, and subsidence has not been recorded in the Cosumnes River area (DWR 2018). Project impacts related to geologic instability would be less than significant.

d) Expansive Soils.

A concern with soils is their expansive or "shrink-swell" potential, which is the potential for the soil to expand and contract. Expansive soils could cause damage to building foundations and to infrastructure if they are not considered in project design. The generally loamy soils of the project area are not typically subject to high shrink-swell concerns. However, soils with higher clay content could be expansive. As noted, project work is engineered to provide a stable surface for proposed erosion protection and to stabilize existing over-steepened riverbanks that have resulted from past erosion. Therefore, the project would not be affected by existing conditions related to expansive soils and levees. Project impacts related to expansive soils would be less then significant.

e) Adequacy of Soils for Sewage Disposal.

The project would not use, and does not propose to install, any septic systems. The project would have no impact related to this issue.

f) Paleontological Resources.

As noted, there are three recorded paleontological sites along the Cosumnes River. It is not known if any paleontological resources exist at the project sites. The project would not involve deep excavation, and proposed grading and RSP placement would occur at the existing surface. However, it is conceivable that construction activities could unearth paleontological materials of significance. The establishment of procedures to address paleontological discoveries if they should occur would reduce any potential impacts to a less than significant level. These procedures are set forth in the mitigation measure below, which is consistent with County General Plan policies promoting the protection of

paleontological resources. Implementation of the mitigation measure would reduce impacts on these resources to a level that would be less than significant.

Level of Significance: Potentially significant

Mitigation Measures:

GEO-1: If any subsurface paleontological resources are encountered during construction of the project, all construction activities in the vicinity of the encounter shall be halted until a qualified paleontologist can examine these materials, make a determination of their significance and, if significant, recommend further mitigation measures that would reduce potential effects to a level that would be less than significant. Such measures could include 1) preservation in place or 2) excavation, recovery, and curation by qualified professionals. RD 800 shall be responsible for retaining qualified professionals, implementing recommended mitigation measures, and documenting mitigation efforts in a written report, consistent with the requirements of the State CEQA Guidelines.

Significance After Mitigation: Less than significant

3.8 GREENHOUSE GAS EMISSIONS

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			✓	
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?				✓

NARRATIVE DISCUSSION

Environmental Setting

Greenhouse gases (GHGs) are gases that absorb and emit radiation within the thermal infrared range, trapping heat in the earth's atmosphere. GHGs are both naturally occurring and are emitted by human activity. GHGs include carbon dioxide, the most abundant GHG, as well as methane, nitrous oxide and other gases.

GHG emissions in California in 2017, the most recent year for which data are available, were estimated at approximately 424 million metric tons carbon dioxide equivalent (CO_2e) – a decrease of approximately 14% from the peak level in 2004. Transportation

was the largest contributor to GHG emissions in California, accounting for approximately 40% of total emissions. Other significant sources include industrial activities, with approximately 21% of total emissions, and electric power generation, both in-state and imported, with 14.7% of total emissions (ARB 2019). In unincorporated Sacramento County, the estimated GHG emissions in 2005 was 4,987,668 metric tons CO_2e, with on-road transportation the largest contributor (Sacramento County 2011a).

Increased atmospheric concentrations of GHGs are considered a main contributor to global climate change, which is a subject of concern for the State of California, as evidenced by legislation and executive orders issued since 2005, which are discussed below. Potential impacts of global climate change in California include reduced Sierra Nevada snowpack, increased storm runoff intensity, increased wildfire hazards, greater number of hot days with associated decreases in air quality, and potential decreases in agricultural production (Climate Action Team 2010).

Unlike the criteria air pollutants described in Section 3.3, Air Quality, GHGs have no "attainment" standards established by the federal or State government. Nevertheless, the EPA has found that GHG emissions endanger both the public health and public welfare under Section 202(a) of the Clean Air Act due to their impacts associated with climate change (EPA 2009).

The State of California has implemented GHG emission reduction strategies through AB 32, the Global Warming Solutions Act of 2006, which requires total statewide GHG emissions to reach 1990 levels by 2020, or an approximately 29% reduction from 2004 levels. In compliance with AB 32, the State adopted the Climate Change Scoping Plan in 2008 and updated the plan in 2014. Primary strategies addressed in the original Scoping Plan included new industrial and emission control technologies; alternative energy generation technologies; advanced energy conservation in lighting, heating, cooling and ventilation; fuels with reduced carbon content; hybrid and electric vehicles; and methods for improving vehicle mileage (ARB 2008). The 2014 update highlights California's progress toward meeting the 2020 GHG emission reduction goal of the original Scoping Plan, and it establishes a broad framework for continued emission reductions beyond 2020, on the path to 80% below 1990 levels by 2050 (ARB 2014). The 2017 state GHG emissions were approximately seven million metric tons CO_2e below the 2020 target established by AB 32 (ARB 2019).

In 2016, Senate Bill (SB) 32 became law. SB 32 extends the GHG reduction objectives of AB 32 by mandating statewide reductions in GHG emissions to levels that are 40% below 1990 levels by the year 2030. The State has adopted an updated Scoping Plan that sets forth strategies for achieving the SB 32 target, which is 260 million metric tons CO_2e. The updated Scoping Plan continues many of the programs that were part of the previous Scoping Plans, including the cap-and-trade program, low-carbon fuel standards, renewable energy, and methane reduction strategies, along with a proposed 20% reduction in GHG emissions from refineries. It also addresses, for the first time, GHG emissions from the natural and working lands of California, including the agriculture and forestry sectors (ARB 2017).

Sacramento County is in the process of adopting a comprehensive Climate Action Plan. In 2011, the County adopted a Strategy and Framework Document, which presents a framework for reducing GHG emissions and managing water and other resources to best prepare for a changing climate. More specifically, one of the strategies is to reduce GHG emissions associated with the County's own operations, as well as to take actions that facilitate GHG emissions reduction in the community. Transportation and land use, energy, water, waste management and recycling, and agriculture and open space are the main sectors of concern in reducing GHG emissions. Off-road emissions, such as emissions from construction equipment, are a lesser concern (Sacramento County 2011a). In 2012, the County adopted a Climate Action Plan focused on reducing GHG emissions from County government operations; this plan is currently being updated. Work on a Climate Action Plan to reduce GHG emissions in the community is in progress.

Environmental Impacts and Mitigation Measures

a) Project GHG Emissions.

Based on results from the RCEM run (see Appendix A), total GHG emissions from project construction are estimated to be approximately 92.48 metric tons CO_2e for the entire construction period of four months (see Section 3.3, Air Quality). Construction emissions would be limited to a short time and would cease once work is completed.

In addition, the SMAQMD has established GHG Operational Screening Levels for a variety of development projects. The SMAQMD has determined that projects below the GHG Operational Screening Levels will not exceed the construction GHG threshold of significance if the project meets the parameters for the construction NO_x screening level (SMAQMD 2019). While the specific project type is not listed in the GHG Operational Screening Levels, the project would not generate GHG emissions upon completion of construction, and the project would not exceed construction NO_x screening levels (see Section 3.3, Air Quality). Because of this, project GHG construction emissions are considered less than significant.

Upon completion, the levees would not directly generate any GHG emissions; only incidental emissions from maintenance vehicles would be generated. Project impacts related to GHG emissions are considered less than significant.

b) Consistency with GHG Reduction Plans.

As noted in a) above, the levees would not directly generate any GHG emissions when construction work is completed. As a result, the project would have no adverse impacts related to implementation of the GHG reduction objectives of the State's Climate Change Scoping Plan and the County community Climate Action Plan once the latter is adopted. The project would have no impact related to GHG reduction plans.

3.9 HAZARDS AND HAZARDOUS MATERIALS

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?				✓
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			✓	
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				✓
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				✓
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?				✓
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				✓
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?			✓	

NARRATIVE DISCUSSION

Environmental Setting

This section focuses on hazards associated with hazardous materials, proximity to airports, and wildland fires. Geologic and soil hazards are addressed in Section 3.7, Geology and Soils, and potential flooding hazards are addressed in Section 3.10, Hydrology and Water Quality. Potential wildland fire hazards are briefly analyzed here; a broader discussion of wildfires is in Section 3.20, Wildfire.

Data on hazardous material sites are kept in the GeoTracker database, maintained by the State Water Resources Control Board (SWRCB), and in the EnviroStor database, maintained by the California Department of Toxic Substances Control (DTSC). Both GeoTracker and EnviroStor provide the names and addresses of hazardous material sites,

along with their cleanup status. A search of GeoTracker and EnviroStor indicated no record of active hazardous material sites (sites not cleaned up) on or in the immediate vicinity of the project sites (SWRCB 2020, DTSC 2020).

Wildland fires pose a threat to the more rural areas of Sacramento County. Grass fires and peat fires are the two main types of wildland fires of concern in the County. Grass fires are an annual threat in the unincorporated area of the County, especially in heavily used recreational areas such as the American River Parkway. Peat fires are unique to the Delta, where peat is subject to spontaneous combustion (Sacramento County 2017a).

Environmental Impacts and Mitigation Measures

a) Transport, Use, and Disposal of Hazardous Materials.

The project involves the repair and stabilization of sections of levee along the Cosumnes River. Repair and stabilization activities, and the levees themselves, would not require the use or storage of hazardous materials other on-board fuel tanks on trucks and heavy equipment; as such, substantial transport or the disposal of such substances would not be required. The project would have no impact related to hazardous material transport, use, and disposal.

b) Releases of Hazardous Materials.

Construction activities would involve the use of hazardous materials such as fuels and solvents in conjunction with the operation of vehicles and heavy equipment, which would involve a potential for hazardous material spills. Construction and maintenance vehicles would transport and use fuels in ordinary quantities. Fuel spills, if any occur, would be minimal and would not have significant adverse effects in the area. Contracts for construction typically include requirements related to the prevention and cleanup of fuel, oil, and other hazardous material leaks and spills. Upon completion of construction work, the levees would not require the use or storage of hazardous materials, as discussed in a) above. Project impacts related to hazardous material releases are considered less than significant.

c) Release of Hazardous Materials near Schools.

The project would not involve hazardous materials other than vehicle and equipment exhaust gases. The nearest school to the Cosumnes River – Pleasant Grove Elementary School in Elk Grove – is more than two miles away from Project Sites 7 (Cosumnes Road Upstream) and 8 (Cosumnes Road Downstream), the nearest project sites. As discussed in a) above, the levees would not require the use or storage of hazardous materials. The project would have no impact related to hazardous material releases near schools.

d) Hazardous Materials Sites.

None of the lists of hazardous materials sites compiled pursuant to Government Code Section 65962.5 list contaminated sites that are on or near the project sites. As previously noted, a search of the GeoTracker and EnviroStor databases did not identify any hazardous material sites on or near the project sites. A list of solid waste disposal sites

identified by SWRCB with waste constituents above hazardous waste levels outside the waste management unit did not show any locations within the project sites (CalEPA 2018a); likewise, a list by SWRCB containing sites under Cease and Desist Orders and Cleanup and Abatement Orders showed no locations (CalEPA 2018b). The project would have no impact related to hazardous material sites.

e) Airport Operations.

There are two public-use airports in the vicinity of the project sites. The Elk Grove-Sunset Skyranch Airport is slightly less than two miles west of Project Site 9 (Freeman Road). However, this airport closed in 2010, and Project Site 9 is not within the area covered by the Comprehensive Land Use Plan that had been previously prepared for the airport (Boyer 2000). The Rancho Murrieta Airport is more than two miles east of Project Site 1 (Meiss Road Upstream). No Comprehensive Land Use Plan has been prepared for this airport. As the project is the repair of levees, it would not lead to any air space obstruction that could affect aviation or the placement of residents or employees in or near the safety zones of both airports. The project would have no impact related to airport hazards.

f) Emergency Response and Emergency Evacuations.

The project would be constructed away from public or private roads that could be needed for emergency vehicle responses or for emergency evacuation. Project work would not obstruct or physically affect these roads. Construction work would temporarily generate an incremental increase in traffic on some of these roads (see Section 3.17, Transportation), but this traffic would cease once construction is completed. The purpose of the project is to repair and stabilize levees, reducing the risk of breach or overtopping and flooding of occupied lands in the Cosumnes River plain that may require evacuations. The project would have no adverse impact on emergency response or evacuation.

g) Wildland Fire Hazards.

As further discussed in Section 3.20, Wildfire, the project sites are not in an area with a high likelihood of wildland fires. The project does not propose to place any structures within this area that could be damaged by fire, nor would it place any people who would be exposed to such risk. There are no recreational areas, where wildland fires are a concern, on or in the vicinity of the project sites. The project sites are not in the Delta region, so peat fires would not be an issue.

In riparian and other wildland areas along the Cosumnes River, construction activities may cause fires. Sparks from construction equipment, storage of combustible materials and waste, and careless disposal of cigarettes by workers may ignite fires. Construction plans and specifications typically include provisions to reduce fire hazards, such as disposal of combustible waste, use of spark arrestors, storage of combustible materials away from sites, and prohibitions on smoking. Such provisions would reduce the likelihood of a wildland fire occurring at the project sites. Project impacts related to wildland fire hazards would be less than significant.

3.10 HYDROLOGY AND WATER QUALITY

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?			✓	
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?				✓
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river runoff or through the addition of impervious surfaces, in a manner which would:				
i) Result in substantial erosion or siltation on- or off-site?			✓	
ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?			✓	
iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?				✓
iv) Impede or redirect flood flows?				✓
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?				✓
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?			✓	

NARRATIVE DISCUSSION

Environmental Setting

The project sites are levees or portions of levees adjacent to the Cosumnes River channel. The Cosumnes River originates in the lower elevations of the Sierra Nevada and drains a watershed of approximately 537 square miles. The Cosumnes River receives most of its water from rainfall. Most of the river discharge is into the Mokelumne River near the community of Thornton in San Joaquin County; a portion of the discharge goes to the Sacramento River upstream of the community of Walnut Grove through Lost Slough (DWR et al. 2013).

Reflecting the Cosumnes River's dependence on seasonal rainfall, both flow and water quality vary widely, as indicated in USGS records kept for 100+ years. Minimum mean monthly flows range from no flow at all in the summer and early fall months, which was common, to 10-50 cubic feet per second (cfs) during the same months in other years. During the rainy season, from December through April, mean monthly flows range from 900 to 1,200 cfs, but they have been substantially lower or higher depending on rainfall conditions. Maximum recorded flows on the river reached 93,000 cfs on January 2, 1997; maximum flows of 45,100 cfs and 49,700 cfs were recorded in February 1986 and February 2017, respectively (USGS 2020). By contrast, river flows often are reduced to zero between August and October (FISHBIO 2020a, 2020b).

Cosumnes River water quality conditions also vary widely. USGS records display variations in pH from 6.2 to 9.4 standard units, specific conductance from 43 to 130 microsiemens, and temperature from 34 to 97 degrees Fahrenheit (USGS 2020). The RWQCB has listed pollutants for which water quality in streams is considered impaired under Clean Water Act Section 303(d), along with the category of the pollutant. For the segment of the Cosumnes River that includes the project sites, identified pollutants include indicator bacteria, invasive species, and general toxicity, all from unknown sources (RWQCB 2010).

The Cosumnes River has been prone to flooding historically. Based on information from the Federal Emergency Management Agency (FEMA), the project sites are within areas designated Zone A, which indicates areas with a 1% chance of flooding on average every year, or the "100-year floodplain" (Sacramento County 2017a). As noted, levee failures along the Cosumnes River have led to flooding of nearby lands.

Most of the project sites are located within the Cosumnes Groundwater Subbasin, which lies between the Cosumnes River and the San Joaquin and Calaveras County lines. In 2014, the California Legislature passed the Sustainable Groundwater Management Act, which requires the formation of Groundwater Sustainability Agencies that must assess conditions in their local water basins and adopt groundwater sustainability plans. Seven agencies have designated themselves Groundwater Sustainability Agencies for their areas of jurisdiction within the Cosumnes Subbasin, including the Omochumne-Hartnell Water District that encompasses the project sites. All seven agencies are collaborating on a Cosumnes Subbasin groundwater sustainability plan, which the State requires to be adopted by 2022.

Environmental Impacts and Mitigation Measures

a) Water Quality Standards.

Grading work associated with the project would directly disturb the existing riverbank and lower waterside levee slopes along the Cosumnes River. If uncontrolled, this could lead to discharge of sediments that would adversely affect water quality in the river. In addition to regulatory water quality requirements, discussed below, the design of the project follows the project objectives, which are to protect against future levee erosion, by incorporating several features designed to minimize erosion and sediment discharge. Proposed grading will correct existing over-steeping of levee slopes caused by past

erosion and re-establish gradual levee slopes. The waterside levee slopes exposed to future peak flows will be compacted and covered with geofabric and a 24-inch layer of rock slope protection.

Typically, for projects that disturb one acre of soil or more, the SWRCB requires a Construction General Permit. The permit requirements include preparation of a Storm Water Pollution Prevention Plan to address potential water quality issues. Construction activity subject to the Construction General Permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. Since the project proposes to restore the original grade and capacity of the levees, the Construction General Permit would not be required.

As noted in Section 3.7, Geology and Soils, the project must comply with Section 11 of the 2018 County Improvement Standards, which requires preparation and implementation of an Erosion and Sediment Control Plan, along with implementation of required BMPs. Additionally, as noted in Section 3.4, Biological Resources, the project would be required to obtain a Section 404 permit from the U.S. Army Corps of Engineers. Corps permits typically have attached conditions that are intended to reduce the water quality impacts of projects. A Section 401 Water Quality Certification, also required in connection with Corps permits, verifies compliance with federal and state water quality requirements.

After construction work is completed, the levees would not involve any significant adverse water quality impacts. Erosion would be minimized, and no other potential water pollutants would be involved in levee operations. Project impacts on water quality would be less than significant.

b) Groundwater Supplies.

The project would not require the use of groundwater. Most construction work would be done at and above the surface, and any excavation that occurs would be shallow and would not intercept or disturb aquifers. The project would have no impact on groundwater supplies.

c-i, -ii) Drainage Patterns.

The project is the repair and stabilization of existing levee segments. The project would not alter the existing course of the Cosumnes River or the existing drainage patterns between the levees. Runoff on the landside of the levees will continue to drain to adjacent lands. Since levee configurations would essentially remain the same after the project, drainage patterns would not be altered such that potential erosion, siltation, or flooding impacts would change from existing conditions.

As noted, some of the project sites would use nearby borrow sites for fill material. These borrow sites are hills or piles of dirt that would be lowered a few inches from project activities, as well as stripped of vegetation. The height of these borrow sites would not be substantially altered, and the project proposes hydroseeding these sites after the required fill is obtained. Therefore, existing drainage patterns at the borrow sites would not be altered such that erosion or flooding would occur.

The proposed staging areas would be used temporarily for construction materials and equipment. These areas would be restored to pre-existing conditions when work is completed. As a result, drainage patterns at these areas would not be altered. Overall, project impacts on drainage patterns would be less than significant.

c-iii) Runoff.

As noted in c-i, -ii) above, existing drainage patterns at the project sites would not change. The project would not introduce any impervious surfaces, so runoff would not be expected to increase. Levee reconstruction and erosion protection should result in increased infiltration of rainfall, potentially reducing runoff. Existing levee characteristics would not change, so no potential contaminants would be introduced. The project would have no impact related to runoff.

c-iv) Flood Flows.

The project proposes to repair existing levees along the Cosumnes River. It would not place other structures within the floodway. The project would not impede or redirect flood flows in any manner other than by the levees. The project would have no impact on flood flows.

d) Other Flooding Hazards.

As noted, the project proposes to repair existing levees, which would make them less prone to erosion and breaching that would cause flooding. A rough estimate of the amount of land near the project sites subject to flooding by breach is 6,500 acres. The project sites are not within an area that has been identified as subject to flooding from potential dam failure (Sacramento County 2017a). The project is in a topographically flat area away from large bodies of water. Because of this, the project would not experience seiche, tsunami or mudflow hazards.

As a result of State legislation enacted in 2007, urban areas in the Central Valley are required to incorporate measures in their General Plans and zoning ordinance designed to reduce impacts from a 200-year flood (i.e., flood with a 0.5% chance of occurring on average every year). No 200-year floodplains subject to this legislation have been designated on the project sites or vicinity. The project would have no impact related to other flooding hazards.

e) Conflict with Water Quality/Groundwater Management Plans.

The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, adopted in 1994 and last amended in 2016, contains provisions applicable to the Cosumnes River. As noted in a) above, project impacts on water quality would be less than significant, and even less so upon project completion, so the project would not substantially conflict with the Water Quality Control Plan.

As noted in b) above, the project would not involve any new groundwater demand or otherwise affect groundwater, so it would not conflict with any of groundwater

sustainability plans that would be adopted for the Cosumnes Subbasin. Project impacts on water quality plans or groundwater management plans would be less than significant.

3.11 LAND USE AND PLANNING

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Physically divide an established community?				✓
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?			✓	

NARRATIVE DISCUSSION

Environmental Setting

The project sites are located within an area of unincorporated Sacramento County that is predominantly rural in character. Agricultural lands are found throughout the project vicinity, interspersed with rural residences and farm structures. The unincorporated community of Wilton is in the vicinity of the project sites, and the community of Sloughhouse is approximately three-quarters mile north of Project Site 2 (Meiss Road Downstream).

The Sacramento County General Plan of 2005-2030, adopted in 2011 and subsequently amended, provides a guide to growth and development within the unincorporated County to the year 2030. Table 3-4 shows the County General Plan designations for the project sites, along with their current zoning. The Sacramento County Zoning Code, adopted in 2015 and subsequently amended, establishes land use zones and standards and regulations for development in those zones, consistent with the County General Plan.

Environmental Impacts and Mitigation Measures

a) Division of Established Communities.

The project sites are in a rural area of southeastern Sacramento County. The unincorporated community of Wilton is approximately one-half mile east of Project Site 7 (Cosumnes Road Upstream). As noted, Sloughhouse is approximately three-quarters mile from Project Site 2. Beyond both communities is scattered residential housing associated with agricultural fields. The project sites are located along the Cosumnes River; they are not in established communities. Because of this, the project would not divide any communities. The project would have no impact on this issue.

TABLE 3-4
GENERAL PLAN DESIGNATIONS AND ZONING FOR PROJECT SITES

Site No.	Site Name	APN	General Plan Designation	Zoning
1	Meiss Road Upstream	128-0070-057	Natural Preserve	AG-80
2	Meiss Road Downstream	126-0110-001	Natural Preserve	AG-20
3	Fig Road Upstream	126-0300-055	Natural Preserve	AG-80
4	Fig Road Downstream	126-0150-037	Natural Preserve	AG-80
5	Keating Road	126-0160-052	Natural Preserve	AG-80
6	Mile Marker 19	126-0030-025	Natural Preserve	AG-80
7	Cosumnes Road Upstream	134-0141-027	General Agriculture, 20-acre minimum	AG-80
8	Cosumnes Road Downstream	134-0141-007	General Agriculture, 20-acre minimum	AG-80
9	Freeman Road	134-0174-014	Agricultural Cropland	AG-20
		134-0174-004	Agricultural-Residential	A-10

Notes: Project site numbers correspond to those in Figures 1-2 and 1-3 of this IS/MND.
AG – General Agriculture (with acreage minimum); A-10 – Agriculture with 10-acre minimum

b) Conflict with Adopted Actions for Environmental Effects.

As discussed in Section 3.2, Agriculture and Forestry Resources, the project would have no impact on agricultural lands, as no agricultural land would be lost. Moreover, since the project would control existing erosion problems that potentially threatens the structural integrity of levees, it would maintain flood protection for nearby agricultural lands, promoting continued agricultural use. The project would be consistent with and supportive of agricultural land protection policies in the Agricultural Element of the County General Plan.

The project proposes some construction work within the Cosumnes River levee system, which could conflict with County General Plan policies regarding maintenance of water quality and riparian habitat. These include Policy CO-20, which supports preservation and restoration of the Cosumnes River riparian ecosystem; Policy CO-26, which seeks to protect areas susceptible to erosion, natural water bodies, and natural drainage systems; and Policy CO-89, which seeks to protect, enhance and maintain riparian habitat in Sacramento County. Also, Policy CO-88 states that, where removal of riparian habitat is necessary for channel maintenance, it will be planned and mitigated to minimize unavoidable impacts upon biological resources.

Habitat issues are discussed in Section 3.4, Biological Resources, and water quality issues are discussed in Section 3.10, Hydrology and Water Quality. The Biological

Resources section describes mitigation measures and permit conditions that would minimize potential impacts on habitats, while the Hydrology and Water Quality section describes the various project features and required permits from State and federal agencies that would reduce water quality impacts. These measures and actions would minimize conflicts with the County General Plan policies described above.

The project would involve no significant conflicts with other County General Plan policies adopted to avoid or minimize environmental impacts. Project impacts related to land use and planning are considered less than significant.

3.12 MINERAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				✓
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?				✓

NARRATIVE DISCUSSION

Environmental Setting

Mineral resources in Sacramento County include natural gas, petroleum, sand, gravel, clay, gold, silver, peat, topsoil, and lignite. The principal resources which are in production are aggregate (sand and gravel) and natural gas. The Sacramento County General Plan indicated there were no designated mineral deposits nor oil or natural gas deposits in the area (Sacramento County 2017b).

Environmental Impacts and Mitigation Measures

a, b) Availability of Mineral Resources.

Since there are no identified mineral resources areas in the vicinity of the project sites, the project would have no effect on the availability of or access to locally designated or known mineral resources. The project would have no impact on mineral resources.

3.13 NOISE

Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			✓	
b) Generation of excessive groundborne vibration or groundborne noise levels?			✓	
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				✓

NARRATIVE DISCUSSION

Environmental Setting

Noise is often described as unwanted sound, which is any pressure variation in air that the human ear can detect. Since measuring sound by pressure would require a large and awkward range of numbers, the decibel (dB) scale was devised. This scale is typically adjusted for perception of loudness by the standardized A-weighting network, which provides a strong correlation between A-weighted decibels (dBA) and community noise.

Community noise is commonly described in terms of the "ambient" noise level – the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}), which corresponds to a steady-state, dBA sound level containing the same total energy as a time-varying signal over a given time period, usually one hour. The L_{eq} shows very good correlation with community response to noise, and it is the basis for other noise descriptors.

The project sites and surrounding lands do not contain significant noise sources. The only noise sources at the project sites are intermittent noise associated with adjacent agricultural activities and occasional trips by RD 800 maintenance vehicles. Near the project sites, the main existing sources of noise are agricultural operations and vehicle traffic on local roads. Due to the rural and agricultural nature of the project area, noise-sensitive uses such as residences are relatively few. Of the nine repair sites, four have residences in the general vicinity, none closer than approximately 725 feet. Along most of the proposed construction access roads, there are several residences, some of which are adjacent to the roadways and others that are more distant. A count of residences in the vicinity of the repair sites and the proposed access routes, gathered from a review of 2019 aerial photographs, is shown in Table 3-5.

TABLE 3-5
SENSITIVE RECEPTORS NEAR PROJECT SITES AND ACCESS ROADS

Site	Receptors Near Sites	Receptors Near Access Roads
1	None	Approx. 6, 1 @ 625', others <150'
2	1 @ 1,700', 1 @ 725'	3, adjacent
3	None	12-15, near and adjacent
4	None	Same as above
5	None	1 @ 250', 1 @ 650'
6	None	7, adjacent and 3 @ 150-500'
7	1 @ 1,700'	1, adjacent
8	1 @ 1,700+'	Same as above
9	1 @ 725'	15, from adjacent to 500'

Chapter 6.68 of the Sacramento County Code establishes noise standards applicable to projects. Exterior noise in specified zones shall not exceed 55 dBA during the daytime (7:00 a.m. to 10:00 p.m.) and 50 dBA during the nighttime. An exemption is specified for noise sources associated with construction, repair, remodeling, demolition, paving, or grading of any real property, provided said activities do not take place between the hours of 8:00 p.m. and 6:00 a.m. on weekdays, on Friday commencing at 8:00 p.m. through and including 7:00 a.m. on the following Saturday, on Saturdays commencing at 8:00 p.m. through and including 7:00 a.m. on the following Sunday, and on each Sunday after the hour of 8:00 p.m. The project sites are not within the specified zones, which mainly are residential and rural residential zones.

Environmental Impacts and Mitigation Measures

a) Exposure to Noise Exceeding Local Standards.

The project would not involve any substantial operational noise. Maximum noise impacts would result from occasional inspection and maintenance visits to the levees by RD 800 employees.

Project construction activities would generate significant short-term noise. Grading, earthmoving, and placement of RSP would be the main noise-generating construction activities. Equipment likely to be used in the construction process would include excavators, scrapers, backhoes, and haul trucks. Based on the equipment anticipated to be used, project construction may generate maximum noise levels ranging from 76 to 81 dBA at a reference distance of 50 feet (FHWA 2006).

The noise level at a given distance from a source can be estimated using the Inverse Square Law of Noise Propagation (Harris 1991). Essentially, this law states that noise

decreases by 6 dBA with every doubling of distance from a source. For example, if the noise from an industrial engine is 81 dBA at 50 feet, the noise at 100 feet would be 75 dBA, and at 200 feet would be 69 dBA. Insertion of the levee structure between construction activity and any nearby noise-sensitive uses would result in a minimum of 5-10 dB of noise reduction, depending on the height of the levee above the noise source and the relative distances between the construction activity and nearby residences.

The nearest noise-sensitive land uses to any of the project sites are two residences, one approximately 725 feet from Project Site 9 (Freeman Road) and the other at the same distance from Project Site 2 (Meiss Road Downstream). At that distance, the noise level from the loudest construction equipment, including reductions for distance and levee interference, would be approximately 52 dBA, which is below the upper limit of County standards for exterior noise. Moreover, construction noise is a short-term occurrence that would cease after construction work is completed. As noted in Section 3.3, Air Quality, construction time would be about 1½ weeks at each site except at Project Site 6 (Mile Marker 19), which would be about three weeks.

In all cases, construction noise would be reduced to due to distance and the effect of the existing levees in reducing propagation of noise outside of the immediate river vicinity. Project impacts related to noise exposure would be less than significant.

b) Exposure to Groundborne Vibrations.

Groundborne vibration is not a common environmental problem. It is typically associated with transportation facilities, although it is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of groundborne vibration are trains, buses on rough roads, and construction activities such as blasting, pile driving, and operating heavy earth-moving equipment. As the nearest sensitive receptor is at least 725 feet away, groundborne vibrations generated by construction equipment are unlikely to reach this potential receptor, or receptors at greater distances. Project vibration impacts would be less than significant.

c) Noise from Public Airports and Private Airstrips.

As described in Section 3.9, Hazards and Hazardous Materials, there is only one active public-use airport in the vicinity of the project sites - the Rancho Murieta Airport more than two miles east of Project Site 1 (Meiss Road Upstream). No Comprehensive Land Use Plan has been prepared for this airport. In any case, the project would not lead to the placement of any residents or employees who could be regularly exposed to noise from this airport or others. No private airstrips have been identified in the vicinity of the project sites, and as noted, the project would not lead to regular noise exposure by residents or employees. The project would have no impact related to airport or airstrip noise.

3.14 POPULATION AND HOUSING

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				✓
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				✓

NARRATIVE DISCUSSION

Environmental Setting

As of January 1, 2020, the population of Sacramento County was estimated at 1,555,365, of which 594,801 resided in the unincorporated area (California Department of Finance 2020). Sacramento County had an estimated 579,115 housing units on January 1, 2020, of which 223,706 were in the unincorporated area. Single-family detached units (typical houses) accounted for approximately 64.9% of total housing units in the County, and approximately 64.6% of housing units in the unincorporated area (California Department of Finance 2020).

Wilton is a Census Designated Place in Sacramento County and a part of the Sacramento–Arden-Arcade–Roseville Metropolitan Statistical Area. The population within the Wilton Census Designated Place boundaries was 5,363, according to the 2010 U.S. Census. Housing in the Wilton vicinity is composed primarily of low-density, single-family residential units.

Environmental Impacts and Mitigation Measures

a) Population Growth Inducement.

The project would not construct residences or other development that would encourage population growth in the area. The project would repair levee sections, thereby maintaining the structural integrity of the levees and flood protection for adjacent lands. However, the adjacent lands are mainly rural and agricultural and would remain so after project completion. No urban development is planned.

As set forth in the County General Plan, population growth is being directed more toward the urbanized areas of the County. Wilton and nearby areas have been designated Agricultural Residential, within which residential development would be of very low density and therefore would involve relatively little population growth. The project would

not affect planned population growth in the area. The project would have no impact on population growth, either directly or indirectly.

b) Displacement of Housing or People.

There is no housing or population on or adjacent to the project sites, or in the immediate vicinity. The project would not result in the displacement of housing or residents. The project would have no impact on displacement.

3.15 PUBLIC SERVICES

Would the project:

a) Result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
i) Fire protection?			✓	
ii) Police protection?				✓
iii) Schools?				✓
iv) Parks?				✓
v) Other public facilities?				✓

NARRATIVE DISCUSSION

Environmental Setting

Most of the project sites are within the service area of the Wilton Fire Protection District, which is based in the community of Wilton and has four fire stations. The exceptions are Project Sites 1 and 2 (Meiss Road sites), which are within the service area of the Sacramento Metropolitan Fire District. The nearest Fire District stations to these two sites are in the communities of Rancho Murieta and Sloughhouse.

Law enforcement services for the project vicinity are provided by the Sacramento County Sheriff's Department. The Sheriff's Department maintains a service center, open on Wednesdays, in the Wilton Fire Protection District office at 9800 Dillard Road in Wilton.

The project sites are within the boundaries of the Elk Grove Unified School District, which provides public educational services from kindergarten to high school. The Sacramento County Parks and Recreation Department provides park and recreational services to unincorporated Sacramento County. There are no County parks or recreational

facilities in the project vicinity. Other public services include the Sacramento Public Library, with branches in Elk Grove and Galt, and the Sacramento County Superior Court, with facilities in Sacramento.

Environmental Impacts and Mitigation Measures

a) Fire Protection.

The project involves levee repair along a river. Construction activities would involve minor temporary increases in fire start potential, as described in Section 3.9, Hazards and Hazardous Materials, but activities would be subject to applicable fire prevention requirements. As noted in Section 3.14, Population and Housing, the project would not construct residences or other development that would encourage population growth in the area. Because of this, it would not create additional long-term demand for fire protection services. No new or expanded fire protection facilities that could have environmental impacts would be required. Project impacts on fire protection services would be less than significant.

b) Police Protection.

The project would not create additional demand for police protection services. No new or expanded police protection facilities that could have environmental impacts would be required. The project would have no impact on this issue.

c) Schools.

The project would not create additional demand for school services. No new or expanded school facilities that could have environmental impacts would be required. The project would have no impact on this issue.

d, e) Parks and Other Public Facilities.

The project would not involve any direct effect on existing park or recreation facilities or create additional demand for parks or other public facilities. No new or expanded facilities that could have environmental impacts would be required. Public river access is unavailable due to private land ownership adjacent to the river. The project would have no impact on this issue.

3.16 RECREATION

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated?				✓

b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?				✓

NARRATIVE DISCUSSION

Environmental Setting

As noted in Section 3.15, Public Services, the Sacramento County Parks and Recreation Department provides park and recreation services to unincorporated Sacramento County. There are no County parks or recreational facilities in the project vicinity. Public access to the segment of the Cosumnes River on which the project sites are located is unavailable due to the private land ownership adjacent to the river.

The project sites are within County Service Area 4B, which encompasses the unincorporated area of Sacramento County east of Grant Line Road to the County line and includes Rancho Murieta, Wilton, Sloughhouse, and the Cosumnes areas. Within County Service Area 4B, the Wilton/Cosumnes Council, which consists of five members of the community, works at an advisory level with the County Parks and Recreation Department on parks and recreation issues in the Wilton/Cosumnes area.

Environmental Impacts and Mitigation Measures

a, b) Recreational Facilities.

The project is levee repair along a river segment that is generally not available for public access due to private land ownership. Recreational opportunities are further reduced by the seasonal dryness of the river segment.

As noted in Section 3.14, Population and Housing, the project would not construct residences or other development that would encourage population growth in the area. Because of this, it would not create additional demand for recreational facilities, nor would it increase the use of existing facilities. No new or expanded facilities that could have environmental impacts would be required. The project would have no impact on this issue.

3.17 TRANSPORTATION

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?				✓
b) Conflict with or be inconsistent with CEQA Guidelines				✓

Section 15064.3, subdivision (b)?				
c) Substantially increase hazards to a geometric design feature (e g., sharp curves or dangerous intersections) or incompatible uses (e g, farm equipment)?				✓
d) Result in inadequate emergency access?				✓

NARRATIVE DISCUSSION

Environmental Setting

The main roads serving the project vicinity are State Route 16, Cosumnes Road, Wilton Road and Dillard Road. State Route 16 connects Sacramento with communities such as Sloughhouse and Rancho Murieta in southeastern Sacramento County, as well as with Amador County to the east. Wilton Road connects the Wilton area and Dillard Road with Sheldon and Grantline Road to the northwest, and Cosumnes Road interconnects Wilton Road and Dillard Road in the area south of Wilton. Dillard Road begins at State Route 16 west of Rancho Murieta, then follows a generally southwest route past Wilton before terminating at State Route 99 south of Elk Grove. These are two-lane paved rural roads with relatively light traffic and lane and edge striping but no bike lanes or off-road pedestrian facilities. Stop signs provide all traffic control in the project area.

Other roads in the vicinity are smaller paved and graveled County roads that primarily access farms and rural residences, such as Meiss Road and Freeman Road. Unpaved private access roads extend to the project sites and to surrounding agricultural lands from the County road system. Traffic on these roads is restricted to occasional agricultural vehicle and equipment use and RD 800 maintenance vehicles.

No regular public transit service is provided to the project sites or vicinity. There are no designated bike routes and no pedestrian sidewalks in the area.

Environmental Impacts and Mitigation Measures

a) Conflicts with Transportation Programs and Plans.

The project would generate truck traffic during construction activities as fill and RSP materials are delivered to most of the sites. Assuming fill and RSP deliveries are 20 cubic yards per load, the project would involve approximately 1,319 one-way trips to address the total material needs of the project. Individual project needs would involve from 21 to 328 one-way truck trips. As noted in Section 3.3, Air Quality, each repair project would involve a typical construction time of about 1½ weeks except for Project Site 6 (Mile Marker 19), which would take three weeks. This would result in daily truck trip traffic ranging from approximately 4 to 65 on local roads, assuming two-way trips. Project-related truck traffic would be a small amount of the daily traffic on the affected public roads and would involve no substantial change in traffic or vehicle delay. Traffic effects would in any event be temporary and would cease when construction work is completed.

Because of the lack of substantial increase in traffic volumes and the temporary nature of construction work, construction traffic impacts would be less than significant.

Upon completion of construction work at each site, the project would generate no traffic other than occasional visits by RD 800 maintenance vehicles. The project would result in no significant change to traffic volumes on nearby public roads upon project completion.

The Sacramento County Bicycle Master Plan proposes a future Class II bike lane along Dillard Road (Sacramento County 2011b). The project would not interfere with future development of the bike lane as it would not affect Dillard Road. Overall, the project would have no impact on transportation programs and plans.

b) Conflict with CEQA Guidelines Section 15064.3(b).

The Environmental Checklist in CEQA Guidelines Appendix G has been revised to include a question regarding consistency of the project with CEQA Guidelines Section 15064.3(b). Section 15064.3(b) states that VMT is the preferred method for evaluating transportation impacts, rather than the commonly used LOS. The repaired levees would not generate any regular traffic upon completion, and therefore no increase in VMT. The project would have no impact regarding conflict with CEQA Guidelines Section 15064.3(b).

c) Traffic Hazards.

The project sites are located off the existing public road system. As such, project work would not alter or obstruct existing public roads in the vicinity. The levees would not generate traffic after project completion, so it would not contribute any traffic that would be incompatible with existing traffic in the area. The project would have no impact on traffic hazards.

d) Emergency Access.

As noted in Section 3.9, Hazards and Hazardous Materials, project construction would occur away from public roads, so it would not interfere with emergency vehicle response or emergency evacuation. RD 800 has existing access to its levees in case of emergency, and the project would not obstruct this access for RD 800 maintenance vehicles or other emergency vehicles. The project would have no impact on emergency access.

3.18 TRIBAL CULTURAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of		✓		

Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or				
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	✓		

NARRATIVE DISCUSSION

Environmental Setting

As noted in Section 3.5, Cultural Resources, the project area is at the confluence of the ethnographic territories of the Nisenan to the north and the Plains Miwok to the south (ECORP 2019).

- *Nisenan* - The Nisenan inhabited the drainages of the Yuba, Bear, and American rivers and the lower reaches of the Feather River, extending from the east banks of the Sacramento River on the west to the mid to high elevations of the western flank of the Sierra Nevada to the east. The basic social and economic group for the Nisenan was the family or household unit. These basic units were combined into distinct village or hamlet groups. During most of the year, Nisenan usually lived in permanent villages located below about 2,500 feet. Villages typically included family dwellings, acorn granaries, a sweathouse, and a dance house, owned by the chief. The Nisenan practiced a subsistence strategy involving moving from one area or elevation to another to harvest plants, fish, and hunt game across contrasting ecosystems in relative proximity to each other.

- *Plains Miwok* - The project area is in the Plains Miwok area, which started between modern-day Freeport and Rio Vista along the Sacramento River and extended eastward along the Mokelumne and Cosumnes Rivers. The Plains Miwok included tribelets along the Sacramento, Cosumnes, and Mokelumne rivers. Tribelets were the primary political units and often consisted of a population of 300 to 500 people. Within each tribelet were permanent settlements, as well as seasonal hunting and gathering campsites. Subsistence for the Plains Miwok centered on hunting, gathering, and fishing within the confines of their tribelet areas.

A records search conducted by ECORP as part of its Cultural Resource Inventory (see Section 3.5, Cultural Resources) found 15 previously recorded cultural resources believed to be associated with Native American occupation located within one-half mile of the project area. Studies previously conducted in or near the project area revealed the presence of pre-contact sites, including lithic scatters and habitation sites. Further

research by ECORP indicated the presence of Native American villages in the area. A search of the Sacred Lands File by the Native American Heritage Commission (NAHC) also indicated the presence of Native American cultural resources in the project area. However, the ECORP report did not specifically identify or evaluate tribal cultural resources; the report stated that only California Native American tribes, as defined in Public Resources Code Section 21073, are experts in the identification of Tribal Cultural Resources and impacts thereto. (ECORP 2019).

In 2015, the California Legislature enacted AB 52, which focuses on consultation with Native American tribes on land use issues potentially affecting the tribes. The intent of this consultation is to avoid or mitigate potential impacts on "tribal cultural resources," which are defined as "sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe."

Under AB 52, when a tribe requests consultation with a CEQA lead agency on projects within its traditionally and culturally affiliated geographical area, the lead agency must provide the tribe with notice of a proposed project within 14 days of a project application being deemed complete or when the lead agency decides to undertake the project if it is the agency's own project. The tribe has up to 30 days to respond to the notice and request consultation; if consultation is requested, then the local agency has up to 30 days to initiate consultation.

As part of its Sacred Lands File search, the NAHC provided ECORP with a list of ten contacts representing eight tribes that may have knowledge of resources at the project sites. The NAHC suggested that two tribes in particular - the Wilton Rancheria and the Ione Band of Miwok Indians – be contacted for further information. ECORP did not follow up with the tribes as suggested by the NAHC, deferring to the AB 52 tribal consultation procedures of the lead agency (ECORP 2019).

Environmental Impacts and Mitigation Measures

a, b) Tribal Cultural Resources.

As noted, the ECORP report indicated the presence of potential tribal cultural resources in the project area, based on a positive result in the Sacred Lands file search by the NAHC. The NAHC recommended contacting the Wilton Rancheria and the Ione Band of Miwok Indians for more information. The Wilton Rancheria has been active in RD 800 projects in this area before and had previously expressed concern about District projects. Therefore, RD 800 sent a letter dated June 6, 2019 to the Wilton Rancheria asking if it wished to consult on this project per AB 52. The Wilton Rancheria sent no response to RD 800 within the 30-day timeframe set by AB 52; therefore, no further consultation is required. There is no record of any contact by the Ione Band.

As noted, there have been 15 Native American sites recorded in the vicinity of the project sites. Therefore, it is possible that currently unknown resources of potential value to Native American tribes, including burials, could be encountered during project construction. The establishment of procedures to address such encounters if they occur would reduce any potential impacts on these resources to a level that would be less than

significant. These procedures are set forth in Mitigation Measures CULT-1 and CULT-2, described in Section 3.5, Cultural Resources. Implementation of these mitigation measures would reduce impacts on uncovered tribal cultural resources to a level that would be less than significant.

Level of Significance: Potentially significant

Mitigation Measures: Mitigation measures CULT-1 and CULT-2.

Significance After Mitigation: Less than significant

3.19 UTILITIES AND SERVICE SYSTEMS

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?				✓
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?				✓
c) Result in a determination by the wastewater treatment provider that would serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				✓
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?				✓
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?				✓

NARRATIVE DISCUSSION

Environmental Setting

The proposed project is in a rural area of Sacramento County. Organized domestic water, sewage collection and treatment, and storm drainage services are not available in the project vicinity. Individual landowners have on-site water supply and sewage disposal as needed to support land uses on their properties. The project sites have no existing storm drainage system; runoff flows into the Cosumnes River on the waterside portion of a levee and onto adjacent land on the landside portion, where it percolates into the soil.

The project sites are within the service area of the Omochumne-Hartnell Water District, which provides irrigation water to its agricultural customers. In the project vicinity, residential solid waste collection services are provided by Sacramento County. The County operates the Kiefer Landfill on Kiefer Boulevard and Grant Line Road.

Environmental Impacts and Mitigation Measures

a) Relocation or Construction of Utility Facilities.

The project is the repair of levee segments. As such, the project would not generate a demand for utilities that would require the extension of sewer mains, water lines, or storm water drainage lines. There are no existing utility lines in the area that would require relocation. The project would have no impact on this issue.

b) Water Supplies.

As noted in Section 3.14, Population and Housing, the project would not construct residences or other development that would encourage population growth in the area. Because of this, the project would not generate a demand for water. The project would have no impact on water supplies.

c) Wastewater Treatment Capacity.

The project would not generate a demand for wastewater services. As such, no additional wastewater treatment capacity would be required. The project would have no impact on wastewater treatment capacity.

d, e) Solid Waste Services.

The project would not generate a demand for solid waste collection services or landfill capacity. Since the project would not generate demand for solid waste services, there would be no conflict with federal, state, and local solid waste management and reduction statutes and regulations. The project would have no impact on solid waste.

3.20 WILDFIRE

If located in or near State Responsibility Areas or lands classified as Very High Fire Hazard Severity Zones, would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?				✓
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?				✓
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate				✓

fire risk or that may result in temporary or ongoing impacts to the environment?				
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?			✓	

NARRATIVE DISCUSSION

Environmental Setting

The Environmental Checklist in CEQA Guidelines Appendix G has been revised to include a section addressing the potential impacts of a project as it relates to wildfire. As noted in Section 3.9, Hazards and Hazardous Materials, wildland fires are fires that pose a threat to the more rural areas of Sacramento County. Grass fires and peat fires are the two main types of wildland fires of concern in the County. Grass fires are an annual threat in the unincorporated area of the County, especially recreational areas such as the American River Parkway. Peat fires are unique to the Delta where peat is subject to spontaneous combustion (Sacramento County 2017a). As noted in Section 3.9, there are no recreational areas in the project vicinity, and the project sites are not in the Delta, so peat fires are not an issue.

The California Department of Forestry and Fire Protection's Fire and Resource Assessment Program identifies fire threat based on a combination of two factors: 1) fire frequency, or the likelihood of a given area burning, and 2) potential fire behavior (hazard). These two factors are combined in determining the following Fire Hazard Severity Zones: Moderate, High, Very High, Extreme. These zones apply to areas designated as State Responsibility Areas – areas in which the State has primary firefighting responsibility. They also apply to Local Responsibility Areas – areas which are served by local fire protection districts or departments. The project sites are not within a State Responsibility Area; all of them are within Local Responsibility Areas. The project sites and vicinities have not been placed in a Fire Hazard Severity Zone (Cal Fire 2007, 2008).

Environmental Impacts and Mitigation Measures

a) Emergency Response Plans and Emergency Evacuation Plans.

As discussed in Section 3.9, Hazards and Hazardous Materials, the project would be constructed away from public roads that would be used for emergency vehicle responses or for emergency evacuations. The project would have no impact related to wildfire emergency response plans or emergency evacuation plans.

b) Exposure of Project Occupants to Wildfire Hazards.

As noted in Section 3.9, the project would not permanently place any people on the sites, so no residents would be exposed to potential wildfire hazards. The project sites are not part of a State Responsibility Area, and Cal Fire maps indicate the sites are not

designated within a Very High Fire Hazard Severity Zone or a zone of higher severity. The project is adjacent to the Cosumnes River, and the RSP would further reduce the likelihood of wildfires on the project sites. The project would have no impact related to exposure of project occupants to wildfire hazards.

c) Installation and Maintenance of Infrastructure.

The project proposes the installation of roads and parking areas and the extension of utilities. The installation of these facilities is not expected to exacerbate the wildfire risk at the project sites, as explained in b) above. Project construction would involve activities that would temporally increase fire risk in the vicinity of each project. However, as discussed in Section 3.9, construction plans and specifications would include provisions to reduce fire risk. The project would have no impact related to infrastructural exacerbation of wildfire hazards.

d) Risks from Runoff, Post-Fire Slope Instability, or Drainage Changes.

The project sites are along the Cosumnes River, the headwaters of which are in the Sierra Nevada foothills. Fires in the foothill areas could lead to increased downslope runoff into the river, increasing the possibility of flooding. However, the purpose of the project is to maintain flood protection for adjacent lands. As such, the project would reduce the risk of people or structures along these levees being exposed to the downslope or downstream flooding that is a potential consequence of fires in steeper areas. The project sites and vicinity are in a valley area, so landslides or other risks from wildfires in areas of steeper slopes would not occur. Project impacts related to risks from runoff, post-fire slope instability, or drainage changes would be less than significant.

3.21 MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?		✓		
b) Does the project have impacts that are individually limited, but cumulatively considerable? "Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?			✓	

c) Does the project have environmental effects which would cause substantial adverse effects on human beings, either directly or indirectly?				✓

NARRATIVE DISCUSSION

Finding a) – Biological and Cultural Resources.

The biological resource impacts of the project are described in Section 3.4, Biological Resources. Cultural resource impacts are described in Section 3.5, Cultural Resources, and in Section 3.18, Tribal Cultural Resources. Potentially significant environmental effects were identified in these issue areas, but mitigation measures that would be incorporated into the project would reduce all potential impacts to a level that would be less than significant.

Finding b) – Cumulatively Considerable Impacts.

As described in this IS/MND, the potential environmental effects of the project would either be less than significant, or the project would have no impact at all, when compared to the baseline. Where the project involves potentially significant effects, these effects would be reduced to a less than significant level with proposed mitigation measures and compliance with required permits and applicable regulations.

The potential environmental effects identified in this IS/MND have been considered in conjunction with each other as to their potential to generate other potentially significant effects. The various potential environmental effects of the project would not combine with other projects to generate any potentially significant adverse cumulative effects.

There are no known, similar projects with which the project might combine to produce adverse cumulative impacts. Both the City and County of Sacramento have been engaged in levee improvement projects. In combination with these other projects, the project would have a cumulatively beneficial impact by providing overall improved flood protection for the County and its communities.

Finding c) – Adverse Effects on Human Beings.

Potential adverse effects on human beings were discussed in Section 3.3, Air Quality (TACs); Section 3.7, Geology and Soils (seismic hazards); Section 3.9, Hazards and Hazardous Materials; Section 3.10, Hydrology and Water Quality (flooding); Section 3.17, Transportation (road hazards); and Section 3.20, Wildfire. No potential adverse effects on human beings were identified in these sections. The project would have a beneficial effect for people residing and working in the vicinity, as it would maintain the structural integrity of the RD 800 levee system, thereby reducing the potential for breaching and consequent flooding.

4.0 REFERENCES

4.1 DOCUMENT PREPARERS

This IS/MND was prepared by BaseCamp Environmental for use by and under the supervision of Reclamation District No. 800. The following persons were involved in preparation of the IS/MND:

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4.3 PERSONS CONSULTED

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Patrick Ervin, P.E. Wagner and Bonsignore.

Diane Moore. Moore Biological Consultants.

Lisa Westwood, RPA. ECORP Consulting, Inc.

5.0 NOTES RELATED TO EVALUATION OF ENVIRONMENTAL IMPACTS

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant with Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration (CEQA Guidelines Section 15063(c)(3)(D)). In this case, a brief discussion should identify the following:

    a) Earlier Analyses Used: Identify and state where they are available for review.

    b) Impacts Adequately Addressed: Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

    c) Mitigation Measures: For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures,

which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) The checklist in CEQA Guidelines Appendix G is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The explanation of each issue should identify:

   a) the significance criteria or threshold, if any, used to evaluate each question; and

   b) the mitigation measure identified, if any, to reduce the impact to less than significance.

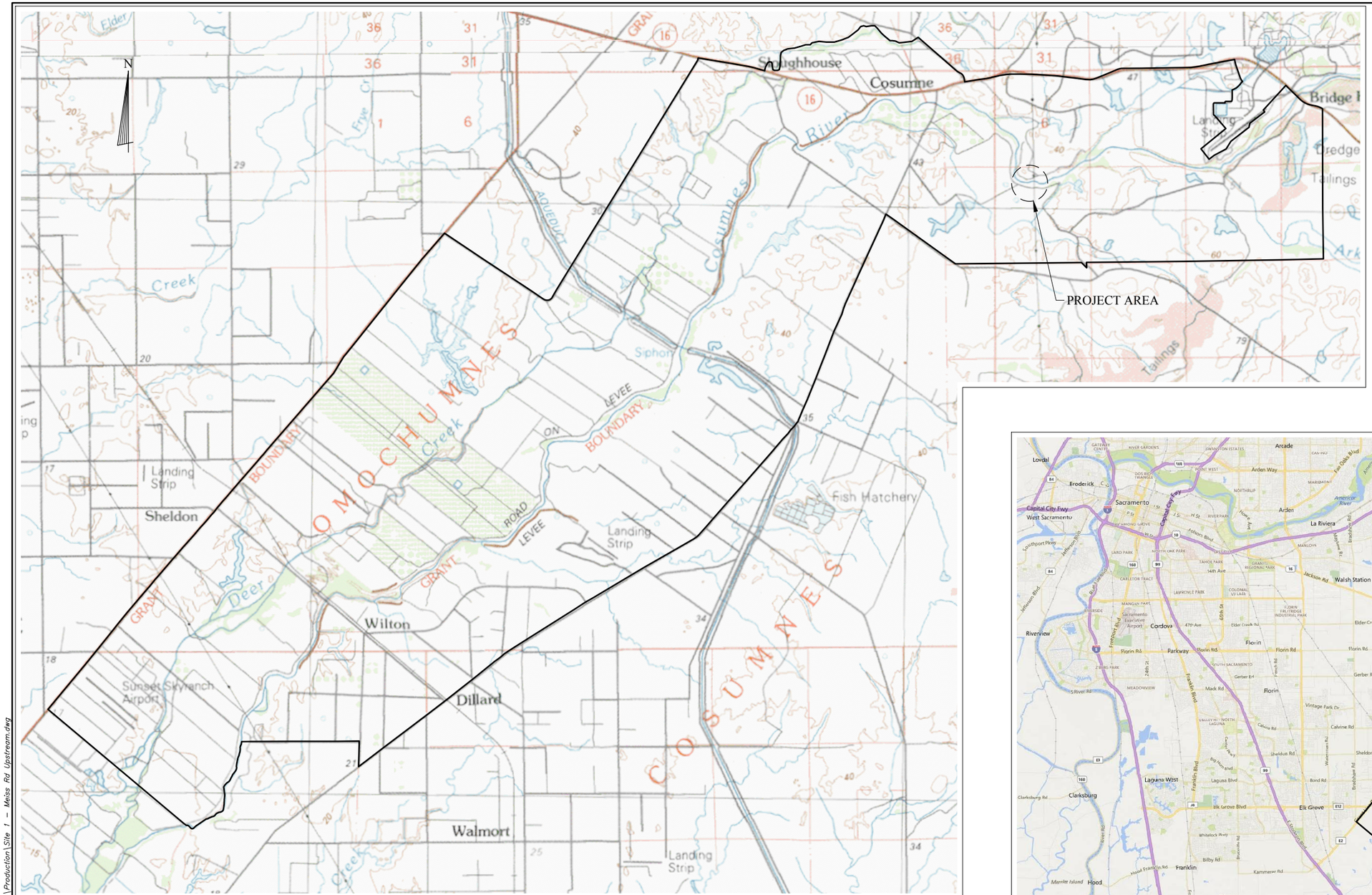
APPENDIX A
LEVEE REPAIR PLANS FOR SITES 1 THROUGH 9

RECLAMATION DISTRICT NO. 800

CRITICAL LEVEE REPAIR PROJECTS
SITE 1: MEISS ROAD UPSTREAM

Sacramento County **California**

WAGNER & BONSIGNORE CONSULTING CIVIL ENGINEERS A CORPORATION
2151 RIVER PLAZA DRIVE, SUITE 100 SACRAMENTO, CALIFORNIA



LOCATION MAP

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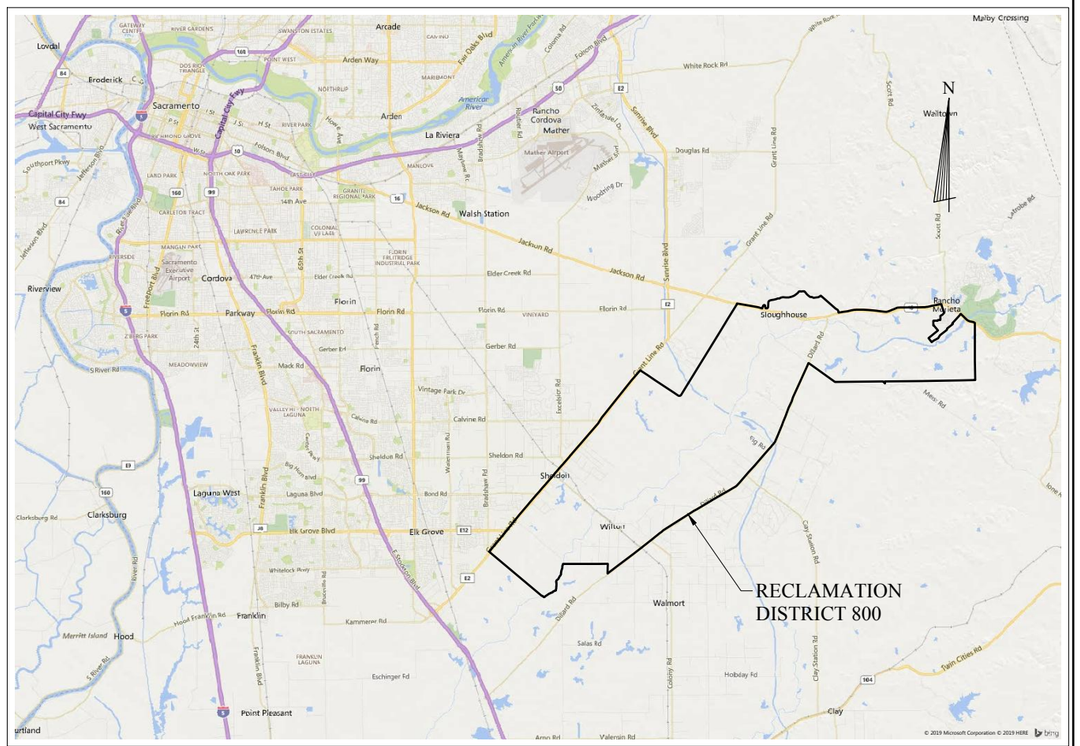

VICINITY MAP

NOT TO SCALE

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By	P.W. ERVIN
Drawn By	P. INTHARATH
Checked By	—
Approved By	—
Date	APRIL 2020

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RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS MEISS ROAD UPSTREAM

LOCATION AND VICINITY MAP

SHEET 1 OF 8 SHEETS

File Name: Site 1 – Meiss Rd Upstream.dwg
Plot Date: 4/16/2020
Revision Date: —

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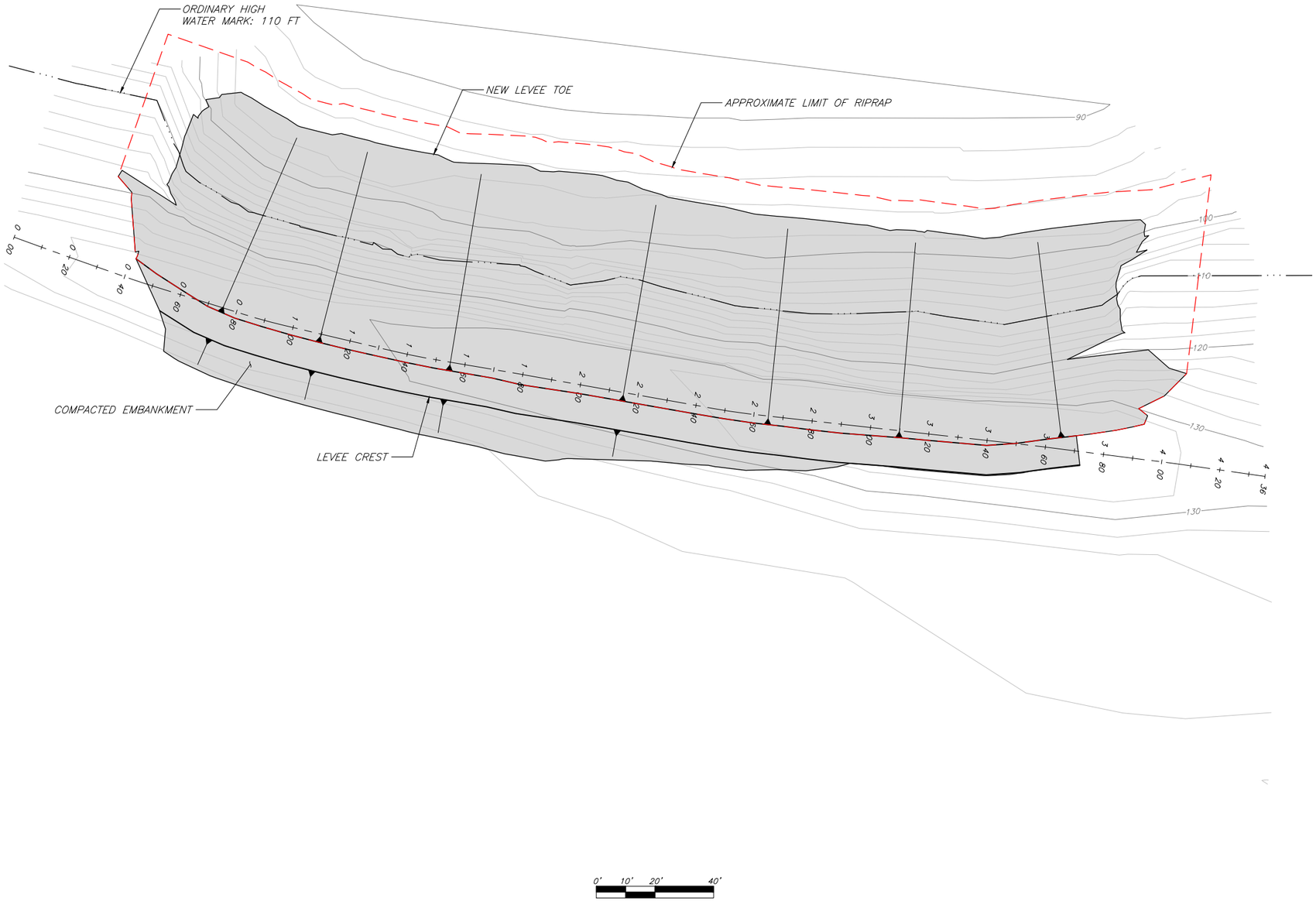

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Plot Date	4/16/2020
Revision Date	–

REVISIONS

REF.	DESCRIPTION	APVD.	DATE

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RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
MEISS ROAD UPSTREAM

PLAN

SHEET 2 OF 8 SHEETS

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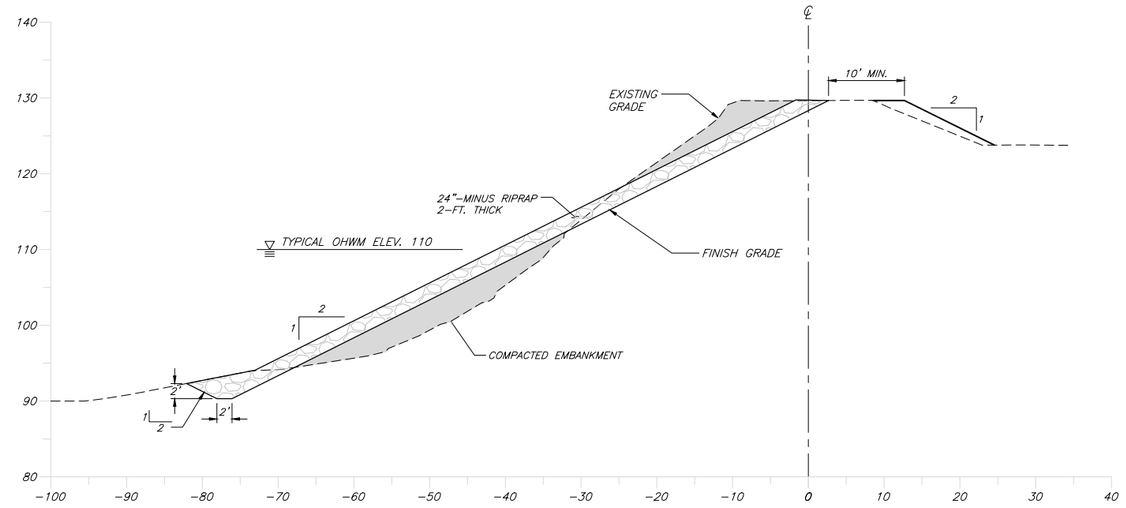

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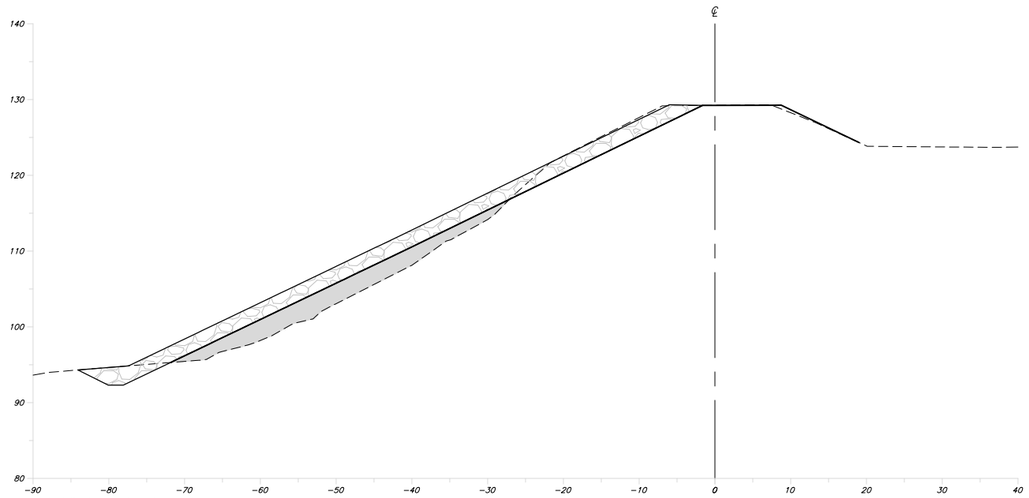

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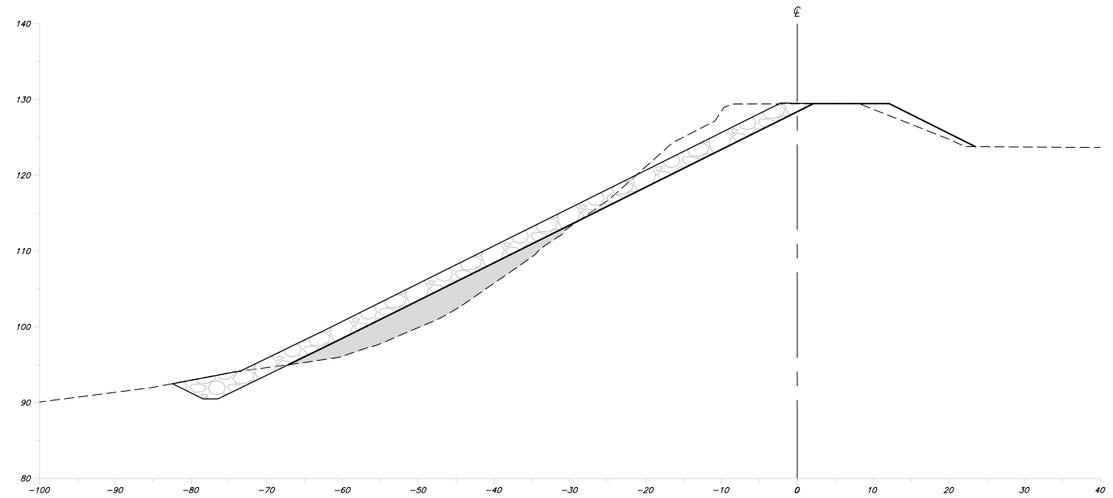

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Plot Date: 4/16/2020
Revision Date: –

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REVISIONS			
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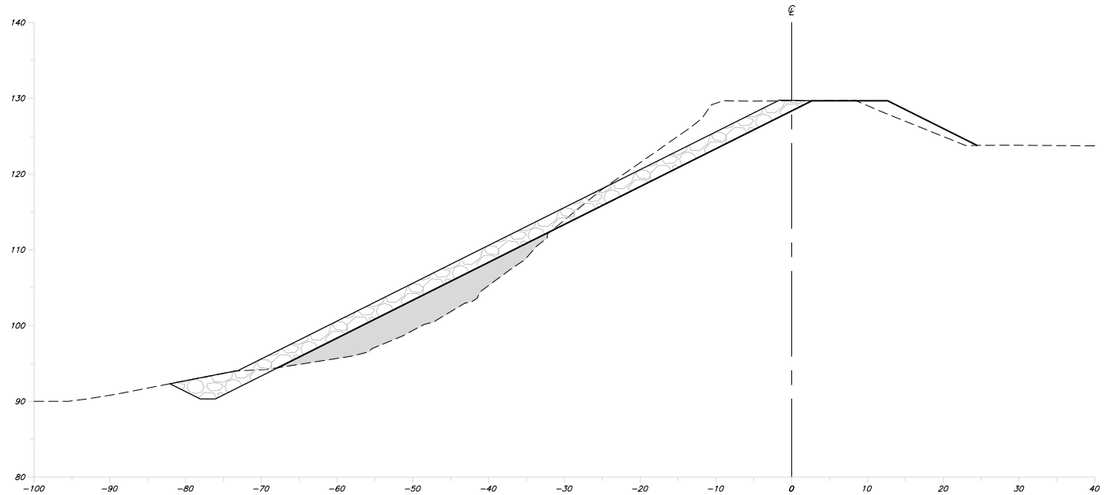
RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
MEISS ROAD UPSTREAM

SECTIONS

SHEET 3 OF 8 SHEETS



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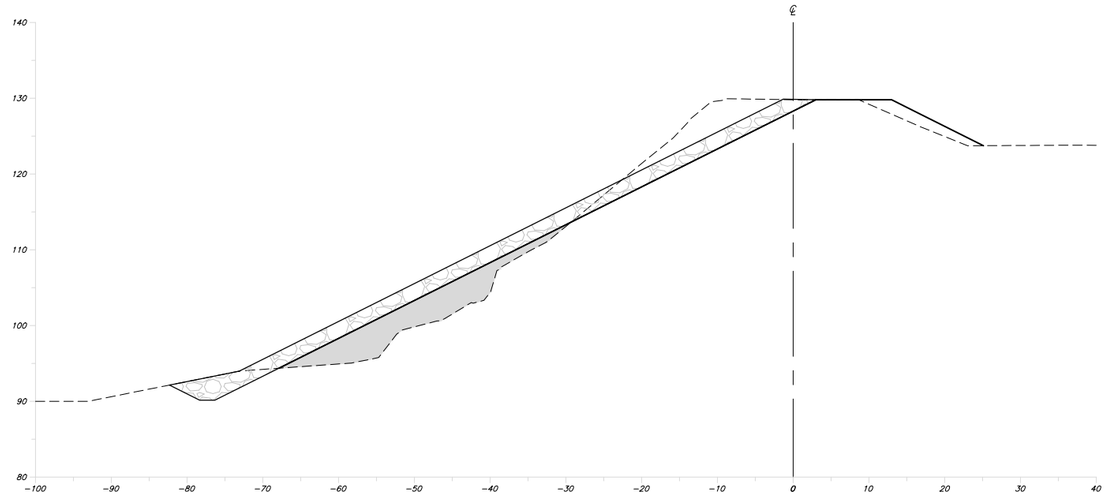

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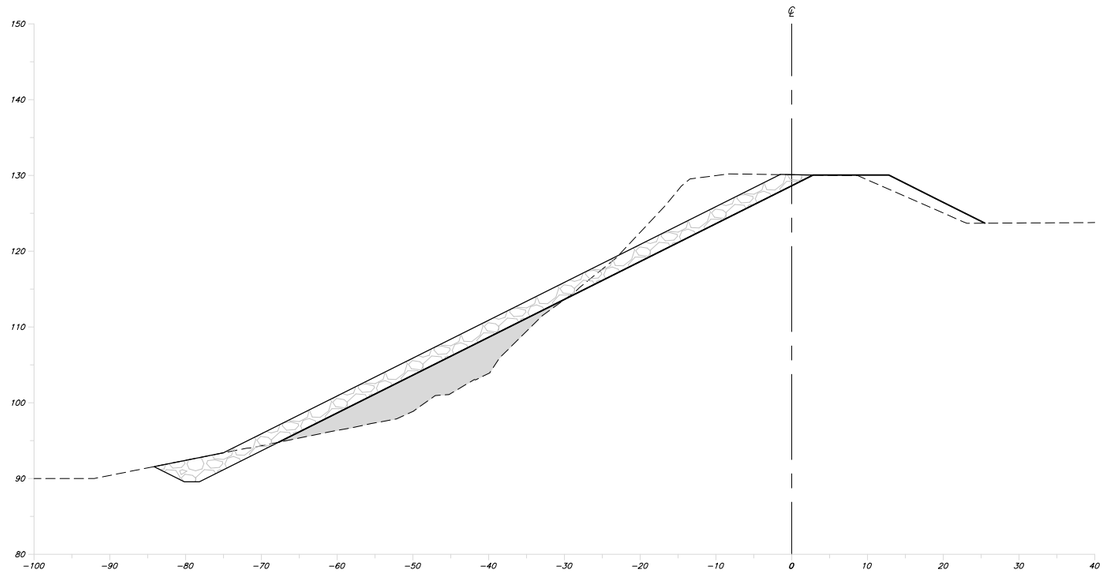

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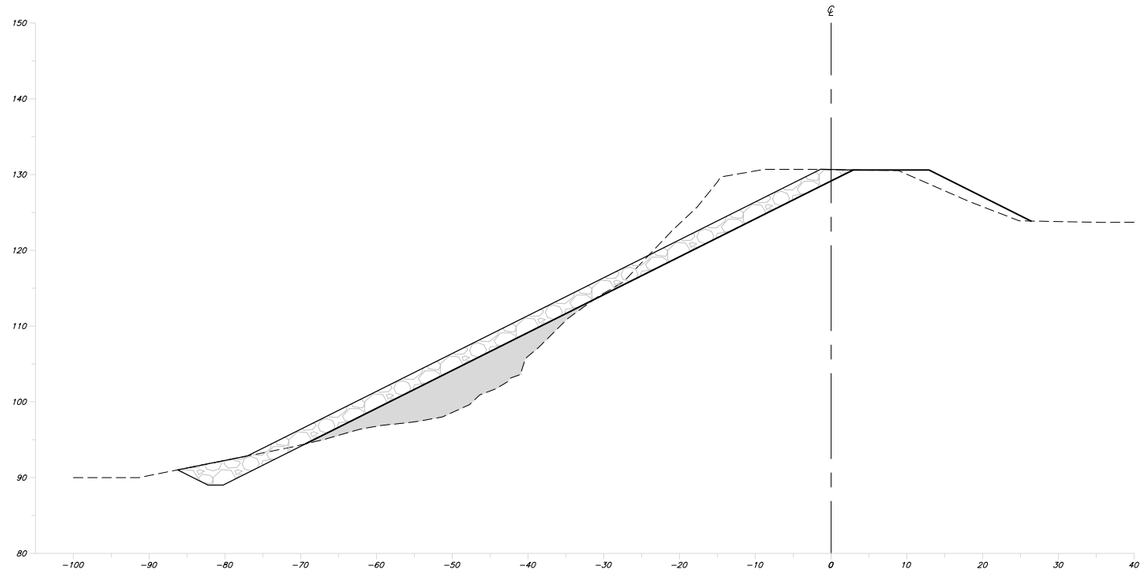

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Plot Date: 4/16/2020
Revision Date: –

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
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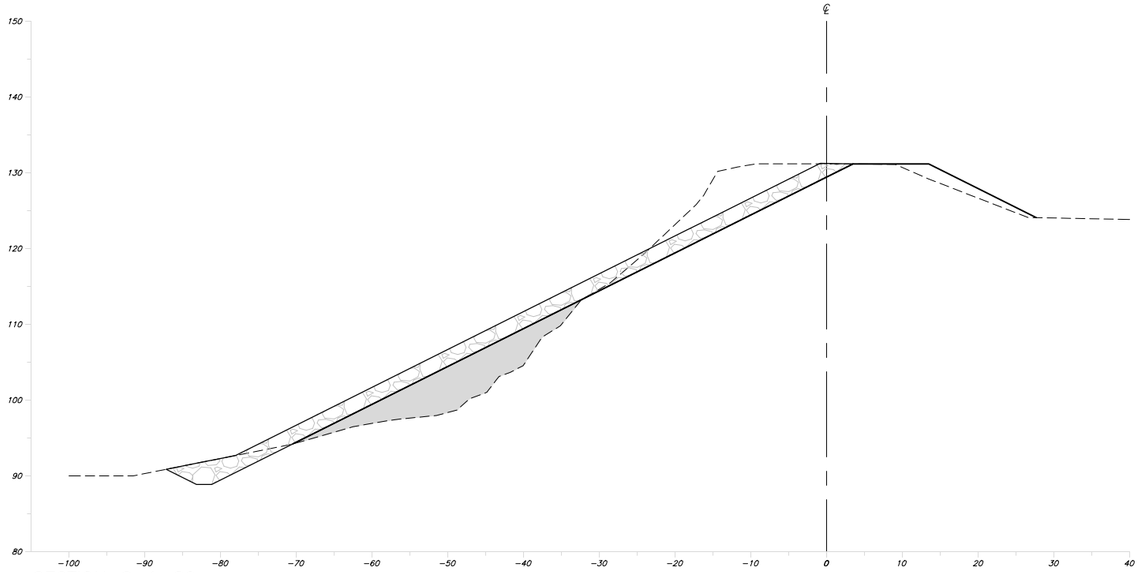
RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
MEISS ROAD UPSTREAM

SECTIONS

SHEET 4 OF 8 SHEETS



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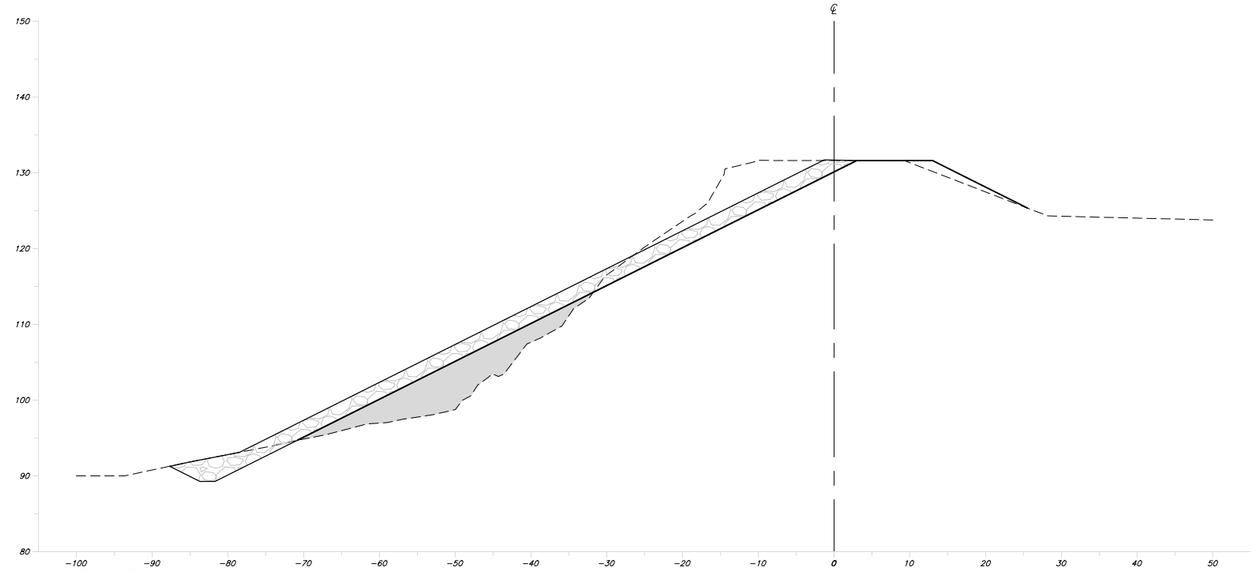

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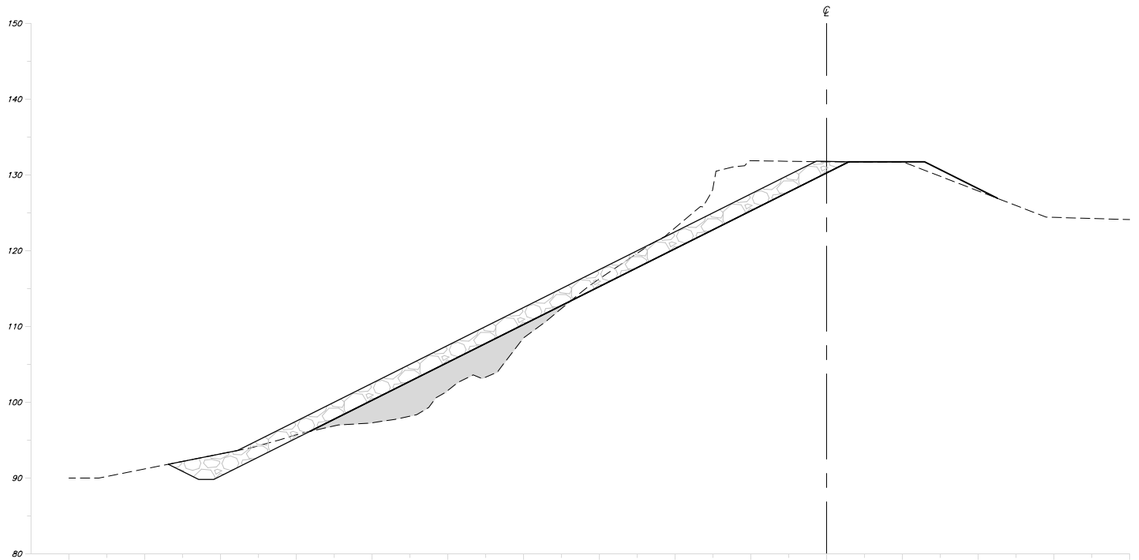

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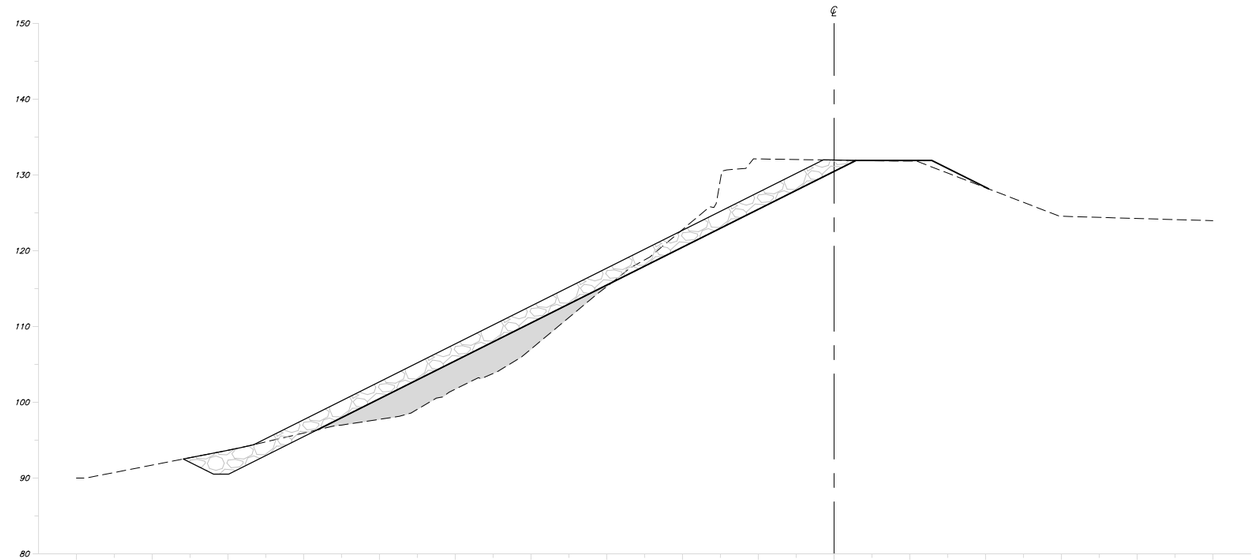

SECTION @ 2+40

0' 5' 10' 20'

File Name: Site 1 – Meiss Rd Upstream.dwg

Plot Date: 4/16/2020

Revision Date: –

Q:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 1 – Meiss Rd Upstream.dwg

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By	P.W. ERVIN
Drawn By	P. INTHARATH
Checked By	–
Approved By	–
Date	APRIL 2020

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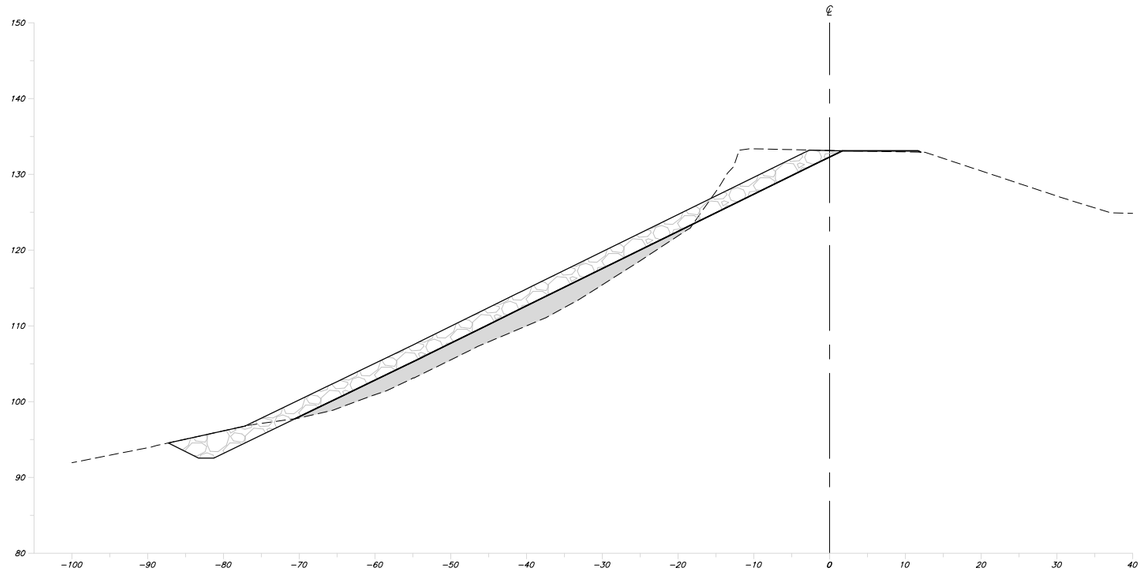
DRAFT

RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
MEISS ROAD UPSTREAM

SECTIONS

SHEET 5 OF 8 SHEETS



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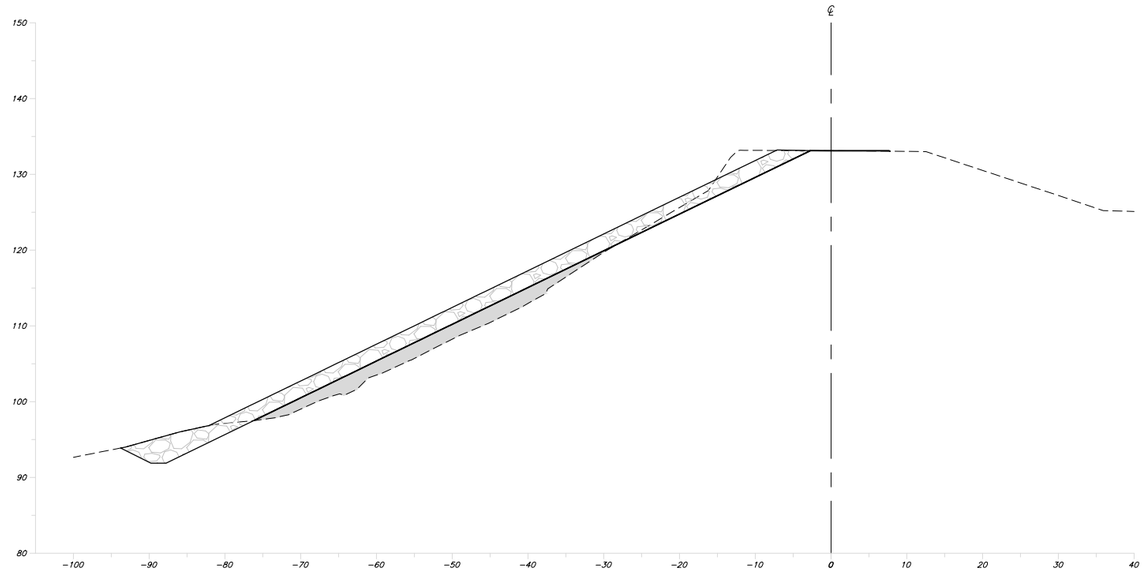

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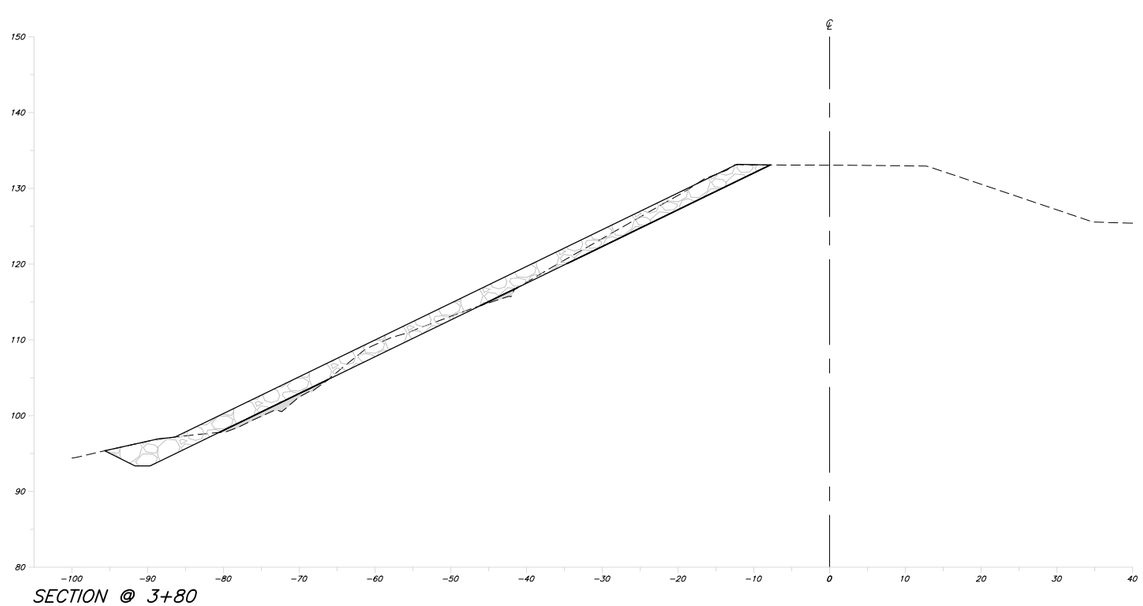

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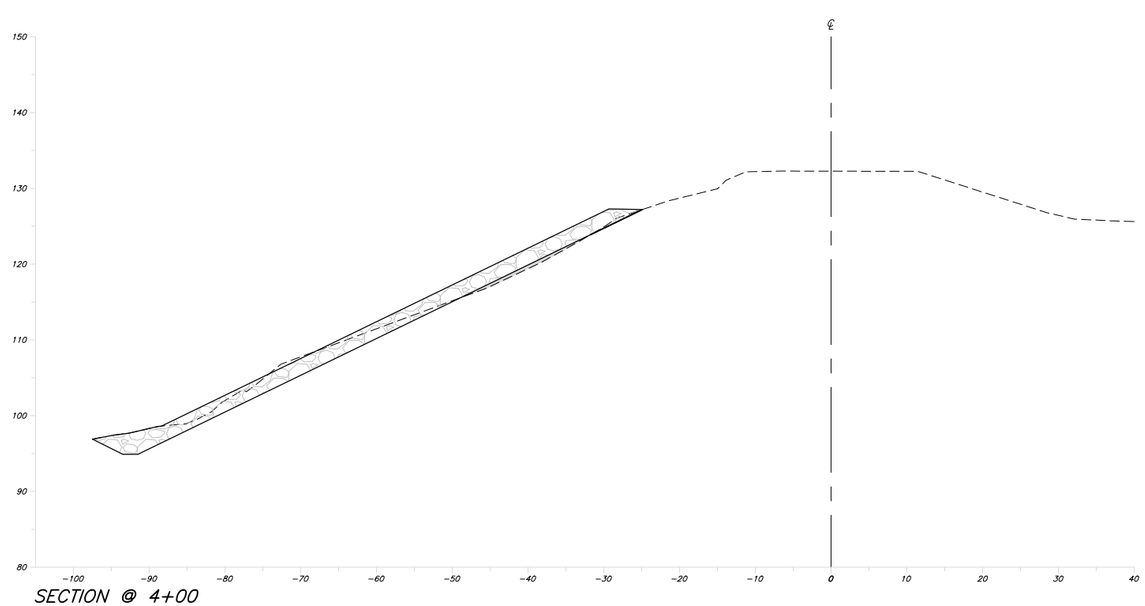

SECTION @ 4+00

0' 5' 10' 20'

O:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 1 - Meiss Rd Upstream.dwg

File Name: Site 1 - Meiss Rd Upstream.dwg
Plot Date: 4/16/2020
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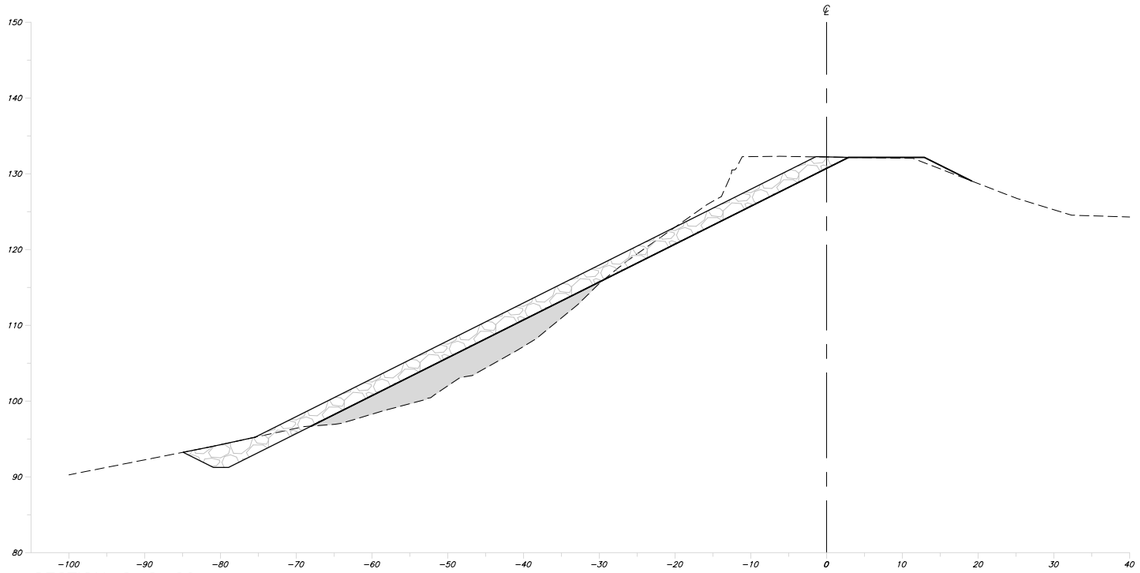
CRITICAL LEVEE REPAIRS
MEISS ROAD UPSTREAM

SECTIONS

SHEET 6 OF 8 SHEETS



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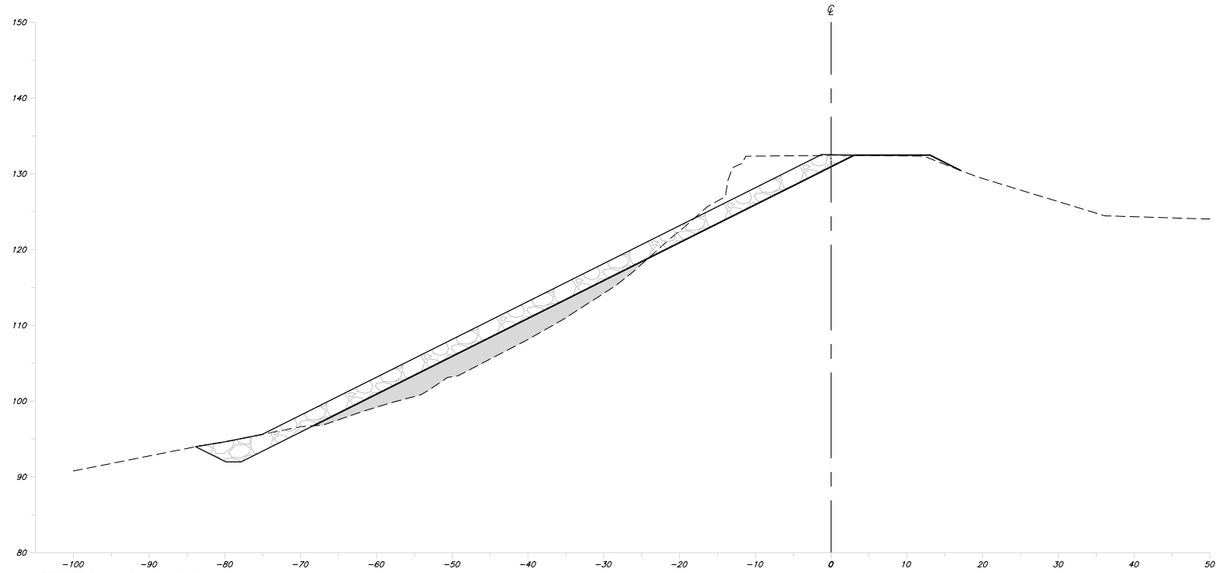

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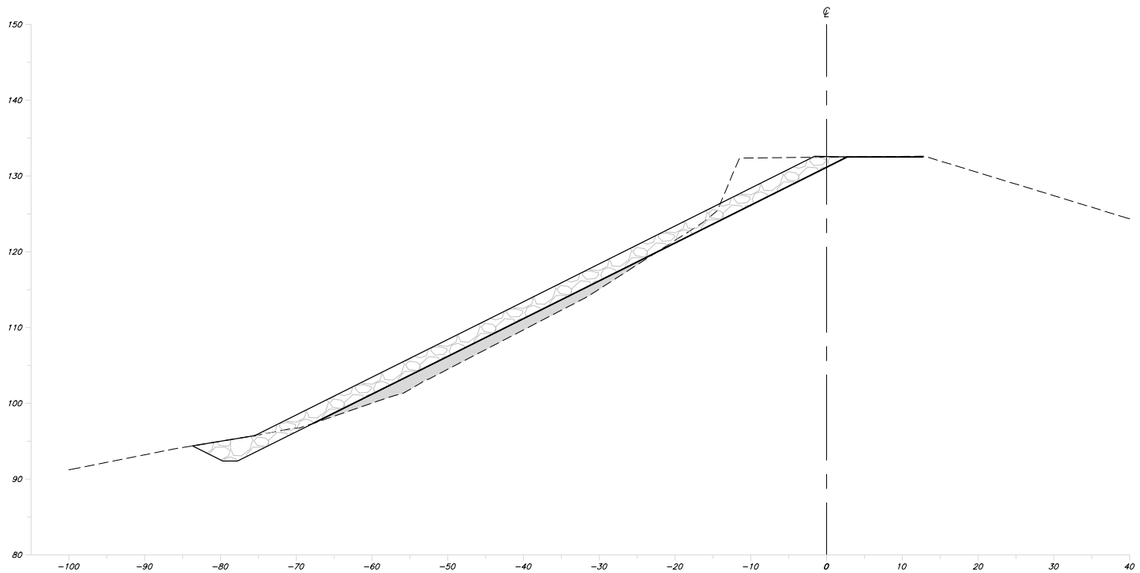

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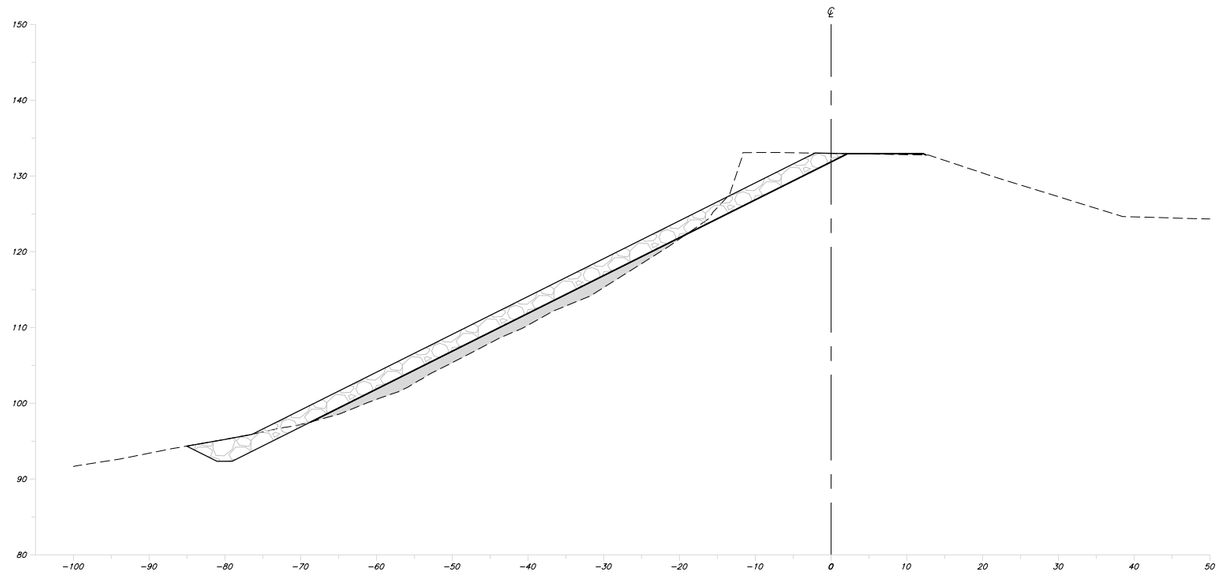

SECTION @ 3+20

0' 5' 10' 20'

Q:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 1 - Meiss Rd Upstream.dwg

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CRITICAL LEVEE REPAIRS
MEISS ROAD UPSTREAM

SECTIONS

SHEET 7 OF 8 SHEETS

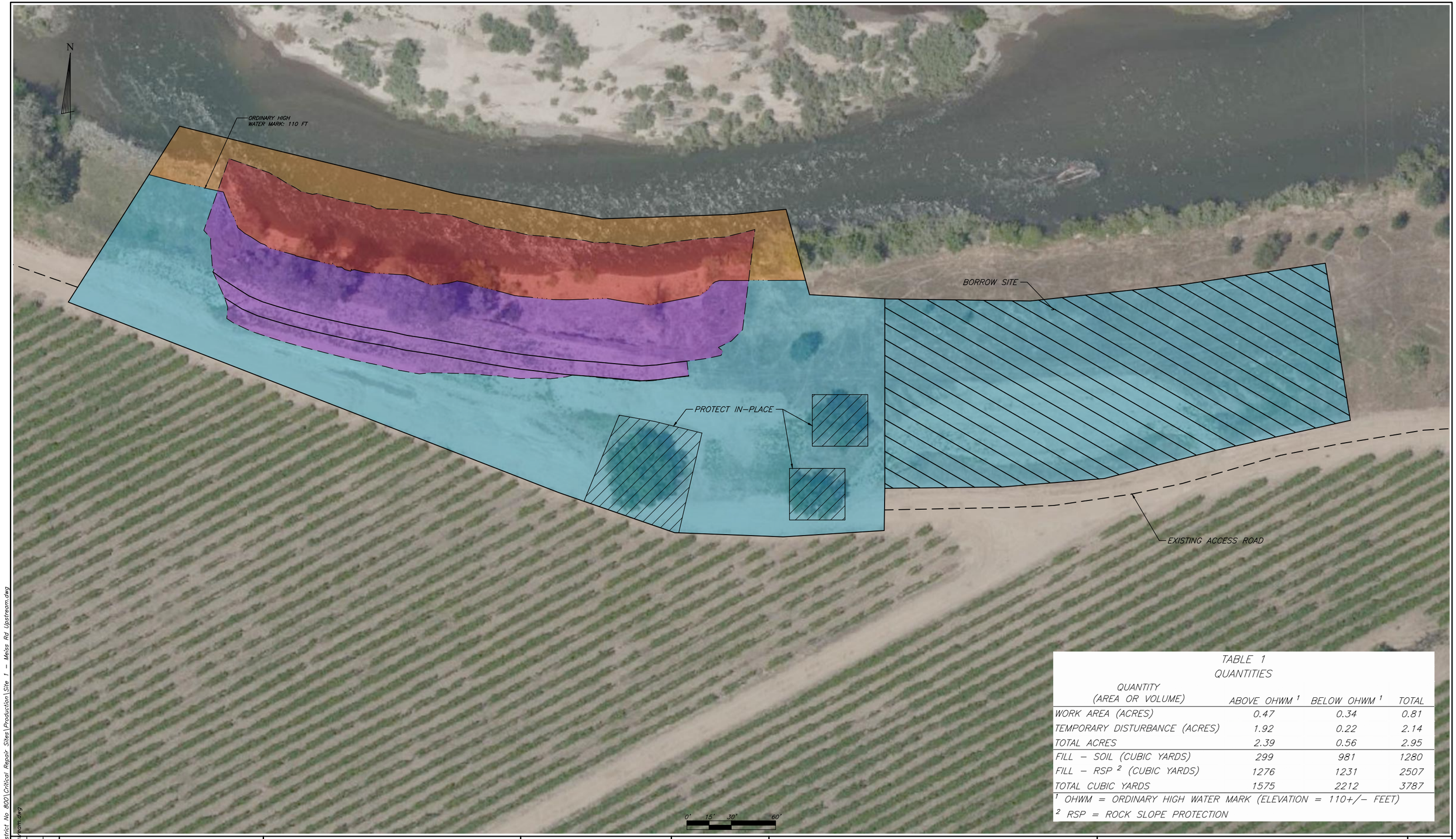

TABLE 1
QUANTITIES

QUANTITY (AREA OR VOLUME)	ABOVE OHWM [1]	BELOW OHWM [1]	TOTAL
WORK AREA (ACRES)	0.47	0.34	0.81
TEMPORARY DISTURBANCE (ACRES)	1.92	0.22	2.14
TOTAL ACRES	2.39	0.56	2.95
FILL – SOIL (CUBIC YARDS)	299	981	1280
FILL – RSP [2] (CUBIC YARDS)	1276	1231	2507
TOTAL CUBIC YARDS	1575	2212	3787

[1] OHWM = ORDINARY HIGH WATER MARK (ELEVATION = 110+/– FEET)
[2] RSP = ROCK SLOPE PROTECTION

LEGEND
- WORK AREA BELOW ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA BELOW ORDINARY HIGH WATER MARK
- WORK AREA ABOVE ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA ABOVE ORDINARY HIGH WATER MARK

REVISIONS

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RECLAMATION DISTRICT 800
CRITICAL LEVEE REPAIRS
MEISS ROAD UPSTREAM
IMPACTS

SHEET 8 OF 8 SHEETS

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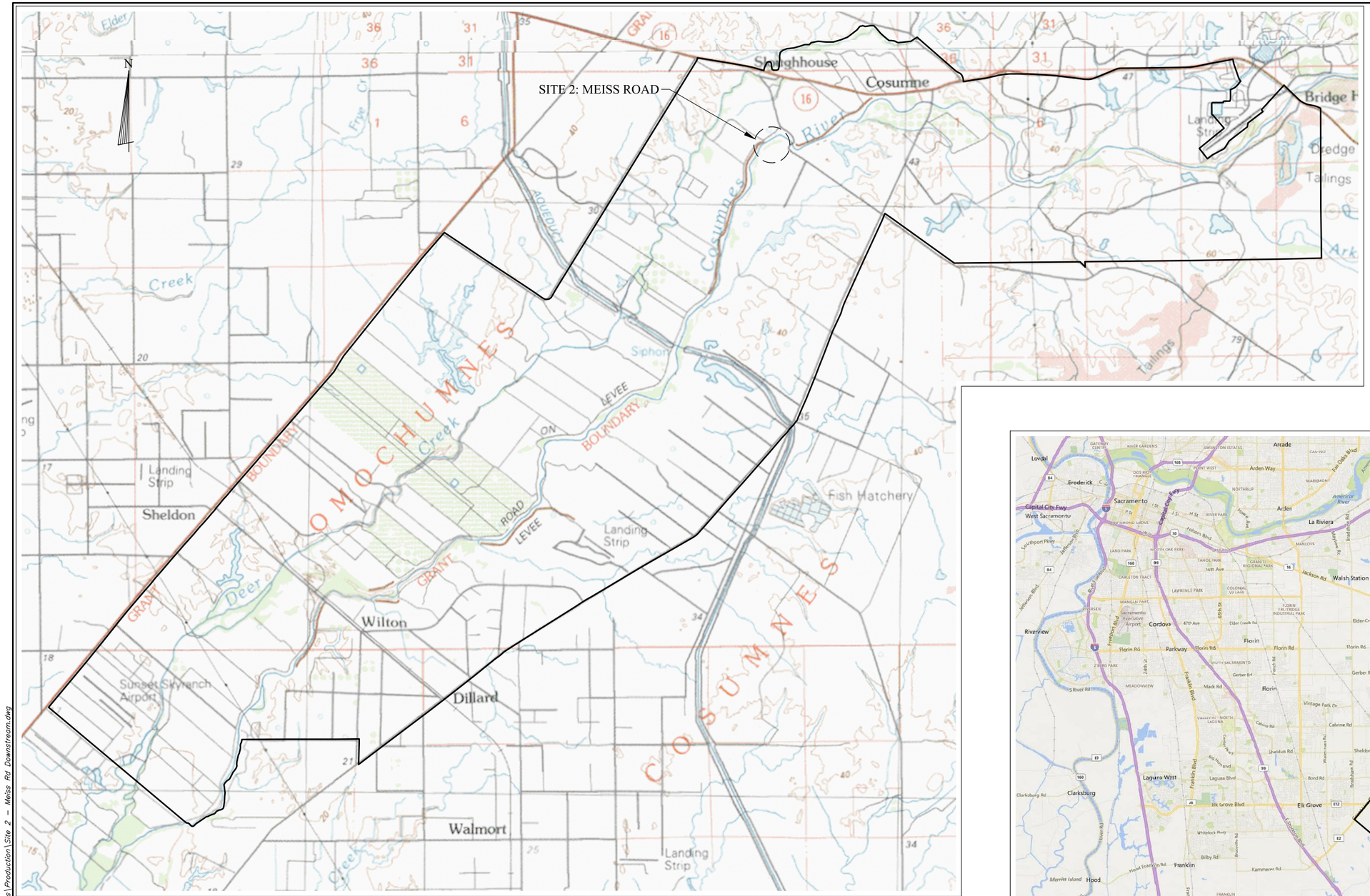
RECLAMATION DISTRICT NO. 800

CRITICAL LEVEE REPAIR PROJECTS
SITE 2: MEISS ROAD DOWNSTREAM

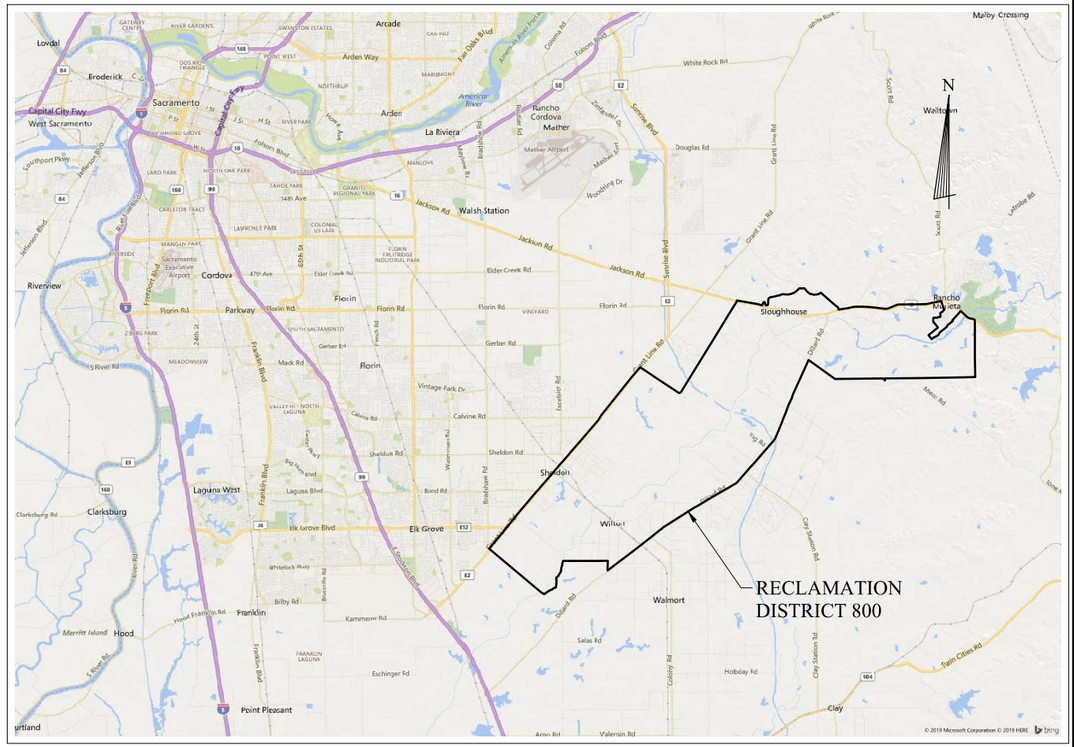
Sacramento County **California**

WAGNER & BONSIGNORE CONSULTING CIVIL ENGINEERS A CORPORATION
2151 RIVER PLAZA DRIVE, SUITE 100 SACRAMENTO, CALIFORNIA



LOCATION MAP

0' 1,500' 3,000' 6,000'



VICINITY MAP

NOT TO SCALE

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RECLAMATION DISTRICT 800

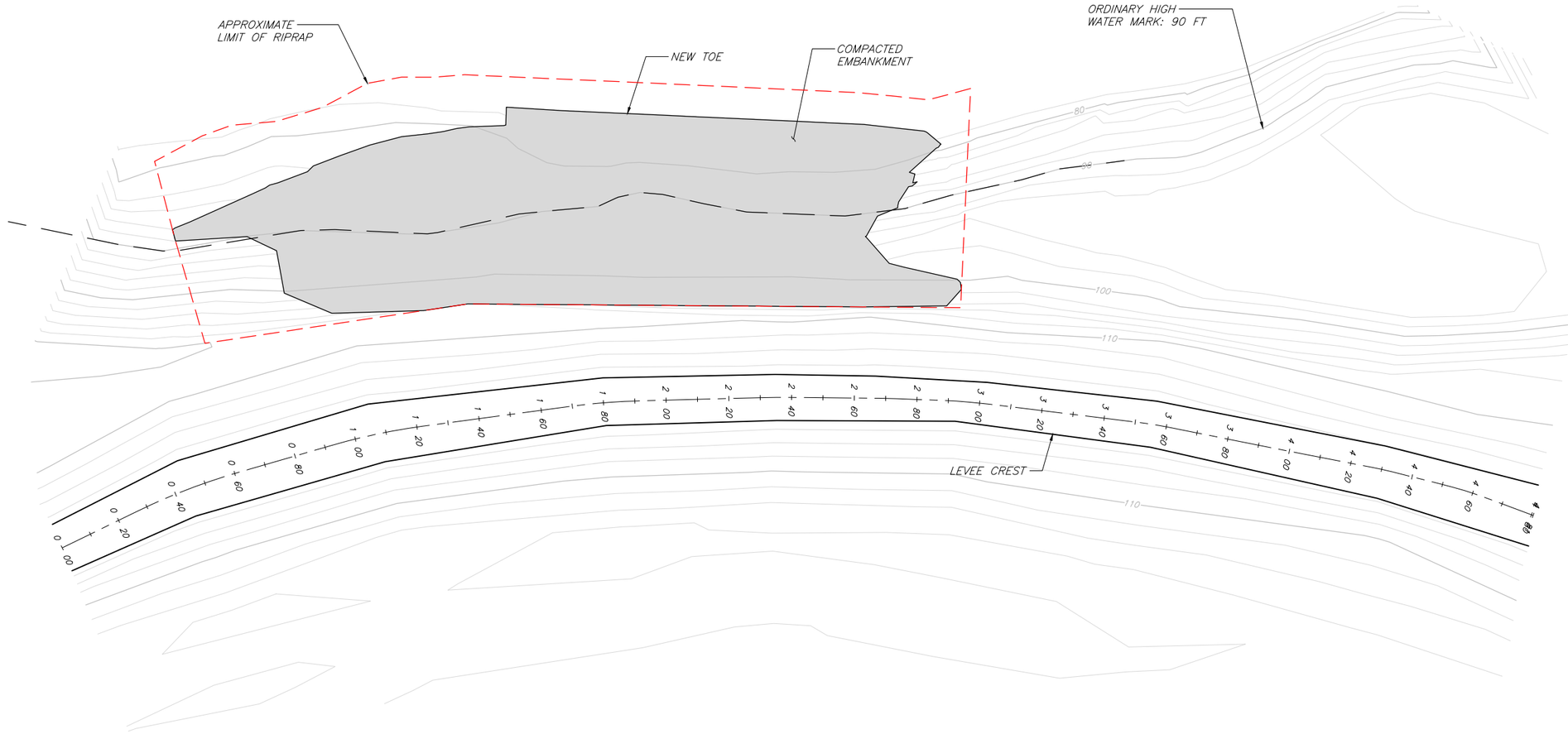
SITE 2 - MEISS ROAD DOWNSTREAM

LOCATION AND VICINITY MAP

SHEET 1 OF 10 SHEETS

File Name: Site 2 – Meiss Rd Downstream.dwg
Plot Date: 6/30/2020
Revision Date: —

Q:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 2 – Meiss Rd Downstream.dwg



0' 10' 20' 40'

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RECLAMATION DISTRICT 800

SITE 2 - MEISS ROAD DOWNSTREAM

PLAN

SHEET 2 OF 10 SHEETS

File Name: Site 2 – Meiss Rd Downstream.dwg
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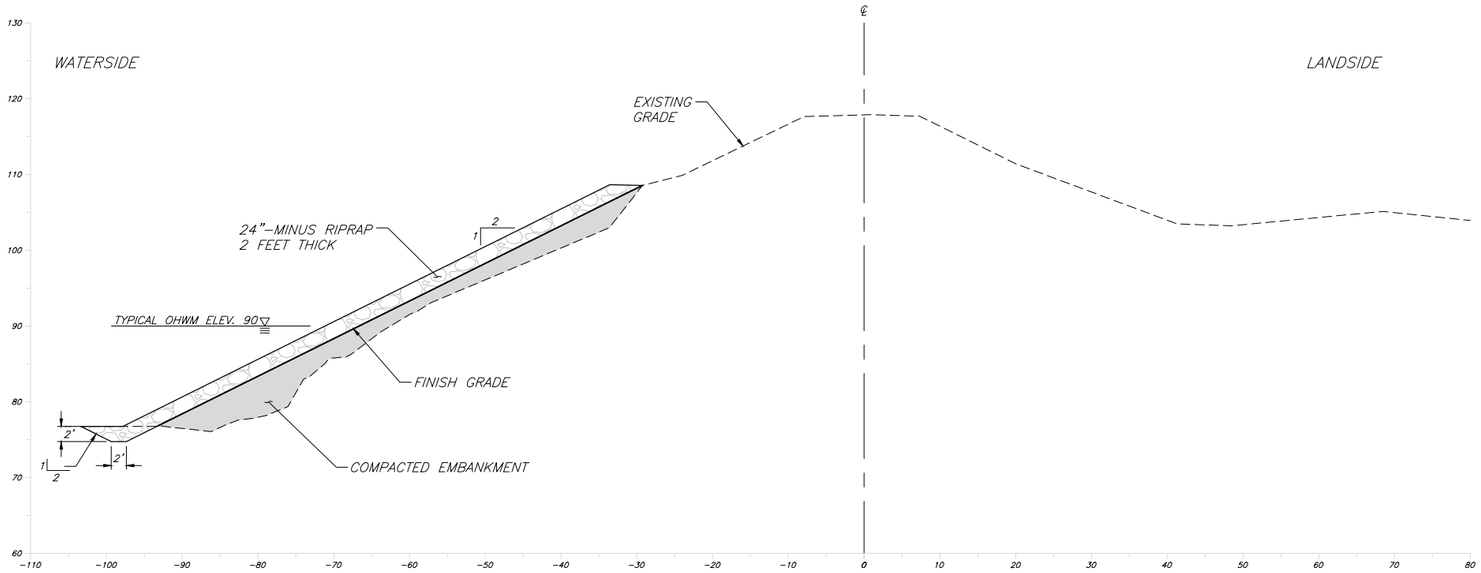
Q:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 2 – Meiss Rd Downstream.dwg



TYPICAL SECTION

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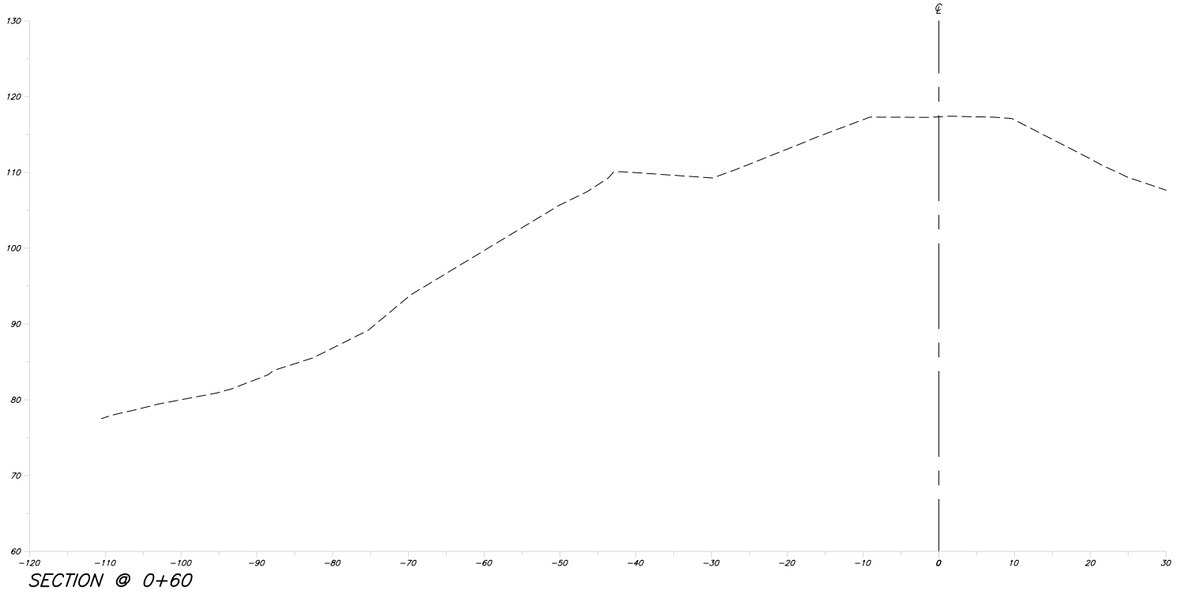

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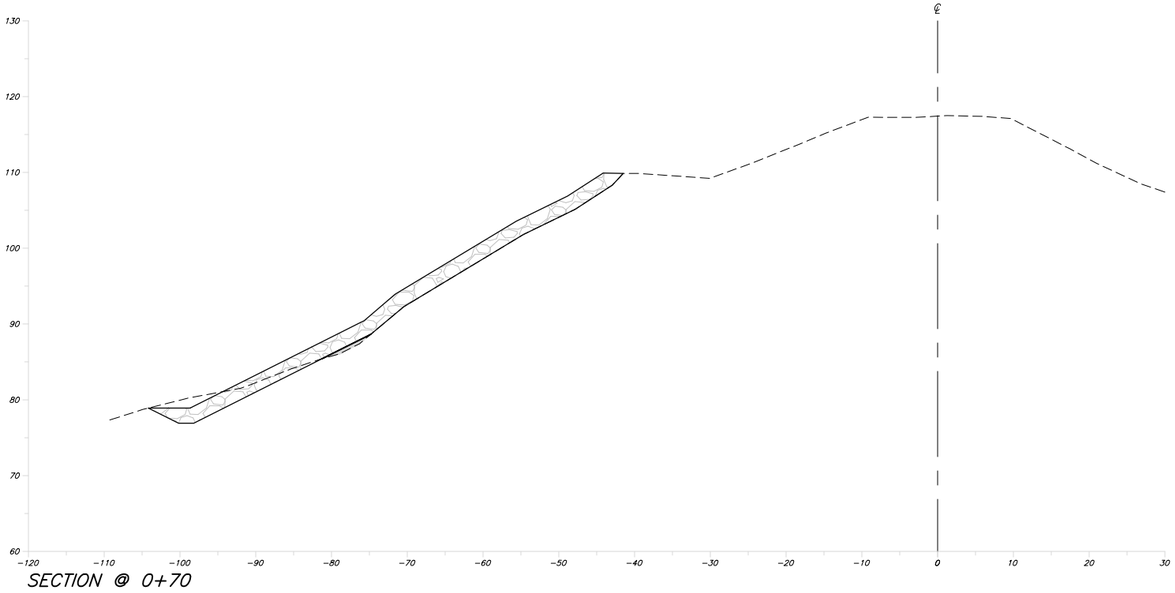

SECTION @ 0+70

0' 10' 20' 40'

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RECLAMATION DISTRICT 800

SITE 2 - MEISS ROAD DOWNSTREAM

SECTIONS

SHEET 3 OF 10 SHEETS

File Name: Site 2 – Meiss Rd Downstream.dwg
Plot Date: 6/30/2020
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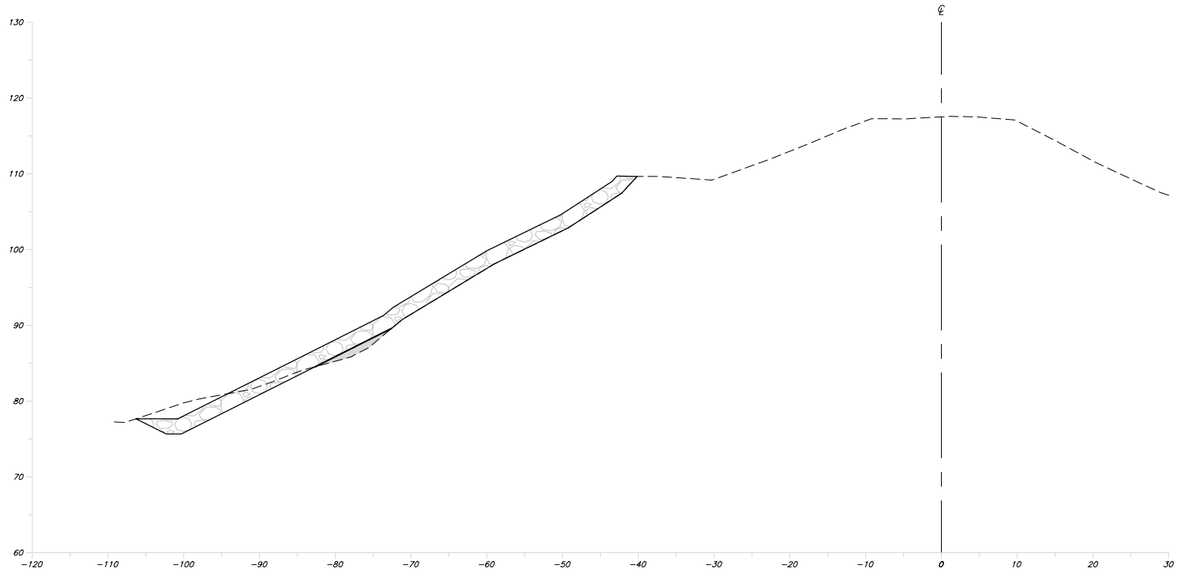
Q:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 2 – Meiss Rd Downstream.dwg



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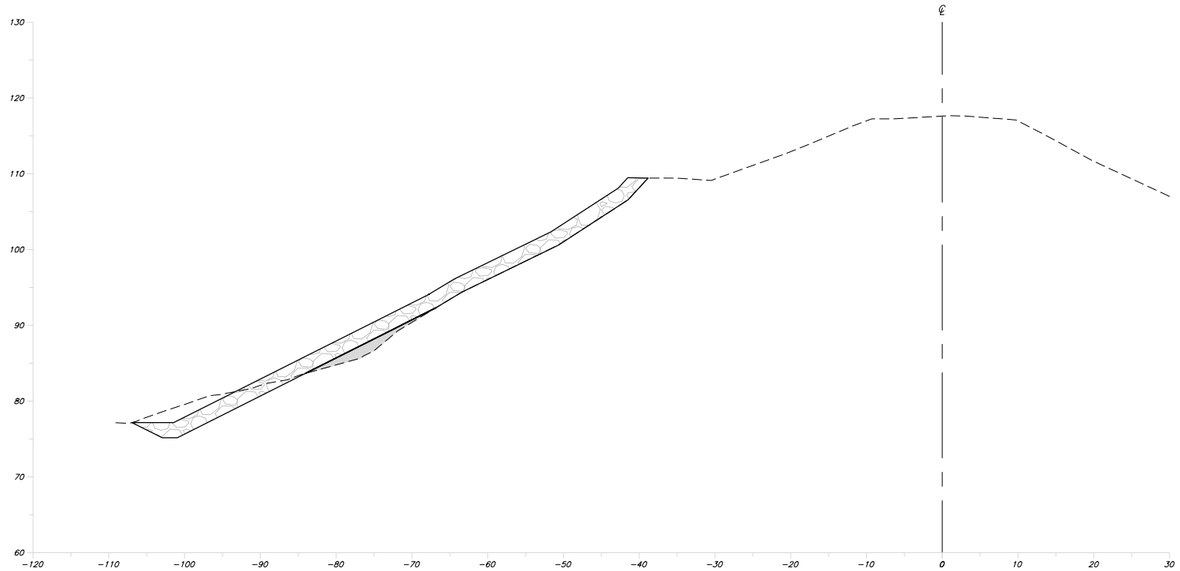

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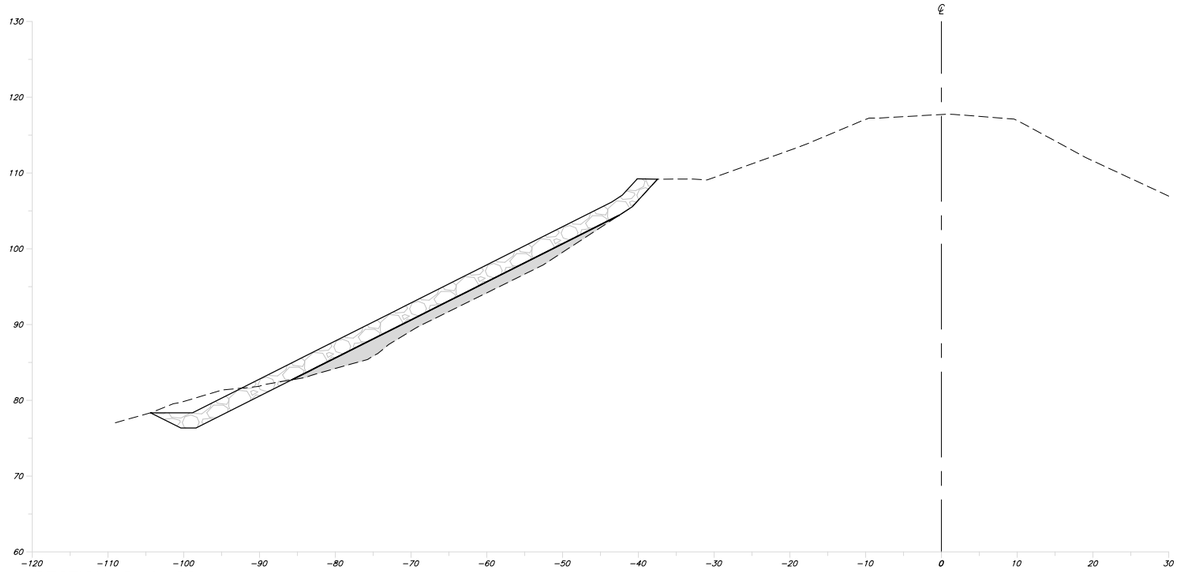

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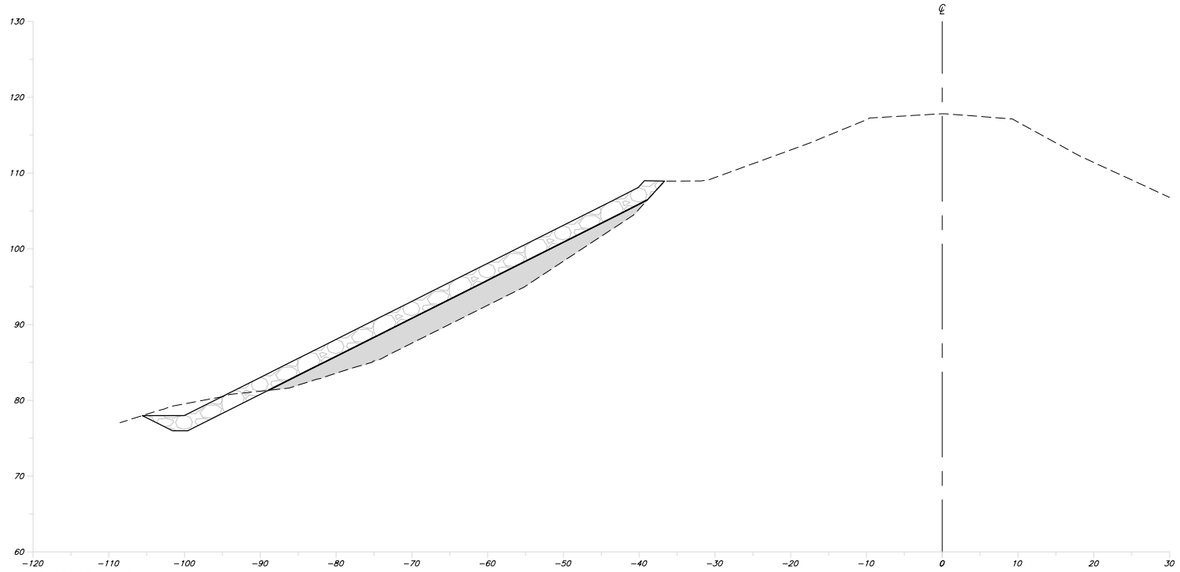

SECTION @ 1+10

0' 10' 20' 40'

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RECLAMATION DISTRICT 800

SITE 2 - MEISS ROAD DOWNSTREAM

SECTIONS

SHEET 4 OF 10 SHEETS

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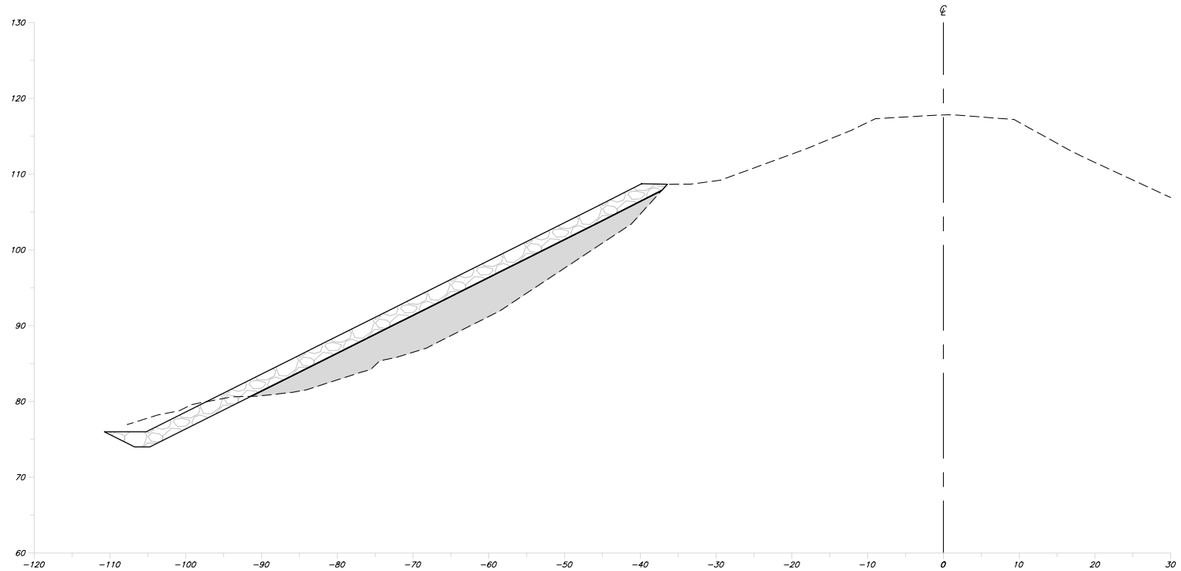

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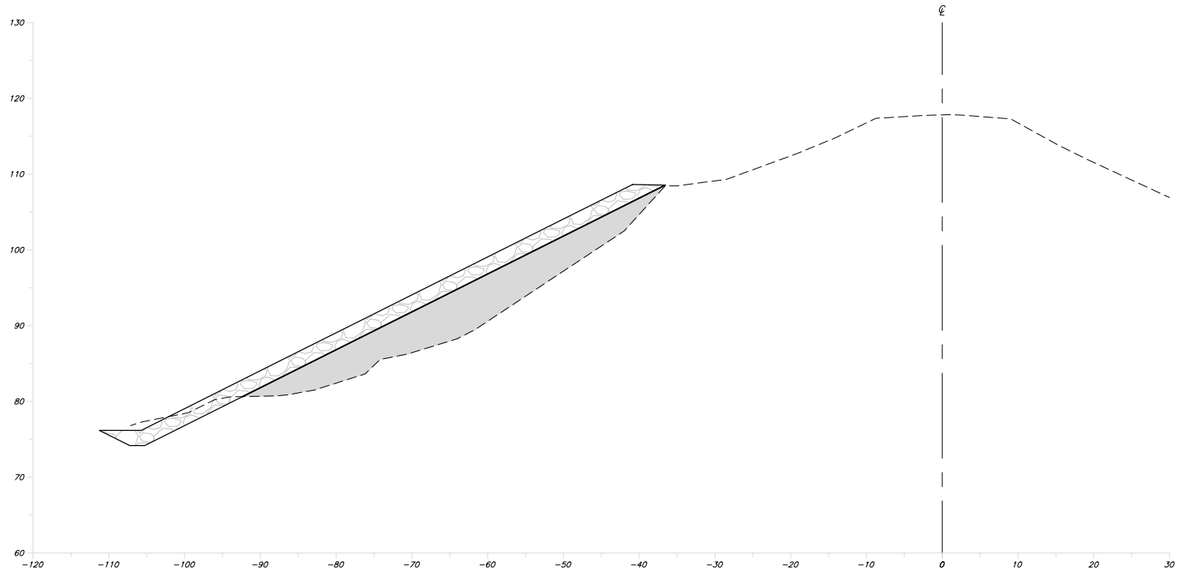

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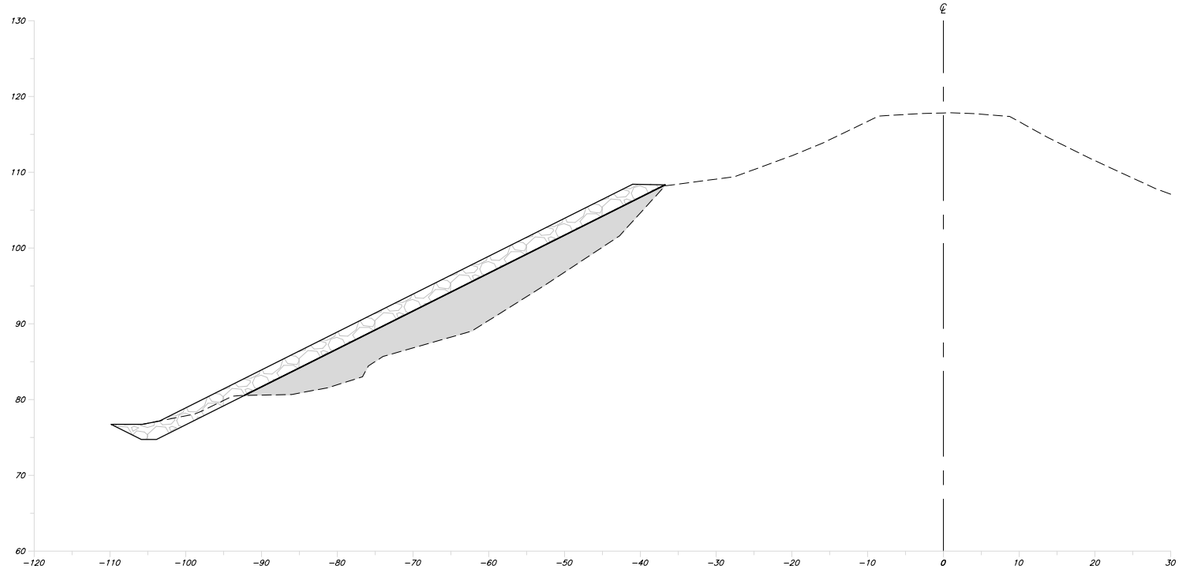

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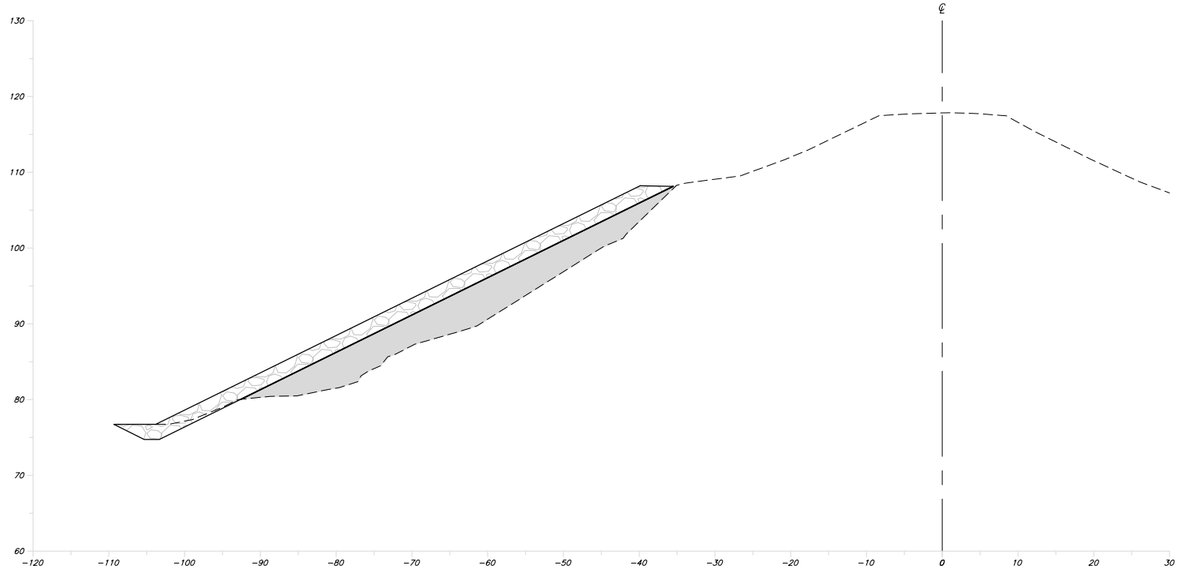

SECTION @ 1+50

0' 10' 20' 40'

Q:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 2 - Meiss Rd Downstream.dwg

File Name: Site 2 - Meiss Rd Downstream.dwg

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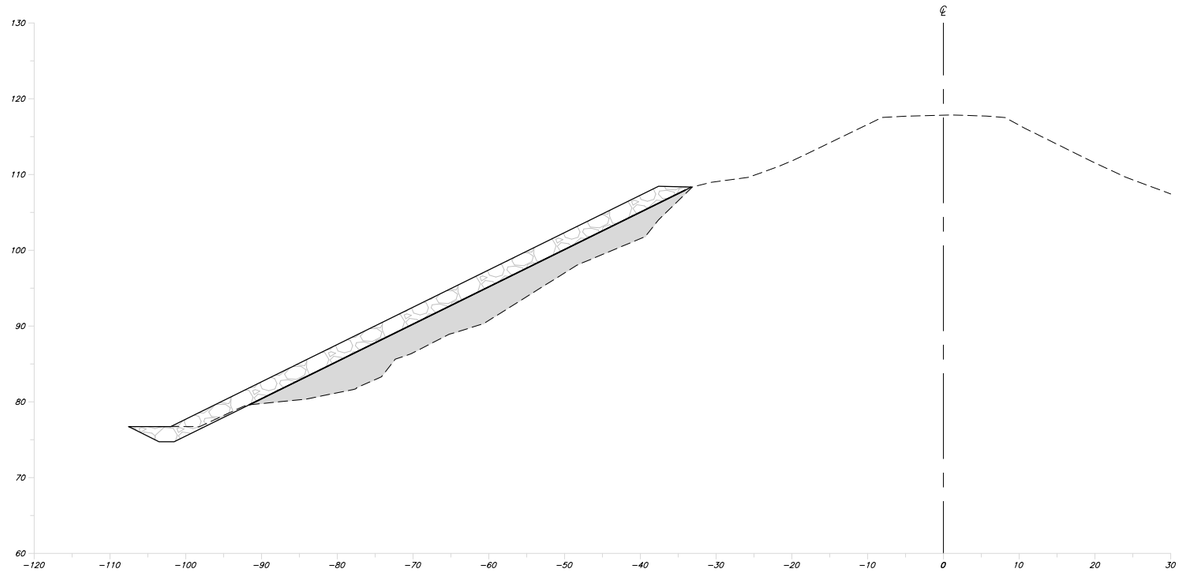
RECLAMATION DISTRICT 800

SITE 2 - MEISS ROAD DOWNSTREAM

SECTIONS

SHEET 5 OF 10 SHEETS



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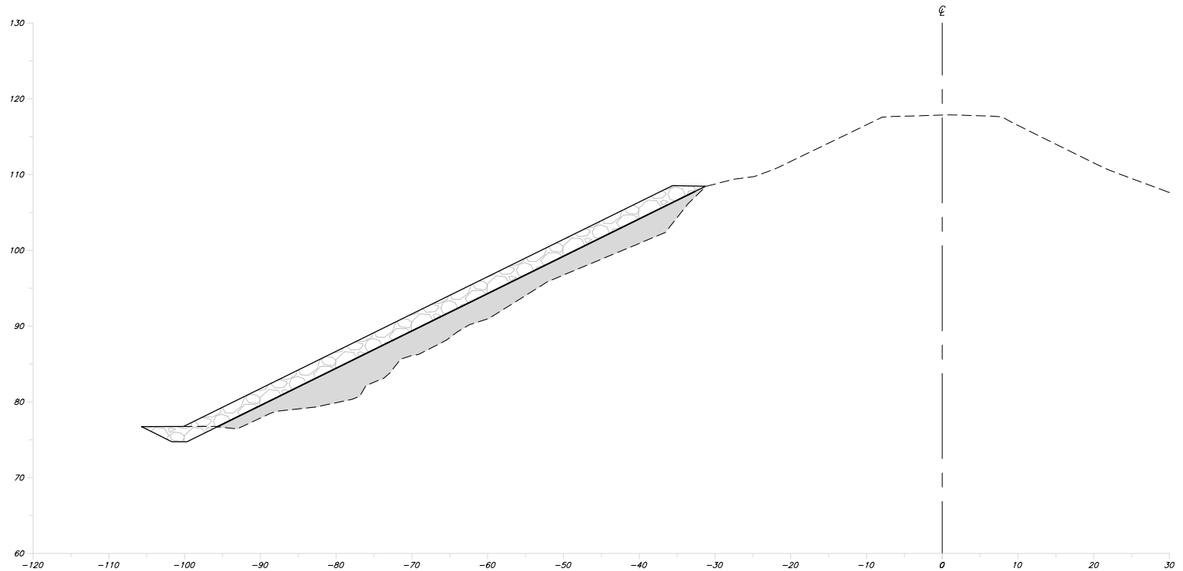

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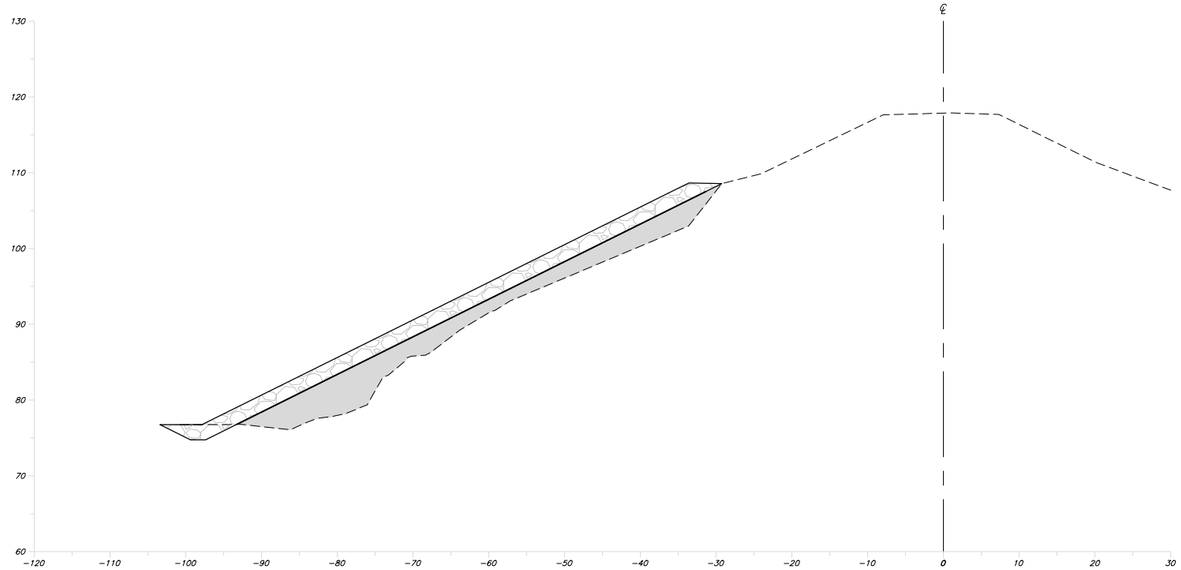

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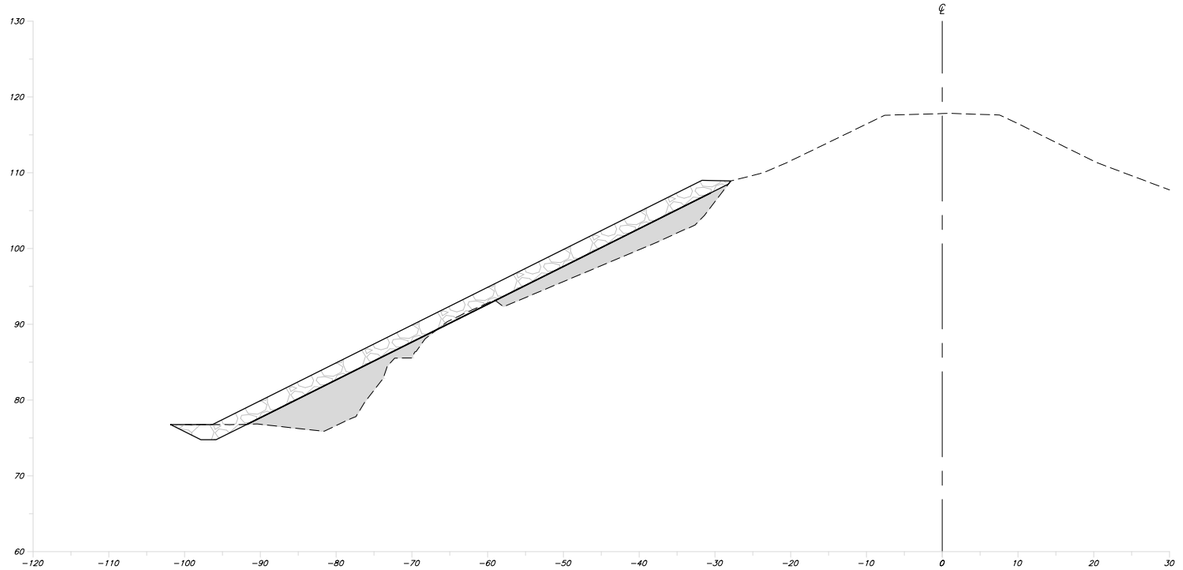

SECTION @ 1+90

0' 10' 20' 40'

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RECLAMATION DISTRICT 800

SITE 2 - MEISS ROAD DOWNSTREAM

SECTIONS

SHEET 6 OF 10 SHEETS

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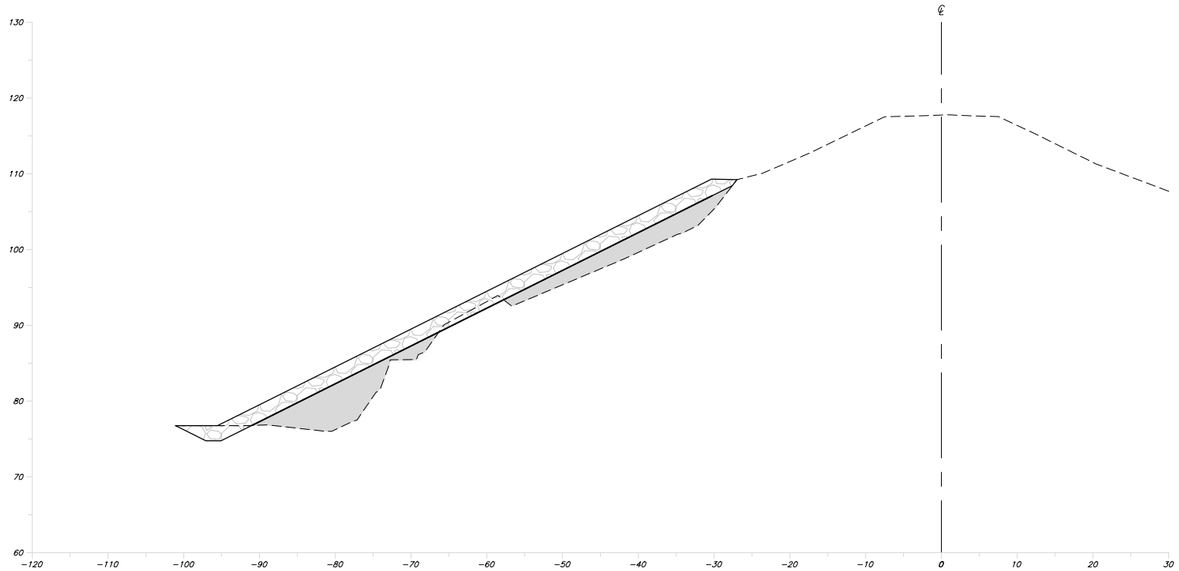

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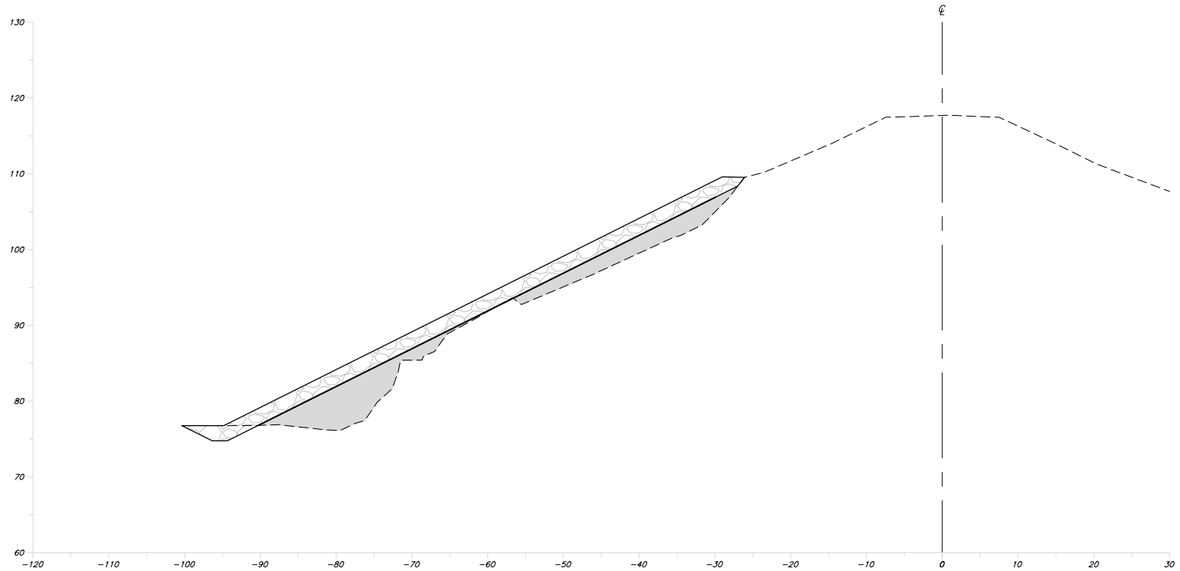

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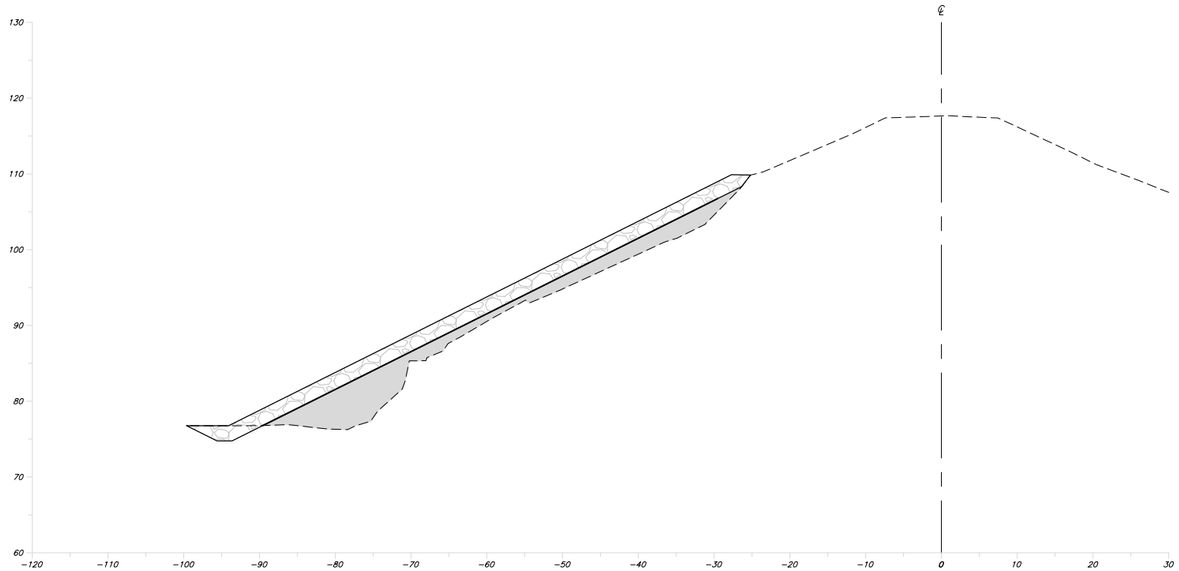

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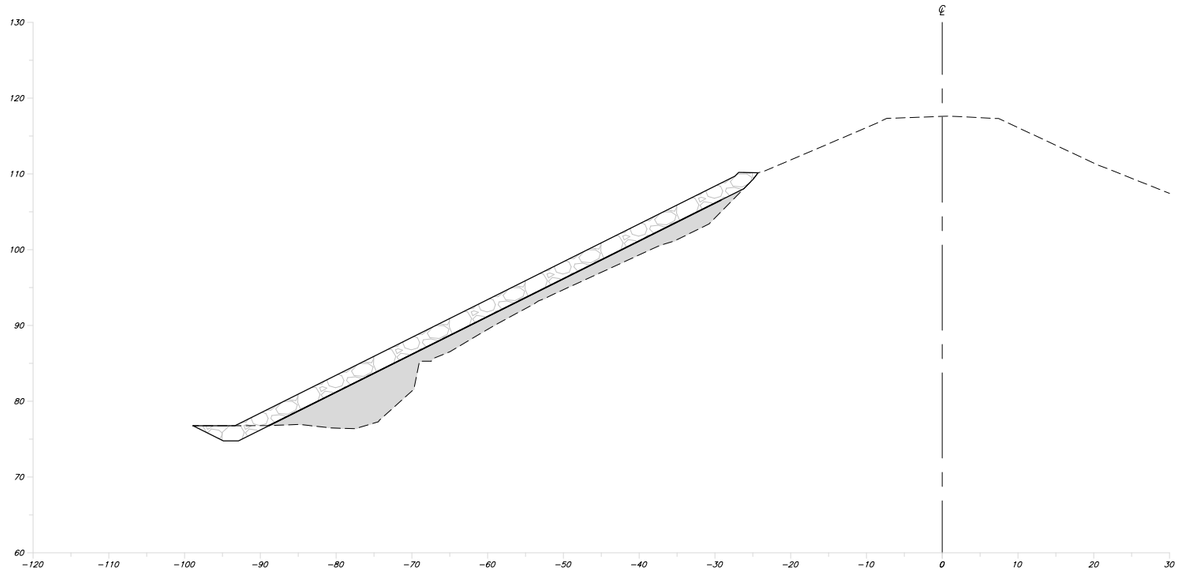

SECTION @ 2+30

0' 10' 20' 40'

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RECLAMATION DISTRICT 800

SITE 2 - MEISS ROAD DOWNSTREAM

SECTIONS

SHEET 7 OF 10 SHEETS

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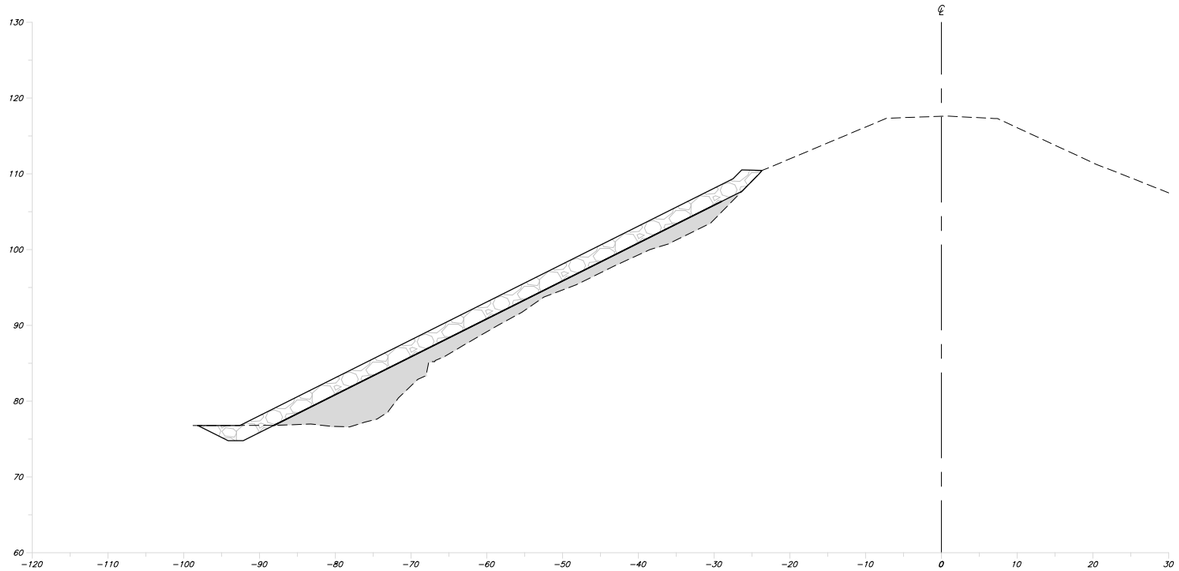
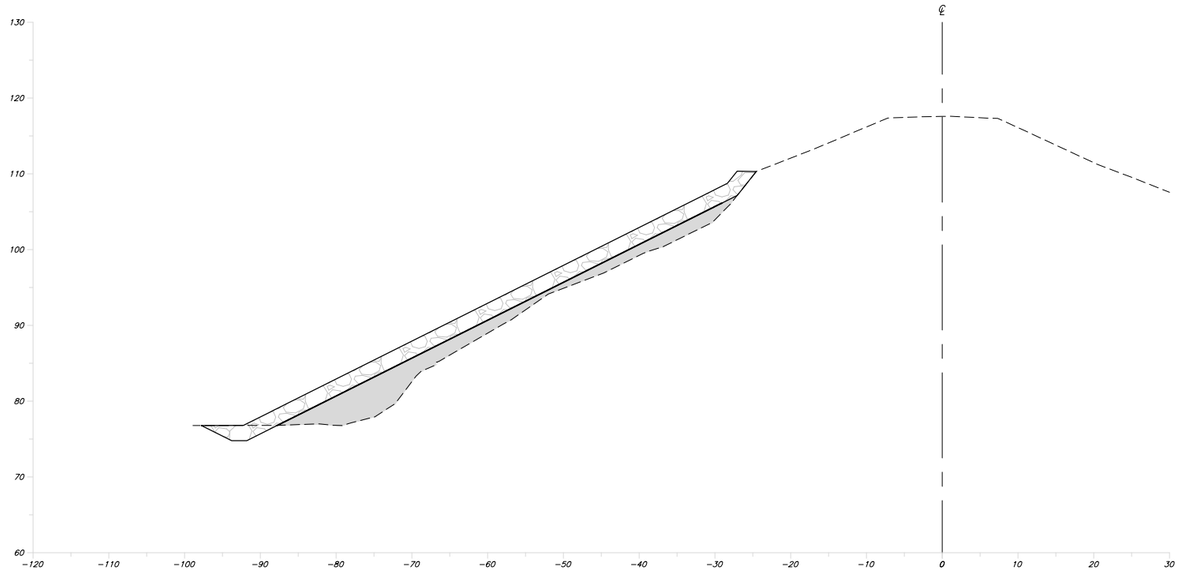


SECTION @ 2+40



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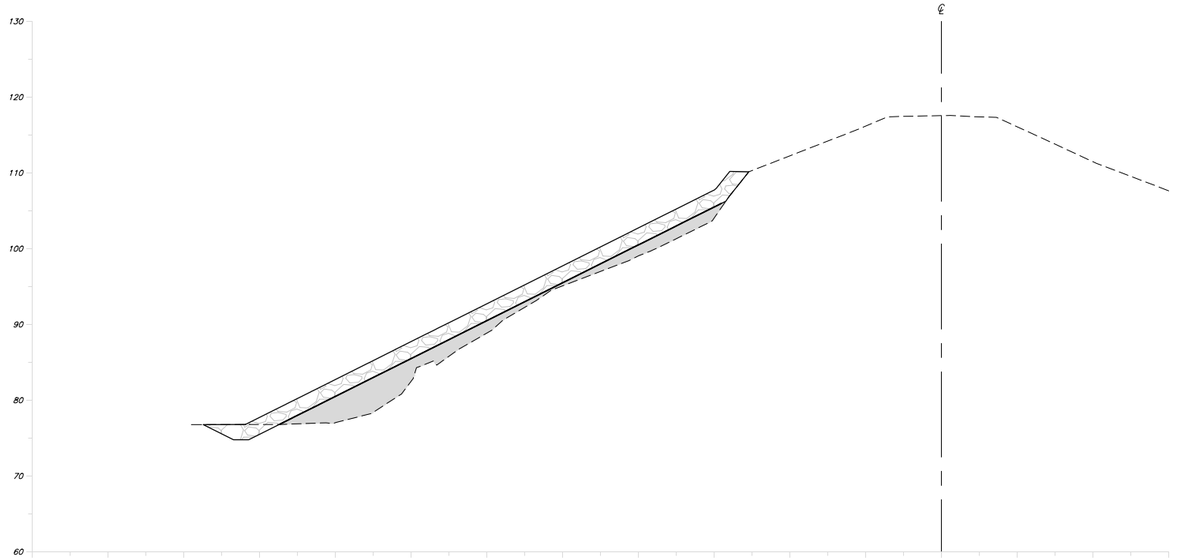

SECTION @ 2+60

SECTION @ 2+70

0' 10' 20' 40'

File Name: Site 2 – Meiss Rd Downstream.dwg
Plot Date: 6/30/2020
Revision Date: –

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
Approved By: –
Date: APRIL 2020

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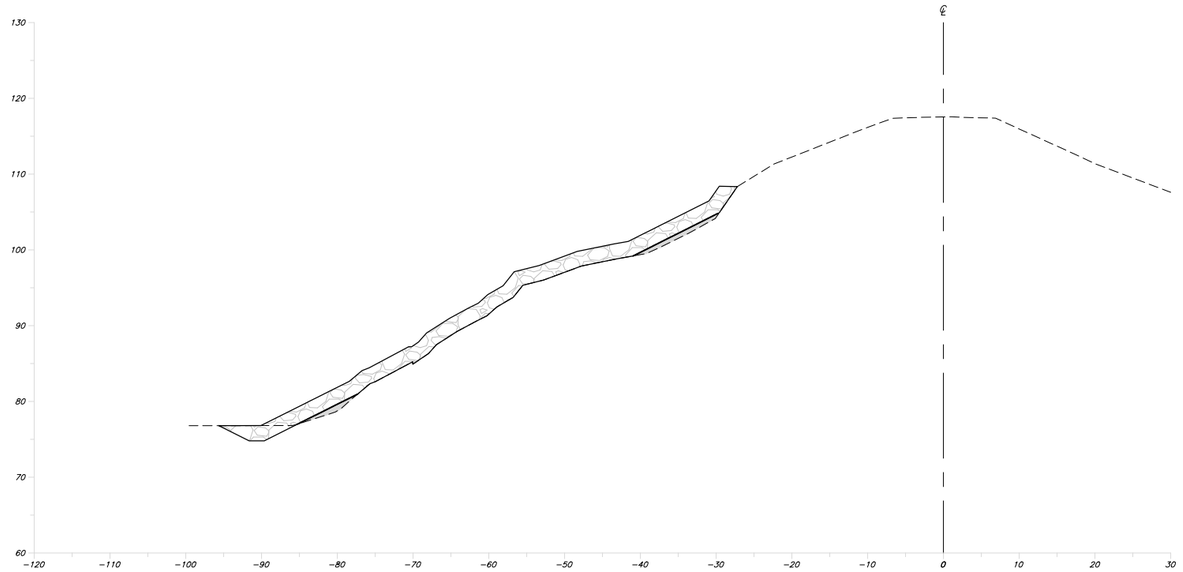
RECLAMATION DISTRICT 800

SITE 2 - MEISS ROAD DOWNSTREAM

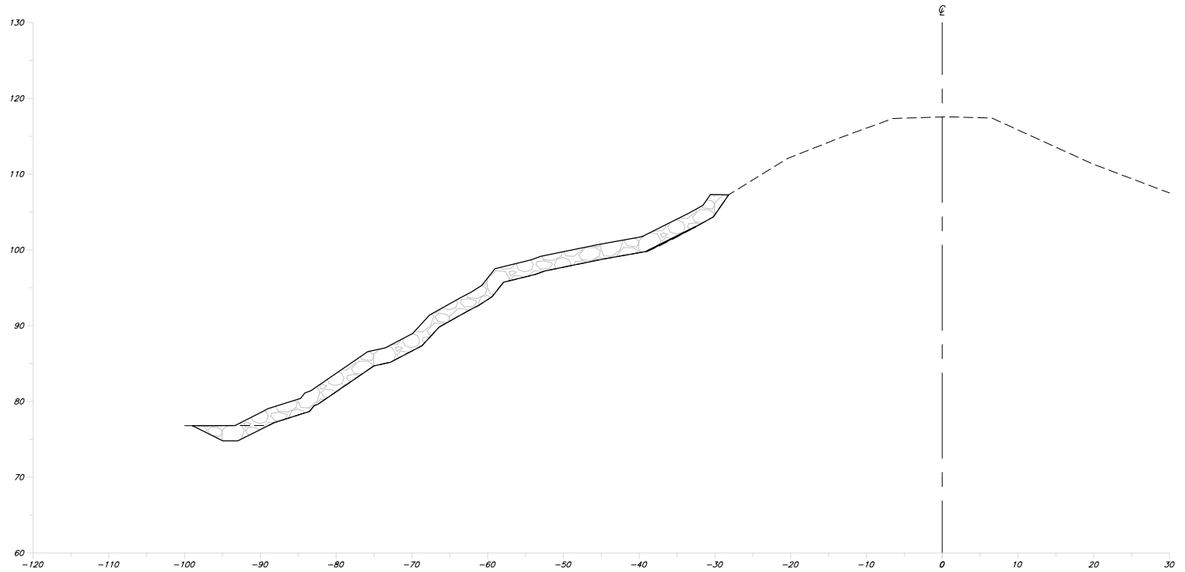
SECTIONS

SHEET 8 OF 10 SHEETS

O:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 2 – Meiss Rd Downstream.dwg



SECTION @ 2+80



SECTION @ 2+90

0' 10' 20' 40'

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By	P.W. ERVIN
Drawn By	P. INTHARATH
Checked By	–
Approved By	–
Date	APRIL 2020

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RECLAMATION DISTRICT 800

SITE 2 - MEISS ROAD DOWNSTREAM

SECTIONS

SHEET 9 OF 10 SHEETS

File Name: Site 2 – Meiss Rd Downstream.dwg
Plot Date: 6/30/2020
Revision Date: –

O:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 2 – Meiss Rd Downstream.dwg

TABLE 1
QUANTITIES

QUANTITY (AREA OR VOLUME)	ABOVE OHWM [1]	BELOW OHWM [1]	TOTAL
WORK AREA (ACRES)	0.17	0.23	0.40
TEMPORARY DISTURBANCE (ACRES) [2]	0.48	0.25	0.73
TOTAL ACRES	0.65	0.48	1.13
FILL – SOIL (CUBIC YARDS)	511	535	1046
FILL – RSP [3] (CUBIC YARDS)	693	583	1276
TOTAL CUBIC YARDS	1204	1118	2322

[1] OHWM = ORDINARY HIGH WATER MARK (ELEVATION = 90+/– FEET)
[2] INCLUDES ACREAGE OF BORROW SITES ON SHEET 11
[3] RSP = ROCK SLOPE PROTECTION

LEGEND
- WORK AREA BELOW ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA BELOW ORDINARY HIGH WATER MARK
- WORK AREA ABOVE ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA ABOVE ORDINARY HIGH WATER MARK

REVISIONS

REF.	DESCRIPTION	APVD.	DATE

Designed By	P.W. ERVIN
Drawn By	P. INTHARATH
Checked By	–
Approved By	–
Date	APRIL 2020

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RECLAMATION DISTRICT 800

SITE 2 - MEISS ROAD DOWNSTREAM

IMPACT

SHEET 10 OF 10 SHEETS

File Name: Site 2 – Meiss Rd Downstream.dwg
Plot Date: 6/30/2020
Revision Date: –

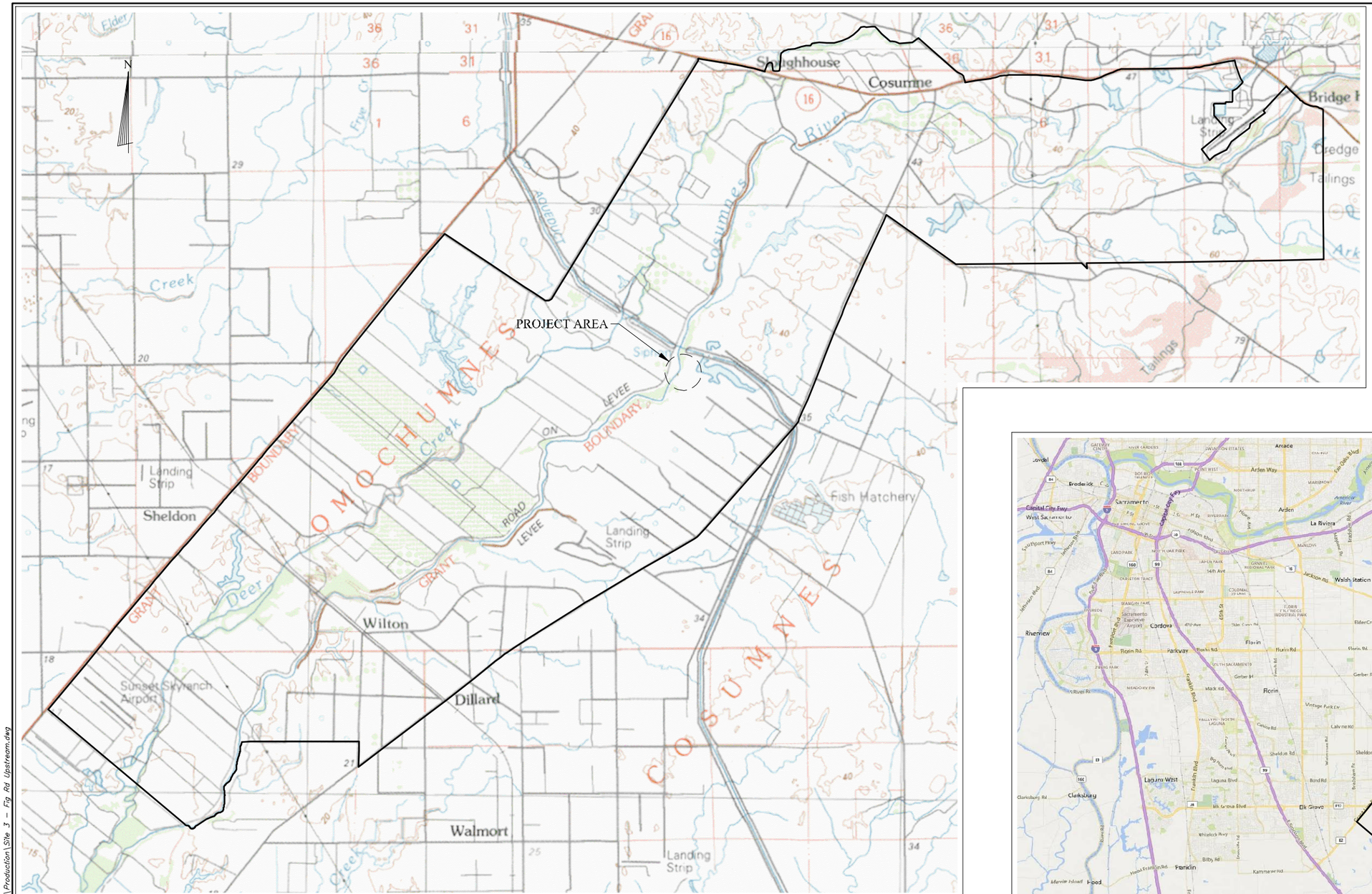
Q:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 2 – Meiss Rd Downstream.dwg

RECLAMATION DISTRICT NO. 800

CRITICAL LEVEE REPAIR PROJECTS
SITE 3: FIG ROAD UPSTREAM

Sacramento County **California**

WAGNER & BONSIGNORE CONSULTING CIVIL ENGINEERS A CORPORATION
2151 RIVER PLAZA DRIVE, SUITE 100 SACRAMENTO, CALIFORNIA



LOCATION MAP

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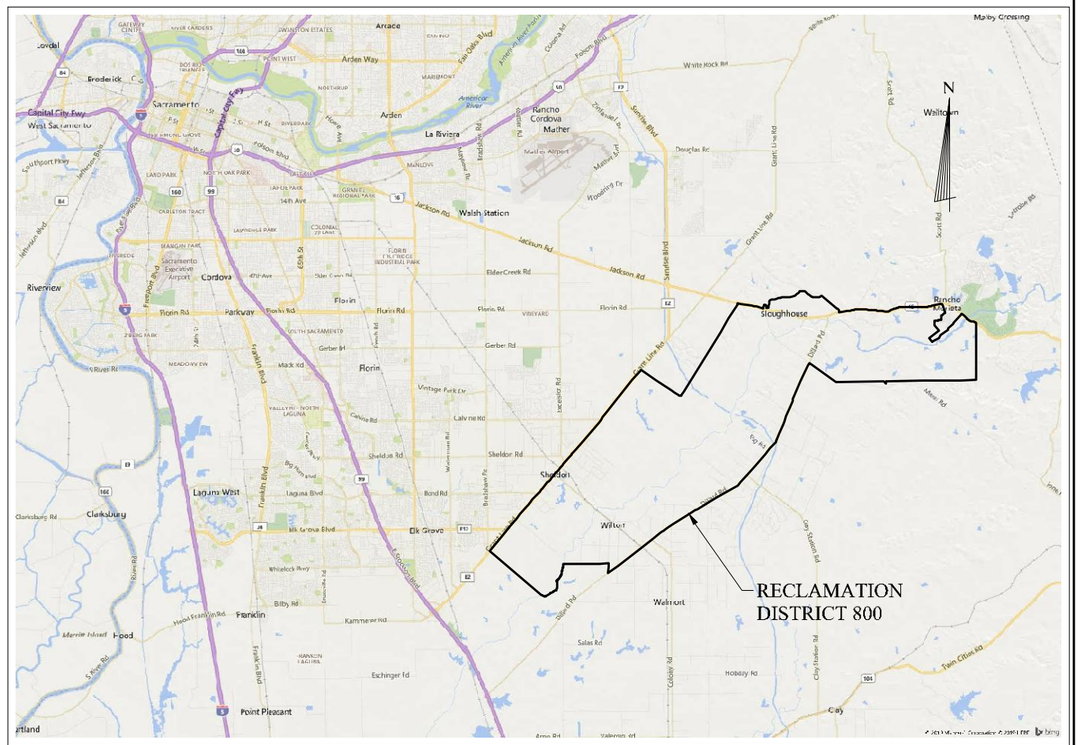

VICINITY MAP

NOT TO SCALE

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
Approved By: –
Date: FEBRUARY 2020

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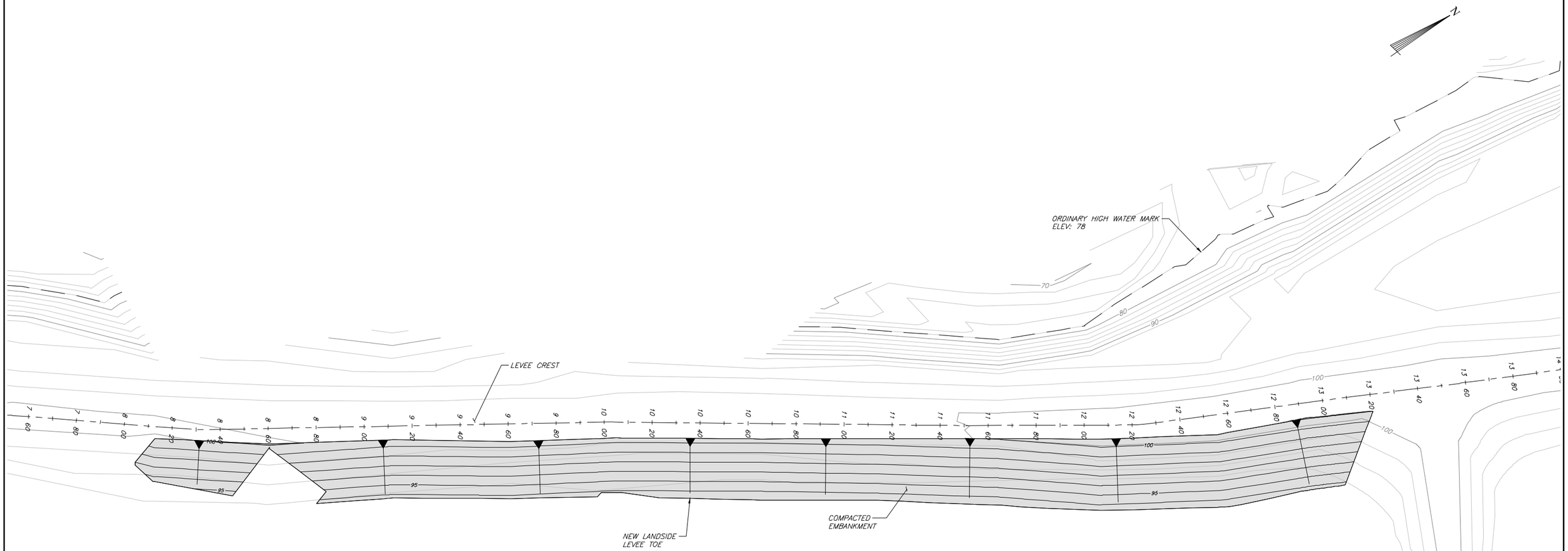
RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
FIG ROAD UPSTREAM

LOCATION AND VICINITY MAP

SHEET 1 OF 8 SHEETS

Q:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 3 – Fig Rd Upstream.dwg
Tab Name: Site 3 – Fig Rd Upstream
Plot Date: 2/26/2020
Revision By: –



LEGEND

COMPACTED EMBANKMENT

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By:	P.W. ERVIN
Drawn By:	P. INTHARATH
Checked By:	–
Approved By:	–
Date:	FEBRUARY 2020

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RECLAMATION DISTRICT 800

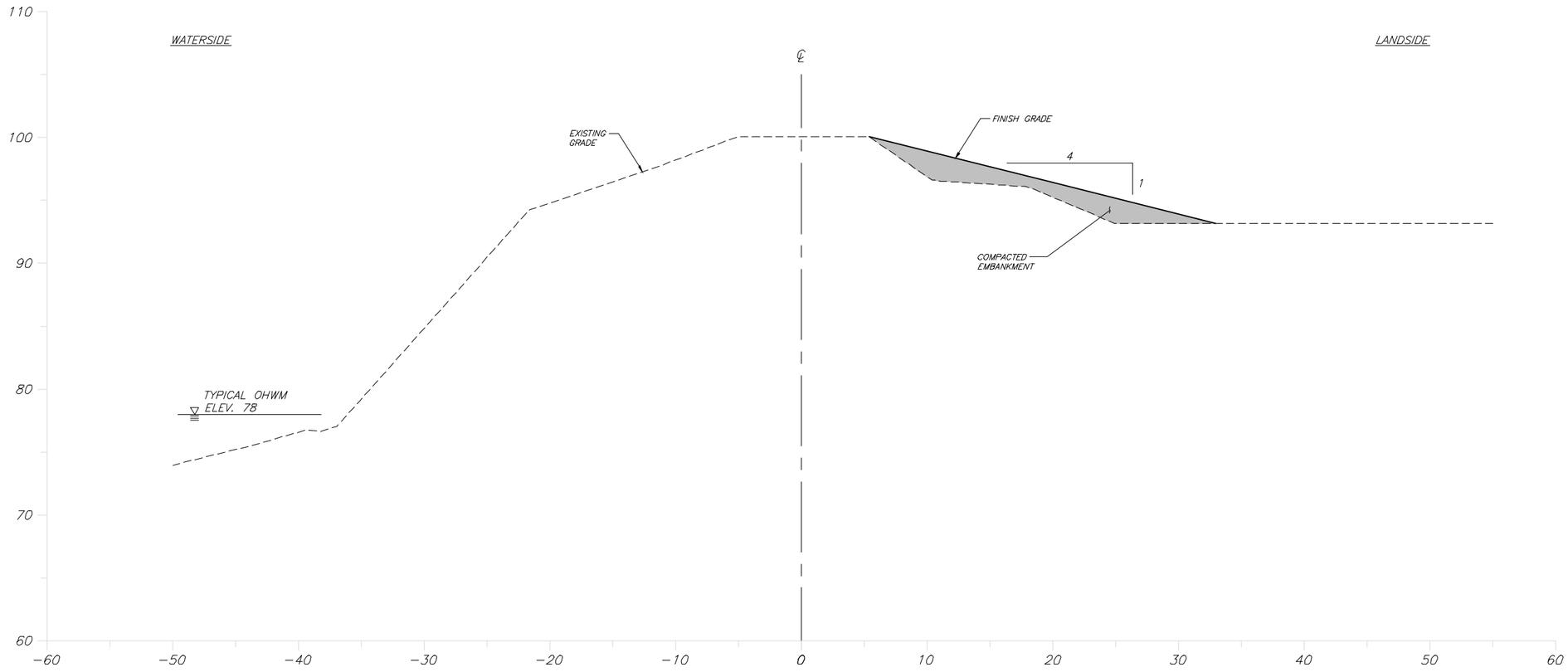
CRITICAL LEVEE REPAIRS
FIG ROAD UPSTREAM

PLAN

SHEET 2 OF 8 SHEETS

Last Saved By: Site 3 – Fig Rd Upstream
Last Plotted: 2/26/2020
Revision No.: –

C:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 3 – Fig Rd Upstream.dwg



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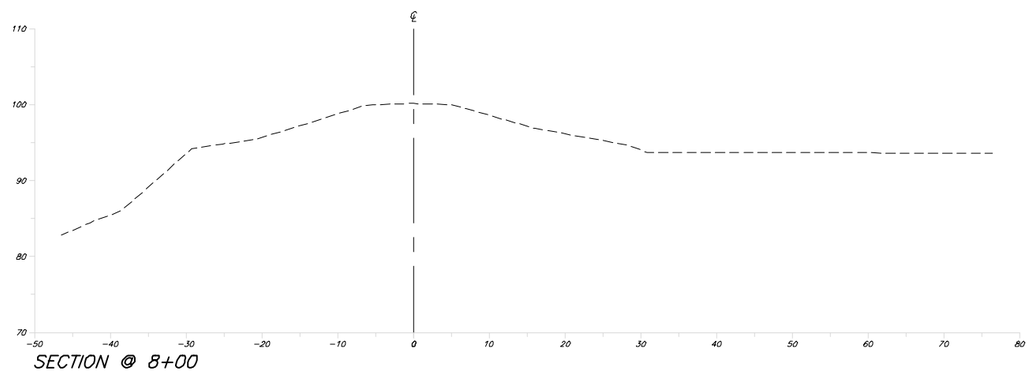
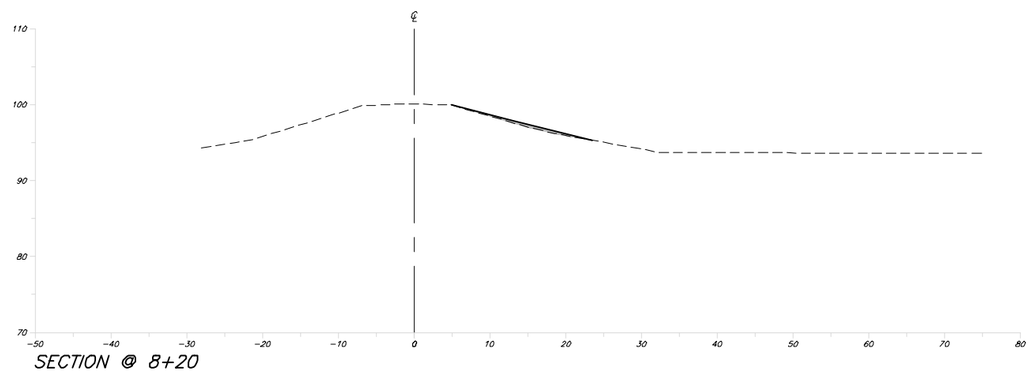


SECTION @ 8+00



SECTION @ 8+20

0' 5' 10' 20'

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
Approved By: –
Date: FEBRUARY 2020

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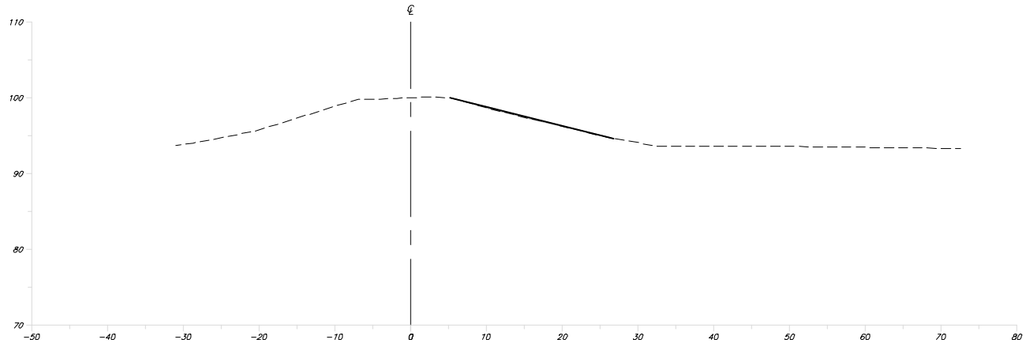
RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
FIG ROAD UPSTREAM

SECTIONS

SHEET 3 OF 8 SHEETS

Q:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 3 – Fig Rd Upstream.dwg
Last Date: 2/26/2020
File Name: Site 3 – Fig Rd Upstream.dwg
Xref Dim –
Plot –



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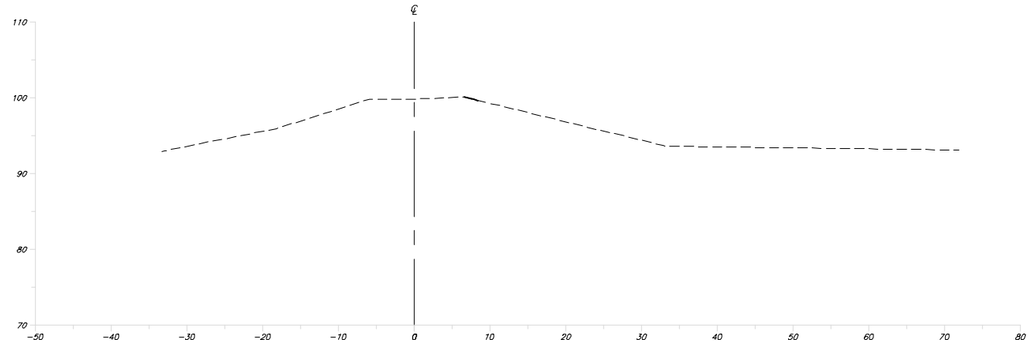

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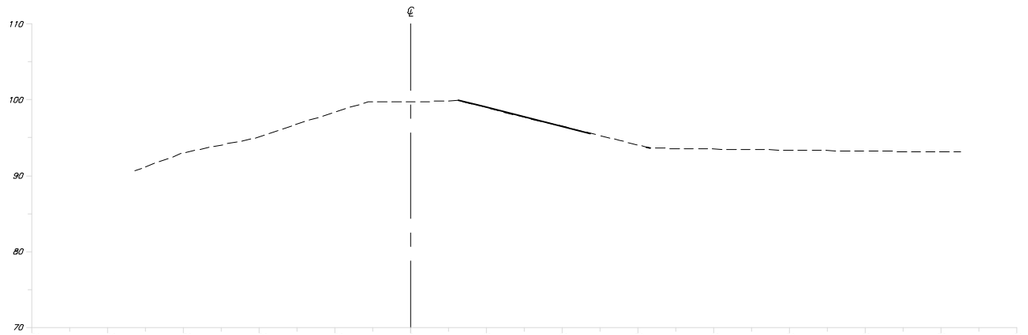

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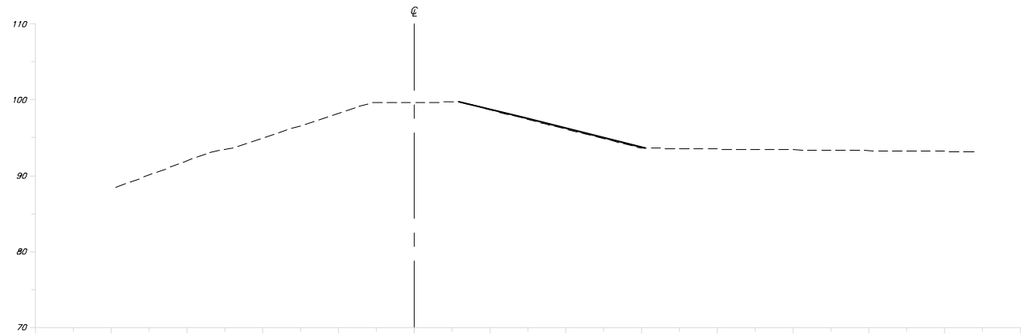

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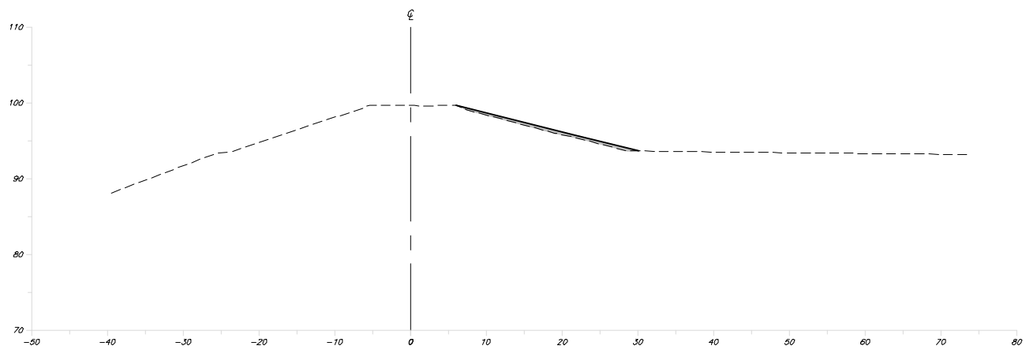

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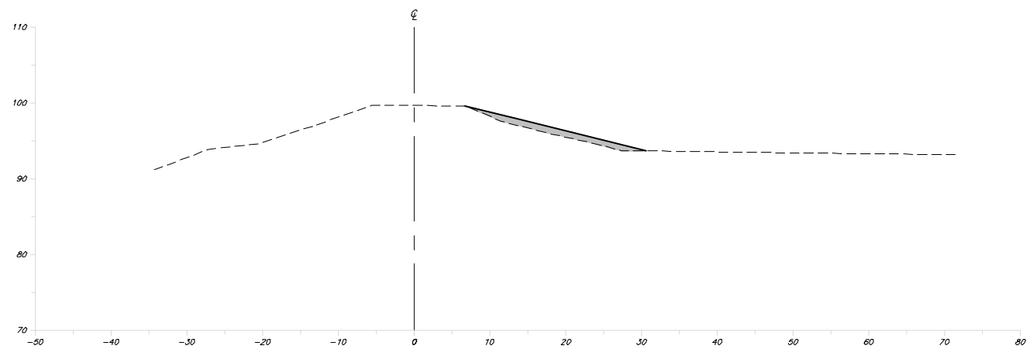

SECTION @ 9+40

0' 5' 10' 20'

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
Approved By: –
Date: FEBRUARY 2020

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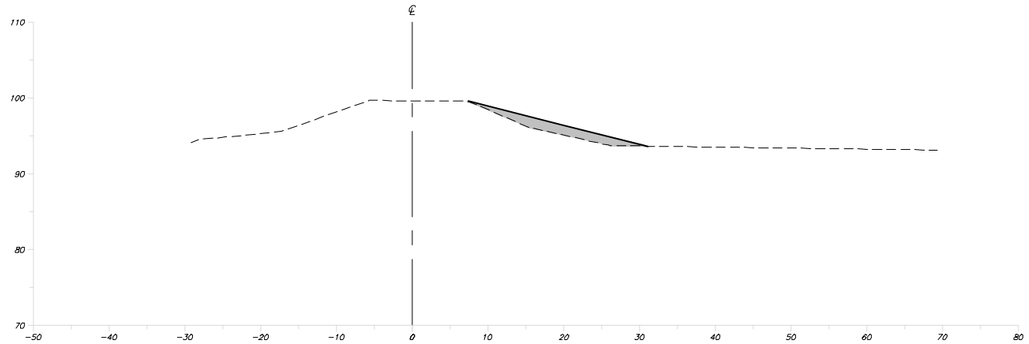
RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
FIG ROAD UPSTREAM

SECTIONS

SHEET 4 OF 8 SHEETS

File: Q:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 3 – Fig Rd Upstream.dwg
Last Save: Site 3 – Fig Rd Upstream.dwg
Plot Date: 2/26/2020
Revision Date: –



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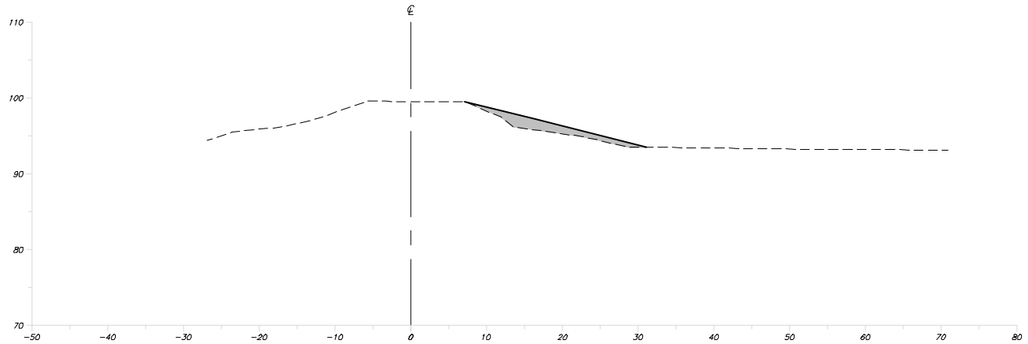

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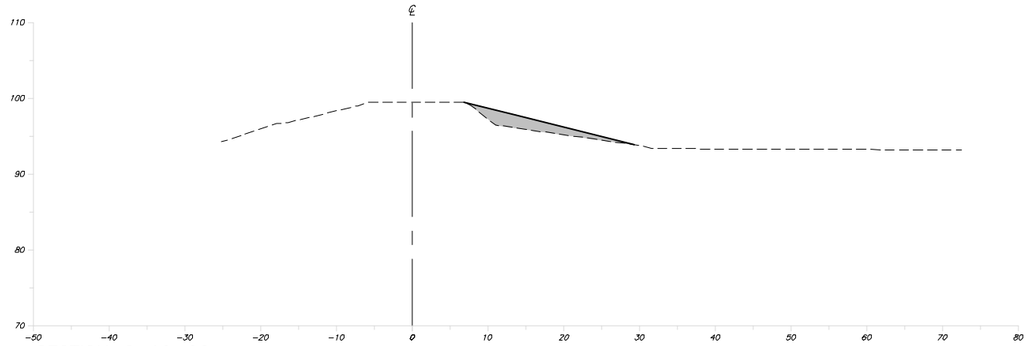

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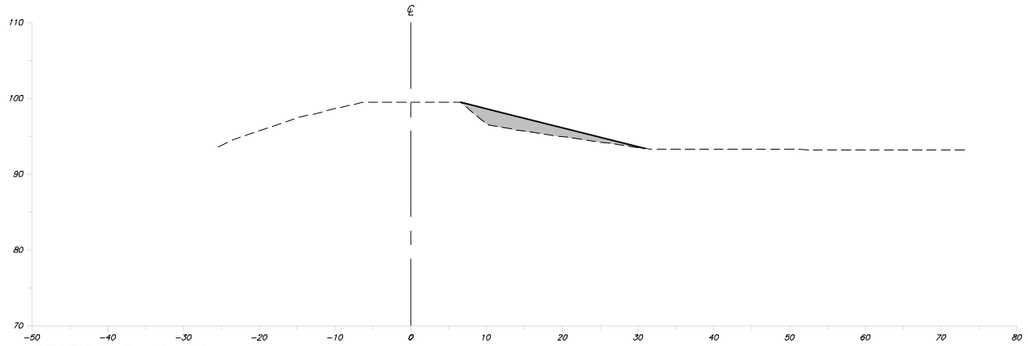

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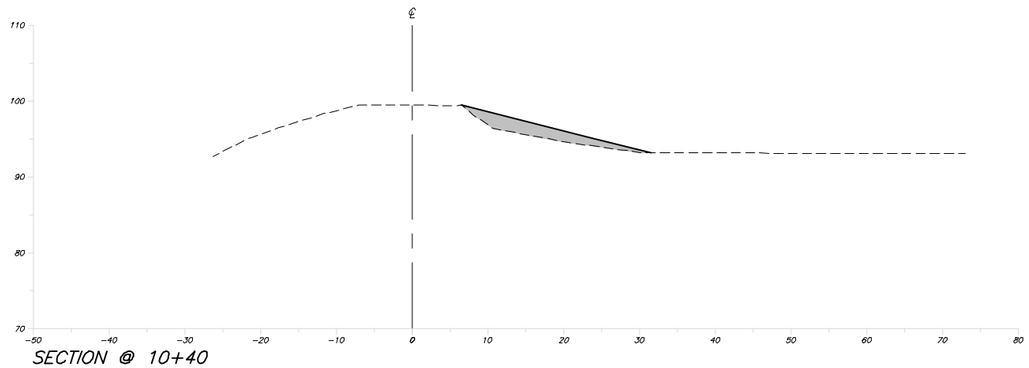

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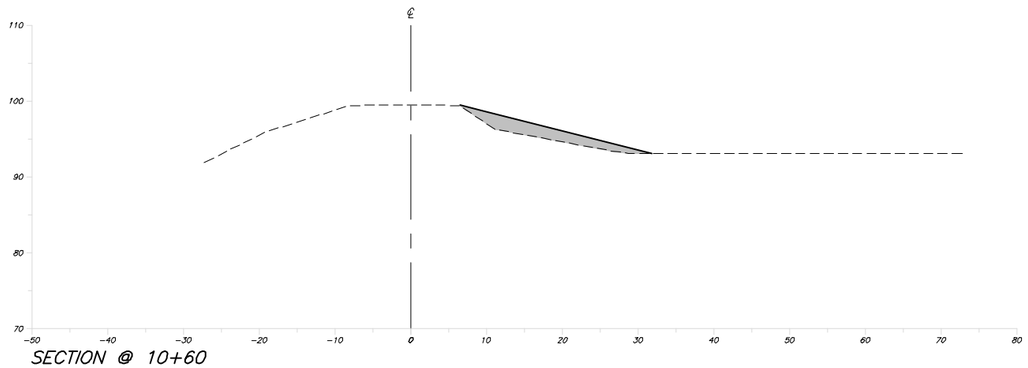

SECTION @ 10+60

0' 5' 10' 20'

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By	P.W. ERVIN
Drawn By	P. INTHARATH
Checked By	–
Approved By	–
Date	FEBRUARY 2020

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RECLAMATION DISTRICT 800

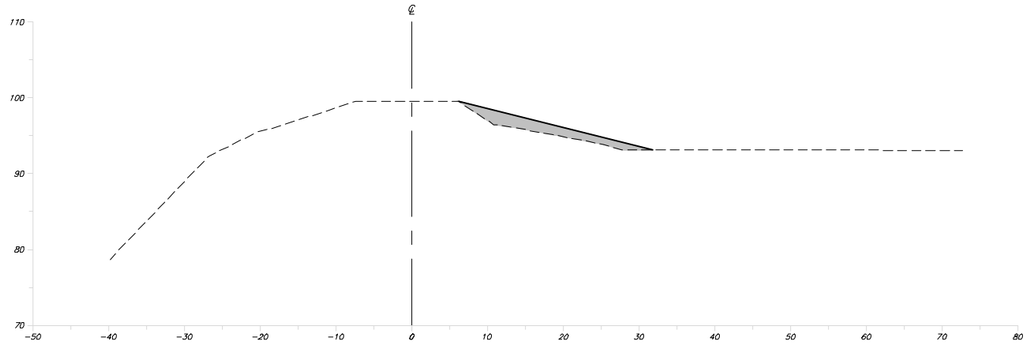
CRITICAL LEVEE REPAIRS
FIG ROAD UPSTREAM

SECTIONS

SHEET 5 OF 8 SHEETS

Use Xref: Site 3 – Fig Rd Upstream.dwg
Plot Date: 2/26/2020
Plotted By: –

O:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 3 – Fig Rd Upstream.dwg



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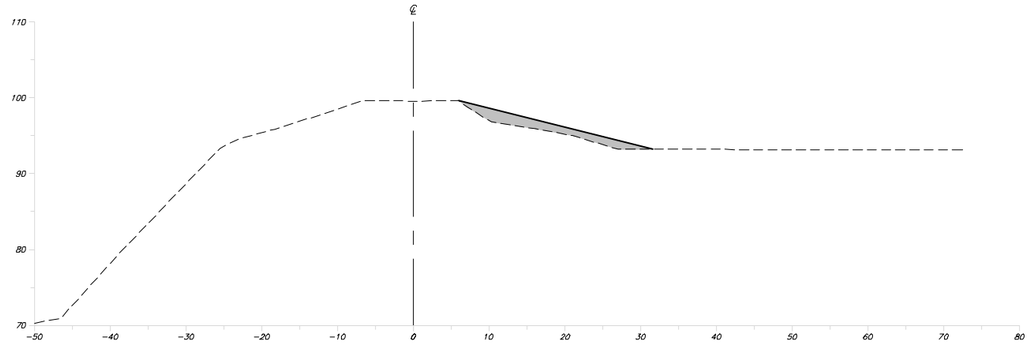

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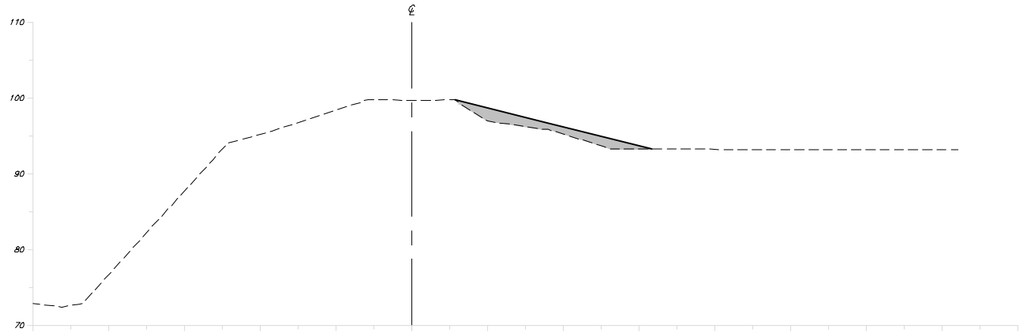

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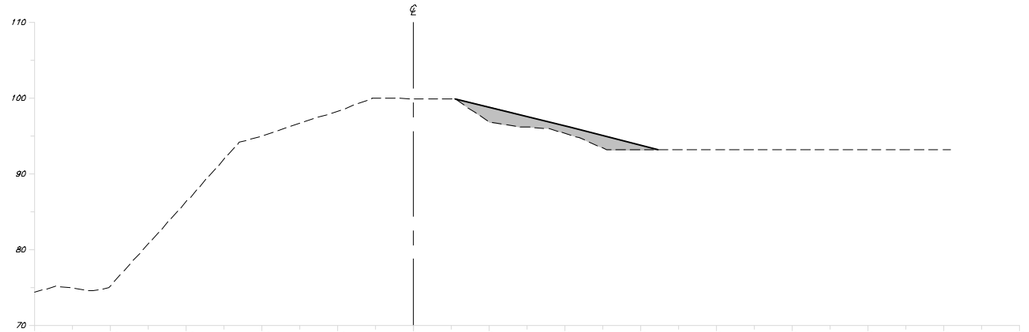

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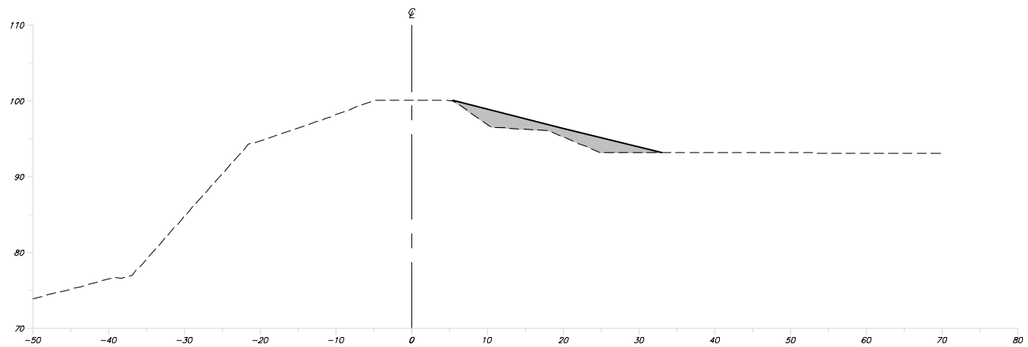

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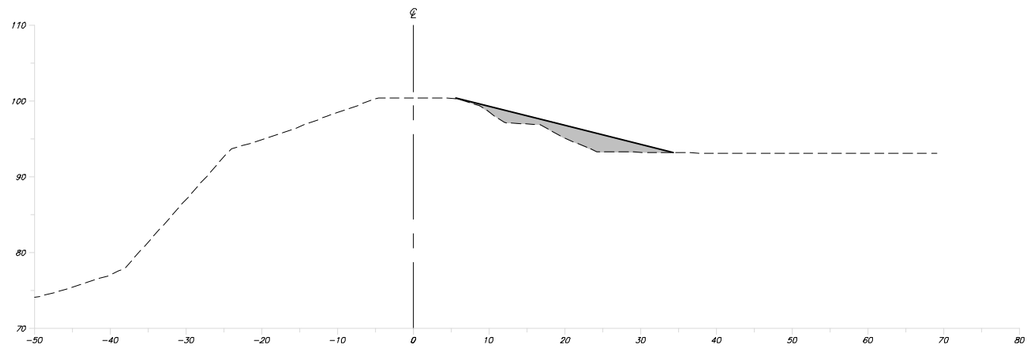

SECTION @ 11+80

0' 5' 10' 20'

C:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 3 - Fig Rd Upstream.dwg
Last Saved By: Site 3 - Fig Rd Upstream.dwg
Plot Date: 2/26/2020
Plotted By: —

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: —
Approved By: —
Date: FEBRUARY 2020

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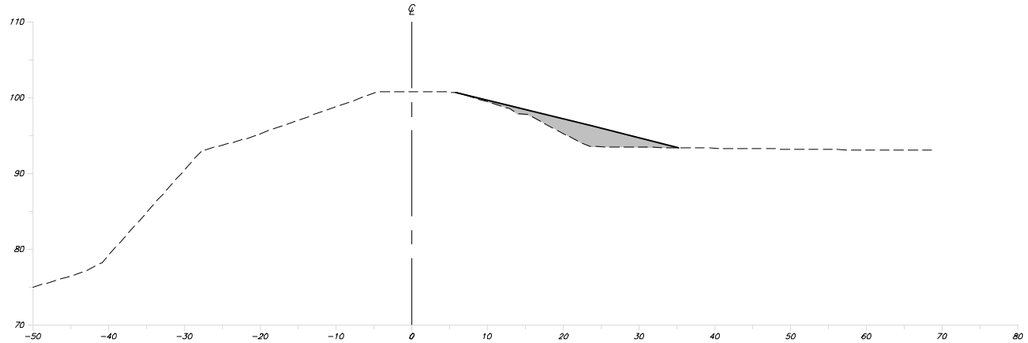
RECLAMATION DISTRICT 800

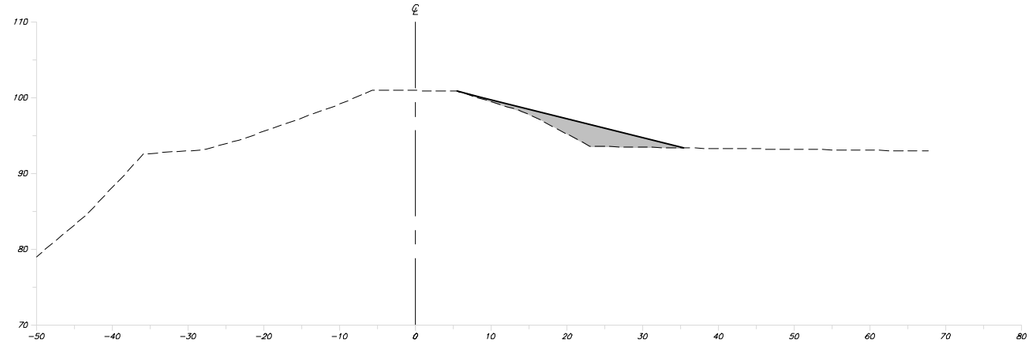
CRITICAL LEVEE REPAIRS
FIG ROAD UPSTREAM

SECTIONS

SHEET 6 OF 8 SHEETS



SECTION @ 12+00



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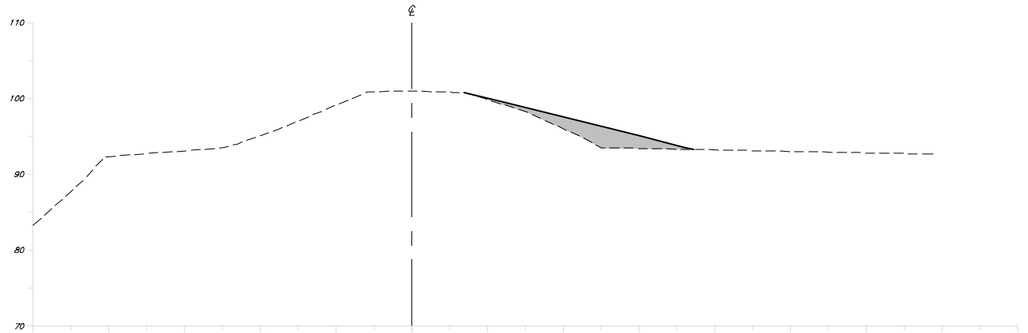

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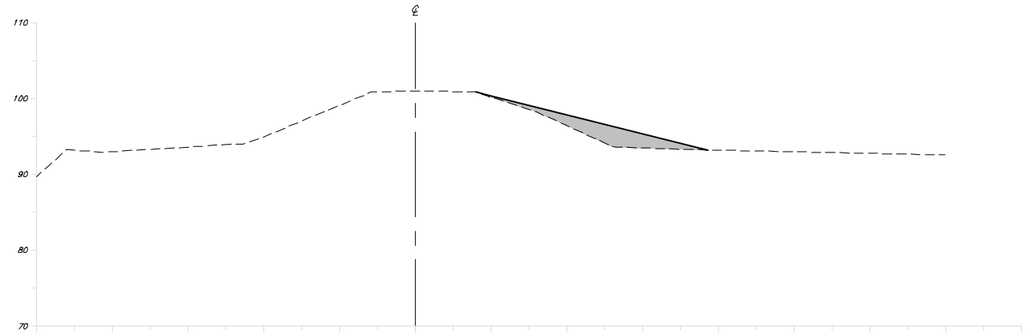

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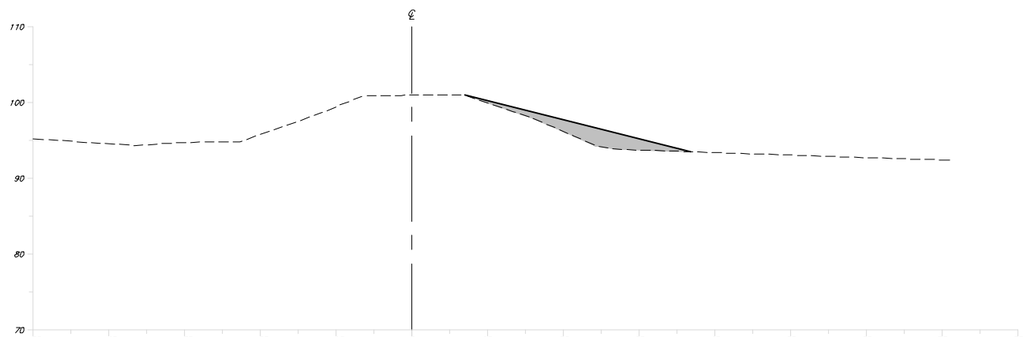

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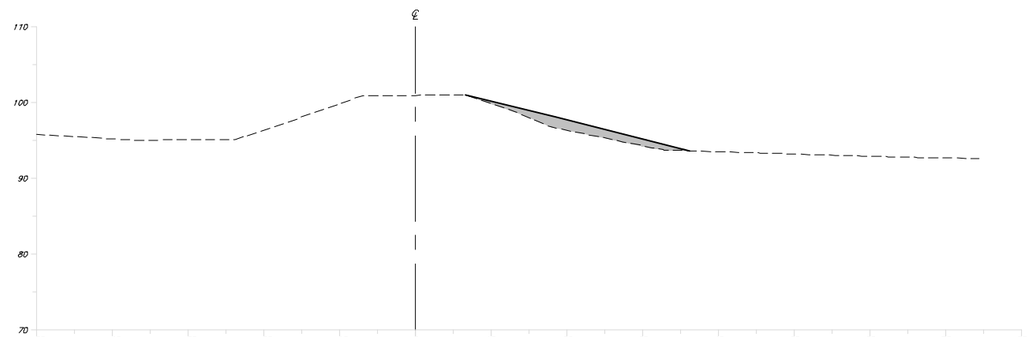

SECTION @ 13+00

0' 5' 10' 20'

C:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 3 - Fig Rd Upstream.dwg

Site 3 - Fig Rd Upstreprm.dwg

Use Layer	
Plot Date	2/26/2020
Revision Date	–

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By	P.W. ERVIN
Drawn By	P. INTHARATH
Checked By	–
Approved By	–
Date	FEBRUARY 2020

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RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
FIG ROAD UPSTREAM

SECTIONS

SHEET 7 OF 8 SHEETS

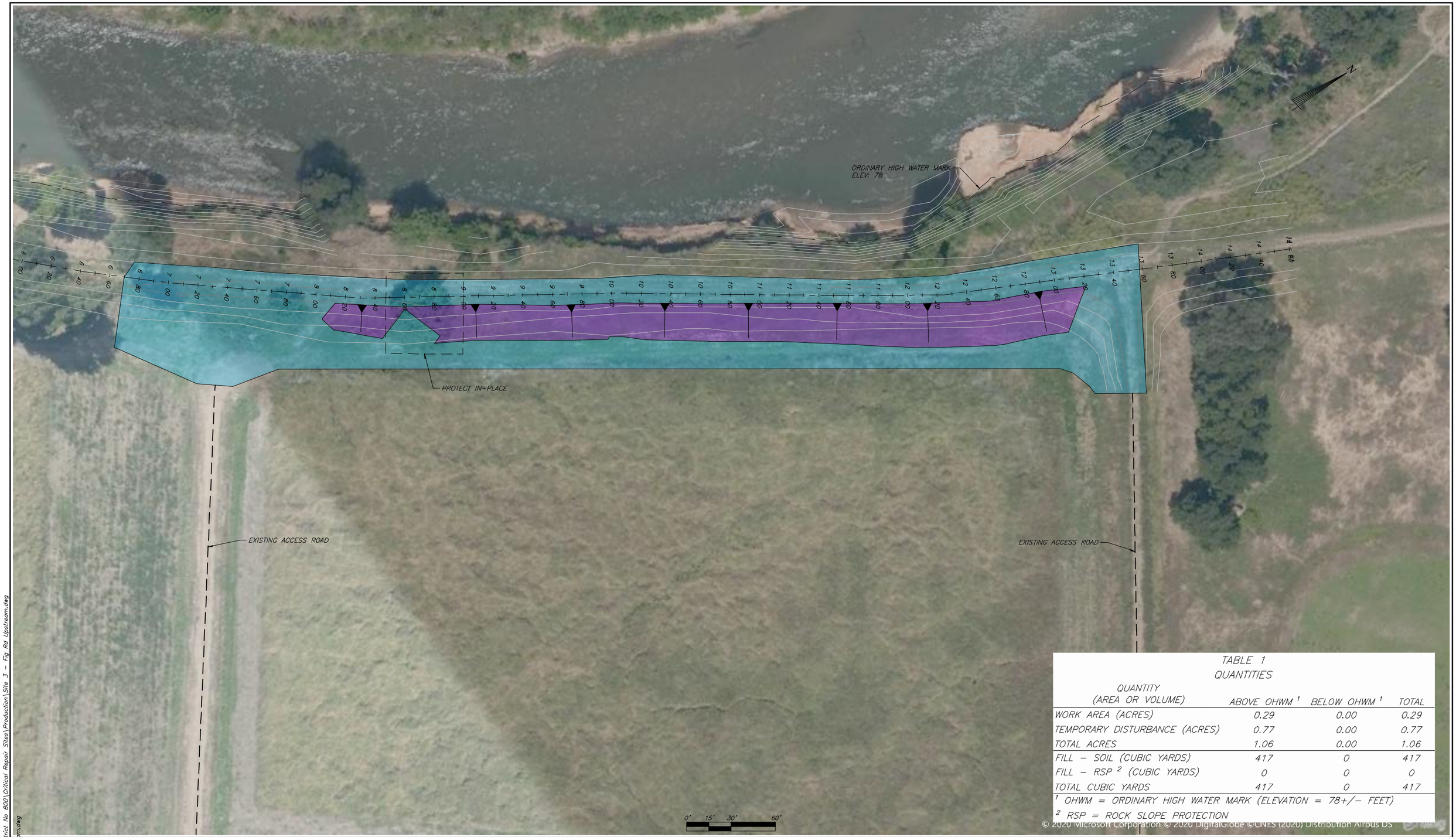

TABLE 1
QUANTITIES

QUANTITY (AREA OR VOLUME)	ABOVE OHWM [1]	BELOW OHWM [1]	TOTAL
WORK AREA (ACRES)	0.29	0.00	0.29
TEMPORARY DISTURBANCE (ACRES)	0.77	0.00	0.77
TOTAL ACRES	1.06	0.00	1.06
FILL – SOIL (CUBIC YARDS)	417	0	417
FILL – RSP [2] (CUBIC YARDS)	0	0	0
TOTAL CUBIC YARDS	417	0	417

[1] OHWM = ORDINARY HIGH WATER MARK (ELEVATION = 78+/- FEET)
[2] RSP = ROCK SLOPE PROTECTION

LEGEND
- WORK AREA ABOVE ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA ABOVE ORDINARY HIGH WATER MARK

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By	P.W. ERVIN
Drawn By	P. INTHARATH
Checked By	–
Approved By	–
Date	FEBRUARY 2020

Wagner & Bonsignore
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Ph: 916-441-6850
Fx: 916-779-3120

DRAFT

RECLAMATION DISTRICT 800
CRITICAL LEVEE REPAIRS
FIG ROAD UPSTREAM
IMPACT

SHEET 8 OF 8 SHEETS

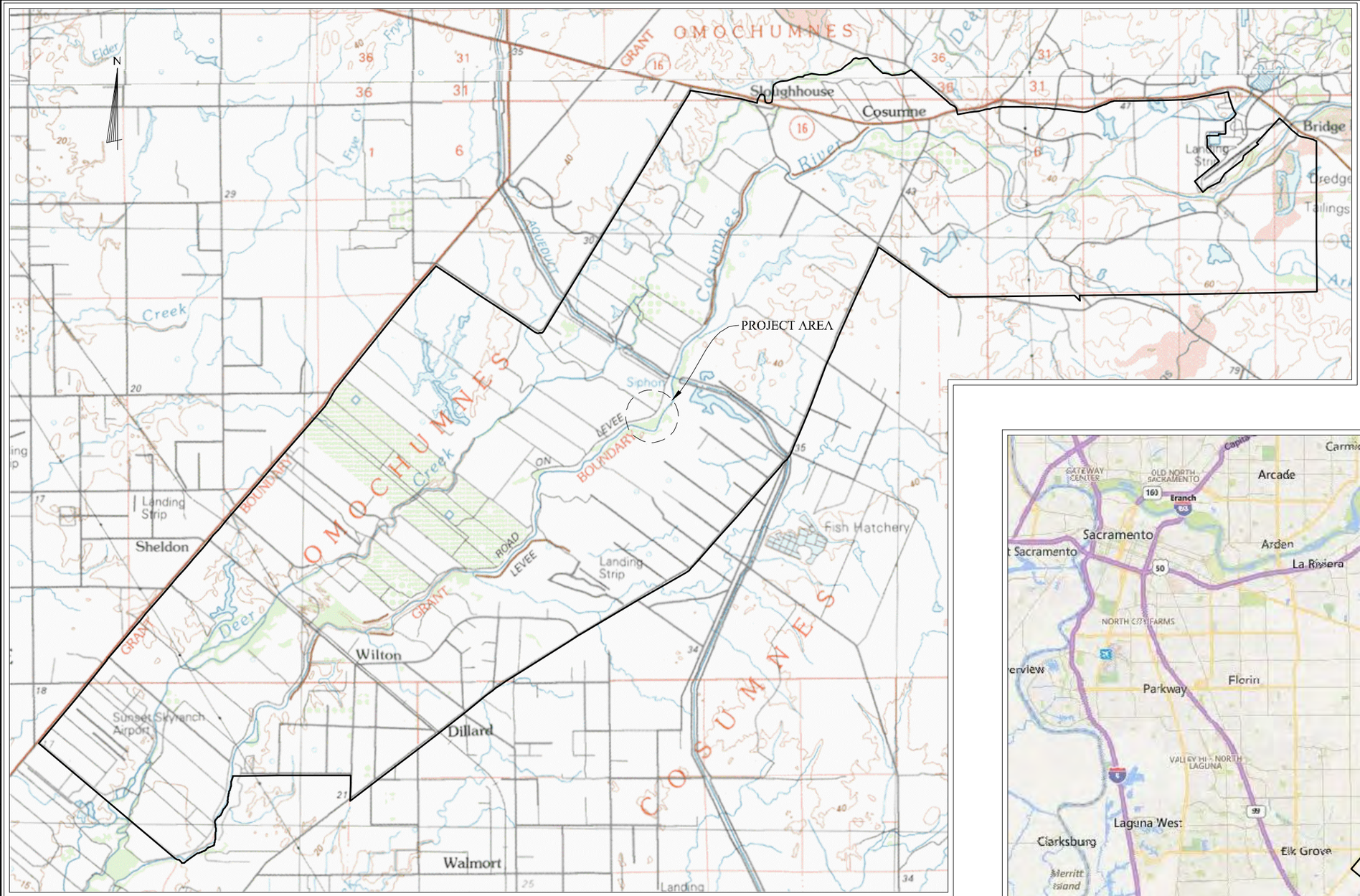
Last Saved By: Site 3 – Fig Rd Upstream
Plot Date: 2/26/2020
Plotted By: –
C:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 3 – Fig Rd Upstream.dwg

RECLAMATION DISTRICT NO. 800

CRITICAL LEVEE REPAIR PROJECTS
SITE 4: FIG ROAD DOWNSTREAM

Sacramento County **California**

WAGNER & BONSIGNORE CONSULTING CIVIL ENGINEERS A CORPORATION
2151 RIVER PLAZA DRIVE, SUITE 100 SACRAMENTO, CALIFORNIA



LOCATION MAP

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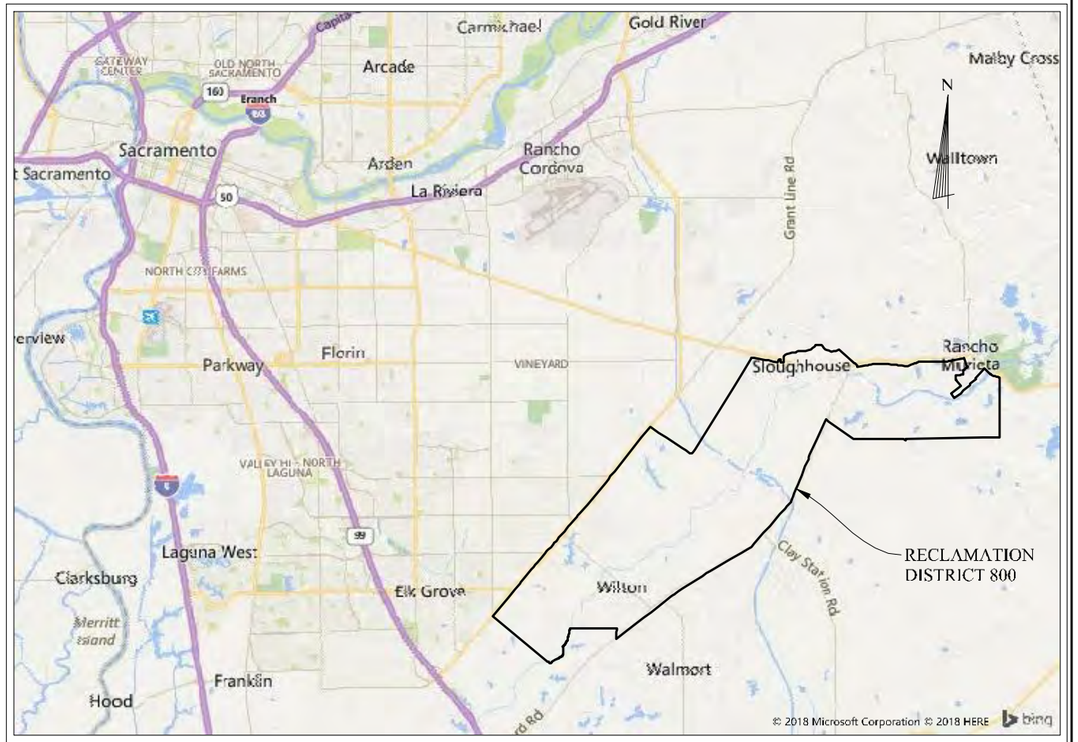

VICINITY MAP

NOT TO SCALE

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
Approved By: –
Date: FEBRUARY 2020

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RECLAMATION DISTRICT 800 - COSUMNES

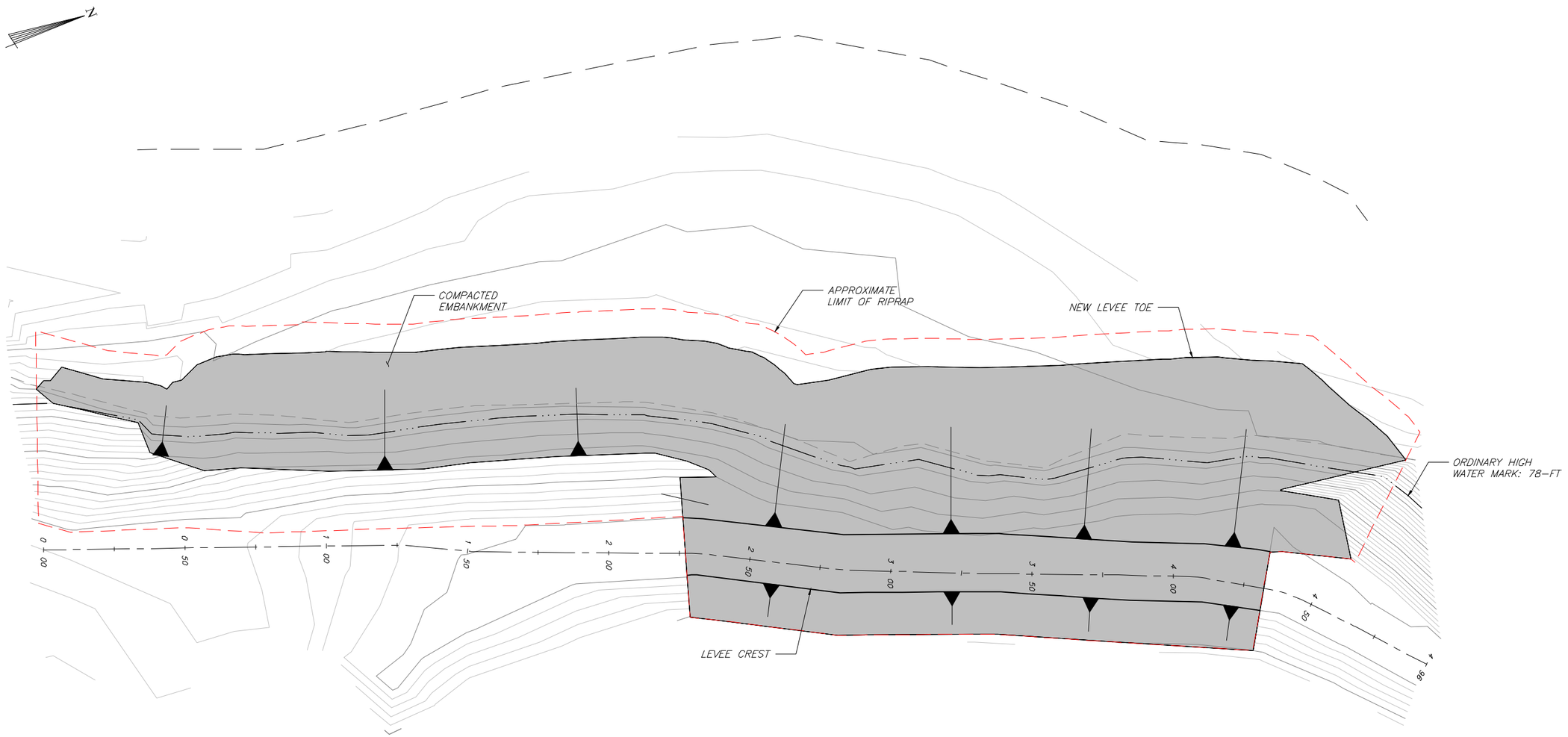
CRITICAL LEVEE REPAIRS
FIG ROAD DOWNSTREAM

LOCATION AND VICINITY MAPS

SHEET 1 OF 9 SHEETS

Plot Date: 3/2/2020

G:\Drawings\Reclamation District No 800\NRCS Repair Sites\Production\Fig Road\Fig Road map.dwg



PLAN

0' 10' 20' 40'

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
Approved By: –
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RECLAMATION DISTRICT 800 - COSUMNES
CRITICAL LEVEE REPAIRS
FIG ROAD DOWNSTREAM
PLAN

SHEET 2 OF 9 SHEETS

Plot Date: 3/2/2020
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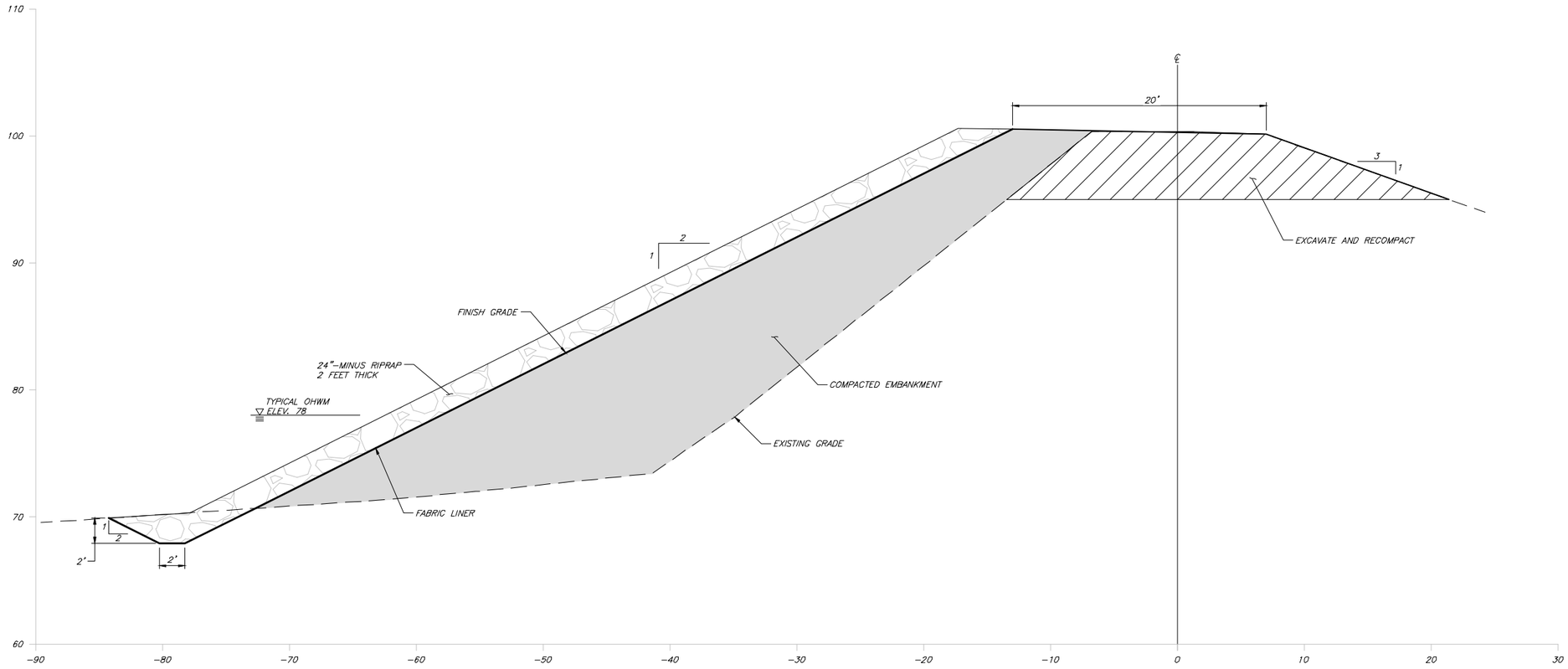

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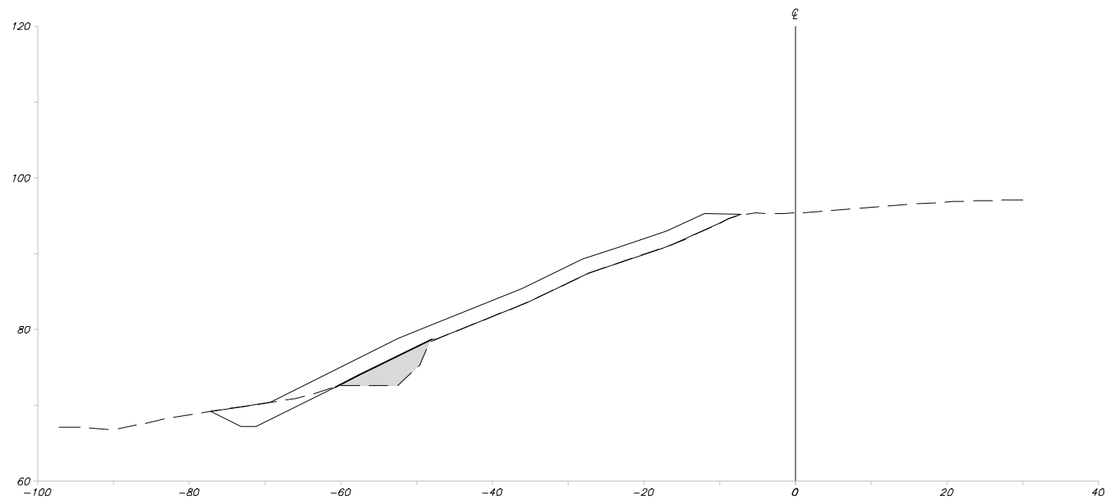

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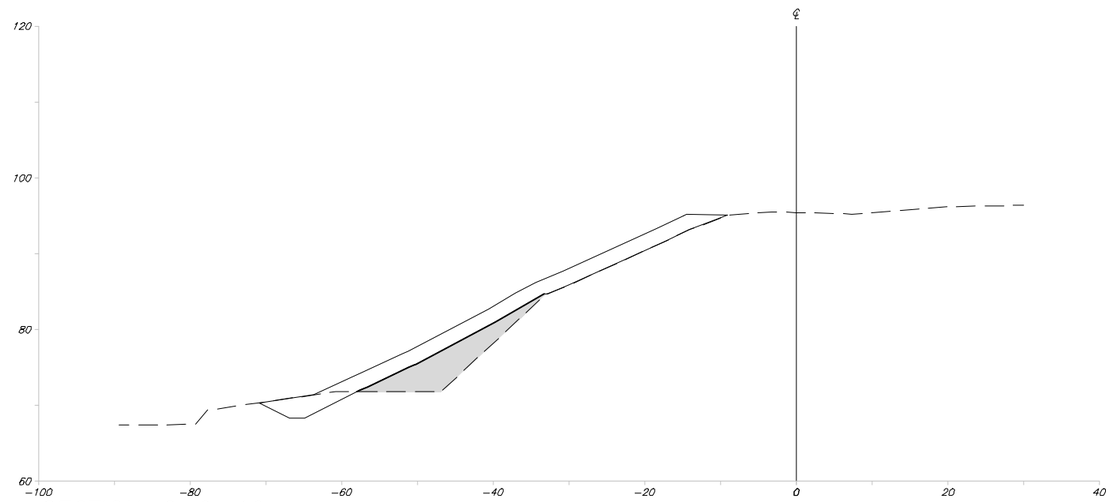

SECTION @ 0+40

0' 5' 10' 20'

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
Approved By: –
Date: FEBRUARY 2020

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RECLAMATION DISTRICT 800 - COSUMNES
CRITICAL LEVEE REPAIRS
FIG ROAD DOWNSTREAM

SECTIONS

SHEET 3 OF 9 SHEETS

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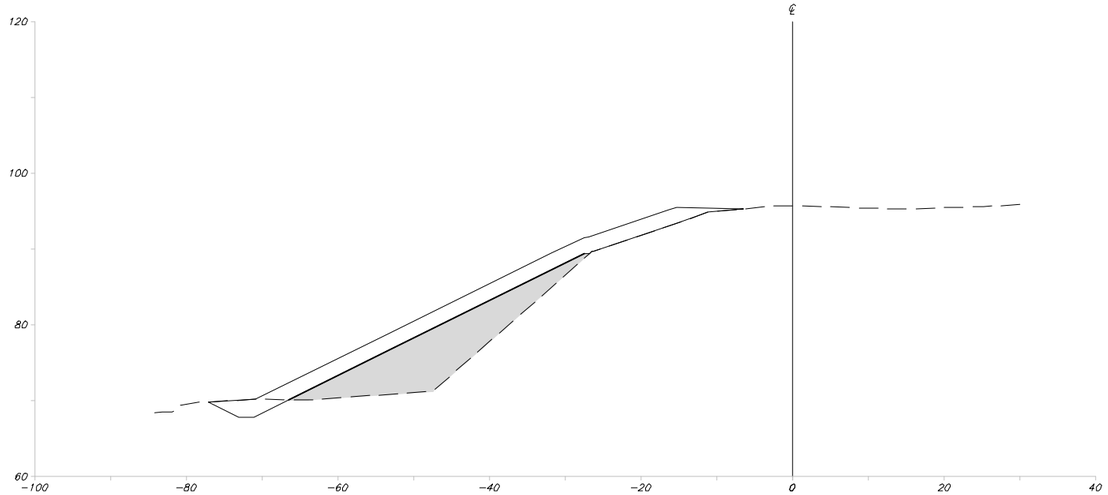
Plot Date: 3/2/2020



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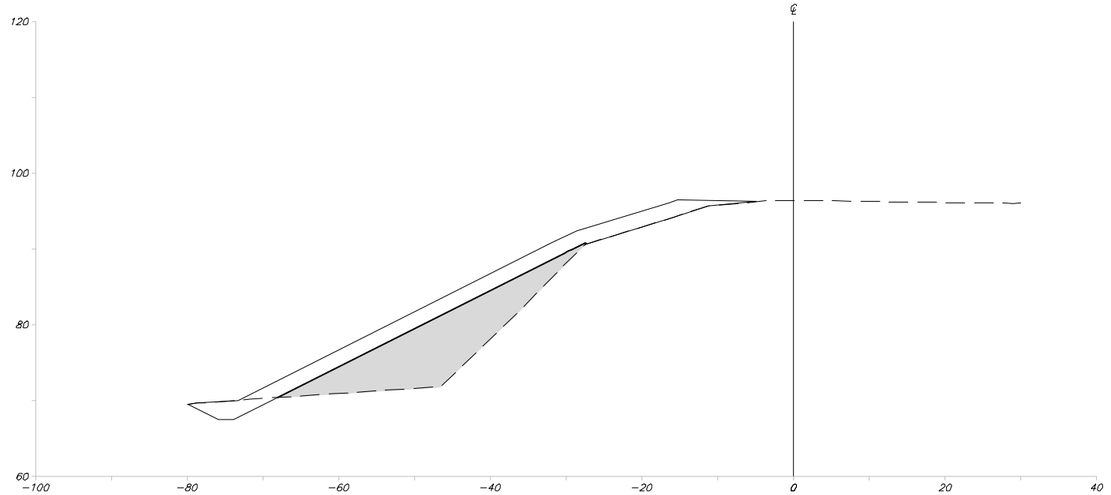

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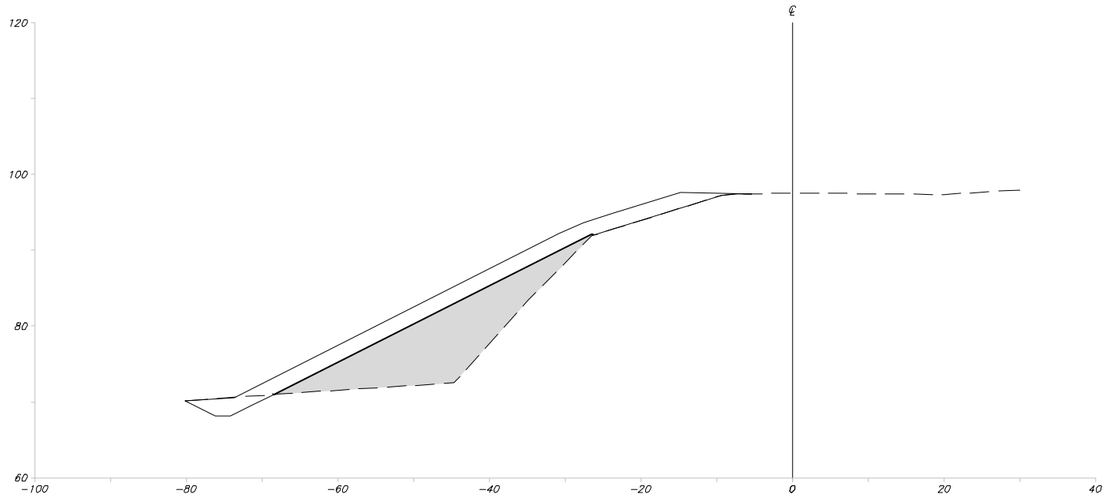

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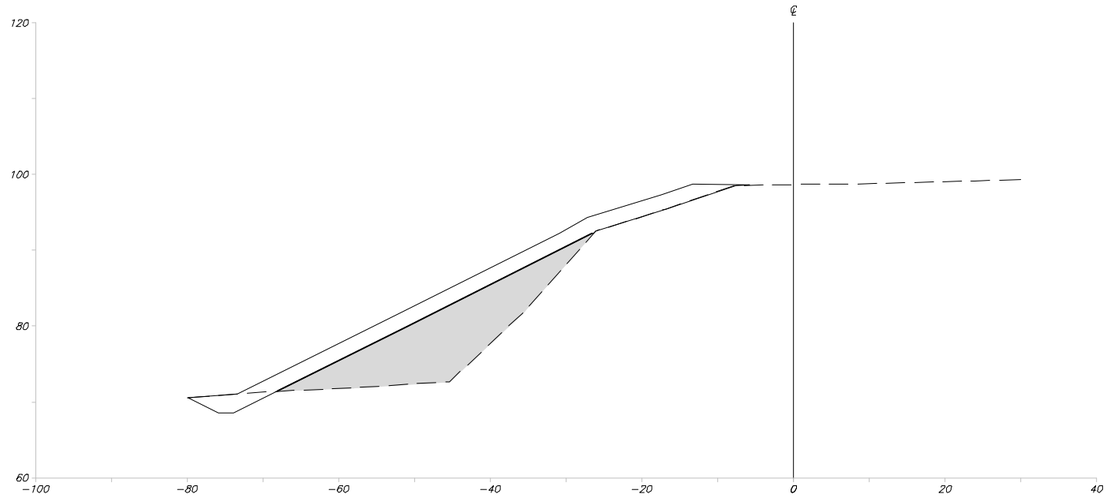

SECTION @ 1+20

0' 5' 10' 20'

G:\Drawings\Reclamation District No 800\NRCS Repair Sites\Production\Fig Road\Fig Road map.dwg

Plot Date: 3/2/2020

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
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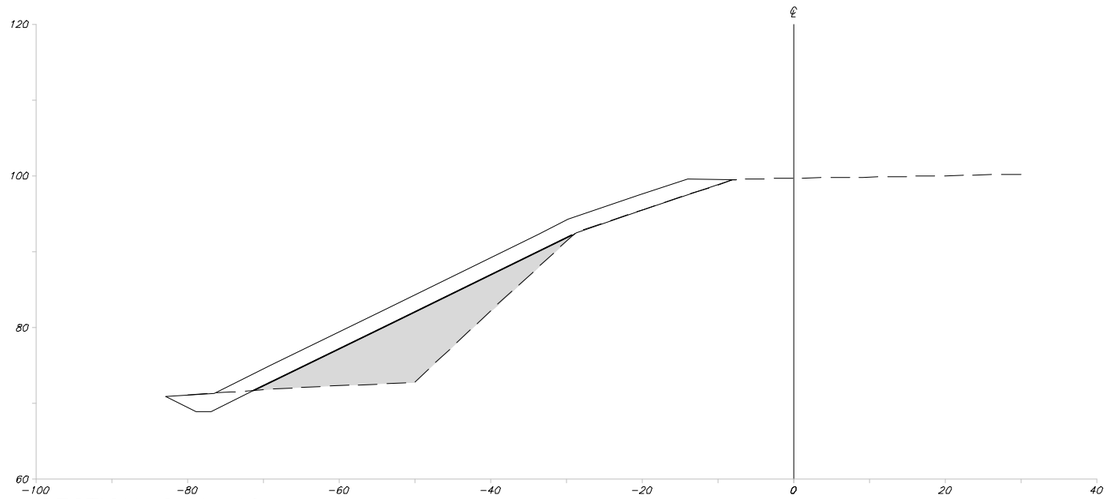
RECLAMATION DISTRICT 800 - COSUMNES

CRITICAL LEVEE REPAIRS
FIG ROAD DOWNSTREAM

SECTIONS

SHEET 4 OF 9 SHEETS



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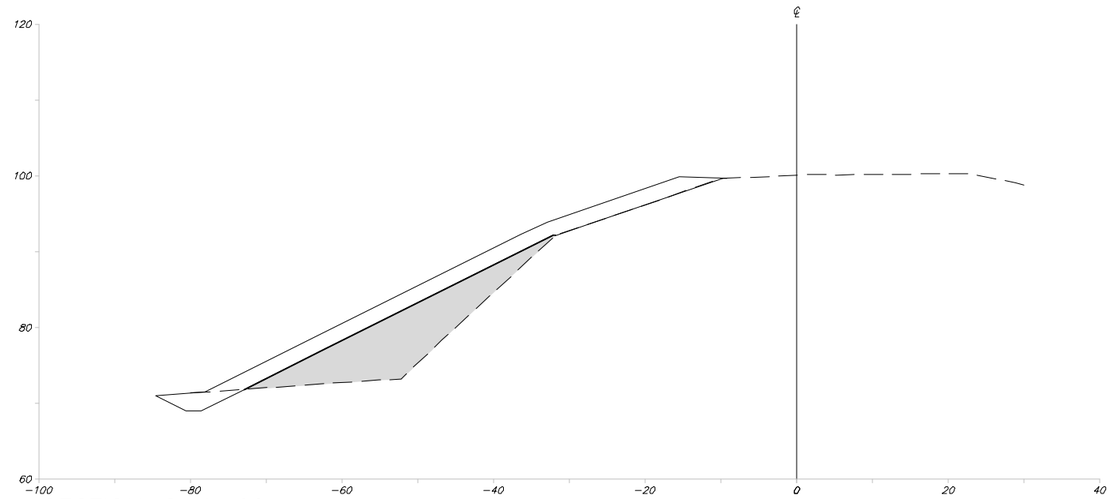

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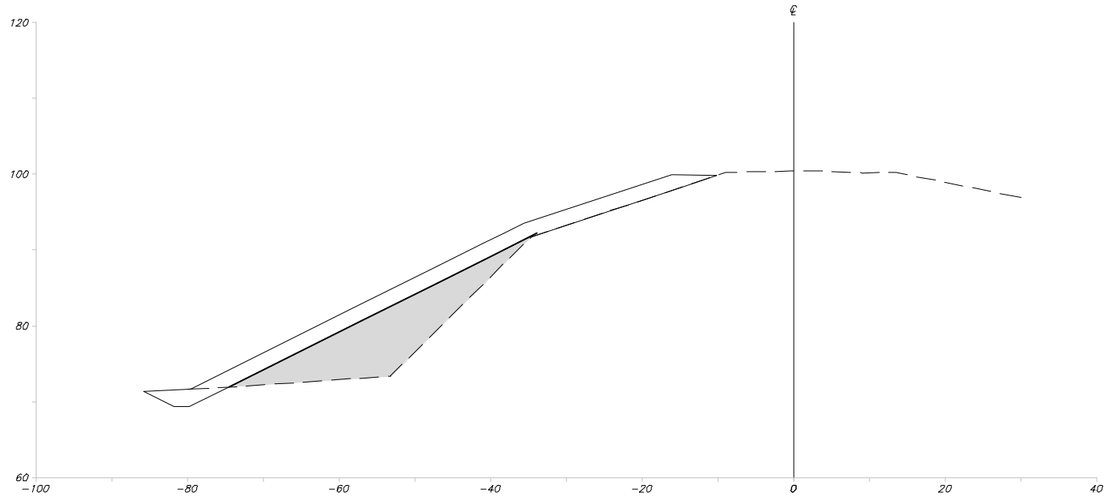

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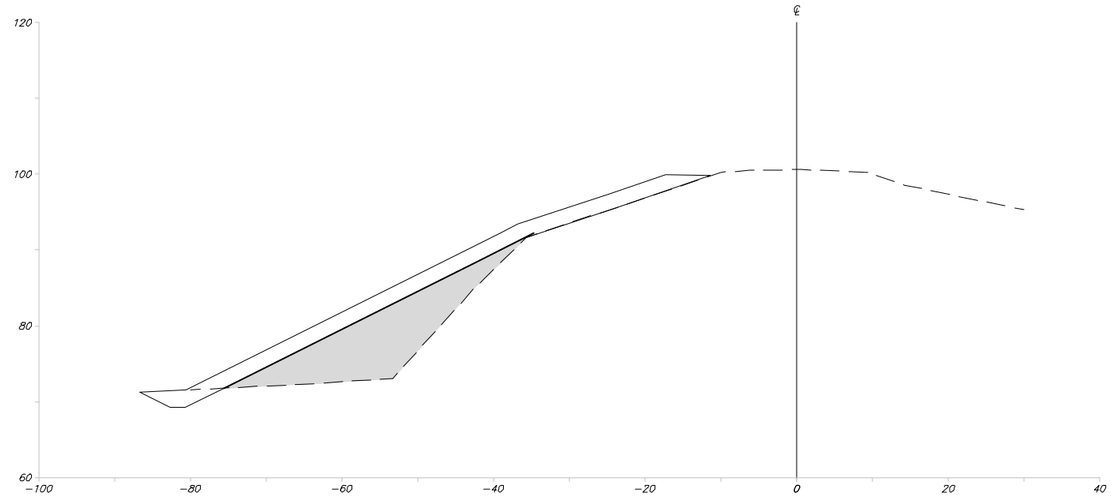

SECTION @ 2+00

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REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
Approved By: –
Date: FEBRUARY 2020

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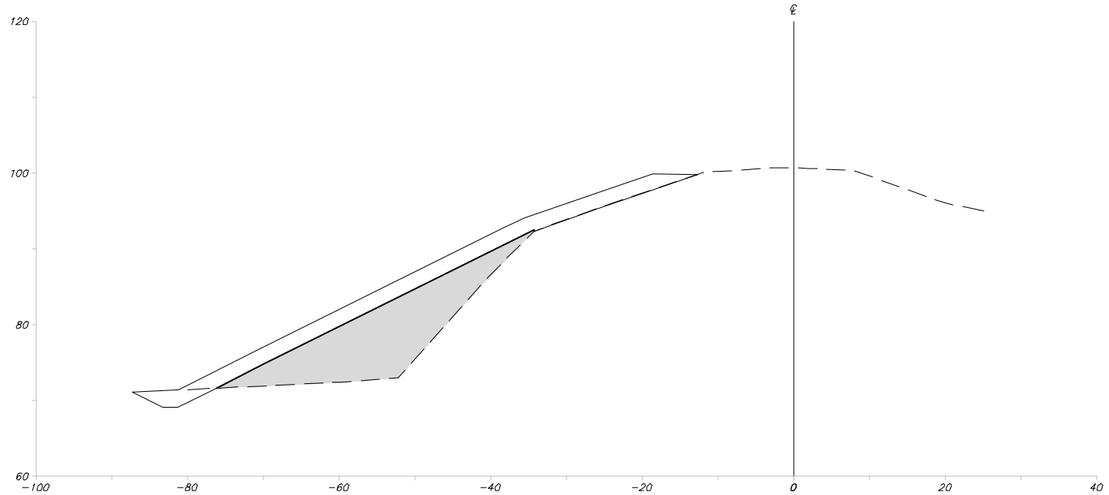
RECLAMATION DISTRICT 800 - COSUMNES
CRITICAL LEVEE REPAIRS
FIG ROAD DOWNSTREAM

SECTIONS

SHEET 5 OF 9 SHEETS

File Date: C:\Drawings\Reclamation District No 800\NRCS Repair Sites\Production\Fig Road\Fig Road map.dwg 3/2/2020



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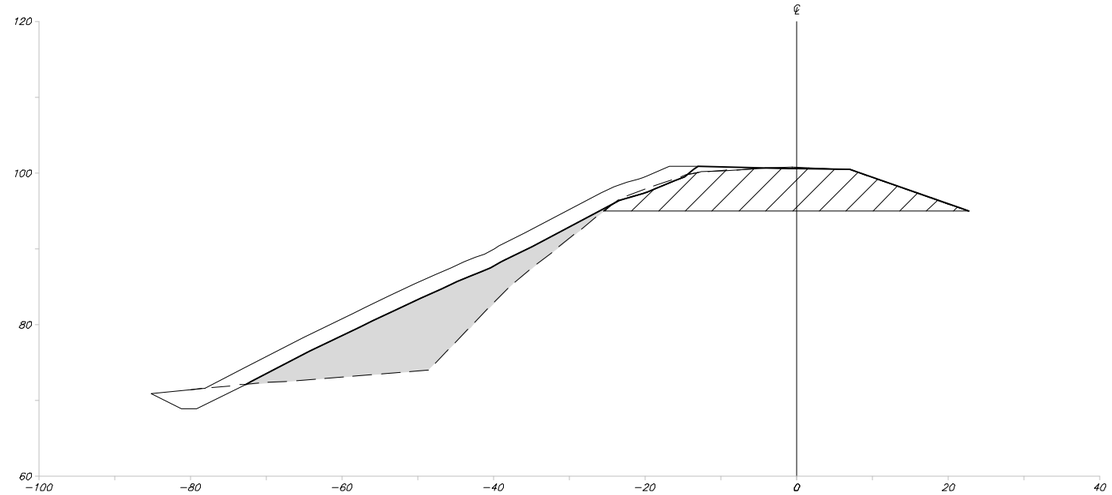

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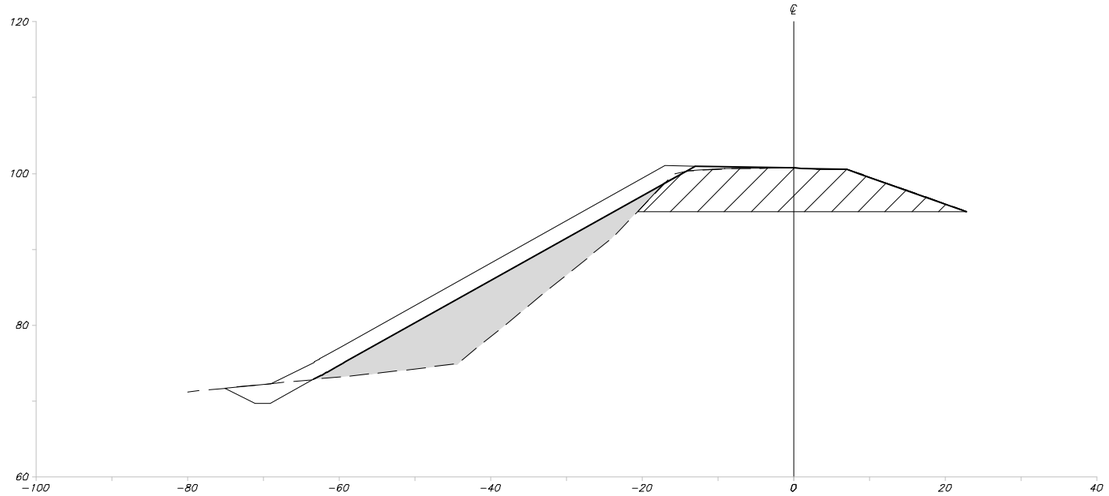

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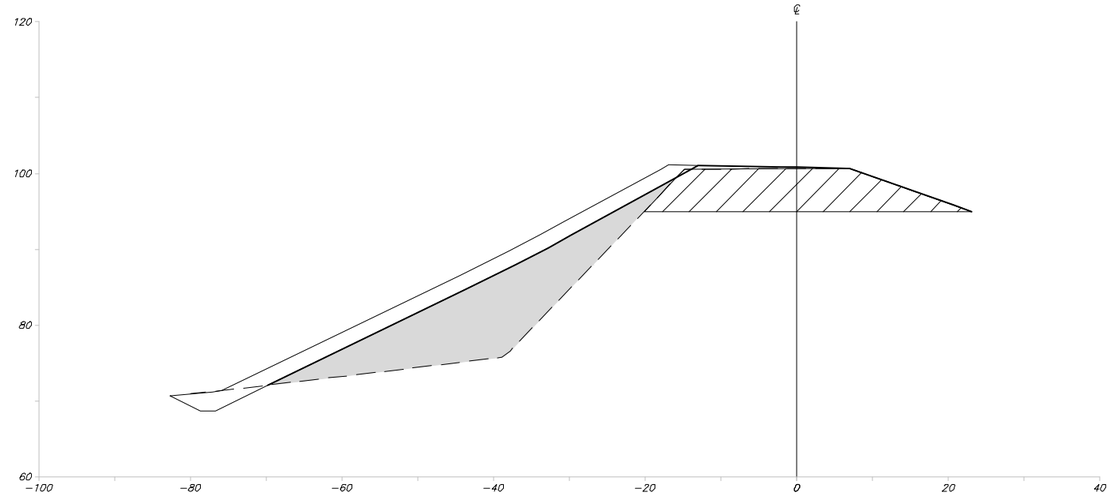

SECTION @ 2+80

0' 5' 10' 20'

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
Approved By: –
Date: FEBRUARY 2020

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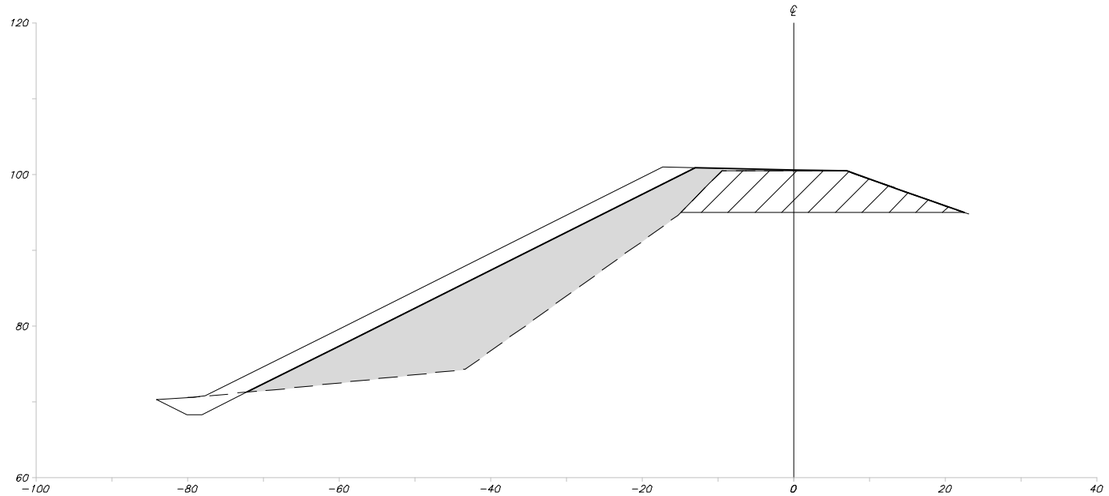
RECLAMATION DISTRICT 800 - COSUMNES
CRITICAL LEVEE REPAIRS
FIG ROAD DOWNSTREAM
SECTIONS

SHEET 6 OF 9 SHEETS

Q:\Drawings\Reclamation District No 800\NRCS Repair Sites\Production\Fig Road\Fig Road map.dwg
Plot Date: 3/2/2020



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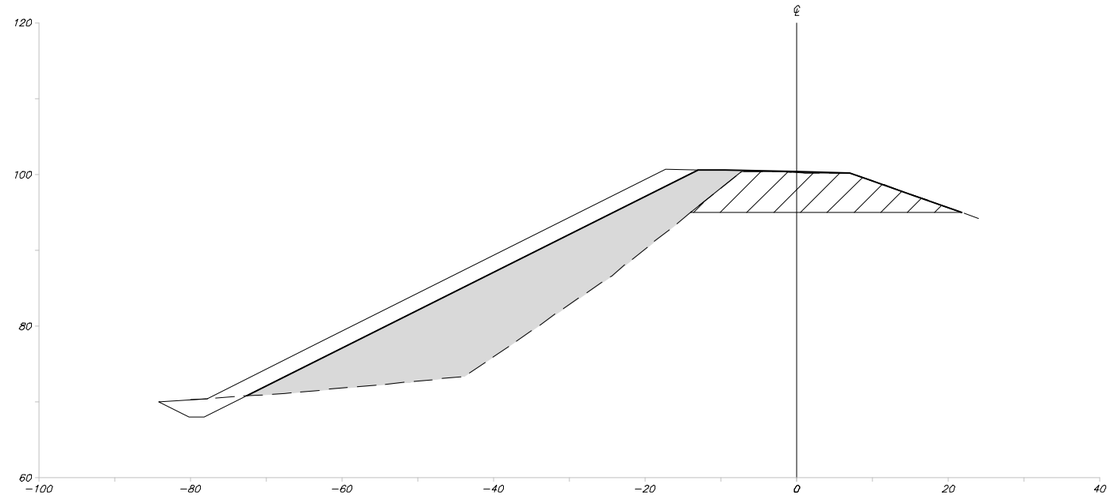

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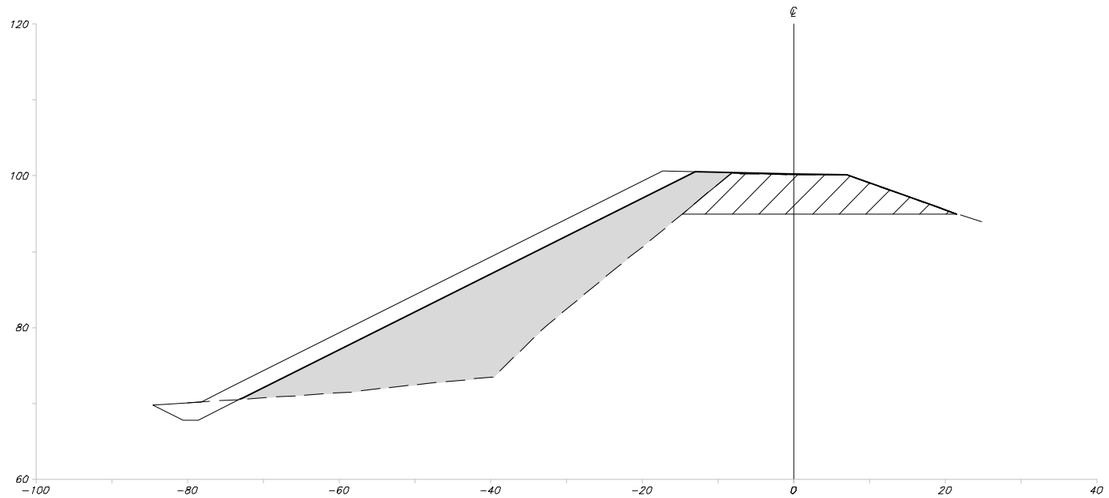

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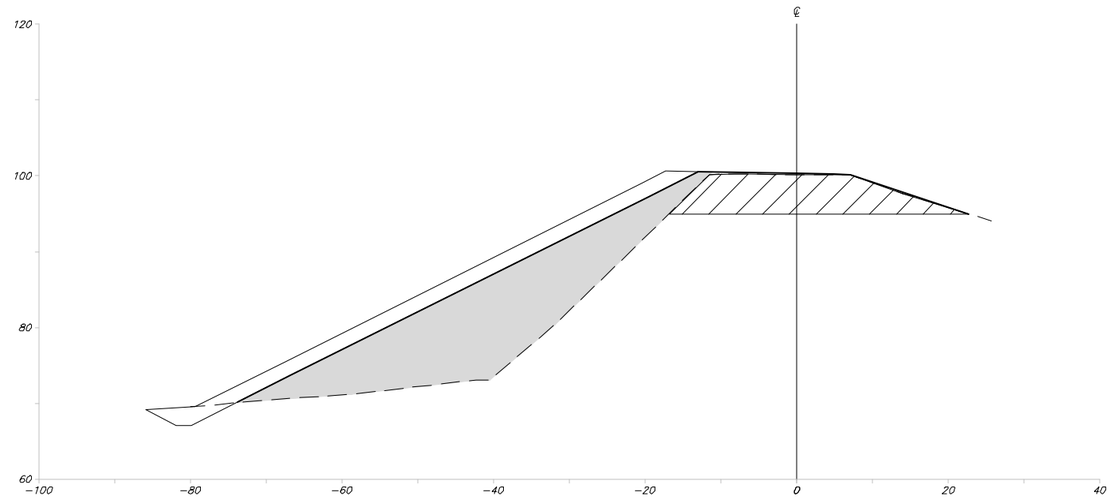

SECTION @ 3+60

0' 5' 10' 20'

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
Approved By: –
Date: FEBRUARY 2020

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RECLAMATION DISTRICT 800 - COSUMNES

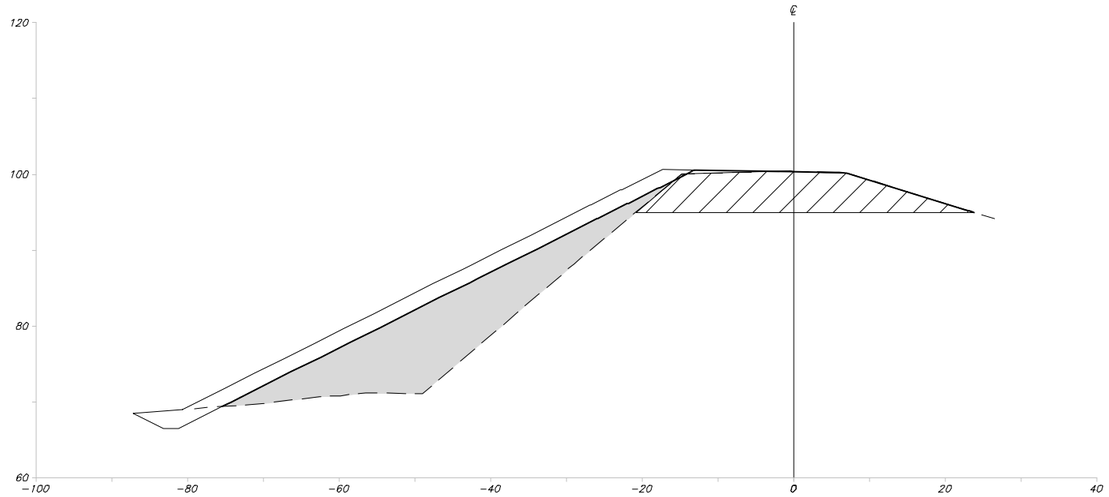
CRITICAL LEVEE REPAIRS
FIG ROAD DOWNSTREAM

SECTIONS

SHEET 7 OF 9 SHEETS

Plot Date: 3/2/2020

G:\Drawings\Reclamation District No 800\NRCS Repair Sites\Production\Fig Road\Fig Road map.dwg



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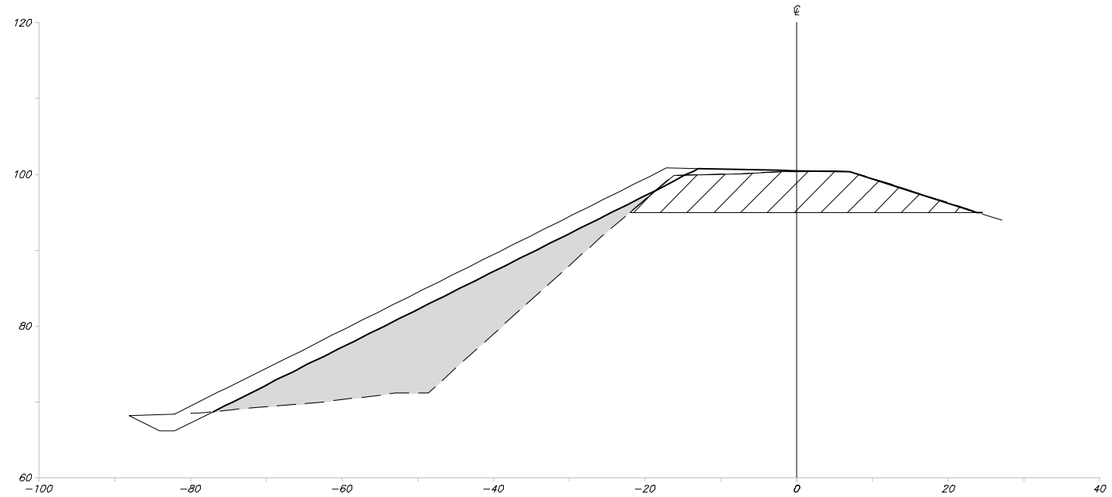

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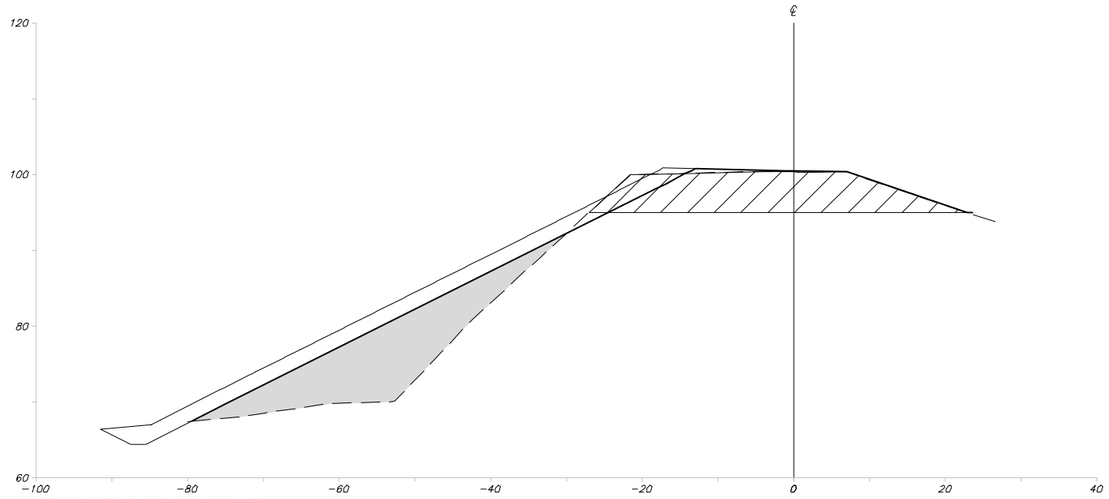

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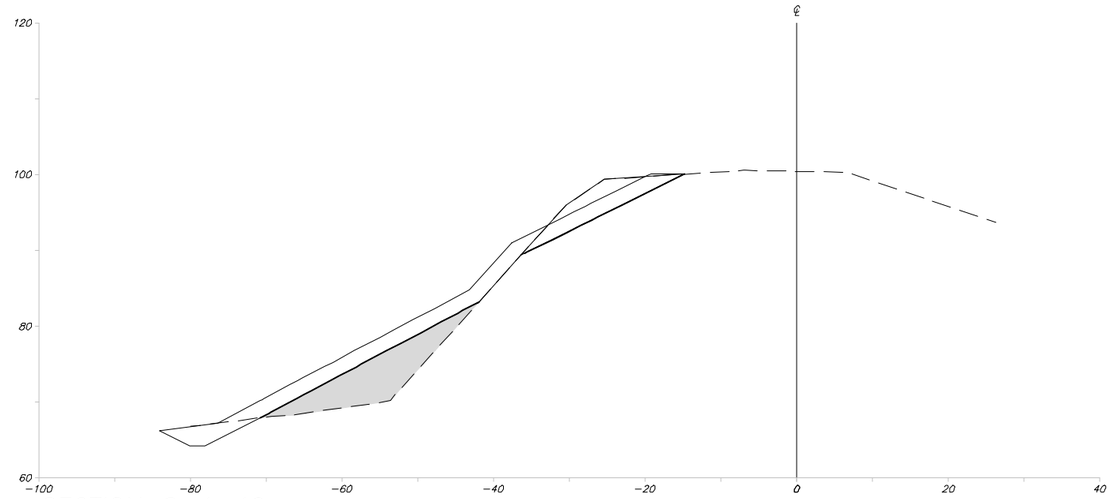

SECTION @ 4+40

0' 5' 10' 20'

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
Approved By: –
Date: FEBRUARY 2020

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RECLAMATION DISTRICT 800 - COSUMNES

CRITICAL LEVEE REPAIRS
FIG ROAD DOWNSTREAM

SECTIONS

SHEET 8 OF 9 SHEETS

File Date: 3/2/2020

O:\Drawings\Reclamation District No 800\NRCS Repair Sites\Production\Fig Road\Fig Road map.dwg

N

EXISTING ACCESS ROAD

30'

BORROW ACCESS

LOCAL BORROW

ORDINARY HIGH WATER MARK: 78-FT

PLAN
0' 50' 100'

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TABLE 1
QUANTITIES

QUANTITY (AREA OR VOLUME)	ABOVE OHWM [1]	BELOW OHWM [1]	TOTAL
WORK AREA (ACRES)	0.51	0.43	0.94
TEMPORARY DISTURBANCE (ACRES)	0.75	0.29	1.04
TOTAL ACRES	1.26	0.72	1.98
FILL – SOIL (CUBIC YARDS)	2421	1633	4054
FILL – RSP [2] (CUBIC YARDS)	1674	830	2504
TOTAL CUBIC YARDS	4095	2463	6558

[1] OHWM = ORDINARY HIGH WATER MARK (ELEVATION = 78+/- FEET)
[2] RSP = ROCK SLOPE PROTECTION

LEGEND
- WORK AREA BELOW ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA BELOW ORDINARY HIGH WATER MARK
- WORK AREA ABOVE ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA ABOVE ORDINARY HIGH WATER MARK

REVISIONS

REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
Approved By: –
Date: FEBRUARY 2020

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RECLAMATION DISTRICT 800 - COSUMNES
CRITICAL LEVEE REPAIRS
FIG ROAD DOWNSTREAM
IMPACT

SHEET 9 OF 9 SHEETS

Plot Date: 3/2/2020
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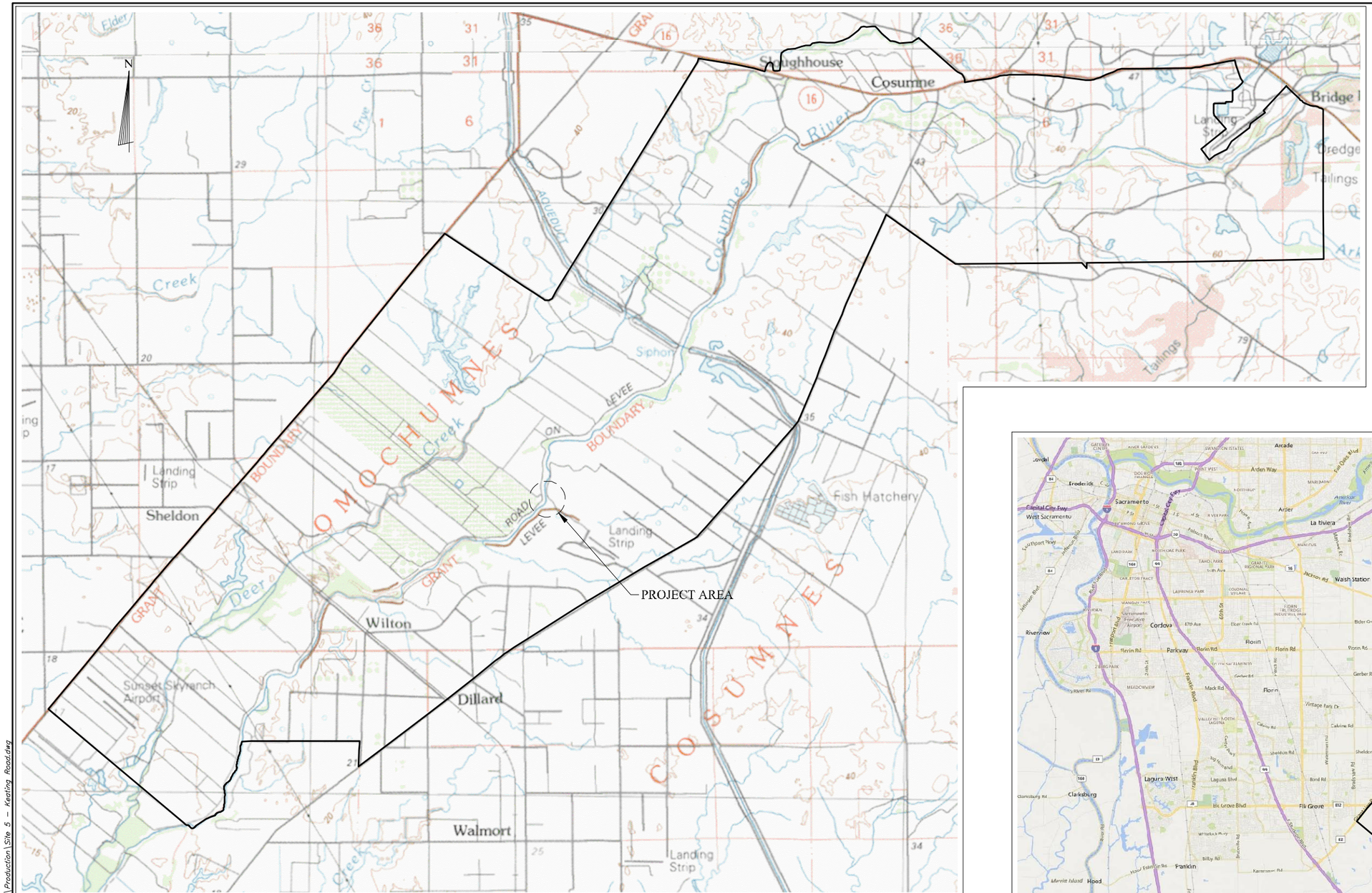
RECLAMATION DISTRICT NO. 800

CRITICAL LEVEE REPAIR PROJECTS
SITE 5: KEATING ROAD

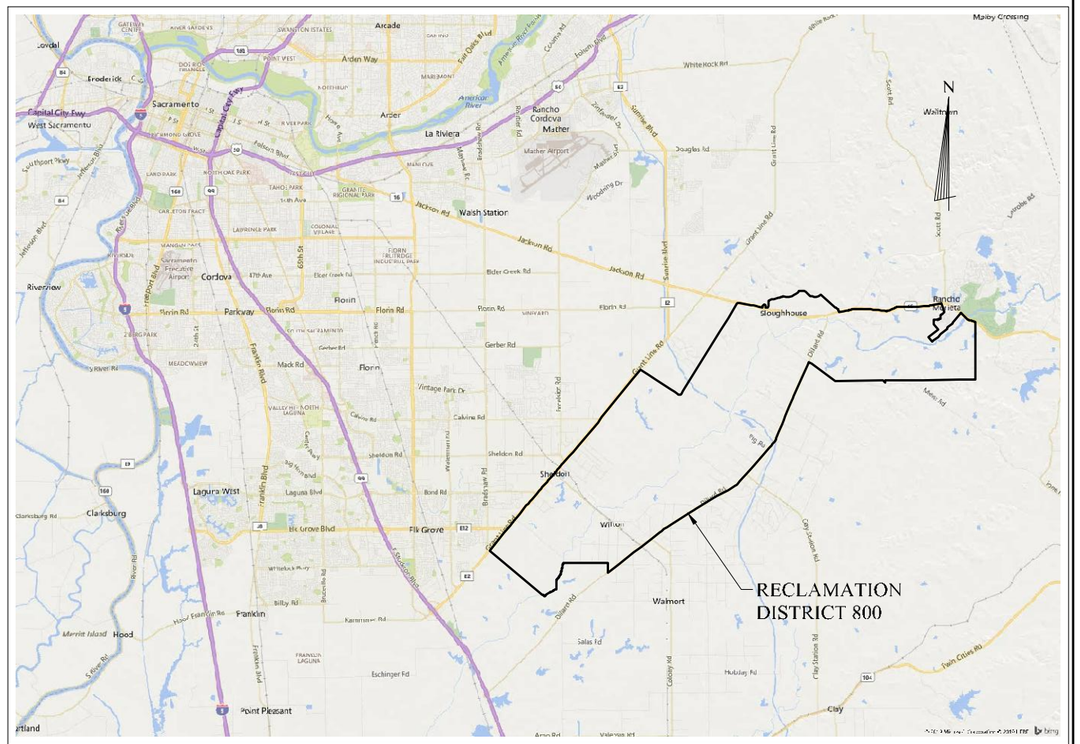
Sacramento County **California**

WAGNER & BONSIGNORE CONSULTING CIVIL ENGINEERS A CORPORATION
2151 RIVER PLAZA DRIVE, SUITE 100 SACRAMENTO, CALIFORNIA



LOCATION MAP

0' 1,500' 3,000' 6,000'



VICINITY MAP

NOT TO SCALE

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: —
Approved By: —
Date: MARCH 2020

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RECLAMATION DISTRICT 800

SITE 5 - KEATING ROAD

LOCATION AND VICINITY MAP

SHEET 1 OF 7 SHEETS

File Name: Site 5 – Keating Road.dwg
Plot Date: 4/3/2020
Revision By: —

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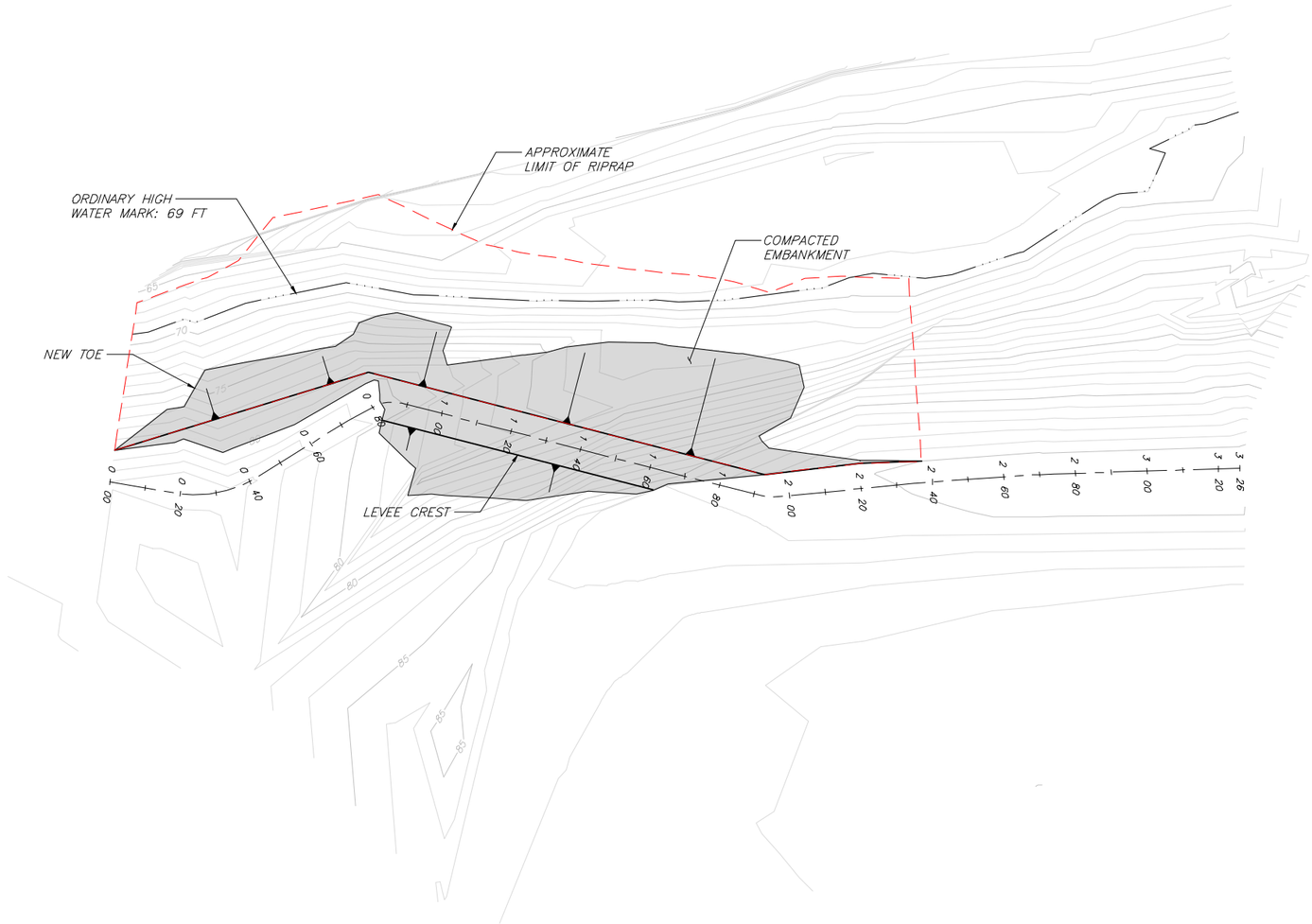

0' 10' 20' 40'

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By	P.W. ERVIN
Drawn By	P. INTHARATH
Checked By	–
Approved By	–
Date	MARCH 2020

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RECLAMATION DISTRICT 800

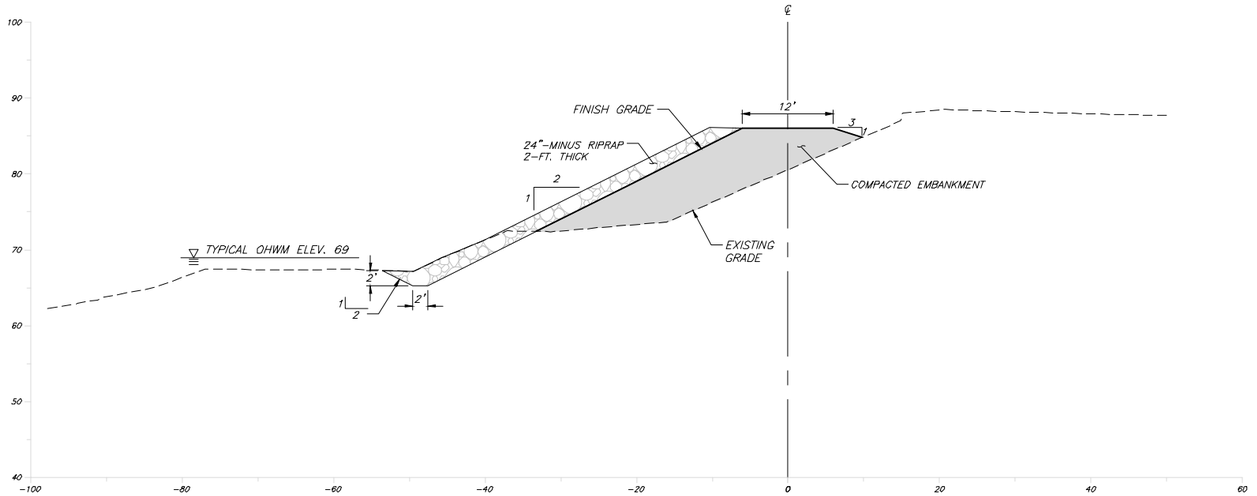
SITE 5 - KEATING ROAD

PLAN

SHEET 2 OF 7 SHEETS

Last Saved By: Site 5 – Keating Road.dwg
Plot Date: 4/3/2020
Revision Date: –

G:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 5 – Keating Road.dwg



TYPICAL SECTION

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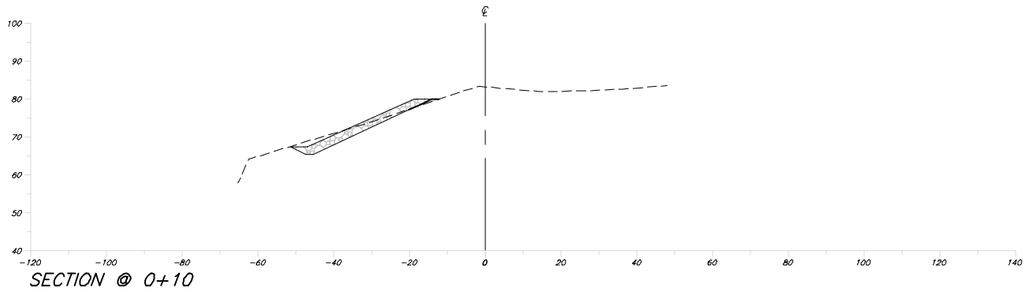

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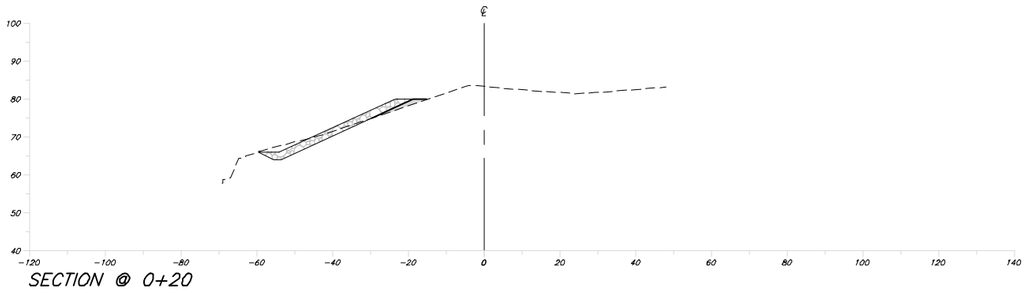

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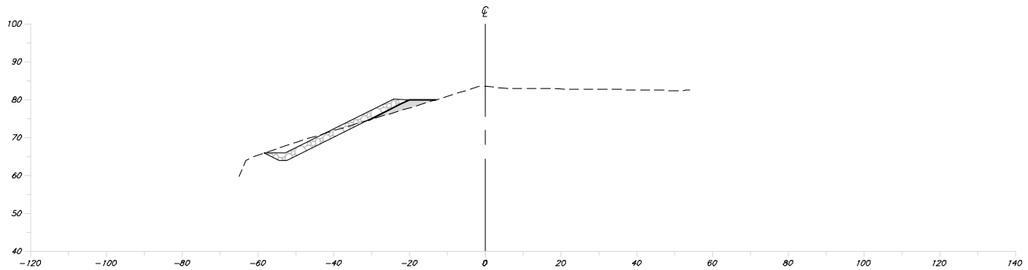

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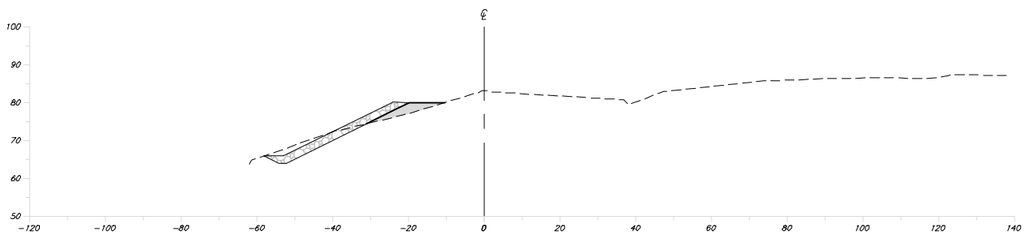

SECTION @ 0+40

0' 10' 20' 40'

C:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 5 – Keating Road.dwg

Last Saved By: Site 5 – Keating Road.dwg
Plot Date: 4/3/2020
Acad Ver: –
Plot By: –

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
Approved By: –
Date: MARCH 2020

Wagner & Bonsignore
Consulting Civil Engineers, A Corporation
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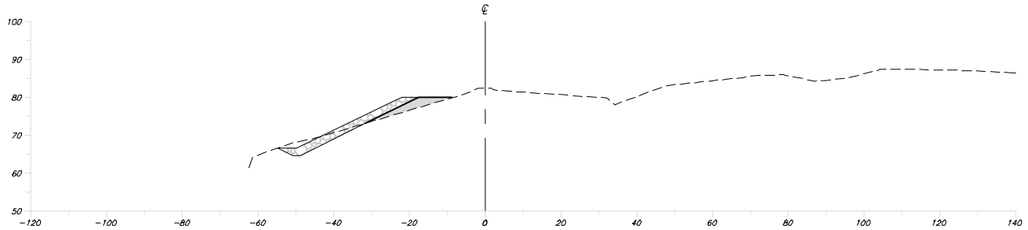
DRAFT

RECLAMATION DISTRICT 800

SITE 5 - KEATING ROAD

SECTIONS

SHEET 3 OF 7 SHEETS



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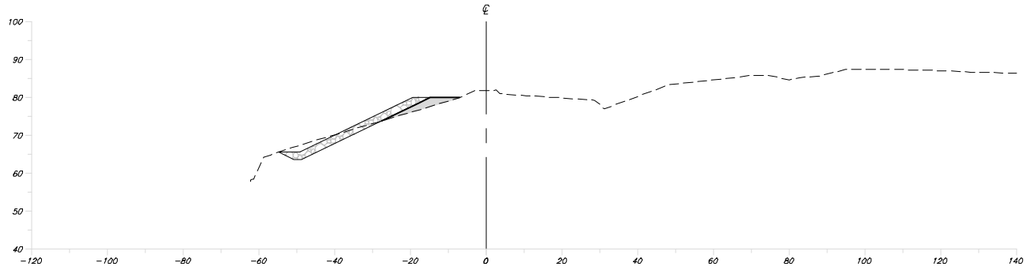

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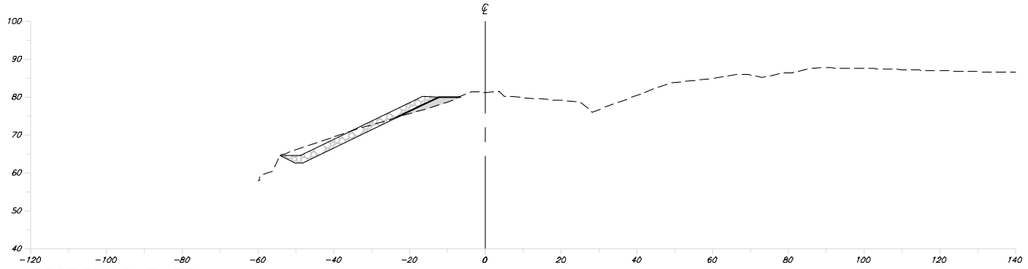

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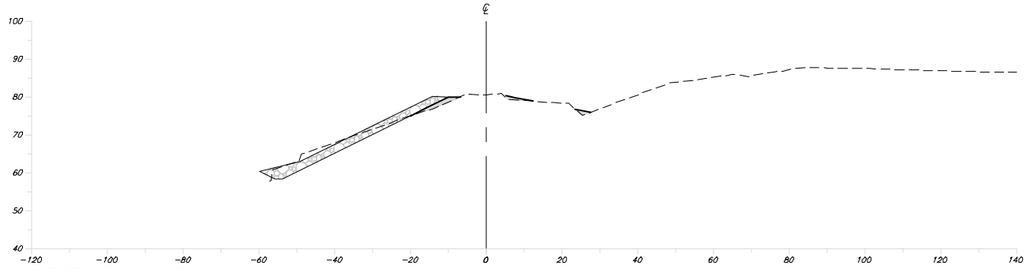

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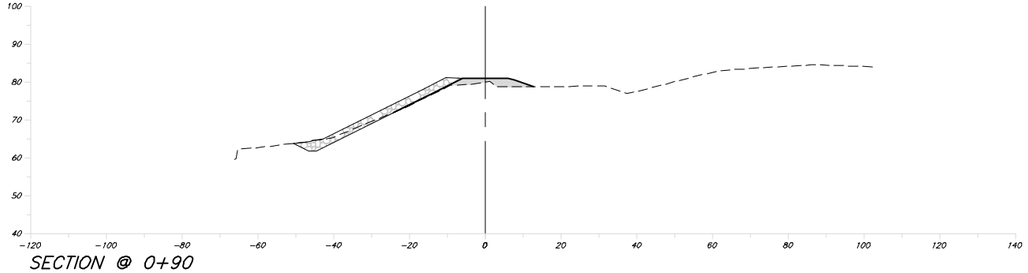

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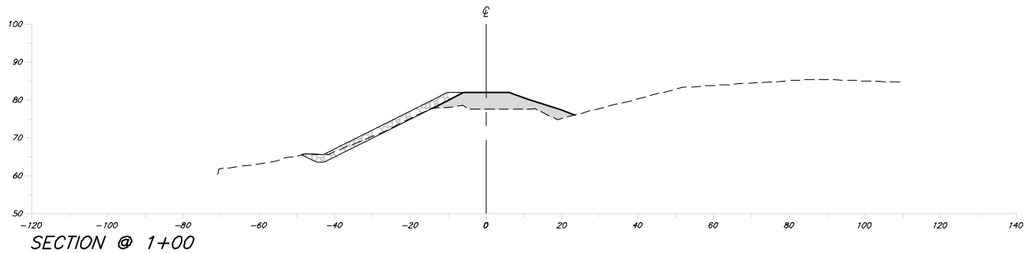

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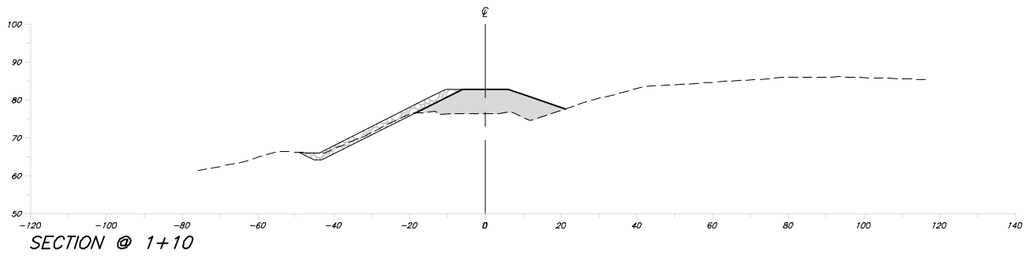

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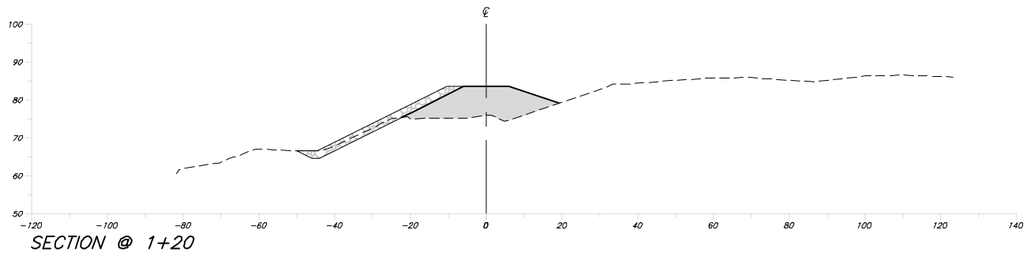

SECTION @ 1+20

0' 10' 20' 40'

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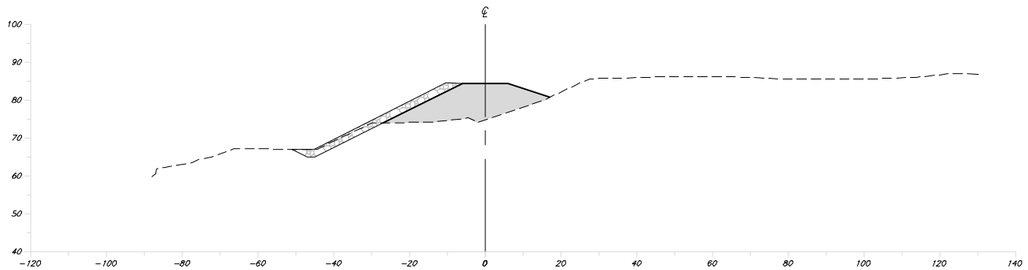
RECLAMATION DISTRICT 800

SITE 5 - KEATING ROAD

SECTIONS

SHEET 4 OF 7 SHEETS



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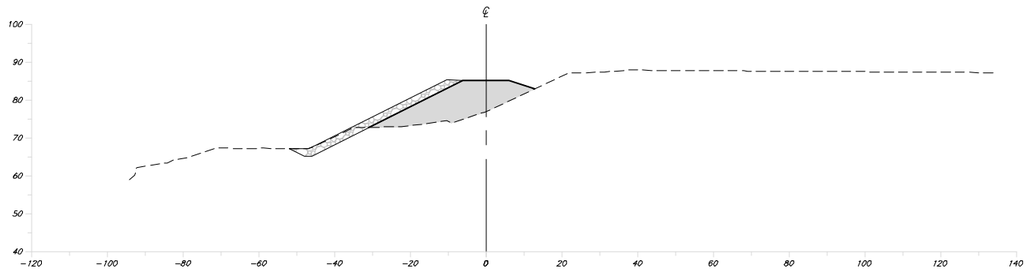

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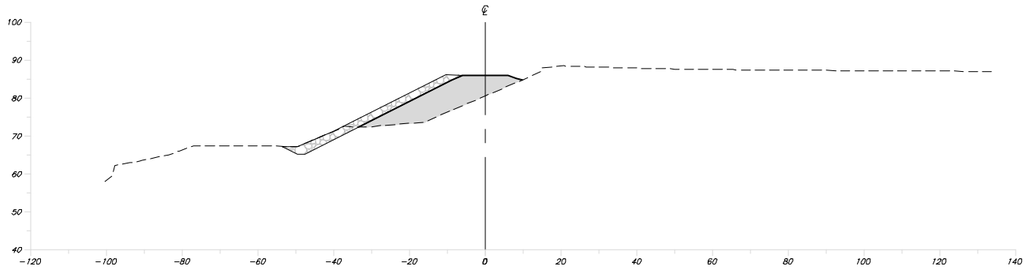

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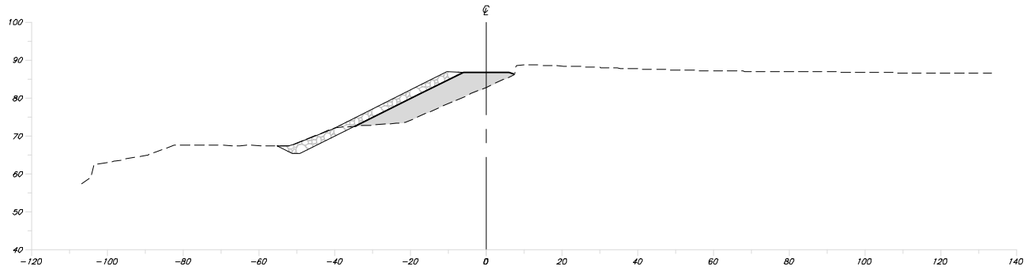

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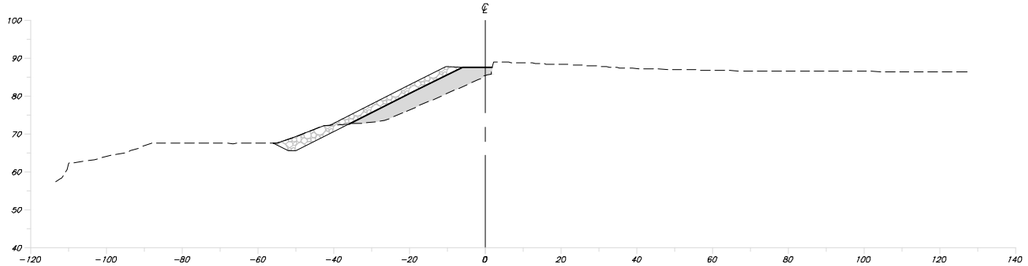

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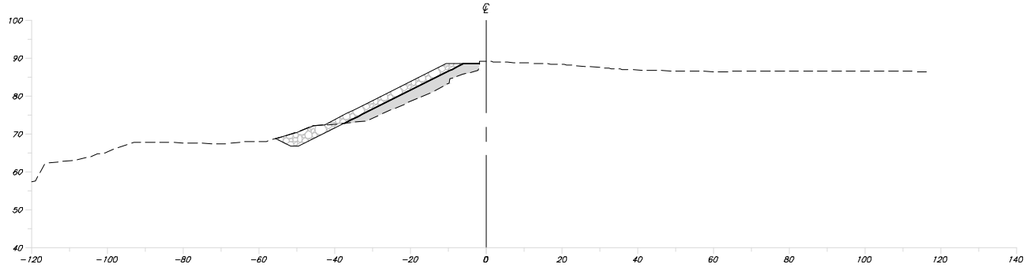

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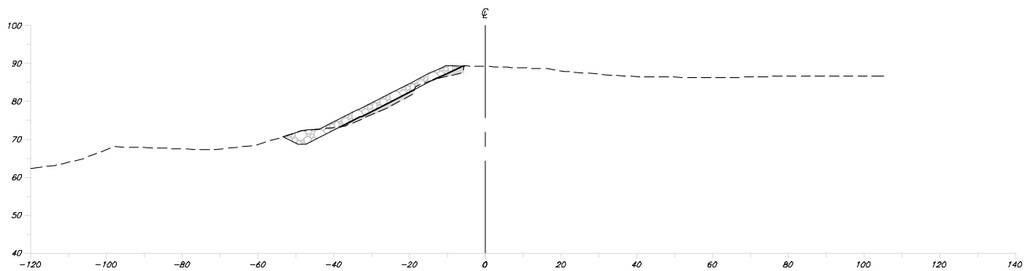

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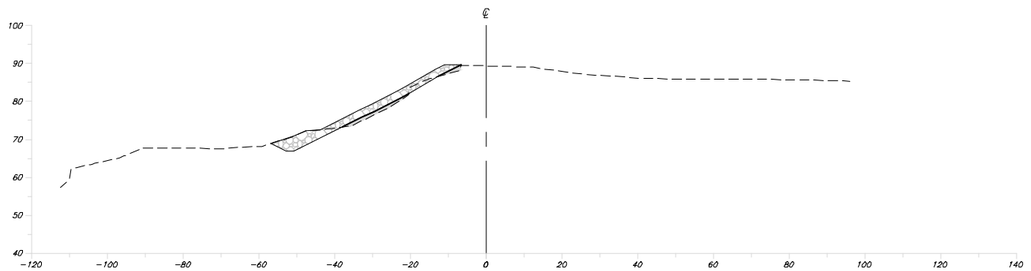

SECTION @ 2+00

0' 10' 20' 40'

C:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 5 - Keating Road.dwg

Last Save Site 5 - Keating Road.dwg
Plot Date 4/3/2020
Revision Date —

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Drawn By P. INTHARATH
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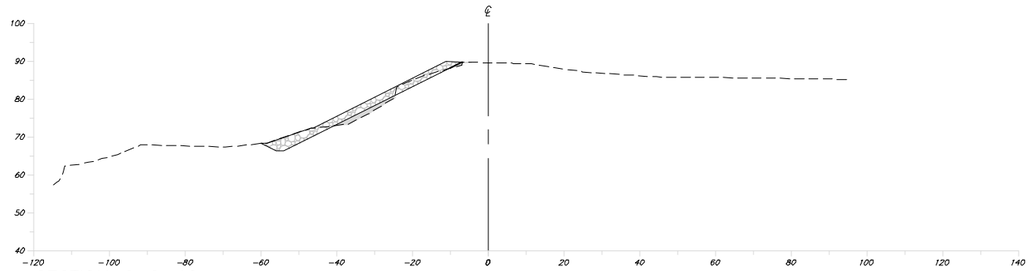
RECLAMATION DISTRICT 800

SITE 5 - KEATING ROAD

SECTIONS

SHEET 5 OF 7 SHEETS



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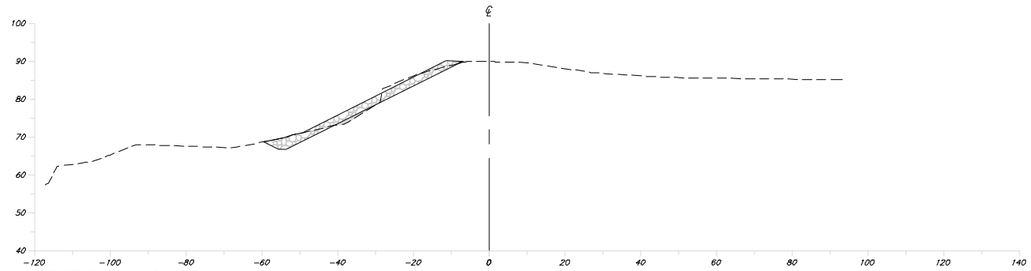

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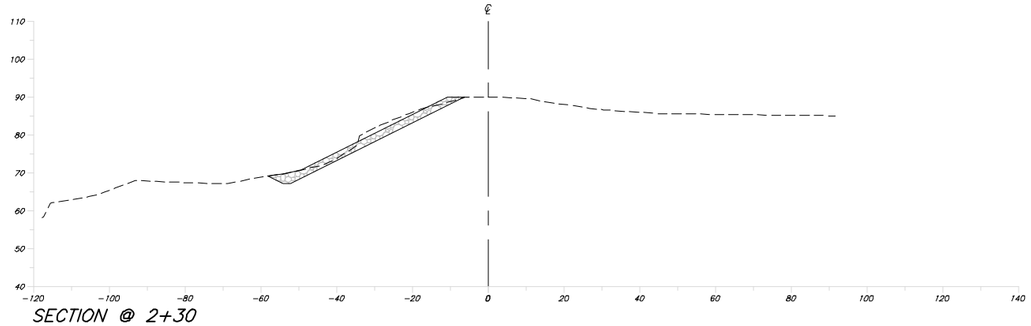

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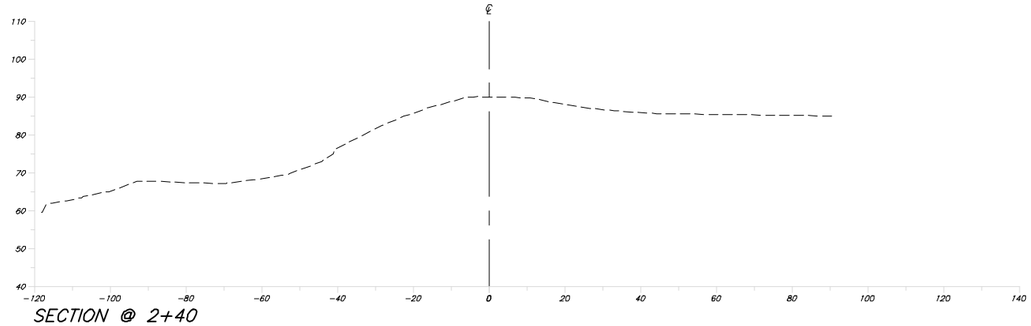

SECTION @ 2+40

0' 10' 20' 40'

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RECLAMATION DISTRICT 800

SITE 5 - KEATING ROAD

SECTIONS

SHEET 6 OF 7 SHEETS

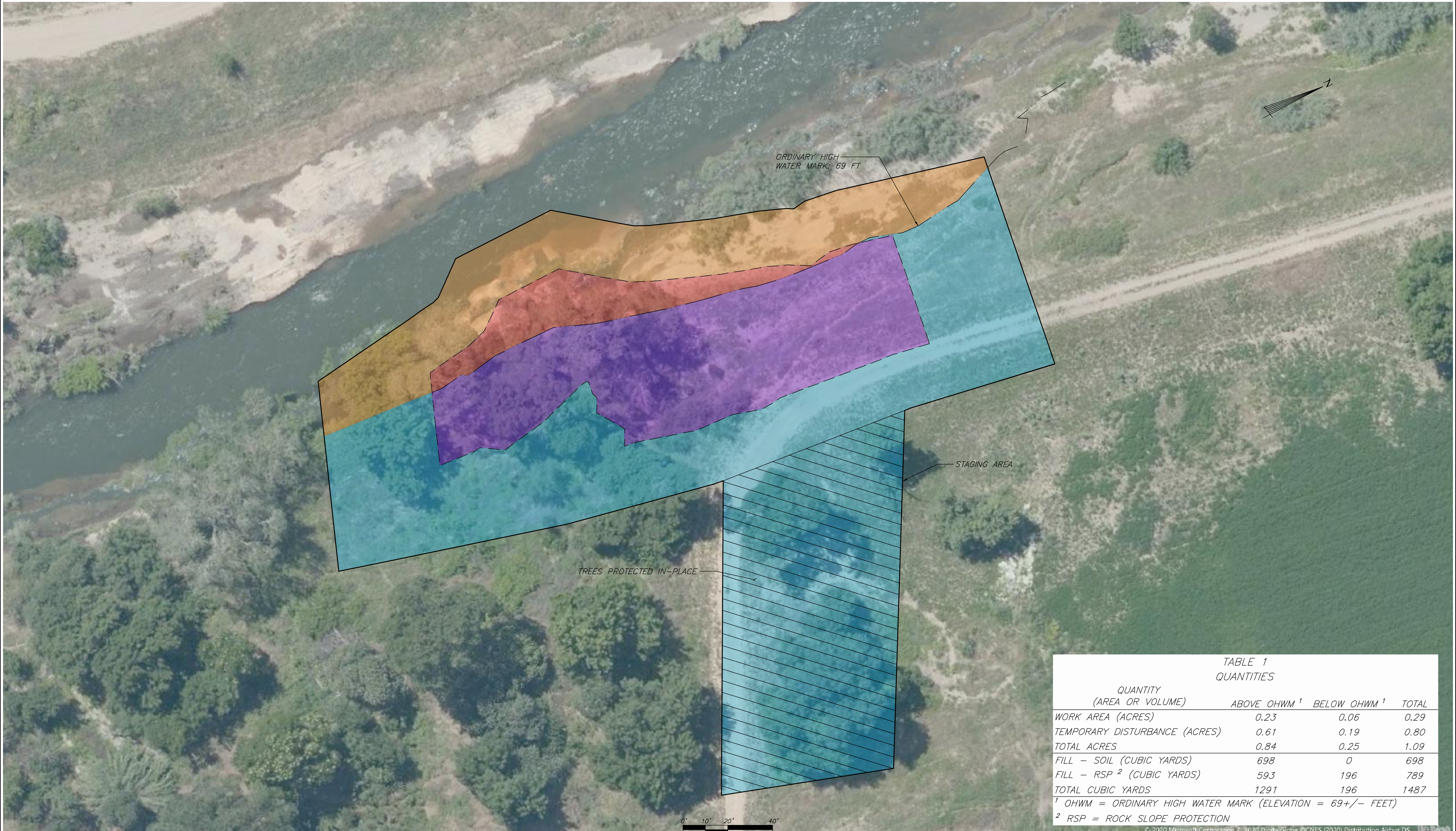

TABLE 1
QUANTITIES

QUANTITY (AREA OR VOLUME)	ABOVE OHWM [1]	BELOW OHWM [1]	TOTAL
WORK AREA (ACRES)	0.23	0.06	0.29
TEMPORARY DISTURBANCE (ACRES)	0.61	0.19	0.80
TOTAL ACRES	0.84	0.25	1.09
FILL – SOIL (CUBIC YARDS)	698	0	698
FILL – RSP [2] (CUBIC YARDS)	593	196	789
TOTAL CUBIC YARDS	1291	196	1487

[1] OHWM = ORDINARY HIGH WATER MARK (ELEVATION = 69+/– FEET)
[2] RSP = ROCK SLOPE PROTECTION

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Plot Date: 4/3/2020
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LEGEND
- WORK AREA BELOW ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA BELOW ORDINARY HIGH WATER MARK
- WORK AREA ABOVE ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA ABOVE ORDINARY HIGH WATER MARK

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RECLAMATION DISTRICT 800
SITE 5 - KEATING ROAD
IMPACT

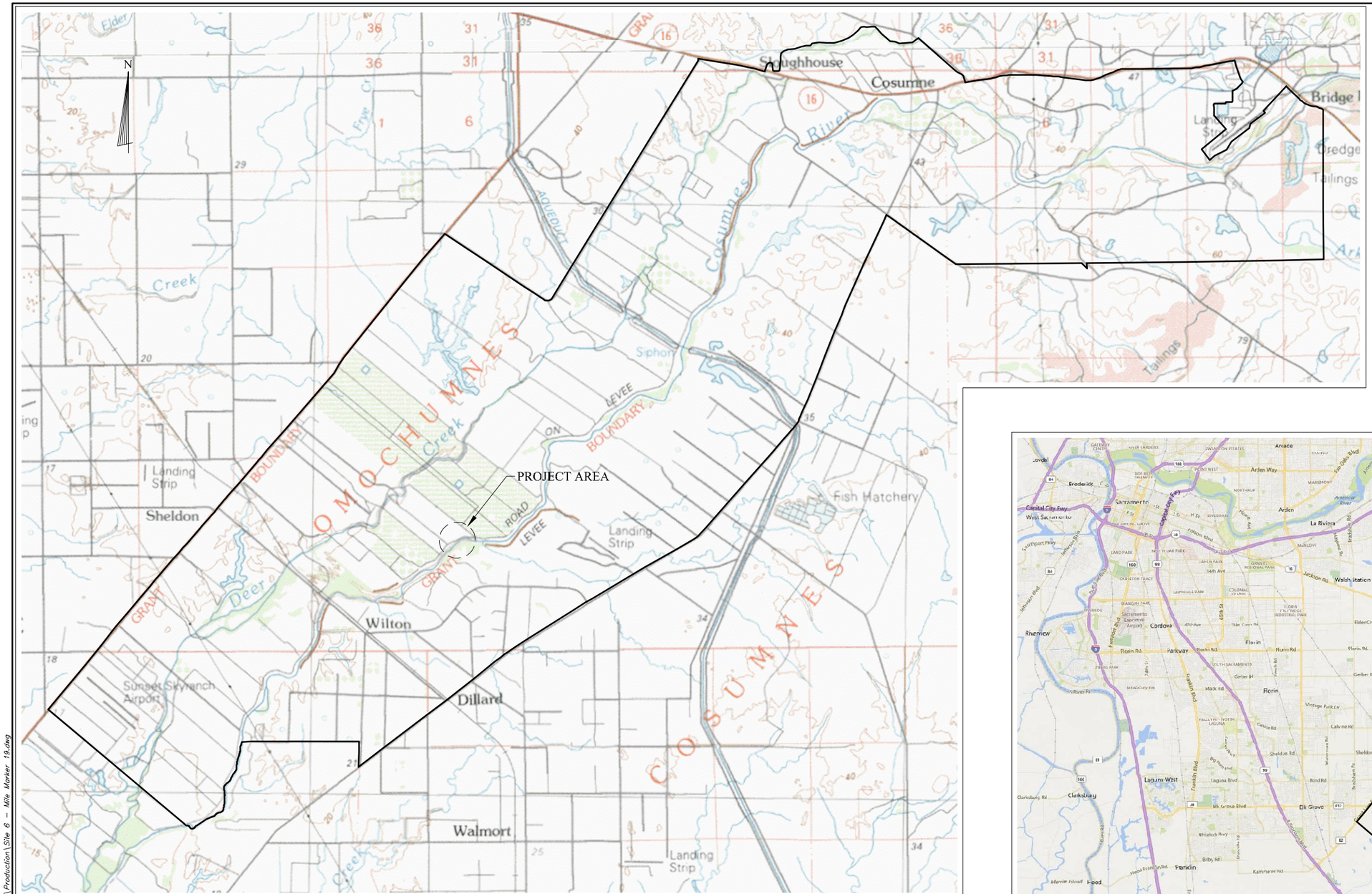
SHEET 7 OF 7 SHEETS

RECLAMATION DISTRICT NO. 800

CRITICAL LEVEE REPAIR PROJECTS
SITE 6: MILE MARKER 19

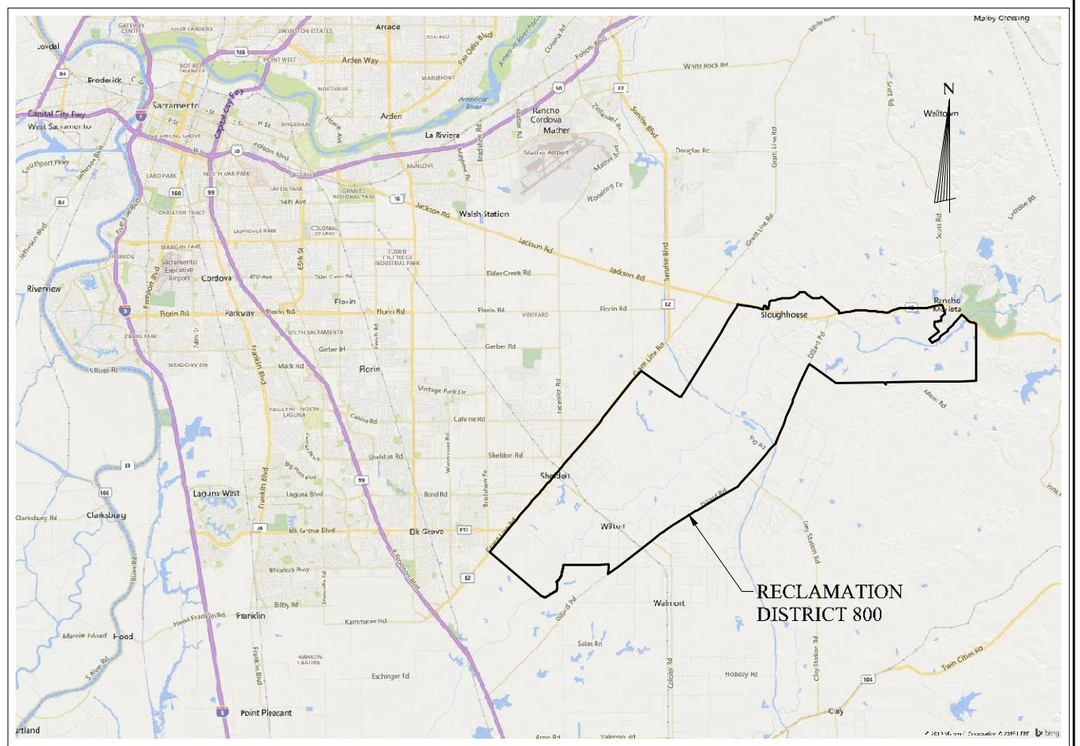
Sacramento County **California**

WAGNER & BONSIGNORE CONSULTING CIVIL ENGINEERS A CORPORATION
2151 RIVER PLAZA DRIVE, SUITE 100 SACRAMENTO, CALIFORNIA



LOCATION MAP

0' 1,500' 3,000' 6,000'



VICINITY MAP

NOT TO SCALE

REVISIONS			
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RECLAMATION DISTRICT 800

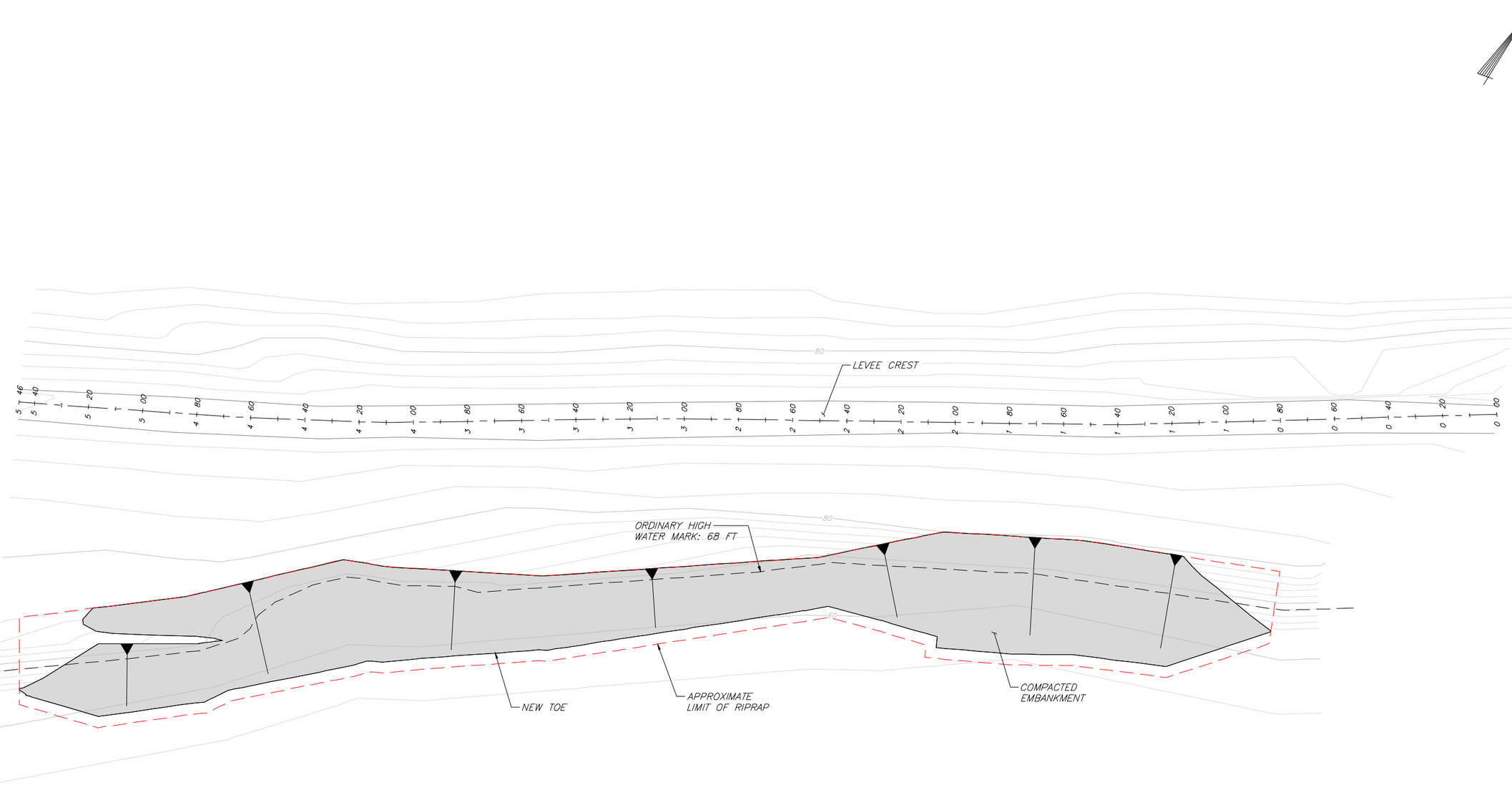
CRITICAL LEVEE REPAIRS MILE MARKER 19

LOCATION AND VICINITY MAP

SHEET 1 OF 9 SHEETS

Design Engr	
Plot Date	4/2/2020
Revision No.	–

O:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 6 – Mile Marker 19.dwg



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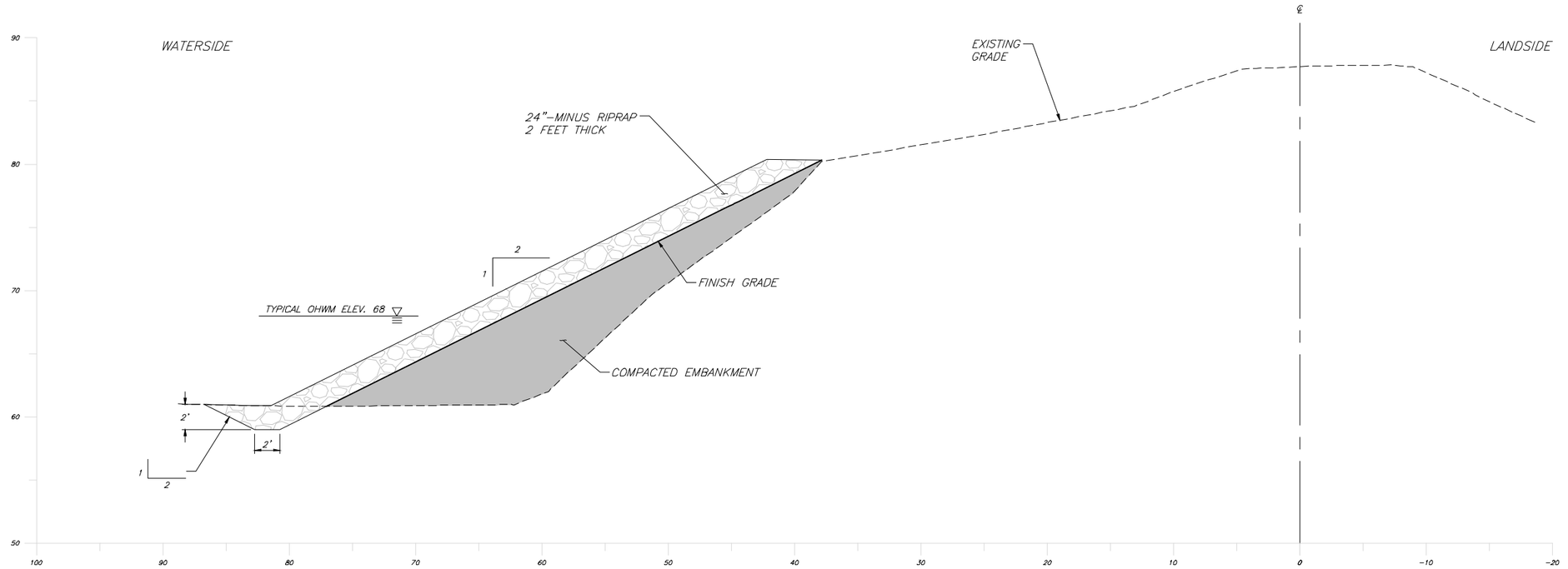
RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
MILE MARKER 19

PLAN

SHEET 2 OF 9 SHEETS



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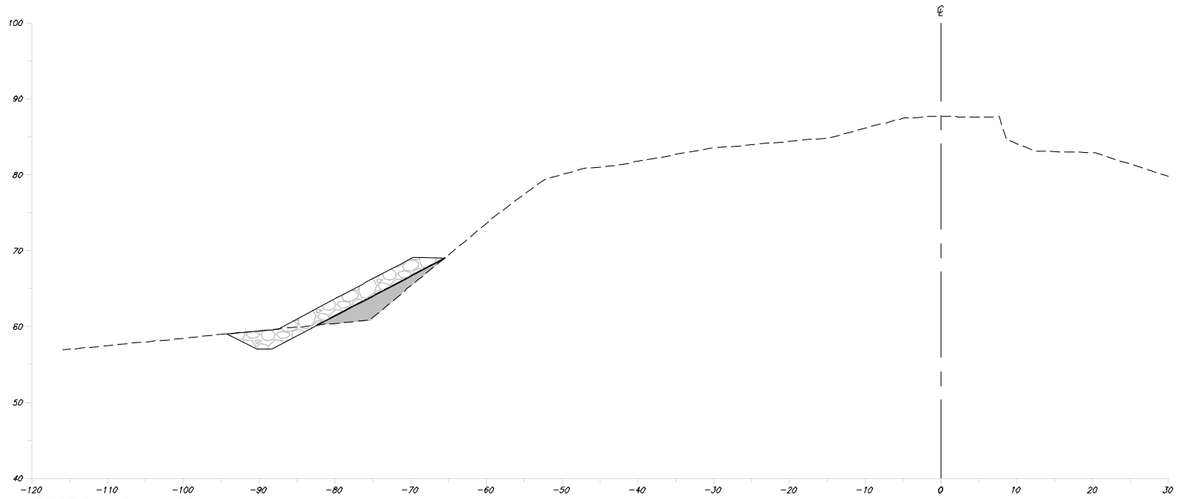

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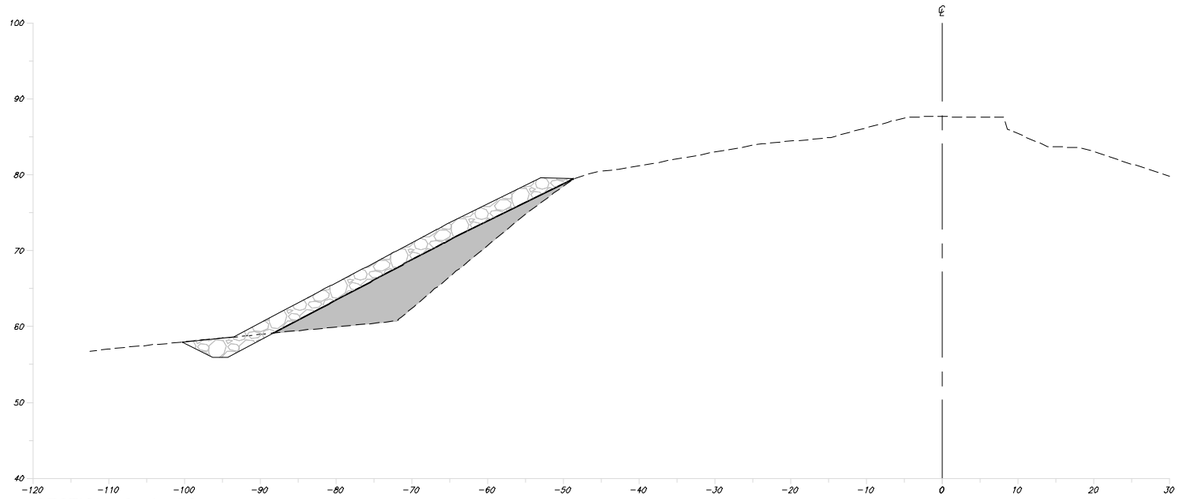

SECTION @ 1+20

0' 10' 20'

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CRITICAL LEVEE REPAIRS
MILE MARKER 19

SECTIONS

SHEET 3 OF 9 SHEETS

Last Plot Date: 4/2/2020
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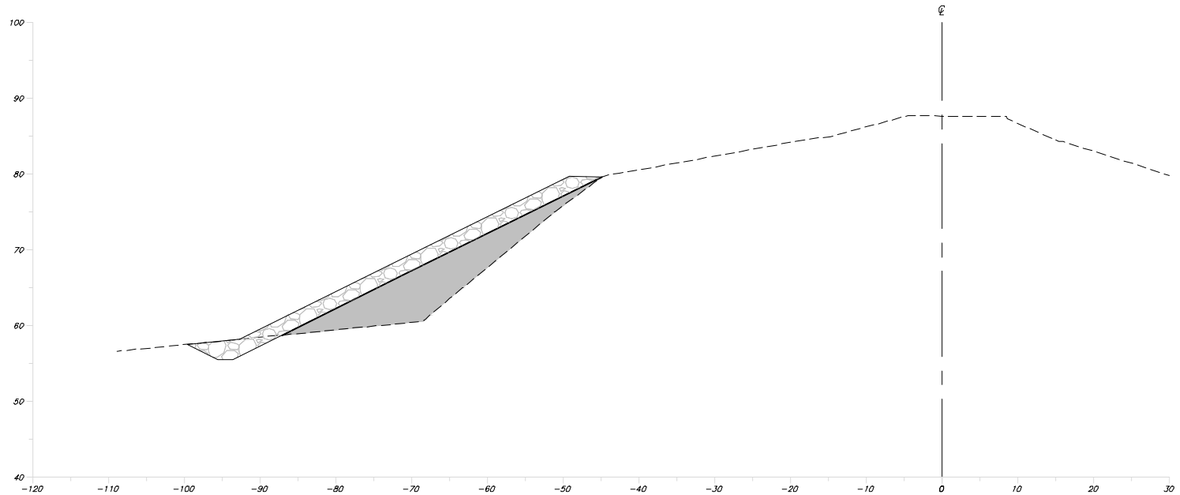

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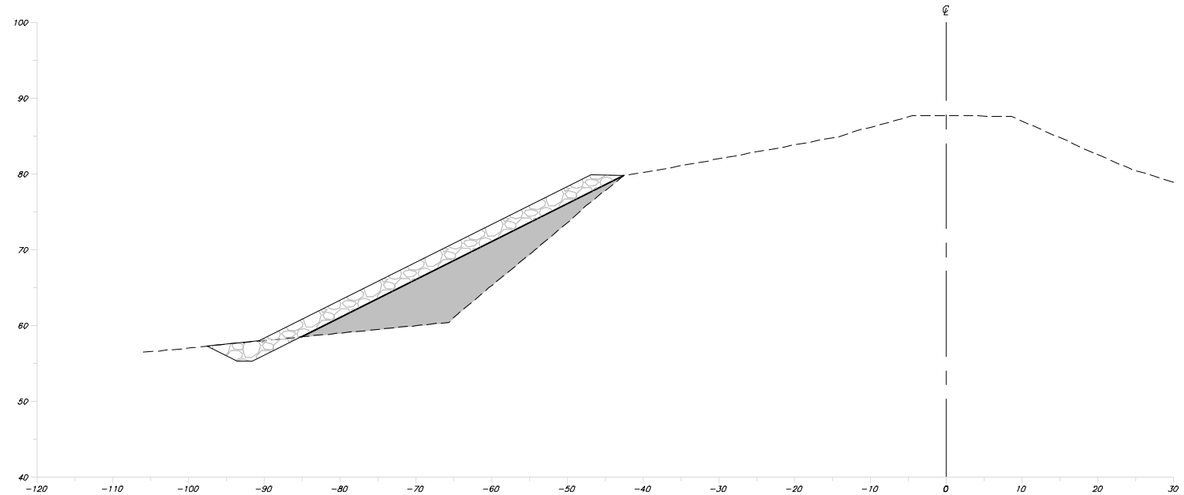

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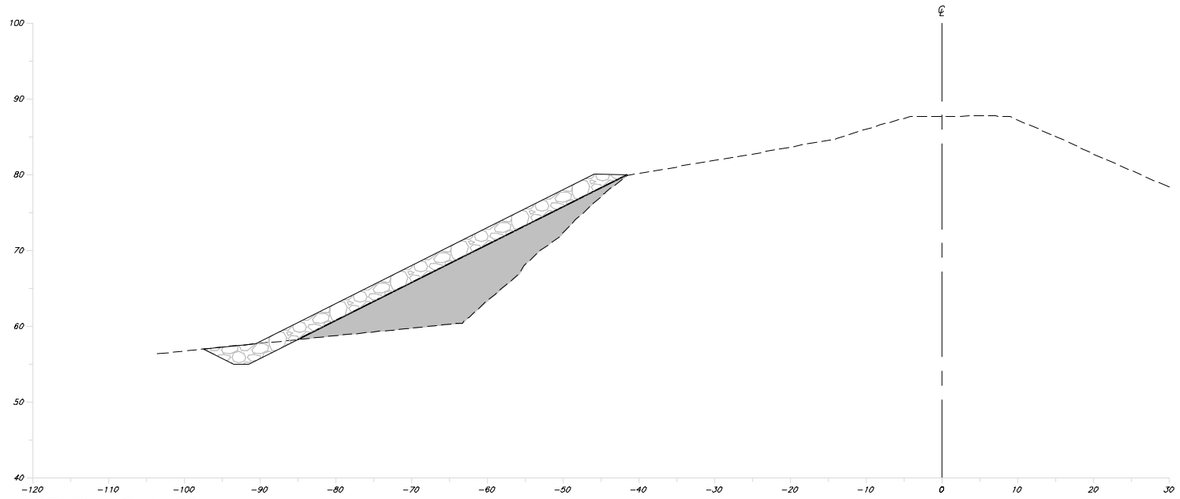

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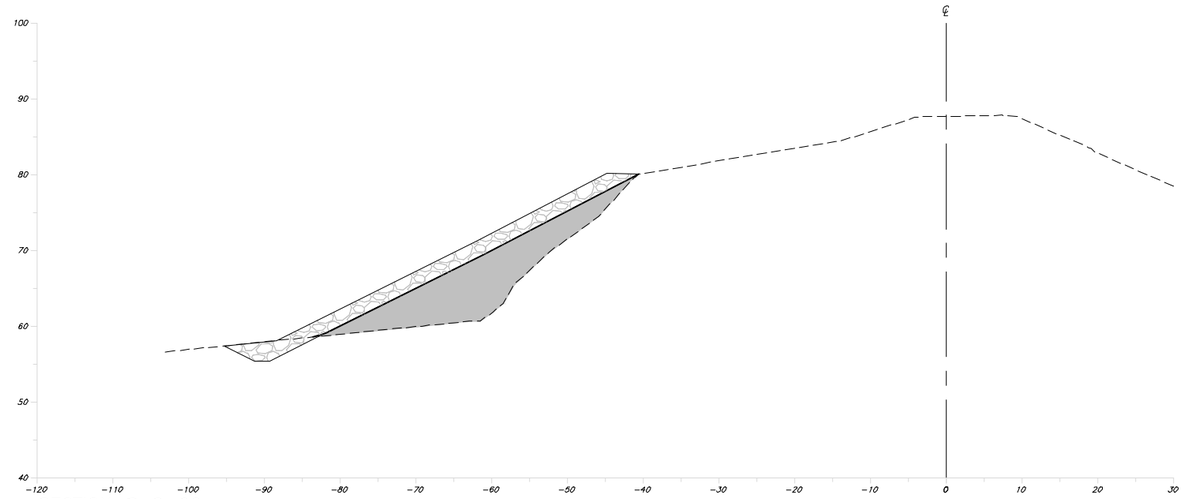

SECTION @ 2+00

0' 10' 20'

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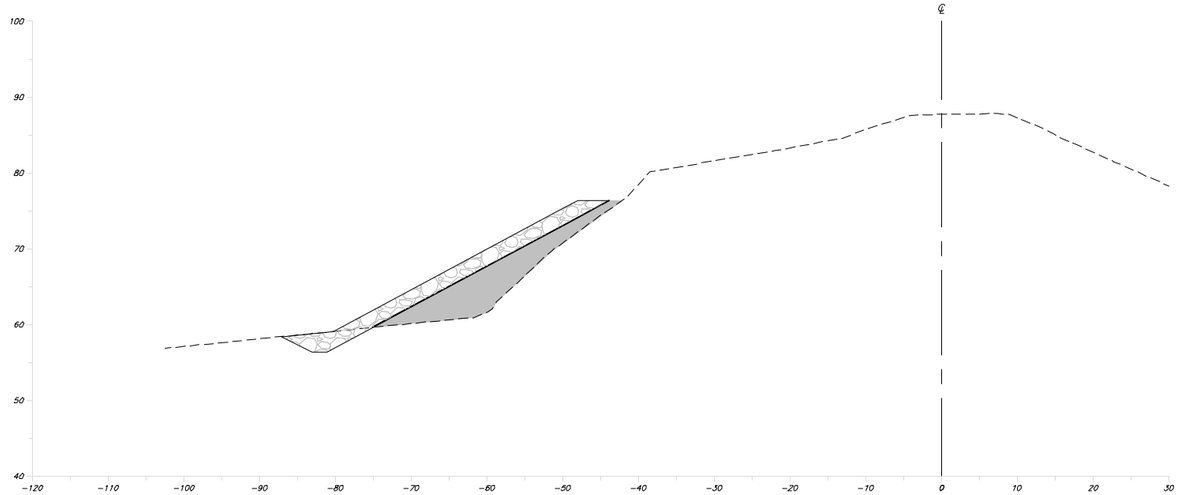
CRITICAL LEVEE REPAIRS
MILE MARKER 19

SECTIONS

SHEET 4 OF 9 SHEETS



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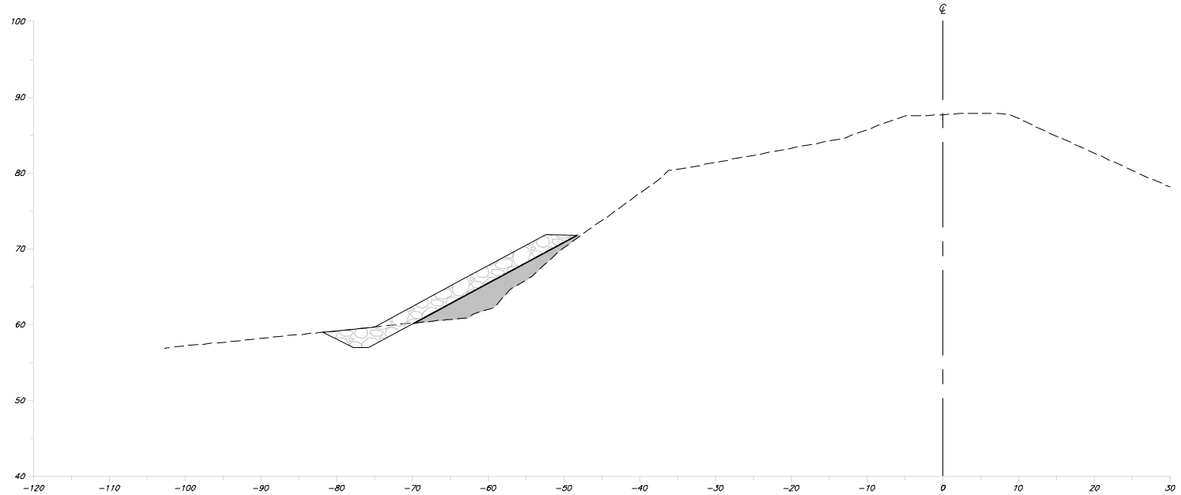

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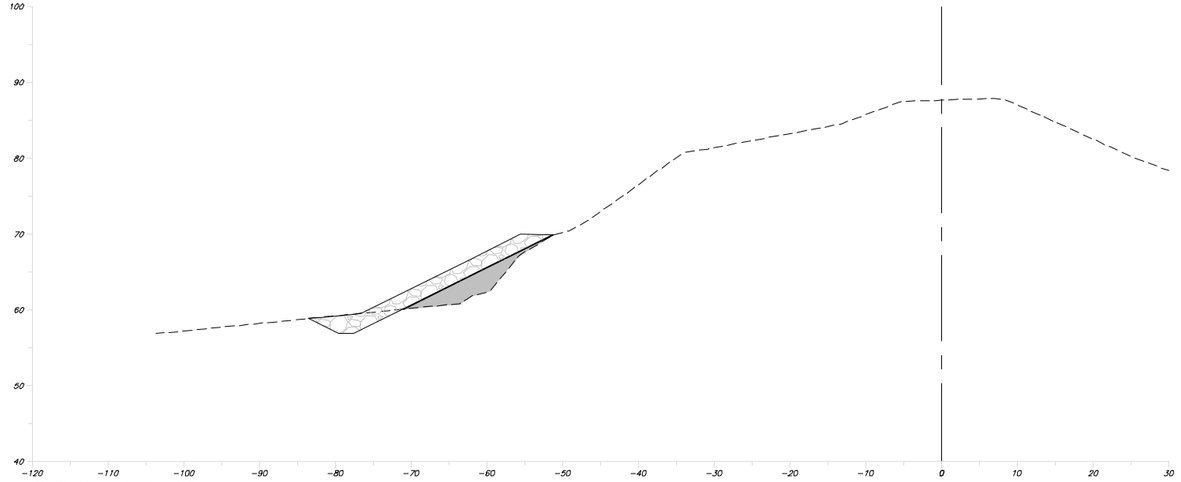

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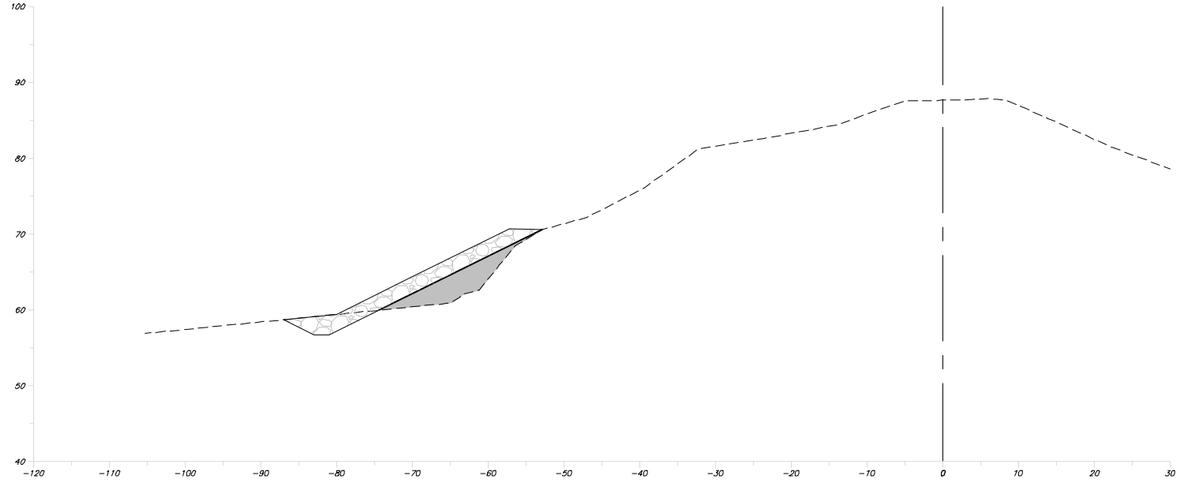

SECTION @ 2+80

0' 10' 20'

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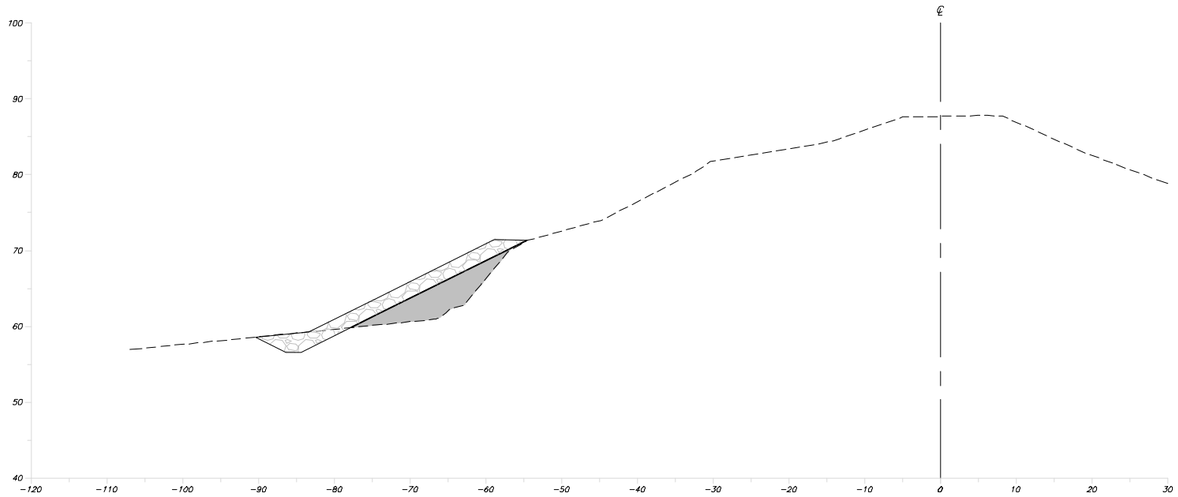
CRITICAL LEVEE REPAIRS
MILE MARKER 19

SECTIONS

SHEET 5 OF 9 SHEETS



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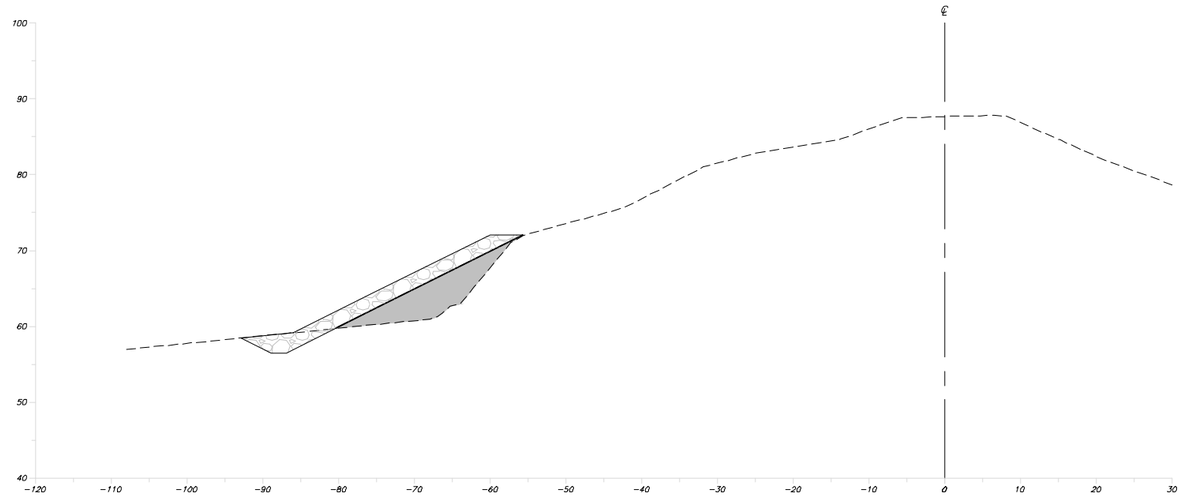

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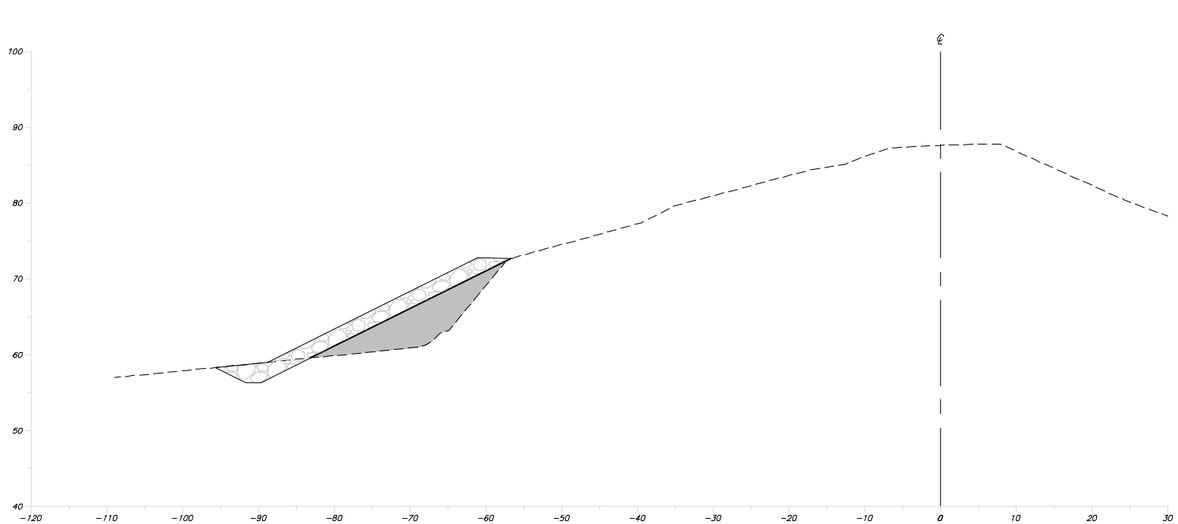

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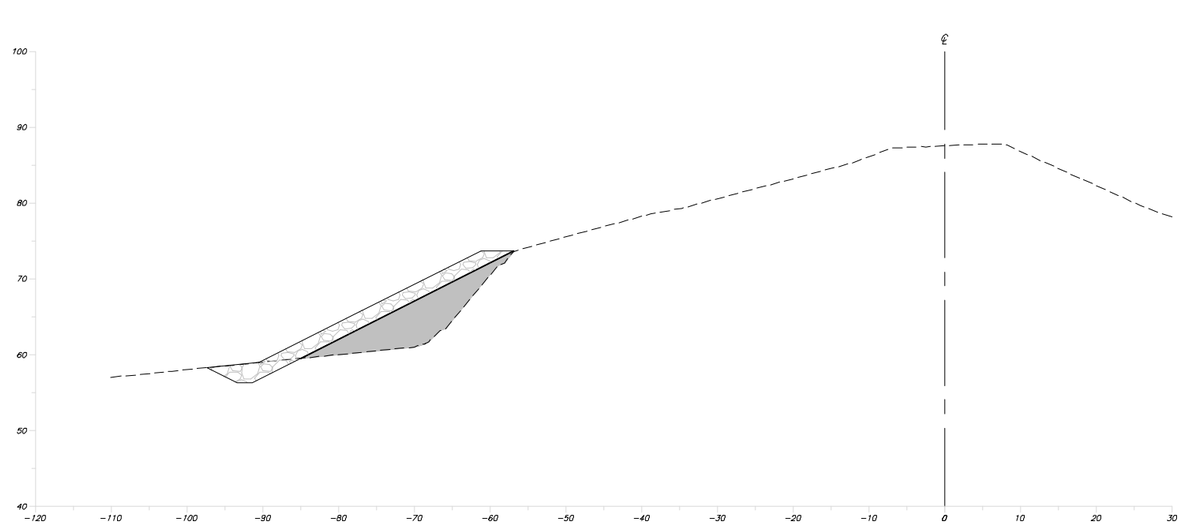

SECTION @ 3+60

0' 10' 20'

Q:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 6 – Mile Marker 19.dwg

Last Saved By:	
Last Saved On:	Site 6 – Mile Marker 19.dwg
Plot Date:	4/2/2020
Revision No.:	—
Revision Date:	

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By:	P.W. ERVIN
Drawn By:	P. INTHARATH
Checked By:	—
Approved By:	—
Date:	FEBRUARY 2020

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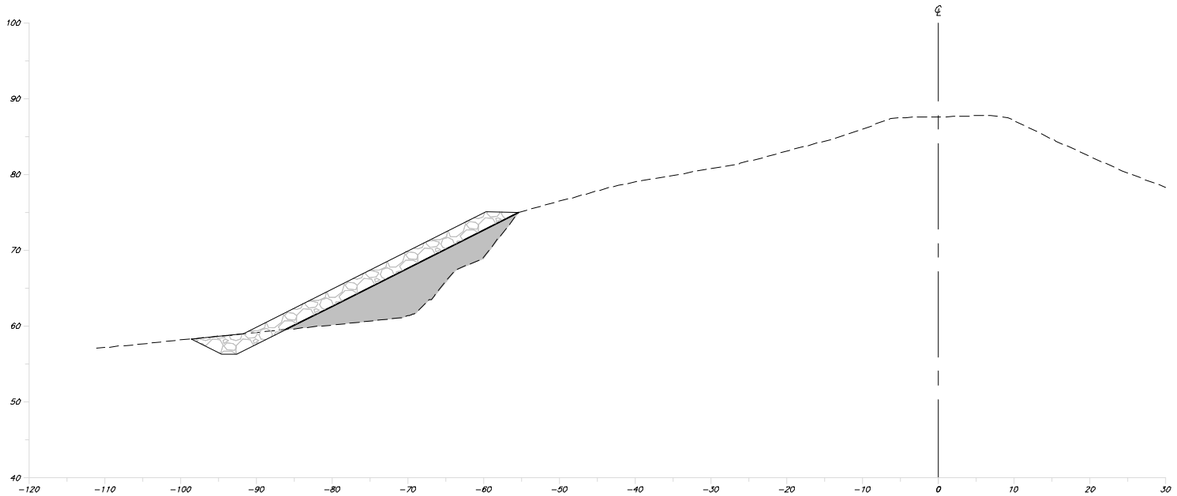
RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
MILE MARKER 19

SECTIONS

SHEET 6 OF 9 SHEETS



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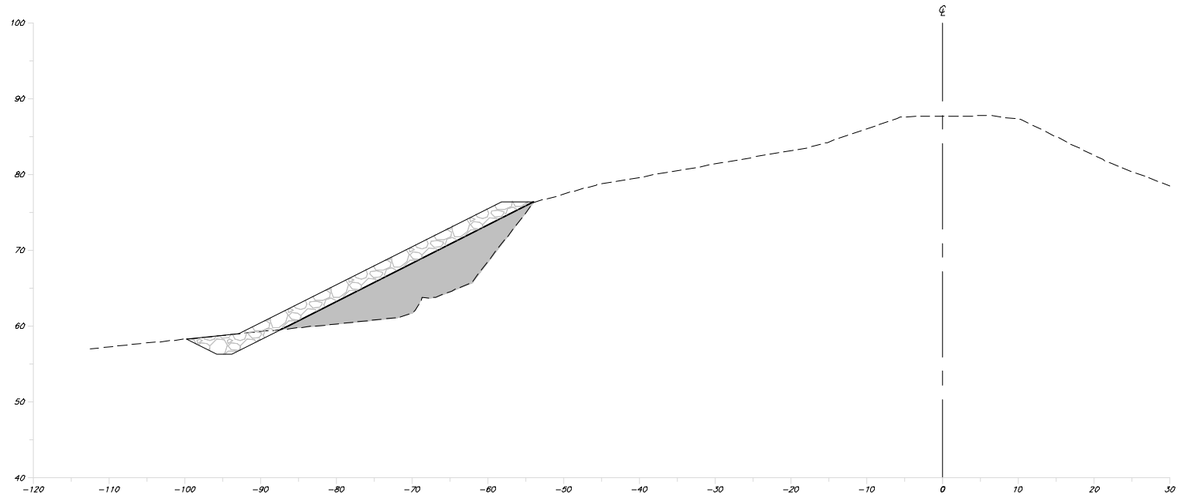

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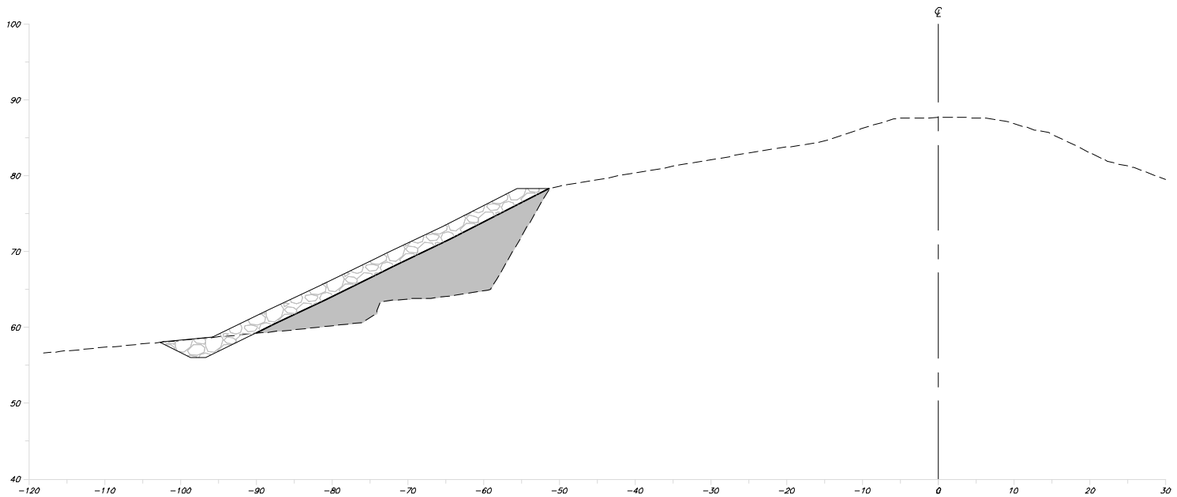

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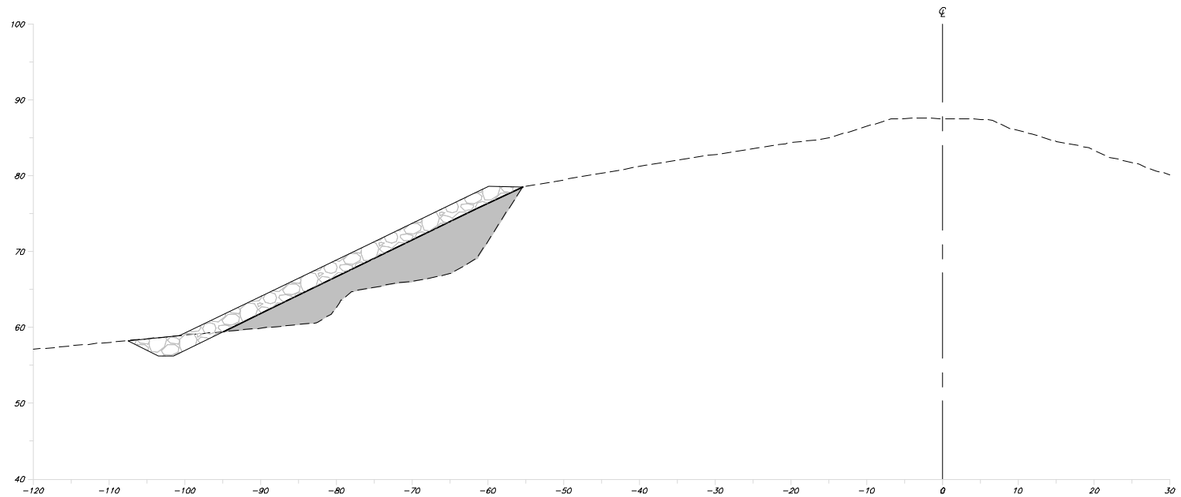

SECTION @ 4+40

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REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
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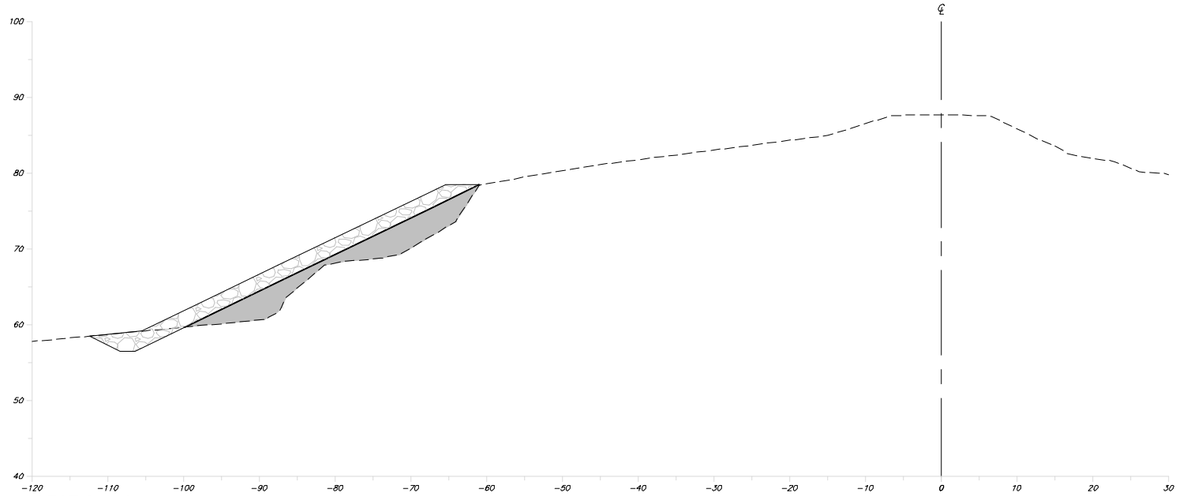
CRITICAL LEVEE REPAIRS
MILE MARKER 19

SECTIONS

SHEET 7 OF 9 SHEETS

Use Scale: Site 6 – Mile Marker 19.dwg
Plot Date: 4/2/2020
Revision Box: –

O:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 6 – Mile Marker 19.dwg



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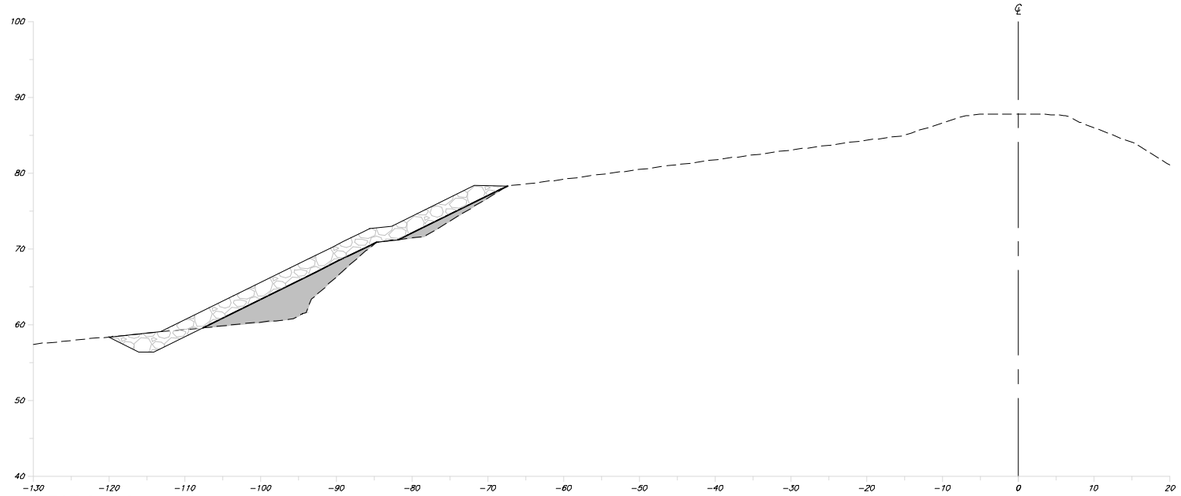

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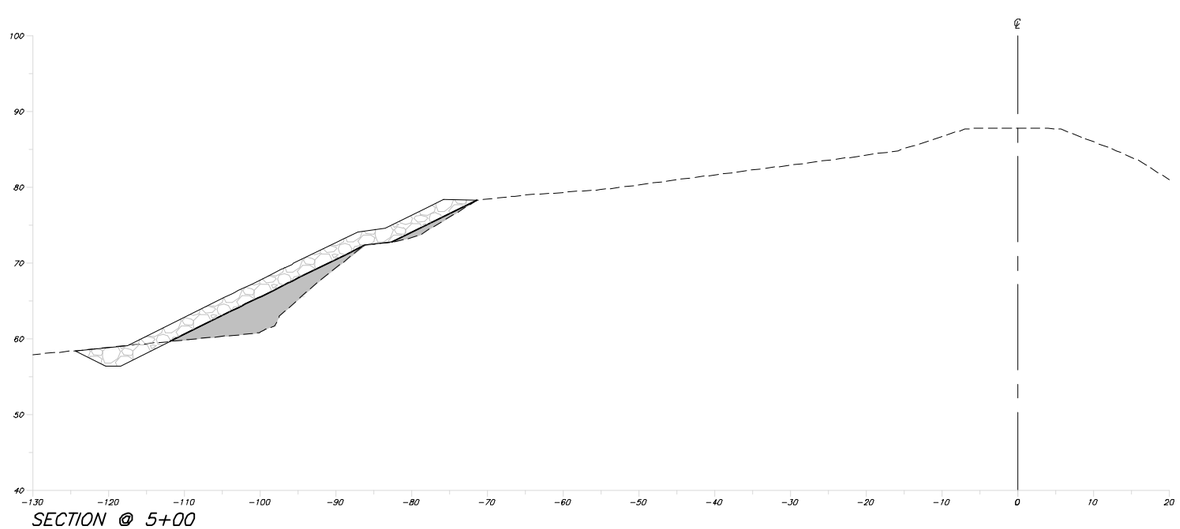

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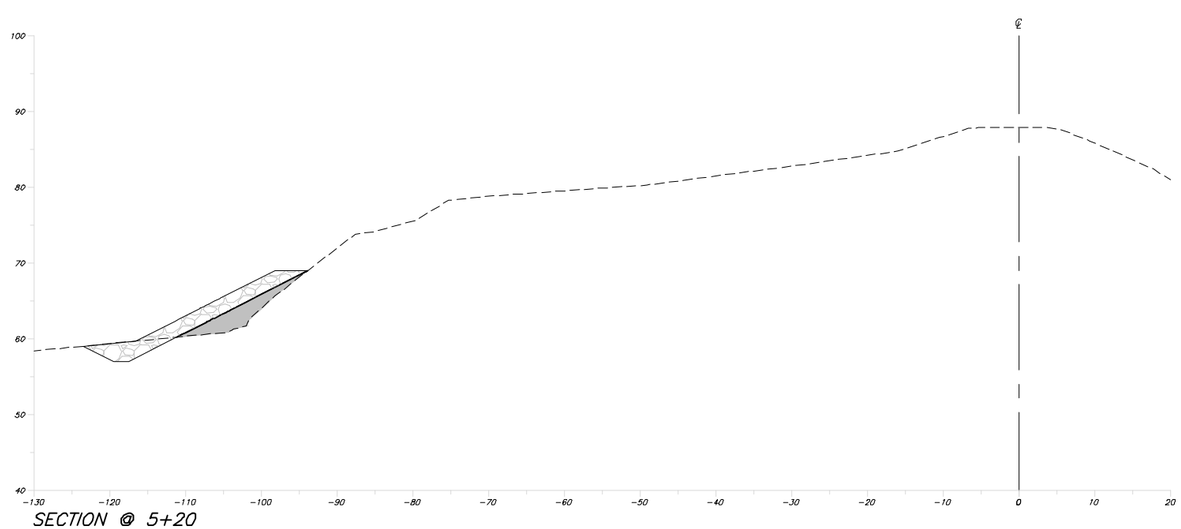

SECTION @ 5+20

0' 10' 20'

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Site 6 - Mile Marker 19.dwg

Plot Date: 4/2/2020

Xrefs: —

Plot Scale: —

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN

Drawn By: P. INTHARATH

Checked By: —

Approved By: —

Date: FEBRUARY 2020

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RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
MILE MARKER 19

SECTIONS

SHEET 8 OF 9 SHEETS

TABLE 1
QUANTITIES

QUANTITY (AREA OR VOLUME)	ABOVE OHWM [1]	BELOW OHWM [1]	TOTAL
WORK AREA (ACRES)	0.11	0.28	0.39
TEMPORARY DISTURBANCE (ACRES)	0.94	0.23	1.17
TOTAL ACRES	1.05	0.51	1.56
FILL – SOIL (CUBIC YARDS)	487	1111	1598
FILL – RSP [2] (CUBIC YARDS)	544	893	1437
TOTAL CUBIC YARDS	1031	2004	3035

[1] OHWM = ORDINARY HIGH WATER MARK (ELEVATION = 68+/– FEET)
[2] RSP = ROCK SLOPE PROTECTION

C:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 6 – Mile Marker 19.dwg

Last User	Plot Date	Plot Scale
Site 6 – Mile Marker 19.dwg	4/2/2020	–

LEGEND

- WORK AREA BELOW ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA BELOW ORDINARY HIGH WATER MARK
- WORK AREA ABOVE ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA ABOVE ORDINARY HIGH WATER MARK

REVISIONS

REF.	DESCRIPTION	APVD.	DATE

Designed By	P.W. ERVIN
Drawn By	P. INTHARATH
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RECLAMATION DISTRICT 800
CRITICAL LEVEE REPAIRS
MILE MARKER 19

PLAN

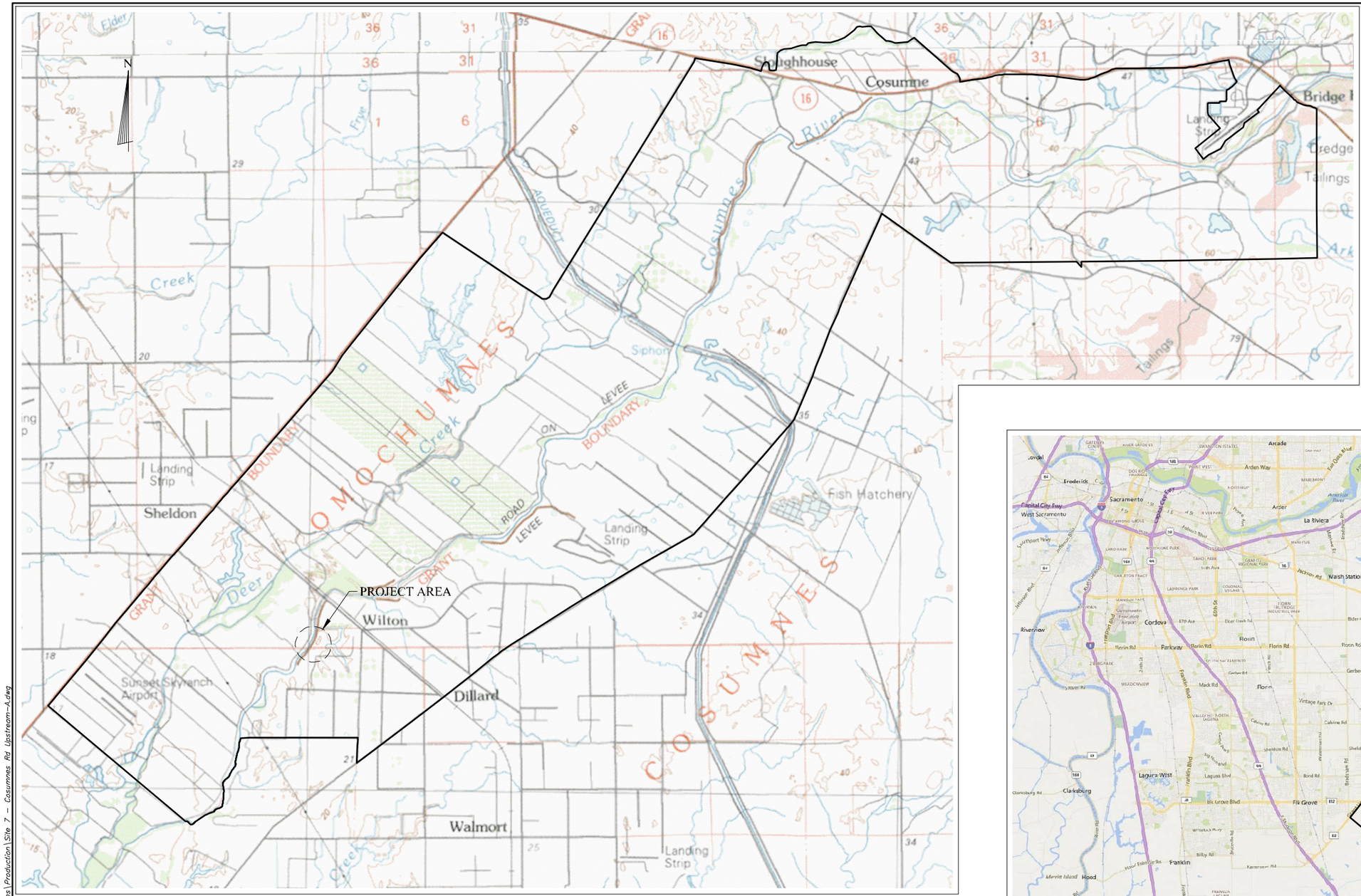
SHEET 9 OF 9 SHEETS

RECLAMATION DISTRICT NO. 800

CRITICAL LEVEE REPAIR PROJECTS
SITE 7: COSUMNES ROAD UPSTREAM

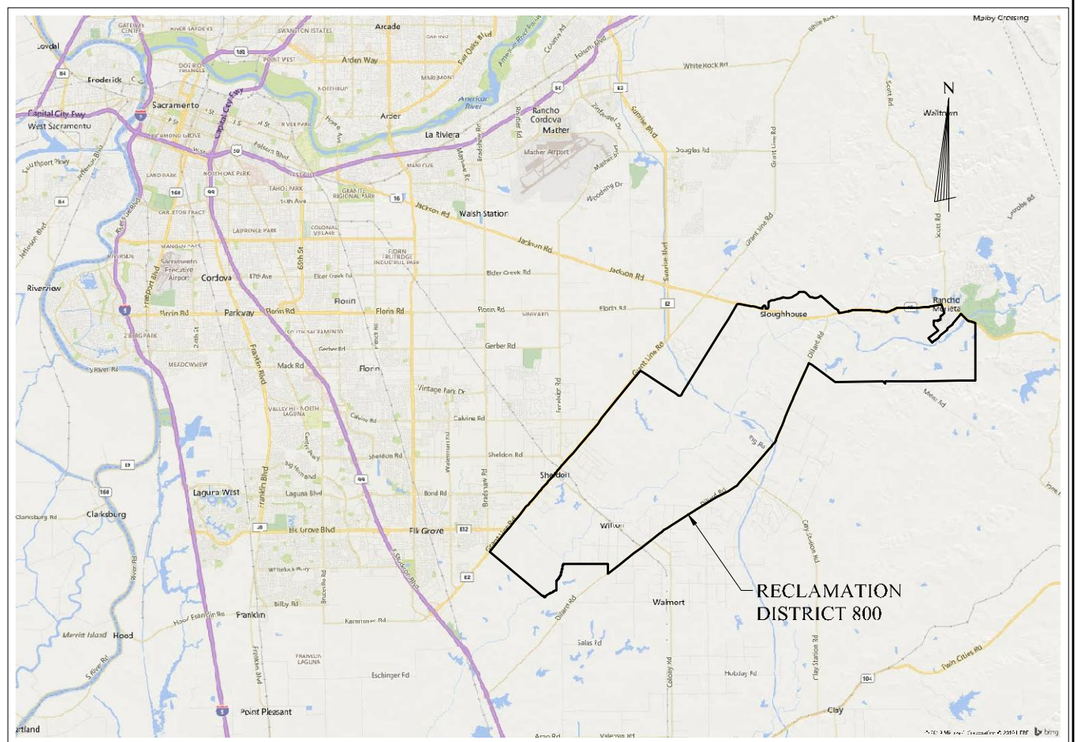
Sacramento County **California**

WAGNER & BONSIGNORE CONSULTING CIVIL ENGINEERS A CORPORATION
2151 RIVER PLAZA DRIVE, SUITE 100 SACRAMENTO, CALIFORNIA



LOCATION MAP

0' 1,500' 3,000' 6,000'



VICINITY MAP

NOT TO SCALE

G:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 7 – Cosumnes Rd Upstream–A.dwg

Last Saved: Site 7 – Cosumnes Rd Upstream–A.dwg
Plot Date: 4/1/2020
Revision No.: –

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
Approved By: –
Date: FEBRUARY 2020

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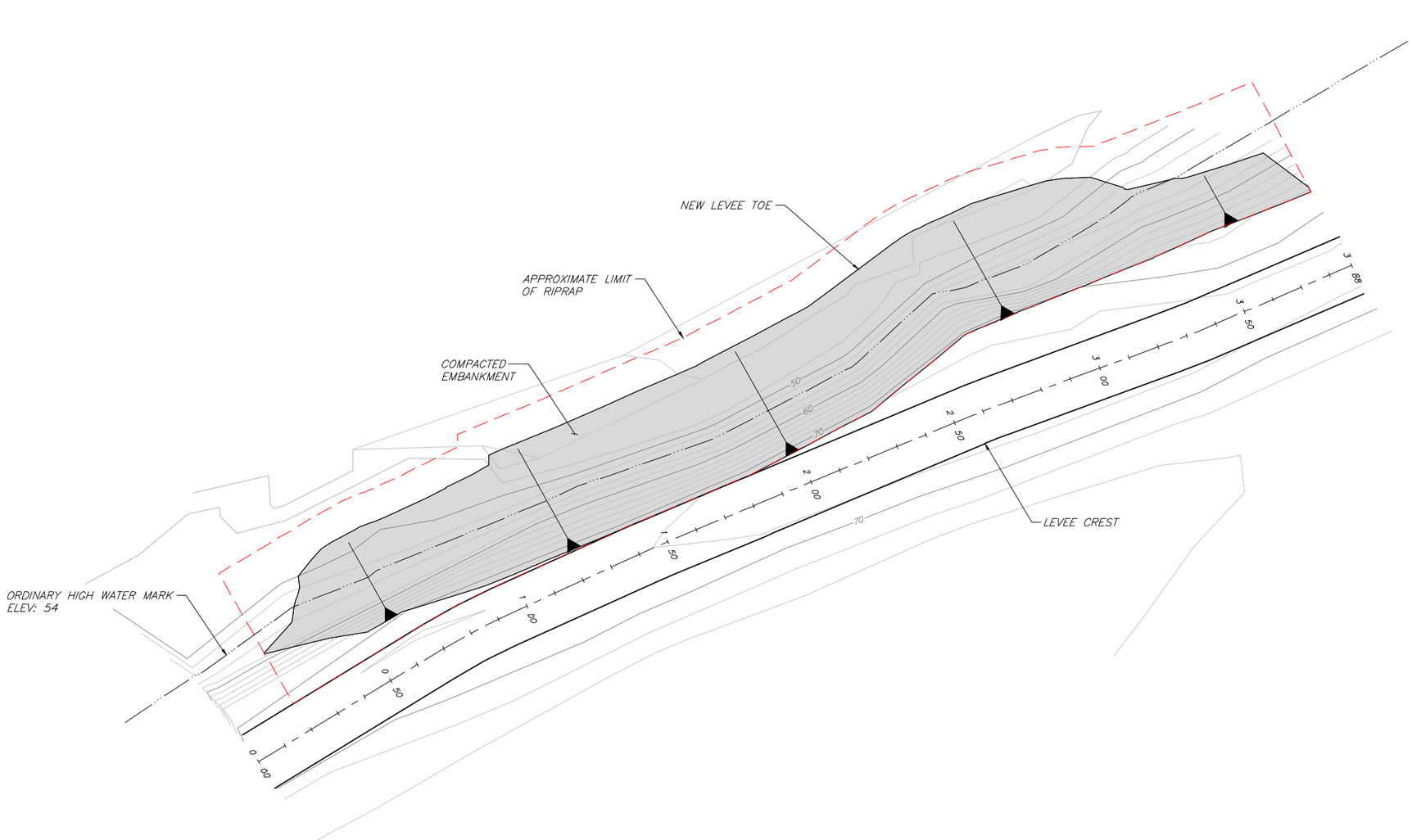
RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS COSUMNES ROAD UPSTREAM

LOCATION AND VICINITY MAP

SHEET 1 OF 8 SHEETS



0' 10' 20' 40'

C:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 7 – Cosumnes Rd Upstream–A.dwg

Last Saved By	Site 7 – Cosumnes Rd Upstream–A
Plot Date	4/1/2020
Revision No.	–
Revision Date	

REVISIONS

REF.	DESCRIPTION	APVD.	DATE

Designed By	P.W. ERVIN
Drawn By	P. INTHARATH
Checked By	–
Approved By	–
Date	FEBRUARY 2020

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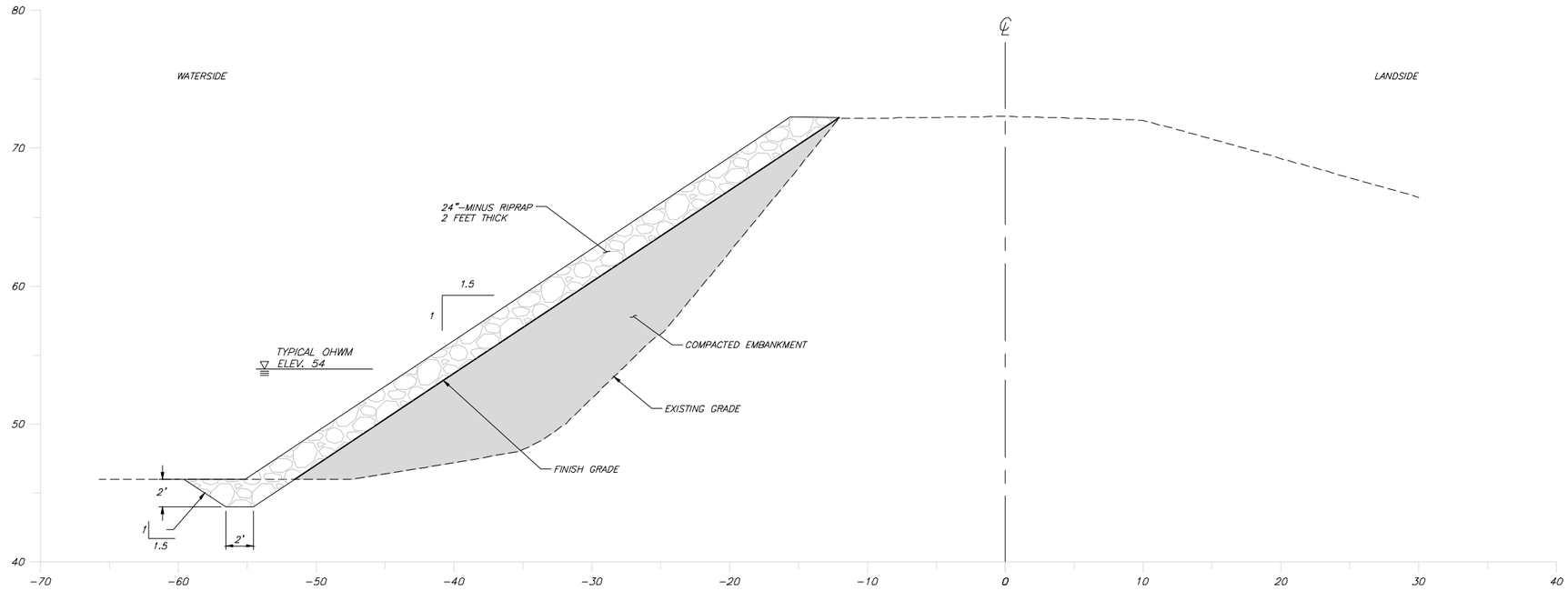
RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
COSUMNES ROAD UPSTREAM

PLAN

SHEET 2 OF 8 SHEETS



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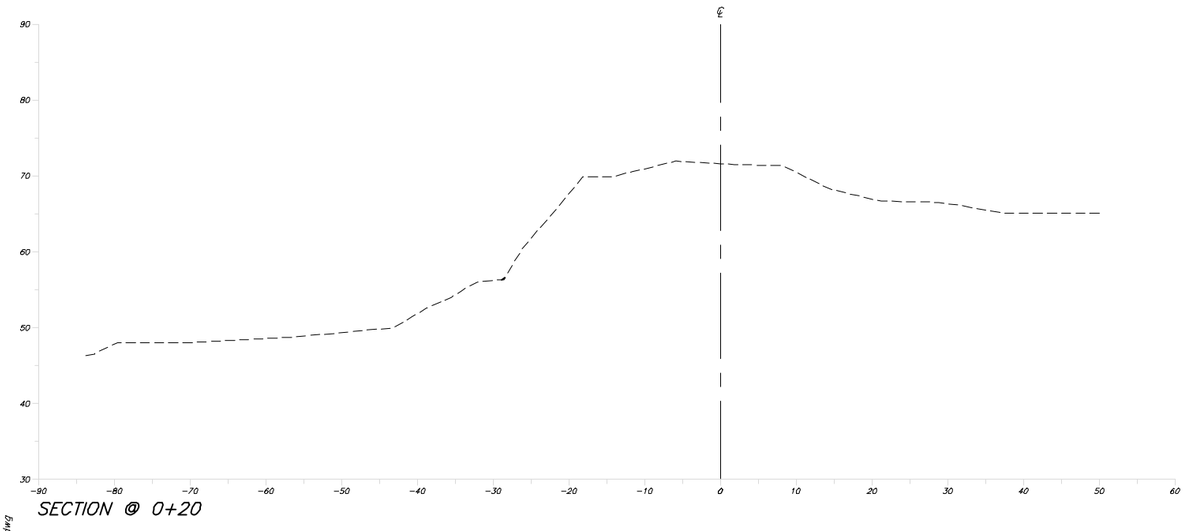

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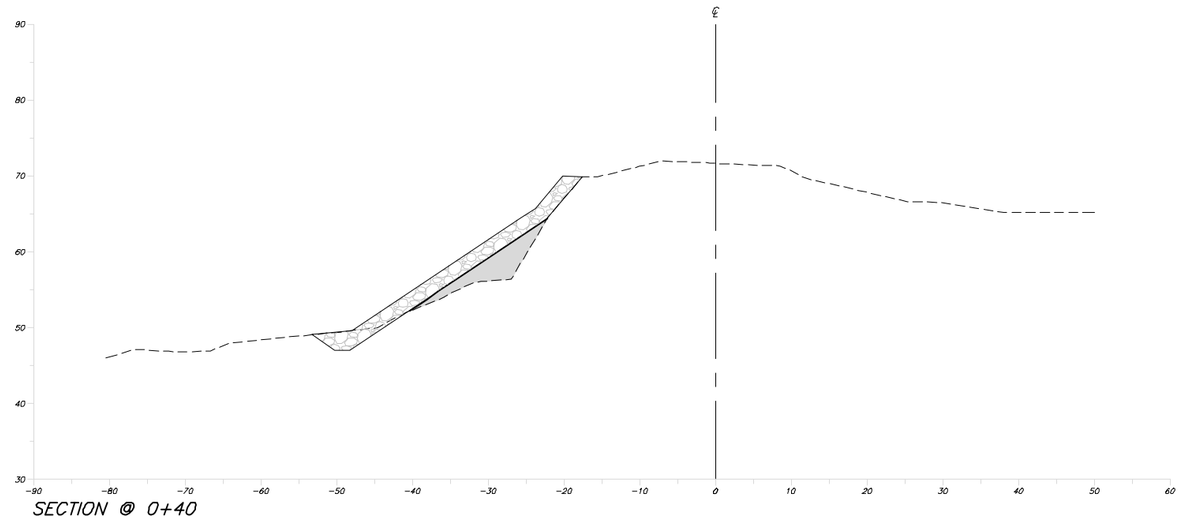

SECTION @ 0+40

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G:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 7 – Cosumnes Rd Upstream–A.dwg

Last Saved By: Site 7 – Cosumnes Rd Upstream–A.dwg
Plot Date: 4/1/2020
Revision By: –
Revision Date:

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Drawn By: P. INTHARATH
Checked By: –
Approved By: –
Date: FEBRUARY 2020

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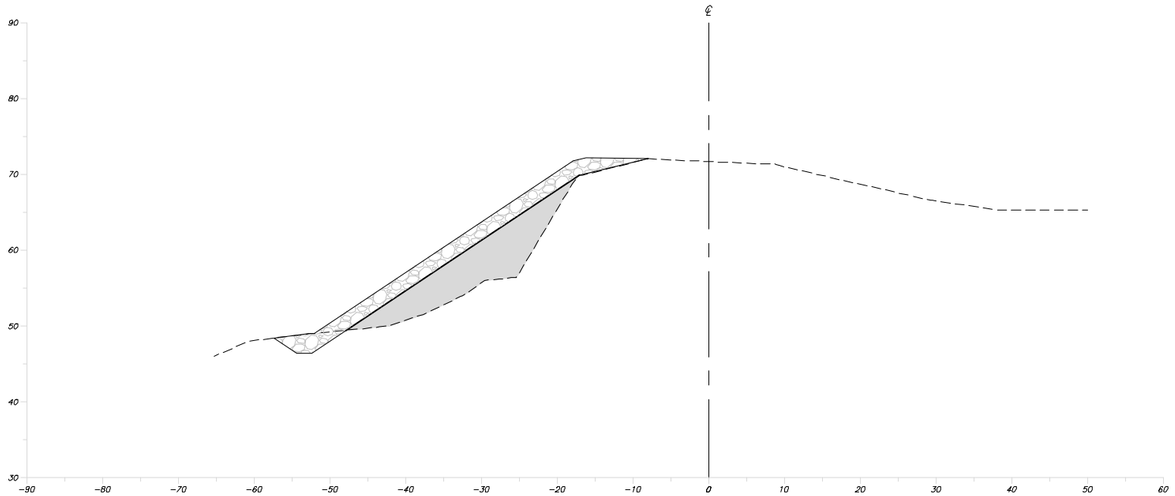
RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
COSUMNES ROAD UPSTREAM

SECTIONS

SHEET 3 OF 8 SHEETS



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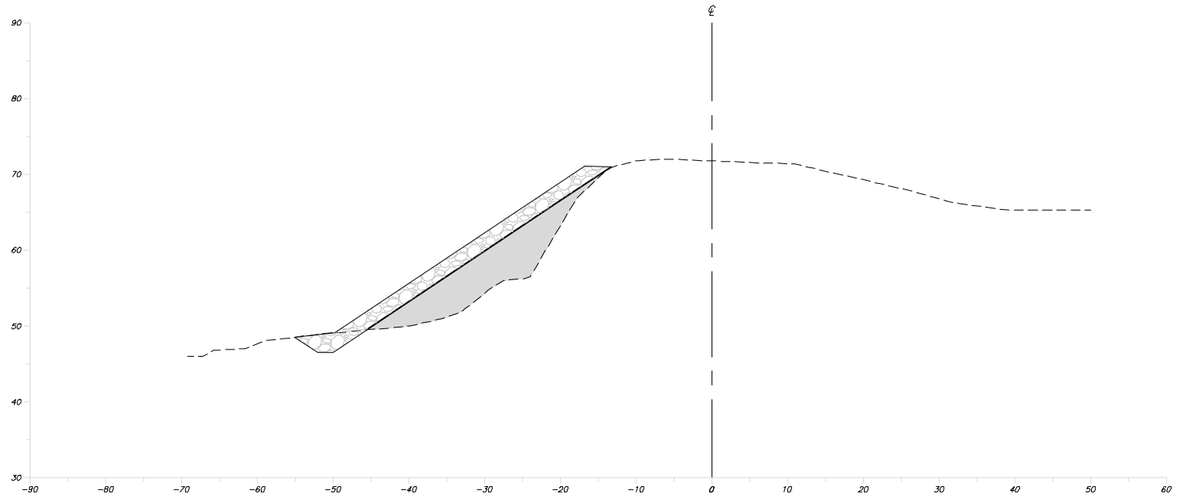

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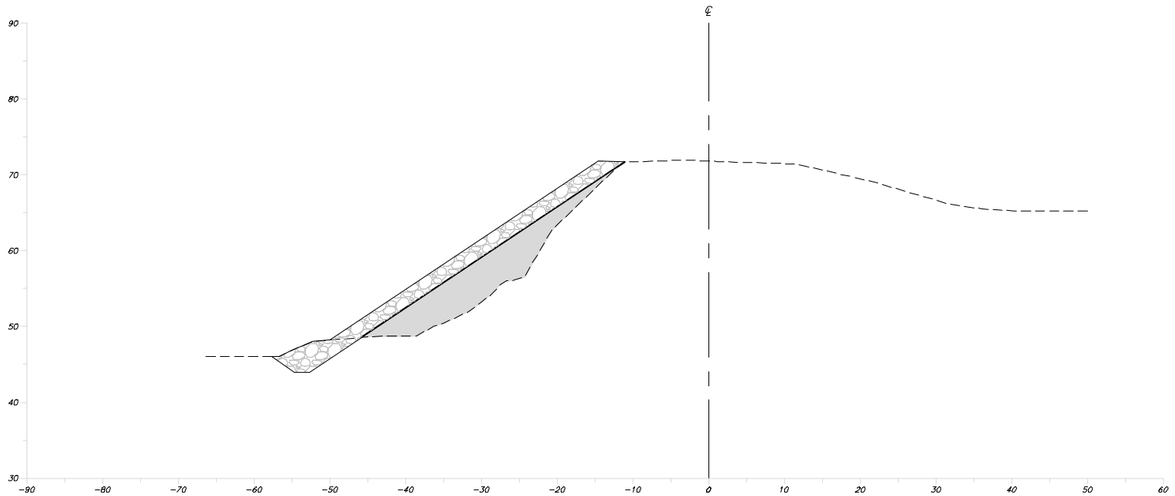

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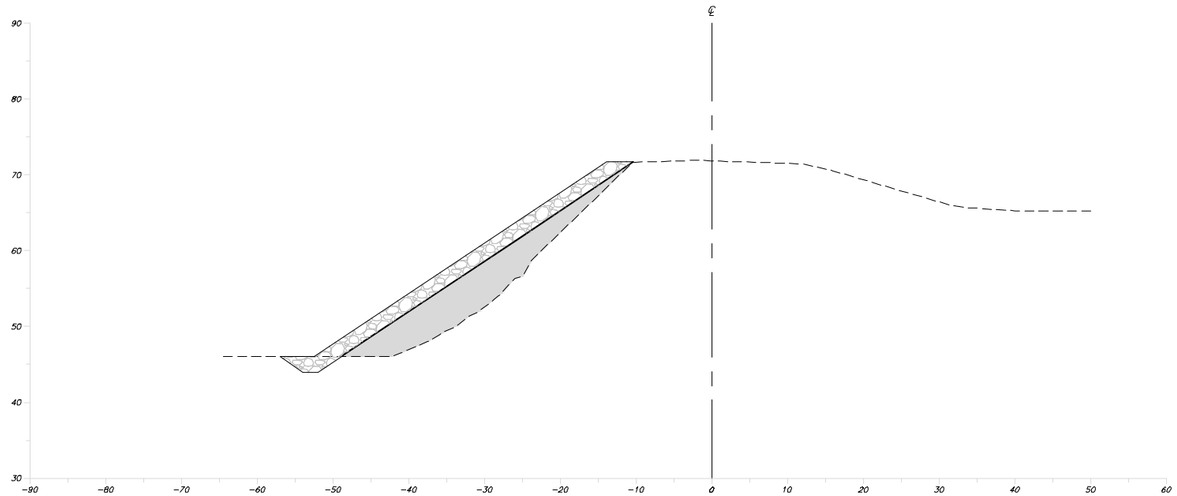

SECTION @ 1+20

0' 5' 10' 20'

Q:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 7 - Cosumnes Rd Upstream-A.dwg

Site 7 – Cosumnes Rd Upstream-A.dwg

Last Saved By: —
Plot Date: 4/1/2020
Revision No.: —

REVISIONS

REF.	DESCRIPTION	APVD.	DATE

Designed By	P.W. ERVIN
Drawn By	P. INTHARATH
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Date	FEBRUARY 2020

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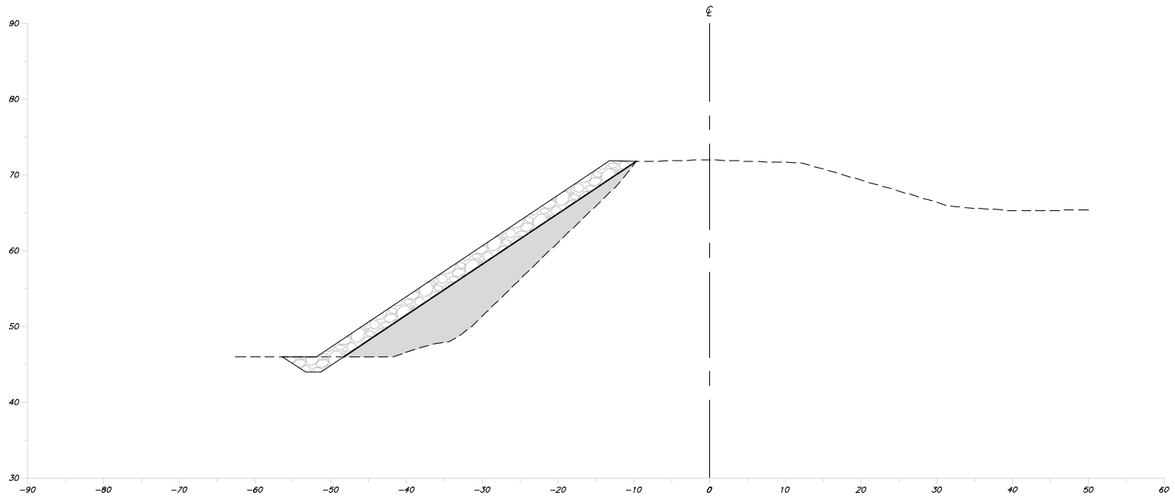
RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
COSUMNES ROAD UPSTREAM

SECTIONS

SHEET 4 OF 8 SHEETS



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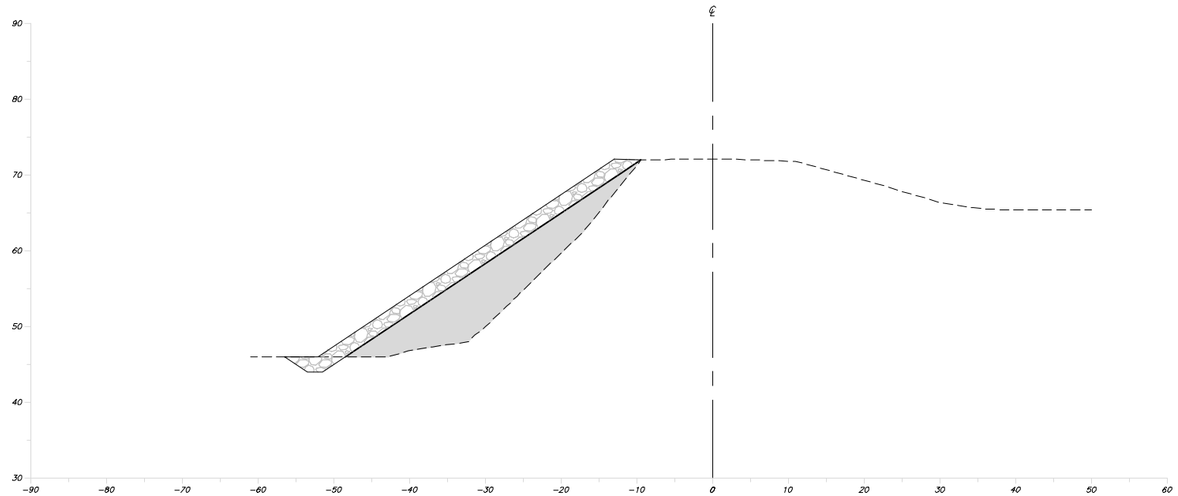

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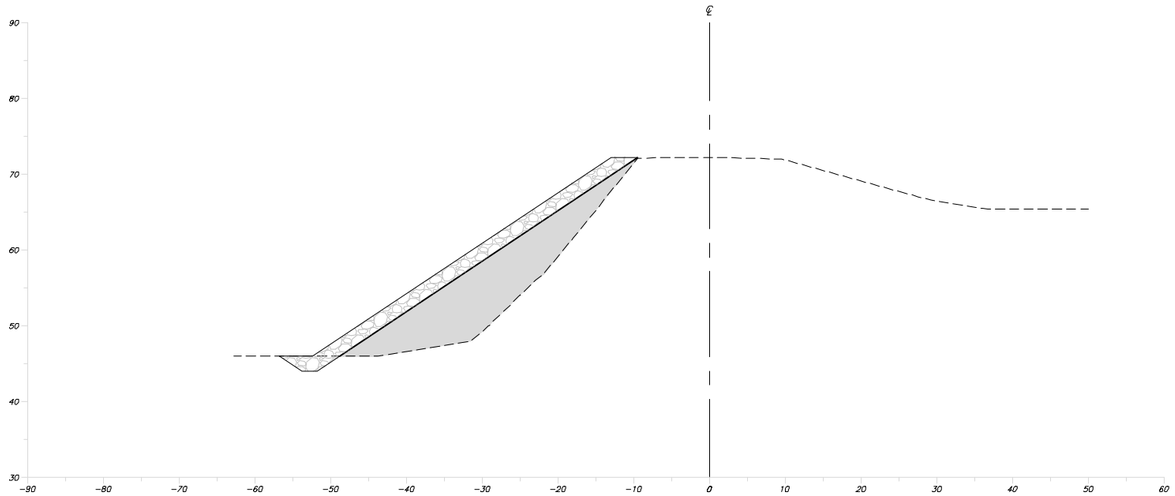

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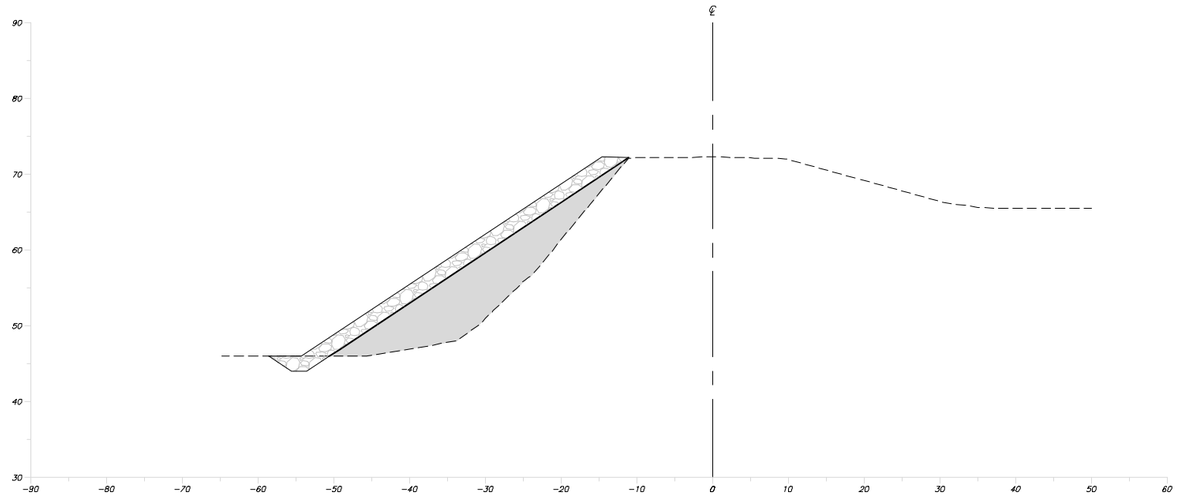

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Last Saved: Site 7 - Cosumnes Rd Upstream-A.dwg
Plot Date: 4/1/2020
Revision Date: –

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
Approved By: –
Date: FEBRUARY 2020

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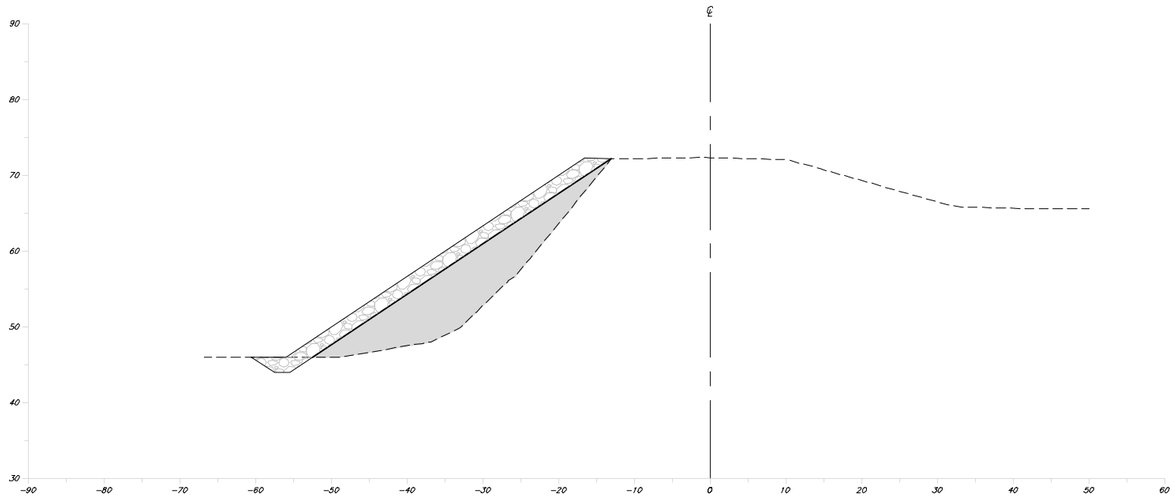
RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
COSUMNES ROAD UPSTREAM

SECTIONS

SHEET 5 OF 8 SHEETS



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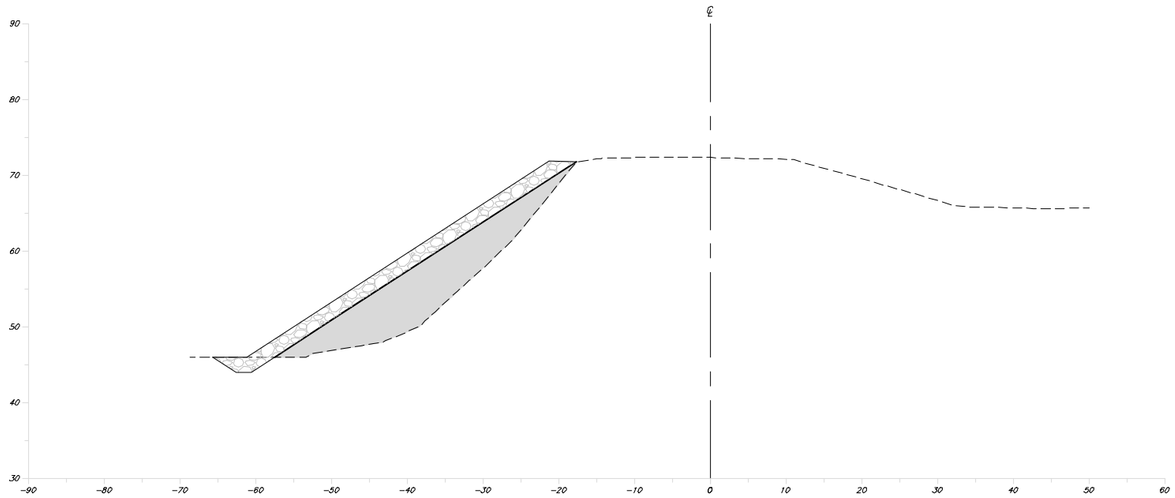

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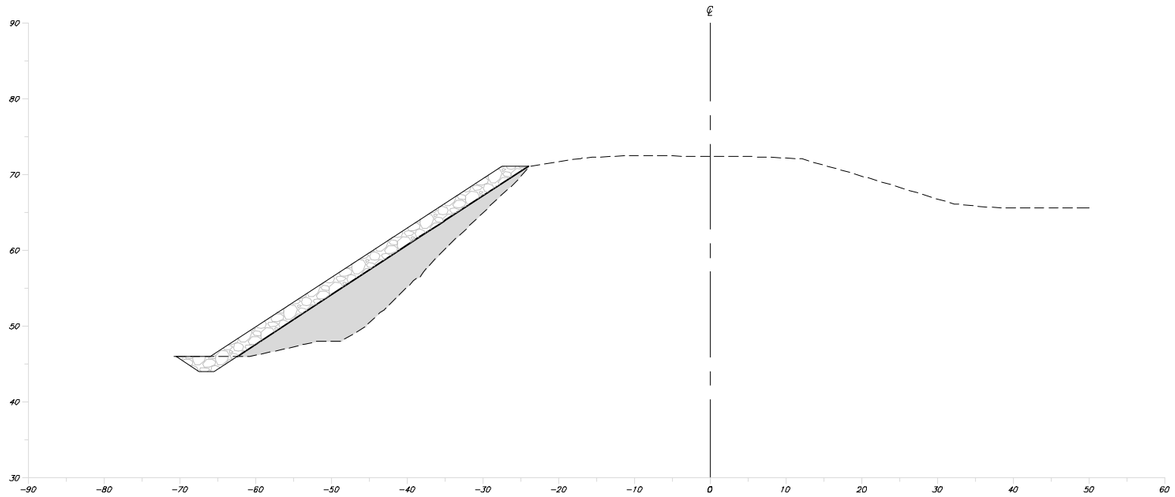

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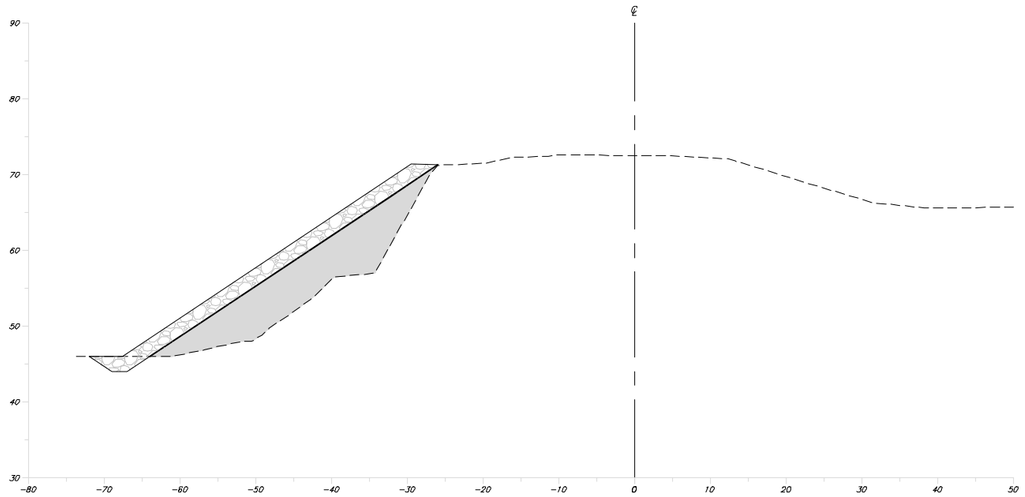

SECTION @ 2+80

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Plot Date	4/1/2020	
File Name	Site 7 - Cosumnes Rd Upstream-A.dwg	
Revision Date	–	

REVISIONS

REF.	DESCRIPTION	APVD.	DATE

Designed By	P.W. ERVIN
Drawn By	P. INTHARATH
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Approved By	–
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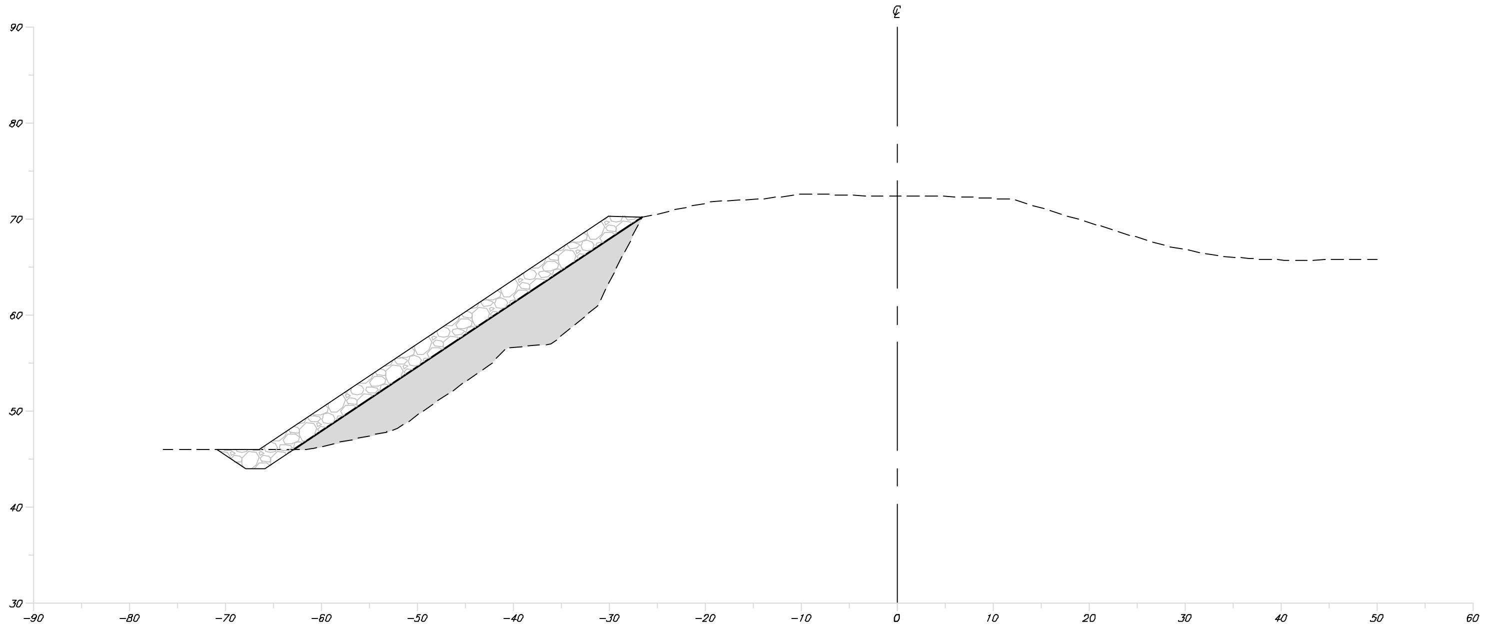
RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
COSUMNES ROAD UPSTREAM

SECTIONS

SHEET 6 OF 8 SHEETS



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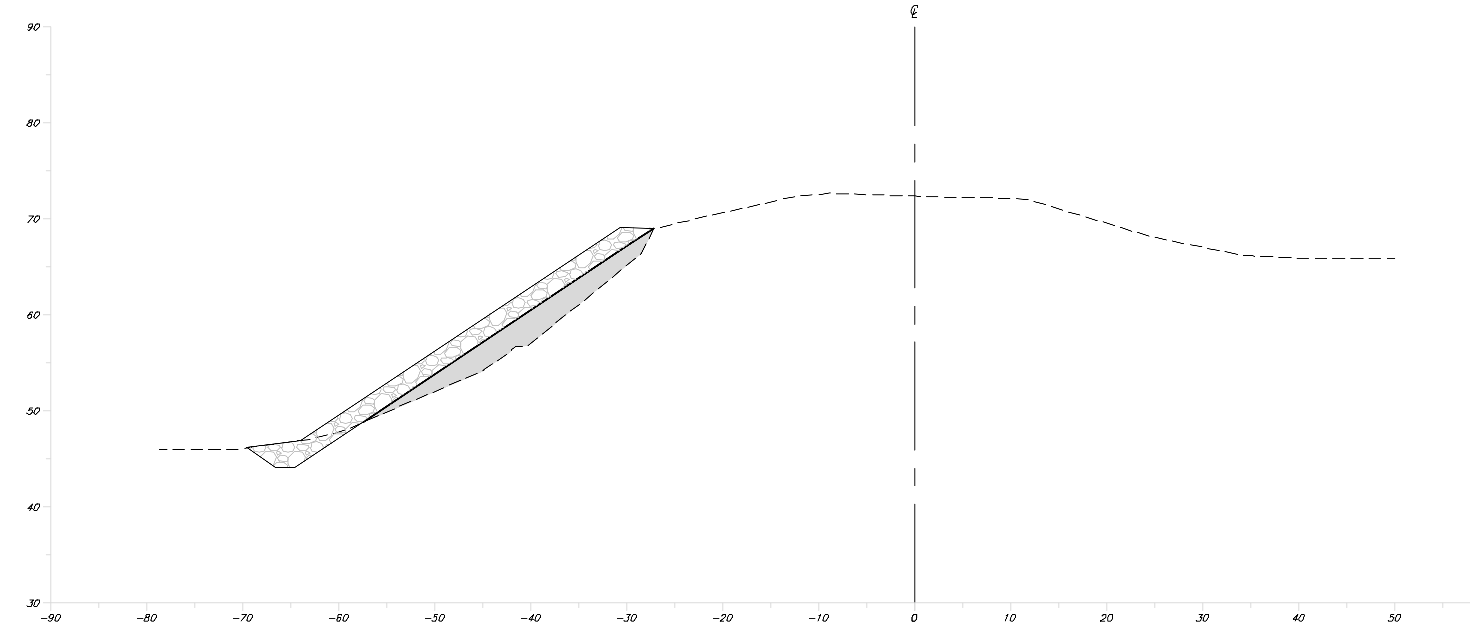

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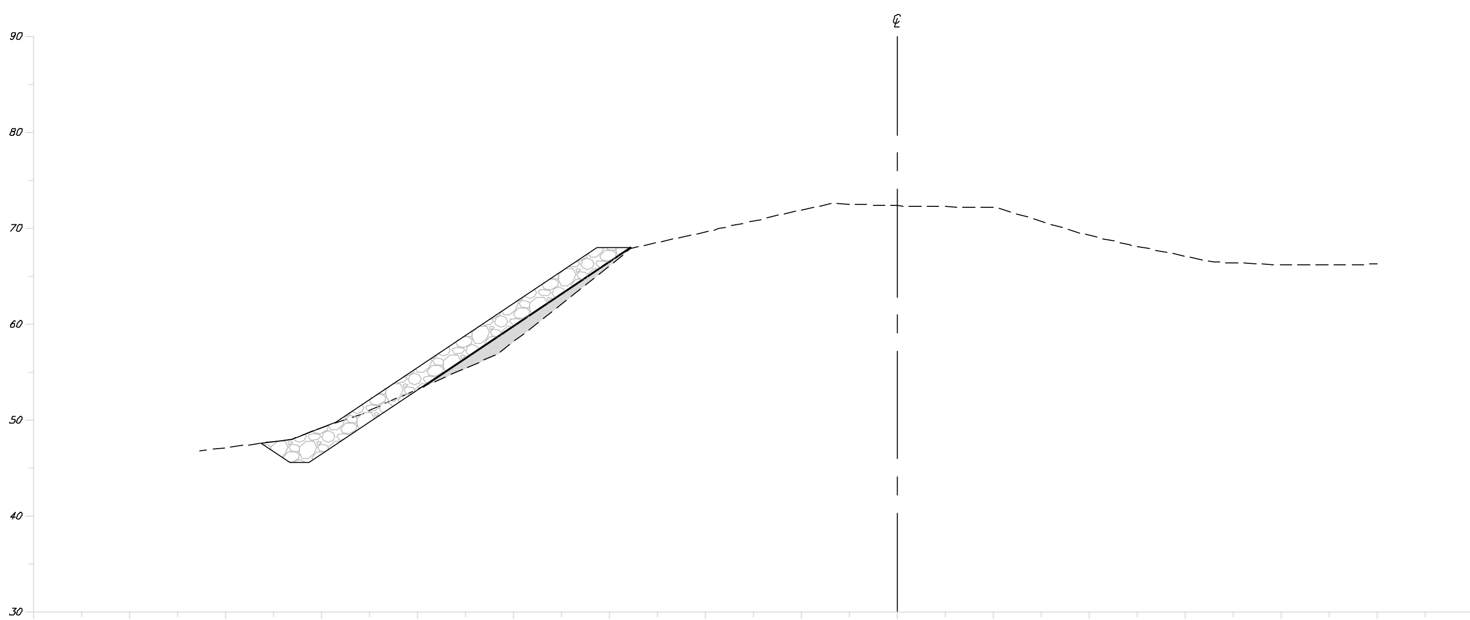

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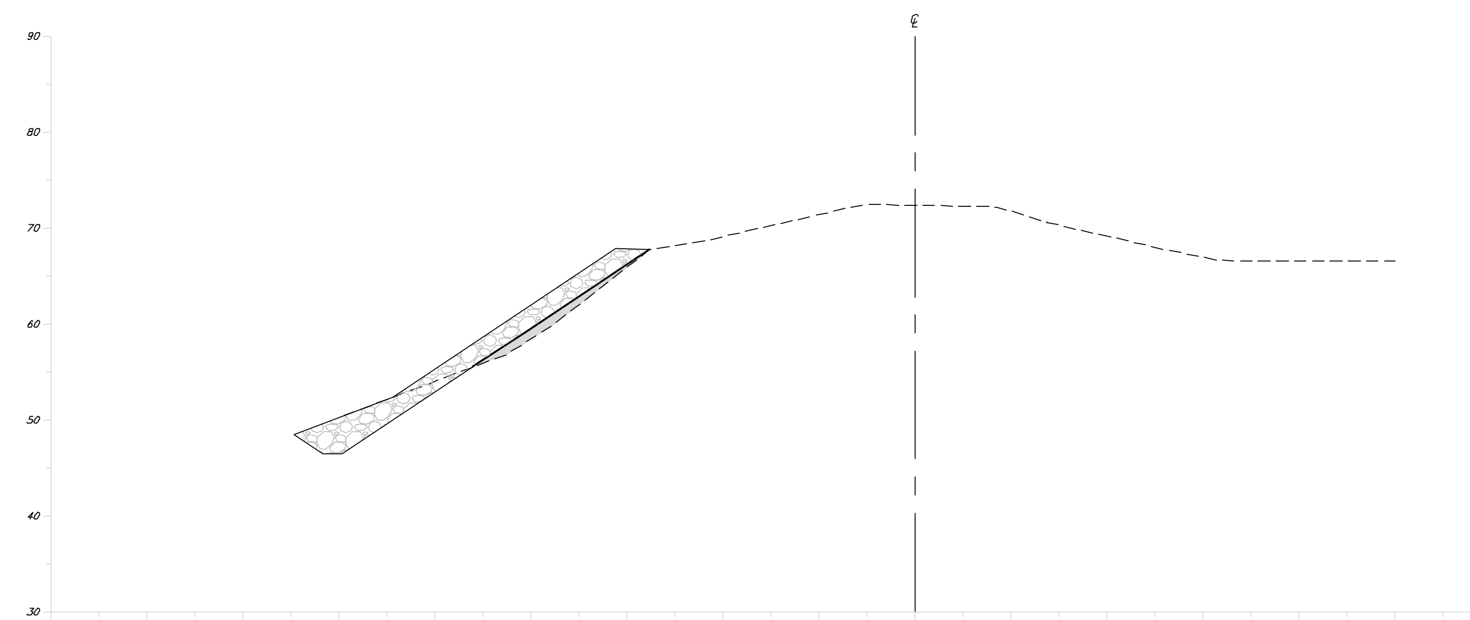

SECTION @ 3+60

0' 5' 10' 20'

Q:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 7 - Cosumnes Rd Upstream-A.dwg

Site 7 - Cosumnes Rd Upstream-A.dwg

4/1/2020

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By P.W. ERVIN
Drawn By P. INTHARATH
Checked By –
Approved By –
Date FEBRUARY 2020

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RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
COSUMNES ROAD UPSTREAM

SECTIONS

SHEET 7 OF 8 SHEETS

TABLE 1
QUANTITIES

QUANTITY (AREA OR VOLUME)	ABOVE OHWM [1]	BELOW OHWM [1]	TOTAL
WORK AREA (ACRES)	1.09	0.20	1.29
TEMPORARY DISTURBANCE (ACRES)	0.16	0.24	0.40
TOTAL ACRES	1.25	0.44	1.69
FILL – SOIL (CUBIC YARDS)	1043	684	1727
FILL – RSP [2] (CUBIC YARDS)	772	474	1246
TOTAL CUBIC YARDS	1815	1158	2973

[1] OHWM = ORDINARY HIGH WATER MARK (ELEVATION = 54+/– FEET)
[2] RSP = ROCK SLOPE PROTECTION

LEGEND
- WORK AREA BELOW ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA BELOW ORDINARY HIGH WATER MARK
- WORK AREA ABOVE ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA ABOVE ORDINARY HIGH WATER MARK

REVISIONS

REF.	DESCRIPTION	APVD.	DATE

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RECLAMATION DISTRICT 800
CRITICAL LEVEE REPAIRS
COSUMNES ROAD UPSTREAM
IMPACTS

SHEET 8 OF 8 SHEETS

Last User	–
Last Plot	4/1/2020
Plot Scale	Site 7 – Cosumnes Rd Upstream–A.dwg
Ref Files	–

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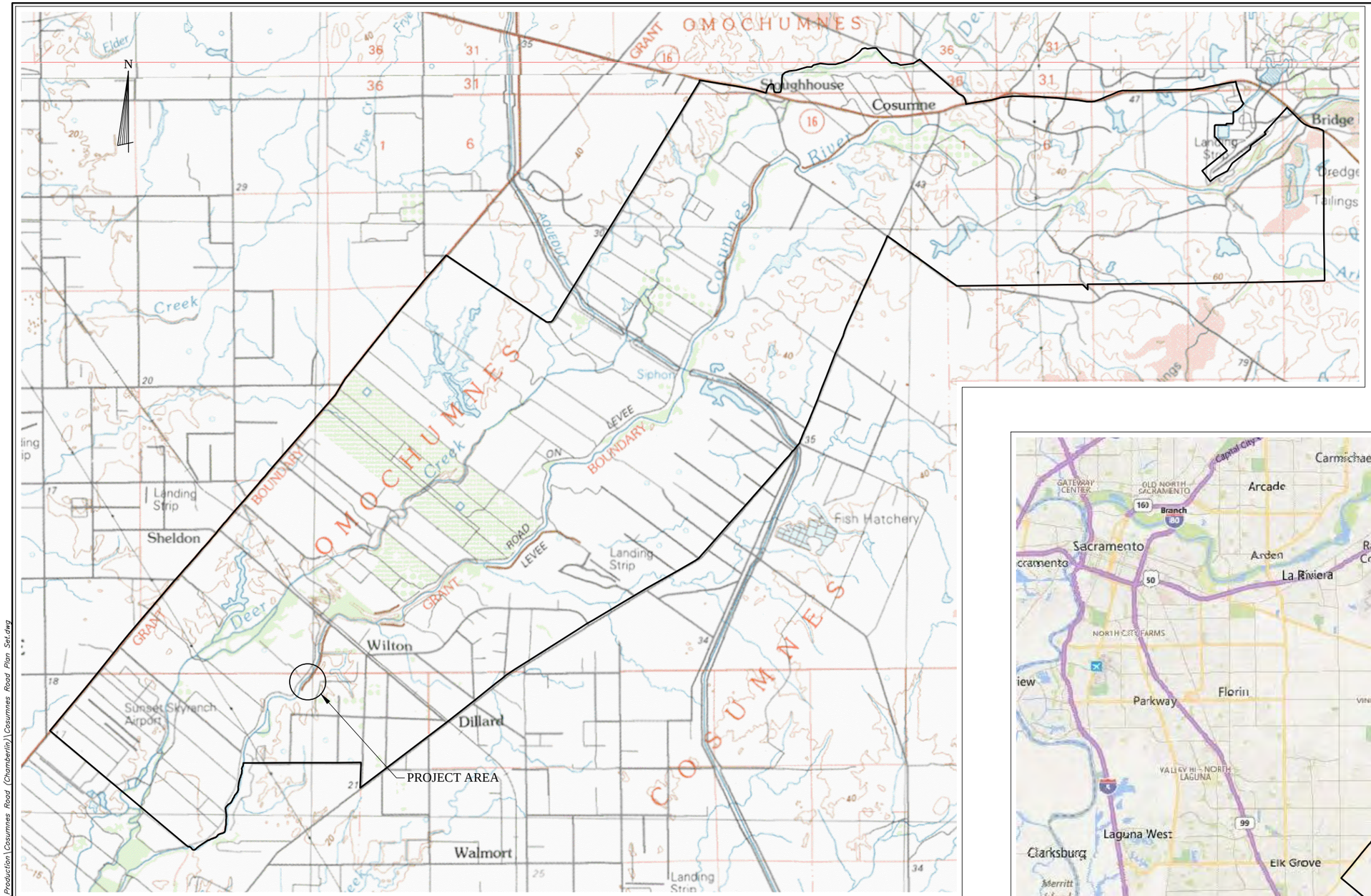
RECLAMATION DISTRICT NO. 800

CRITICAL LEVEE REPAIR PROJECTS
SITE 8: COSUMNES ROAD DOWNSTREAM

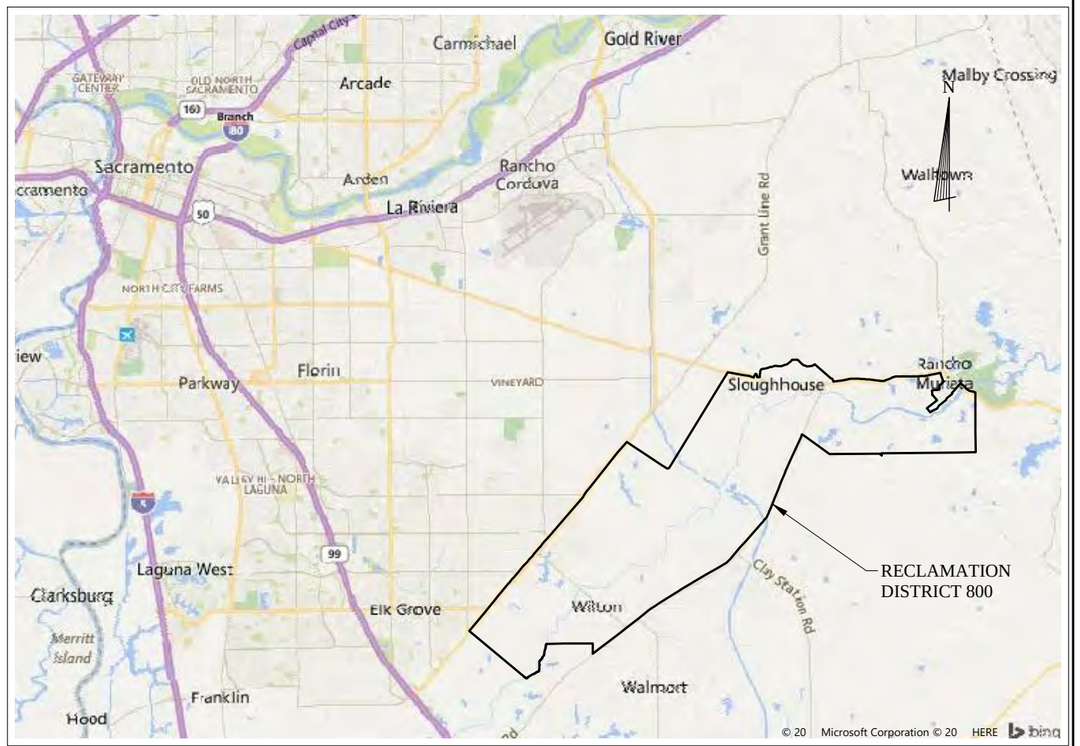
Sacramento County **California**

WAGNER & BONSIGNORE CONSULTING CIVIL ENGINEERS A CORPORATION
2151 RIVER PLAZA DRIVE, SUITE 100 SACRAMENTO, CALIFORNIA



LOCATION MAP

0' 1,500' 3,000' 6,000'



VICINITY MAP

NOT TO SCALE

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
Approved By: –
Date: FEBRUARY 2020

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DRAFT

RECLAMATION DISTRICT 800 - COSUMNES

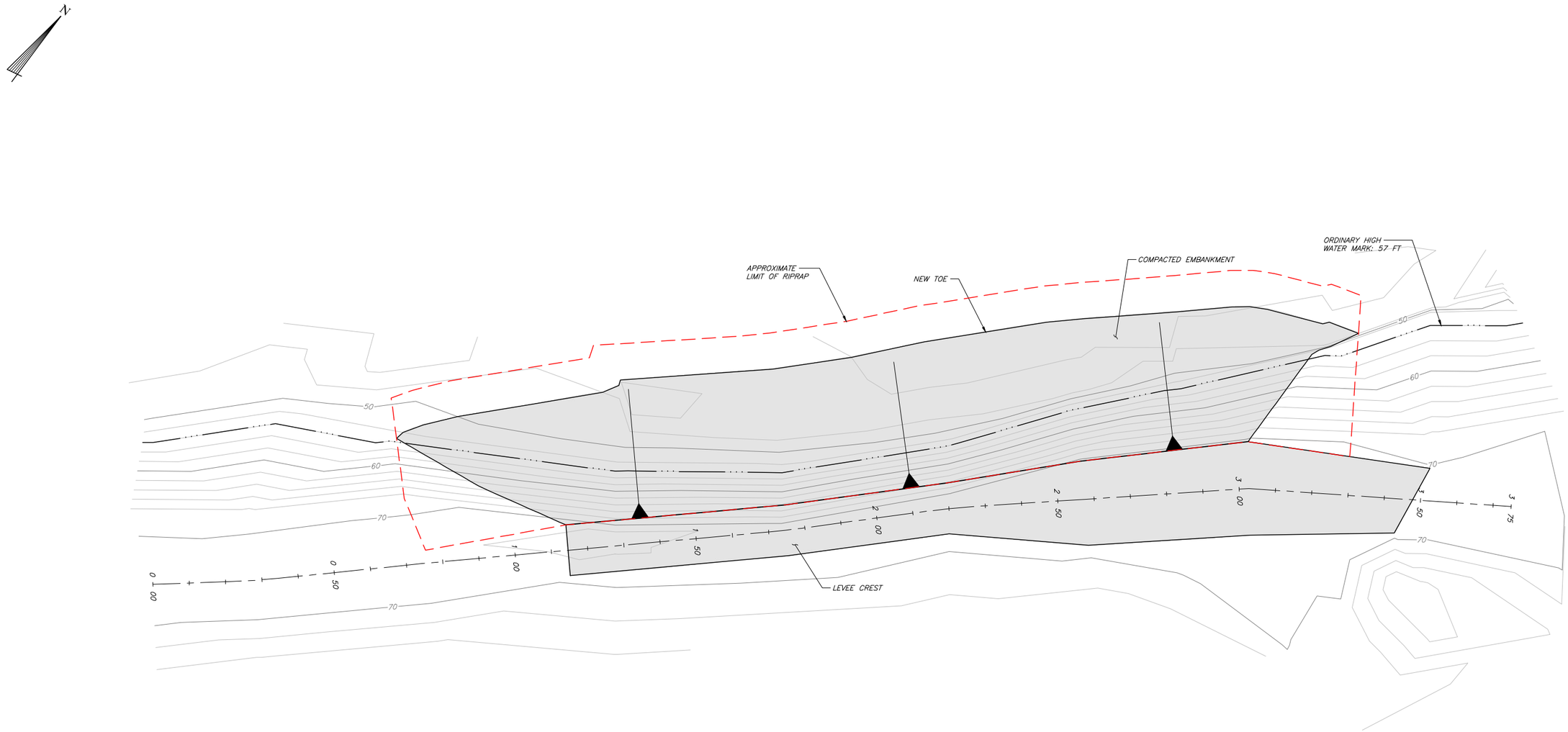
CRITICAL LEVEE REPAIRS
COSUMNES ROAD DOWNSTREAM

LOCATION AND VICINITY MAPS

SHEET 1 OF 6 SHEETS

Plot Date: 3/16/2020

G:\Drawings\Reclamation District No 800\NRCS Repair Sites\Production\Cosumnes Road (Chamberlin)\Cosumnes Road Plan Set.dwg



PLAN
0' 15' 30'

G:\Drawings\Reclamation District No. 800\NRCS Repair Sites\Production\Cosumnes Road (Chamberlin)\Cosumnes Road Plan Set.dwg
Plot Date: 3/16/2020

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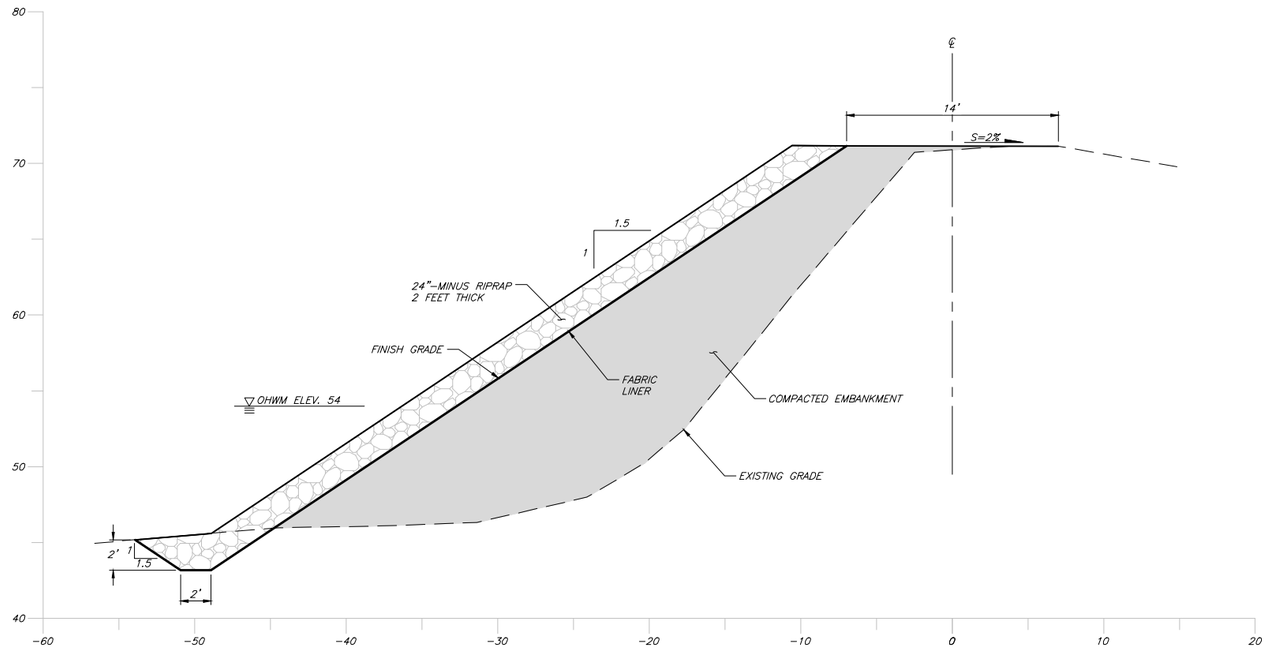
RECLAMATION DISTRICT 800 - COSUMNES

CRITICAL LEVEE REPAIRS
COSUMNES ROAD DOWNSTREAM

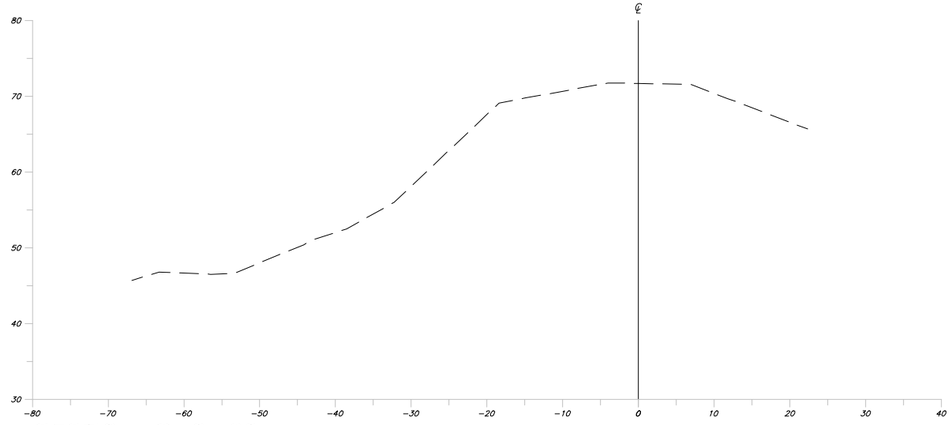
PLAN

SHEET 2 OF 6 SHEETS



TYPICAL SECTION

NOT TO SCALE



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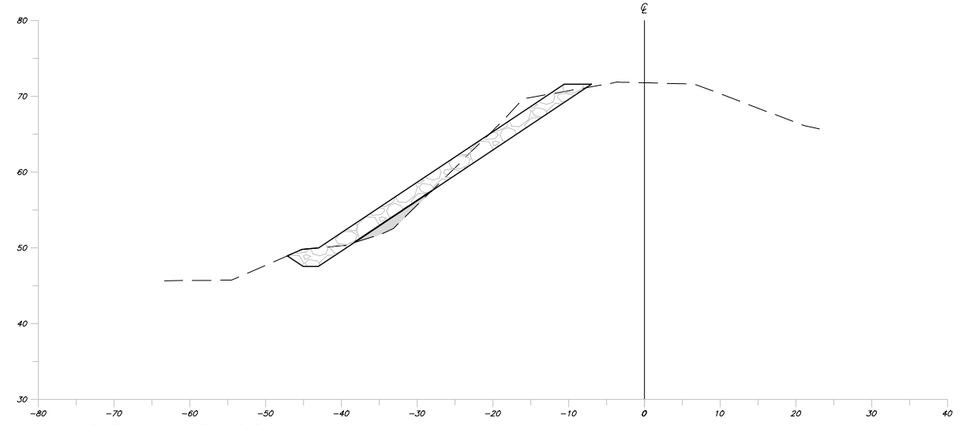

SECTION @ 0+80

SECTION

0' 10' 20' 40'

REVISIONS			
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RECLAMATION DISTRICT 800 - COSUMNES

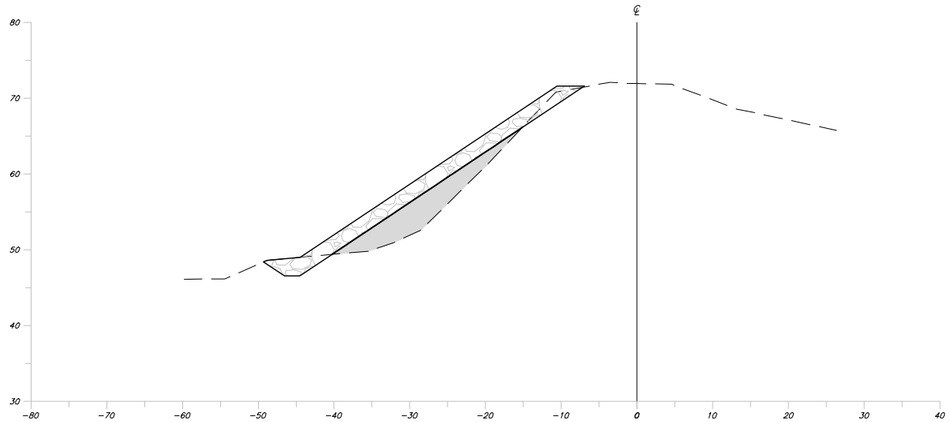
CRITICAL LEVEE REPAIRS
COSUMNES ROAD DOWNSTREAM

SECTIONS

SHEET 3 OF 6 SHEETS

Plot Date: 3/16/2020

G:\Drawings\Reclamation District No 800\NRCS Repair Sites\Production\Cosumnes Road (Chamberlin)\Cosumnes Road Plan Set.dwg



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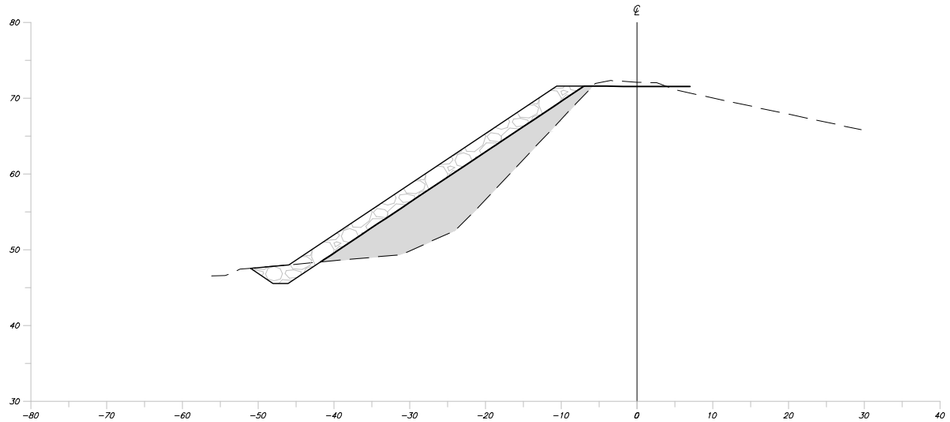

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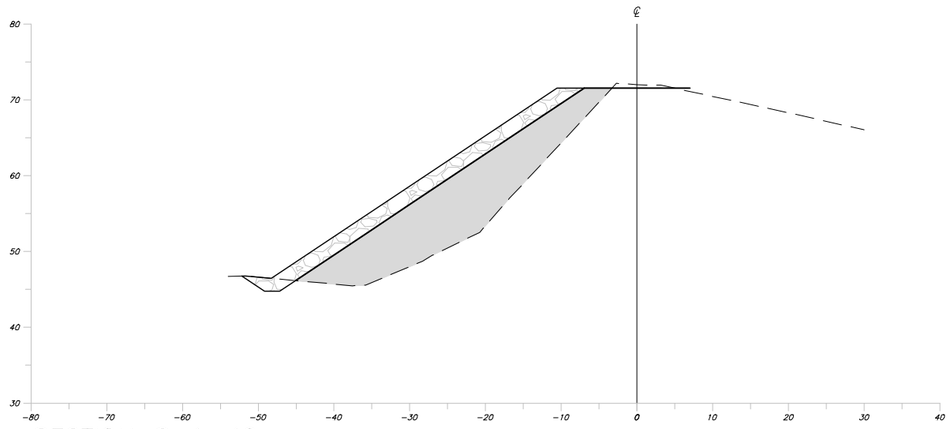

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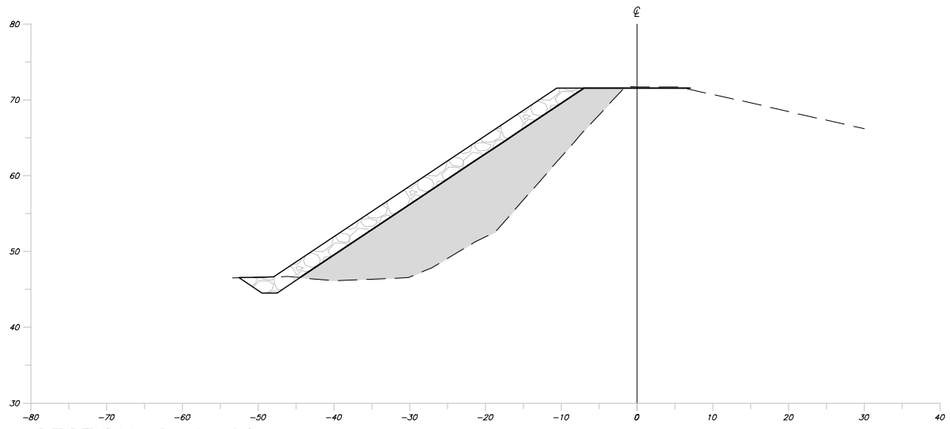

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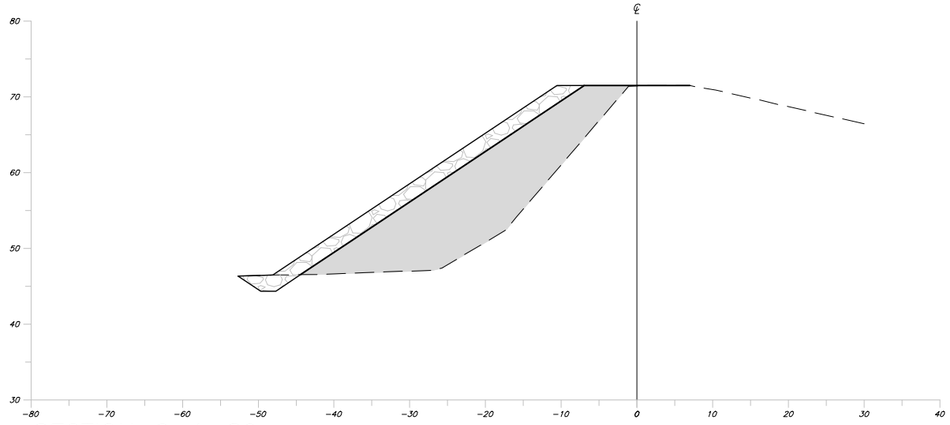

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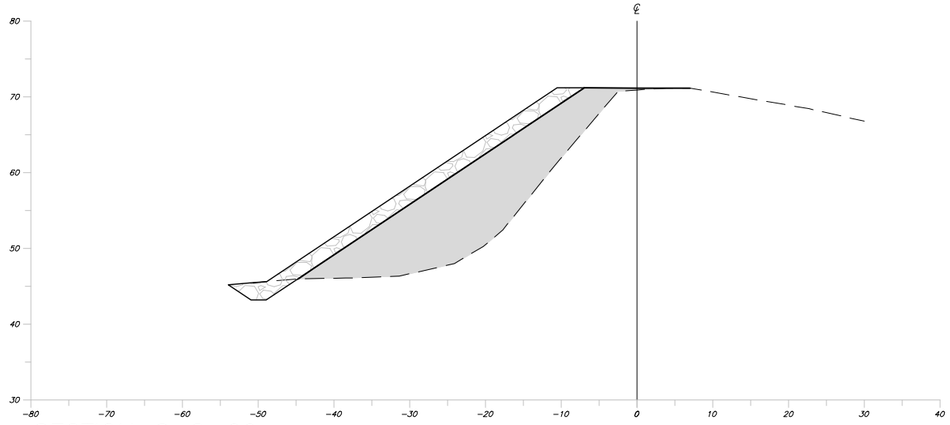

SECTION @ 2+00

SECTION

0' 5' 10' 20'

G:\Drawings\Reclamation District No 800\NRCS Repair Sites\Production\Cosumnes Road (Chamberlin)\Cosumnes Road Plan Set.dwg

Plot Date: 3/16/2020

REVISIONS			
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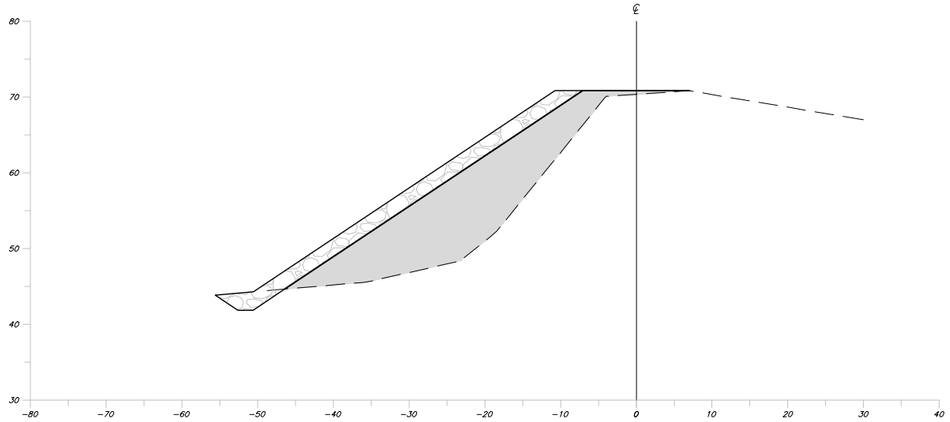
RECLAMATION DISTRICT 800 - COSUMNES

CRITICAL LEVEE REPAIRS
COSUMNES ROAD DOWNSTREAM

SECTIONS

SHEET 4 OF 6 SHEETS



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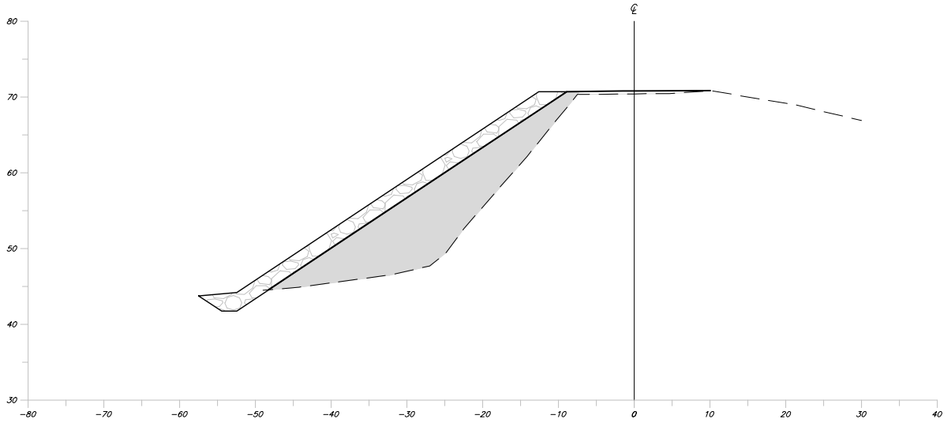

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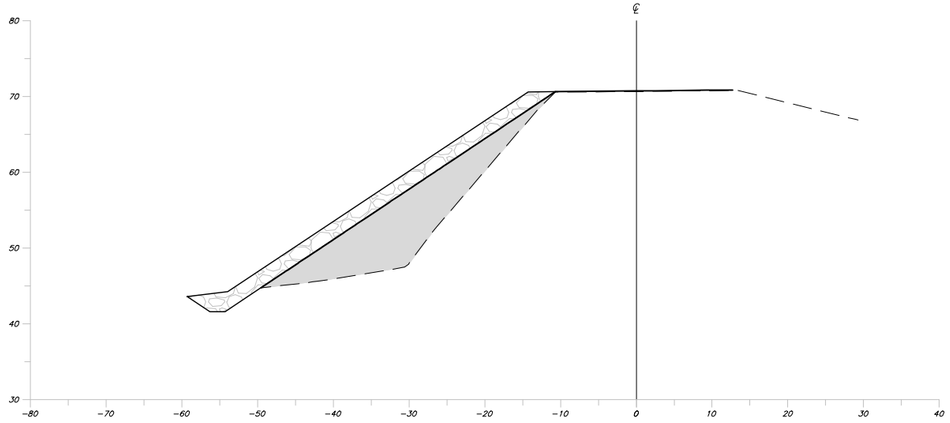

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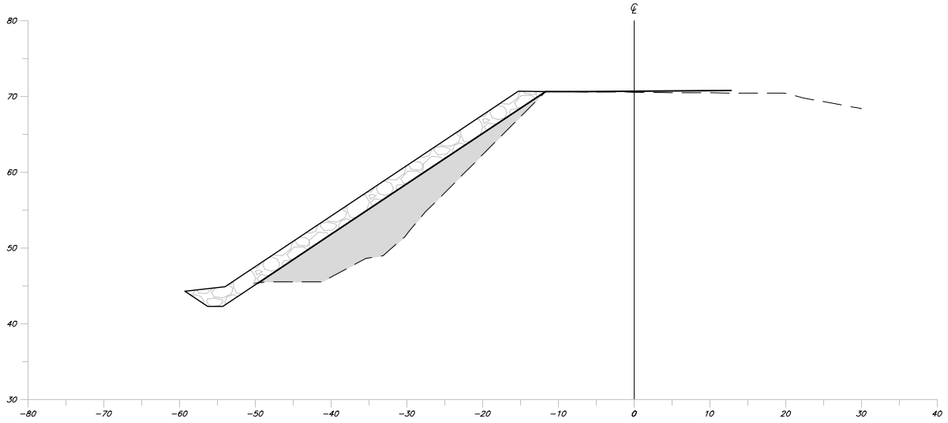

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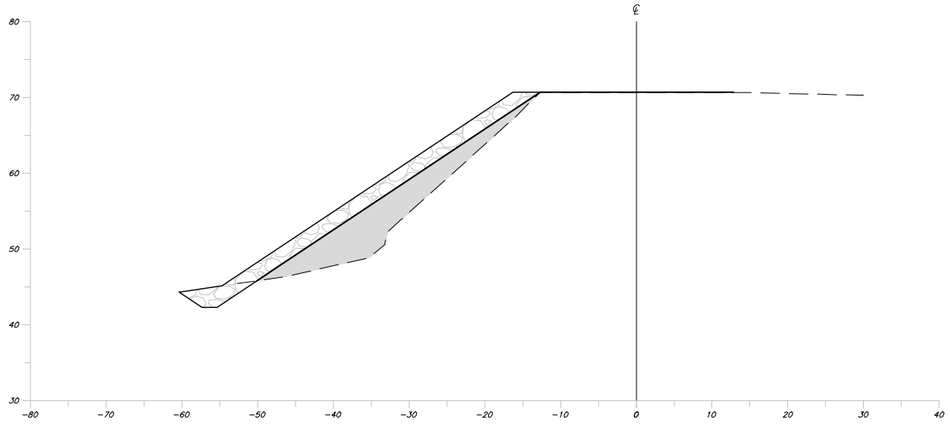

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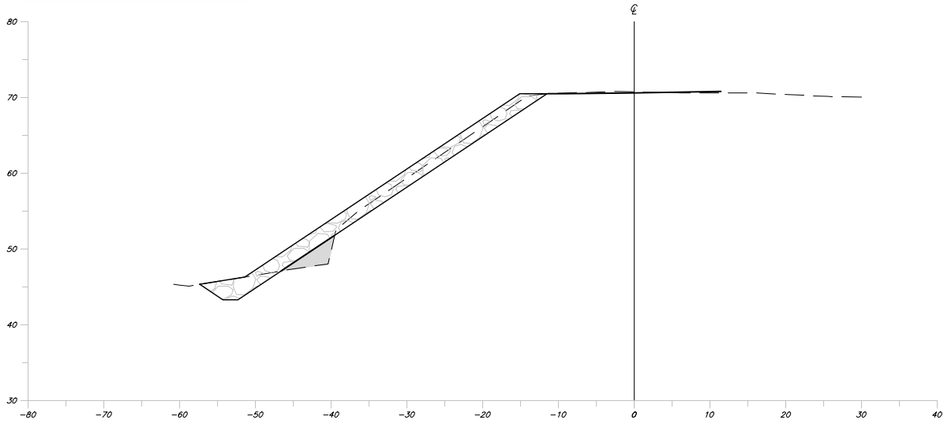

SECTION @ 3+20

SECTION

0' 5' 10' 20'

Q:\Drawings\Reclamation District No 800\NRCS Repair Sites\Production\Cosumnes Road (Chamberlin)\Cosumnes Road Plan Set.dwg

Plot Date 3/16/2020

REVISIONS			
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Designed By P.W. ERVIN
Drawn By P. INTHARATH
Checked By –
Approved By –
Date FEBRUARY 2020

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RECLAMATION DISTRICT 800 - COSUMNES

CRITICAL LEVEE REPAIRS
COSUMNES ROAD DOWNSTREAM

SECTIONS

SHEET 5 OF 6 SHEETS

TABLE 1
QUANTITIES

QUANTITY (AREA OR VOLUME)	ABOVE OHWM [1]	BELOW OHWM [1]	TOTAL
WORK AREA (ACRES)	0.19	0.19	0.38
TEMPORARY DISTURBANCE (ACRES)	0.56	0.16	0.72
TOTAL ACRES	0.75	0.35	1.10
FILL – SOIL (CUBIC YARDS)	1011	797	1808
FILL – RSP [2] (CUBIC YARDS)	549	363	912
TOTAL CUBIC YARDS	1560	1160	2720

[1] OHWM = ORDINARY HIGH WATER MARK (ELEVATION = 54+/– FEET)
[2] RSP = ROCK SLOPE PROTECTION

LEGEND
- WORK AREA BELOW ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA BELOW ORDINARY HIGH WATER MARK
- WORK AREA ABOVE ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA ABOVE ORDINARY HIGH WATER MARK

REVISIONS

REF.	DESCRIPTION	APVD.	DATE

Plot Date: 3/16/2020
Q:\Drawings\Reclamation District No. 800\WRCS Repair Sites\Production\Cosumnes Road (Chamberlin)\Cosumnes Road Plan Set.dwg

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
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RECLAMATION DISTRICT 800 - COSUMNES
CRITICAL LEVEE REPAIRS
COSUMNES ROAD DOWNSTREAM

PLAN

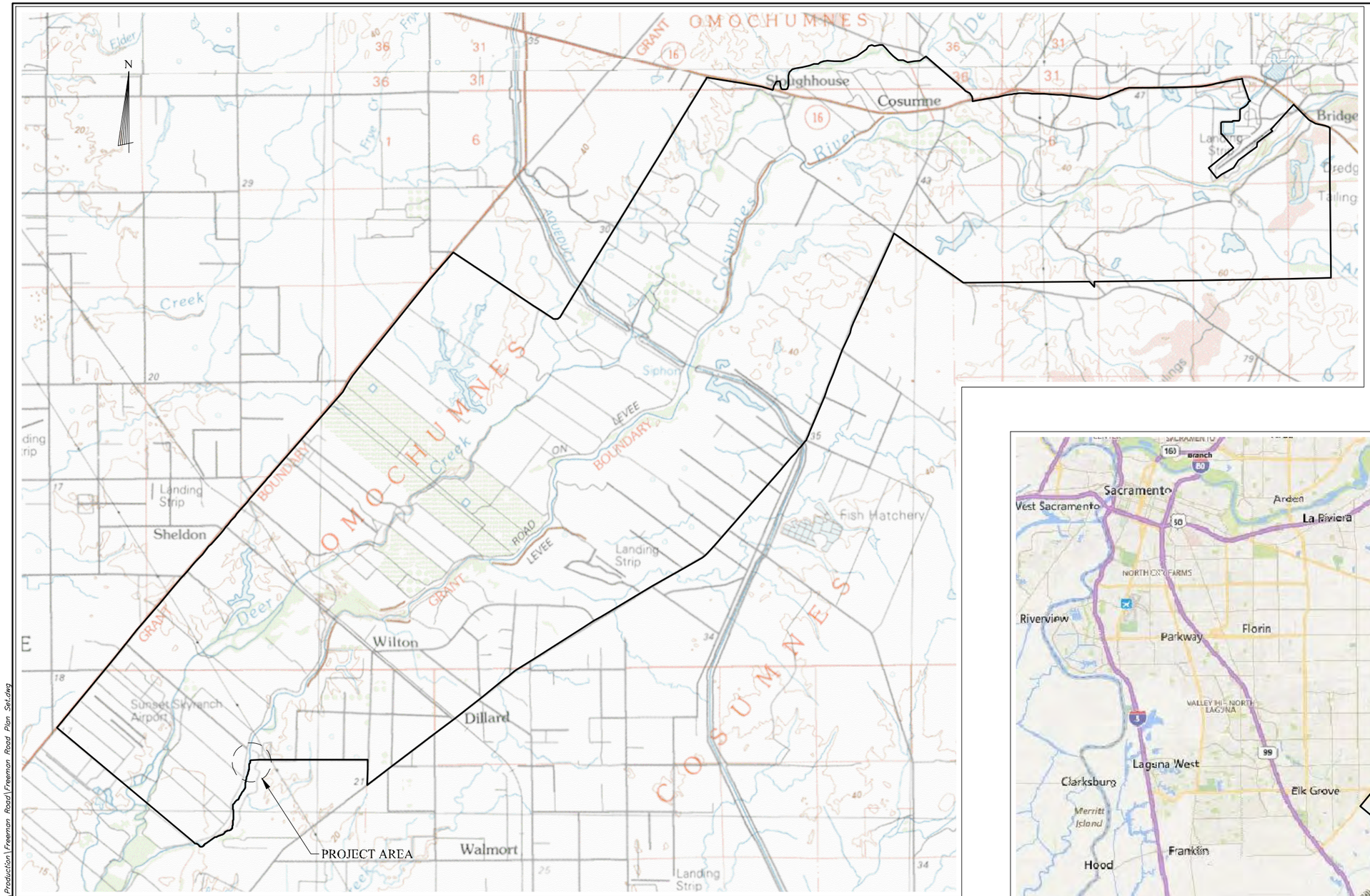
SHEET 6 OF 6 SHEETS

RECLAMATION DISTRICT NO. 800

CRITICAL LEVEE REPAIR PROJECTS
SITE 9: FREEMAN ROAD

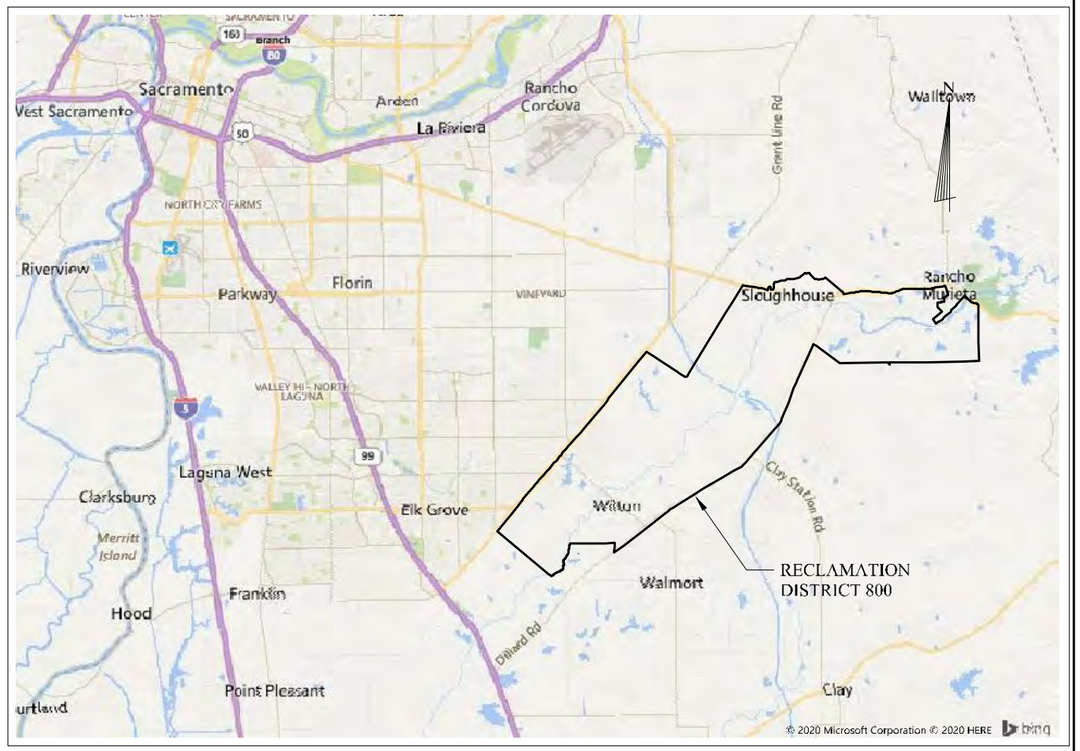
Sacramento County **California**

WAGNER & BONSIGNORE CONSULTING CIVIL ENGINEERS A CORPORATION
2151 RIVER PLAZA DRIVE, SUITE 100 SACRAMENTO, CALIFORNIA



LOCATION MAP

0' 1,500' 3,000' 6,000'



VICINITY MAP

NOT TO SCALE

G:\Drawings\Reclamation District No. 800\WRCS Repair Sites\Production\Freeman Road\Freeman Road Plan Set.dwg

File Date 3/2/2020

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN

Drawn By: P. INTHARATH

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Approved By: –

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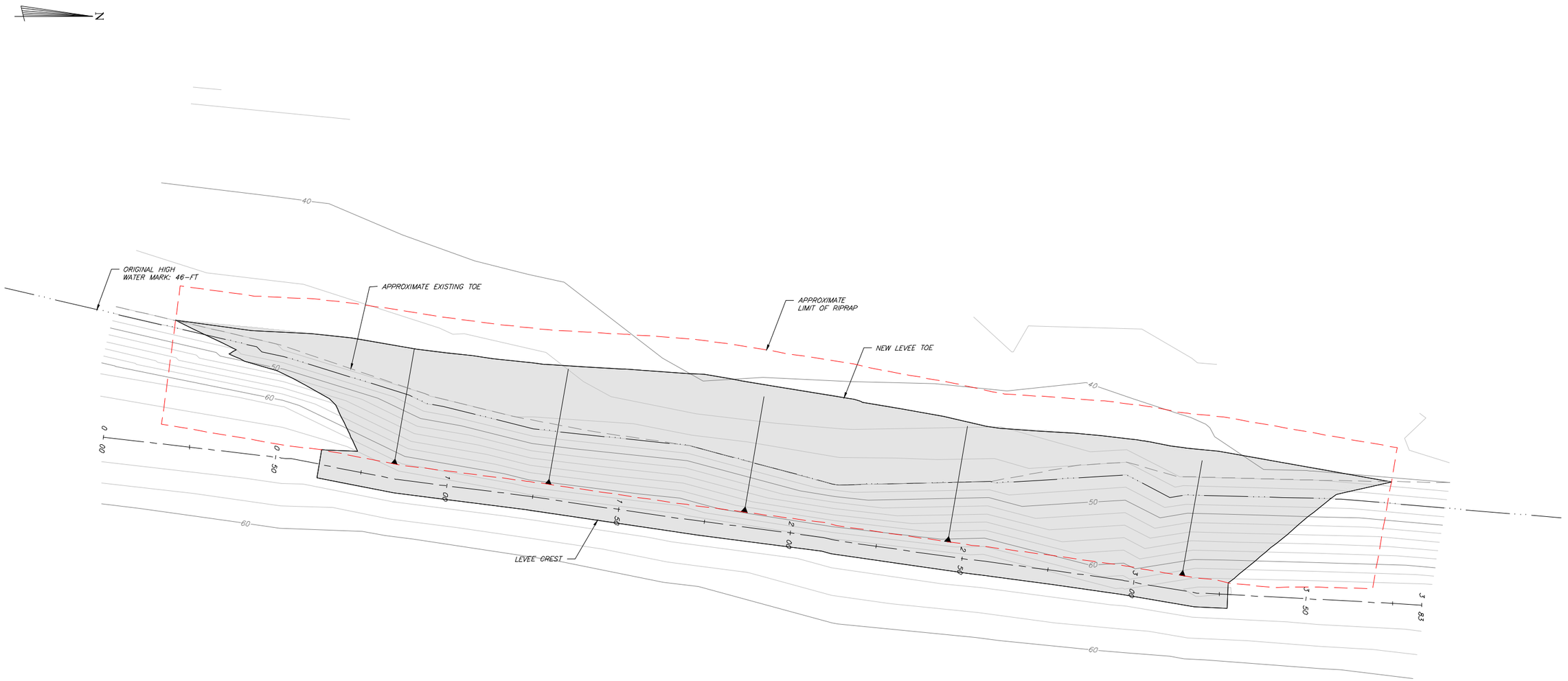
RECLAMATION DISTRICT 800 - COSUMNES

CRITICAL LEVEE REPAIRS FREEMAN ROAD

LOCATION AND VICINITY MAPS

SHEET 1 OF 7 SHEETS



PLAN
0' 15' 30'

G:\Drawings\Reclamation District No 800\NRCS Repair Sites\Production\Freeman Road\Freeman Road Plan Set.dwg

P.W.
3/2/2020

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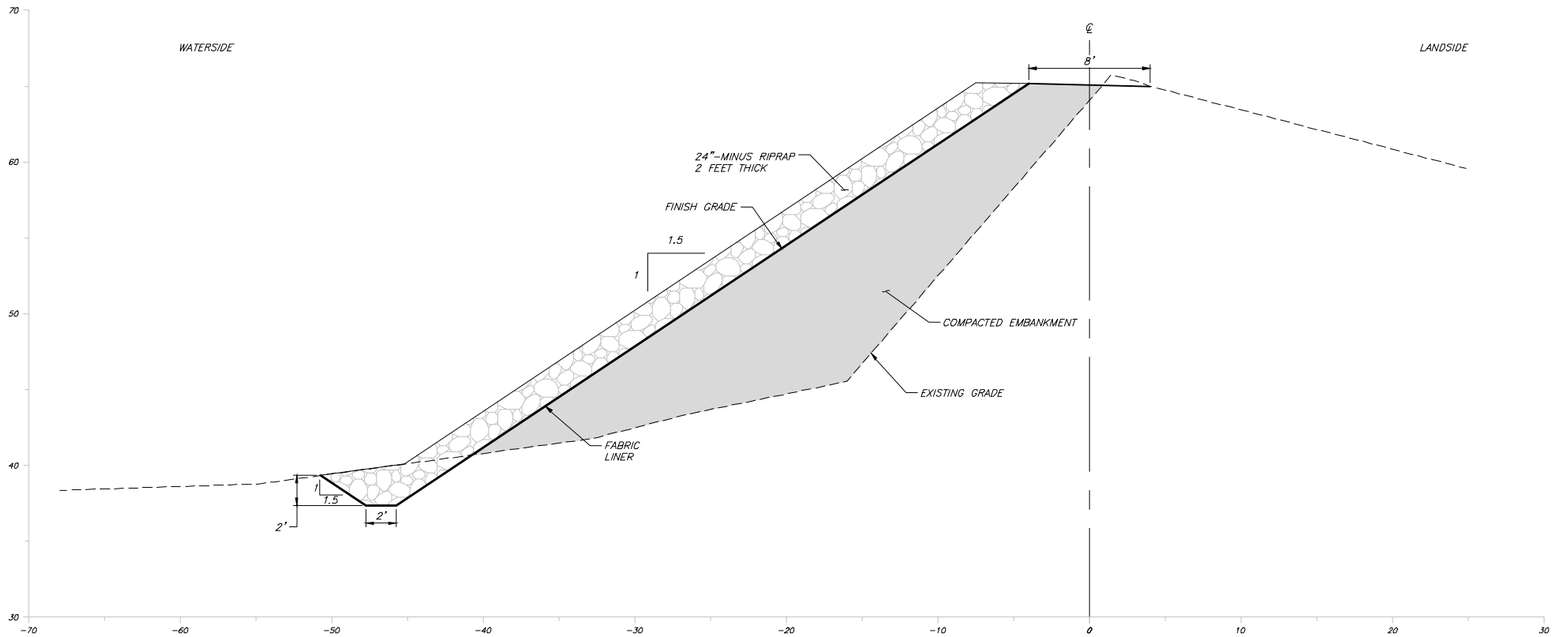
RECLAMATION DISTRICT 800 - COSUMNES

CRITICAL LEVEE REPAIRS FREEMAN ROAD

PLAN

SHEET 2 OF 7 SHEETS



TYPICAL SECTION

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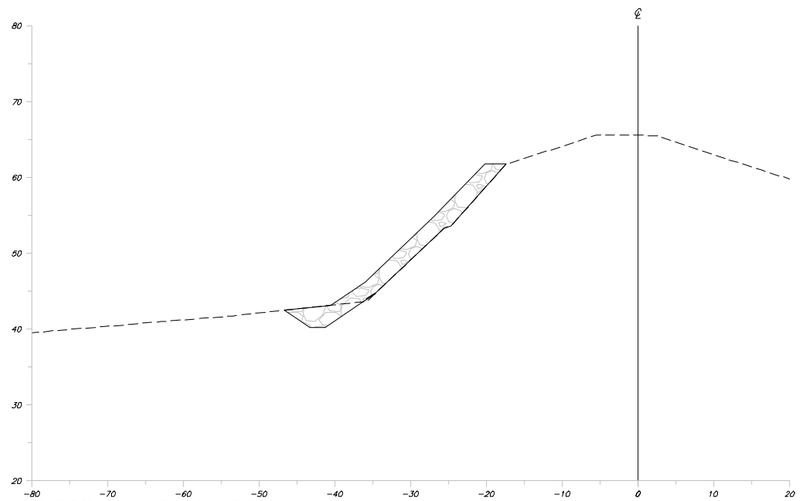

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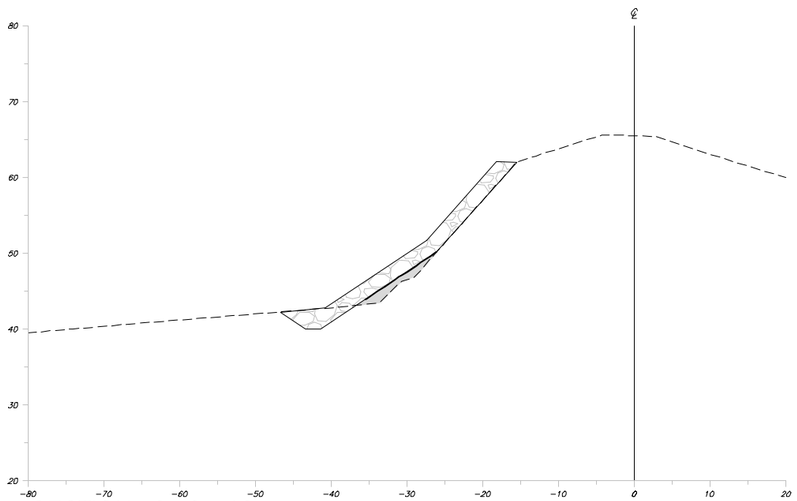

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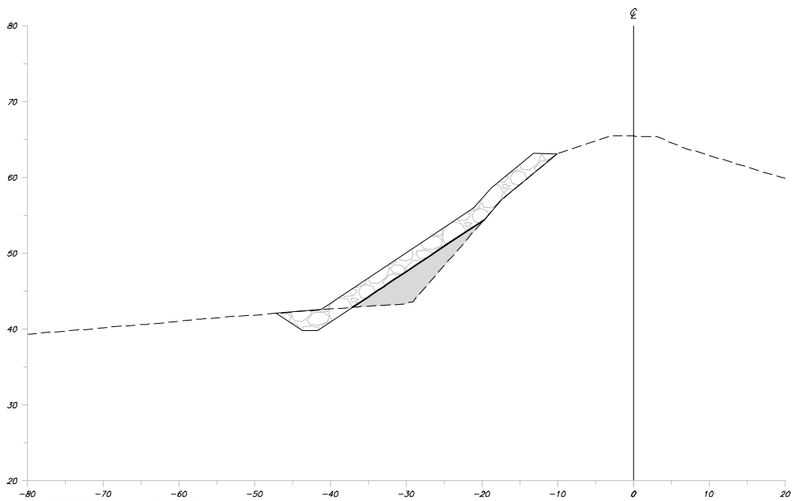

SECTION @ 0+60

0' 5' 10' 20'

REVISIONS			
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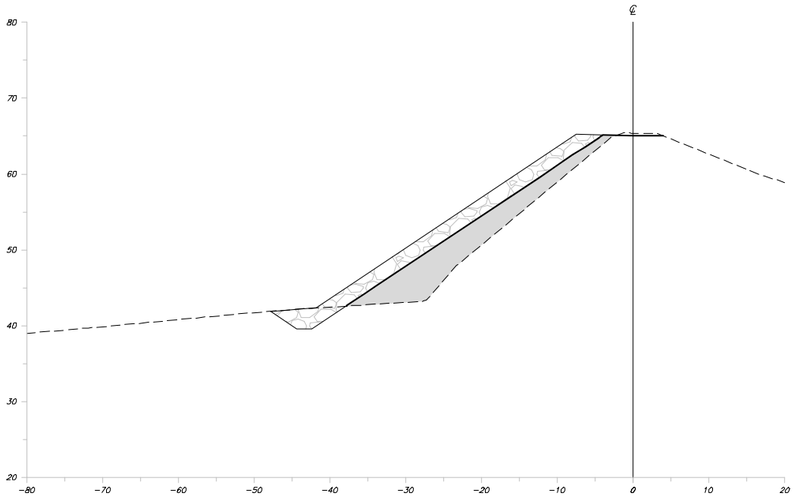
RECLAMATION DISTRICT 800 - COSUMNES

CRITICAL LEVEE REPAIRS
FREEMAN ROAD

SECTIONS

SHEET 3 OF 7 SHEETS

C:\Drawings\Reclamation District No 800\NRCS Repair Sites\Production\Freeman Road\Freeman Road Plan Set.dwg
P.W. Date: 3/2/2020



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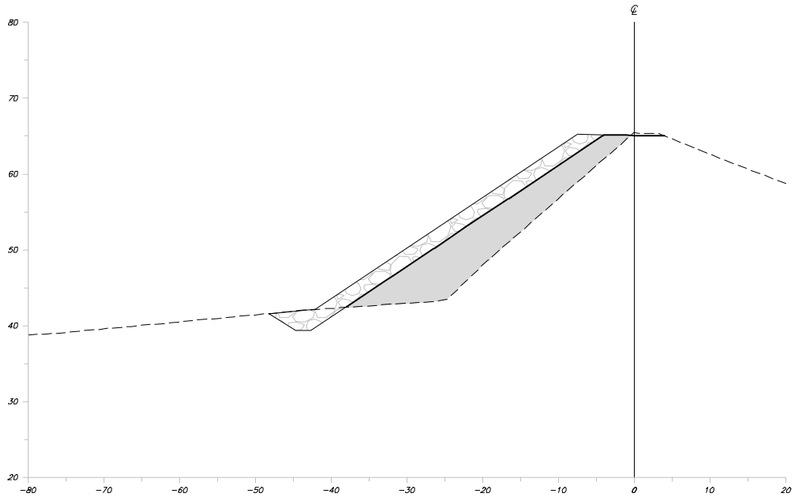

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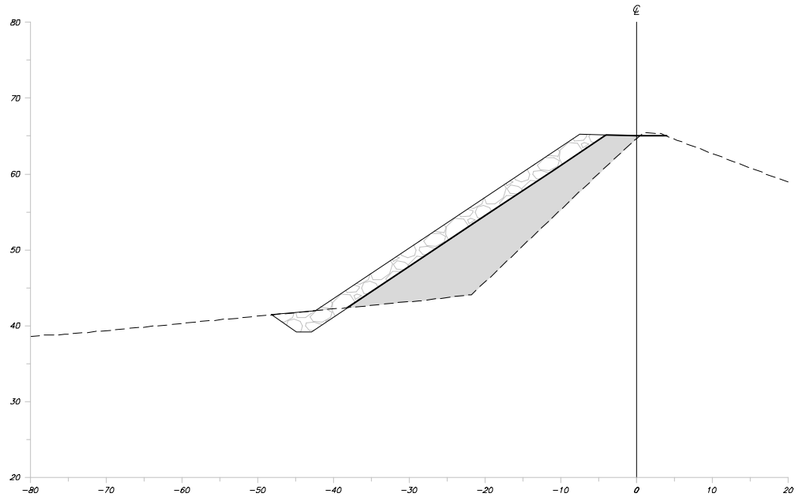

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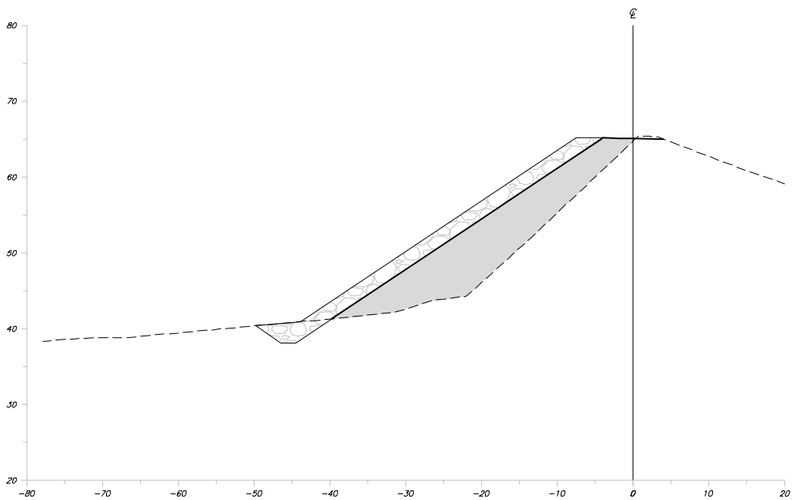

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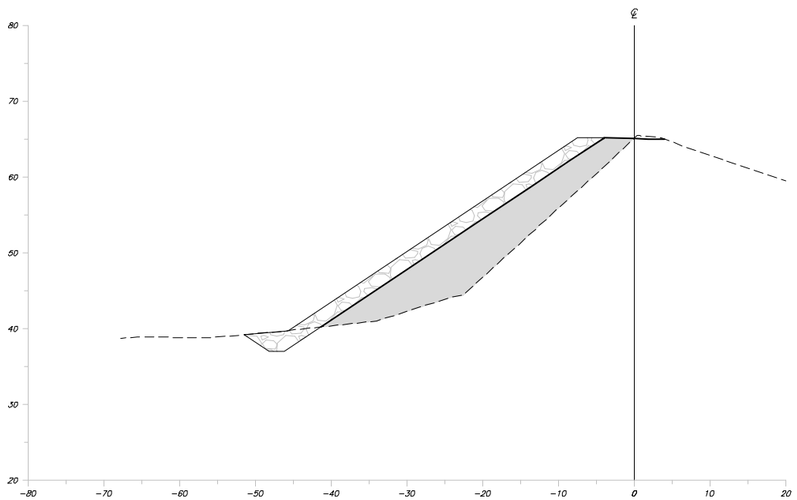

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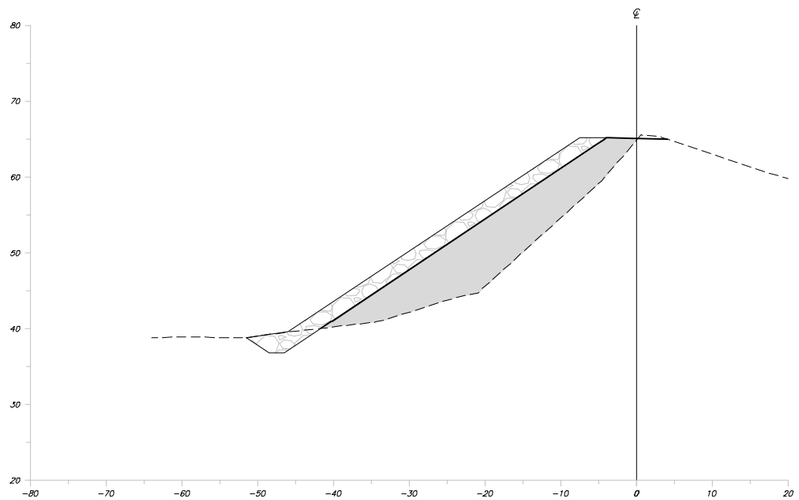

SECTION @ 1+80

0' 5' 10' 20'

G:\Drawings\Reclamation District No 800\NRCS Repair Sites\Production\Freeman Road\Freeman Road Plan Set.dwg

P.W.
Date 3/2/2020

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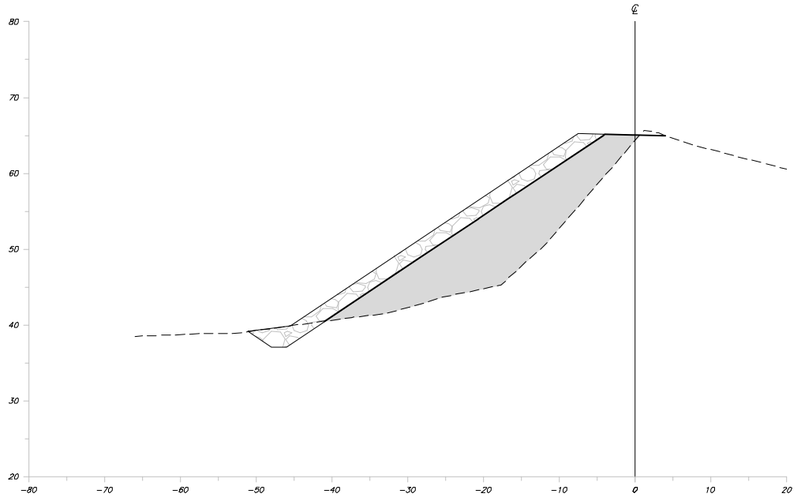
RECLAMATION DISTRICT 800 - COSUMNES

CRITICAL LEVEE REPAIRS
FREEMAN ROAD

SECTIONS

SHEET 4 OF 7 SHEETS



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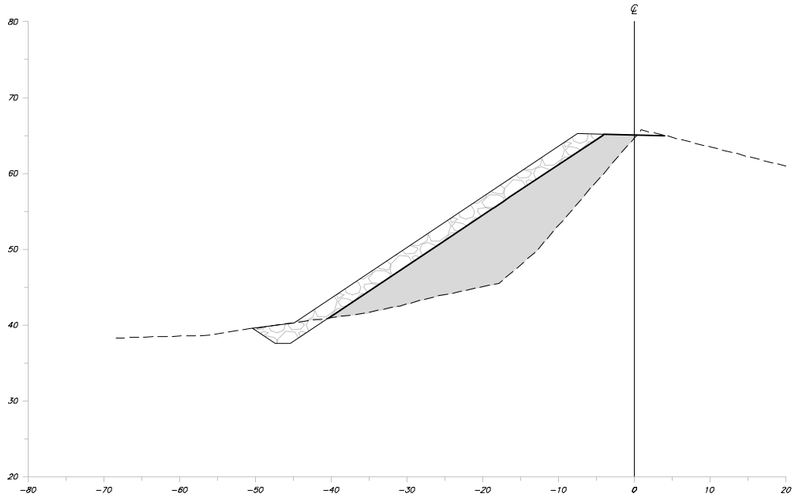

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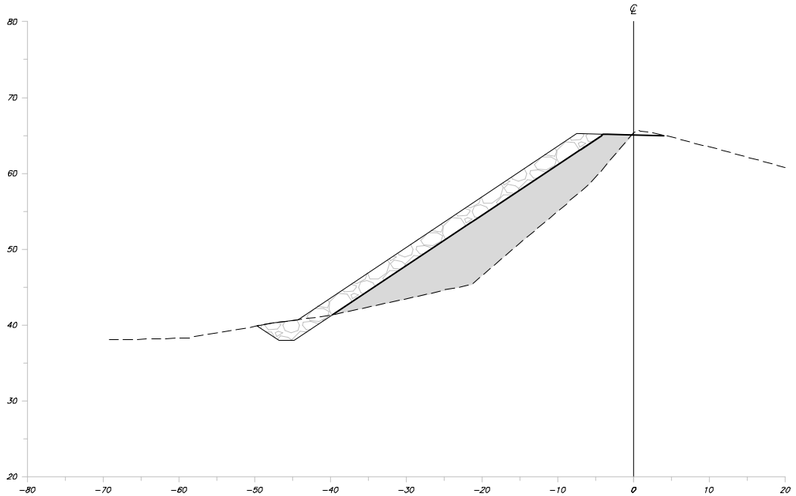

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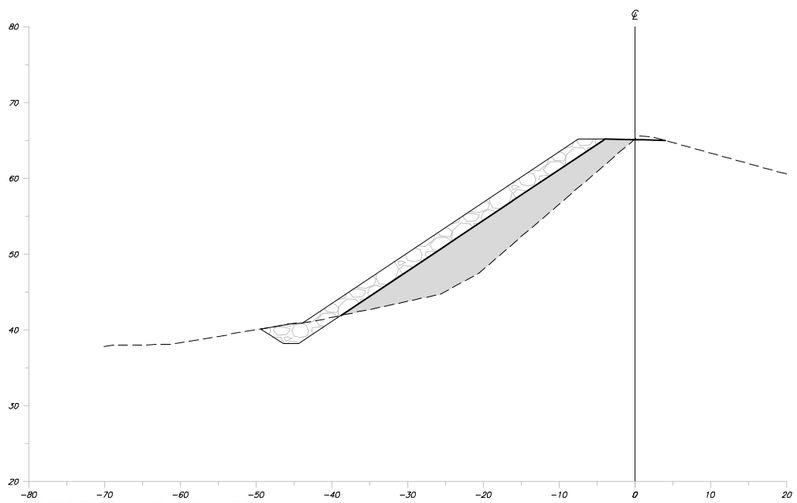

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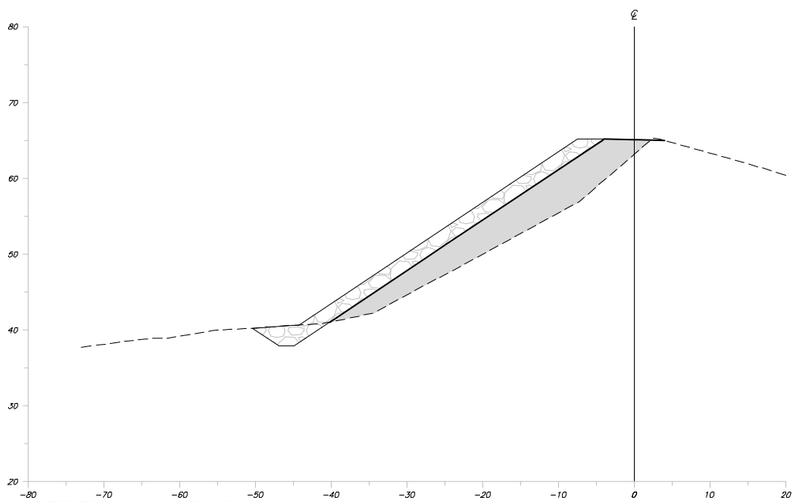
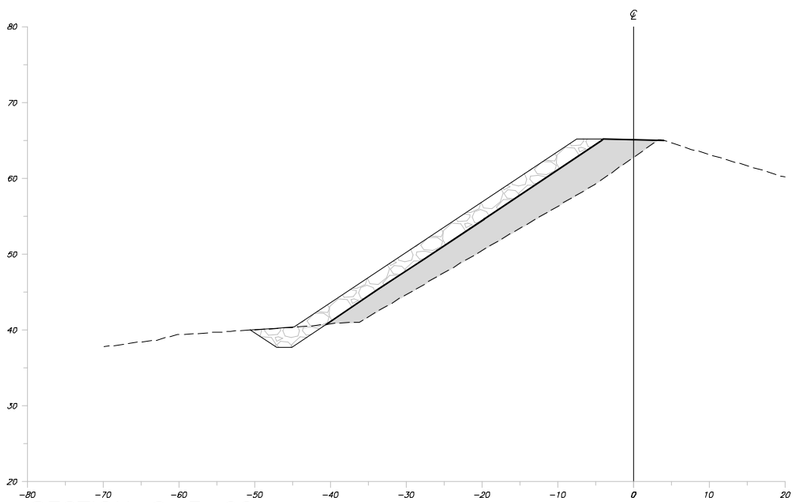


SECTION @ 2+80



SECTION @ 3+00

0' 5' 10' 20'

G:\Drawings\Reclamation District No 800\NRCS Repair Sites\Production\Freeman Road\Freeman Road Plan Set.dwg

P.W. Date 3/2/2020

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
Approved By: –
Date: FEBRUARY 2020

Wagner&Bonsignore
Consulting Civil Engineers, A Corporation
2151 River Plaza Drive
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REGISTERED PROFESSIONAL ENGINEER
PATRICK W. ERVIN
No. 66061
09/30/18
CIVIL
STATE OF CALIFORNIA

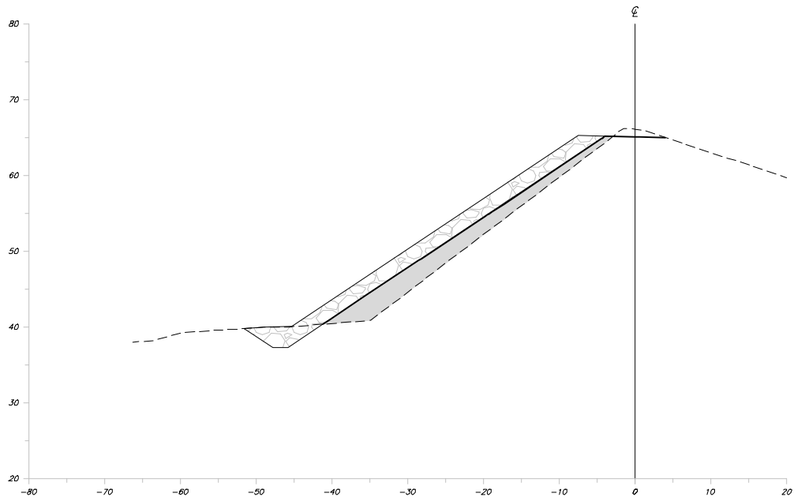
DRAFT

RECLAMATION DISTRICT 800 - COSUMNES

CRITICAL LEVEE REPAIRS FREEMAN ROAD

SECTIONS

SHEET 5 OF 7 SHEETS



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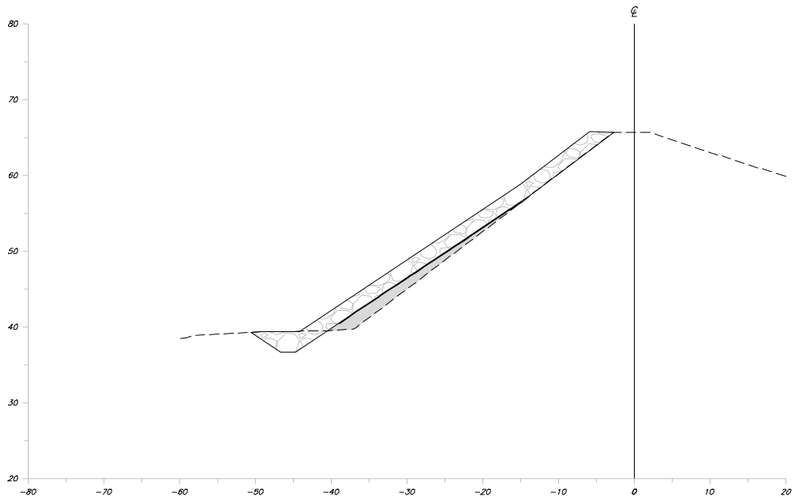

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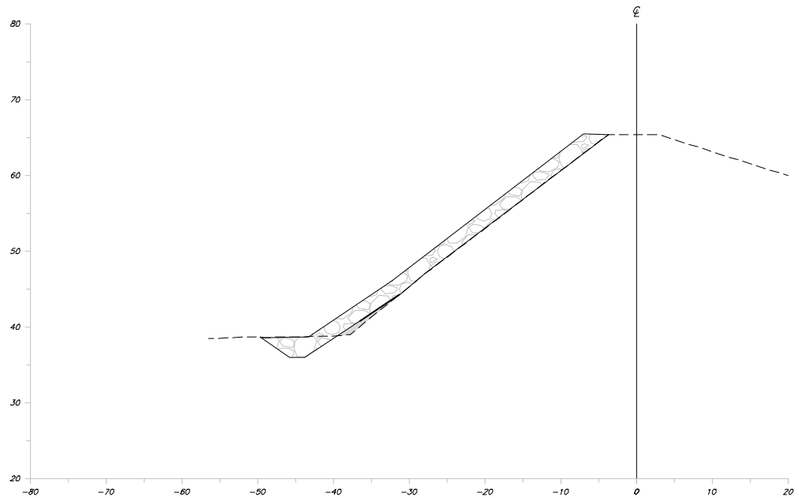

SECTION @ 3+60

0' 5' 10' 20'

G:\Drawings\Reclamation District No 800\NRCS Repair Sites\Production\Freeman Road\Freeman Road Plan Set.dwg

P.W. Date 3/2/2020

REVISIONS			
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Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
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RECLAMATION DISTRICT 800 - COSUMNES

CRITICAL LEVEE REPAIRS FREEMAN ROAD

SECTIONS

SHEET 6 OF 7 SHEETS

N

PROJECT ACCESS/
TEMPORARY IMPACT

FREEMAN ROAD

ORDINARY HIGH
WATER MARK: 54–FT

PLAN
0' 15' 30' 60'

TABLE 1
QUANTITIES

QUANTITY (AREA OR VOLUME)	ABOVE OHWM [1]	BELOW OHWM [1]	TOTAL
WORK AREA (ACRES)	0.21	0.20	0.41
TEMPORARY DISTURBANCE (ACRES)	0.65	0.12	0.77
TOTAL ACRES	0.86	0.32	1.18
FILL – SOIL (CUBIC YARDS)	1432	388	1820
FILL – RSP [2] (CUBIC YARDS)	835	423	1258
TOTAL CUBIC YARDS	2267	811	3078

[1] OHWM = ORDINARY HIGH WATER MARK (ELEVATION = 46+/– FEET)
[2] RSP = ROCK SLOPE PROTECTION

LEGEND
- WORK AREA BELOW ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA BELOW ORDINARY HIGH WATER MARK
- WORK AREA ABOVE ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA ABOVE ORDINARY HIGH WATER MARK

REVISIONS

REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
Approved By: –
Date: FEBRUARY 2020

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RENEWAL

RECLAMATION DISTRICT 800 - COSUMNES
CRITICAL LEVEE REPAIRS
FREEMAN ROAD
IMPACT

SHEET 7 OF 7 SHEETS

C:\Drawings\Reclamation District No. 800\WRCS Repair Sites\Production\Freeman Road\Freeman Road Plan Set.dwg
Plot Date: 3/2/2020

APPENDIX B
AIR QUALITY MODELING RESULTS

Road Construction Emissions Model **Version 9.0.0**
Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a
yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	RD 800 Levee Repair	
Construction Start Year	2022	Enter a Year between 2014 and 2040 (inclusive)
Project Type For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data	4	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	4.00	months
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	1	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	1.00	mile
Total Project Area	5.20	acres
Maximum Area Disturbed/Day	0.06	acres
Water Trucks Used?	1	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing	20.00	10.00	10.00
	Grading/Excavation	20.00	10.00	10.00
	Drainage/Utilities/Sub-Grade			
	Paving			
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			

Mitigation Options

On-road Fleet Emissions Mitigation		Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation		Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

The remaining sections of this sheet contain areas that require modification when 'Other Project Type' is selected.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	2.00	0.40		1/1/2022
Grading/Excavation	2.00	1.60		3/3/2022
Drainage/Utilities/Sub-Grade	0.00	1.40		5/3/2022
Paving	0.00	0.60		5/3/2022
Totals (Months)		4		

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	10.00			1	10.00
Miles/round trip: Grading/Excavation	10.00			1	10.00
Miles/round trip: Drainage/Utilities/Sub-Grade	0.00			0	0.00
Miles/round trip: Paving	0.00			0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grading/Excavation (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Draining/Utilities/Sub-Grade (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.01	0.08	0.00	0.00	0.00	38.55	0.00	0.01	40.36
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.85	0.00	0.00	0.89
Pounds per day - Grading/Excavation	0.00	0.01	0.08	0.00	0.00	0.00	38.55	0.00	0.01	40.36
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.85	0.00	0.00	0.89
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	1.70	0.00	0.00	1.78

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing				0	0.00
Miles/round trip: Grading/Excavation				0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade				0	0.00
Miles/round trip: Paving				0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grading/Excavation (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Draining/Utilities/Sub-Grade (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions	User Override of Worker Commute Default Values	Default Values		
User Input				
Miles/ one-way trip	10		Calculated Daily Trips	Calculated Daily VMT
One-way trips/day	2			
No. of employees: Grubbing/Land Clearing	3		6	60.00
No. of employees: Grading/Excavation	3		6	60.00
No. of employees: Drainage/Utilities/Sub-Grade			0	0.00
No. of employees: Paving			0	0.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Grading/Excavation (grams/mile)	0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Draining/Utilities/Sub-Grade (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Grading/Excavation (grams/trip)	1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.02	0.17	0.02	0.01	0.00	0.00	44.42	0.00	0.00	44.87
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00	0.99
Pounds per day - Grading/Excavation	0.02	0.17	0.02	0.01	0.00	0.00	44.42	0.00	0.00	44.87
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00	0.99
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.01	0.00	0.00	0.00	0.00	1.95	0.00	0.00	1.97

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
User Input								
Grubbing/Land Clearing - Exhaust	1							0.00
Grading/Excavation - Exhaust	1							0.00
Drainage/Utilities/Subgrade								0.00
Paving								0.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grading/Excavation (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Draining/Utilities/Sub-Grade (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing			0.60	0.01	0.12	0.00
Fugitive Dust - Grading/Excavation			0.60	0.01	0.12	0.00
Fugitive Dust - Drainage/Utilities/Subgrade			0.00	0.00	0.00	0.00

Values in cells D195 through D228, D246 through D279, D297 through D330, and D348 through D381 are required when 'Other Project Type' is selected.

Off-Road Equipment Emissions

Grubbing/Land Clearing	Default Number of Vehicles	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*				pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Excavators	0.20	3.26	1.78	0.09	0.08	0.01	500.02	0.16	0.00	505.41
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Rubber Tired Dozers	0.84	3.58	8.79	0.42	0.38	0.01	827.04	0.27	0.01	835.94
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Scrapers	0.82	6.38	8.94	0.35	0.32	0.02	1,470.30	0.48	0.01	1,486.14
			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
				pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
	Grubbing/Land Clearing	pounds per day	1.86	13.21	19.51	0.85	0.78	0.03	2,797.35	0.90	0.03	2,827.49
	Grubbing/Land Clearing	tons per phase	0.04	0.29	0.43	0.02	0.02	0.00	61.54	0.02	0.00	62.20

Grading/Excavation

Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Excavators	0.20	3.26	1.78	0.09	0.08	0.01	500.02	0.16	0.00	505.41
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Plate Compactors	0.04	0.21	0.25	0.01	0.01	0.00	34.48	0.00	0.00	34.65
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Rubber Tired Dozers	0.84	3.58	8.79	0.42	0.38	0.01	827.04	0.27	0.01	835.94
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment

If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grading/Excavation	pounds per day	1.08	7.05	10.82	0.51	0.47	0.01	1,361.53	0.43	0.01	1,376.00
	Grading/Excavation	tons per phase	0.02	0.16	0.24	0.01	0.01	0.00	29.95	0.01	0.00	30.27

Drainage/Utilities/Subgrade Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment

If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Drainage/Utilities/Sub-Grade	pounds per day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drainage/Utilities/Sub-Grade	tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Paving	Default Number of Vehicles	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
Override of Default Number of Vehicles	*Program-estimate*													
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Paving	pounds per day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Emissions all Phases (tons per construction period) =>		0.06	0.45	0.67	0.03	0.03	0.00	91.50	0.03	0.00	92.48

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		221		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		231		8
Crawler Tractors		212		8
Crushing/Proc. Equipment		85		8
Excavators		158		8
Forklifts		89		8
Generator Sets		84		8
Graders		187		8
Off-Highway Tractors		124		8
Off-Highway Trucks		402		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130		8
Paving Equipment		132		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		80		8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		263		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97		8
Trenchers		78		8
Welders		46		8

END OF DATA ENTRY SHEET

APPENDIX C
BIOLOGICAL ASSESSMENTS

C-1, TERRESTRIAL BIOLOGICAL ASSESSMENT, SITES 4, 8 AND 9

C-2, TERRESTRIAL BIOLOGICAL ASSESSMENT, SITES 1, 2, 3, 5, 6 AND 7

C-3, FISHERIES BIOLOGICAL ASSESSMENT

Biological Assessment

Cosumnes District (RD 800) Emergency Levee Repair Project

Sacramento County, California

Prepared for:

Reclamation District 800
c/o Wagner & Bonsignore
Attn: Patrick Ervin, P.E.
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Sacramento, CA 95833

Prepared by:

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March 2020

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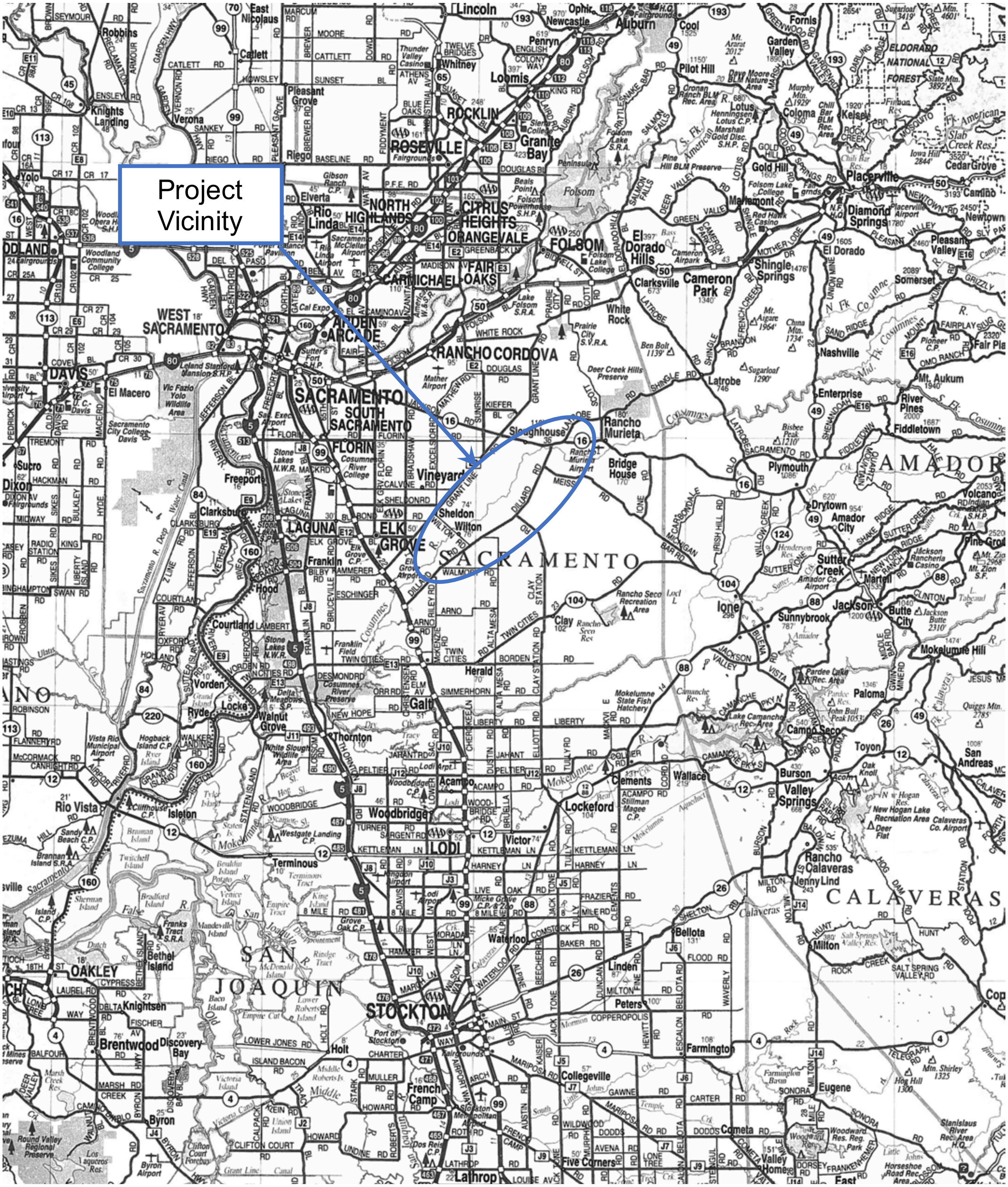
I. INTRODUCTION

The project proponent, Reclamation District No. 800 Cosumnes District (RD 800), proposes to repair three critical erosion repairs on the waterside of the Cosumnes River levee that suffered severe erosion during the 2017 storms. The erosion at these sites is so severe, levee integrity has been compromised and further erosion could lead to a breach during a major storm event. These sites are named “Fig Road Downstream” “Cosumnes Road Downstream”, and “Freeman Road” after the roads that provide access to each site.

The sections of levee proposed for repair are along the Cosumnes River, in Sacramento County, California (Figure 1). Fig Road Downstream is in an unnumbered Section in Township 7 North, Range 7 East of the USGS 7.5-minute Sloughhouse topographic quadrangle and is at an elevation of approximately 90 feet above mean sea level (Figure 2). Cosumnes Road Downstream and Freeman Road are within unnumbered Sections in Township 6 North, Range 6 East of the 7.5-minute Elk Grove topographic quadrangle and are at elevations of approximately 65 feet and 60 feet above mean sea level, respectively. The repair sites are along the southeast bank of the Cosumnes in a predominantly agricultural area (Figure 3).

The proposed scope of work is the repair and stabilization of the eroded levees and riverbanks. The work will involve both reconstructing the levees and repairing the underlying riverbanks. Clean fill dirt will be imported to replace the soil washed away during the floods and rock slope protection (RSP) will be added to the restored slopes to reduce potential future erosion. Grading and installation of RSP will occur both above and below the ordinary high water mark (OHWM) of the Cosumnes River. The USDA NRCS (United States Department of Agriculture Natural Resources Conservation Service) is providing cost-share funding through the Emergency Watershed Protection Program (EWP).



Source: California State Automobile Association

Moore Biological Consultants

N
W E
S

0 9 18 Miles

FIGURE 1

PROJECT VICINITY

Site 4 –
Fig Road Downstream

Site 8 –
Cosumnes Road Downstream

Site 9 - Freeman Road

Source: USGS 7.5' Quadrangles
ELK GROVE & SLOUGHHOUSE, CA

Figure 2

Moore Biological Consultants

0 4,000 8,000
Feet

N
W E
S

Map Date: 11/13/19

USGS

RD 800 Erosion Repairs (USDA)

Sacramento County, CA

C:\Users\owner\Documents\EFC_INC\Projects\Moore Biological\RD_800\MXD\USDA_Individual_Figures\rd_800_sites_usgs_figure_2.mxd

Figure 3

Moore Biological Consultants

0 4,000 8,000
Feet

N
W E
S

Map Date: 11/13/19
Aerial Source: Google Earth (08/16/2018)

AERIAL

RD 800 Erosion Repairs (USDA)

Sacramento County, CA

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This assessment describes the existing biological environment and how the project would affect that environment. This document provides the pertinent biological information regarding Waters of the U.S. and wetlands, Federal and State special-status species, and other natural resources that may be present in the project sites. This assessment also evaluates potential impacts of the proposed project to biological resources in the project sites resulting from construction of the project.

The upland areas in the project sites provide habitat for a number of common wildlife species and a few special-status species. Swainson's hawk (*Buteo swainsoni*), white-tailed kite (*Elanus leucurus*), tricolored blackbird (*Agelaius tricolor*), and Pacific pond turtle (*Emys marmorata*) are special-status wildlife species with the potential to occur in the project site on more than an occasional or transitory basis. Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) could potentially occupy blue elderberry shrubs in the Fig Road Downstream site.

Central Valley steelhead (*Oncorhynchus mykiss irrideus*) are known occur in the Cosumnes River but are not expected to occur in the site on more than a migratory basis. The potential for occurrence and potential project impacts to special-status fish are addressed in detail in a separate Biological Assessment (Fishbio, 2020); their findings are included in this assessment.

With the implementation of proposed Avoidance and Minimization Measures including pre-construction surveys and construction scheduling, the project would have less than significant impacts to special-status plant and wildlife species. There would be no long-term adverse impacts to biological resources as a result of the proposed project. The project would have minimal impacts on the aquatic habitats and potentially occurring special-status fish species in the Cosumnes River and downstream waterways.

II. PROJECT DESCRIPTION

The project proponent, Reclamation District No. 800 Cosumnes District (RD 800), proposes to repair three critical erosion repairs on the waterside of the Cosumnes River levee that suffered severe erosion during the 2017 storms. The erosion at these sites is so severe, levee integrity has been compromised and further erosion could lead to a breach during a major storm event. These sites are named “Fig Road Downstream” “Cosumnes Road Downstream”, and “Freeman Road” after the roads that provide access to each site.

The proposed scope of work is the repair and stabilization of the eroded levees and riverbanks. The work will involve both reconstructing the levees and repairing the riverbanks at a horizontal/vertical ratio of between 1.5:1 and 2:1 to conform to the theoretical levee slopes that underlie the banks. Clean fill dirt will be imported to replace the soil washed away during the floods and rock slope protection (RSP) would be added to the restored slopes to reduce potential future erosion. Grading and installation of RSP would occur both above and below the ordinary high water mark (OHWM) of the Cosumnes River.

At the Fig Road Downstream site, approximately 200 feet of levee crest will be excavated to a depth of approximately five feet. The crest will be replaced and recompacted using the excavated material. Additionally, approximately 450 of waterside levee slope will be grubbed, stripped and prepared for material placement. Imported embankment fill material will be placed and compacted at a 2 to 1 slope to restore the levee to its previous condition. Rock slope protection will be placed on the entirety of the waterside slope to protect the repair from future erosion. A two-foot deep by two-foot wide toe trench will be utilized to stabilize the rock. A layer of geosynthetic fabric will be placed between the embankment and the rock slope protection to provide additional rock stabilization.

Cosumnes Road Downstream consists of approximately 270 linear feet of construction on the waterside levee slope south bank of the river. The waterside slope will be grubbed, stripped and prepared for material placement. Imported embankment fill material will be placed and compacted at a 1.5 to 1 slope to restore the levee to its previous condition. Rock slope protection will be placed on the entirety of the waterside slope to protect the repair from future erosion. A two-foot deep by two-foot wide toe trench will be utilized to stabilize the rock. A layer of geosynthetic fabric will be placed between the embankment and the rock slope protection to provide additional rock stabilization.

Freeman Road will use the same repair methodology as Cosumnes Road Downstream, restoring the waterside slope at a 1.5 to 1 slope with rock slope protection for approximately 450 lineal feet.

The project would involve grading disturbance of the riverbanks and channel. The project was designed to have a minimal footprint, thereby minimizing potential impacts to potential or actual habitats of special-status species. The project would involve a work area of 1.73 acres where project improvements would be constructed, and an additional 2.53 acres of temporary construction disturbance, primarily on the upper levee slope (Table 1). Only 1.39 acres of the overall 4.26 acres of construction disturbance is below the OHWM; the remaining 2.87 acres is above the OHWM.

A total of 7,682 cubic yards of clean fill dirt will be placed on the riverbanks to achieve the design slopes and 4,674 cubic yards of RSP will be installed on the graded slopes. Most of the clean fill dirt required at the Fig Road Downstream site will be obtained from a local borrow pit in the field adjacent to the levee; the remaining clean fill dirt at the Fig Road Downstream site and the other sites will be from an off-site source.

The project will result in the placement of fill in 0.82 acres of Waters of the U.S. There will also be temporary construction disturbance to approximately 0.57

TABLE 1

QUANTITIES OF AREAS AFFECTED AND MATERIALS

Quantity (Area or Volume)	Repair Site	Above OHWM[1]	Below OHWM[1]	Total
Work Area (acres)	4	0.51	0.43	0.94
	8	0.19	0.19	0.38
	9	0.21	0.20	0.41
Subtotal Acres	*All*	*0.91*	*0.82*	*1.73*
Temporary Disturbance (acres)	4	0.75	0.29	1.04
	8	0.56	0.16	0.72
	9	0.65	0.12	0.77
Subtotal Acres	*All*	*1.96*	*0.57*	*2.53*
TOTAL ACRES		**2.87**	**1.39**	**4.26**
Fill: Soil (cubic yards)	4	2,421	1,633	4,054
	8	1,011	797	1,808
	9	1,432	388	1,820
Subtotal Cubic Yards	*All*	*4,864*	*2,818*	*7,682*
Fill: RSP[2] (cubic yards)	4	1,674	830	2,504
	8	549	363	912
	9	835	423	1,258
Subtotal Cubic Yards	*All*	*3,058*	*1,616*	*4,674*
TOTAL CUBIC YARDS		**7,922**	**4,434**	**12,356**

[1] OHWM = ordinary high water mark (Site 4 = 78 feet; Site 8 = 54 feet; Site 9 = 46 feet)

[2] RSP = rock slope protection

acres of Waters of the U.S. adjacent to the project footprint related to construction equipment and personnel accessing the work areas.

The project would require the removal of a several valley oaks (*Quercus lobata*), a few black walnuts (*Juglans californica*), two Oregon ash (*Fraxinus latifolia*) trees, and a blue elderberry shrub (*Sambucus nigra* ssp. *caerulea*). The project would result in the removal of approximately 0.86 acres of riparian forest vegetation.

Project equipment and construction materials would be staged in highly disturbed upland areas on the landside levee at each of the erosions repair site. All construction vehicles and equipment needed to complete the project objectives would avoid working in the water. The project sites are expected to be dry during construction. However, if there were work required in the wetted area of the Cosumnes River, construction crews would install a siltation screen or dewatering devices to prevent sediment release. Scheduling construction in the late summer and the purchase of credits at agency-approved mitigation banks would further minimize potential project impacts on biological resources.

Proposed avoidance and minimization measures include the following:

- Construction access via existing farm roads.
- Minimization of overall construction disturbance area.
- Minimization of project footprint in jurisdictional Waters of the U.S.
- Staging areas located in existing disturbed areas.
- Protection of oak trees to be retained with construction fencing in or near construction areas.
- Construction scheduling during late summer or fall to avoid potential impacts to special-status fish species.
- If work is required in the wetted area of the Cosumnes River, installation of siltation screen or dewatering devices to prevent sediment release.

- Pre-construction surveys for potentially occurring special-status species (e.g., Swainson's hawk, burrowing owl, western pond turtle).

The collective implementation of these Avoidance and Minimization Measures as a part of the project will assure the protection of sensitive habitat and species and the maintenance of biological functions and values. In addition to the Avoidance and Minimization Measures, the project will offset unavoidable impacts to biological resource. Proposed mitigation measures include the following:

- Reseeding disturbed areas with native non-invasive erosion control mix following construction.
- Purchasing elderberry mitigation credits from a mitigation bank or banks acceptable to the permitting agencies.
- Mitigation for impacts to jurisdictional Waters of the U.S., riverine habitats, and associated special-status fish species at an approved mitigation bank.

III. REGULATORY FRAMEWORK

Federal Endangered Species Act

The Federal Endangered Species Act (FESA) of 1973 (16 U.S.C. 1531-1543) and subsequent amendments provide guidance for the conservation of endangered and threatened species and the ecosystems upon which they depend.

Section 7 of FESA requires Federal agencies, in consultation with and with the assistance of the Secretary of the Interior or the Secretary of Commerce, as appropriate, to insure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or

result in the destruction or adverse modification of critical habitat for these species. The United States Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) share responsibilities for administering the Act. Regulations governing interagency cooperation under Section 7 are found at 50 CFR Part 402. The opinions issued at the conclusion of consultation include statements authorizing take that may occur incidental to an otherwise legal activity.

Clean Water Act

The Clean Water Act (CWA) (33 U.S.C. 1251-1376) provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters. Section 404 of the CWA established a permit program administered by the U.S. Army Corps of Engineers (ACOE) regulating the discharge of dredged or fill material into waters of the United States (including wetlands). Implementing regulations by ACOE are found at 33 CFR Parts 320-330. Guidelines for implementation are referred to as the Section 404 (b)(1) Guidelines and were developed by the Environmental Protection Agency (EPA) in conjunction with ACOE (40 CFR Parts 230). The Guidelines allow the discharge of dredged or fill material into the aquatic system only if there is no practicable alternative that would have less adverse impacts.

State and federal agencies regulate Waters of the U.S. and wetlands, and Section 404 of the Clean Water Act requires that a permit be secured prior to the discharge of dredged or fill materials into any waters of the U.S., including wetlands. California Department of Fish and Wildlife (CDFW) also has jurisdiction over modifications to rivers, lakes, and streams under Section 1600 of Fish and Game Code of California.

“Waters of the U.S.”, as defined in 33 CFR 328.4, encompasses Territorial Seas, Tidal Waters, and Non-Tidal Waters; Non-Tidal Waters includes interstate and intrastate rivers and streams, as well as their tributaries. The limit of federal

jurisdiction of Non-Tidal Waters of the U.S. extends to the “ordinary high water mark”. The ordinary high water mark is established by physical characteristics such as a natural water line impressed on the bank, presence of shelves, destruction of terrestrial vegetation, or the presence of litter and debris.

Jurisdictional wetlands and Waters of the U.S. include, but are not limited to, perennial and intermittent creeks and drainages, lakes, seeps, and springs; emergent marshes; riparian wetlands; and seasonal wetlands. Wetlands and Waters of the U.S. provide critical habitat components, such as nest sites and a reliable source of water, for a wide variety of wildlife species.

Section 401 of the CWA requires an applicant for a Federal license or permit that allows activities resulting in a discharge to waters of the U.S., to obtain a state certification that the discharge complies with other provisions of the CWA. The Regional Water Quality Control Board (RWQCB) administers the certification program in California.

Rivers and Harbors Act

Section 10 of the Rivers and Harbors Act (33 U.S.C. 401 et seq.) is administered by ACOE. This section requires permits in, above, or below navigable waters of the U. S. for all structures such as docks, bridges, riprap, and activities such as dredging. Navigable waters are defined as those subject to the ebb and flow of the tide and susceptible to use in their natural condition or by reasonable improvements as means to transport interstate or foreign commerce. The ACOE grants or denies permits based on the effects on navigation. Most activities covered under this act are also covered under Section 404 of CWA, so a Section 404 permit process usually also covers Section 10 of the Rivers and Harbors Act, where appropriate.

California Water Code, Section 8710

The Central Valley Flood Protection Board (CVFPB) administers section 8710 of the California Water Code. Section 8710 of the California Water Code requires that a permit must be obtained from the CVFPB prior to the start of any work, including excavation and construction activities within floodways, levees, and 10 feet landward of the landside levee toes. Streams regulated by the CVFPB include the Sacramento or San Joaquin Rivers or any of their tributaries (California Code of Regulations, Title 23, Section 122).

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 USC, Section 703-711; 40 Stat. 755), as amended, prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act applies to whole birds, parts of birds, and bird nests and eggs. The MBTA does not provide protection for habitat of migratory birds, but does prohibit the destruction or possession of individual birds, eggs, or nest in active use without a permit from USFWS.

California Endangered Species Act

The California Endangered Species Act (CESA) (Fish and Game Code 2050 et seq.) establishes the policy of the State to conserve, protect, restore, and enhance threatened or endangered species and their habitats. CESA mandates that State agencies should not approve projects that would jeopardize the continued existence of threatened or endangered species, if reasonable and prudent alternatives are available that would avoid jeopardy. CESA requires State lead agencies to consult with the during the California Environmental Quality Act **(**CEQA) process to avoid jeopardy to threatened or endangered species. As an outcome of consultation, CDFW is required to issue a written

finding indicating if a project would jeopardize threatened or endangered species and specifying reasonable and prudent alternatives that would avoid jeopardy. The Act provides for joint consultations when species are listed by both the State and Federal governments.

California Environmental Quality Act

With respect to biological resources, the California Environmental Quality Act (CEQA) Guidelines Section 15206 specifies that a project shall be deemed to be of statewide, regional, or area wide significance if it would substantially affect sensitive wildlife habitats, including but not limited to riparian lands, wetlands, bays, estuaries, marshes, and habitats for rare and endangered species.

CEQA Guidelines Section 15380 provides that a species not listed under the FESA or CESA may be considered rare or endangered under specific criteria. These criteria have been modeled after the definitions in FESA and CESA. Section 15380 was included in the CEQA Guidelines primarily to deal with situations in which a public agency is reviewing a project that may have a significant effect on a candidate species that has not yet been listed by either USFWS or CDFW. Thus, Section 15380 provides an agency with the ability to protect a species from a project's potential impacts until the respective resource agencies have had an opportunity to designate the species as protected, if warranted.

An example would be the vascular plants listed as rare or endangered by the California Native Plant Society (CNPS), but which may have no designated status or protection under FESA or CESA. The CNPS created five lists:

- List 1A: Plants presumed extinct in California,
- List 1B: Plants rare, threatened, or endangered in California and elsewhere,
- List 2: Plants rare, threatened, or endangered in California, but more

numerous elsewhere,

- List 3: Plants about which more information is needed; a “review list”, and
- List 4: Plants of limited distribution; a “watch list”.

In general, plants appearing on CNPS List 1A, 1B, or 2 are considered to meet the criteria of Section 15380.

Fish and Game Code of California (Sections 1600 and 3503)

Under Section 1600 of the Fish and Game Code of California, project proponents are required to notify CDFW prior to initiating activities for any project that would divert water from, or obstruct or change the natural flow, bed, channel, or bank of any river, stream, or lake. When an existing fish or wildlife resource may be substantially adversely affected, CDFW is required to propose reasonable project changes to protect the resource. These modifications are formalized in a Streambed Alteration Agreement.

Section 3503 of the Fish and Game Code prohibits unlawful take, possession or needless destruction of the nest or eggs of any bird. Section 3503.5 of the Fish and Game Code states that it is “unlawful to take, possess, or destroy any birds-of-prey in the orders Falconiformes or Strigiformes . . .” (i.e., hawks, owls, eagles, and falcons). The loss of an active nest is considered a violation of this code by CDFW. This statute does not provide for the issuance of any type of incidental take permit.

Porter-Cologne Water Quality Control Act & Waters of the State

Under the Porter-Cologne Water Quality Control Act, “Waters of the State” fall under the jurisdiction of the State Water Resource Control Board (SWRCB) and California Regional Water Quality Control Boards (RWQCBs). The RWQCBs are required to prepare and periodically update water quality control basin plans, which set forth water quality standards for surface water and groundwater, as

well as actions to control non-point and point sources of pollution to achieve and maintain these standards.

Projects that affect Waters of the State may also be required to meet waste discharge requirements (WDRs) of the RWQCBs. SWRCB's Resolution 2008-0026 identified a need to protect Waters of the State that are not subject to CWA Section 404 permitting and associated CWA Section 401 Water Quality Certification. On April 2, 2019, the SWRCB adopted the *State Wetland Definition and Procedures for the Discharges of Dredged or Fill Material to Waters of the State*; the effective date of the Procedures May 28, 2020. Once implemented, the Central Valley Regional Water Quality Board is expected to require WDRs for the fill of isolated wetlands that not subject to CWA Section 404 that authorize the impacts by issuing WDRs or in some cases, a WDR waiver.

California Native Plant Protection Act

The California Native Plant Protection Act (codified in Fish and Game Code Sections 1900-1913) is intended to preserve, protect, and enhance endangered or rare native plants in the state. The act directs CDFW to establish criteria for determining what native plants are rare or endangered. Under Section 1901, a species is endangered when its prospects for survival and reproduction are in immediate jeopardy from one or more causes. A species is rare when, although not threatened with immediate extinction, it is in such small numbers throughout its range that it may become endangered if its present environment worsens. Under the Act, the Fish and Game Commission may adopt regulations governing the taking, possessing, propagation, or sale of any endangered or rare native plant.

IV. METHODS

Database Review

A search of CDFW's California Natural Diversity Database (CNDDB, 2020) was conducted. The CNDDB search included the USGS 7.5-minute Elk Grove and Sloughhouse topographic quadrangles, encompassing approximately 120 square miles around the sites. The USFWS IPaC Trust Report of Federally Threatened and Endangered species that may occur in or be affected by projects in the project vicinity was also reviewed (Appendix B). These databases provide information on wildlife and plant species that have been documented in the project vicinity or have the potential to occur based on suitable habitat and geographical distribution. The USFWS maps of designated critical habitat were also reviewed.

Field Surveys

Moore Biological Consultants conducted field surveys of the erosion repair sites and staging areas on April 4, May 24 and 27, and August 5, 2019. The surveys consisted of walking throughout the sites observing habitat conditions and noting surrounding land uses, general habitat types, and plant and wildlife species. The surveys included an assessment of the site for potentially jurisdictional Waters of the U.S. and wetlands as defined by ACOE (1987; 2008), special-status species, and suitable habitat for special-status species (e.g., blue elderberry shrubs). Trees in and near the site were assessed for the potential use by nesting raptors, especially Swainson's hawk. The site and surrounding areas were also searched for burrowing owls or burrows that could be utilized by burrowing owls.

The limit of federal jurisdiction of Waters of the U.S. [i.e., the ordinary high water mark (OHWM)] along the bank in the work area was identified by physical

characteristics including a natural water line impressed on the bank, shelves, destruction of terrestrial vegetation, and/or the presence of litter and debris. The elevation of the OWHM along the bank at each site was identified in the field and mapped on the plan and profile maps of each site prepared by Wagner & Bonsignore, Inc. The acreage of Waters of the U.S. at each site was calculated as the area below the OHWM.

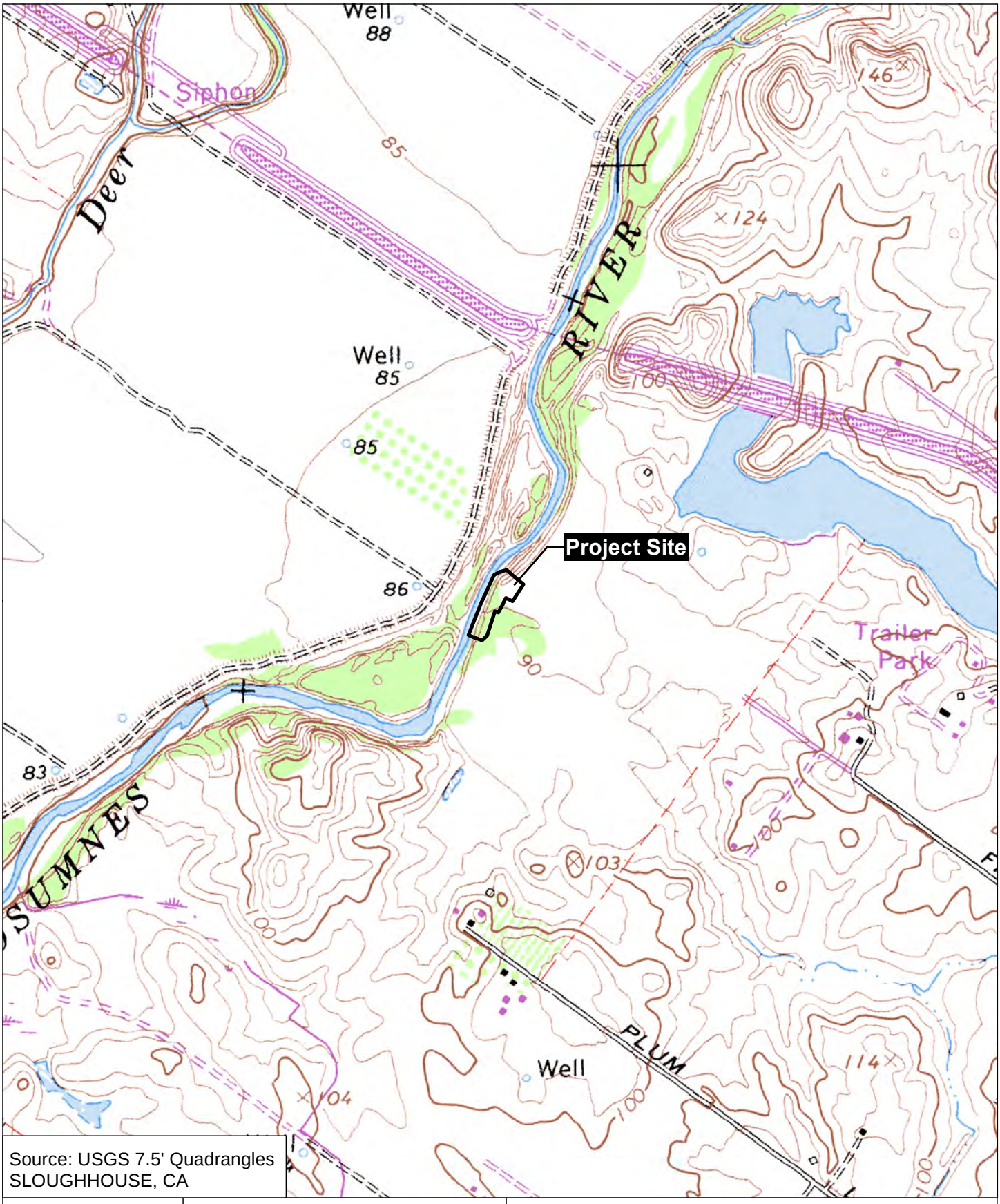
The locations of trees greater than 6 inches in diameter at breast height (DBH) in each site were recorded in the field using a Trimble GeoXH Global Positioning System (GPS) unit. All blue elderberry (*Sambucus nigra* ssp. *caerulea*) shrubs within the sites and off-site shrubs within 165 of the sites were also mapped with the GPS unit. The GPS data were corrected using the nearest available base station. The data was then combined with Google Earth 2019 color aerial photographs in ArcGIS to generate maps with the location of the trees and blue elderberry shrubs within and near the sites.

V. RESULTS AND DISCUSSION

Setting

The erosion repair sites are along the Cosumnes River in south Sacramento County, California (Figure 1). Fig Road Downstream, the upstream-most site is approximately 9 miles northeast of the Elk Grove near the Folsom South Canal (Figures 2 and 3). Cosumnes Road Downstream and Freeman Road are much further southwest, and are approximately 4 miles east of the Elk Grove.

Fig Road Downstream is within an unnumbered Section in Township 7 North, Range 7 East of the USGS 7.5-minute Sloughhouse topographic quadrangle and is at an elevation of approximately 90 feet above mean sea level (Figure 4). The Cosumnes Road Downstream site is within an unnumbered Section in Township 6 North, Range 6 East of the 7.5-minute Elk Grove topographic quadrangle



Source: USGS 7.5' Quadrangles
SLOUGHHOUSE, CA

Figure 4

Moore Biological Consultants

0 500 1,000
Feet

N
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Map Date: 11/13/2019

USGS / Site 4 – Fig Road Downstream

RD 800 Erosion Repairs (USDA)

Sacramento County, CA

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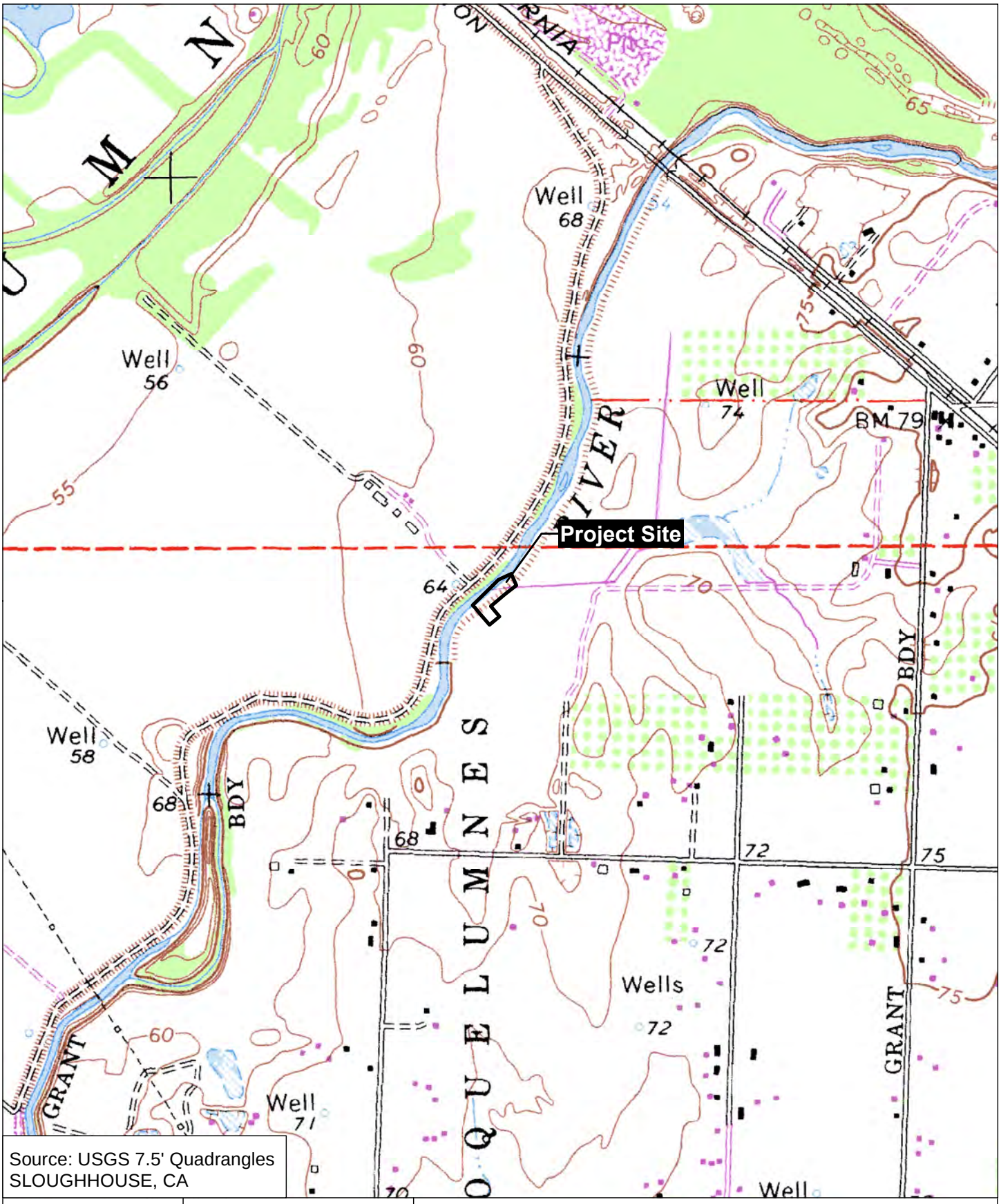
and is at an elevation of approximately 65 feet above mean sea level (Figure 5). The Freeman Road site is in an unnumbered Section in Township 6 North, Range 6 East of the 7.5-minute Elk Grove topographic quadrangle and is at an elevation of approximately 60 feet above mean sea level (Figure 6).

Surrounding land uses in this portion of Sacramento County are primarily agricultural, with widely scattered residences consisting primarily of ranchette-style homes. Most of the parcels in the greater project vicinity are farmed in hay and other annual crops, orchards and vineyards. The three repair sites have differing adjacent land uses. There is fallow annual grassland and irrigated pasture to the east of the Fig Road Downstream site and fallow grassland across the Cosumnes River to the west of the site (Figure 7). The Cosumnes Road Downstream site consists of fallow annual grassland to the east and a vineyard west across the river (Figure 8). The Freeman Road site consists of fallow grassland and a field farmed in hay crop the east and irrigated pasture to the west across the river (Figure 9).

Vegetation

Vegetation communities in the sites include annual ruderal grassland, riparian forest, and riparian scrub. These vegetation communities and wildlife habitat types generally correspond to the California Annual Grassland series, Valley oak series, and Arroyo willow series (Sawyer and Keeler-Wolf, 1995). The project sites, and ruderal areas along the edges of fields, levee roads, and farm roads in the site are vegetated with highly disturbed and routinely maintained patches of the California Annual Grassland series. The bank of the Cosumnes River supports a mosaic of riparian forest and riparian scrub vegetation.

Historically, the California Annual Grassland series was the most widespread upland vegetation type occurring in the project vicinity. The ruderal grassland vegetation in the site is periodically scraped and/or disked, mowed, or treated with herbicides, primarily for fire suppression and is best described as highly



Source: USGS 7.5' Quadrangles SLOUGHHOUSE, CA

Figure 5

Moore Biological Consultants

0 500 1,000
Feet

Map Date: 11/13/2019

USGS / Site 8 – Cosumnes Road Downstream

RD 800 Erosion Repairs (USDA)

Sacramento County, CA

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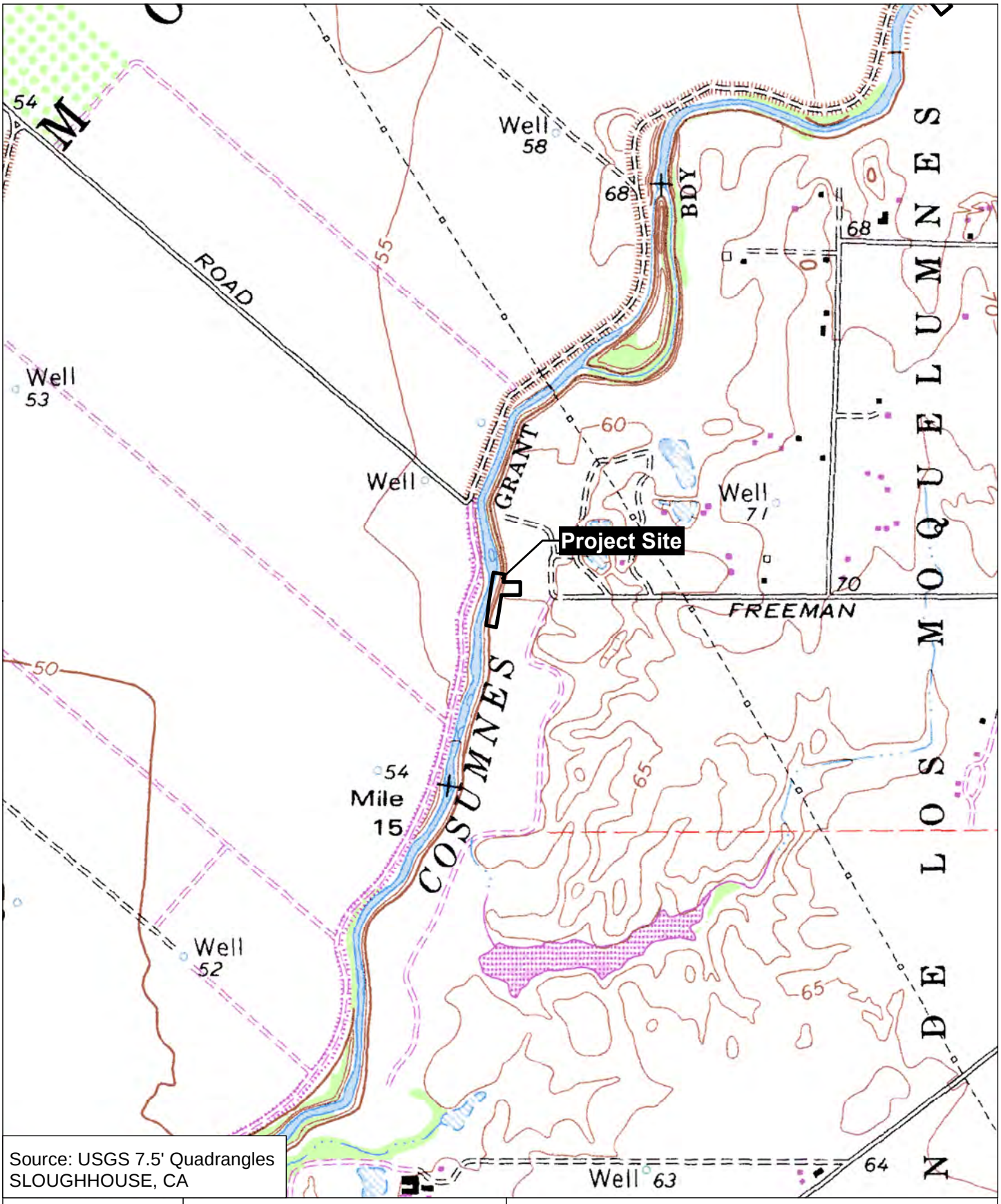

Source: USGS 7.5' Quadrangles SLOUGHHOUSE, CA

Figure 6

Moore Biological Consultants

0 500 1,000
Feet

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Map Date: 11/13/2019

USGS / Site 9 – Freeman Road

RD 800 Erosion Repairs (USDA) -

Sacramento County, CA

Figure 7

Moore Biological Consultants

0 50 100
Feet

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Map Date: 11/20/19
Aerial Source: Google Earth (08/16/2018)

Aerial / Site 4 – Fig Road Downstream

RD 800 Erosion Repairs (USDA)

Sacramento County, CA

Figure 8

Moore Biological Consultants

0 100 200
Feet

Map Date: 11/20/19
Aerial Source: Google Earth (08/16/2018)

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Aerial / Site 8 – Cosumnes Road Downstream

RD 800 Erosion Repairs (USDA)

Sacramento County, CA

Figure 9

Moore Biological Consultants

0 50 100
Feet

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W E
S

Map Date: 11/20/19
Aerial Source: Google Earth (08/16/2018)

Aerial / Site 9 – Freeman Road

RD 800 Erosion Repairs (USDA)

Sacramento County, CA

disturbed. Some of the most common grasses include oats (*Avena* sp.), soft chess brome (*Bromus hordeaceus*), ripgut brome (*B. diandrus*), foxtail barley (*Hordeum murinum*), and perennial ryegrass (*Lolium perenne*). Other grassland species such as black mustard (*Brassica nigra*), bull thistle (*Cirsium vulgare*), yellow star-thistle (*Centaurea solstitalis*), morning glory (*Convolvulus arvensis*), wild radish (*Raphanus sativa*), prickly lettuce (*Lactuca serriola*), Italian thistle (*Carduus pycnocephalus*), dove weed (*Eremocarpus setigerus*), miniature lupine (*Lupinus bicolor*), miner's lettuce (*Montia perfoliata*), rose clover (*Trifolium hirtum*), and filaree (*Erodium* spp.) are intermixed with the grasses. Table 2 is a list of plant species observed in the site.

The Valley oak series and Arroyo willow series (Sawyer and Keeler-Wolf, 1995) best describe the vegetation communities along the banks of the Cosumnes River. Dominant trees in the riparian forest and scrub vegetation include valley oak (*Quercus lobata*), black walnut (*Juglans californicus*), Fremont's cottonwood (*Populus fremontii*), and Oregon ash (*Fraxinus latifolia*). Narrow-leaved willow (*Salix exigua*), Gooding's black willow (*Salix goodingii*), Himalayan blackberry (*Rubus discolor*), California wild rose (*Rosa californica*), Pacific poison oak (*Toxicodendron diversilobum*), and California wild grape (*Vitis californica*) are dominant shrubs and vines. The understory is comprised of grasses and weeds typical of the nearby annual grasslands.

The Cosumnes River at and near the waterline at the time of the surveys supported a generally narrow and discontinuous fringe of willow seedlings, umbrella sedge (*Cyperus eragrostis*), annual rabbit's foot grass (*Polypogon monspeliensis*), and other emergent wetland vegetation. All of this vegetation is well below the OWHM at each site.

There are a few blue elderberry shrubs intermixed with the oak woodland vegetation at and near Fig Road Downstream. There are no blue elderberry shrubs within Cosumnes Road Downstream or in the Freeman Road site.

TABLE 2

PLANT SPECIES OBSERVED IN THE SITE

Amsinckia menziesii	rancher's fireweed
Anthemis cotula	stinking chamomile
Avena sp.	oat
Brassica nigra	black mustard
Bromus diandrus	ripgut brome
Bromus hordeaceus	soft chess brome
Bromus madritensis	compact brome
Briza minor	lesser quaking grass
Carduus pycnocephalus	Italian thistle
Centaurea solstitialis	yellow star-thistle
Chamomilla suaveolens	pineapple weed
Cirsium vulgare	bull thistle
Clarkia purpurea purpureac	clarkia
Conium maculatum	poison hemlock
Convolvulus arvensis	morning glory
Cyperus eragrostis	umbrella sedge
Deschampsia danthonioides	annual hairgrass
Eremocarpus setigerus	dove weed
Erodium botrys	filaree
Erodium cicutarium	red-stem filaree
Eschscholzia californica	California poppy
Fraxinus latifolia	Oregon ash
Geranium dissectum	dissected geranium
Hordeum murinum	foxtail barley
Hypochaeris radicata	rough cat's ear
Juglans californicus	black walnut
Juncus bufonius	toad rush
Lactuca serriola	prickly lettuce
Lolium perenne	perennial ryegrass

TABLE 2 (Continued)
PLANT SPECIES OBSERVED IN THE SITE

Lupinus bicolor	miniature lupine
Lysimachia arvensis	scarlet pimpernel
Lythrum hyssopifolium	Hyssop loosestrife
Medicago polymorpha	California bur clover
Mentha pulegium	pennyroyal
Montia perfoliata	miner's lettuce
Plantago lanceolata	plantain
Poa annua	annual bluegrass
Polypogon monspeliensis	rabbit's foot grass
Populus fremontii	Fremont cottonwood
Quercus lobata	valley oak
Raphanus sativus	wild radish
Rosa californica	California wild rose
Rubus discolor	Himalayan blackberry
Salix exigua	narrow-leaved willow
Salix goodingii	Gooding's black willow
Sambucus nigra ssp. *caerulea*	blue elderberry
Sonchus asper	prickly sow thistle
Tribulus terrestris	puncture vine
Trifolium hirtum	rose clover
Triteleia laxa	Ithuriel's spear
Urtica dioica	stinging nettle
Verbascum blattaria	moth mullein
Verbascum thapsus	woolly mullein
Vicia americana	winter vetch
Vitis californica	California wild grape
Vulpia myuros	rat-tail six-weeks grass

There is a blue elderberry shrub near the south edge of the Fig Road Downstream site that is surrounded by black walnut and valley oak trees (Figure 10). Additionally, there are three elderberry shrubs near the Fig Road Downstream site, approximately 25 feet and 150 feet east of the site, and approximately 40 feet north of the site.

There are no blue elderberry shrubs within the Cosumnes Road Downstream site (Figure 11). The nearest cluster of blue elderberry shrubs is approximately 150 feet northeast of the Cosumnes Road Downstream site. There are no blue elderberry shrubs within Freeman Road (Figure 12). The nearest cluster of blue elderberry shrubs is approximately 80 feet north of the Freeman Road site.

There is a total of 0.86+/- acres of riparian forest and scrub-shrub vegetation in the project site, including 0.18+/- acres at Fig Road Downstream, 0.27+/- acres at Cosumnes Road Downstream, and 0.43+/- acres at Freeman Road (Figures 10, 11 and 12). All of this vegetation is within the footprint of work and will be directly impacted by the repairs. These acreages also include all of the vegetation within the construction access and staging areas, much of which is expected to be retained.

Wildlife

The ruderal grasslands on the levee crown and slopes and in the staging areas primarily provide foraging habitat for a variety of bird species. In contrast, the riparian woodlands and riparian scrub associated with the Cosumnes River riparian corridor provide habitat for a wide variety of wildlife species. In addition to resident wildlife, the project site provides seasonal habitats for a wide variety of migratory wildlife, including numerous birds and a few fish.

A variety of bird species were observed during the field surveys; the majority of these are common species found in agricultural and riparian areas of south Sacramento County (Table 3). Several birds were flying around and over the site

Figure 10

Moore Biological Consultants

Map Date: 11/21/19
Aerial Source: Google Earth (08/16/2018)

Vegetation / Site 4 – Fig Road Downstream

RD 800 Erosion Repairs (USDA)

Sacramento County, CA

Figure 11

Moore Biological Consultants

0 75 150
Feet

N
W E
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Map Date: 02/18/2020
Aerial Source: Google Earth (09/19/2019)

Vegetation / Site 8 – Cosumnes Road Downstream

RD 800 Erosion Repairs (USDA)

Sacramento County, CA

Cosumnes River

Freeman Road Project Area

Riparian Forest (0.43 ac.)

Elderberry Shrub

Black Walnut

Valley Oak

*Note: riparian forest acreage excludes the canopies of off-site trees overhanging the site.

0 50 100

Feet

N

W E

S

Figure 12

Moore Biological Consultants

Map Date: 02/18/2020
Aerial Source: Google Earth (09/19/2019)

Vegetation / Site 9 – Freeman Road

RD 800 Erosion Repairs (USDA)

Sacramento County, CA

TABLE 3

WILDLIFE SPECIES DOCUMENTED IN THE SITE

Birds

Great blue heron	*Ardea herodias*
Great egret	*Casmerodius albus*
Canada goose	*Branta canadensis*
Wood duck	*Aix sponsa*
Mallard	*Anas platyrhynchos*
Turkey vulture	*Cathartes aura*
Bald eagle	*Haliaeetus leucocephalus*
Red-shouldered hawk	*Buteo lineatus*
Swainson's hawk	*Buteo swainsoni*
Red-tailed hawk	*Buteo jamaicensis*
California quail	*Callipepla californica*
Belted kingfisher	*Ceryle alcyon*
Acorn woodpecker	*Melanerpes formicivorus*
Northern flicker	*Colaptes auratus*
Black phoebe	*Sayornis nigricans*
Western kingbird	*Tyrannus verticalis*
California scrub jay	*Aphelocoma californica*
American crow	*Corvus brachyrhynchos*
American robin	*Turdus migratorius*
Northern mockingbird	*Mimus polyglottos*
White-crowned sparrow	*Zonotrichia leucophrys*
Red-winged blackbird	*Agelaius phoeniceus*
Brewer's blackbird	*Euphagus cyanocephalus*
House finch	*Carpodacus mexicanus*

Mammals

California ground squirrel	*Spermophilus beecheyi*
California mule deer	*Odocoileus hemionus californicus*
Coyote	*Canis latrans*
Raccoon	*Procyon lotor*

TABLE 3 (Continued)
WIDLIFE SPECIES DOCUMENTED IN THE SITE

Reptiles and Amphibians	
Red-eared slider	*Trachemys scripta elegans*
Pacific chorus frog	*Pseudacris regilla*
Western fence lizard	*Sceloporus occidentalis*
Western skink	*Plestiodon skiltonianus*
Northern alligator lizard	*Elgaria coerulea*

and perching in trees and shrubs. Mallard (*Anas platyrhynchos*), great egret (*Casmerodias albus*), turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), Swainson's hawk, American crow (*Corvus brachyrhynchos*), northern mockingbird (*Mimus polyglottos*), western kingbird (*Tyrannus verticalis*), California scrub jay (*Aphelocoma californica*), black phoebe (*Sayornis nigricans*), Brewer's blackbird (*Euphagus cyanocephalus*), and red-winged blackbird (*Agelaius phoeniceus*) are representative of the avian species observed in the site.

There are several potential nest trees in and near the site that are suitable for nesting raptors and other protected migratory birds, including Swainson's hawk. Several stick nests were observed within some of the trees within and near the site. Given the presence of large trees and raptor foraging habitat (i.e., open fields) in and near the site, it is likely one or more pairs of raptors, plus a variety of songbirds, nest in trees in or near the site each year. Further, it is considered likely that numerous songbirds nest within trees, shrubs, and grassland habitats in or adjacent to the site each year. Red-winged blackbirds were observed displaying nesting behavior in the grasslands adjacent to the project sites during the springtime surveys.

A variety of mammals common to agricultural areas likely occur in the project site. However, California ground squirrel (*Spermophilus beecheyi*), California mule deer (*Odocoileus hemionus californicus*) and coyote (*Canis latrans*) were the only mammals observed during the surveys; sign of and raccoon (*Procyon lotor*) was also observed. Black-tailed hares (*Lepus californicus*), striped skunk (*Mephitis mephitis*), desert cottontail (*Sylvilagus audubonii*), and Virginia opossum (*Didelphis virginiana*) are a few mammals expected to occur in the area. A number of species of small rodents including mice (*Mus musculus, Reithrodontomys megalotis,* and *Peromyscus maniculatus*) and voles (*Microtus californicus*) also likely occur.

Based on habitat types present, a variety of amphibians and reptiles may use habitats in the site. Western fence lizard (*Sceloporus occidentalis*), western skink (*Plestiodon skiltonianus*), Northern alligator lizard (*Elgaria coerulea*), red-eared slider (*Trachemys scripta elegans*) and Pacific chorus frog (*Pseudacris regilla*) were observed during the surveys. American bullfrog (*Rana catesbeiana*), common garter snake (*Thamnophis sirtalis*), and gopher snake (*Pituophis melanoleucus*) are known to occur in the greater project vicinity and may occur in the sites on occasion. Although not observed during the surveys, the Cosumnes River also provides suitable habitat for western pond turtle (*Emys marmorata*), which is discussed further below.

Waters of the U.S. and Wetlands

The Cosumnes River is a Water of the U.S. subject Section 404 of the Clean Water Act. The Cosumnes River also falls under the jurisdiction of CDFW, RWQCB, and CVFPB. The project site contains approximately 1.39 acres of Waters of the U.S. below the OHWM, including 0.72+/- acres at Fig Road Downstream, 0.35+/- acres at Cosumnes Road Downstream, and 0.32+/- acres at Freeman Road (Figures 13, 14 and 15). The majority of this acreage is outside the limits of work. Beyond the Cosumnes River, no other potentially jurisdictional wetlands or Waters of the U.S. were observed in or near the sites.

Figure 13

Moore Biological Consultants

0 25 50
Feet

N
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S

Map Date: 11/14/19
Aerial Source: Google Earth (08/16/2018)

Waters of the U.S. / Site 4 – Fig Road Downstream

RD 800 Erosion Repairs (USDA)

Sacramento County, CA

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Figure 14

Moore Biological Consultants

0 50 100
Feet

N
W E
S

Map Date: 11/13/19
Aerial Source: Google Earth (08/16/2018)

Waters of the U.S. / Site 8 – Cosumnes Road Downstream

RD 800 Erosion Repairs (USDA)

Sacramento County, CA

Figure 15

Moore Biological Consultants

0 25 50
Feet

N
W E
S

Map Date: 11/14/19
Aerial Source: Google Earth (08/16/2018)

Waters of the U.S. / Site 9 – Freeman Road

RD 800 Erosion Repairs (USDA)

Sacramento County, CA

As described aboge, the limit of Clean Water Act jurisdiction along the Cosumnes River is the OHWM; there are no adjacent wetlands. The OHWM is at an elevation of approximately 78 feet above mean sea level at the Fig Road Downstream site. The OHWM at Cosumnes Road Downstream and Freeman Road are elevations of approximately 54 feet and 46 feet above mean sea level, respectively.

The Cosumnes River corridor in and adjacent to the sites consists of an alluvial channel associated with a broad floodplain. The open water habitat is primarily low gradient run and pool habitats with gravel, cobble, and clay substrates. The edges of the Cosumnes River and low areas in the floodplain support riparian vegetation, with a tree layer dominated by willows (*Salix* spp.), Fremont cottonwood (*Populus fremontii*), and black walnut. Valley oaks are restricted to higher elevations on the bank, well above the OHWM.

The project will result in the placement of fill in 0.82 acres of Waters of the U.S (Table 1). There will also be temporary construction disturbance to approximately 0.57 acres of Waters of the U.S. adjacent to the project footprint related to construction equipment and personnel accessing the work areas. In the event dewatering is necessary, temporary cofferdams (i.e., K-rail, sandbags, etc.) would also be located within the temporary construction disturbance areas.

Special-Status Species

Special-status species are plants and animals that are legally protected under the CESA, FESA, or other regulations. Special-status species also include other species that are considered rare enough by the scientific community and trustee agencies to warrant special consideration, particularly with regard to protection of isolated populations, nesting or denning locations, communal roosts, and other essential habitat.

The likelihood of occurrence of listed, candidate, and other special-status species in the project site is generally low. Table 4 provides a summary of the listing status and habitat requirements of special-status species that have been documented in the greater project vicinity or for which there is potentially suitable habitat in the greater project vicinity. This table also includes an assessment of the likelihood of occurrence of each of these species in the site. The evaluation of the potential for occurrence of each species is based on the distribution of regional occurrences (if any), habitat suitability, and field observations.

SPECIAL-STATUS PLANTS

Six special-status plants were identified in the CNDDB (2020) search: dwarf downingia (*Downingia pusilla*), Bogg's Lake hedge hyssop (*Gratiola heterosepala*), legenere (*Legenere limosa*), slender Orcutt grass (*Orcuttia tenuis*), and Sacramento Orcutt grass (*Orcuttia viscida*), and Sanford's arrowhead (*Sagittaria sanfordii*) (Table 4 and Appendix B). Although not documented in the CNDDB (2020) within the search area, succulent owl's clover (*Castilleja campestris ssp. succulenta*) was added to Table 4 because they are on the USFWS IPaC Trust Report.

Special-status plants generally occur in relatively undisturbed areas and are primarily found within unique vegetation communities such as vernal pools, chenopod scrub, chaparral, marshes and swamps, and areas with unique soils. The site does not provide highly suitable habitat for any of the species listed in Table 4 and is entirely unsuitable for most of the plants. Due to habitats present on site, the potential for any special-status plants to occur on-site is very low.

The site does not contain vernal pools, precluding the presence of succulent owl's clover, dwarf downingia, Bogg's Lake hedge hyssop, legenere, slender Orcutt grass and Sacramento Orcutt grass. The Cosumnes River does not provide the suitable aquatic habitat to support Sanford's arrowhead, which occurs in standing or slow moving freshwater ponds, marshes and ditches.

TABLE 4

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[1]	CNPS List[2]	Habitat	Likelihood of Occurrence in the Site
PLANTS						
Succulent owl's clover	*Castilleja campestris ssp. succulenta*	T	E	1B	Vernal pools.	Unlikely: there are no vernal pools or seasonal wetlands in the sites. There are no occurrences of succulent owl's clover in the CNDDB (2020) search area. The sites are not within designated critical habitat for succulent owl's clover (USFWS, 2005a).
Dwarf downingia	*Downingia pusilla*	None	None	2	Vernal pools.	Unlikely: there are no vernal pools or seasonal wetlands in the sites. The nearest occurrence of dwarf downingia in the CNDDB (2020) search area is a few records in the vernal pool grasslands northwest of Grantline Road.
Bogg's Lake hedge hyssop	*Gratiola heterosepala*	None	E	1B	Vernal pools.	Unlikely: there are no vernal pools or seasonal wetlands in the sites. The nearest occurrences of Bogg's Lake hedge hyssop in the CNDDB (2020) search area are a few records in the vernal pool grasslands northwest of Grantline Road. An additional record is approximately 3 miles northwest of Site 4.
Legenere	*Legenere limosa*	None	None	1B	Vernal pools.	Unlikely: there are no vernal pools or seasonal wetlands in the sites. The nearest occurrences of legenere in the CNDDB (2020) search area are a few records in the vernal pool grasslands northwest of Grantline Road
Slender Orcutt grass	*Orcuttia tenuis*	T	E	1B	Vernal pools.	Unlikely: there are no vernal pools or seasonal wetlands in the sites. The nearest occurrences of slender Orcutt grass in the CNDDB (2020) search area are a few records in the vernal pool grasslands northwest of Grantline Road. The sites are not within designated critical habitat for slender Orcutt grass (USFWS, 2005a).

TABLE 4

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[1]	CNPS List[2]	Habitat	Likelihood of Occurrence in the Site
Sacramento orcutt grass	*Orcuttia viscida*	E	E	1B	Vernal pools.	Unlikely: there are no vernal pools or seasonal wetlands in the sites. There is only one record of Sacramento Orcutt grass in the CNDDB (2020) search area and this record is in the vernal pool grasslands northwest of Grantline Road. The sites are not within designated critical habitat of Sacramento Orcutt grass (USFWS, 2005a).
Sanford's arrowhead	*Sagittaria sanfordii*	None	None	1B	Standing or slow moving freshwater ponds, marshes, and ditches.	Unlikely: the Cosumnes River does not provide suitable habitat for Sanford's arrowhead. There are a few occurrence of Sanford's arrowhead in the CNDDB (2020) search area within a few miles east and west of the Cosumnes River. The nearest occurrence is approximately 2 miles southeast of Fig Road Downstream.
WILDLIFE						
Birds						
Swainson's hawk	*Buteo swainsoni*	None	T	N/A	Nesting: large trees, usually within riparian corridors. Foraging: agricultural fields and annual grasslands.	High: large trees along the Cosumnes River provide suitable nesting habitat for Swainson's hawks and adjacent grasslands and croplands provide suitable foraging habitat for this species. There are several records of nesting Swainson's hawks in the CNDDB (2020) search area along the Cosumnes River.
Bank swallow	*Riparia riparia*	None	T	N/A	Nests colonially in riparian habitats; requires vertical banks and cliffs with fine-textured soils.	Low: some of the banks along the Cosumnes River provide potentially suitable nesting habitat for this species. However, no bank swallows were observed nesting in the sites. This species is primarily restricted to the Sacramento River and there is only one record in the CNDDB (2020) search area, which approximately 5.5 miles northeast of Fig Road Downstream. The CNDDB describes this colony as being seen in 1987 and it is described as being the only known occurrence of nesting bank swallows along the Cosumnes River.

TABLE 4

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[1]	CNPS List[2]	Habitat	Likelihood of Occurrence in the Site
Burrowing owl	*Athene cunicularia*	None	SC	N/A	Open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation.	Unlikely: the ruderal grasslands in the sites are weedy and do not provide suitable habitat for burrowing owl. There are also very few ground squirrel burrows along the levees. There is only one occurrence of burrowing owl in the CNDDB (2020) search area and is in the vernal pool grasslands northwest of Grantline Road, approximately 4 miles northwest of Fig Road Downstream.
Tricolored blackbird	*Agelaius tricolor*	None	T	N/A	Requires open water and protected nesting substrate, usually cattails and riparian scrub with surrounding foraging habitat.	Moderate: the Cosumnes River provides suitable nesting habitat for this species and the grasslands adjacent to the river corridor provide suitable foraging habitat for tricolored blackbird. There are several records of this species in the CNDDB (2020) search area in the project vicinity.
White-tailed kite	*Elanus leucurus*	None	FP	N/A	Herbaceous lowlands with variable tree growth and dense population of voles.	Low: large trees along the Cosumnes River provide potentially suitable nesting habitat for white-tailed kite, although this species prefers more isolated trees for nesting. The nearest occurrence of white-tailed kite in the CNDDB (2020) search area is 3 miles northeast of Fig Road Downstream.
Reptiles & Amphibians						
Giant garter snake	*Thamnophis gigas*	T	T	N/A	Freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches.	Unlikely: the sites do not contain suitable aquatic habitat for giant garter snake. There is only one occurrence of this species in the CNDDB (2020) search area, approximately 3 miles southwest of Freeman Road.
California tiger salamander	*Ambystoma californiense*	T	T	N/A	Seasonal water bodies without fish (i.e., vernal pools and stock ponds) near grassland/ woodland habitats with summer refugia (i.e., burrows).	Unlikely: There is no suitable habitat within or near the site for California tiger salamander. This species is not recorded in the CNDDB (2020) within the search area. The site is not in designated critical habitat for California tiger salamander (USFWS, 2005b).

TABLE 4

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[1]	CNPS List[2]	Habitat	Likelihood of Occurrence in the Site
California red-legged frog	*Rana aurora draytonii*	T	SC	N/A	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation.	Unlikely: there is no suitable aquatic habitat for California red-legged frog in or near the sites. California red-legged frog is also presumed extinct on the floor of the Central Valley of California. There are no recorded occurrences of this species in the CNDDB (2020) search area. The sites are not within designated critical habitat for California red-legged frog (USFWS, 2006).
Western pond turtle	*Emys marmorata*	None	SC	N/A	Ponds, marshes, streams, and ditches with emergent aquatic vegetation and basking areas.	Moderate: the Cosumnes River provides suitable habitat for western pond turtle. The closest occurrence of western pond turtle in the CNDDB (2020) search area is approximately 4.5 miles northwest of Cosumnes Road Downstream.
Western spadefoot	*Spea hammondii*	None	SC	N/A	Breeds and lays eggs in seasonal water bodies such as deep vernal pools or stock ponds.	Unlikely: there is no suitable aquatic habitat for western spadefoot in the sites. The nearest occurrence of western spadefoot in the CNDDB (2020) search area is approximately 3 miles north of Fig Road Downstream.
Fish						
Central Valley steelhead	*Oncorhynchus mykiss*	T	None	N/A	Riffle and pool complexes with adequate spawning substrates within Central Valley drainages.	High: the Cosumnes River provides suitable aquatic habitat for Central Valley steelhead. There are several records of steelhead in the CNDDB (2020) search area in the Cosumnes River. The Cosumnes River is not designated critical habitat for Central Valley steelhead (NOAA, 2005).
Delta smelt	*Hypomesus transpacificus*	T	T	N/A	Shallow lower delta waterways with submersed aquatic plants and other suitable refugia.	None: Delta smelt do not occur in the Cosumnes River. This species is not recorded in the CNDDB (2020) search area. The Cosumnes River is not designated critical habitat for delta smelt (USFWS, 1994).

TABLE 4

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[1]	CNPS List[2]	Habitat	Likelihood of Occurrence in the Site
Invertebrates						
Vernal pool fairy shrimp	*Branchinecta lynchi*	T	None	N/A	Vernal pools	None: there are no vernal pools or seasonal wetlands in the sites. The nearest occurrence of this species in the CNDDB (2020) search area is a few records in the vernal pool grasslands several miles east and west of the Cosumnes River. The site is not in designated critical habitat for vernal pool fairy shrimp (USFWS 2005a).
Conservancy fairy shrimp	*Branchinecta conservatio*	E	None	N/A	Vernal pools	Unlikely: there are no vernal pools in or adjacent to the site. There are no occurrences of this species recorded in the CNDDB (2020) within the search area. The sites are not in designated critical habitat for Conservancy fairy shrimp (USFWS, 2005a).
Vernal pool tadpole shrimp	*Lepidurus packardi*	E	None	N/A	Vernal pools	Unlikely: there are no vernal pools or seasonal wetlands in the project site. The nearest occurrence of this species in the CNDDB (2020) search area is a few records in the vernal pool grasslands northwest of Grantline Road. The sites are not in designated critical habitat for vernal pool tadpole shrimp (USFWS 2005a).
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	T	None	N/A	Elderberry shrubs, usually in Central Valley riparian habitats.	Unlikely: there are blue elderberry shrubs in close proximity to several of the work sites. The nearest occurrence of valley elderberry longhorn beetle in the CNDDB (2020) search area is along the Cosumnes River, approximately one mile southwest of Fig Road Downstream.

1 T = Threatened; E = Endangered; FP = Fully Protected Species; SC= State of California Species of Special Concern.

2 CNPS List 1B includes species that are rare, threatened, or endangered in California and elsewhere; List 2 includes species that are rare, threatened, or endangered in California, but more common elsewhere.

SPECIAL-STATUS WILDLIFE

The potential for intensive use of habitats within the project site by special-status wildlife species is generally low. Swainson's hawk, tricolored blackbird (*Agelaius tricolor*), burrowing owl (*Athene cunicularia*), bank swallow (*Riparia riparia*), white-tailed kite, giant garter snake (*Thamnophis gigas*), western pond turtle (*Emys marmorata*), western spadefoot (*Spea hammondii*), Central Valley steelhead (*Oncorhynchus mykiss*), vernal pool fairy shrimp (*Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardi*), and valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) are special-status wildlife species identified in the CNDDB (2020) query. The USFWS IPaC Trust Report includes a few of these same species and also includes California tiger salamander (*Ambystoma californiense*), California red-legged frog (*Rana aurora draytonii*), delta smelt (*Hypomesus transpacificus*), and Conservancy fairy shrimp (*Branchinecta conservatio*).

While the project vicinity may have provided habitat for several special-status wildlife species in the past, agriculture, development, and construction and maintenance of levees in and/or adjacent to the sites have modified the natural habitats and associated potential to support special-status wildlife species. Of the wildlife species in Table 4, Swainson's hawk, white-tailed kite, tricolored blackbird, western pond turtle, and valley elderberry longhorn beetle are the only species with potential to occur in the site on more than a transitory or very occasional basis. Other special-status birds may fly over or forage in the area on occasion, but are not expected to nest or extensively utilize the habitats within the project sites. Central Valley steelhead occur in the Cosumnes River in the vicinity of the sites on a seasonal basis. Species with the greatest potential to occur at and/or be impacted by the project are discussed below.

SWAINSON'S HAWK: The Swainson's hawk is a migratory hawk listed by the State of California as a Threatened species. The Migratory Bird Treaty Act and Fish and Game Code of California protect Swainson's hawks year-round, as well as

their nests during the nesting season (March 1 through September 15). Swainson's hawks are found in the Central Valley primarily during their breeding season, a population is known to winter in the San Joaquin Valley.

Swainson's hawks prefer nesting sites that provide sweeping views of nearby foraging grounds consisting of grasslands, irrigated pasture, hay, and wheat crops. Most Swainson's hawks are migratory, wintering in Mexico and Central America and breeding in California and elsewhere in the western United States. This raptor generally arrives in the Central Valley in mid-March, and begins courtship and nest construction immediately upon arrival at the breeding sites. The young fledge in early July, and most Swainson's hawks leave their breeding territories by late August. The CNDDB (2020) contains several records of nesting Swainson's hawks along the Cosumnes River corridor, including several along the river and within a few miles of each site (Appendix B).

The sites are in the heart of the nesting range of Swainson's hawks and the agricultural fields and grasslands near the sites provides high quality foraging habitat for this species. The larger valley oaks, cottonwoods, willows, and other trees in and near the site and in the greater project vicinity provide suitable nesting habitat for this species. Several Swainson's hawks were observed along the river and circling over the project sites and adjacent agricultural areas during the 2019 surveys. Swainson's hawks likely nest along the river somewhere near each site, and potentially in trees within the sites.

Swainson's hawks could be adversely affected by construction noise and disturbance if they nested in or near the sites during construction. However, project construction will occur in the late summer or fall, at the tail end or outside of the nesting period of this species. The conversion of less than one acre of ruderal grassland along the upper levee slopes to armored slopes would result in a very minor and less-than-significant reduction of potential Swainson's hawk foraging habitat. Similarly, the removal of several potentially suitable nest trees

from a few relatively small sites along the river corridor is a less-than-significant reduction of potential nesting habitat for this species.

WHITE-TAILED KITE: White-tailed kite is a State of California Species of Concern, but is not a listed species at the state or federal level. The Migratory Bird Treaty Act and Fish and Game Code protect white-tailed kite year-round, as well as their nests during nesting season; nesting for this species peaks from May to August. White-tailed kites can be found in a variety of habitats across California including grasslands, open woodlands, riparian areas, marshes and cultivated fields. Populations of white-tailed kites are concentrated in the Central Valley, but their range spans west of the Sierra Nevada's to the California coastline.

White-tailed kite may nest in large trees in the general project vicinity and may forage in habitats nearby. Nesting usually commences in the early-spring, concurrent with other resident Central Valley raptors, and most young fledge by early-July. The nearest occurrence of white-tailed kite in the CNDDB (2020) search area is approximately 3 miles northeast of the Fig Road Downstream site. No white-tailed kites were observed in or near the sites during the 2019 surveys.

White-tailed kites could be adversely affected by noise and disturbance related to construction activities if they nested in close proximity to the project site during the construction period. However, project construction will occur in the late-summer or Fall, outside of the nesting period of this species. The conversion of less than one acre of ruderal grassland along the upper levee slopes to armored slopes would result in a very minor and less-than-significant reduction of potential white-tailed kite foraging habitat. Similarly, the removal of several potentially suitable nest trees from a few relatively small sites along the river corridor is a less-than-significant reduction of potential nesting habitat for this species.

TRICOLORED BLACKBIRD: The tricolored blackbird is a State of California Species threatened species and is also protected by the federal MBTA and Fish and Game Code of California. Tricolored blackbirds are colonial nesters requiring very dense stands of emergent wetland vegetation and/or dense thickets of wild rose or blackberries for nesting. Preferred nesting substrates are expansive stands of cattails and tules adjacent to open water. Tricolored blackbirds forage in annual grasslands and cropland. There are several records of this species in the CNDDB (2020) search area in the greater project vicinity, with the occurrences primarily in patches of vegetation in agricultural parcels outside the Cosumnes River corridor.

Tricolored blackbirds were not observed in the site during the 2019 surveys, although the willows, wild rose, blackberry brambles, and other suitable patches of vegetation along the edges of the Cosumnes River provide suitable nesting habitat for this species. Within the project sites, nesting habitat is limited and fragmented. The annual grassland field in and adjacent to the project sites may provide marginal foraging habitat for this species. Conversely, the expansive alfalfa and hay fields in the region provide high quality foraging habitat. The extent of use of nearby fields by foraging tricolored blackbirds is not known.

The removal of a few relatively small pathes (i.e., cumulatively less than 0.5 acres) of potentially suitable tricolored blackbird nesting habitat is a less than significant reduction of potentially suitable nesting habitat in the project vicinity. While the removal of vegetation containing nesting tricolored blackbirds would result in direct take of the birds, or their eggs, or chicks, project construction would occur in the late-summer or fall, outside of the nesting season for this species.

WESTERN POND TURTLE: The western pond turtle is a state species of concern, but is not a listed species at the state or federal level. Western pond turtles are associated with permanent or nearly permanent bodies of water with adequate basking sites such as logs, rocks or open mud banks. Pond turtles construct

nests in sandy banks along slow moving streams and ponds in the spring and the young usually hatch in 2 to 3 months. The nearest occurrence of western pond turtle recorded in the CNDDB (2020) within the search area is approximately 4.5 miles northwest of the Cosumnes Road Downstream and Freeman Road sites.

The Cosumnes River provides suitable habitat for western pond turtle. If western pond turtles are present in the Cosumnes River at or near the sites, it is possible they utilize sandy banks and/or grasslands in or near the sites for nesting. Due to the steep and near-vertical stream banks in and adjacent to the project site, it is unlikely western pond turtles from the Cosumnes River nest in the ruderal grasslands on the landside of the levee in the site.

VALLEY ELDERBERRY LONGHORN BEETLE: The valley elderberry longhorn beetle (VELB) is listed as a federally threatened species and its host plant is the blue elderberry shrub. Eggs are laid on the leaves or stems of the shrubs and upon hatching, the larvae bore in to the stem where they remain for 2+/- years feeding on the interior portions of the stems. Following several larval instars, the larvae chews an exit hole in the stem, pupates, and emerges after approximately a month as an adult. The adults live only 4 to 5 days, mates, lays eggs, and dies. The nearest occurrence of valley elderberry longhorn beetle in the CNDDB (2020) search area is within a mile southwest of the Fig Road Downstream site.

The USFWS (2017) *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle* direct that, if possible, elderberry shrubs should be avoided by a ground disturbance set back of at least 165 feet from the drip line of each shrub. A number of measures are also recommended to avoid and minimize project impacts to VELB and/or its habitat including fencing, worker training, and timing of construction, among others. In cases where complete avoidance is not feasible, the Framework recommends compensatory mitigation for the loss of actual or potential VELB habitat. Mitigation is usually achieved through the purchase of credits at an USFWS-approved mitigation bank, and transplantation

of the impacted shrub to the bank, if feasible. In the case of a single shrub in a riparian setting such as at the project site, the Framework recommends the purchase of 2 credits at a mitigation bank approved by USFWS and transplantation of the impacted shrub to the bank, if feasible.

As discussed above, there is a blue elderberry shrub near the south edge of the Fig Road Downstream site that is surrounded by black walnut and valley oak trees (Figure 10). Additionally, there are three elderberry shrubs near the Fig Road Downstream site, approximately 25 feet and 150 feet east of the site, and approximately 40 feet north of the site.

There are no blue elderberry shrubs within the Cosumnes Road Downstream site (Figure 11). The nearest cluster of blue elderberry shrubs is approximately 150 feet northeast of the Cosumnes Road Downstream site. There are no blue elderberry shrubs within Freeman Road (Figure 12). The nearest cluster of blue elderberry shrubs is approximately 80 feet north of the Freeman Road site.

Steep slopes and dense vegetation, including poison oak, precluded a comprehensive inspection of the stems of the blue elderberry shrubs for VELB or evidence of past occupancy by the species. VELB could be impacted by the removal of riparian vegetation or indirect disturbance it is in fact occupying the the blue elderberry shrubs in or near the sites.

To compensate for potential direct impacts to VELB, the District will provide compensatory mitigation according to the Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (USFWS 2017). The project would result in the removal of approximately 0.18 acres of riparian forest vegetation that contains a blue elderberry shrub at the Fig Road Downstream site. Therefore, compensation will be provided via the purchase of 0.54 acres of credits (3:1 ratio) at a USFWS-approved mitigation bank, such as the French Camp Conservation Bank.

SPECIAL-STATUS FISH: The potential for occurrence of special-status fish in the project site and surrounding areas is discussed in detail in the Fisheries Biological Assessment for the project prepared by FishBio (2020). The Fisheries Biological Assessment provides information on the life history and distribution of special-status fish in and near the site. The project sites are a combination of severely eroded river banks in the lower portion and constructed levees in the upper portion, offering little native aquatic vegetation or cover habitat for aquatic species. Because the Cosumnes River gets hot in the summer before going dry most years at and near the sites each year, Central Valley steelhead use the area as a migratory corridor as opposed to rearing. Central Valley steelhead spawning and rearing habitat in the Cosumnes River is limited to much further upstream reaches of the river.

The Fisheries Assessment describes how the Cosumnes River primarily serves as a movement corridor for two salmonids that occur in the area on a seasonal basis: fall-run Chinook salmon (*Oncorhynchus tshawytscha*) and Central Valley steelhead. Delta waterways downstream and west of the site provide potentially suitable habitat for delta smelt (*Hypomesus transpacificus*) and the southern Distinct Population Segment (sDPS) of green sturgeon (*Acipenser medirostris*). The FishBio Assessment concludes that while green sturgeon could potentially occur in much further downstream reaches of the Cosumnes River, it is highly unlikely either of these species occur in or near the sites.

The Fisheries Assessment provides an analysis of how the project may affect Central Valley California steelhead and fall-run Chinook salmon and/or the habitat suitability of the Cosumnes River at and near the sites for these species. If Central Valley California steelhead and/or fall-run Chinook salmon were to occur in the area during construction, these fish are active swimmers and could readily move away from the work area. The potential release of more than minor amounts of sediment during project construction could adversely impact Central Valley California steelhead and/or fall-run Chinook salmon in or near the site.

The lower edges of the erosion repair sites will either be dry or inundated with shallow water (estimated depth less than one foot) during construction. The riverbed at Fig Road Downstream and Freeman Road dries out entirely during most summers. In contrast, the Cosumnes Road Downstream site is a low pocket that is often an isolated pocket of hot water during the late summer. The proposed installation of a silt curtain or dewatering devices during project construction will protect any fish that may be in the river from elevated levels of background turbidity in the vicinity of the repair sites.

The armoring of 0.82 acres and temporary disturbance of 0.57 acres of the Cosumnes River bank below the OHWM would result in a minor reduction of potential salmon and steelhead rearing habitat. Following construction, the aquatic habitats adjacent to the stabilized banks at each site will be comparable to those under existing conditions, providing minimal habitat for Chinook salmon and Central Valley California steelhead beyond those of a migratory corridor.

The Assessment concludes project construction is unlikely to impact sDPS green sturgeon. First, both adult and juveniles are active and mobile swimmers that would largely be able to leave any area disturbed by project activities. The project is also located well outside the primary Sacramento River migratory corridor used by both juveniles and adults; little to no spawning occurs in the San Joaquin basin. Following construction, aquatic habitats adjacent to the stabilized bank will be comparable to those under existing conditions, providing minimal habitat for sDPS green sturgeon.

Mitigation for the armoring of 0.82 acres of the Cosumnes River bank below the OHWM and associated impacts to special-status fish and riparian habitats will be achieved by purchasing riverine credits at a ratio of 2:1 from an approved mitigation bank. The project is within the service area of the Cosumnes Floodplain Mitigation Bank (CFMB) and the purchase of 1.64 acres of Flooded Riparian credits would provide mitigation for impacts to 0.82 acres of Waters of the U.S. and associated impacts to special-status fish and riparian habitats. In

the event credits are not available at CFMB, equivalent compensatory mitigation would be provided at an alternate agency-approved bank.

OTHER SPECIAL-STATUS SPECIES: Beyond Swainson's hawk, white-tailed kite, and tricolored blackbird, a few other special-status birds may fly over or forage in the area on occasion, but are not expected to nest or extensively utilize the habitats within the project sites. For example, bank swallow may nest along the portions of the Cosumnes River, but was not observed in or near the sites. Burrowing owls are not known to occur south Sacramento County, but rarely occur in riparian corridors. The only occurrence of burrowing owl in the CNDDB (2020) within the search area was recorded near the vernal pool grasslands northwest of Grantline Road, approximately 4 miles northwest of the Fig Road Downstream site.

The site and surrounding areas do not provide suitable habitat for California red-legged frog, which is presumed extinct on the floor of the Central Valley. There are no potential breeding ponds in or near the site for California tiger salamander. The Cosumnes River does not provide suitable habitat for giant garter snake, which does not occur in large rivers with introduced populations of large predatory fish. There are no vernal pools or seasonal wetlands in the site for vernal pool branchiopods (i.e., fairy and tadpole shrimp).

CRITICAL HABITAT: The sites are not within designated critical habitat for California red-legged frog (USFWS, 2006a), federally listed vernal pool shrimp or plants (USFWS, 2005a), California tiger salamander (USFWS, 2005b), valley elderberry longhorn beetle (USFWS, 1980), Central Valley California steelhead (NOAA), or other federally listed species (Appendix D).

VI. AVOIDANCE, MINIMIZATION AND MITIGATION MEASURES

The following avoidance, minimization, and mitigation measures will be implemented to reduce the potential for impacts to jurisdictional Waters of the U.S., special-status species, and potential or actual habitats of special-status species:

- Minimize impacts to potentially jurisdictional Waters of the U.S. and wetlands by restricting all work to the project footprint and adjacent temporary construction areas, as proposed. Permits from ACOE, CDFW, and RWQCB shall be secured prior to the placement of any fill material within the jurisdictional Waters of the U.S. The District shall implement all permit conditions and mitigation measures related to the protection of sensitive aquatic habitats and species, including any conditions resulting from ACOE Section 7 consultations with USFWS and/or the NMFS, such as project scheduling and implementing appropriate construction Best Management Practices.

- Project construction shall be scheduled between July 1 and October 31 to reduce the potential for sedimentation of Cosumnes River, and associated impacts to aquatic resources including special-status fish that occur in the Cosumnes River or downstream waterways on a seasonal basis. This work window may be adjusted through consultation with CDFW, NMFS and/or USFWS. During the late-summer or fall work window, the lower edge of the erosion repair sites will either be dry or inundated with shallow water (estimated depth less than one foot) during construction. A silt curtain or dewatering devices (i.e., K-rail, sandbags, etc.) shall be installed during project construction to minimize the potential for sediment release in to the river and protect any fish in the river from elevated levels of background turbidity in the vicinity of the repair sites.

- Off-site compensatory mitigation for impacts to riverine habitats and associated special-status fish species shall be provided at an approved mitigation bank. The project is within the service area of the Cosumnes Floodplain Mitigation Bank and the purchase of 1.64 acres of Flooded Riparian credits would provide mitigation for impacts to 0.82 acres of Waters of the U.S. and associated impacts to special-status fish and riparian habitats. In the event credits are not available at the Cosumnes Floodplain Mitigation Bank, equivalent compensatory mitigation would be provided at an alternate agency-approved bank.

- To compensate for potential direct impacts to VELB, the District will provide compensatory mitigation according to the USFWS Framework. The project would result in the removal of approximately 0.18 acres of riparian forest vegetation that contains a blue elderberry shrub at the Fig Road Downstream site. Therefore, compensation will be provided via the purchase of 0.54 acres of credits (3:1 ratio) at an USFWS-approved mitigation bank, such as the French Camp Conservation Bank.

- Implement standard BMPs for vegetation protection and management of invasive species, including fencing of avoided valley oaks and re-seeding disturbed areas with a seed-mix approved by CDFW.

- In order to avoid take of protected raptors and migratory birds between February 1 and August 31, a CDFW approved biologist shall conduct an initial pre-construction nest survey. The survey shall be conducted within fifteen (15) days prior to the beginning of construction activities in order to identify active nests of all species within five hundred feet (500 ft.) of the project work areas, as well as raptors' active nests within a quarter mile (1320 ft.) of the project work areas. The surveys shall incorporate methodologies from CDFW's 1994 Staff Report regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California (CDFW, 1994) and the Swainson's Hawk Technical Advisory

Committee (SHTAC) survey guidelines (SHTAC, 2000). If active raptor nests are found within 1320 feet of the work area or other active nests within 500 feet of the work area, a temporary buffer of 1320 feet and 500 feet respectively shall be established and the District shall retain an on-site biologist/monitor experienced with raptor behavior. The biologist shall monitor the nest(s) and consult with the CDFW to determine the buffers to be applied and best course of action to avoid nest abandonment or take of individuals. The necessity and extent for temporal construction restrictions shall be determined by CDFW. CDFW may determine it is necessary for a designated biologist/monitor to be on-site daily while construction-related activities are within or near buffer areas. The on-site biologist/monitor shall have authority to stop work if raptors are exhibiting agitated behavior such as defensive flights at intruders, unusual getting up from a brooding position or unusual flying off the nest. If during the nesting season there is a lapse in project-related work of fifteen (15) days or longer, another focused survey shall be performed and the results sent to CDFW prior to resuming work.

- Preconstruction surveys for burrowing owl shall be undertaken for construction activities between February 1 and August 31. The surveys shall incorporate methodologies from CDFW's 2012 Staff Report on Burrowing Owl Mitigation and the California Burrowing Owl Consortium CBOC) Burrowing Owl Survey Protocol and Mitigation Guidelines (CBOC, 1993). In the event that nesting owls are located within 250 feet of the work areas, temporal construction restrictions may be necessary to eliminate the potential for noise disturbance to the burrowing owls. The necessity and extent for temporal construction restrictions as to nesting burrowing owls is dependent upon location of the nest with respect to construction and shall be determined by CDFW as described above.

- Trees and shrubs within the work area could be used by other birds protected by the Migratory Bird Treaty Act of 1918. The grasslands may

be used by ground-nesting species. Any vegetation removal during the avian nesting season (February 1 through August 31) shall be immediately preceded by a survey. If active nests are found, adequate marking of the nest site shall be provided and vegetation removal in the vicinity of the nest shall be delayed until the young fledge.

- Western pond turtle may be present in the project area. If a western pond turtle is observed, it should be left alone to move out of the area on its own or may be relocated by a qualified biologist to a suitable aquatic habitat outside of the work area. The District shall exercise measures to avoid direct injury to western pond turtle, as well as measures to avoid areas where they are observed to occur.

- Pre-construction surveys for western pond turtle and their nests will be conducted for construction during April 1 through October 31. This will involve a search for nests in uplands on the landside of the levees. If nest sites are located, the District will notify CDFW and a 50-foot buffer area around the nest shall be staked and work will be delayed until hatching is complete and the young have left the nest site.

- A biological worker awareness training program shall be implemented to educate the construction crews of the biological diversity within the project area. The worker awareness program shall include a presentation on the life history and legal status of potentially occurring special-status species and distribution of informational packages to each worker. While all of the species in Table 4 will be at least briefly addressed, the focal species of the worker awareness training program will be Swainson's hawk, white-tailed kite, tricolored blackbird, burrowing owl, western pond turtle, valley elderberry longhorn beetle, and Central Valley steelhead.

VII. REFERENCES AND LITERATURE CONSULTED

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Appendix A

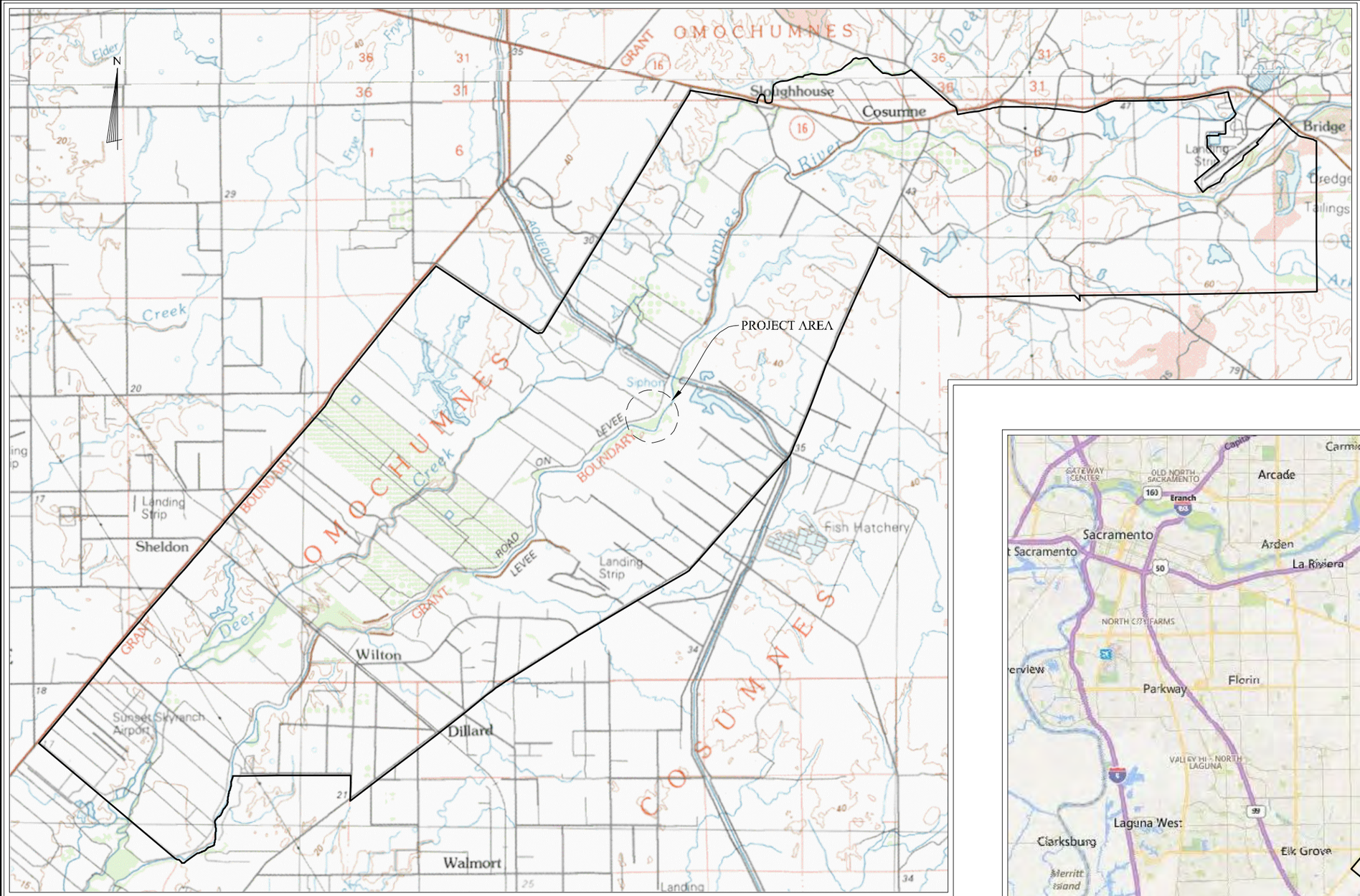
Plan and Profile Exhibits

RECLAMATION DISTRICT NO. 800

CRITICAL LEVEE REPAIR PROJECTS
SITE 4: FIG ROAD DOWNSTREAM

Sacramento County **California**

WAGNER & BONSIGNORE CONSULTING CIVIL ENGINEERS A CORPORATION
2151 RIVER PLAZA DRIVE, SUITE 100 SACRAMENTO, CALIFORNIA



LOCATION MAP

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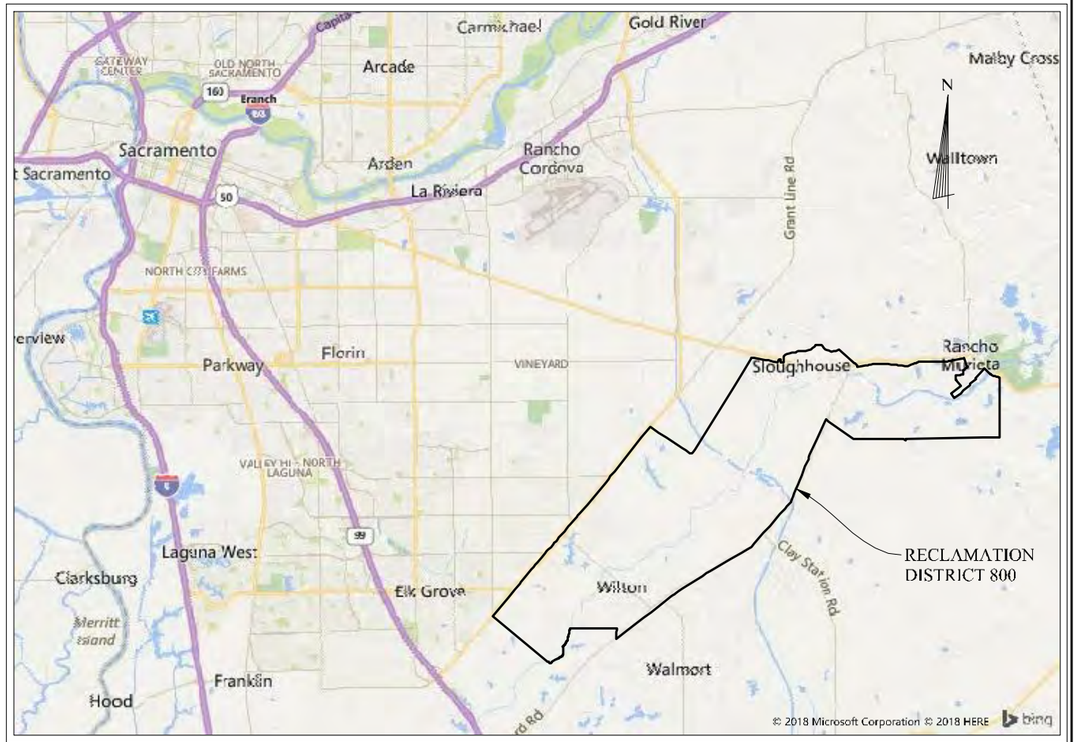

VICINITY MAP

NOT TO SCALE

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
Approved By: –
Date: FEBRUARY 2020

Wagner & Bonsignore
Consulting Civil Engineers, A Corporation
2151 River Plaza Drive
Suite 100
Sacramento, California 95833
Ph: 916-441-6850
Fx: 916-779-3120

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RECLAMATION DISTRICT 800 - COSUMNES

CRITICAL LEVEE REPAIRS
FIG ROAD DOWNSTREAM

LOCATION AND VICINITY MAPS

SHEET 1 OF 9 SHEETS

Plot Date: 3/2/2020

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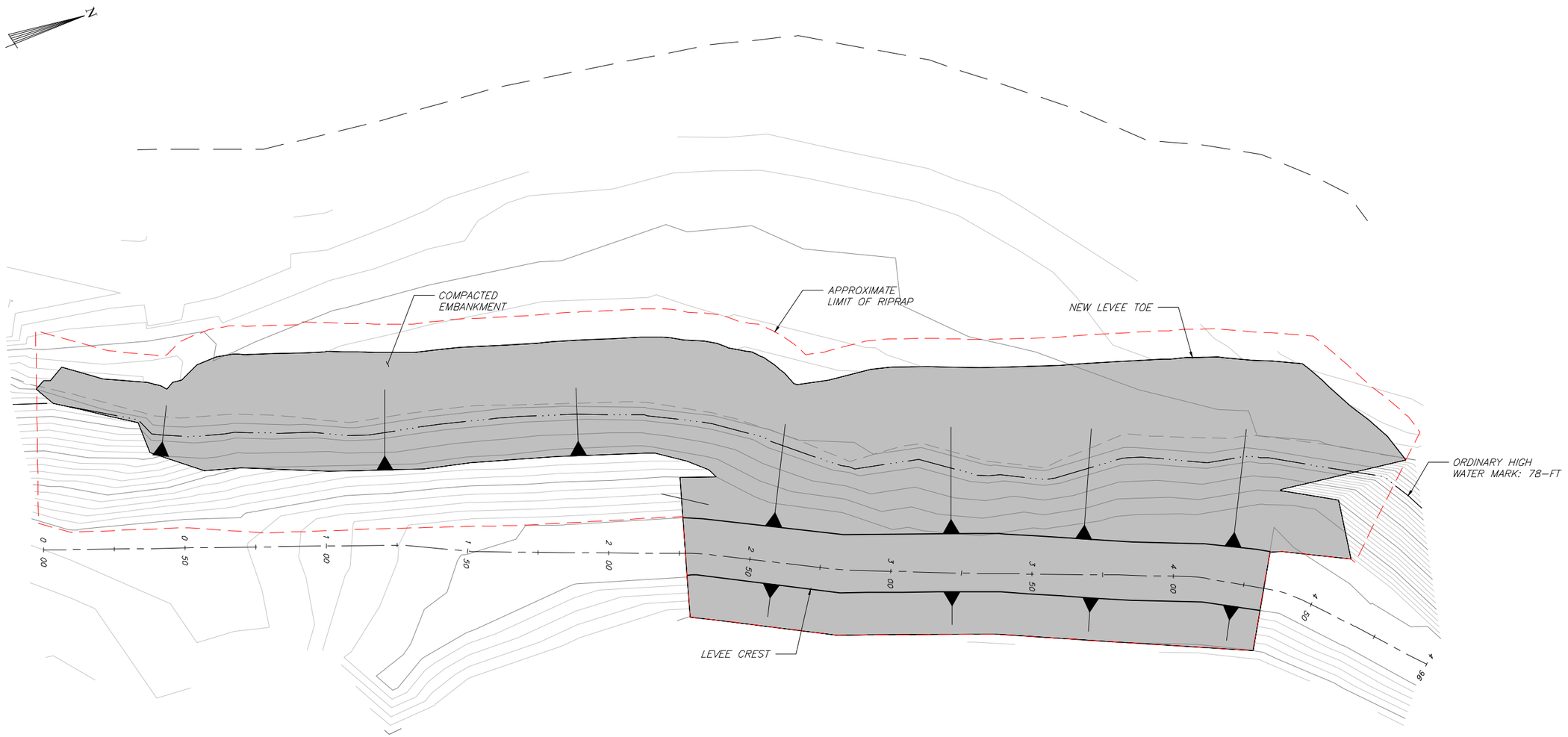

PLAN

0' 10' 20' 40'

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

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RECLAMATION DISTRICT 800 - COSUMNES
CRITICAL LEVEE REPAIRS
FIG ROAD DOWNSTREAM
PLAN

SHEET 2 OF 9 SHEETS

Plot Date: 3/2/2020
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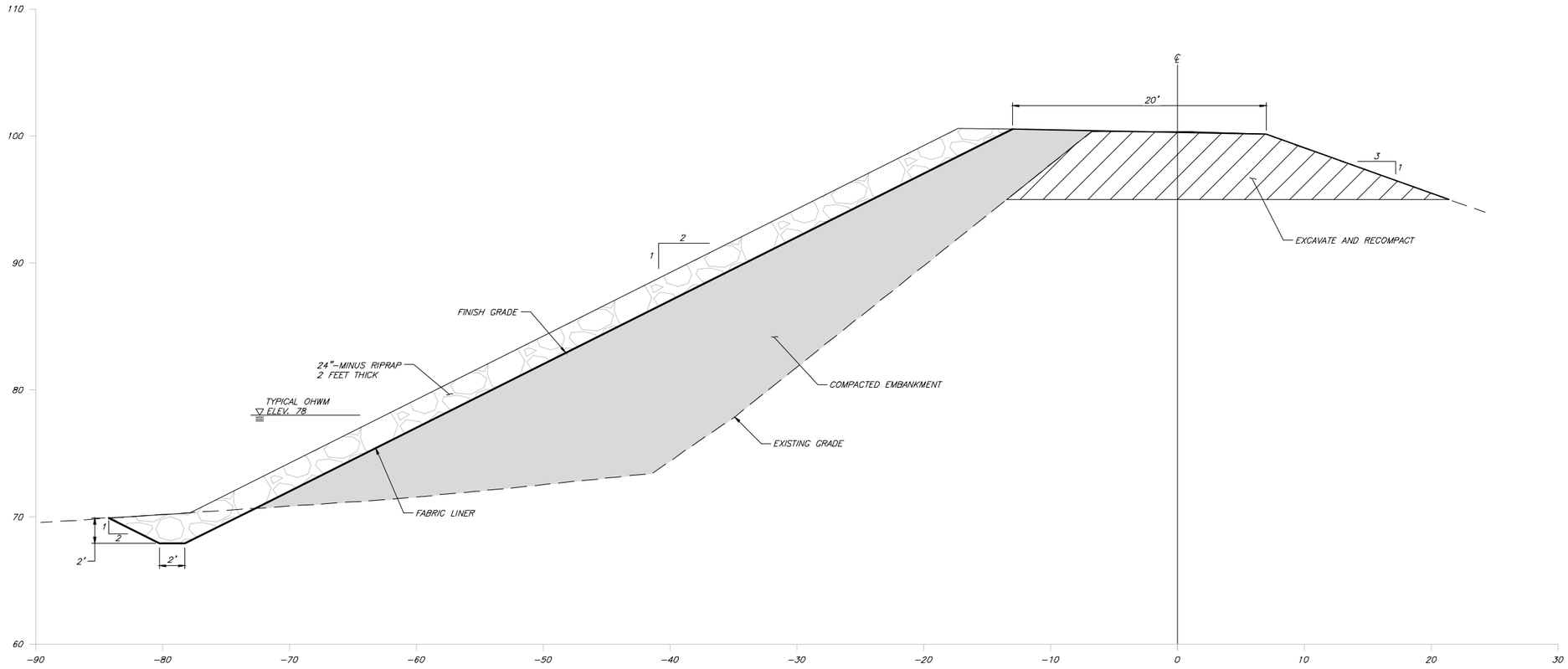

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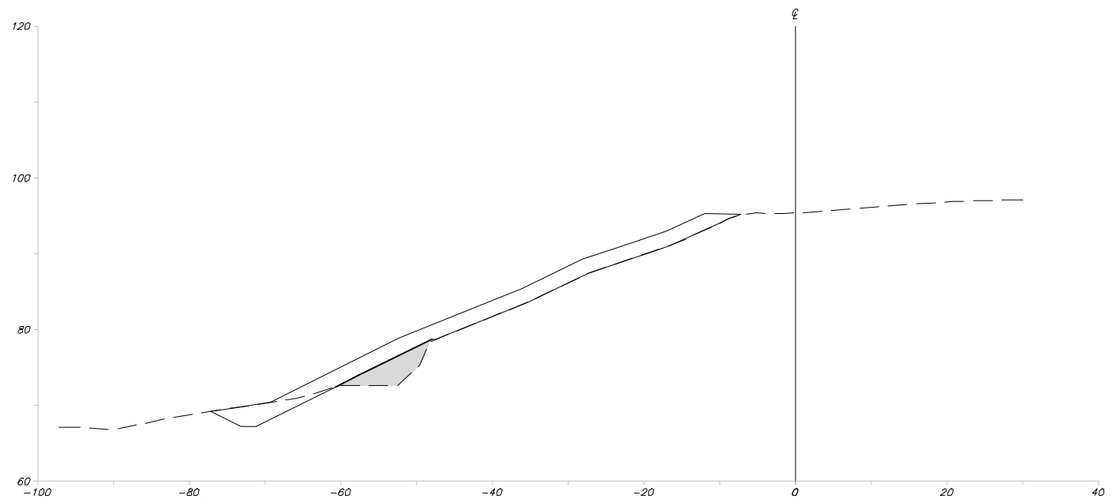

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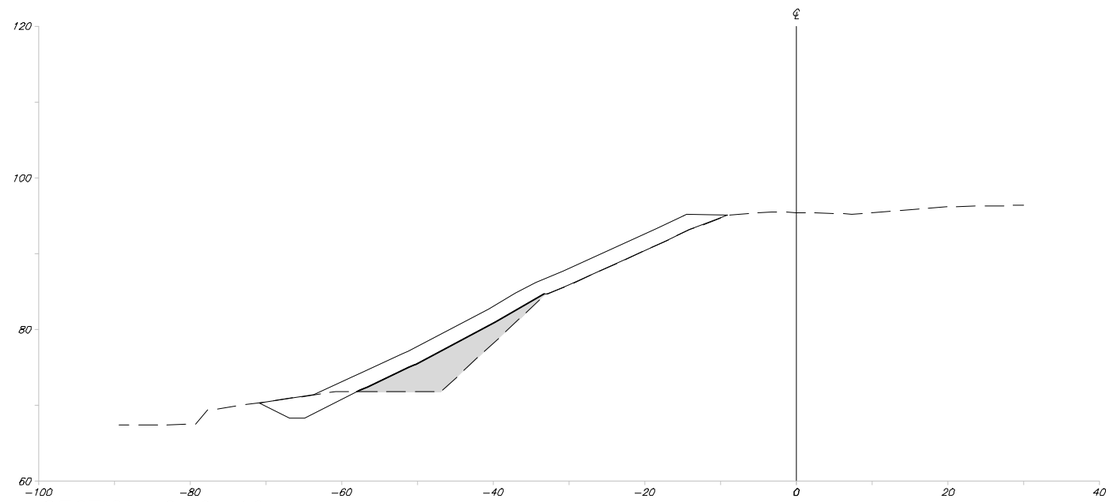

SECTION @ 0+40

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RECLAMATION DISTRICT 800 - COSUMNES
CRITICAL LEVEE REPAIRS
FIG ROAD DOWNSTREAM

SECTIONS

SHEET 3 OF 9 SHEETS

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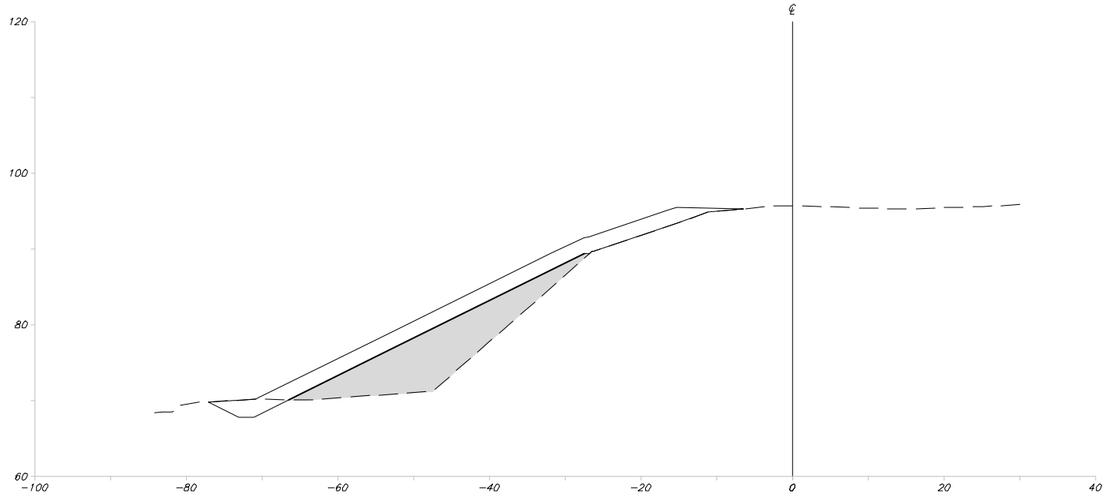

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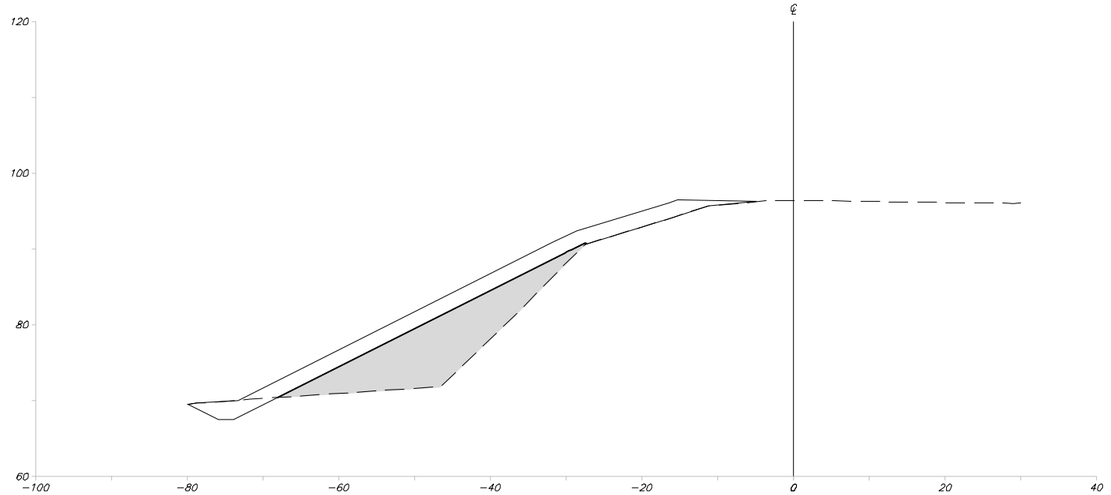

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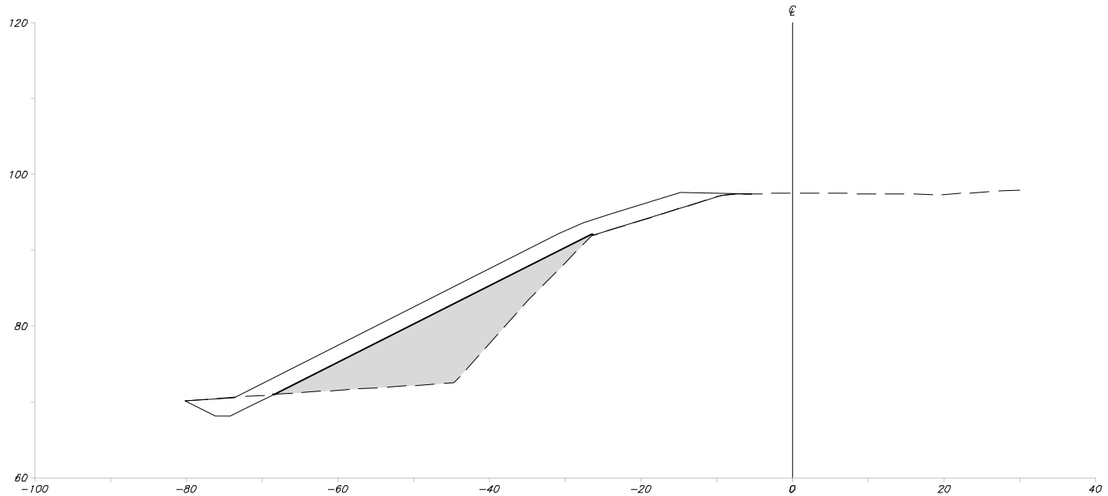

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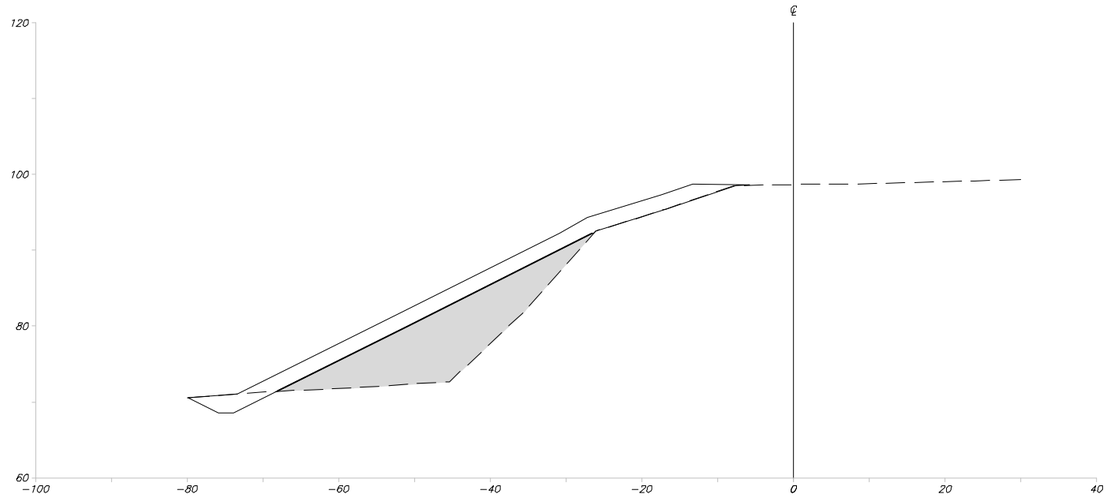

SECTION @ 1+20

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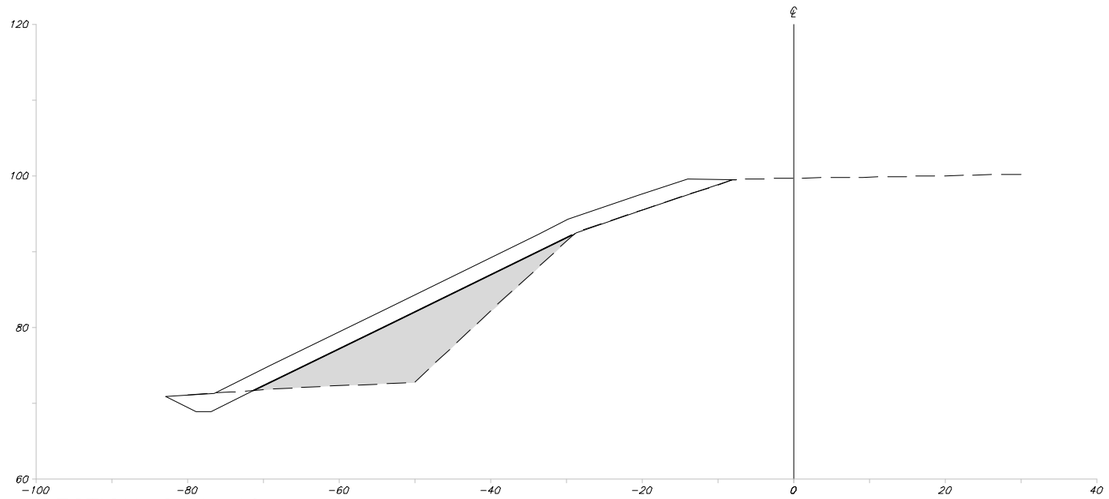
RECLAMATION DISTRICT 800 - COSUMNES

CRITICAL LEVEE REPAIRS
FIG ROAD DOWNSTREAM

SECTIONS

SHEET 4 OF 9 SHEETS



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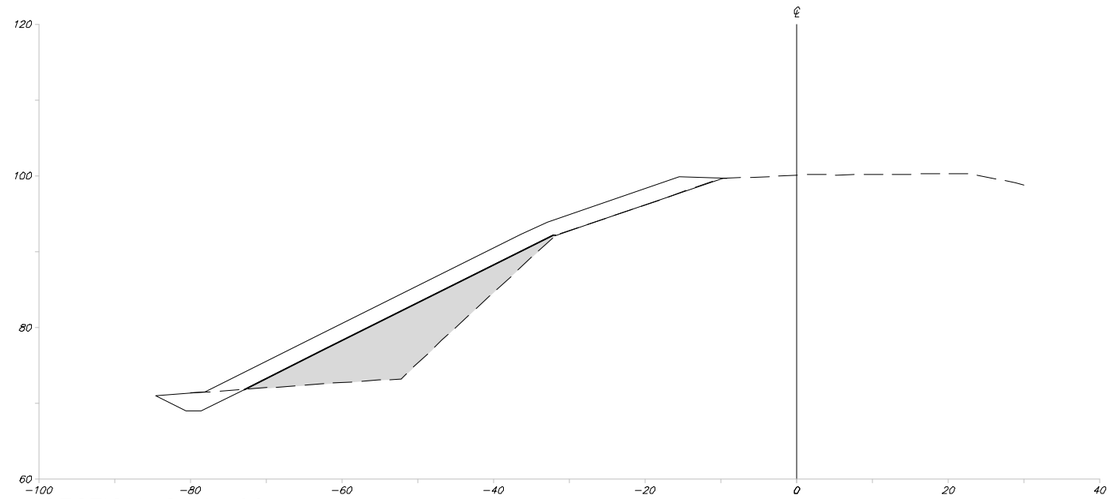

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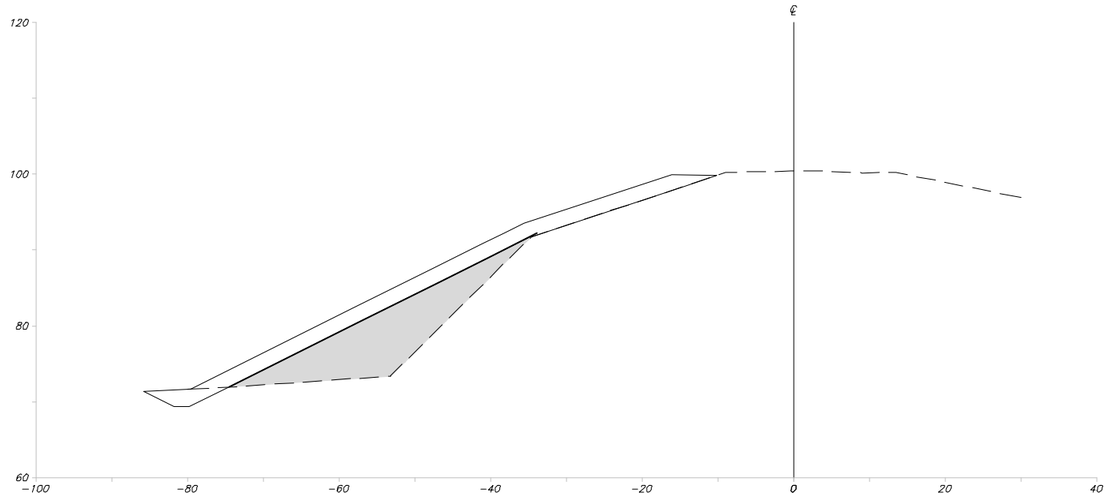

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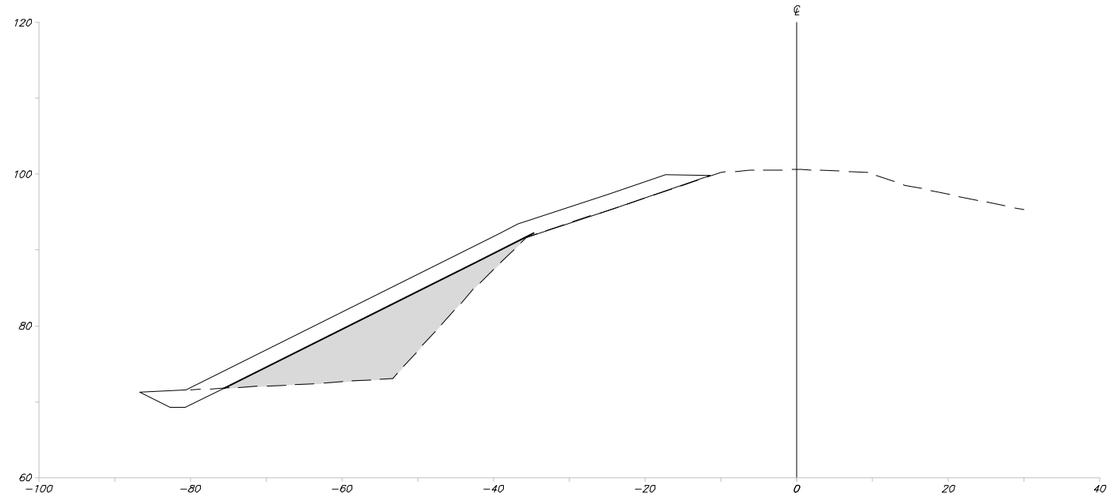

SECTION @ 2+00

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RECLAMATION DISTRICT 800 - COSUMNES
CRITICAL LEVEE REPAIRS
FIG ROAD DOWNSTREAM

SECTIONS

SHEET 5 OF 9 SHEETS

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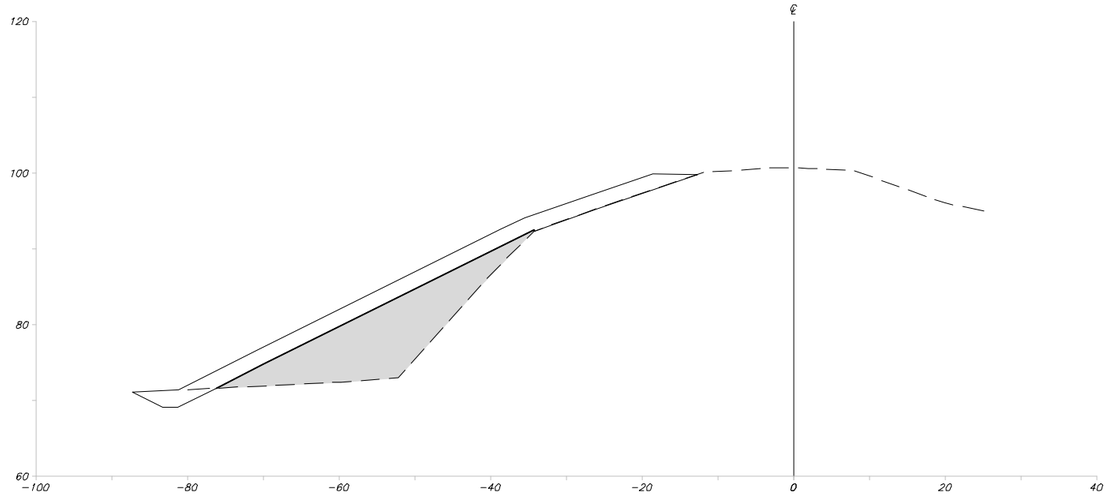

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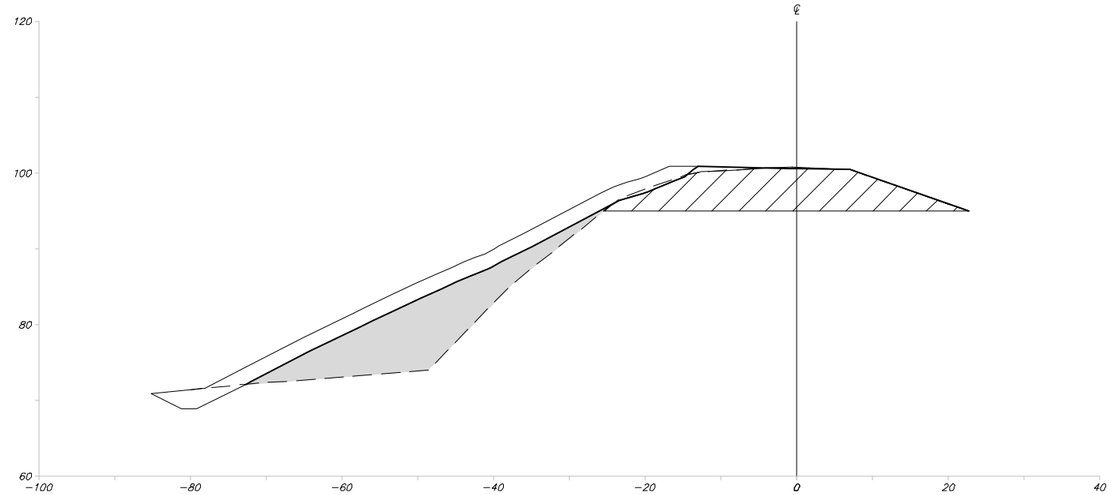

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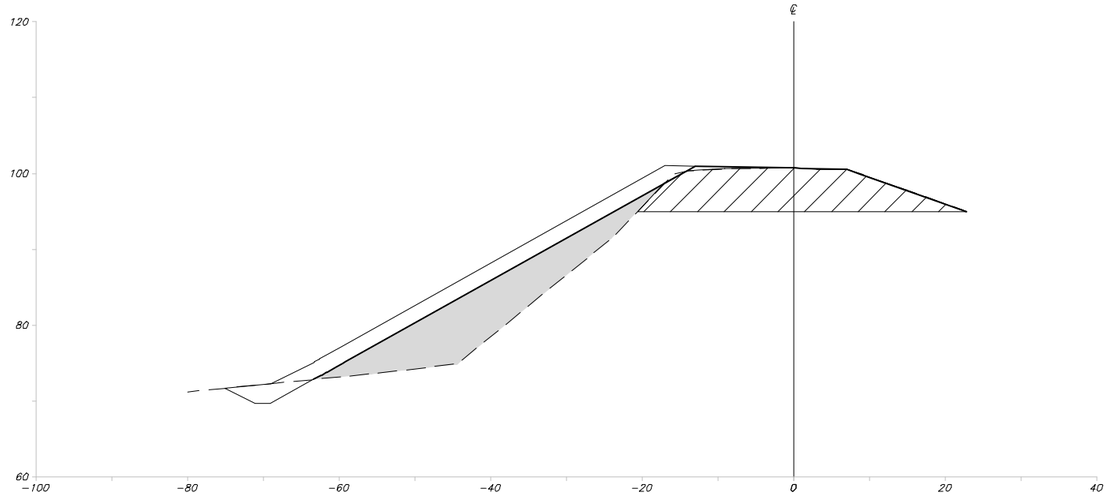

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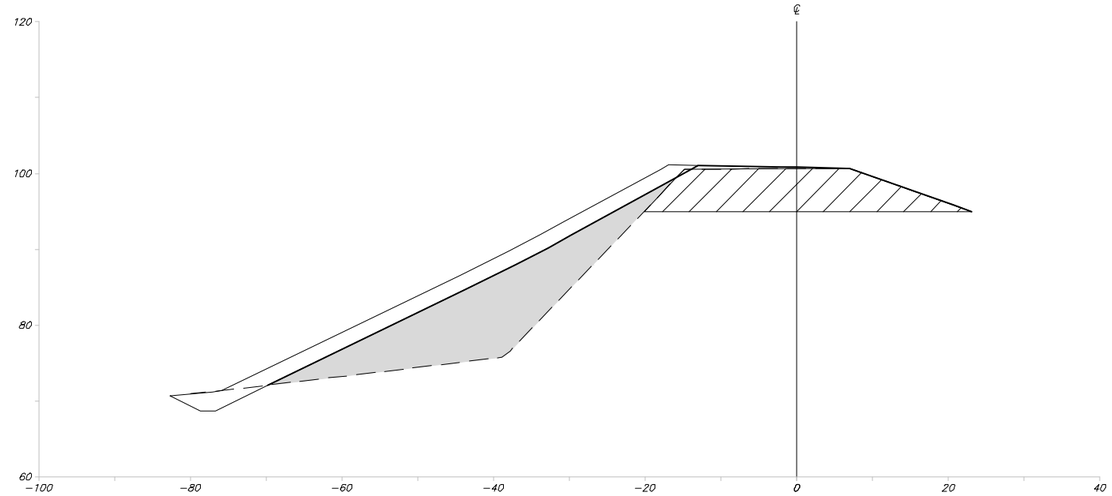

SECTION @ 2+80

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RECLAMATION DISTRICT 800 - COSUMNES
CRITICAL LEVEE REPAIRS
FIG ROAD DOWNSTREAM
SECTIONS

SHEET 6 OF 9 SHEETS

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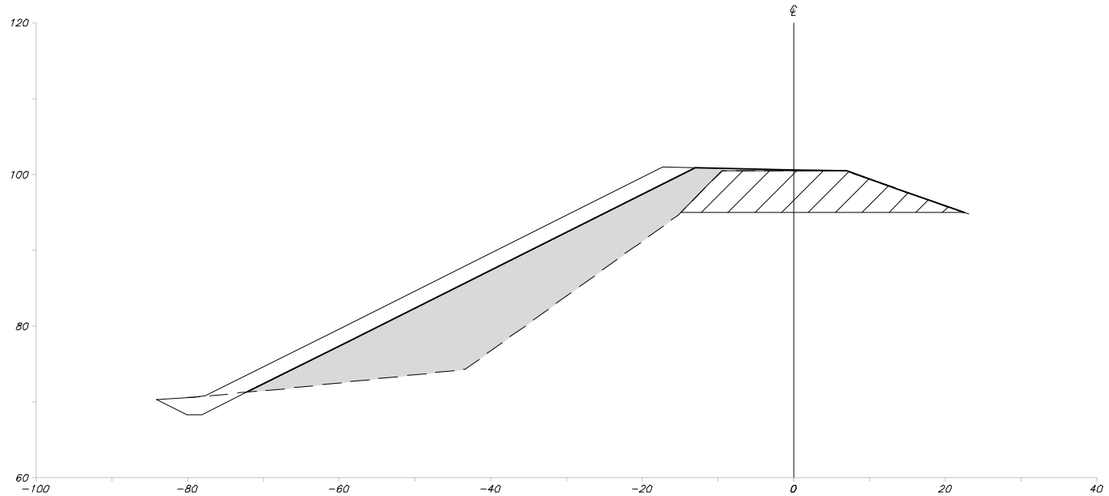

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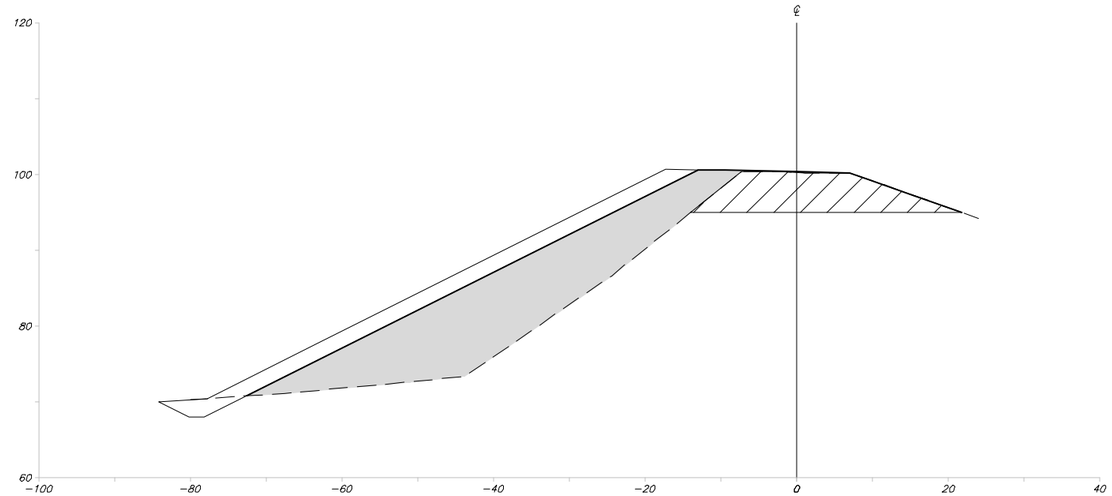

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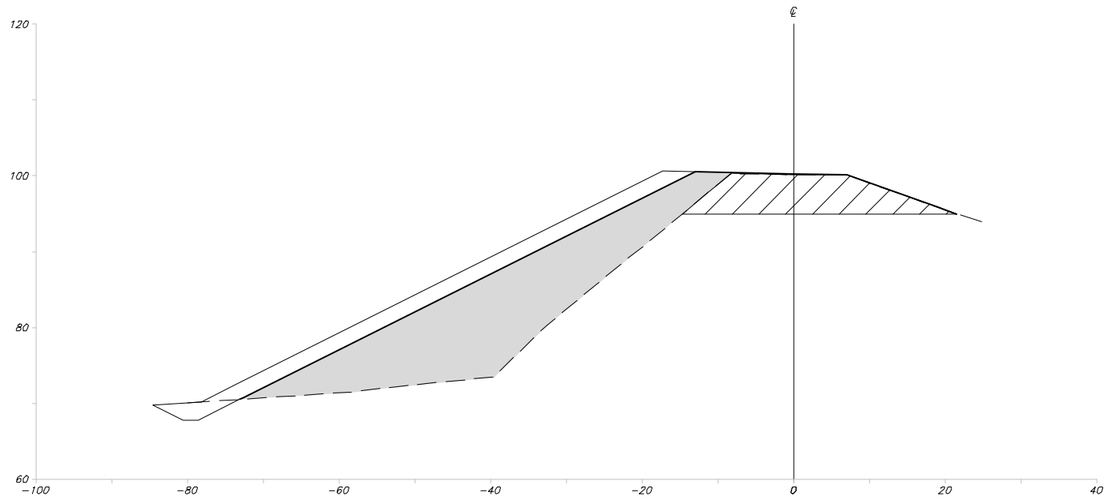

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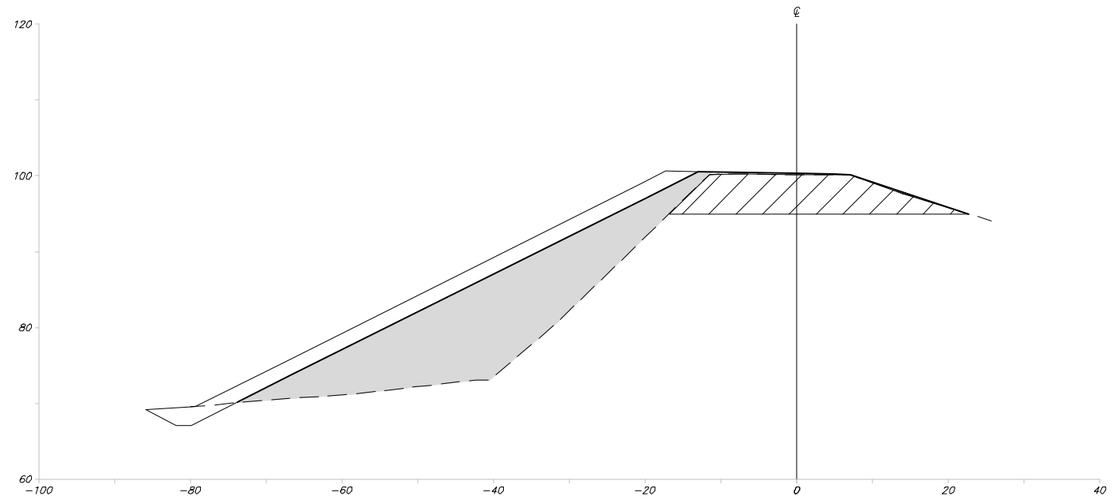

SECTION @ 3+60

0' 5' 10' 20'

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

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RECLAMATION DISTRICT 800 - COSUMNES

CRITICAL LEVEE REPAIRS
FIG ROAD DOWNSTREAM

SECTIONS

SHEET 7 OF 9 SHEETS

Plot Date: 3/2/2020

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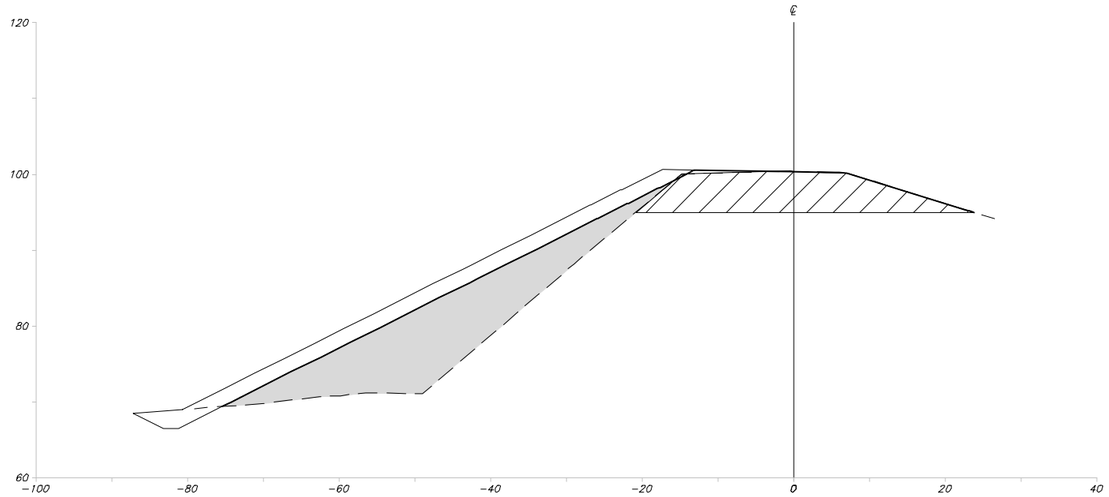

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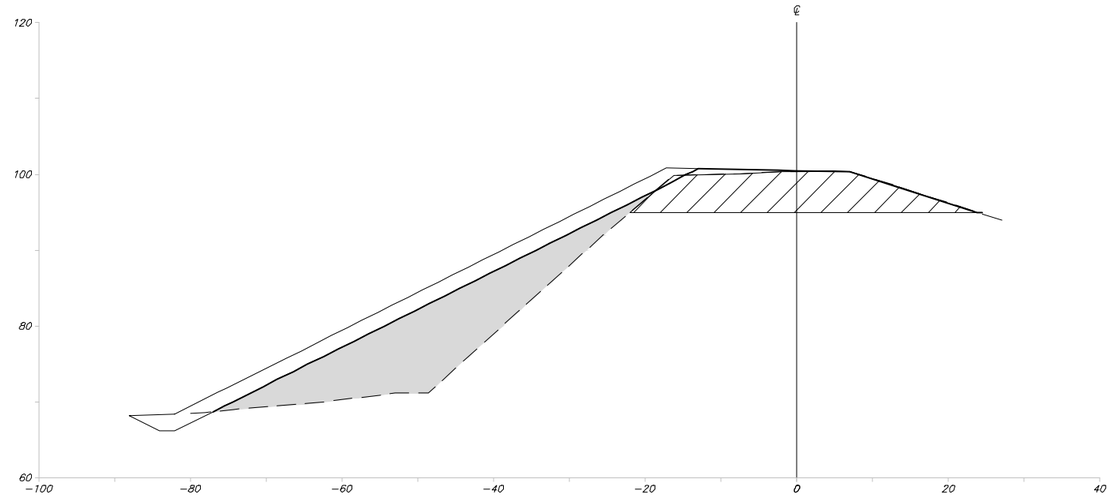

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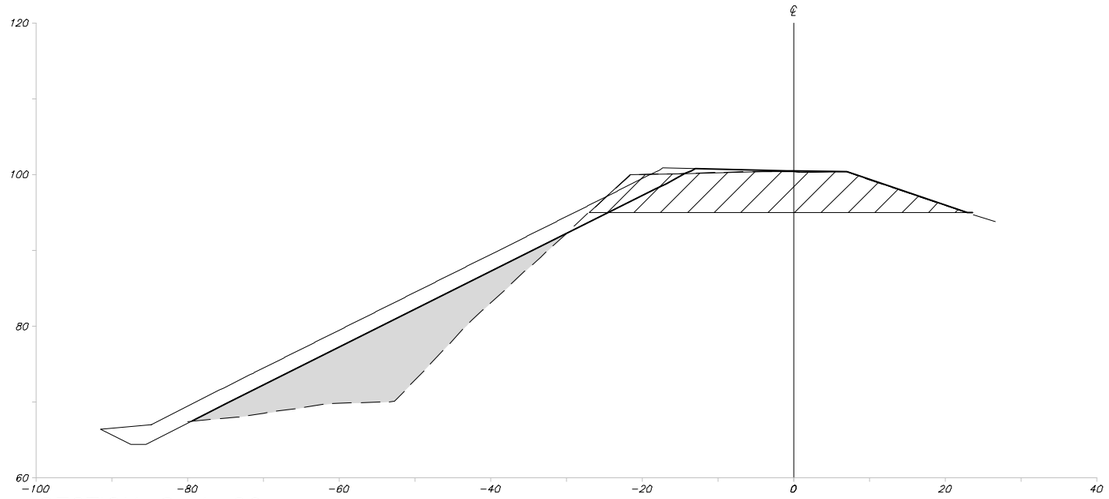

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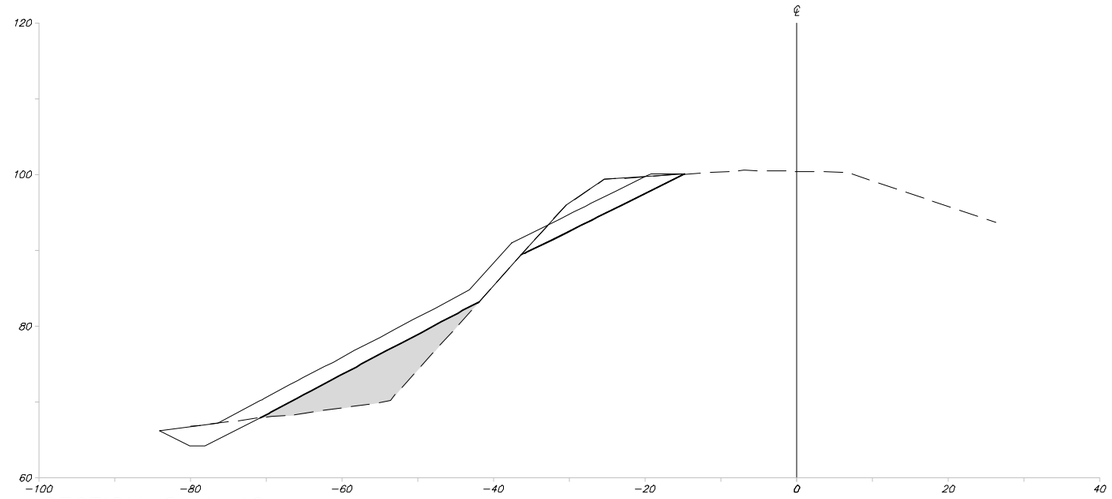

SECTION @ 4+40

0' 5' 10' 20'

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

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RECLAMATION DISTRICT 800 - COSUMNES

CRITICAL LEVEE REPAIRS
FIG ROAD DOWNSTREAM

SECTIONS

SHEET 8 OF 9 SHEETS

File Date: 3/2/2020

O:\Drawings\Reclamation District No 800\NRCS Repair Sites\Production\Fig Road\Fig Road map.dwg

N

EXISTING ACCESS ROAD

30'

BORROW ACCESS

LOCAL BORROW

ORDINARY HIGH WATER MARK: 78-FT

PLAN
0' 50' 100'

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TABLE 1
QUANTITIES

QUANTITY (AREA OR VOLUME)	ABOVE OHWM [1]	BELOW OHWM [1]	TOTAL
WORK AREA (ACRES)	0.51	0.43	0.94
TEMPORARY DISTURBANCE (ACRES)	0.75	0.29	1.04
TOTAL ACRES	1.26	0.72	1.98
FILL – SOIL (CUBIC YARDS)	2421	1633	4054
FILL – RSP [2] (CUBIC YARDS)	1674	830	2504
TOTAL CUBIC YARDS	4095	2463	6558

[1] OHWM = ORDINARY HIGH WATER MARK (ELEVATION = 78+/- FEET)
[2] RSP = ROCK SLOPE PROTECTION

LEGEND
- WORK AREA BELOW ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA BELOW ORDINARY HIGH WATER MARK
- WORK AREA ABOVE ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA ABOVE ORDINARY HIGH WATER MARK

REVISIONS

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RECLAMATION DISTRICT 800 - COSUMNES
CRITICAL LEVEE REPAIRS
FIG ROAD DOWNSTREAM
IMPACT

SHEET 9 OF 9 SHEETS

Plot Date: 3/2/2020
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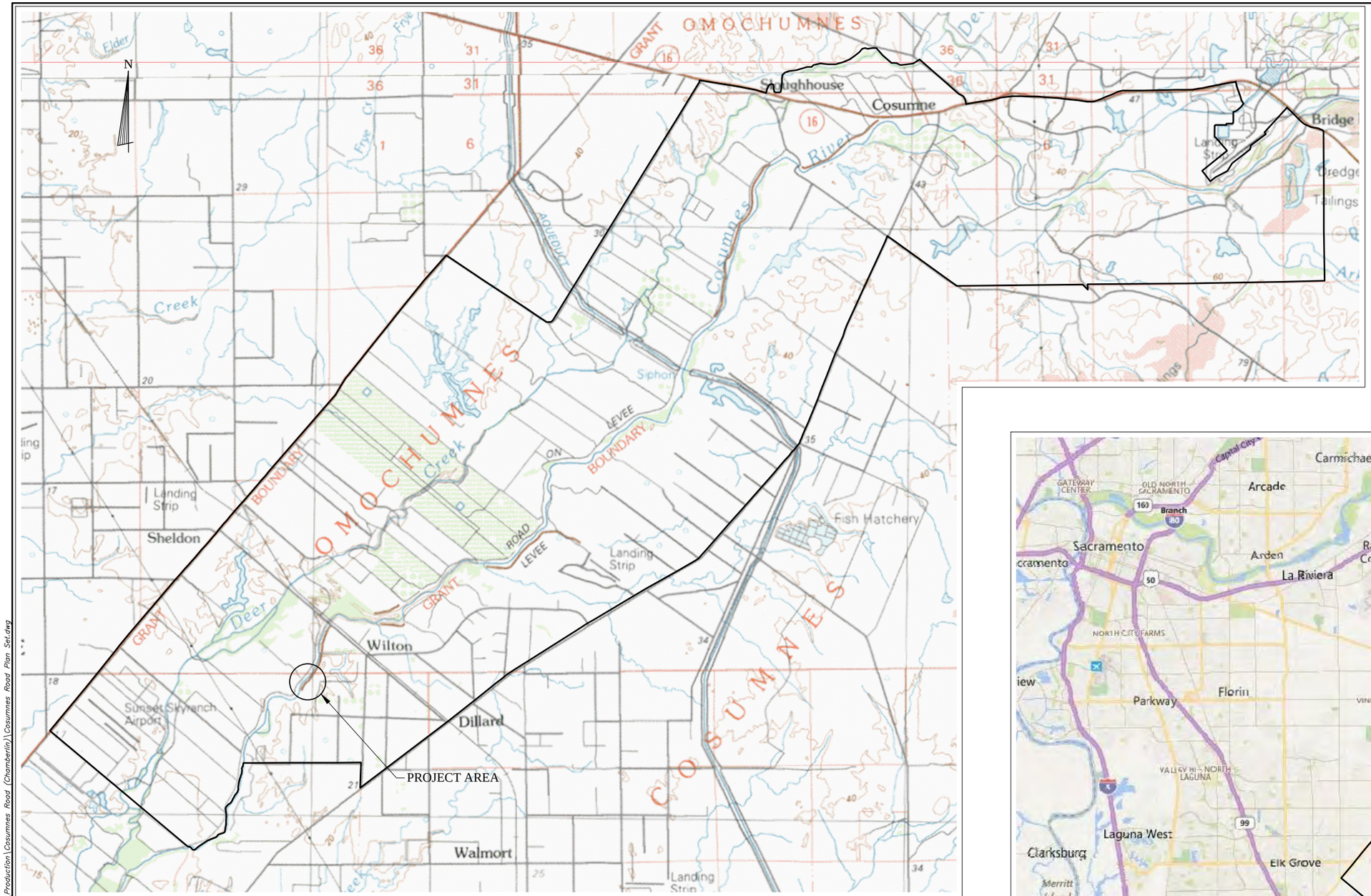
RECLAMATION DISTRICT NO. 800

CRITICAL LEVEE REPAIR PROJECTS
SITE 8: COSUMNES ROAD DOWNSTREAM

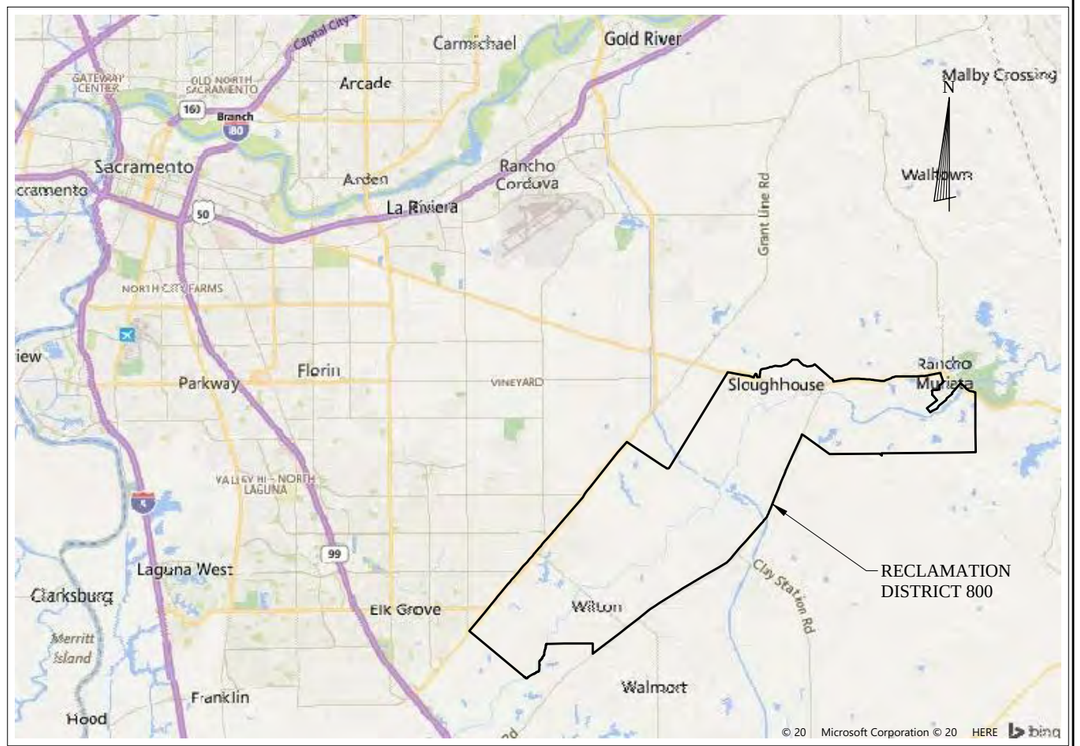
Sacramento County **California**

WAGNER & BONSIGNORE CONSULTING CIVIL ENGINEERS A CORPORATION
2151 RIVER PLAZA DRIVE, SUITE 100 SACRAMENTO, CALIFORNIA



LOCATION MAP

0' 1,500' 3,000' 6,000'



VICINITY MAP

NOT TO SCALE

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REGISTERED PROFESSIONAL ENGINEER PATRICK W. ERVIN No. 66063 Exp. 09/30/18 CIVIL STATE OF CALIFORNIA

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RECLAMATION DISTRICT 800 - COSUMNES

CRITICAL LEVEE REPAIRS
COSUMNES ROAD DOWNSTREAM

LOCATION AND VICINITY MAPS

SHEET 1 OF 6 SHEETS

Plot Date: 3/16/2020

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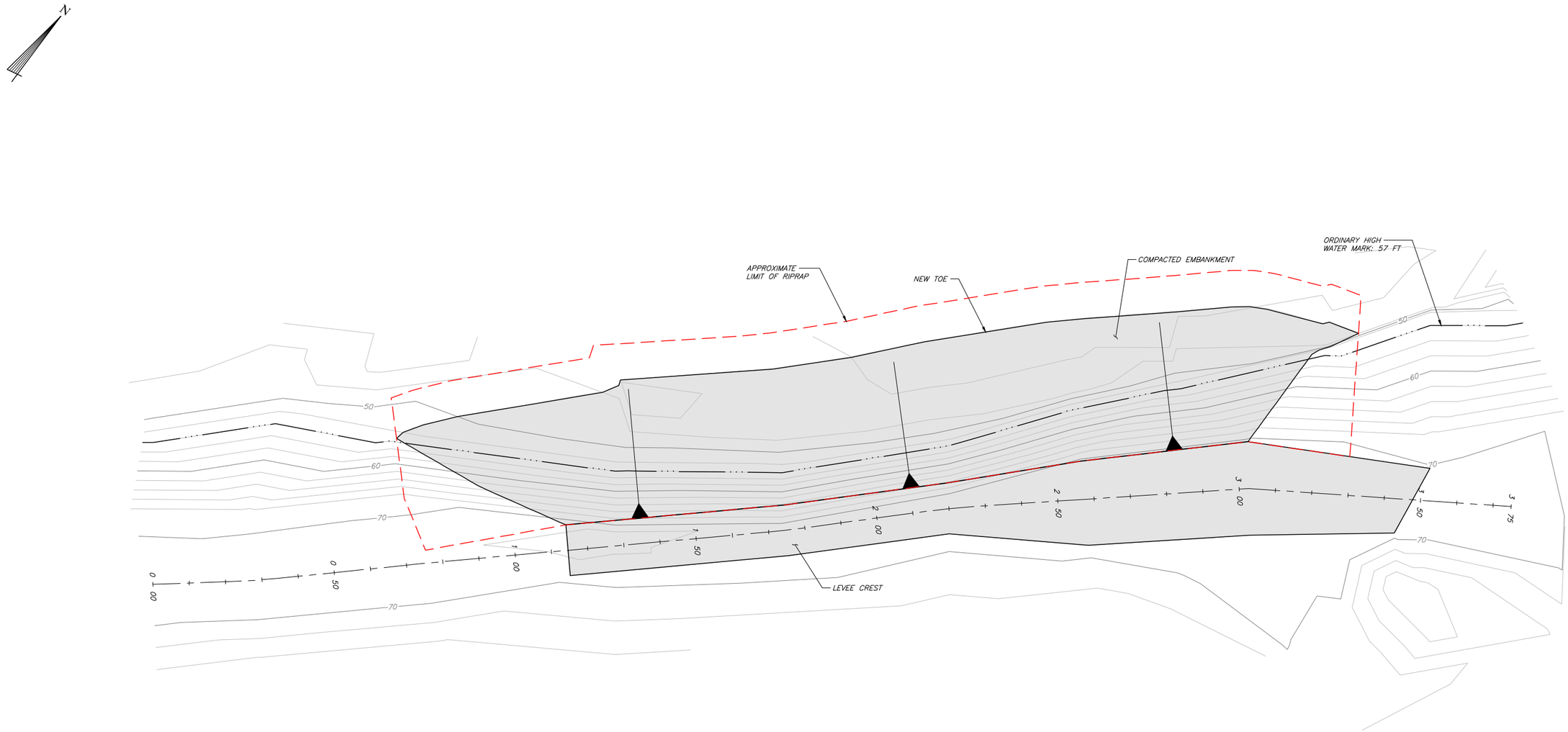

PLAN
0' 15' 30'

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Plot Date: 3/16/2020

REVISIONS			
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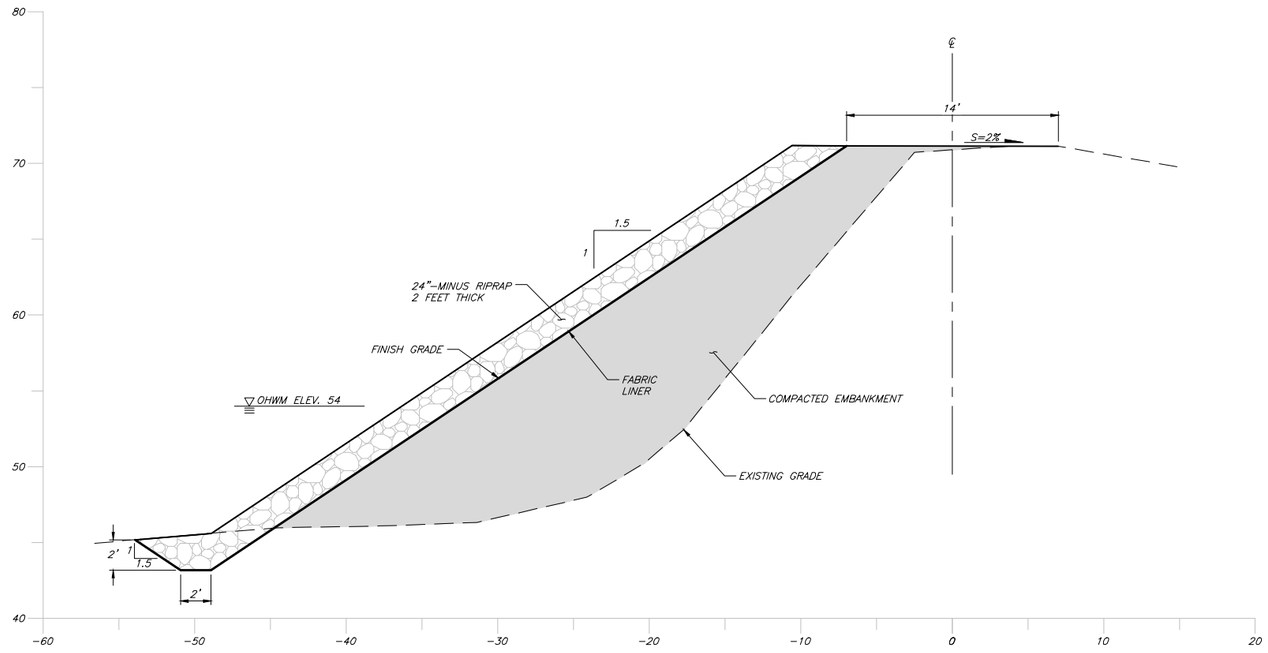
RECLAMATION DISTRICT 800 - COSUMNES

CRITICAL LEVEE REPAIRS
COSUMNES ROAD DOWNSTREAM

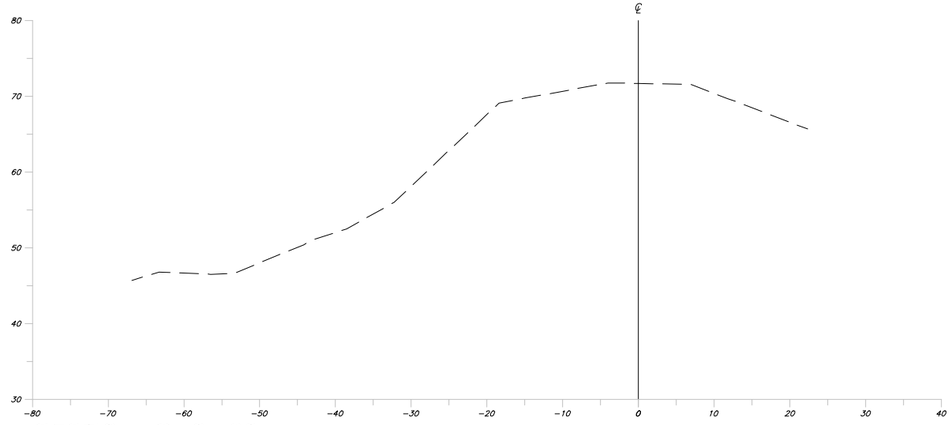
PLAN

SHEET 2 OF 6 SHEETS



TYPICAL SECTION

NOT TO SCALE



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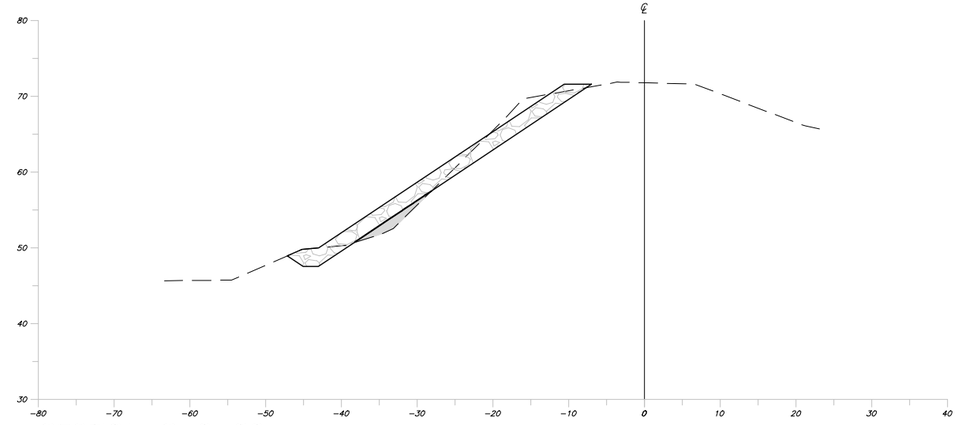

SECTION @ 0+80

SECTION

0' 10' 20' 40'

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
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Approved By: –
Date: FEBRUARY 2020

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RECLAMATION DISTRICT 800 - COSUMNES

CRITICAL LEVEE REPAIRS
COSUMNES ROAD DOWNSTREAM

SECTIONS

SHEET 3 OF 6 SHEETS

Plot Date: 3/16/2020

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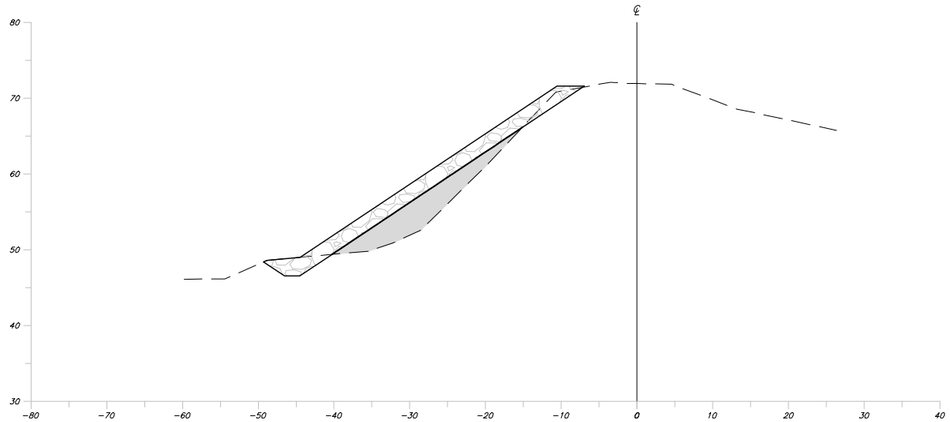

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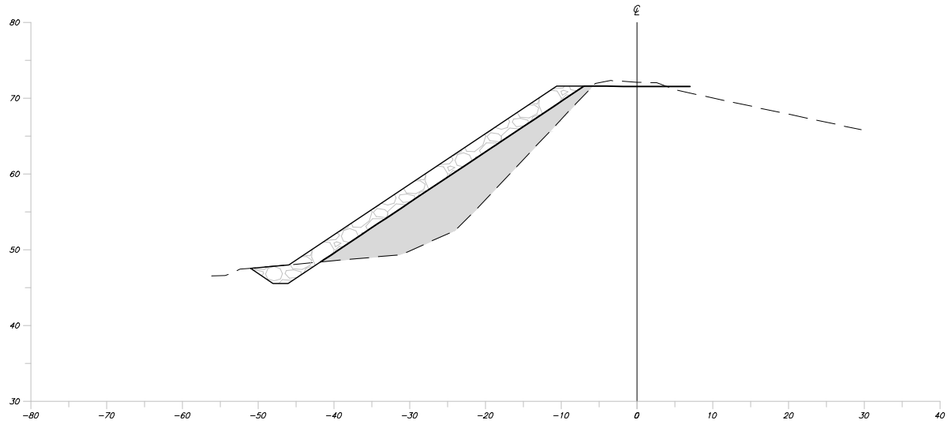

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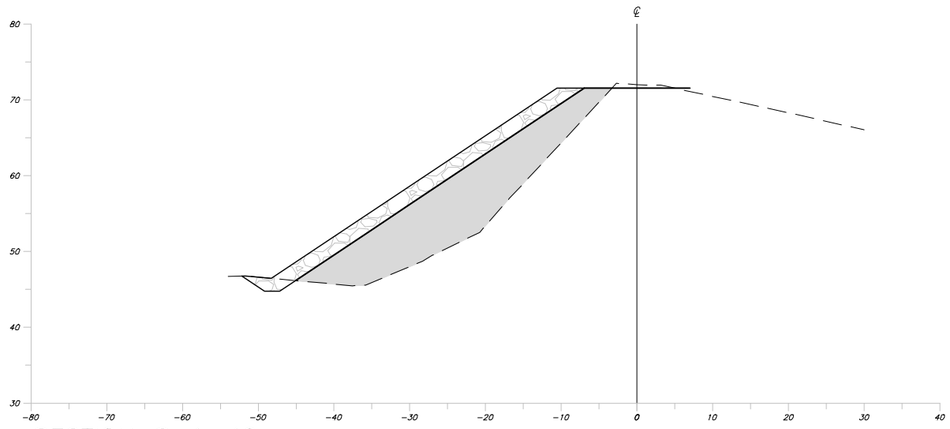

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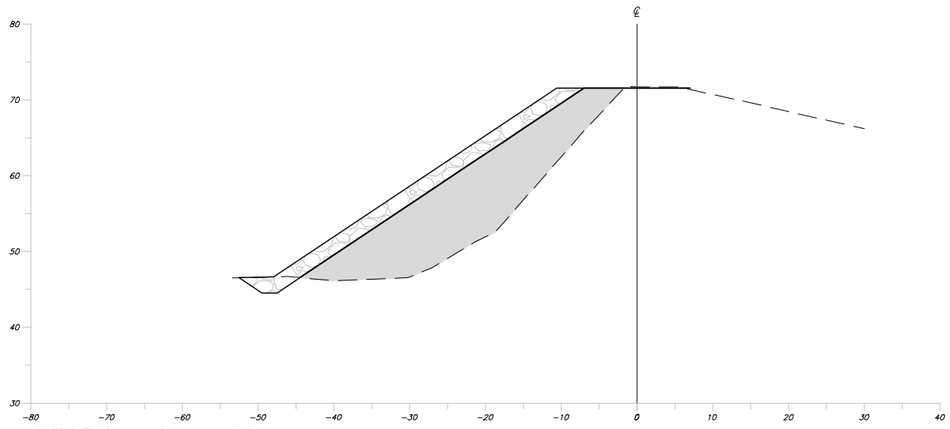

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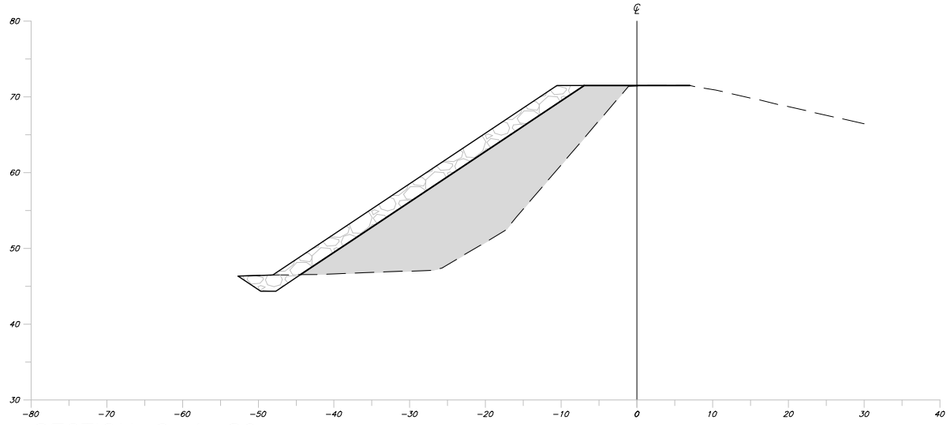

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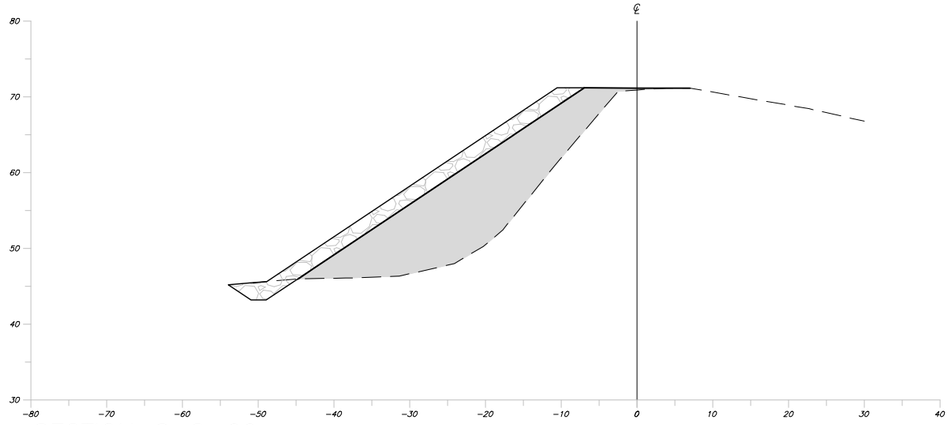

SECTION @ 2+00

SECTION

0' 5' 10' 20'

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Plot Date: 3/16/2020

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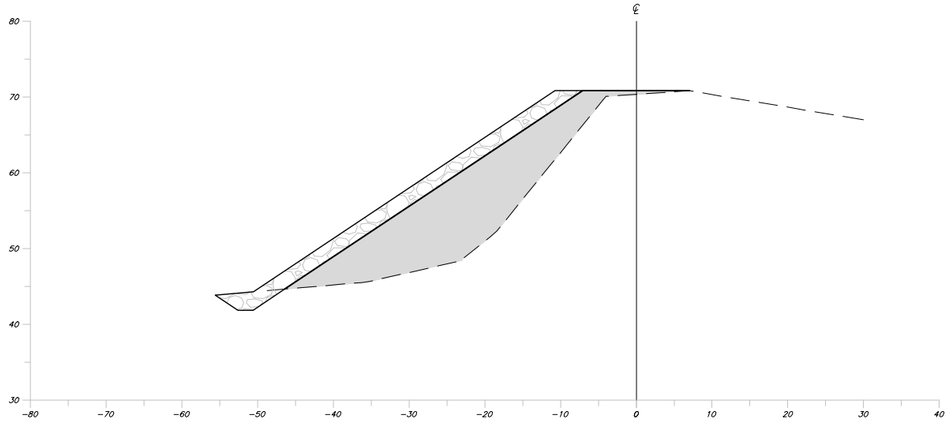
RECLAMATION DISTRICT 800 - COSUMNES

CRITICAL LEVEE REPAIRS
COSUMNES ROAD DOWNSTREAM

SECTIONS

SHEET 4 OF 6 SHEETS



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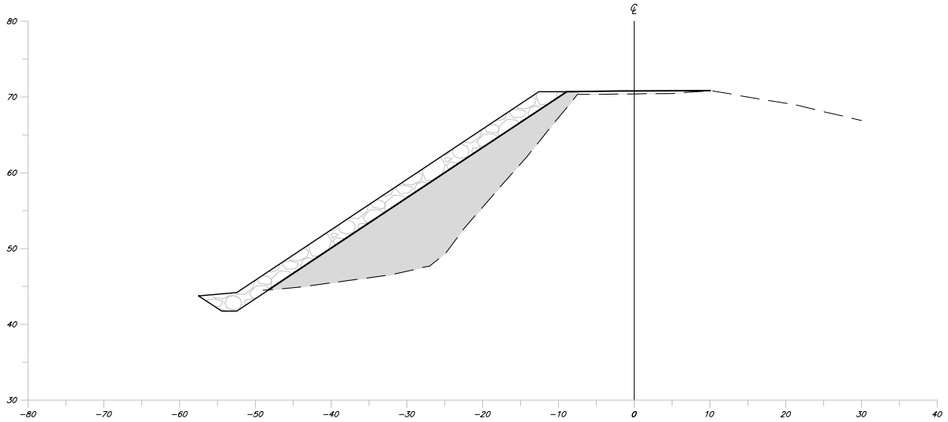

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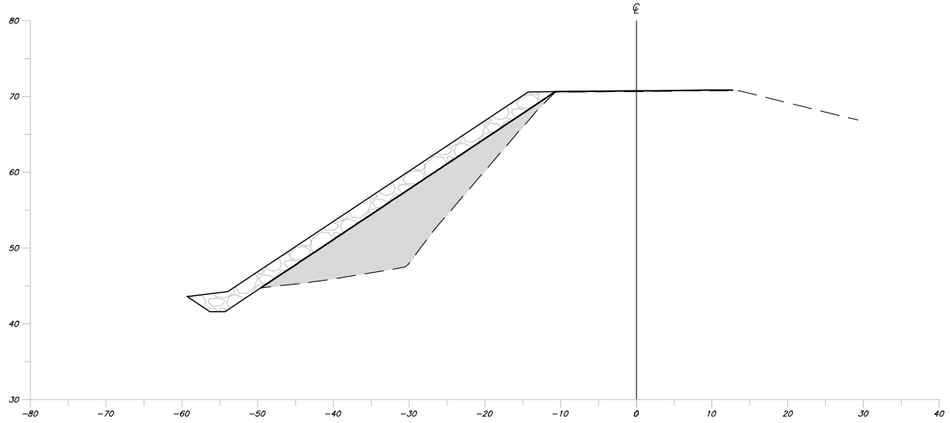

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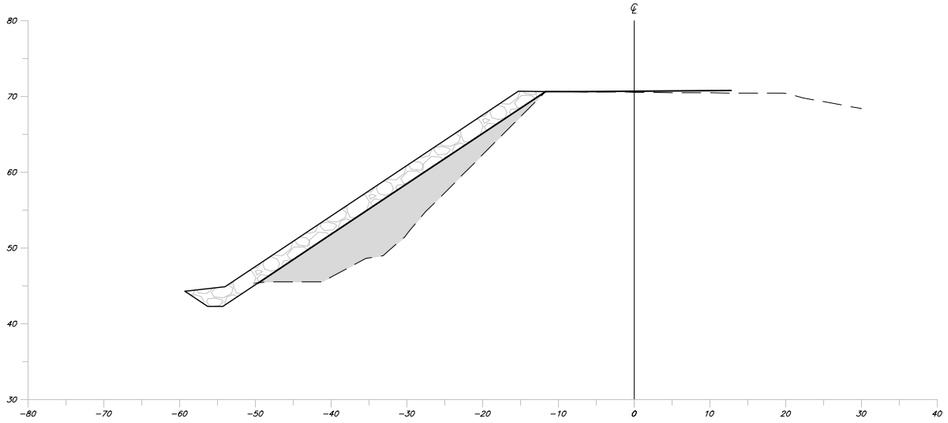

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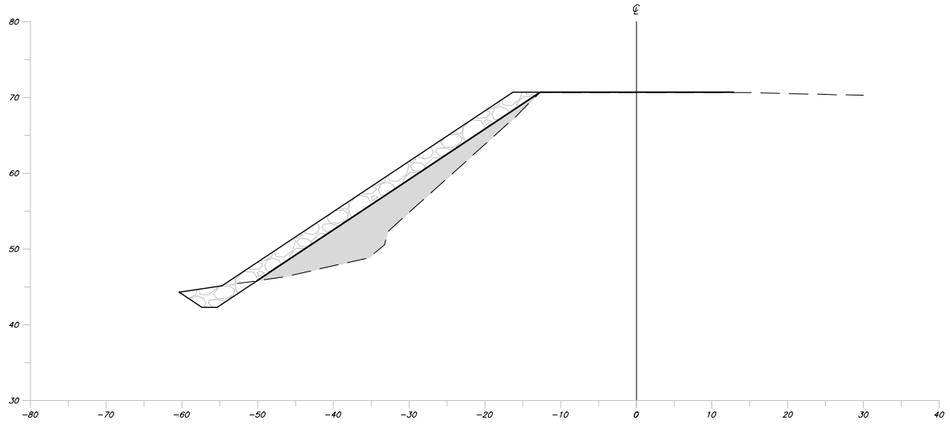

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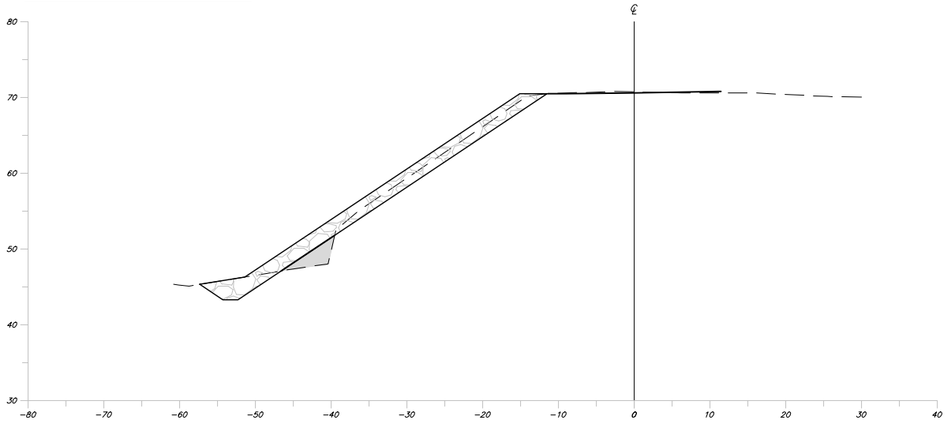

SECTION @ 3+20

SECTION

0' 5' 10' 20'

Q:\Drawings\Reclamation District No 800\NRCS Repair Sites\Production\Cosumnes Road (Chamberlin)\Cosumnes Road Plan Set.dwg

Plot Date 3/16/2020

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RECLAMATION DISTRICT 800 - COSUMNES

CRITICAL LEVEE REPAIRS
COSUMNES ROAD DOWNSTREAM

SECTIONS

SHEET 5 OF 6 SHEETS

TABLE 1
QUANTITIES

QUANTITY (AREA OR VOLUME)	ABOVE OHWM [1]	BELOW OHWM [1]	TOTAL
WORK AREA (ACRES)	0.19	0.19	0.38
TEMPORARY DISTURBANCE (ACRES)	0.56	0.16	0.72
TOTAL ACRES	0.75	0.35	1.10
FILL – SOIL (CUBIC YARDS)	1011	797	1808
FILL – RSP [2] (CUBIC YARDS)	549	363	912
TOTAL CUBIC YARDS	1560	1160	2720

[1] OHWM = ORDINARY HIGH WATER MARK (ELEVATION = 54+/– FEET)
[2] RSP = ROCK SLOPE PROTECTION

LEGEND
- WORK AREA BELOW ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA BELOW ORDINARY HIGH WATER MARK
- WORK AREA ABOVE ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA ABOVE ORDINARY HIGH WATER MARK

REVISIONS

REF.	DESCRIPTION	APVD.	DATE

Plot Date: 3/16/2020
Q:\Drawings\Reclamation District No. 800\WRCS Repair Sites\Production\Cosumnes Road (Chamberlin)\Cosumnes Road Plan Set.dwg

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RECLAMATION DISTRICT 800 - COSUMNES
CRITICAL LEVEE REPAIRS
COSUMNES ROAD DOWNSTREAM

PLAN

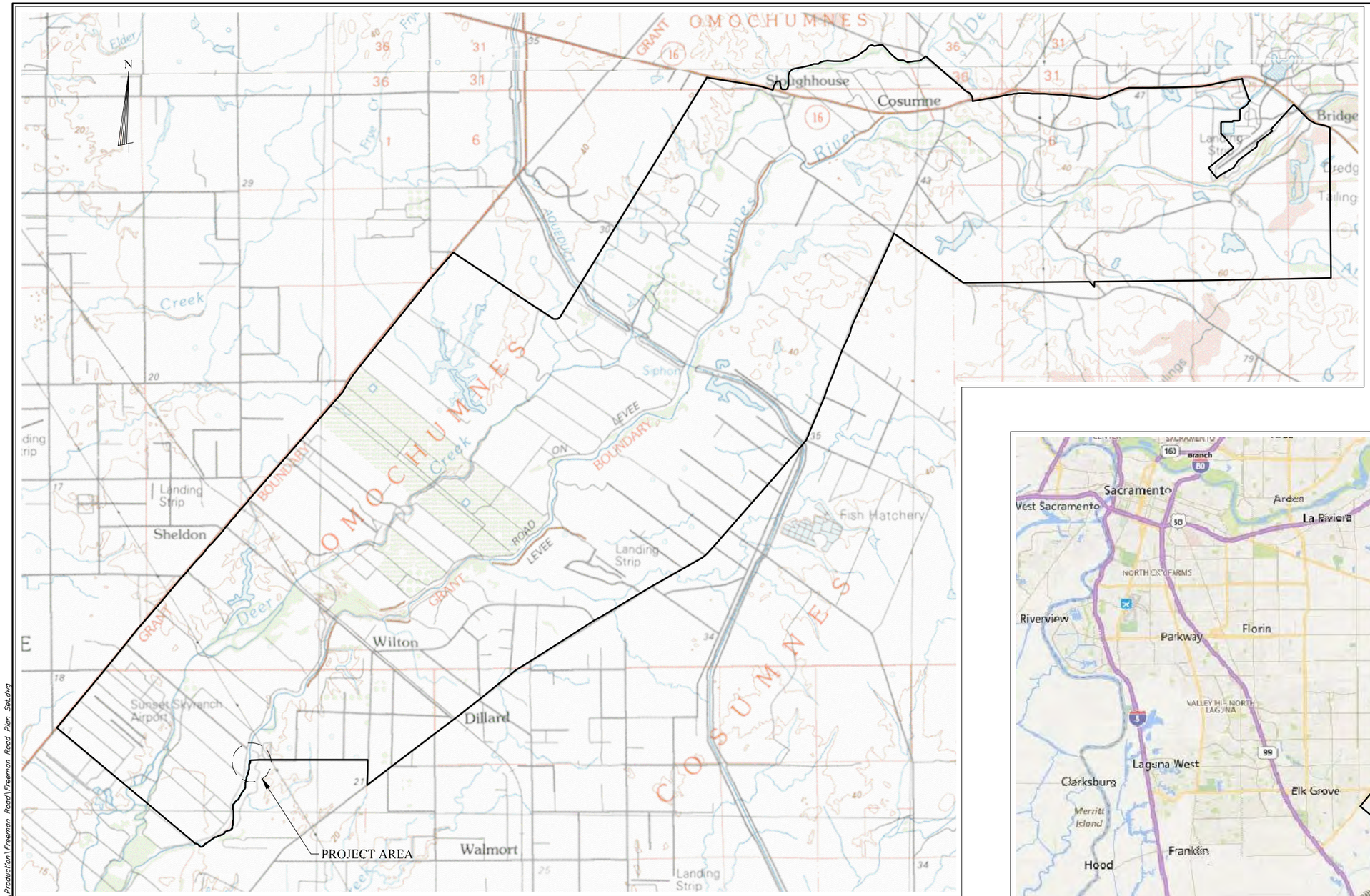
SHEET 6 OF 6 SHEETS

RECLAMATION DISTRICT NO. 800

CRITICAL LEVEE REPAIR PROJECTS
SITE 9: FREEMAN ROAD

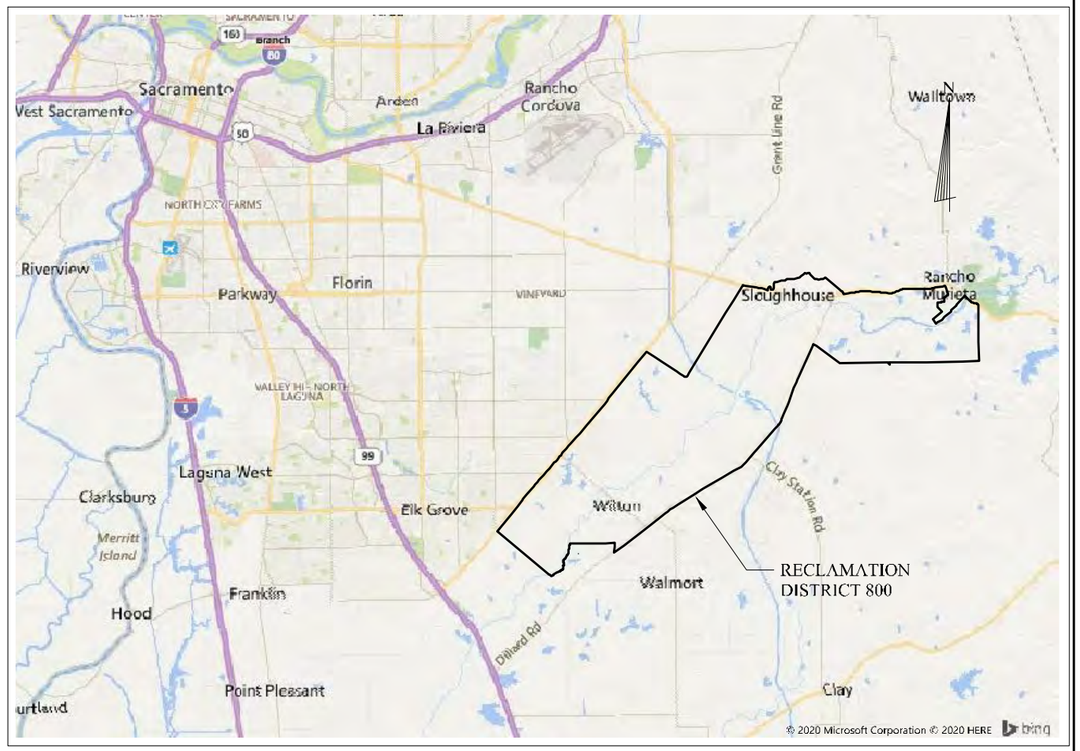
Sacramento County **California**

WAGNER & BONSIGNORE CONSULTING CIVIL ENGINEERS A CORPORATION
2151 RIVER PLAZA DRIVE, SUITE 100 SACRAMENTO, CALIFORNIA



LOCATION MAP

0' 1,500' 3,000' 6,000'



VICINITY MAP

NOT TO SCALE

G:\Drawings\Reclamation District No. 800\WRCS Repair Sites\Production\Freeman Road\Freeman Road Plan Set.dwg

File Date 3/2/2020

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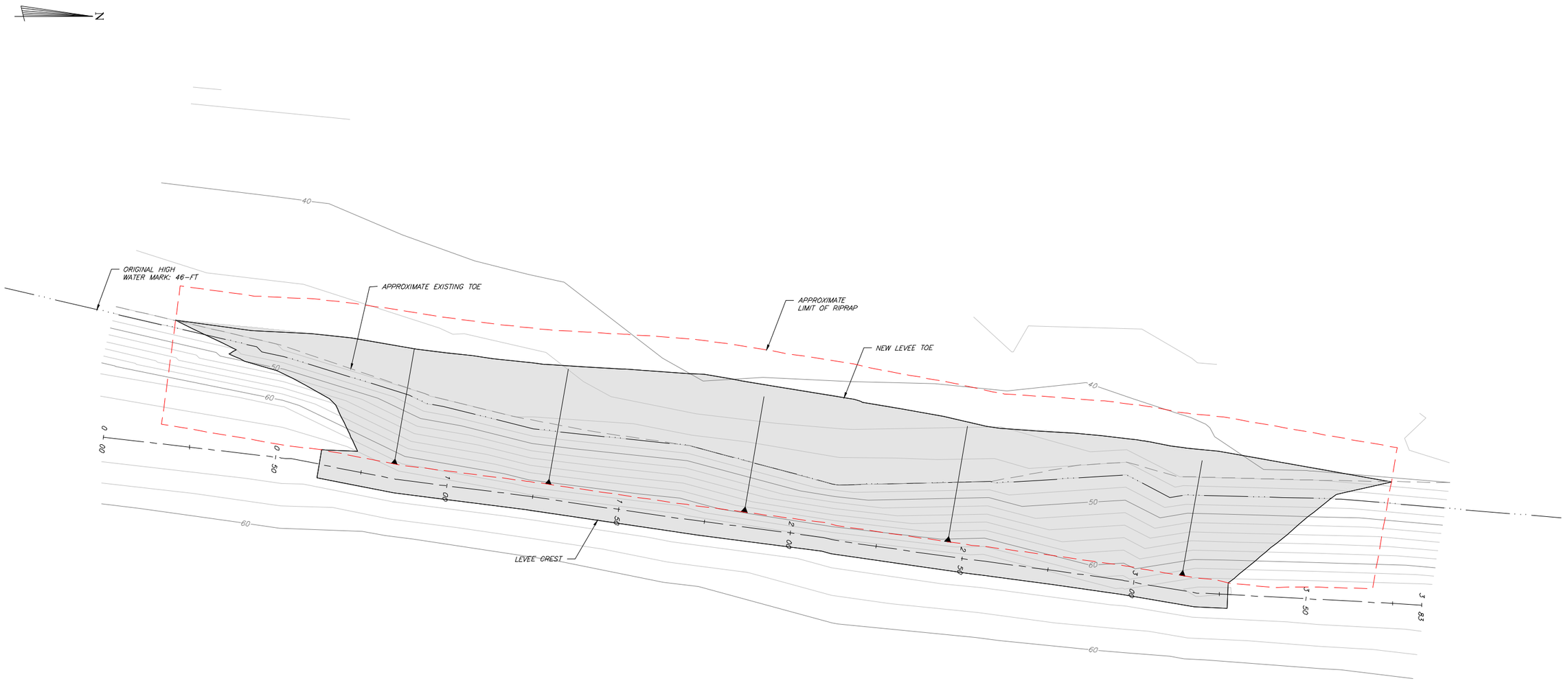
RECLAMATION DISTRICT 800 - COSUMNES

CRITICAL LEVEE REPAIRS FREEMAN ROAD

LOCATION AND VICINITY MAPS

SHEET 1 OF 7 SHEETS



PLAN
0' 15' 30'

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P.W.
3/2/2020

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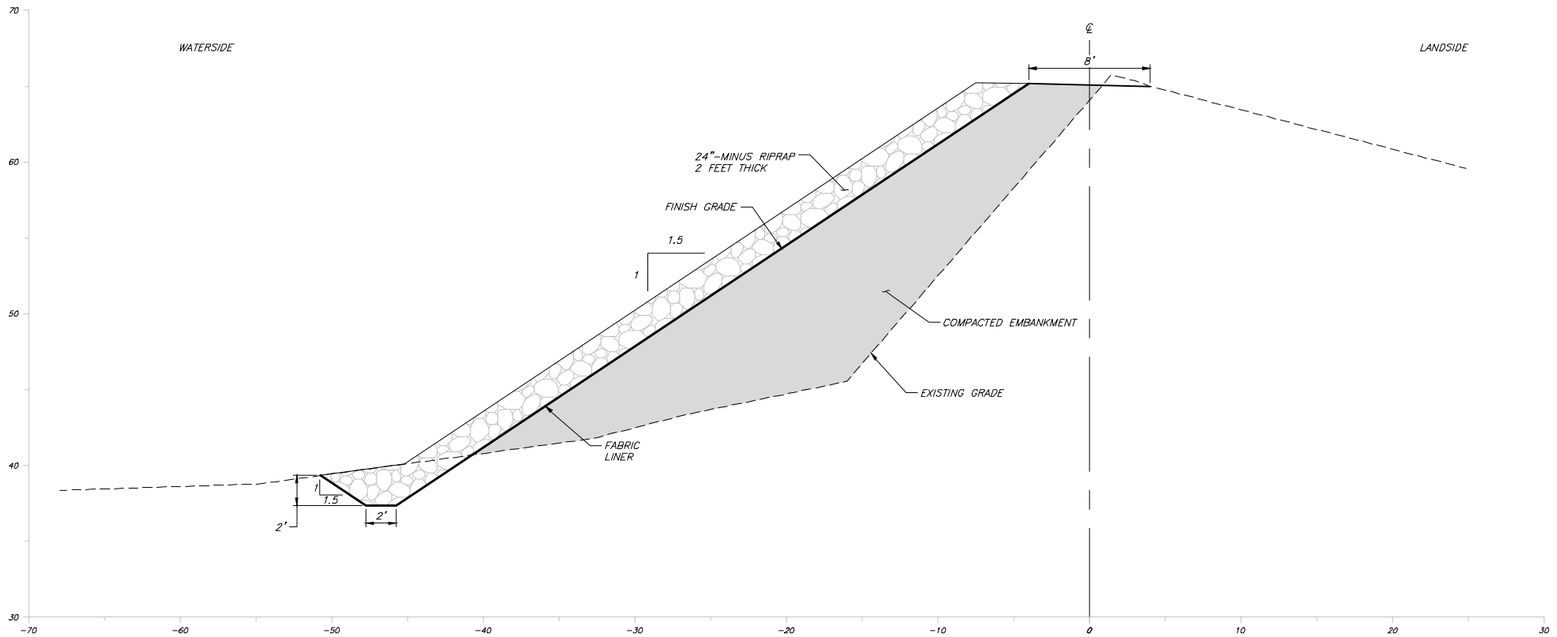
RECLAMATION DISTRICT 800 - COSUMNES

CRITICAL LEVEE REPAIRS FREEMAN ROAD

PLAN

SHEET 2 OF 7 SHEETS



TYPICAL SECTION

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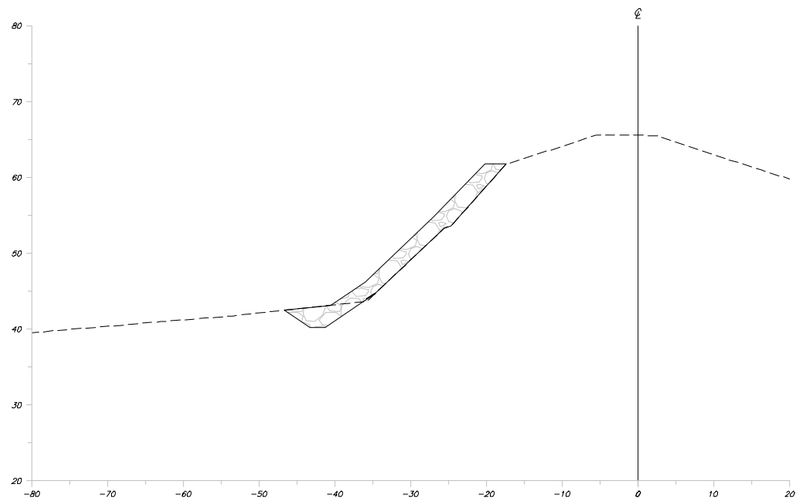

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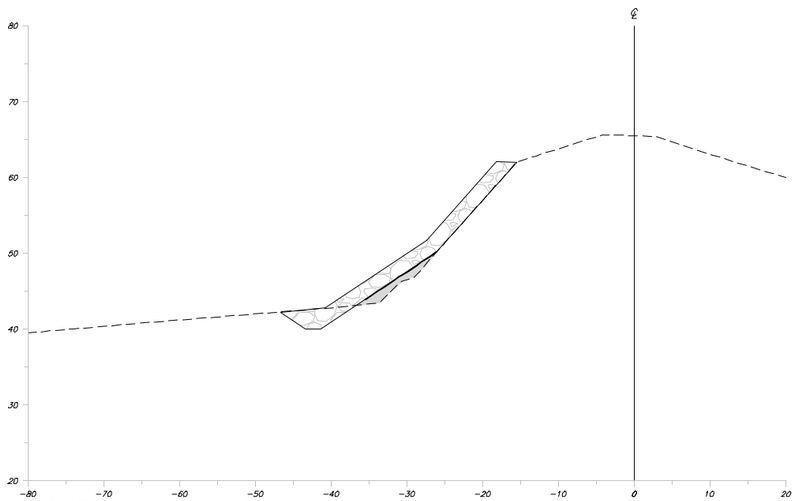

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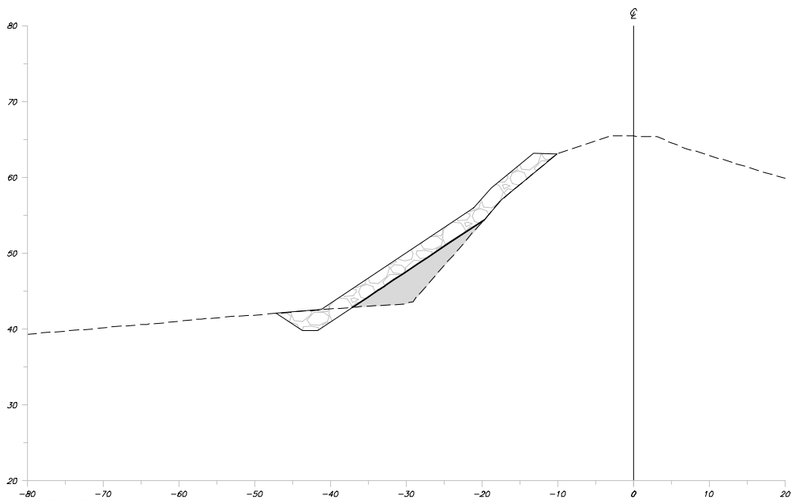

SECTION @ 0+60

0' 5' 10' 20'

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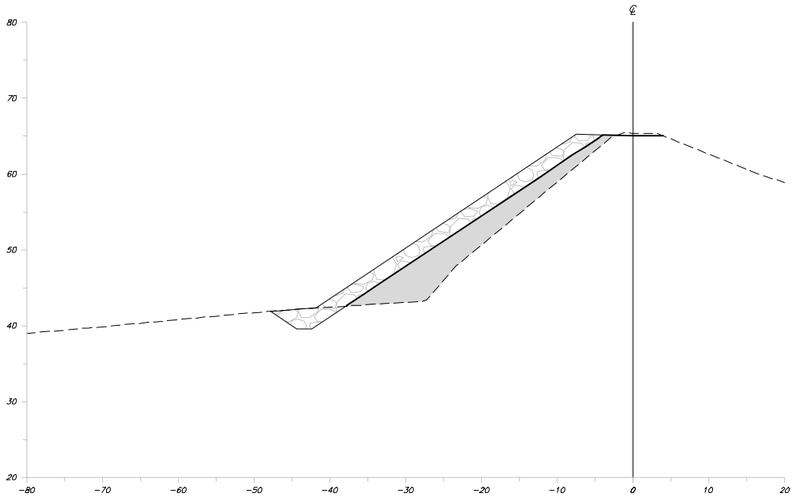
RECLAMATION DISTRICT 800 - COSUMNES

CRITICAL LEVEE REPAIRS
FREEMAN ROAD

SECTIONS

SHEET 3 OF 7 SHEETS

C:\Drawings\Reclamation District No 800\NRCS Repair Sites\Production\Freeman Road\Freeman Road Plan Set.dwg
P.W. Date: 3/2/2020



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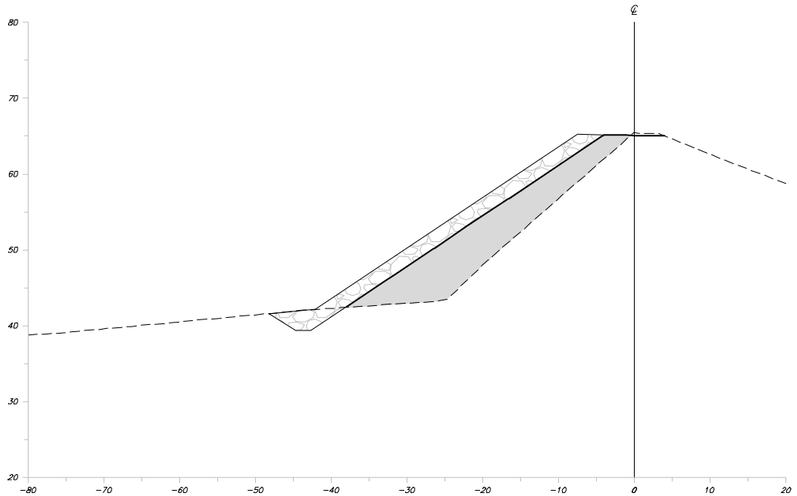

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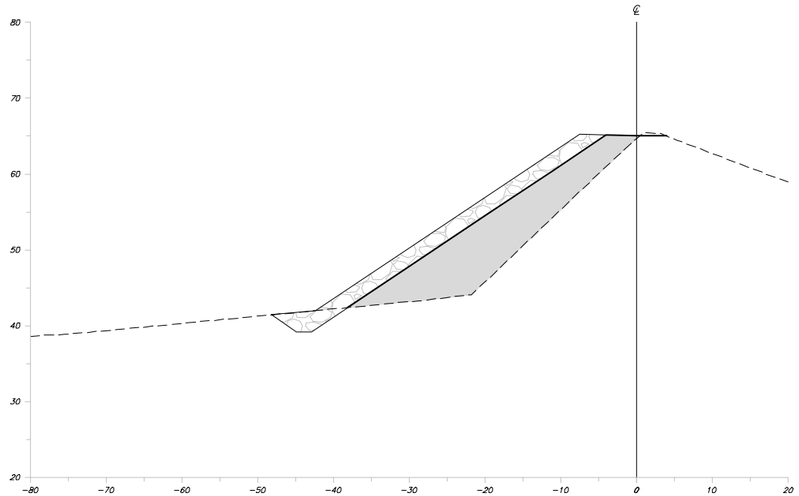

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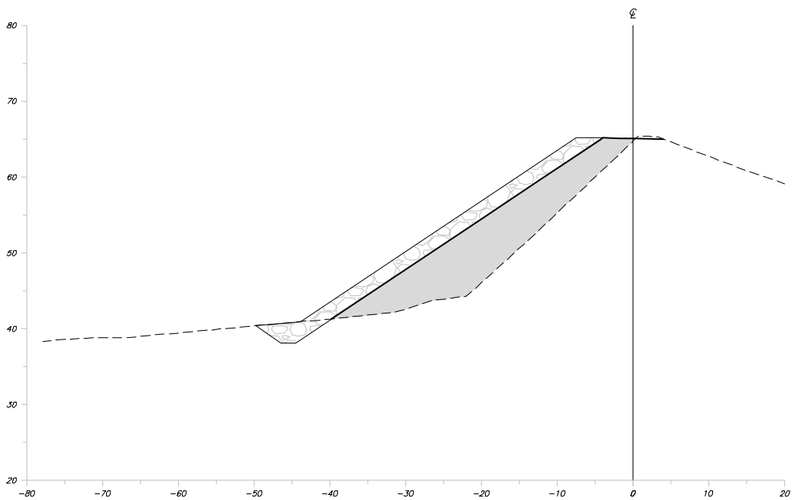

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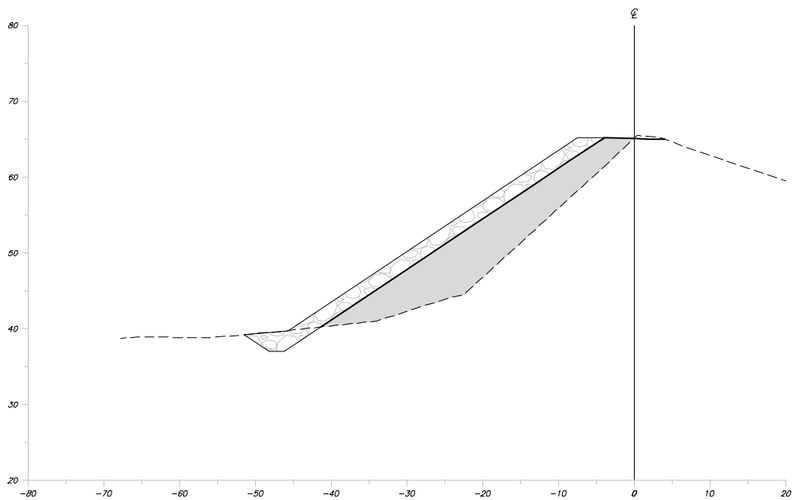

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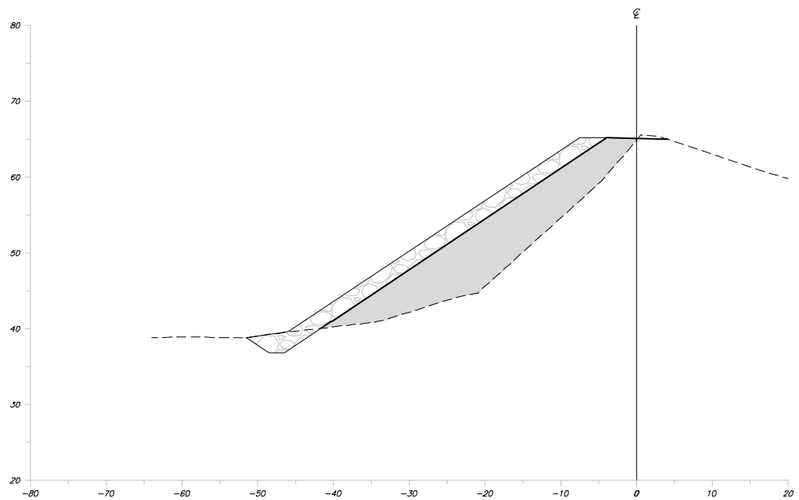

SECTION @ 1+80

0' 5' 10' 20'

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P.W.
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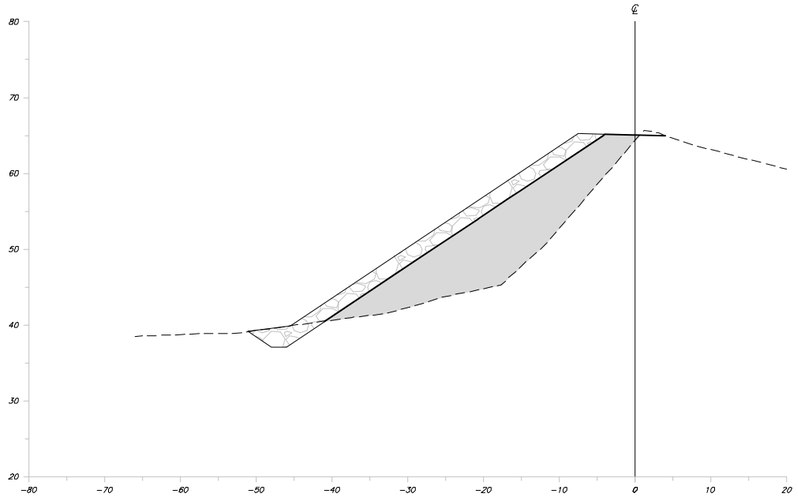
RECLAMATION DISTRICT 800 - COSUMNES

CRITICAL LEVEE REPAIRS
FREEMAN ROAD

SECTIONS

SHEET 4 OF 7 SHEETS



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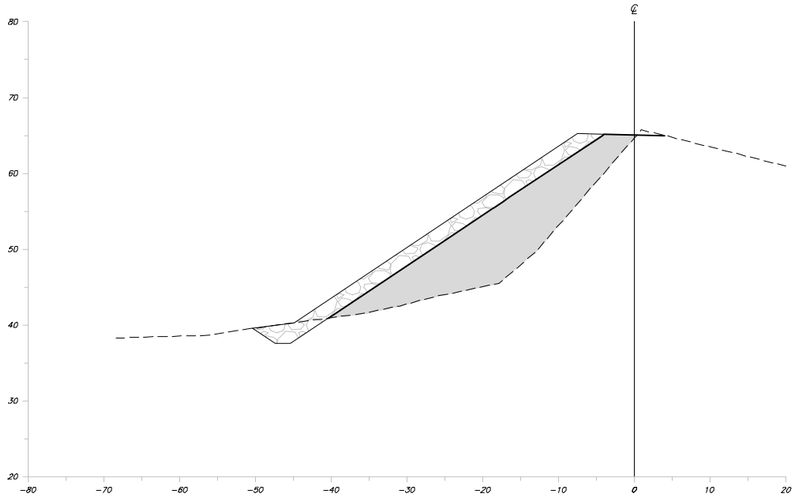

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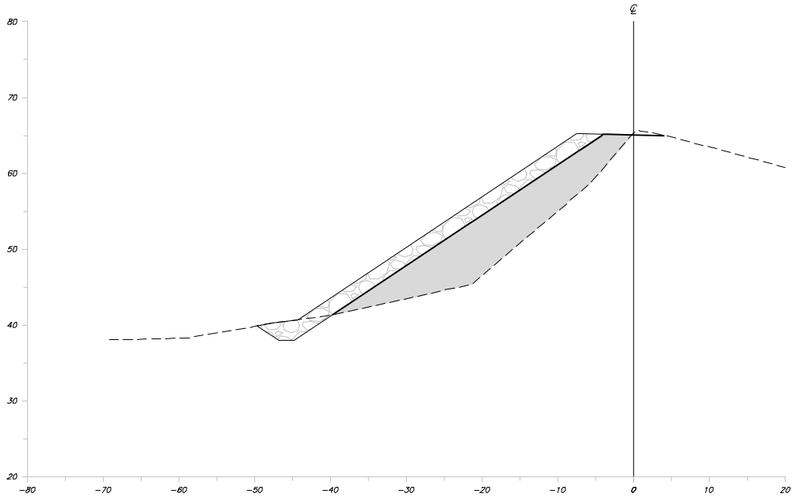

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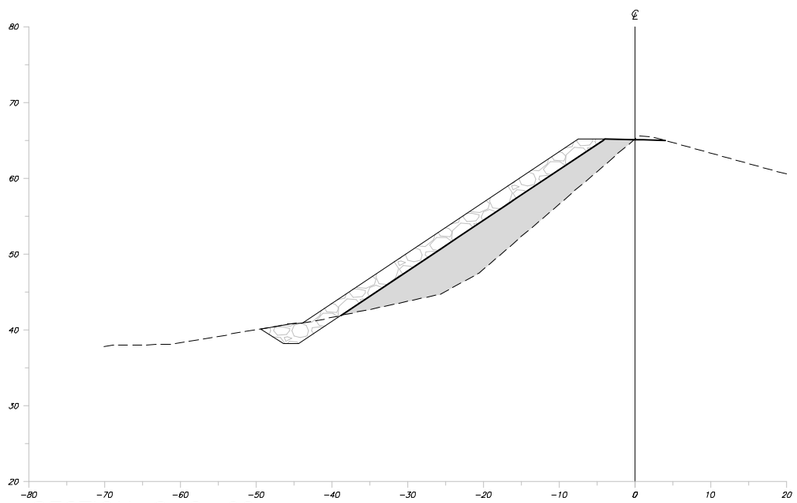

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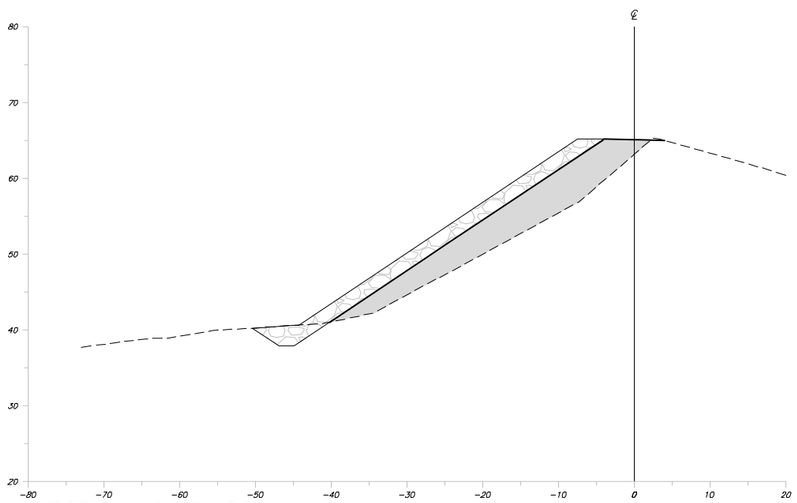

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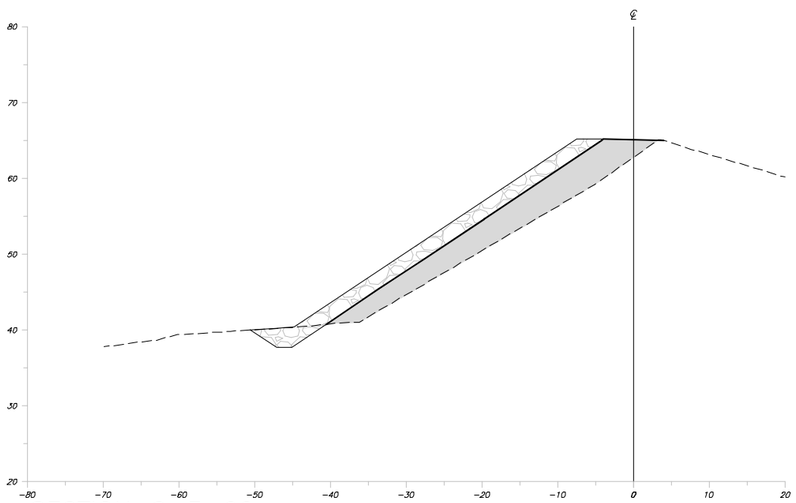

SECTION @ 3+00

0' 5' 10' 20'

G:\Drawings\Reclamation District No 800\NRCS Repair Sites\Production\Freeman Road\Freeman Road Plan Set.dwg

P.W. Date 3/2/2020

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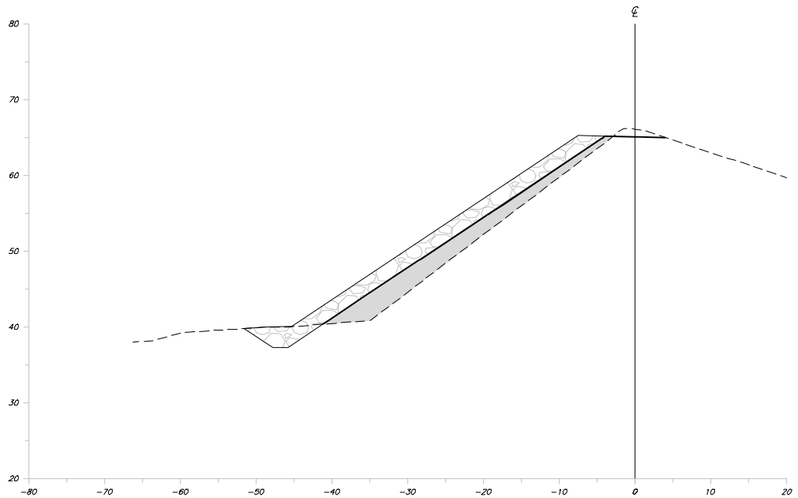
RECLAMATION DISTRICT 800 - COSUMNES

CRITICAL LEVEE REPAIRS FREEMAN ROAD

SECTIONS

SHEET 5 OF 7 SHEETS



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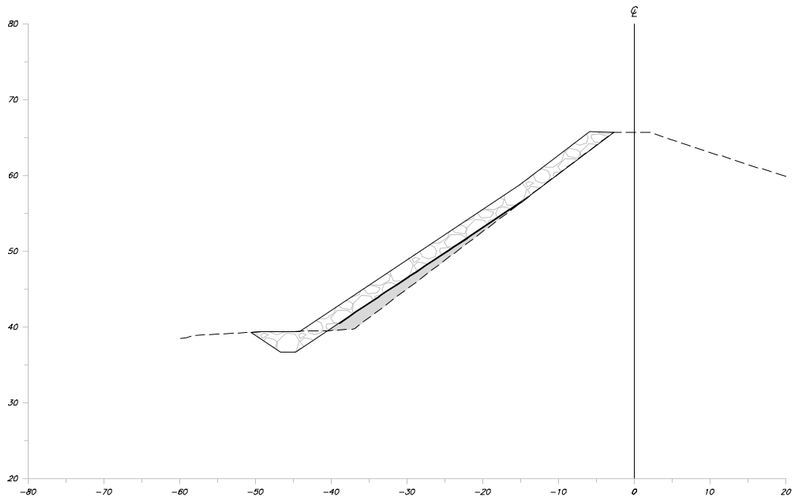
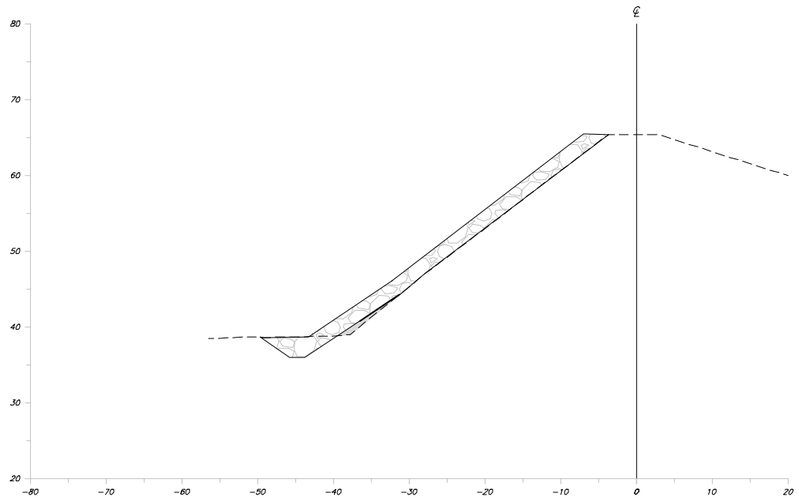


SECTION @ 3+40



SECTION @ 3+60

0' 5' 10' 20'

G:\Drawings\Reclamation District No 800\NRCS Repair Sites\Production\Freeman Road\Freeman Road Plan Set.dwg

P.W. Date 3/2/2020

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
Approved By: –
Date: FEBRUARY 2020

Wagner&Bonsignore
Consulting Civil Engineers, A Corporation
2151 River Plaza Drive
Suite 100
Sacramento, California 95833
Ph: 916-441-6850
Fx: 916-779-3120

REGISTERED PROFESSIONAL ENGINEER PATRICK W. ERVIN No. 66061 09/30/18 CIVIL STATE OF CALIFORNIA

DRAFT

RECLAMATION DISTRICT 800 - COSUMNES

CRITICAL LEVEE REPAIRS FREEMAN ROAD

SECTIONS

SHEET 6 OF 7 SHEETS

N

PROJECT ACCESS/
TEMPORARY IMPACT

FREEMAN ROAD

ORDINARY HIGH
WATER MARK: 54–FT

PLAN
0' 15' 30' 60'

TABLE 1
QUANTITIES

QUANTITY (AREA OR VOLUME)	ABOVE OHWM [1]	BELOW OHWM [1]	TOTAL
WORK AREA (ACRES)	0.21	0.20	0.41
TEMPORARY DISTURBANCE (ACRES)	0.65	0.12	0.77
TOTAL ACRES	0.86	0.32	1.18
FILL – SOIL (CUBIC YARDS)	1432	388	1820
FILL – RSP [2] (CUBIC YARDS)	835	423	1258
TOTAL CUBIC YARDS	2267	811	3078

[1] OHWM = ORDINARY HIGH WATER MARK (ELEVATION = 46+/– FEET)
[2] RSP = ROCK SLOPE PROTECTION

LEGEND
- WORK AREA BELOW ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA BELOW ORDINARY HIGH WATER MARK
- WORK AREA ABOVE ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA ABOVE ORDINARY HIGH WATER MARK

REVISIONS

REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
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REGISTERED PROFESSIONAL ENGINEER
PATRICK W. ERVIN
No. 84061
06/30/18
CIVIL
STATE OF CALIFORNIA

RENEWAL

RECLAMATION DISTRICT 800 - COSUMNES
CRITICAL LEVEE REPAIRS
FREEMAN ROAD
IMPACT

SHEET 7 OF 7 SHEETS

C:\Drawings\Reclamation District No. 800\WRCS Repair Sites\Production\Freeman Road\Freeman Road Plan Set.dwg
Plot Date: 3/2/2020

Appendix B

CNDDB Summary Report and Exhibits

& USFWS IPaC Trust Resource Report

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Elk Grove (3812143) OR Sloughhouse (3812142))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G2G3	S1S2	SSC
Andrena blennospermatis Blennosperma vernal pool andrenid bee	IIHYM35030	None	None	G2	S2	
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	
Branchinecta mesovallensis midvalley fairy shrimp	ICBRA03150	None	None	G2	S2S3	
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
Desmocerus californicus dimorphus valley elderberry longhorn beetle	IICOL48011	Threatened	None	G3T2	S2	
Downingia pusilla dwarf downingia	PDCAM060C0	None	None	GU	S2	2B.2
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Gratiola heterosepala Boggs Lake hedge-hyssop	PDSCR0R060	None	Endangered	G2	S2	1B.2
Great Valley Valley Oak Riparian Forest Great Valley Valley Oak Riparian Forest	CTT61430CA	None	None	G1	S1.1	
Legenere limosa legenere	PDCAM0C010	None	None	G2	S2	1B.1
Lepidurus packardi vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G4	S3S4	
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Northern Hardpan Vernal Pool Northern Hardpan Vernal Pool	CTT44110CA	None	None	G3	S3.1	
Oncorhynchus mykiss irideus pop. 11 steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	G5T2Q	S2	
Orcuttia tenuis slender Orcutt grass	PMPOA4G050	Threatened	Endangered	G2	S2	1B.1
Orcuttia viscida Sacramento Orcutt grass	PMPOA4G070	Endangered	Endangered	G1	S1	1B.1

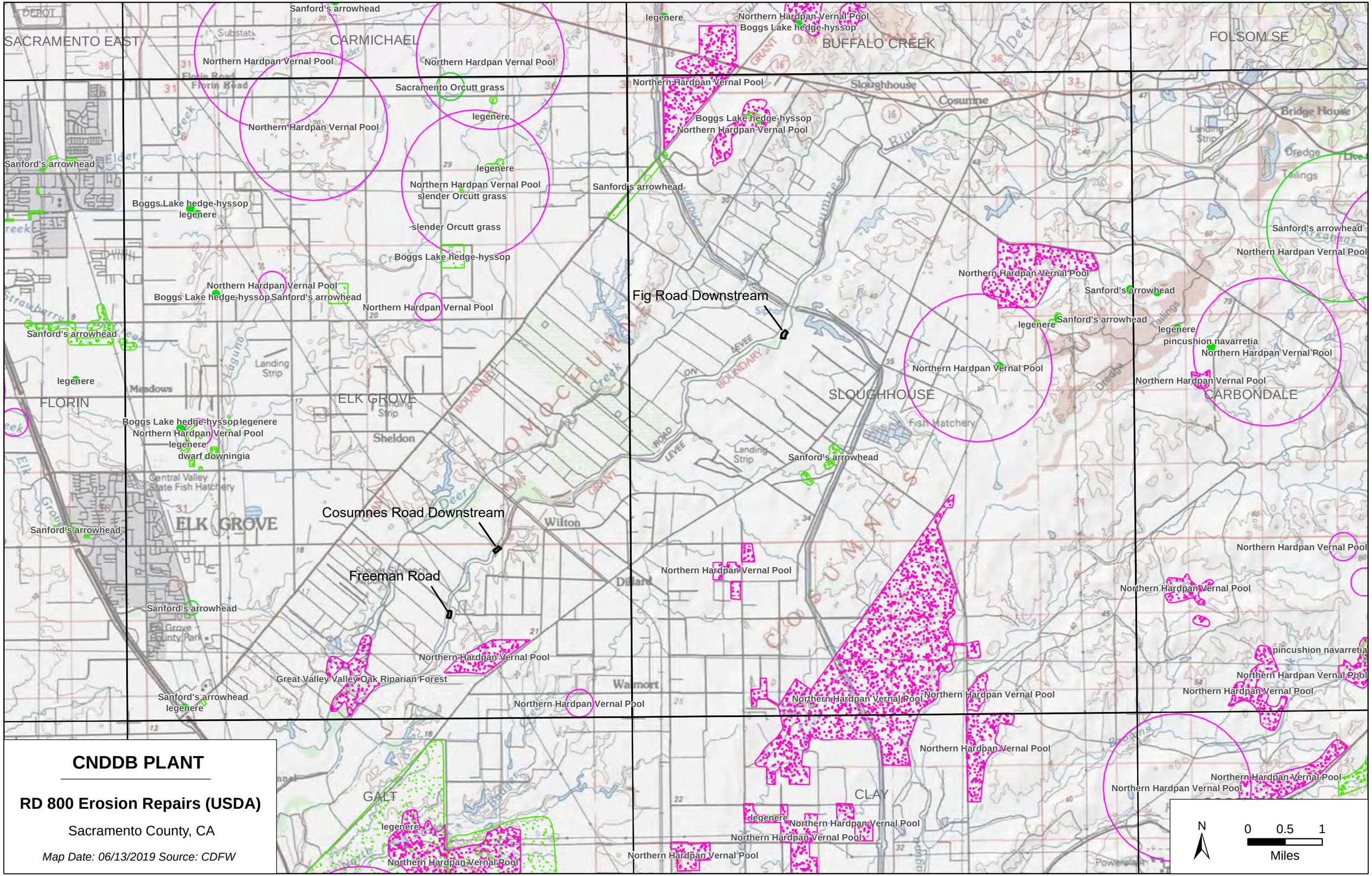
Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Sagittaria sanfordii Sanford's arrowhead	PMALI040Q0	None	None	G3	S3	1B.2
Spea hammondii western spadefoot	AAABF02020	None	None	G3	S3	SSC
Thamnophis gigas giant gartersnake	ARADB36150	Threatened	Threatened	G2	S2	

Record Count: 24



CNDDB PLANT

RD 800 Erosion Repairs (USDA)

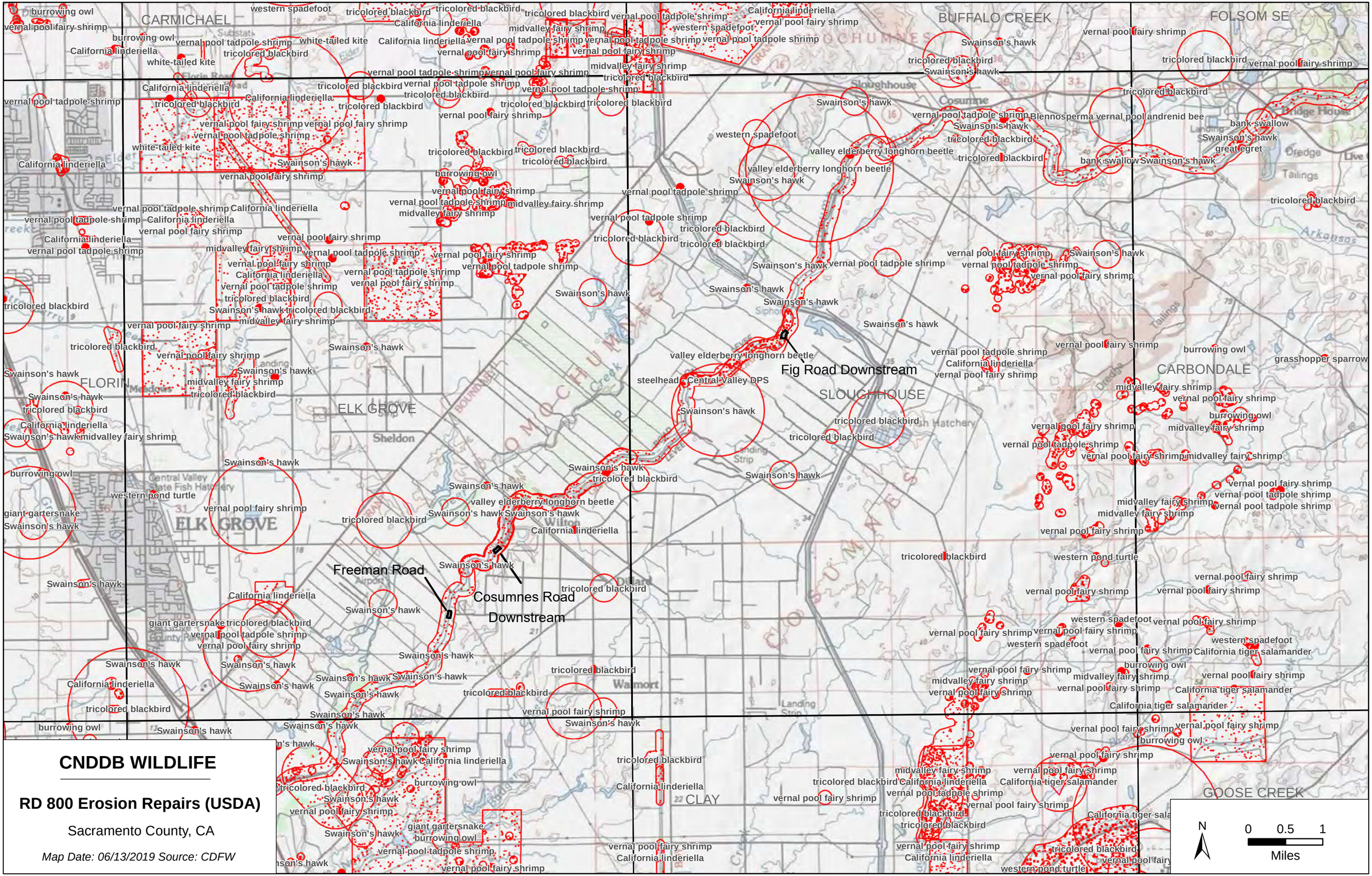
Sacramento County, CA

Map Date: 06/13/2019 Source: CDFW

N

0 0.5 1

Miles



CNDDB WILDLIFE

RD 800 Erosion Repairs (USDA)

Sacramento County, CA

Map Date: 06/13/2019 Source: CDFW

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Sacramento County, California

Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Reptiles

NAME	STATUS

Giant Garter Snake Thamnophis gigas — Threatened
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/4482

Amphibians

NAME	STATUS
California Red-legged Frog Rana draytonii	Threatened
There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2891	
California Tiger Salamander Ambystoma californiense	Threatened
There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2076	

Fishes

NAME	STATUS
Delta Smelt Hypomesus transpacificus	Threatened
There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/321	

Insects

NAME	STATUS
Valley Elderberry Longhorn Beetle Desmocerus californicus dimorphus	Threatened
There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/7850	

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp Branchinecta conservatio	Endangered
There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/8246	
Vernal Pool Fairy Shrimp Branchinecta lynchi	Threatened
There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/498	

Vernal Pool Tadpole Shrimp Lepidurus packardi There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
Fleshy Owl's-clover Castilleja campestris ssp. succulenta There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/8095	Threatened
Sacramento Orcutt Grass Orcuttia viscida There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/5507	Endangered
Slender Orcutt Grass Orcuttia tenuis There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/1063	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31

Burrowing Owl Athene cunicularia — Breeds Mar 15 to Aug 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9737

California Thrasher Toxostoma redivivum — Breeds Jan 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Clark's Grebe Aechmophorus clarkii — Breeds Jan 1 to Dec 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Common Yellowthroat Geothlypis trichas sinuosa — Breeds May 20 to Jul 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/2084

Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Lawrence's Goldfinch Carduelis lawrencei — Breeds Mar 20 to Sep 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9464

Lewis's Woodpecker Melanerpes lewis — Breeds Apr 20 to Sep 30
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9408

Long-billed Curlew Numenius americanus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/5511

Nuttall's Woodpecker Picoides nuttallii — Breeds Apr 1 to Jul 20
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Oak Titmouse Baeolophus inornatus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9656	Breeds Mar 15 to Jul 15
Rufous Hummingbird selasphorus rufus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8002	Breeds elsewhere
Song Sparrow Melospiza melodia This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Feb 20 to Sep 5
Spotted Towhee Pipilo maculatus clementae This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/4243	Breeds Apr 15 to Jul 20
Tricolored Blackbird Agelaius tricolor This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3910	Breeds Mar 15 to Aug 10
Whimbrel Numenius phaeopus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9483	Breeds elsewhere
Wrentit Chamaea fasciata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 10
Yellow-billed Magpie Pica nuttalli This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9726	Breeds Apr 1 to Jul 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

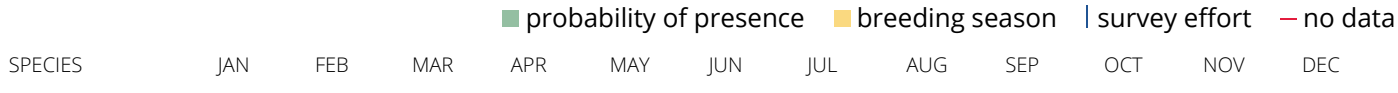
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

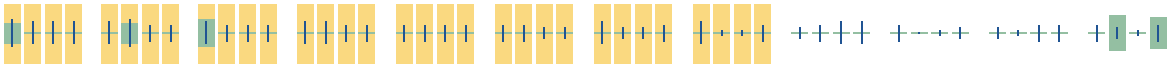
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

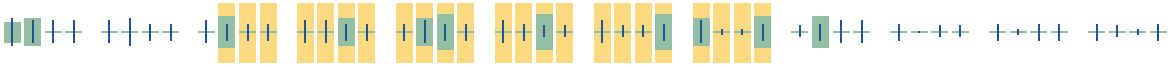
Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



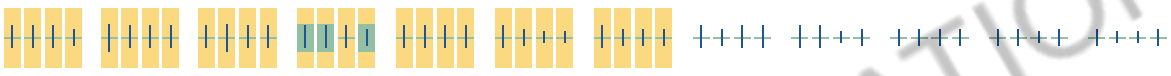
Bald Eagle
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



Burrowing Owl
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

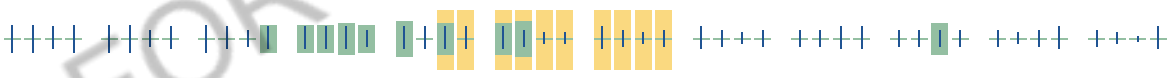


California Thrasher
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

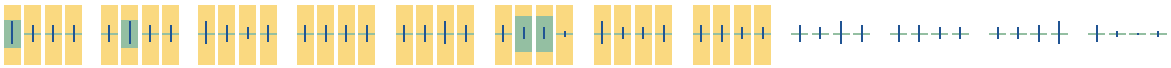


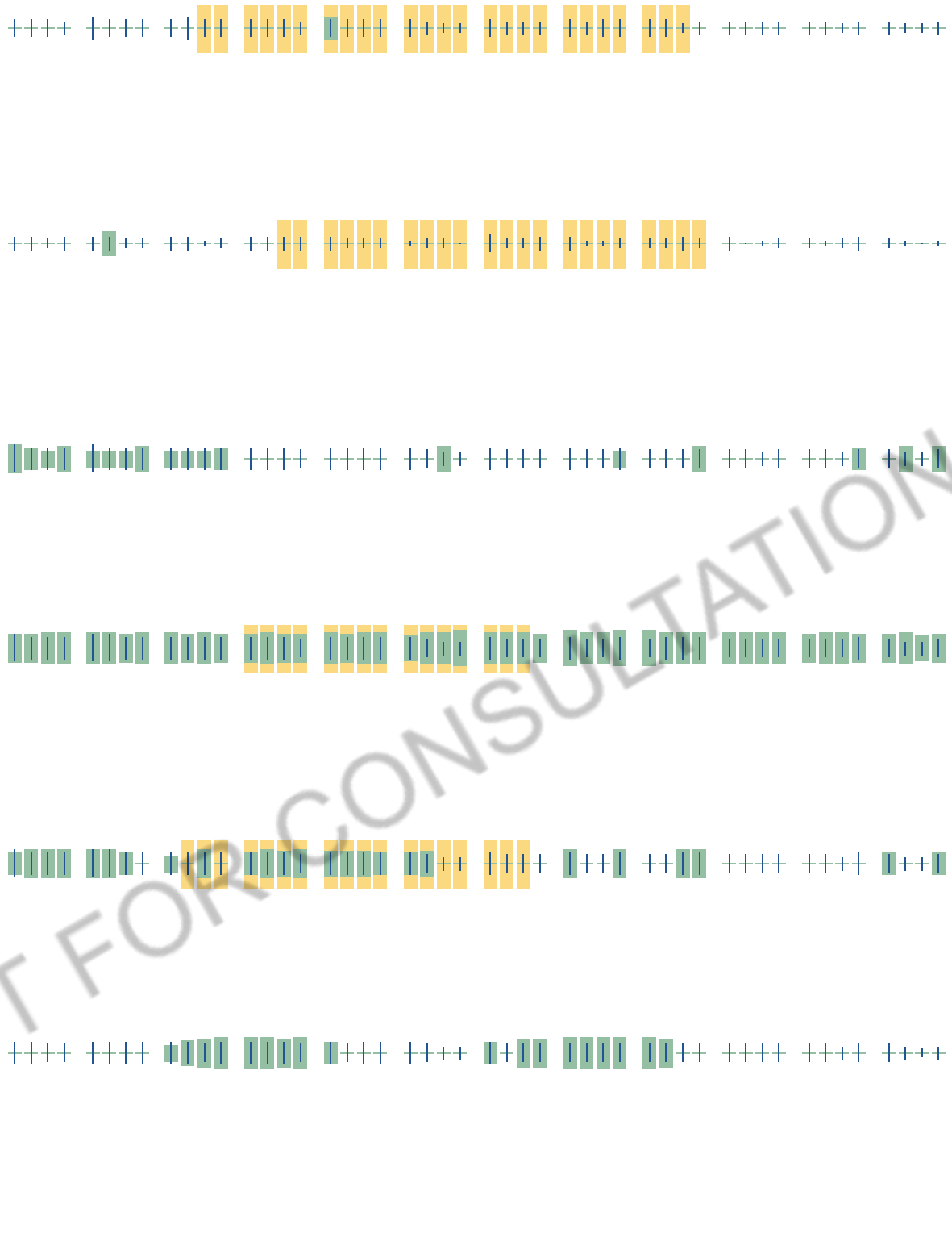
Clark's Grebe
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Common Yellowthroat
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



Golden Eagle
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)





Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project

intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

- PEM1Fh
- PEM1C
- PEM1A
- PEM1Ch
- PEM1Ah
- PEM1Fx
- PEM1B
- PEM1Cx
- PEM1F

FRESHWATER FORESTED/SHRUB WETLAND

- PFOA
- PFOC
- PSSA
- PSSCx
- PFOCx

FRESHWATER POND

- PUBHx
- PUBHh
- PUBFx
- PUBFh
- PUSCx
- PABFx
- PABFh
- PUSC

LAKE

- L1UBHh

RIVERINE

- R2UBH
- R2UBHx
- R2USA
- R4SBC
- R5UBFx
- R5UBF

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

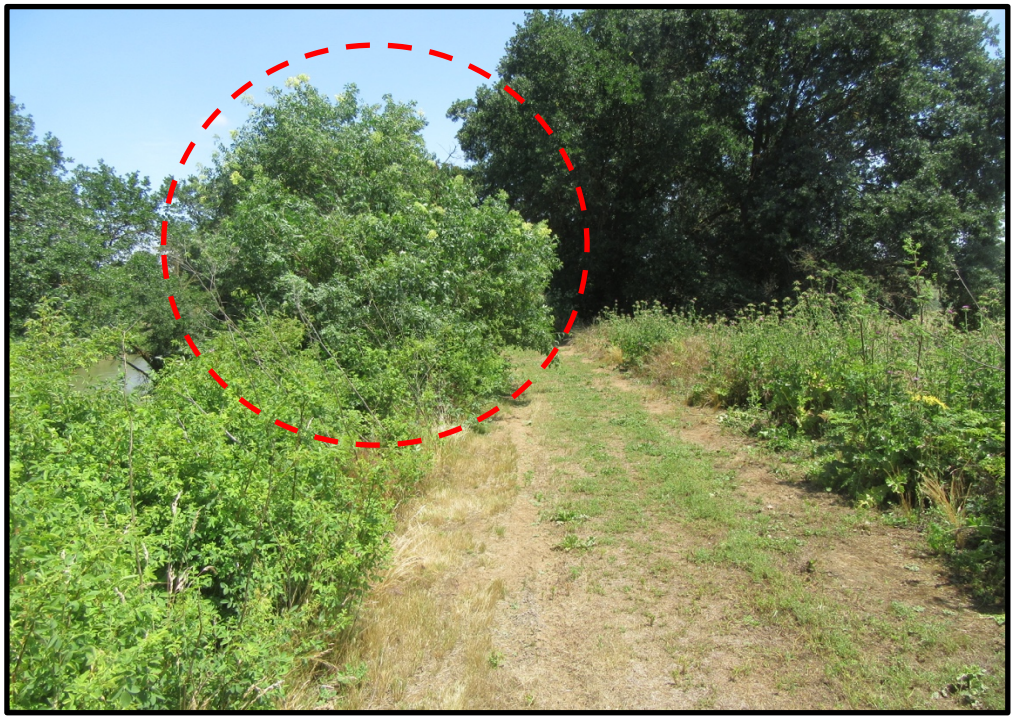
Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Appendix C

Photographs

Eroding bank at the Fig Road Downstream site, looking southwest from the north end of the work area; 05/24/19.



Blue elderberry shrub (circled) approximately 40 feet north of the Fig Road Downstream site, looking northeast from the north part of the site; 05/24/19.

Eroding bank at the Cosumnes Road Downstream site, looking southwest from the north end of the work area; 05/27/19.

View of the eroding bank at the Cosumnes Road Downstream site, looking southeast from across the Cosumnes River; 08/05/19.

Eroding bank at the Freeman Road site, looking south from the north end of the work area; 05/27/19.

View of the eroding bank at the Freeman Road site, looking north from the central part of the work area; 08/05/19.

Tree hanging on to the bank by its roots in the south part of the Freeman Road site, looking south; 05/27/19.

Appendix D

Designated Critical Habitat

California tiger Salamander
Sacramento Orcutt grass
Slender Orcutt grass
Vernal pool fairy shrimp/Vernal pool tadpole shrimp

SACRAMENTO EAST
CARMICHAEL
BUFFALO CREEK
FOLS
FLORIN
ELK GROVE
SLOUGHHOUSE
CARBONDALE
IRISH HILL
GALT
CLAY
GOOSE CREEK
IONE

Fig Road
Downstream

Cosumnes Road
Downstream

Freeman Road

CRITICAL HABITAT

RD 800 Erosion Repairs (USDA)

Sacramento County, CA

Map Date: 06/13/2019 Source: USFWS

N
0 0.75 1.5
Miles

Biological Assessment

Cosumnes District (RD 800)
2021 Erosion Repair Project

Sacramento County, California

Prepared for:

Reclamation District 800
c/o Wagner & Bonsignore
Attn: Patrick Ervin, P.E.
2151 River Plaza Drive, Ste. 100
Sacramento, CA 95833

Prepared by:

Moore Biological Consultants
10330 Twin Cities, Suite 30
Galt, CA 95632
(209) 745-1159

June 2020

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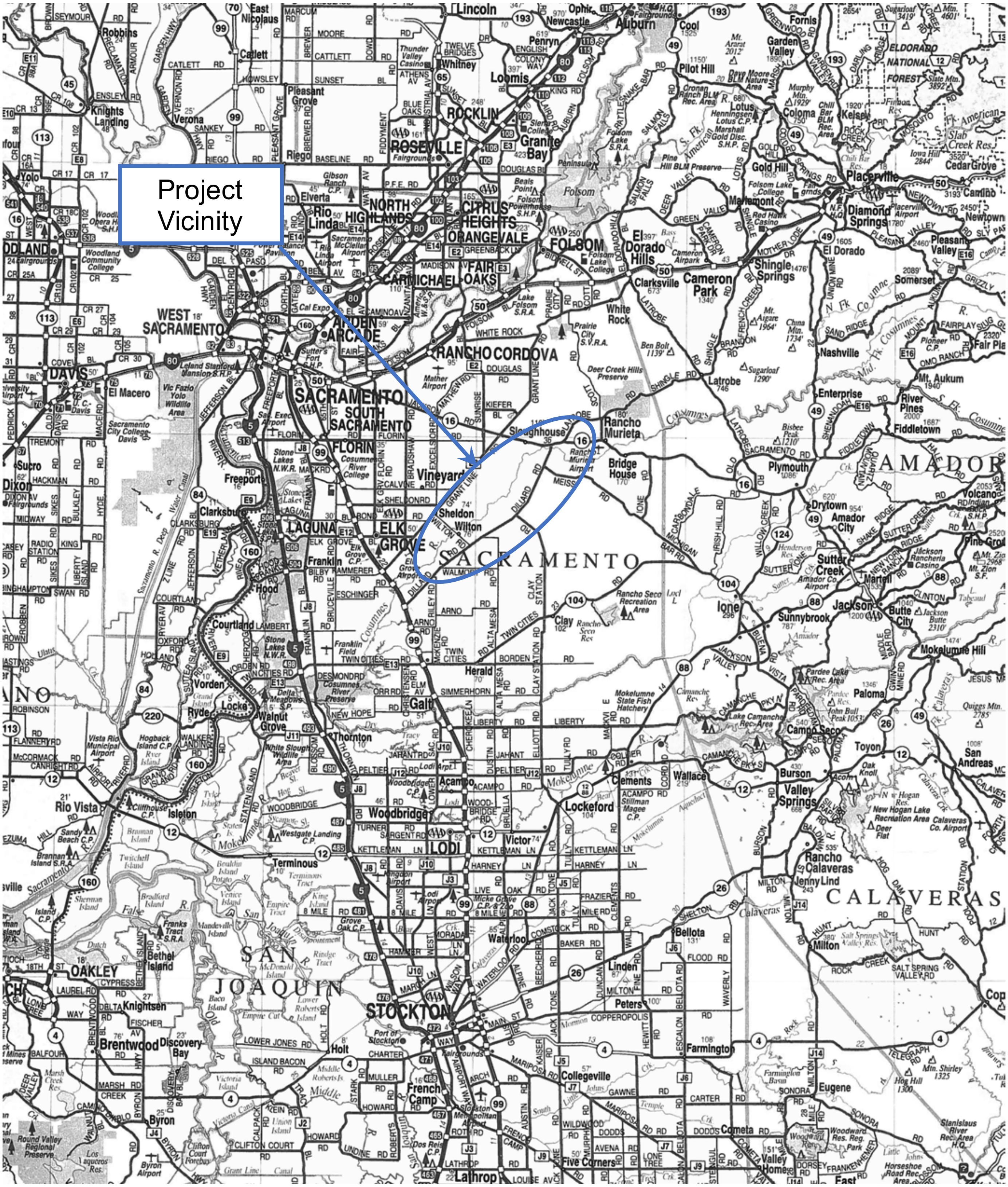
I. INTRODUCTION

The project proponent, Reclamation District No. 800 Cosumnes District (RD 800), proposes to repair 6 critical erosion repairs on the waterside of the Cosumnes River levee that suffered severe erosion during the 2017 storms. The erosion at these sites is so severe, levee integrity has been compromised and further erosion could lead to a breach during a major storm event. Five of these sites are named “Meiss Road Upstream”, “Meiss Road Downstream”, “Fig Road Upstream”, “Keating Road”, “and “Cosumnes Road Upstream” after the roads that provide access to each site. The final site, “Mile Marker 19”, is named after its location along the Cosumnes River.

The sections of levee proposed for repair are in a predominantly agricultural area along the Cosumnes River, in Sacramento County, California (Figure 1). Meiss Road Upstream is in Section 7 in Township 7 North, Range 8 East of the USGS 7.5-minute Sloughhouse topographic quadrangle and is at an elevation of approximately 120 feet above mean sea level (Figure 2). Meiss Road Downstream, Fig Road Upstream, and Keating Road are within unnumbered Sections in Township 7 North, Range 7 East of the 7.5-minute Elk Grove topographic quadrangle and are at elevations of approximately 100 feet, 80 feet, and 90 feet above mean sea level, respectively. Mile Marker 19 is in an unnumbered Section in Township 7 North, Range 7 East of the Elk Grove topographic quadrangle and is at an elevation of approximately 70 feet above mean sea level. Finally, Cosumnes Road Upstream is in unnumbered Sections in Townships 6 North and 7 North, Range 6 East of the Elk Grove topographic quadrangle and is at an elevation of approximately 60 feet above mean sea level. Mile Marker 19 is along the northwest bank of the Cosumnes River and the remaining sites are along the southeast bank of the river (Figure 3).

The proposed scope of work is the repair and stabilization of the eroded levees and riverbanks. The work will involve both reconstructing the levees and repairing the underlying riverbanks. Clean fill dirt will be imported to replace the



Source: California State Automobile Association

Moore Biological Consultants

N
W E
S

0 9 18 Miles

FIGURE 1

PROJECT VICINITY

Site 2 - Meiss Rd DS

Site 1 - Meiss Rd US

Site 3 - Fig Rd US

Site 5 - Keating Rd

Site 6 - Mile Marker 19

Site 7 - Cosumnes Rd US

Source: USGS 7.5' Quadrangles
ELK GROVE & SLOUGHHOUSE, CA

Figure 2

Moore Biological Consultants

0 4,000 8,000
Feet

N W E S

Map Date: 04/21/2020

USGS

RD 800 - 2021 Erosion Repairs

Sacramento County, CA

C:\Users\owner\Documents\FEC_INC\Projects\Moore Biological\RD_800\MXD\RD_800_2021_Erosion_Repairs\rd_800_erosion_repairs_ssjs_figure_2.mxd

Figure 3

Moore Biological Consultants

0 4,000 8,000
Feet

N
W E
S

Map Date: 04/21/20
Aerial Source: Google Earth (08/16/2018)

AERIAL

RD 800 - 2021 Erosion Repairs

Sacramento County, CA

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soil washed away during the floods and rock slope protection (RSP) will be added to the restored slopes to reduce potential future erosion. At five of the sites, grading and installation of RSP will occur both above and below the ordinary high water mark (OHWM) of the Cosumnes River. Work at the Fig Road Upstream site will be limited to landside levee repair.

This assessment describes the existing biological environment and how the project would affect that environment. This document provides the pertinent biological information regarding Waters of the U.S. and wetlands, Federal and State special-status species, and other natural resources that may be present in the project sites. This assessment also evaluates potential impacts of the proposed project to biological resources in the project sites resulting from construction of the project.

The upland areas in the project sites provide habitat for a number of common wildlife species and a few special-status species. Swainson's hawk (*Buteo swainsoni*), white-tailed kite (*Elanus leucurus*), tricolored blackbird (*Agelaius tricolor*), and Pacific pond turtle (*Emys marmorata*) are special-status wildlife species with the potential to occur in the project site on more than an occasional or transitory basis. Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) could potentially occupy blue elderberry shrubs in the Meiss Road Downstream and Mile Marker 19 sites.

Central Valley steelhead (*Oncorhynchus mykiss irrideus*) are known to occur in the Cosumnes River but are not expected to occur in the site on more than a migratory basis. The potential for occurrence and potential project impacts to special-status fish are addressed in detail in a separate Biological Assessment (Fishbio, 2020); their findings are included in this assessment.

With the implementation of proposed Avoidance and Minimization Measures including pre-construction surveys and construction scheduling, the project would have less than significant impacts to special-status plant and wildlife species.

There would be no long-term adverse impacts to biological resources as a result of the proposed project. The project would have minimal impacts on the aquatic habitats and potentially occurring special-status fish species in the Cosumnes River and downstream waterways.

II. PROJECT DESCRIPTION

The project proponent, Reclamation District No. 800 Cosumnes District (RD 800), proposes to repair 6 critical erosion repairs on the waterside of the Cosumnes River levee that suffered severe erosion during the 2017 storms. The erosion at these sites is so severe, levee integrity has been compromised and further erosion could lead to a breach during a major storm event. Five of these sites are named “Meiss Road Upstream”, “Meiss Road Downstream”, “Fig Road Upstream”, “Keating Road”, “and “Cosumnes Road Upstream” after the roads that provide access to each site. The final site, “Mile Marker 19”, is named after its location along the Cosumnes River.

The proposed scope of work is the repair and stabilization of the eroded levees and riverbanks. At five of the six sites, the work will involve both reconstructing the levees and repairing the riverbanks at a horizontal/vertical ratio of 2:1 at all sites except for Cosumnes Road Upstream which will have a 1.5:1 slope, to conform to the theoretical levee slopes that underly the banks. Clean fill dirt will be imported to replace the soil washed away during the floods and rock slope protection (RSP) would be added to the restored slopes to reduce potential future erosion. Grading and installation of RSP would occur both above and below the ordinary high water mark (OHWM) of the Cosumnes River. At Fig Road Upstream, the work is limited to strengthening to landside of the levee.

At the Meiss Road Upstream site, approximately 350 feet of levee crest will be excavated to a depth of approximately 5 feet. The excavated material will be placed and compacted on the waterside slope to restore the slope to its previous condition. The crest will be replaced using material from the adjacent borrow

site. Additionally, approximately 370 feet of waterside levee slope will be grubbed, stripped and prepared for material placement. Rock slope protection will be placed on the entirety of the waterside slope to protect the repair from future erosion. A two-foot deep by two-foot wide toe trench will be utilized to stabilize the rock.

At the Meiss Road Downstream site, approximately 230 feet of waterside levee slope will be grubbed, stripped and prepared for material placement. Fill material will be imported from a local borrow site located approximately one-half mile from the project site, placed and compacted on the waterside levee slope to restore the slope to its previous condition. Rock slope protection will be placed on the entirety of the waterside slope to protect the repair from future erosion. A two-foot deep by two-foot wide toe trench will be utilized to stabilize the rock.

At the Fig Road Upstream site, approximately 520 feet of landside levee slope will be grubbed, stripped and prepared for material placement. Fill material from a local borrow site located approximately 1,000 feet from the project site. Fill material will be placed and compacted at a 4:1 slope to restore the slope to its previous condition.

At the Keating Road site, approximately 240 feet of waterside and landside levee slope will be grubbed, stripped and prepared for material placement. Imported fill material will be placed and compacted to restore the waterside slope, landside slope and levee crest to their previous condition. The waterside of the levee will be placed at a horizontal/vertical ratio of 2:1 while the landside will be placed at 3:1. Rock slope protection will be placed on the entirety of the waterside and landside slopes to protect the repair from future erosion. A two-foot deep by two-foot wide toe trench will be utilized on the waterside slope to stabilize the rock.

At the Mile Marker 19 site, approximately 470 feet of waterside levee slope will be grubbed, stripped and prepared for material placement. Imported fill material will be placed and compacted to restore the slope to its previous condition. Rock

slope protection will be placed on the entirety of the waterside slope to protect the repair from future erosion. A two-foot deep by two-foot wide toe trench will be utilized to stabilize the rock.

At the Cosumnes Road Upstream site, approximately 370 feet of waterside levee slope will be grubbed, stripped and prepared for material placement. Imported fill material will be placed and compacted to restore the levee slope to its previous condition. Rock slope protection will be placed on the entirety of the waterside slope to protect the repair from future erosion. A two-foot deep by two-foot wide toe trench will be utilized to stabilize the rock.

The project would involve grading disturbance of the riverbanks and channel. The project was designed to have a minimal footprint, thereby minimizing potential impacts to potential or actual habitats of special-status species. The project would involve a work area of 3.47 acres where project improvements would be constructed, and an additional 6.01 acres of temporary construction disturbance, primarily on the upper levee slope (Table 1). Only 2.24 acres of the overall 9.48 acres of construction disturbance is below the OHWM; the remaining 7.24 acres is above the OHWM.

A total of 6,766 cubic yards of clean fill dirt will be placed on the riverbanks to achieve the design slopes and 7,255 cubic yards of RSP will be installed on the graded slopes (Table 2). The clean fill dirt required at the Meiss Road Upstream site will be obtained from a pasture near the site; the clean fill dirt for the other sites will be from an off-site source.

The project will result in the placement of fill in 1.11 acres of Waters of the U.S. (Table 1). There will also be temporary construction disturbance to approximately 1.13 acres of Waters of the U.S. adjacent to the project footprint related to construction equipment and personnel accessing the work areas.

TABLE 1

TEMPORARY AND PERMANENT IMPACT AREAS

Area (acres)	Repair Site	Above OHWM[1]	Below OHWM[1]	Total
Work Area	1 - Meiss Road Upstream	0.47	0.34	0.81
	2 - Meiss Road Downstream	0.17	0.23	0.40
	3 - Fig Road Upstream	0.29	0.00	0.29
	5 - Keating Road	0.23	0.06	0.29
	6 - Mile Marker 19	0.11	0.28	0.39
	7 – Cosumnes Road Upstream	1.09	0.20	1.29
Subtotal	*All*	*2.36*	*1.11*	*3.47*
Temporary Disturbance	1 - Meiss Road Upstream	1.92	0.22	2.14
	2 - Meiss Road Downstream	0.48	0.25	0.73
	3 - Fig Road Upstream	0.77	0.00	0.77
	5 - Keating Road	0.61	0.19	0.80
	6 - Mile Marker 19	0.94	0.23	1.17
	7 – Cosumnes Road Upstream	0.16	0.24	0.40
Subtotal	*All*	*4.88*	*1.13*	*6.01*
TOTAL		**7.24**	**2.24**	**9.48**

[1] OHWM = ordinary high water mark (Site 1 = 110 feet; Site 2 = 90 feet; Site 3 = 78 feet; Site 5 = 69 feet; Site 6 = 68 feet; Site 7 = 54 feet).

The project would require the removal of several valley oaks (*Quercus lobata*), black walnuts (*Juglans californica*), Fremont's cottonwood (*Populus fremontii*), and Oregon ash (*Fraxinus latifolia*), and a few trees of other species. A few blue elderberry shrubs (*Sambucus nigra* ssp. *caerulea*) would also be removed. The project would result in the removal of approximately 1.43 acres of riparian forest vegetation.

TABLE 2

VOLUMES OF MATERIALS

Volume (cubic yards)	Repair Site	Above OHWM[1]	Below OHWM[1]	Total
Fill: Soil	1 - Meiss Road Upstream	299	981	1,280
	2 - Meiss Road Downstream	511	535	1,046
	3 - Fig Road Upstream	417	0	417
	5 - Keating Road	698	0	698
	6 - Mile Marker 19	487	1,111	1,598
	7 – Cosumnes Road Upstream	1,043	684	1,727
Subtotal	*All*	*3,455*	*3,311*	*6,766*
Fill: RSP[2]	1 - Meiss Road Upstream	1,276	1,231	2,507
	2 - Meiss Road Downstream	693	583	1,276
	3 - Fig Road Upstream	0	0	0
	5 - Keating Road	593	196	789
	6 - Mile Marker 19	544	893	1,437
	7 – Cosumnes Road Upstream	772	474	1,246
Subtotal	*All*	*3,878*	*3,377*	*7,255*
TOTAL		**7,333**	**6,688**	**14,021**

[1] OHWM = ordinary high water mark (Site 1 = 110 ft; Site 2 = 90 ft; Site 3 = 78 ft; Site 5 = 69 ft; Site 6 = 68 ft; Site 7 = 54 ft)

[2] RSP = rock slope protection (clean quarry stone)

Project equipment and construction materials would be staged in highly disturbed upland areas on the landside levee at each of the erosions repair sites. All construction vehicles and equipment needed to complete the project objectives would avoid working in the water. The project sites are expected to be dry during construction. However, if work is required in the wetted area of the Cosumnes River, construction crews would install a siltation screen or dewatering devices to prevent sediment release. Scheduling construction in the late summer and the purchase of credits at agency-approved mitigation banks would further minimize potential project impacts on biological resources.

Proposed avoidance and minimization measures include the following:

- Construction access via existing farm roads.
- Minimization of overall construction disturbance area.
- Minimization of project footprint in jurisdictional Waters of the U.S.
- Staging areas located in existing disturbed areas.
- Protection of oak trees to be retained with construction fencing in or near construction areas.
- Construction scheduling during late summer or fall to avoid potential impacts to special-status fish species.
- If work is required in the wetted area of the Cosumnes River, installation of siltation screen or dewatering devices to prevent sediment release.
- Pre-construction surveys for potentially occurring special-status species (e.g., Swainson's hawk, burrowing owl, western pond turtle).

The collective implementation of these Avoidance and Minimization Measures as a part of the project will assure the protection of sensitive habitat and species and the maintenance of biological functions and values. In addition to the Avoidance and Minimization Measures, the project will offset unavoidable impacts to biological resource. Proposed mitigation measures include the following:

- Reseeding disturbed areas with native non-invasive erosion control mix following construction.
- Purchasing elderberry mitigation credits from a mitigation bank or banks acceptable to the permitting agencies.
- Mitigation for impacts to jurisdictional Waters of the U.S., riverine habitats, and associated special-status fish species at an approved mitigation bank.

III. REGULATORY FRAMEWORK

Federal Endangered Species Act

The Federal Endangered Species Act (FESA) of 1973 (16 U.S.C. 1531-1543) and subsequent amendments provide guidance for the conservation of endangered and threatened species and the ecosystems upon which they depend.

Section 7 of FESA requires Federal agencies, in consultation with and with the assistance of the Secretary of the Interior or the Secretary of Commerce, as appropriate, to insure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat for these species. The United States Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) share responsibilities for administering the Act. Regulations governing interagency cooperation under Section 7 are found at 50 CFR Part 402. The opinions issued at the conclusion of consultation include statements authorizing take that may occur incidental to an otherwise legal activity.

Clean Water Act

The Clean Water Act (CWA) (33 U.S.C. 1251-1376) provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters. Section 404 of the CWA established a permit program administered by the U.S. Army Corps of Engineers (ACOE) regulating the discharge of dredged or fill material into waters of the United States (including wetlands). Implementing regulations by ACOE are found at 33 CFR Parts 320-330. Guidelines for implementation are referred to as the Section 404 (b)(1) Guidelines and were developed by the Environmental Protection Agency (EPA)

in conjunction with ACOE (40 CFR Parts 230). The Guidelines allow the discharge of dredged or fill material into the aquatic system only if there is no practicable alternative that would have less adverse impacts.

State and federal agencies regulate Waters of the U.S. and wetlands, and Section 404 of the Clean Water Act requires that a permit be secured prior to the discharge of dredged or fill materials into any waters of the U.S., including wetlands. California Department of Fish and Wildlife (CDFW) also has jurisdiction over modifications to rivers, lakes, and streams under Section 1600 of Fish and Game Code of California.

"Waters of the U.S.", as defined in 33 CFR 328.4, encompasses Territorial Seas, Tidal Waters, and Non-Tidal Waters; Non-Tidal Waters includes interstate and intrastate rivers and streams, as well as their tributaries. The limit of federal jurisdiction of Non-Tidal Waters of the U.S. extends to the "ordinary high water mark". The ordinary high water mark is established by physical characteristics such as a natural water line impressed on the bank, presence of shelves, destruction of terrestrial vegetation, or the presence of litter and debris.

Jurisdictional wetlands and Waters of the U.S. include, but are not limited to, perennial and intermittent creeks and drainages, lakes, seeps, and springs; emergent marshes; riparian wetlands; and seasonal wetlands. Wetlands and Waters of the U.S. provide critical habitat components, such as nest sites and a reliable source of water, for a wide variety of wildlife species.

Section 401 of the CWA requires an applicant for a Federal license or permit that allows activities resulting in a discharge to waters of the U.S., to obtain a state certification that the discharge complies with other provisions of the CWA. The Regional Water Quality Control Board (RWQCB) administers the certification program in California.

Rivers and Harbors Act

Section 10 of the Rivers and Harbors Act (33 U.S.C. 401 et seq.) is administered by ACOE. This section requires permits in, above, or below navigable waters of the U. S. for all structures such as docks, bridges, riprap, and activities such as dredging. Navigable waters are defined as those subject to the ebb and flow of the tide and susceptible to use in their natural condition or by reasonable improvements as means to transport interstate or foreign commerce. The ACOE grants or denies permits based on the effects on navigation. Most activities covered under this act are also covered under Section 404 of CWA, so a Section 404 permit process usually also covers Section 10 of the Rivers and Harbors Act, where appropriate.

California Water Code, Section 8710

The Central Valley Flood Protection Board (CVFPB) administers section 8710 of the California Water Code. Section 8710 of the California Water Code requires that a permit must be obtained from the CVFPB prior to the start of any work, including excavation and construction activities within floodways, levees, and 10 feet landward of the landside levee toes. Streams regulated by the CVFPB include the Sacramento or San Joaquin Rivers or any of their tributaries (California Code of Regulations, Title 23, Section 122).

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 USC, Section 703-711; 40 Stat. 755), as amended, prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act applies to whole birds, parts of birds, and bird nests and eggs. The MBTA does not provide protection for habitat of migratory birds, but does prohibit the

destruction or possession of individual birds, eggs, or nest in active use without a permit from USFWS.

California Endangered Species Act

The California Endangered Species Act (CESA) (Fish and Game Code 2050 et seq.) establishes the policy of the State to conserve, protect, restore, and enhance threatened or endangered species and their habitats. CESA mandates that State agencies should not approve projects that would jeopardize the continued existence of threatened or endangered species, if reasonable and prudent alternatives are available that would avoid jeopardy. CESA requires State lead agencies to consult with the during the California Environmental Quality Act **(**CEQA) process to avoid jeopardy to threatened or endangered species. As an outcome of consultation, CDFW is required to issue a written finding indicating if a project would jeopardize threatened or endangered species and specifying reasonable and prudent alternatives that would avoid jeopardy. The Act provides for joint consultations when species are listed by both the State and Federal governments.

California Environmental Quality Act

With respect to biological resources, the California Environmental Quality Act (CEQA) Guidelines Section 15206 specifies that a project shall be deemed to be of statewide, regional, or area wide significance if it would substantially affect sensitive wildlife habitats, including but not limited to riparian lands, wetlands, bays, estuaries, marshes, and habitats for rare and endangered species.

CEQA Guidelines Section 15380 provides that a species not listed under the FESA or CESA may be considered rare or endangered under specific criteria. These criteria have been modeled after the definitions in FESA and CESA. Section 15380 was included in the CEQA Guidelines primarily to deal with situations in which a public agency is reviewing a project that may have a

significant effect on a candidate species that has not yet been listed by either USFWS or CDFW. Thus, Section 15380 provides an agency with the ability to protect a species from a project's potential impacts until the respective resource agencies have had an opportunity to designate the species as protected, if warranted.

An example would be the vascular plants listed as rare or endangered by the California Native Plant Society (CNPS), but which may have no designated status or protection under FESA or CESA. The CNPS created five lists:

- List 1A: Plants presumed extinct in California,
- List 1B: Plants rare, threatened, or endangered in California and elsewhere,
- List 2: Plants rare, threatened, or endangered in California, but more numerous elsewhere,
- List 3: Plants about which more information is needed; a "review list", and
- List 4: Plants of limited distribution; a "watch list".

In general, plants appearing on CNPS List 1A, 1B, or 2 are considered to meet the criteria of Section 15380.

Fish and Game Code of California (Sections 1600 and 3503)

Under Section 1600 of the Fish and Game Code of California, project proponents are required to notify CDFW prior to initiating activities for any project that would divert water from, or obstruct or change the natural flow, bed, channel, or bank of any river, stream, or lake. When an existing fish or wildlife resource may be substantially adversely affected, CDFW is required to propose reasonable project changes to protect the resource. These modifications are formalized in a Streambed Alteration Agreement.

Section 3503 of the Fish and Game Code prohibits unlawful take, possession or needless destruction of the nest or eggs of any bird. Section 3503.5 of the Fish and Game Code states that it is "unlawful to take, possess, or destroy any birds-of-prey in the orders Falconiformes or Strigiformes . . ." (i.e., hawks, owls, eagles, and falcons). The loss of an active nest is considered a violation of this code by CDFW. This statute does not provide for the issuance of any type of incidental take permit.

Porter-Cologne Water Quality Control Act & Waters of the State

Under the Porter-Cologne Water Quality Control Act, "Waters of the State" fall under the jurisdiction of the State Water Resource Control Board (SWRCB) and California Regional Water Quality Control Boards (RWQCBs). The RWQCBs are required to prepare and periodically update water quality control basin plans, which set forth water quality standards for surface water and groundwater, as well as actions to control non-point and point sources of pollution to achieve and maintain these standards.

Projects that affect Waters of the State may also be required to meet waste discharge requirements (WDRs) of the RWQCBs. SWRCB's Resolution 2008-0026 identified a need to protect Waters of the State that are not subject to CWA Section 404 permitting and associated CWA Section 401 Water Quality Certification. On May 28, 2020, the *State Wetland Definition and Procedures for the Discharges of Dredged or Fill Material to Waters of the State* went in to effect. The Central Valley Regional Water Quality Board now issues WDRs for the fill of isolated wetlands that not subject to CWA Section 404 that authorize the impacts by issuing WDRs or in some cases, issues a WDR waiver.

California Native Plant Protection Act

The California Native Plant Protection Act (codified in Fish and Game Code Sections 1900-1913) is intended to preserve, protect, and enhance endangered

or rare native plants in the state. The act directs CDFW to establish criteria for determining what native plants are rare or endangered. Under Section 1901, a species is endangered when its prospects for survival and reproduction are in immediate jeopardy from one or more causes. A species is rare when, although not threatened with immediate extinction, it is in such small numbers throughout its range that it may become endangered if its present environment worsens. Under the Act, the Fish and Game Commission may adopt regulations governing the taking, possessing, propagation, or sale of any endangered or rare native plant.

IV. METHODS

Database Review

A search of CDFW's California Natural Diversity Database (CNDDB, 2020) was conducted. The CNDDB search included the USGS 7.5-minute Elk Grove and Sloughhouse topographic quadrangles, encompassing approximately 120 square miles around the sites. The USFWS IPaC Trust Report of Federally Threatened and Endangered species that may occur in or be affected by projects in the project vicinity was also reviewed (Appendix B). These databases provide information on wildlife and plant species that have been documented in the project vicinity or have the potential to occur based on suitable habitat and geographical distribution. The USFWS maps of designated critical habitat were also reviewed.

Field Surveys

Moore Biological Consultants conducted field surveys of the erosion repair sites and staging areas on April 4, May 17, 24 and 27, and August 5, 2019, and April 10, 2020. The surveys consisted of walking throughout the sites observing habitat conditions and noting surrounding land uses, general habitat types, and

plant and wildlife species. The surveys included an assessment of the sites for potentially jurisdictional Waters of the U.S. and wetlands as defined by ACOE (1987; 2008), special-status species, and suitable habitat for special-status species (e.g., blue elderberry shrubs). Trees in and near the sites were assessed for the potential use by nesting raptors, especially Swainson's hawk. The sites and surrounding areas were also searched for burrowing owls or burrows that could be utilized by burrowing owls.

The limit of federal jurisdiction of Waters of the U.S. [i.e., the ordinary high water mark (OHWM)] along the bank in the work areas were identified by physical characteristics including a natural water line impressed on the bank, shelves, destruction of terrestrial vegetation, and/or the presence of litter and debris. The elevation of the OWHM along the bank at each site was identified in the field and mapped on the plan and profile maps of each site prepared by Wagner & Bonsignore, Inc. The acreage of Waters of the U.S. at each site was calculated as the area below the OHWM.

The locations of trees greater than 6 inches in diameter at breast height (DBH) in each site were recorded in the field using a Trimble GeoXH Global Positioning System (GPS) unit. All blue elderberry (*Sambucus nigra* ssp. *caerulea*) shrubs within the sites and off-site shrubs within 165 of the sites were also mapped with the GPS unit. The GPS data were corrected using the nearest available base station. The data was then combined with Google Earth 2019 color aerial photographs in ArcGIS to generate maps with the location of the trees and blue elderberry shrubs within and near the sites.

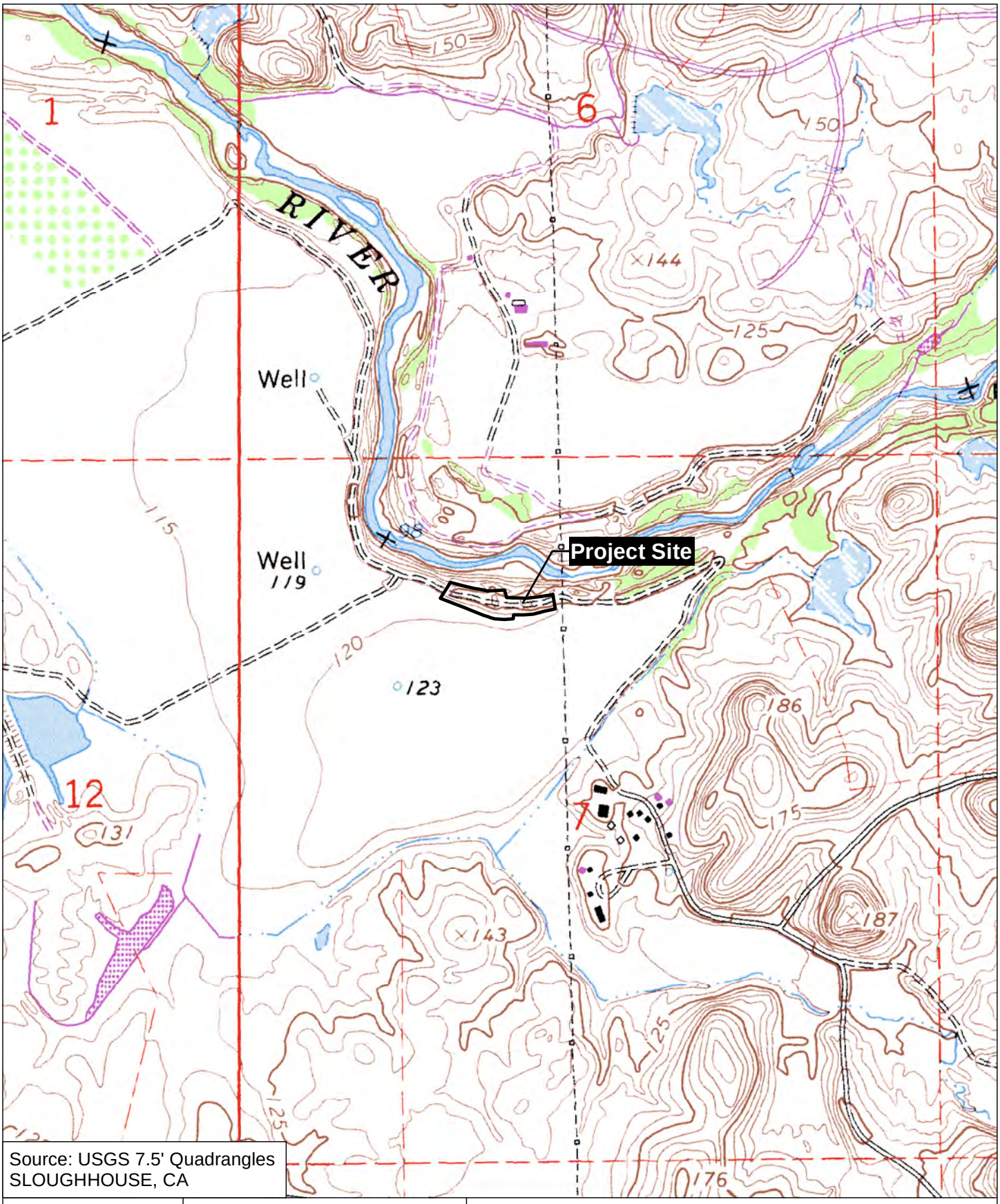
V. RESULTS AND DISCUSSION

Setting

The erosion repair sites are along the Cosumnes River in south Sacramento County, California (Figure 1). The upstream-most sites, Meiss Road Upstream and Meiss Road Downstream, are in the vicinity of Sloughhouse (Figures 2 and 3). Fig Road Upstream is approximately 9 miles northeast of the Elk Grove near the Folsom South Canal. Keating Road and Mile Marker 19 are several miles further downstream, a few miles northeast of Wilton. The Cosumnes Road Upstream is further southwest, approximately 4 miles east of the Elk Grove.

Meiss Road Upstream is in Section 7 in Township 7 North, Range 8 East of the USGS 7.5-minute Sloughhouse topographic quadrangle and is at an elevation of approximately 120 feet above mean sea level (Figure 4). Meiss Road Downstream, Fig Road Upstream, and Keating Road are within unnumbered Sections in Township 7 North, Range 7 East of the 7.5-minute Elk Grove topographic quadrangle and are at elevations of approximately 100 feet, 80 feet, and 90 feet above mean sea level, respectively (Figures 5, 6, and 7). Mile Marker 19 is in an unnumbered Section in Township 7 North, Range 7 East of the Elk Grove topographic quadrangle and is at an elevation of approximately 70 feet above mean sea level (Figure 8). Finally, Cosumnes Road Upstream is in unnumbered Sections in Townships 6 North and 7 North, Range 6 East of the Elk Grove topographic quadrangle and is at an elevation of approximately 60 feet above mean sea level (Figure 9).

Surrounding land uses in this portion of Sacramento County are primarily agricultural, with widely scattered residences consisting primarily of ranchette-style homes. Most of the parcels in the greater project vicinity are farmed in hay and other annual crops, orchards and vineyards. The repair sites have differing adjacent land uses. Meiss Road Upstream is adjacent to a vineyard and there is



Source: USGS 7.5' Quadrangles
SLOUGHHOUSE, CA

Figure 4

Moore Biological Consultants

0 500 1,000
Feet

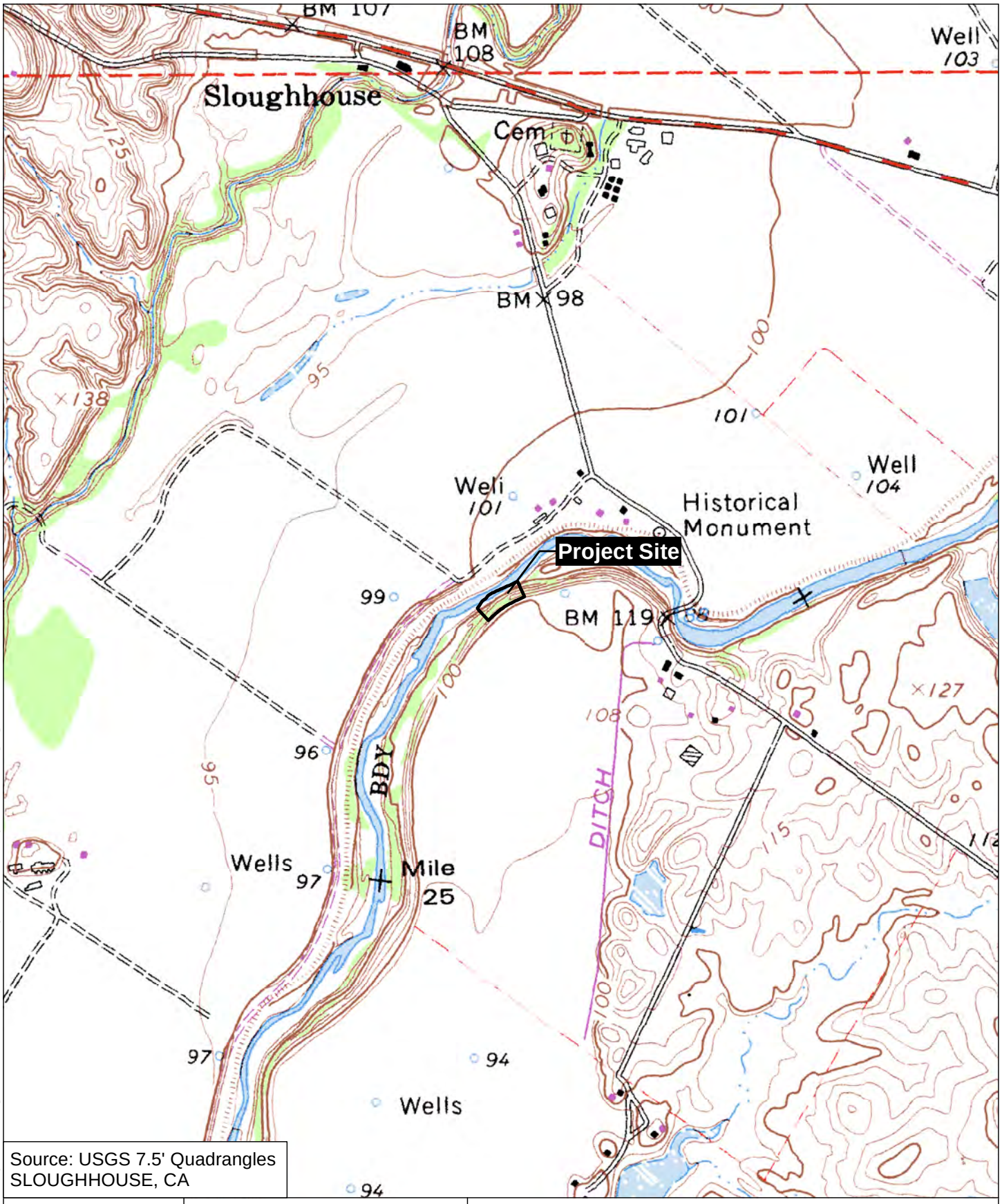
N
W E
S

Map Date: 04/21/2020

USGS / Site 1 - Meiss Road Upstream

RD 800 - 2021 Erosion Repairs

Sacramento County, CA



Source: USGS 7.5' Quadrangles SLOUGHHOUSE, CA

Figure 5

Moore Biological Consultants

0 500 1,000 Feet

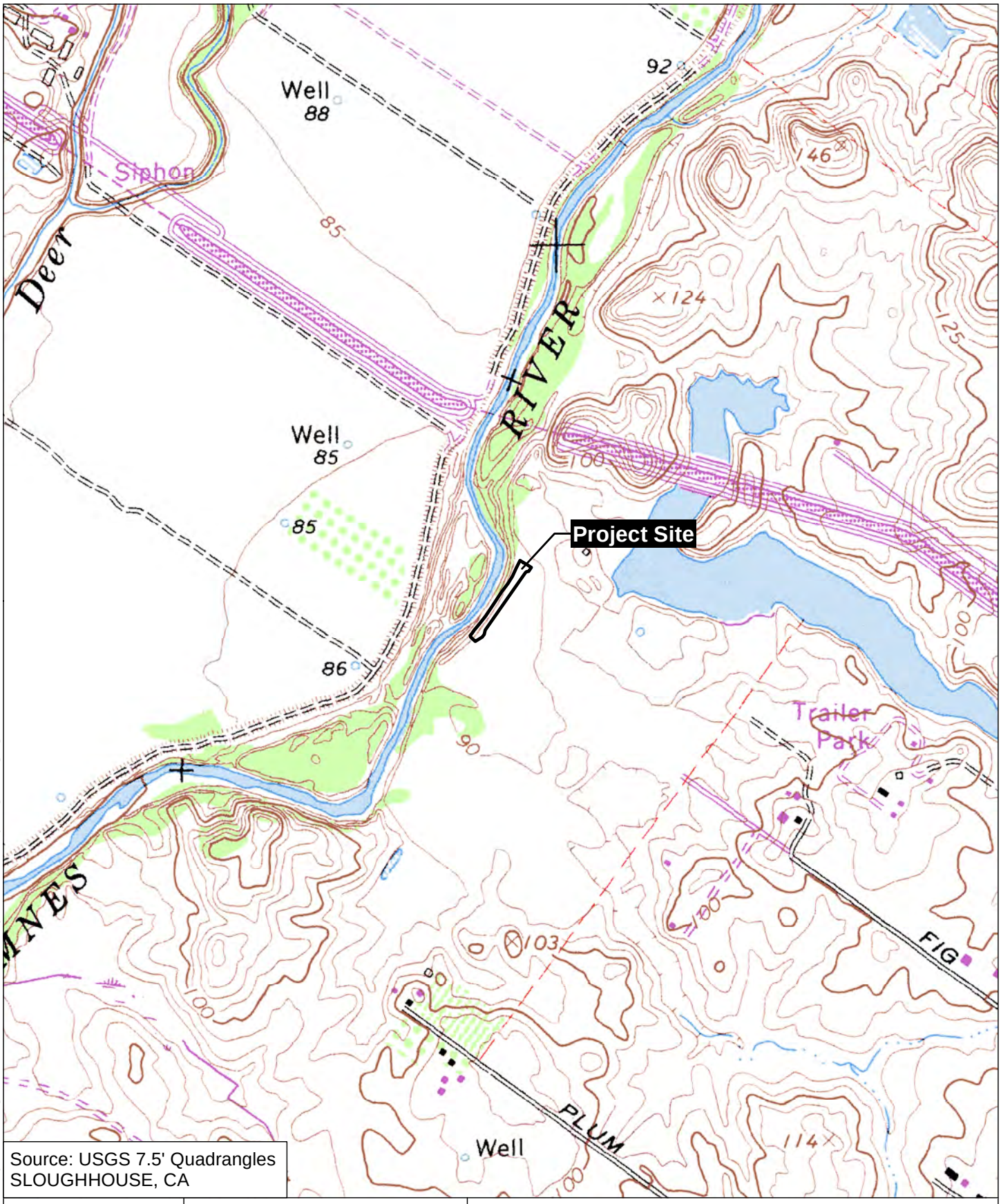
N W E S

Map Date: 04/21/2020

USGS / Site 2 - Meiss Road Downstream

RD 800 - 2021 Erosion Repairs

Sacramento County, CA



Source: USGS 7.5' Quadrangles
SLOUGHHOUSE, CA

Figure 6

Moore Biological Consultants

0 500 1,000
Feet

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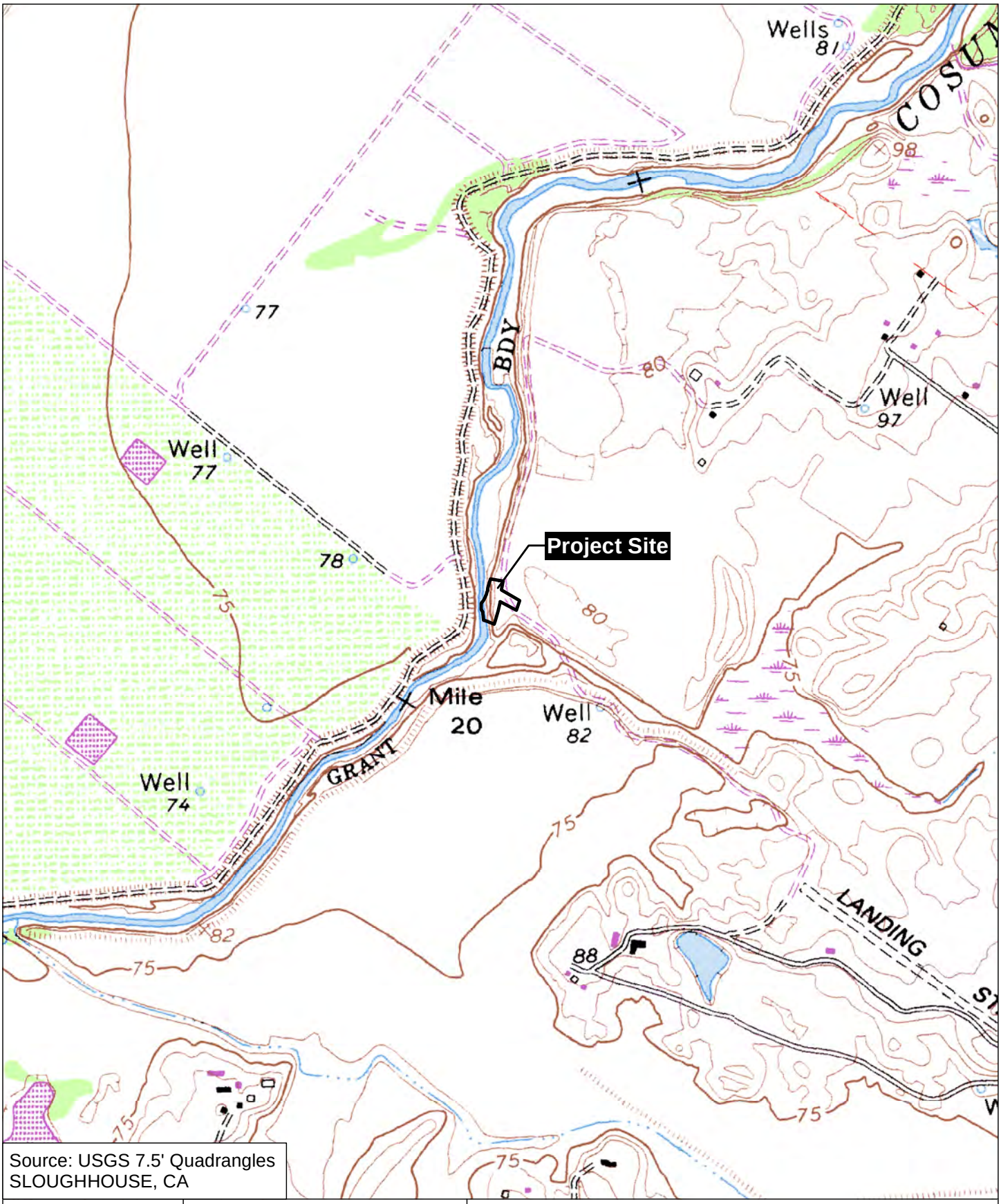
Map Date: 04/21/2020

USGS / Site 3 - Fig Road Upstream

RD 800 - 2021 Erosion Repairs

Sacramento County, CA



Source: USGS 7.5' Quadrangles
SLOUGHHOUSE, CA

Figure 7

Moore Biological Consultants

0 500 1,000
Feet

N
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S

Map Date: 04/21/2020

USGS / Site 5 - Keating Road

RD 800 - 2021 Erosion Repairs

Sacramento County, CA

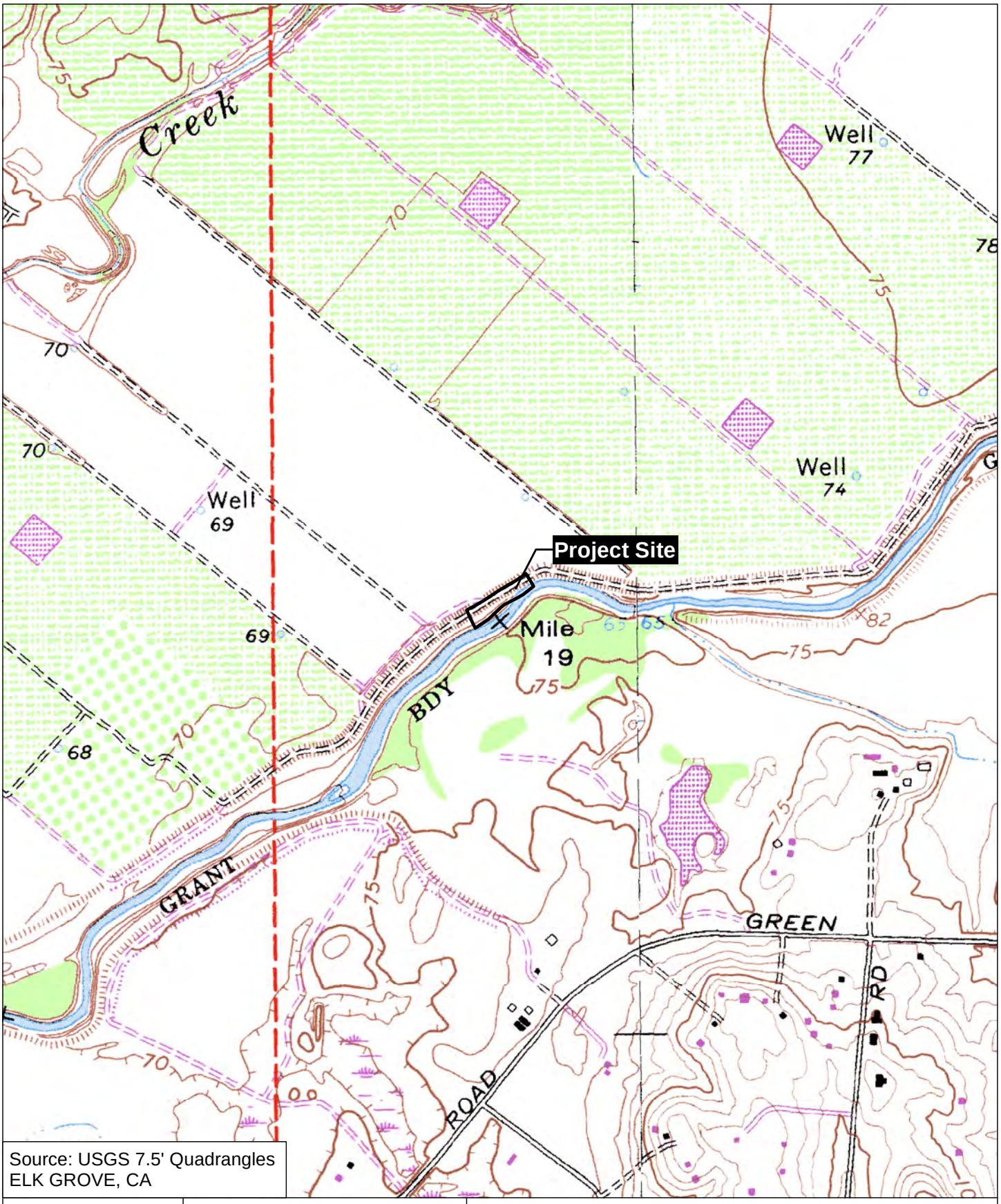

Figure 8

Moore Biological Consultants

0 500 1,000
Feet

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Map Date: 04/21/2020

USGS / Site 6 - Mile Marker 19

RD 800 - 2021 Erosion Repairs

Sacramento County, CA

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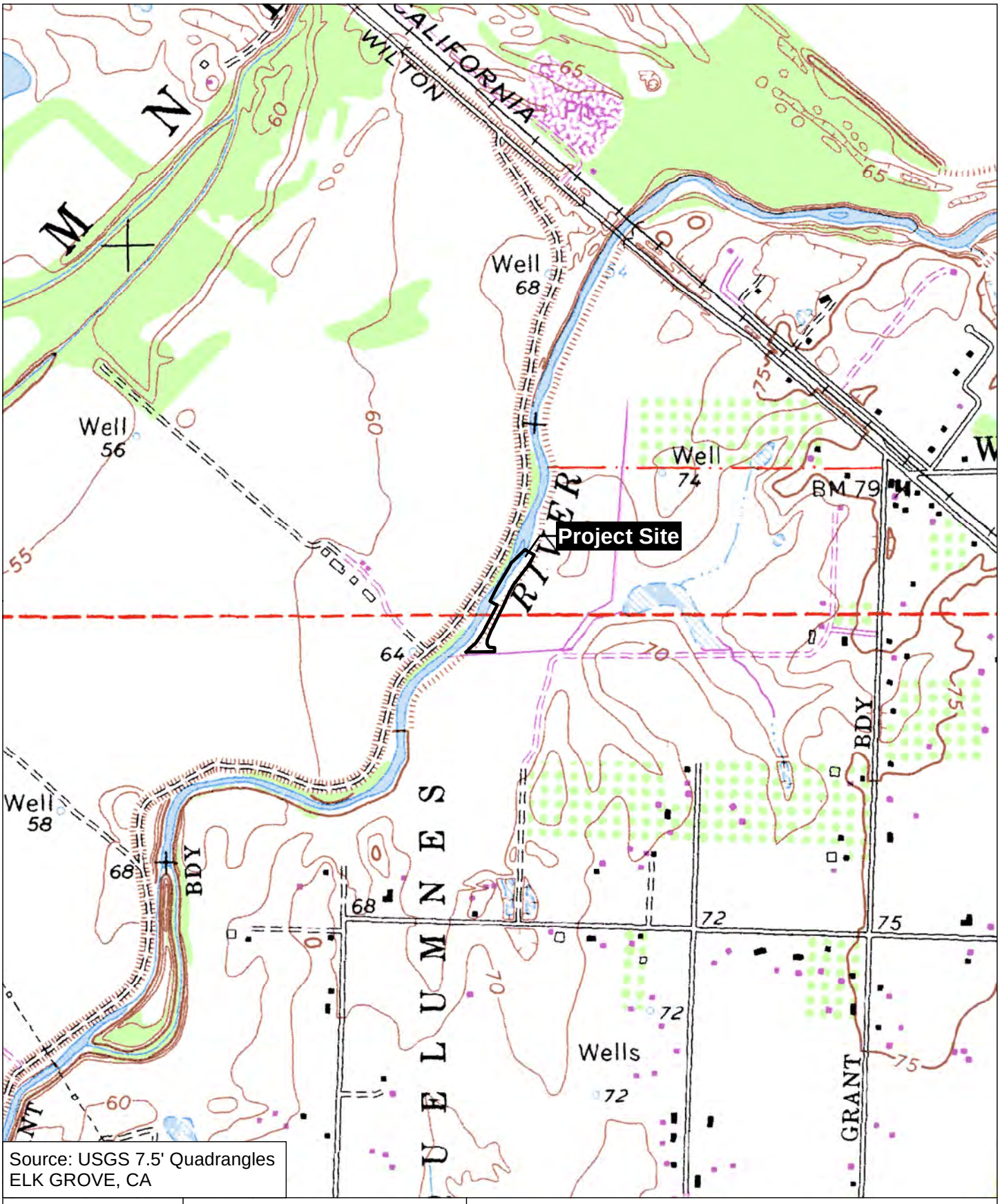

Source: USGS 7.5' Quadrangles
ELK GROVE, CA

Figure 9

Moore Biological Consultants

0 500 1,000
Feet

N
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S

Map Date: 04/21/2020

USGS / Site 7 - Cosumnes Road Upstream

RD 800 - 2021 Erosion Repairs

Sacramento County, CA

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a hay field across the river (Figure 10). There are hay fields to the southeast of the Meiss Road Downstream site and irrigated pasture and vineyard across the Cosumnes River to the northwest of the site (Figure 11). There are fields farmed in hay crops on both sides of the river at the Fig Road Upstream site (Figure 12). There is irrigated pasture and a woodland area adjacent to the Keating Road site, with vineyard across the Cosumnes River (Figure 13). The Mile Marker 19 site is adjacent to a field farmed in row crops, with a woodland area to the southeast, across the Cosumnes River (Figure 14). Finally, the Cosumnes Road Upstream site is adjacent to a polo field, with a vineyard west across the river to the west (Figure 15).

Vegetation

Vegetation communities in the sites include annual ruderal grassland, riparian forest, and riparian scrub. These vegetation communities and wildlife habitat types generally correspond to the California Annual Grassland series, Valley oak series, and Arroyo willow series (Sawyer and Keeler-Wolf, 1995). The project sites, and ruderal areas along the edges of fields, levee roads, and farm roads in the site are vegetated with highly disturbed and routinely maintained patches of the California Annual Grassland series. The bank of the Cosumnes River supports a mosaic of riparian forest and riparian scrub vegetation.

Historically, the California Annual Grassland series was the most widespread upland vegetation type occurring in the project vicinity. The ruderal grassland vegetation in the sites is periodically scraped and/or disked, mowed, or treated with herbicides, primarily for fire suppression and is best described as highly disturbed. Some of the most common grasses include oats (*Avena* sp.), soft chess brome (*Bromus hordeaceus*), ripgut brome (*B. diandrus*), foxtail barley (*Hordeum murinum*), and perennial ryegrass (*Lolium perenne*). Other grassland species such as black mustard (*Brassica nigra*), bull thistle (*Cirsium vulgare*), yellow star-thistle (*Centaurea solstitalis*), morning glory (*Convolvulus arvensis*), wild radish (*Raphanus sativa*), prickly lettuce (*Lactuca serriola*), Italian thistle

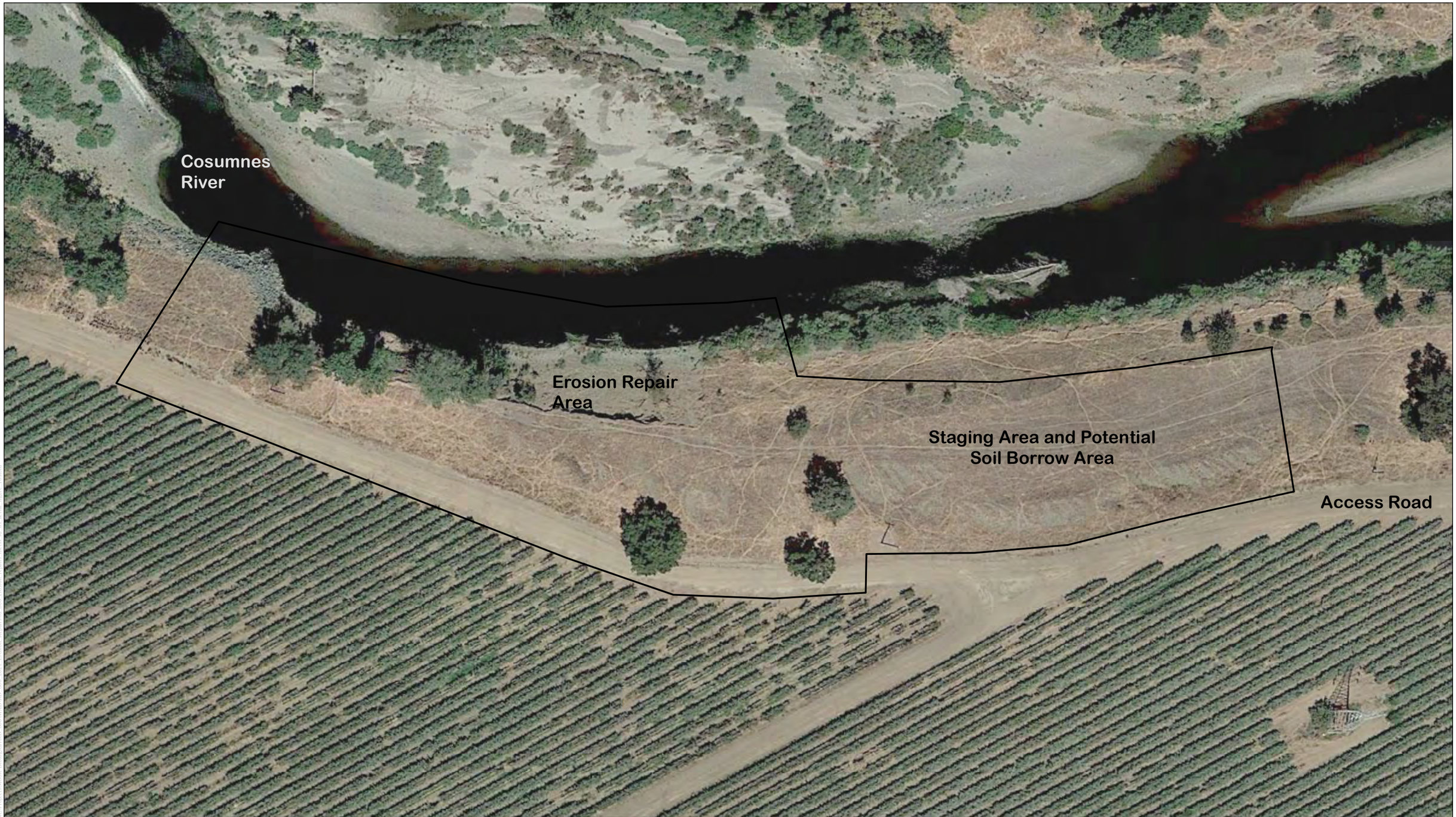

Figure 10

Moore Biological
Consultants

0 100 200
Feet

Map Date: 04/27/20
Aerial Source: Google Earth (08/16/2018)

N
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Aerial / Site 1 - Meiss Road Upstream

RD 800 - 2021 Erosion Repairs

Sacramento County, CA

Figure 11

Moore Biological
Consultants

0 100 200
Feet

Map Date: 04/17/20
Aerial Source: Google Earth (08/16/2018)

N
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Aerial / Site 2 - Meiss Road Downstream

RD 800 - 2021 Erosion Repairs

Sacramento County, CA

Figure 12

Moore Biological Consultants

0 50 100
Feet

Map Date: 04/17/20
Aerial Source: Google Earth (08/16/2018)

N
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Aerial / Site 3 - Fig Road Upstream

RD 800 - 2021 Erosion Repairs

Sacramento County, CA

Figure 13

Moore Biological Consultants

0 50 100
Feet

N
W E
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Map Date: 04/21/20
Aerial Source: Google Earth (08/16/2018)

Aerial / Site 5 - Keating Road

RD 800 - 2021 Erosion Repairs

Sacramento County, CA

Figure 14

Moore Biological
Consultants

0 100 200
Feet

Map Date: 04/17/20
Aerial Source: Google Earth (08/16/2018)

N
W E
S

Aerial / Site 6 - Mile Marker 19

RD 800 - 2021 Erosion Repairs

Sacramento County, CA

Figure 15

Moore Biological Consultants

0 50 100
Feet

N
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Map Date: 04/21/20
Aerial Source: Google Earth (08/16/2018)

Aerial / Site 7 - Cosumnes Road Upstream

RD 800 - 2021 Erosion Repairs

Sacramento County, CA

(*Carduus pycnocephalus*), dove weed (*Eremocarpus setigerus*), miniature lupine (*Lupinus bicolor*), miner's lettuce (*Montia perfoliata*), rose clover (*Trifolium hirtum*), and filaree (*Erodium* spp.) are intermixed with the grasses. Table 3 is a list of plant species observed in the site.

The Valley oak series and Arroyo willow series (Sawyer and Keeler-Wolf, 1995) best describe the vegetation communities along the banks of the Cosumnes River. Dominant trees in the riparian forest and scrub vegetation include valley oak (*Quercus lobata*), black walnut (*Juglans californicus*), Fremont's cottonwood (*Populus fremontii*), and Oregon ash (*Fraxinus latifolia*). Narrow-leaved willow (*Salix exigua*), Gooding's black willow (*Salix goodingii*), Himalayan blackberry (*Rubus discolor*), California wild rose (*Rosa californica*), Pacific poison oak (*Toxicodendron diversilobum*), and California wild grape (*Vitis californica*) are dominant shrubs and vines. The understory is comprised of grasses and weeds typical of the nearby annual grasslands.

The Cosumnes River at and near the waterline at the time of the surveys supported a generally narrow and discontinuous fringe of willow seedlings, umbrella sedge (*Cyperus eragrostis*), annual rabbit's foot grass (*Polypogon monspeliensis*), and other emergent wetland vegetation. All of this vegetation is well below the OWHM at the sites.

There is a total of 2.27+/- acres of riparian forest and scrub-shrub vegetation in the project site, including 0.22+/- acres at Meiss Road Upstream, 0.15+/- acres at Meiss Road Downstream, 0.14+/- acres at Fig Road Upstream, 0.35+/- acres at Keating Road, 0.52+/- acres at Mile Marker 19, and 0.89+/- acres at Cosumnes Road Upstream (Figures 16, 17, 18, 19, 20, and 21). Approximately 1.43 acres of this vegetation is within the footprint of work and will be directly impacted by the repairs. Approximately 0.84 acres of the vegetation Meiss Road Upstream, Keating Road, and Cosumnes Road Upstream are within the construction access and staging areas and will be retained. Some of the vegetation within the construction access and staging areas at the other sites will likely be retained.

TABLE 3

PLANT SPECIES OBSERVED IN THE SITE

Amsinckia menziesii	rancher's fireweed
Anthemis cotula	stinking chamomile
Avena sp.	oat
Brassica nigra	black mustard
Bromus diandrus	ripgut brome
Bromus hordeaceus	soft chess brome
Bromus madritensis	compact brome
Briza minor	lesser quaking grass
Carduus pycnocephalus	Italian thistle
Centaurea solstitialis	yellow star-thistle
Chamomilla suaveolens	pineapple weed
Cirsium vulgare	bull thistle
Clarkia purpurea purpureac	clarkia
Conium maculatum	poison hemlock
Convolvulus arvensis	morning glory
Cyperus eragrostis	umbrella sedge
Deschampsia danthonioides	annual hairgrass
Eremocarpus setigerus	dove weed
Erodium botrys	filaree
Erodium cicutarium	red-stem filaree
Eschscholzia californica	California poppy
Fraxinus latifolia	Oregon ash
Geranium dissectum	dissected geranium
Hordeum murinum	foxtail barley
Hypochaeris radicata	rough cat's ear
Juglans californicus	black walnut
Juncus bufonius	toad rush
Lactuca serriola	prickly lettuce
Lolium perenne	perennial ryegrass

TABLE 3 (Continued)
PLANT SPECIES OBSERVED IN THE SITE

Lupinus bicolor	miniature lupine
Lysimachia arvensis	scarlet pimpernel
Lythrum hyssopifolium	Hyssop loosestrife
Medicago polymorpha	California bur clover
Mentha pulegium	pennyroyal
Montia perfoliata	miner's lettuce
Plantago lanceolata	plantain
Poa annua	annual bluegrass
Polypogon monspeliensis	rabbit's foot grass
Populus fremontii	Fremont cottonwood
Quercus lobata	valley oak
Raphanus sativus	wild radish
Rosa californica	California wild rose
Rubus discolor	Himalayan blackberry
Salix exigua	narrow-leaved willow
Salix goodingii	Gooding's black willow
Sambucus nigra ssp. *caerulea*	blue elderberry
Sonchus asper	prickly sow thistle
Tribulus terrestris	puncture vine
Trifolium hirtum	rose clover
Triteleia laxa	Ithuriel's spear
Urtica dioica	stinging nettle
Verbascum blattaria	moth mullein
Verbascum thapsus	woolly mullein
Vicia americana	winter vetch
Vitis californica	California wild grape
Vulpia myuros	rat-tail six-weeks grass

Cosumnes River

Project Area
Black Walnut
Elderberry Shrub
Fremont Cottonwood
Sycamore
Valley Oak

Riparian Forest

Retain (0.08 ac.)
Remove (0.14 ac.)

Figure 16

Moore Biological Consultants

0 100 200
Feet

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W E
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Map Date: 04/27/20
Aerial Source: Google Earth (08/16/2018)

Vegetation / Site 1 - Meiss Road Upstream

RD 800 - 2021 Erosion Repairs

Sacramento County, CA

Figure 17

Moore Biological Consultants

0 100 200
Feet

Map Date: 04/28/20
Aerial Source: Google Earth (08/16/2018)

N
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Vegetation / Site 2 - Meiss Road Downstream

RD 800 - 2021 Erosion Repairs

Sacramento County, CA

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Figure 18

Moore Biological Consultants

0 50 100
Feet

Map Date: 04/28/20
Aerial Source: Google Earth (08/16/2018)

N
W E
S

Vegetation / Site 3 - Fig Road Upstream

RD 800 - 2021 Erosion Repairs

Sacramento County, CA

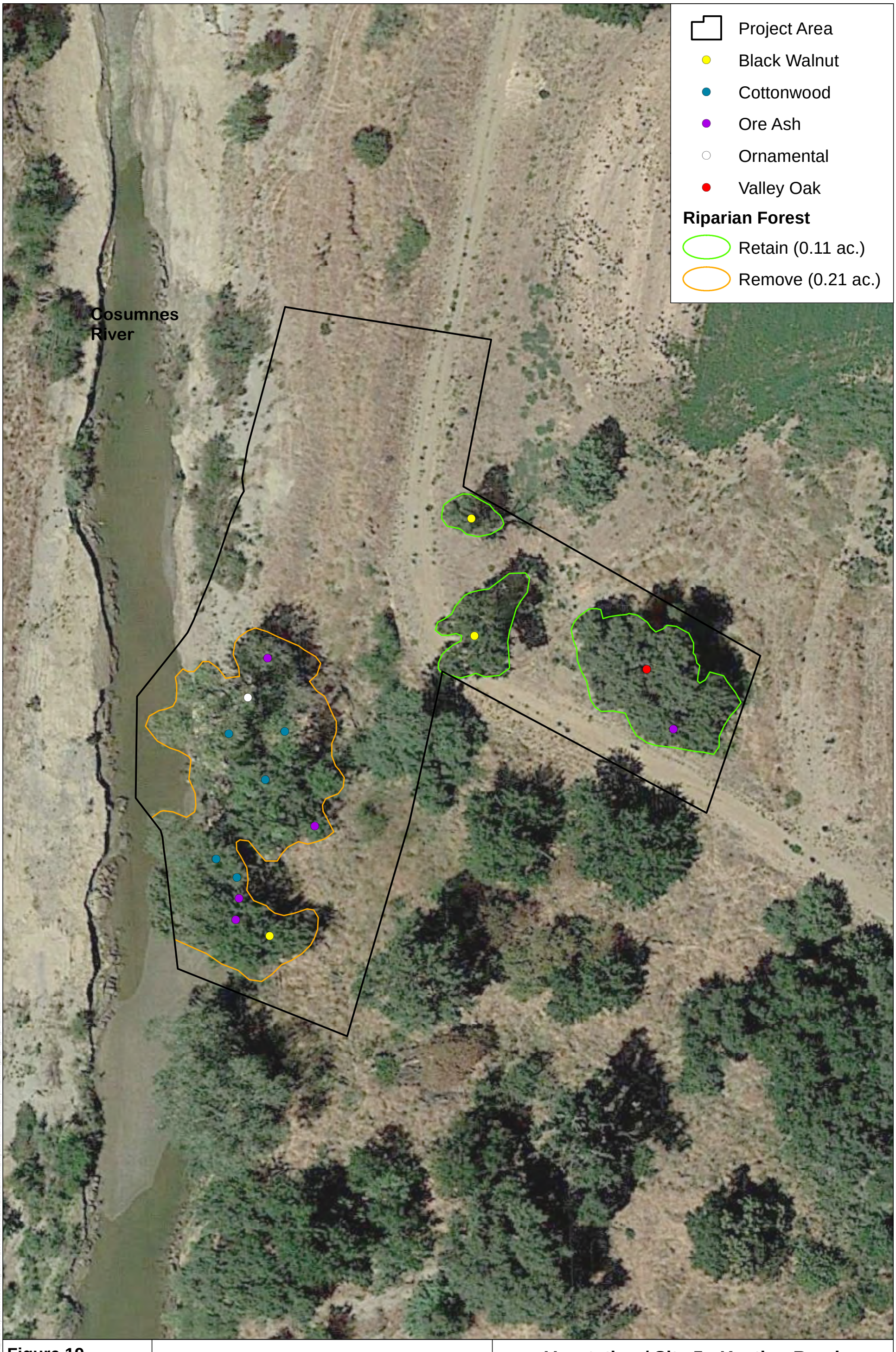

Figure 19

Moore Biological Consultants

0 50 100
Feet

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W E
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Map Date: 04/21/20
Aerial Source: Google Earth (08/16/2018)

Vegetation / Site 5 - Keating Road

RD 800 - 2021 Erosion Repairs

Sacramento County, CA

Figure 20

Moore Biological Consultants

0 100 200
Feet

N
W E
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Map Date: 04/28/20
Aerial Source: Google Earth (08/16/2018)

Vegetation / Site 6 - Mile Marker 19

RD 800 - 2021 Erosion Repairs

Sacramento County, CA

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Figure 21

Moore Biological Consultants

0 50 100
Feet

N
W E
S

Map Date: 05/26/20
Aerial Source: Google Earth (08/16/2018)

Vegetation / Site 7 - Cosumnes Road Upstream

RD 800 - 2021 Erosion Repairs

Sacramento County, CA

There are no blue elderberry shrubs in the Meiss Road Upstream site (Figure 16). The nearest clusters of blue elderberry shrubs are approximately 55 feet and 165 feet east of the site. There are three blue elderberry shrubs in Meiss Road Downstream (Figure 17). There is also a cluster of blue elderberry shrubs approximately 55 feet east of the Meiss Road Downstream site. There are no blue elderberry shrubs in the Fig Road Upstream site (Figure 18). The nearest blue elderberry shrub is approximately 160 feet southwest of the site. There are no blue elderberry shrubs within or near the Keating Road site (Figure 19). There is a single blue elderberry shrub in the east part of Mile Marker 19 (Figure 20). There are also blue elderberry shrubs approximately 90 feet and 160 feet southwest of the site, and approximately 185 feet east of the site. Finally, there is a cluster of blue elderberry shrubs in a patch of oak woodland vegetation in the access and staging area of the Cosumnes Road Downstream site (Figure 21). This shrub cluster is on northwest side of a fence along the levee and will be retained. Access to the site will be on the levee crown or along the landside levee toe and there will be no encroachment northwest of the fence in the vicinity of the cluster of blue elderberry shrubs.

Wildlife

The ruderal grasslands on the levee crown and slopes and in the staging areas primarily provide foraging habitat for a variety of bird species. In contrast, the riparian woodlands and riparian scrub associated with the Cosumnes River riparian corridor provide habitat for a wide variety of wildlife species. In addition to resident wildlife, the project site provides seasonal habitats for a wide variety of migratory wildlife, including numerous birds and a few fish.

A variety of bird species were observed during the field surveys; the majority of these are common species found in agricultural and riparian areas of south Sacramento County (Table 4). Several birds were flying around and over the site and perching in trees and shrubs. Mallard (*Anas platyrhynchos*), great egret (*Casmerodias albus*), turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo*

TABLE 4

WILDLIFE SPECIES DOCUMENTED IN THE SITE

Birds

Great blue heron	*Ardea herodias*
Great egret	*Casmerodius albus*
Canada goose	*Branta canadensis*
Wood duck	*Aix sponsa*
Mallard	*Anas platyrhynchos*
Turkey vulture	*Cathartes aura*
Bald eagle	*Haliaeetus leucocephalus*
Red-shouldered hawk	*Buteo lineatus*
Swainson's hawk	*Buteo swainsoni*
Red-tailed hawk	*Buteo jamaicensis*
California quail	*Callipepla californica*
Belted kingfisher	*Ceryle alcyon*
Acorn woodpecker	*Melanerpes formicivorus*
Northern flicker	*Colaptes auratus*
Black phoebe	*Sayornis nigricans*
Western kingbird	*Tyrannus verticalis*
California scrub jay	*Aphelocoma californica*
American crow	*Corvus brachyrhynchos*
American robin	*Turdus migratorius*
Northern mockingbird	*Mimus polyglottos*
White-crowned sparrow	*Zonotrichia leucophrys*
Red-winged blackbird	*Agelaius phoeniceus*
Brewer's blackbird	*Euphagus cyanocephalus*
House finch	*Carpodacus mexicanus*

TABLE 4 (Continued)
WIDLIFE SPECIES DOCUMENTED IN THE SITE

Mammals	
California ground squirrel	*Spermophilus beecheyi*
California mule deer	*Odocoileus hemionus californicus*
Coyote	*Canis latrans*
Raccoon	*Procyon lotor*
Reptiles and Amphibians	
Red-eared slider	*Trachemys scripta elegans*
Pacific chorus frog	*Pseudacris regilla*
Western fence lizard	*Sceloporus occidentalis*
Western skink	*Plestiodon skiltonianus*
Northern alligator lizard	*Elgaria coerulea*

jamaicensis), Swainson's hawk, American crow (*Corvus brachyrhynchos*), northern mockingbird (*Mimus polyglottos*), western kingbird (*Tyrannus verticalis*), California scrub jay (*Aphelocoma californica*), black phoebe (*Sayornis nigricans*), Brewer's blackbird (*Euphagus cyanocephalus*), and red-winged blackbird (*Agelaius phoeniceus*) are representative avian species observed in the site.

There are several potential nest trees in and near the site that are suitable for nesting raptors and other protected migratory birds, including Swainson's hawk. Several stick nests were observed within some of the trees within and near the site. Given the presence of large trees and raptor foraging habitat (i.e., open fields) in and near the site, it is likely one or more pairs of raptors, plus a variety of songbirds, nest in trees in or near the site each year. Further, it is considered likely that numerous songbirds nest within trees, shrubs, and grassland habitats in or adjacent to the site each year. Red-winged blackbirds were observed

displaying nesting behavior in the grasslands adjacent to the project sites during the springtime surveys.

A variety of mammals common to agricultural areas likely occur in the project site. However, California ground squirrel (*Spermophilus beecheyi*), California mule deer (*Odocoileus hemionus californicus*) and coyote (*Canis latrans*) were the only mammals observed during the surveys; sign of and raccoon (*Procyon lotor*) was also observed. Black-tailed hares (*Lepus californicus*), striped skunk (*Mephitis mephitis*), desert cottontail (*Sylvilagus audubonii*), and Virginia opossum (*Didelphis virginiana*) are a few mammals expected to occur in the area. A number of species of small rodents including mice (*Mus musculus, Reithrodontomys megalotis,* and *Peromyscus maniculatus*) and voles (*Microtus californicus*) also likely occur.

Based on habitat types present, a variety of amphibians and reptiles may use habitats in the site. Western fence lizard (*Sceloporus occidentalis*), western skink (*Plestiodon skiltonianus*), Northern alligator lizard (*Elgaria coerulea*), red-eared slider (*Trachemys scripta elegans*) and Pacific chorus frog (*Pseudacris regilla*) were observed during the surveys. American bullfrog (*Rana catesbeiana*), common garter snake (*Thamnophis sirtalis*), and gopher snake (*Pituophis melanoleucus*) are known to occur in the greater project vicinity and may occur in the sites on occasion. Although not observed during the surveys, the Cosumnes River also provides suitable habitat for western pond turtle (*Emys marmorata*), which is discussed further below.

Waters of the U.S. and Wetlands

The Cosumnes River is a Water of the U.S. subject Section 404 of the Clean Water Act. The Cosumnes River also falls under the jurisdiction of CDFW, RWQCB, and CVFPB. The project site contains a total of approximately 2.24 acres of Waters of the U.S. below the OHWM (Table 1 and Figures 22, 23, 24, 25, and 26). There are no Waters of the U.S. in the Fig Road Upstream site.

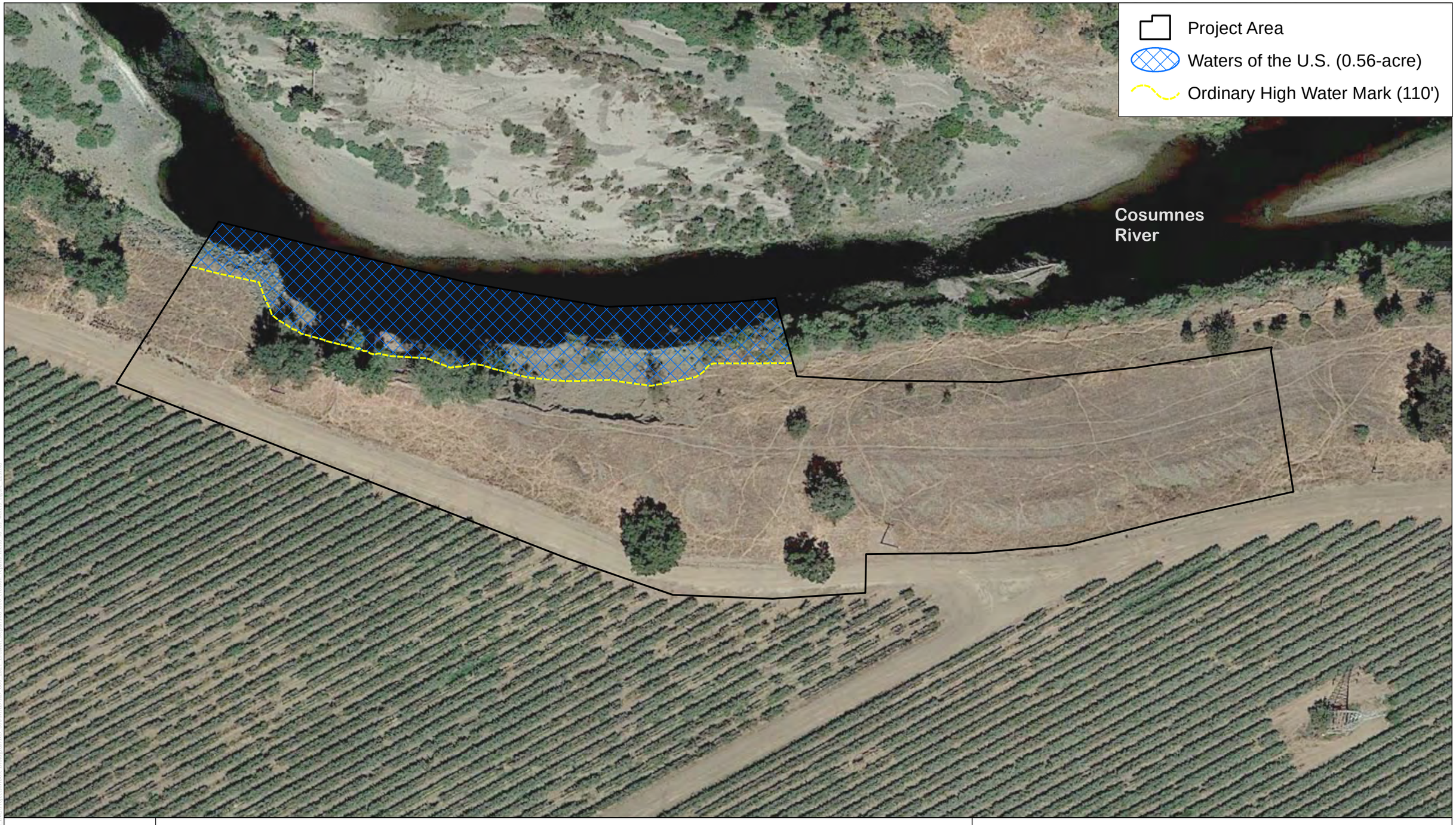

Figure 22

Moore Biological Consultants

0 100 200
Feet

Map Date: 04/17/20
Aerial Source: Google Earth (08/16/2018)

N
W E
S

Waters of the U.S. / Site 1 - Meiss Road Upstream

RD 800 - 2021 Erosion Repairs

Sacramento County, CA

Figure 23

Moore Biological Consultants

0 100 200
Feet

Map Date: 04/17/20
Aerial Source: Google Earth (08/16/2018)

N W E S

Waters of the U.S. / Site 2 - Meiss Road Downstream

RD 800 - 2021 Erosion Repairs

Sacramento County, CA

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Figure 24

Moore Biological Consultants

0 50 100
Feet

N
W E
S

Map Date: 04/21/20
Aerial Source: Google Earth (08/16/2018)

Waters of the U.S. / Site 5 - Keating Road

RD 800 - 2021 Erosion Repairs

Sacramento County, CA

Project Area

Ordinary High Water Mark (66')

Waters of the U.S. (0.51-acre)

Cosumnes River

Figure 25

Moore Biological Consultants

0 100 200

Feet

Map Date: 04/21/20
Aerial Source: Google Earth (08/16/2018)

N W E S

Waters of the U.S. / Site 6 - Mile Marker 19

RD 800 - 2021 Erosion Repairs

Sacramento County, CA

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Figure 26

Moore Biological Consultants

0 50 100
Feet

N
W E
S

Map Date: 04/21/20
Aerial Source: Google Earth (08/16/2018)

Waters of the U.S. / Site 7 - Cosumnes Road Upstream

RD 800 - 2021 Erosion Repairs

Sacramento County, CA

Waters of the U.S. within the sites include 0.56+/- acres at Meiss Road Upstream (Figure 22), 0.48+/- acres at Meiss Road Downstream (Figure 23), 0.25+/- acres at Keating Road (Figure 24), 0.51+/- acres at Mile Marker 19 (Figure 25), and 0.44+/- acres at Cosumnes Road Upstream (Figure 26). The majority of this acreage is outside the limits of work. Beyond the Cosumnes River, no other potentially jurisdictional wetlands or Waters of the U.S. were observed in or near the sites or in the soil borrow areas.

As described aboge, the limit of Clean Water Act jurisdiction along the Cosumnes River is the OHWM; there are no adjacent wetlands. The OHWM is at elevations of approximately 110 feet tand 90 feet above mean sea level at Meiss Road Upstream and Meiss Road Downstream, respectively. At Keating Road and Mile Marker 19, the OHWM is at respective elevations of approximately 70 feet and 66 feet above mean sea level. The OHWM at Cosumnes Road Upstream is at an elevation of approximately 57 feet above mean sea level.

The Cosumnes River corridor in and adjacent to the sites consists of an alluvial channel associated with a broad floodplain. The open water habitat is primarily low gradient run and pool habitats with gravel, cobble, and clay substrates. The edges of the Cosumnes River and low areas in the floodplain support riparian vegetation, with a tree layer dominated by willows (*Salix* spp.), Fremont cottonwood (*Populus fremontii*), and black walnut. Valley oaks are restricted to higher elevations on the bank, well above the OHWM.

The project will result in the placement of fill in 1.11 acres of Waters of the U.S (Table 1). There will also be temporary construction disturbance to approximately 1.13 acres of Waters of the U.S. adjacent to the project footprint related to construction equipment and personnel accessing the work areas. In the event dewatering is necessary, temporary cofferdams (i.e., K-rail, sandbags, etc.) would also be located within the temporary construction disturbance areas.

Special-Status Species

Special-status species are plants and animals that are legally protected under the CESA, FESA, or other regulations. Special-status species also include other species that are considered rare enough by the scientific community and trustee agencies to warrant special consideration, particularly with regard to protection of isolated populations, nesting or denning locations, communal roosts, and other essential habitat.

The likelihood of occurrence of listed, candidate, and other special-status species in the project site is generally low. Table 5 provides a summary of the listing status and habitat requirements of special-status species that have been documented in the greater project vicinity or for which there is potentially suitable habitat in the greater project vicinity. This table also includes an assessment of the likelihood of occurrence of each of these species in the site. The evaluation of the potential for occurrence of each species is based on the distribution of regional occurrences (if any), habitat suitability, and field observations.

SPECIAL-STATUS PLANTS

Six special-status plants were identified in the CNDDB (2020) search: dwarf downingia (*Downingia pusilla*), Bogg's Lake hedge hyssop (*Gratiola heterosepala*), legenere (*Legenere limosa*), slender Orcutt grass (*Orcuttia tenuis*), Sacramento Orcutt grass (*Orcuttia viscida*), and Sanford's arrowhead (*Sagittaria sanfordii*) (Table 5 and Appendix B). Slender Orcutt grass and Sacramento Orcutt grass are also on the USFWS IPaC Trust Report.

Special-status plants generally occur in relatively undisturbed areas and are primarily found within unique vegetation communities such as vernal pools, chenopod scrub, chaparral, marshes and swamps, and areas with unique soils. The site does not provide highly suitable habitat for any of the species listed in Table 5 and is entirely unsuitable for most of the plants. Due to habitats present

TABLE 5

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Likelihood of Occurrence in the Site
PLANTS						
Dwarf downingia	*Downingia pusilla*	None	None	2	Vernal pools.	Unlikely: there are no vernal pools or seasonal wetlands in the sites. The nearest occurrence of this species in the CNDDB (2020) search area is a few records in the vernal pool grasslands northwest of Grantline Road.
Bogg's Lake hedge hyssop	*Gratiola heterosepala*	None	E	1B	Vernal pools.	Unlikely: there are no vernal pools or seasonal wetlands in the sites. The nearest records of this species in the CNDDB (2020) search area are in the vernal pool grasslands northwest of Grantline Road. An additional record is approximately 1.5 miles northwest of the Meiss Road Downstream site.
Legenere	*Legenere limosa*	None	None	1B	Vernal pools.	Unlikely: there are no vernal pools or seasonal wetlands in the project site. The nearest record of this species in the CNDDB (2020) search area is a few records in the vernal pool grasslands northwest of Grantline Road
Slender Orcutt grass	*Orcuttia tenuis*	T	E	1B	Vernal pools.	Unlikely: there are no vernal pools or seasonal wetlands in the project site. The nearest records of slender Orcutt grass in the CNDDB (2020) search area are in the vernal pool grasslands northwest of Grantline Road.
Sacramento Orcutt grass	*Orcuttia viscida*	E	E	1B	Vernal pools.	Unlikely: there are no vernal pools or seasonal wetlands in the project site. There is only one record of this species in the CNDDB (2020) search area and this record is in the vernal pool grasslands northwest of Grantline Road. The site is not within designated critical habitat for Sacramento Orcutt grass (USFWS, 2005a).

TABLE 5

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Likelihood of Occurrence in the Site
Sanford's arrowhead	*Sagittaria sanfordii*	None	None	1B	Standing or slow moving freshwater ponds, marshes, and ditches.	Unlikely: the Cosumnes River does not provide suitable habitat for Sanford's arrowhead. There are a few records of Sanford's arrowhead in the CNDDB (2020) search area within a few miles east and west of the Cosumnes River; approximately 2 miles southeast of Site 5, 2 miles southeast of Site 1, and 3 miles west of Site 2.
WILDLIFE						
Birds						
Swainson's hawk	*Buteo swainsoni*	None	T	N/A	Nesting: large trees, usually within riparian corridors. Foraging: agricultural fields and annual grasslands.	High: large trees along the Cosumnes River provide suitable nesting habitat for Swainson's hawks and adjacent grasslands and croplands provide suitable foraging habitat for this species. There are several records of nesting Swainson's hawks in the CNDDB (2020) search area along the Cosumnes River corridor.
Burrowing owl	*Athene cunicularia*	None	SC	N/A	Open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation.	Unlikely: the ruderal grasslands in the site are weedy and do not provide suitable habitat for burrowing owl. The only occurrence of burrowing owl in the CNDDB (2020) search area is in the grasslands northwest of Grantline Road.
Bank swallow	*Riparia riparia*	None	T	N/A	Nests colonially in riparian habitats; requires vertical banks and cliffs with fine-textured soils.	Low: the Cosumnes River provides suitable nesting habitat for this species. However, there is only one record of bank swallow in the CNDDB (2020) search area within 1 mile east of Site 1.
Tricolored blackbird	*Agelaius tricolor*	None	T	N/A	Requires open water and protected nesting substrate, usually cattails and riparian scrub with surrounding foraging habitat.	Moderate: the Cosumnes River provides suitable nesting habitat for this species and the grasslands adjacent to the Cosumnes River provides suitable foraging habitat for tricolored blackbird. There are several records of this species in the CNDDB (2020) search area along the Cosumnes River corridor.

TABLE 5

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Likelihood of Occurrence in the Site
White-tailed kite	*Elanus leucurus*	None	FP	N/A	Herbaceous lowlands with variable tree growth and dense population of voles.	Moderate: large trees along the Cosumnes River provide suitable nesting habitat for white-tailed kite and adjacent grasslands and croplands provide suitable foraging habitat for this species. The nearest occurrence of white-tailed kite in the CNDDB (2020) search area is just downstream of Site 2.
Reptiles & Amphibians						
California tiger salamander	*Ambystoma californiense*	T	T	N/A	Seasonal water bodies without fish (i.e., vernal pools and stock ponds) near grassland/ woodland habitats with summer refugia (i.e., burrows).	Unlikely: There is no suitable habitat within or near the site for California tiger salamander. This species is not recorded in the CNDDB (2020) within the search area. The site is not within designated critical habitat for California tiger salamander (USFWS, 2005b).
California red-legged frog	*Rana aurora draytonii*	T	SC	N/A	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation.	Unlikely: there is no suitable aquatic habitat for California red-legged frog in or near the project site. This species is also presumed extinct in the Central Valley. There are no recorded occurrences of this species in the CNDDB (2020) search area. The site is not within designated critical habitat for California red-legged frog (USFWS, 2006).
Giant garter snake	*Thamnophis gigas*	T	T	N/A	Freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches.	Unlikely: the site does not contain suitable aquatic habitat for giant garter snake. This species is notably absent in large rivers such as the Cosumnes. There is one occurrence of this species in the CNDDB (2020) search area, approximately 4 miles southwest of the Site 7.
Western pond turtle	*Emys marmorata*	None	SC	N/A	Ponds, marshes, streams, and ditches with emergent aquatic vegetation and basking areas.	Moderate: the Cosumnes River provides suitable habitat for western pond turtle and this species likely occurs in stock ponds the greater project vicinity. The closest occurrence of western pond turtle in the CNDDB (2020) search area is approximately 5 miles west of Site 7.

TABLE 5

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Likelihood of Occurrence in the Site
Western spadefoot	*Spea hammondii*	None	SC	N/A	Breeds and lays eggs in seasonal water bodies such as deep vernal pools or stock ponds.	Unlikely: there is no suitable aquatic habitat for western spadefoot in the site. The nearest occurrence of western spadefoot in the CNDDB (2020) search area is approximately 1.5 miles west of Site 2.
Fish						
Central Valley steelhead	*Oncorhynchus mykiss*	T	None	N/A	Riffle and pool complexes with adequate spawning substrates within Central Valley drainages.	Present: the Cosumnes River provides suitable aquatic habitat for Central Valley steelhead. There are several records of steelhead in the CNDDB (2020) search area in the Cosumnes River. The site is not within designated critical habitat for Central Valley steelhead (NOAA, 2005).
Delta smelt	*Hypomesus transpacificus*	T	T	N/A	Shallow lower delta waterways with submersed aquatic plants and other suitable refugia.	None: delta smelt do not occur in the Cosumnes River. This species is not recorded in the CNDDB (2020) search area. The site is not in designated critical habitat for delta smelt (USFWS, 1994).
Invertebrates						
Vernal pool fairy shrimp	*Branchinecta lynchi*	T	None	N/A	Vernal pools	None: there are no vernal pools or seasonal wetlands in the project site. The nearest records of this species in the CNDDB (2020) search area are in the vernal pool grasslands several miles east and west of the Cosumnes River. The site is not within designated critical habitat for vernal pool fairy shrimp (USFWS 2005a).
Conservancy fairy shrimp	*Branchinecta conservatio*	E	None	N/A	Vernal pools	Unlikely: there are no vernal pools in or adjacent to the site. There are no occurrences of this species recorded in the CNDDB (2020) within the search area. The site is not within designated critical habitat for Conservancy fairy shrimp (USFWS, 2005a).

TABLE 5

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Likelihood of Occurrence in the Site
Vernal pool tadpole shrimp	*Lepidurus packardi*	E	None	N/A	Vernal pools	Unlikely: there are no vernal pools or seasonal wetlands in the project site. The nearest records of this species in the CNDDB (2020) search area are in the vernal pool grasslands northwest of Grantline Road. The site is not within designated critical habitat for vernal pool tadpole shrimp (USFWS 2005a).
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	T	None	N/A	Elderberry shrubs, usually in Central Valley riparian habitats.	Unlikely: there are blue elderberry shrubs in close proximity to several of the work sites. The nearest occurrence of valley elderberry longhorn beetle in the CNDDB (2020) search area is several records within a few miles of a few of the sites.

1 T = Threatened; E = Endangered.

2 T = Threatened; E = Endangered; FP = Fully Protected; SC= State of California Species of Special Concern.

3 CNPS List 1B includes species that are rare, threatened, or endangered in California and elsewhere; List 2 includes species that are rare, threatened, or endangered in California, but more common elsewhere.

on site, the potential for any special-status plants to occur on-site is very low.

The site does not contain vernal pools, precluding the presence of dwarf downingia, Bogg's Lake hedge hyssop, legenere, slender Orcutt grass and Sacramento Orcutt grass. The Cosumnes River does not provide the suitable aquatic habitat to support Sanford's arrowhead, which occurs in standing or slow moving freshwater ponds, marshes and ditches.

SPECIAL-STATUS WILDLIFE

The potential for intensive use of habitats within the project site by special-status wildlife species is generally low. Swainson's hawk, burrowing owl (*Athene cunicularia*), bank swallow (*Riparia riparia*), tricolored blackbird (*Agelaius tricolor*), white-tailed kite, giant garter snake (*Thamnophis gigas*), western pond turtle (*Emys marmorata*), western spadefoot (*Spea hammondii*), Central Valley steelhead (*Oncorhynchus mykiss*), vernal pool fairy shrimp (*Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardi*), and valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) are special-status wildlife species identified in the CNDDB (2020) query. The USFWS IPaC Trust Report includes a few of these same species and also includes California tiger salamander (*Ambystoma californiense*), California red-legged frog (*Rana aurora draytonii*), delta smelt (*Hypomesus transpacificus*), and Conservancy fairy shrimp (*Branchinecta conservatio*).

While the project vicinity may have provided habitat for several special-status wildlife species in the past, agriculture, development, and construction and maintenance of levees in and/or adjacent to the sites have modified the natural habitats and associated potential to support special-status wildlife species. Of the wildlife species in Table 5, Swainson's hawk, white-tailed kite, tricolored blackbird, western pond turtle, and valley elderberry longhorn beetle are the only species with potential to occur in the site on more than a transitory or very occasional basis. Other special-status birds may fly over or forage in the area on

occasion, but are not expected to nest or extensively utilize the habitats within the project sites. Central Valley steelhead occur in the Cosumnes River in the vicinity of the sites on a seasonal basis. Species with the greatest potential to occur at and/or be impacted by the project are discussed below.

SWAINSON'S HAWK: The Swainson's hawk is a migratory hawk listed by the State of California as a Threatened species. The Migratory Bird Treaty Act and Fish and Game Code of California protect Swainson's hawks year-round, as well as their nests during the nesting season (March 1 through September 15). Swainson's hawks are found in the Central Valley primarily during their breeding season, a population is known to winter in the San Joaquin Valley.

Swainson's hawks prefer nesting sites that provide sweeping views of nearby foraging grounds consisting of grasslands, irrigated pasture, hay, and wheat crops. Most Swainson's hawks are migratory, wintering in Mexico and Central America and breeding in California and elsewhere in the western United States. This raptor generally arrives in the Central Valley in mid-March, and begins courtship and nest construction immediately upon arrival at the breeding sites. The young fledge in early July, and most Swainson's hawks leave their breeding territories by late August. The CNDDB (2020) contains several records of nesting Swainson's hawks along the Cosumnes River corridor, including several along the river and within a few miles of each of the sites (Appendix B).

The sites are in the heart of the nesting range of Swainson's hawks and the agricultural fields and grasslands near the sites provides high quality foraging habitat for this species. The larger valley oaks, cottonwoods, willows, and other trees in and near the site and in the greater project vicinity provide suitable nesting habitat for this species. Several Swainson's hawks were observed along the river and circling over the project sites and adjacent agricultural areas during the 2019 surveys. Swainson's hawks likely nest along the river somewhere near each site, and potentially in trees within the sites.

Swainson's hawks could be adversely affected by construction noise and disturbance if they nested in or near the sites during construction. However, project construction will occur in the late summer or fall, at the tail end or outside of the nesting period of this species. The conversion of less than 2 acres of ruderal grassland along the upper levee slopes to armored slopes would result in a very minor and less-than-significant reduction of potential Swainson's hawk foraging habitat. Similarly, the removal of several potentially suitable nest trees from a few relatively small sites along the river corridor is a less-than-significant reduction of potential nesting habitat for this species.

WHITE-TAILED KITE: White-tailed kite is a State of California Species of Concern, but is not a listed species at the state or federal level. The Migratory Bird Treaty Act and Fish and Game Code protect white-tailed kite year-round, as well as their nests during nesting season; nesting for this species peaks from May to August. White-tailed kites can be found in a variety of habitats across California including grasslands, open woodlands, riparian areas, marshes and cultivated fields. Populations of white-tailed kites are concentrated in the Central Valley, but their range spans west of the Sierra Nevada's to the California coastline.

White-tailed kite may nest in large trees in the general project vicinity and may forage in habitats nearby. Nesting usually commences in the early-spring, concurrent with other resident Central Valley raptors, and most young fledge by early-July. The nearest occurrence of white-tailed kite in the CNDDB (2020) search area is just downstream of the Meiss Road Downstream site. No white-tailed kites were observed in or near the sites.

White-tailed kites could be adversely affected by noise and disturbance related to construction activities if they nested in close proximity to the project site during the construction period. However, project construction will occur in the late-summer or Fall, outside of the nesting period of this species. The conversion of less than 2 acres of ruderal grassland along the upper levee slopes to armored slopes would result in a very minor and less-than-significant

reduction of potential white-tailed kite foraging habitat. Similarly, the removal of several potentially suitable nest trees from a few relatively small sites along the river corridor is a less-than-significant reduction of potential nesting habitat for this species.

TRICOLORED BLACKBIRD: The tricolored blackbird is a State of California Species threatened species and is also protected by the federal MBTA and Fish and Game Code of California. Tricolored blackbirds are colonial nesters requiring very dense stands of emergent wetland vegetation and/or dense thickets of wild rose or blackberries for nesting. Preferred nesting substrates are expansive stands of cattails and tules adjacent to open water. Tricolored blackbirds forage in annual grasslands and cropland. There are several records of this species in the CNDDB (2020) search area in the greater project vicinity, with the occurrences primarily in patches of vegetation in agricultural parcels outside the Cosumnes River corridor.

Tricolored blackbirds were not observed in the sites during the 2019 and 2020 surveys, although the willows, wild rose, blackberry brambles, and other suitable patches of vegetation along the edges of the Cosumnes River provide suitable nesting habitat for this species. Within the project sites, nesting habitat is limited and fragmented. The annual grassland field in and adjacent to the project sites may provide marginal foraging habitat for this species. Conversely, the expansive alfalfa and hay fields in the region provide high quality foraging habitat. The extent of use of nearby fields by foraging tricolored blackbirds is not known.

The removal of a few relatively small pathes (i.e., cumulatively less than 1 acre) of potentially suitable tricolored blackbird nesting habitat is a less than significant reduction of potentially suitable nesting habitat in the project vicinity. While the removal of vegetation containing nesting tricolored blackbirds would result in direct take of the birds, or their eggs, or chicks, project construction

would occur in the late-summer or fall, outside of the nesting season for this species.

WESTERN POND TURTLE: The western pond turtle is a state species of concern, but is not a listed species at the state or federal level. Western pond turtles are associated with permanent or nearly permanent bodies of water with adequate basking sites such as logs, rocks or open mud banks. Pond turtles construct nests in sandy banks along slow moving streams and ponds in the spring and the young usually hatch in 2 to 3 months. The nearest occurrence of western pond turtle recorded in the CNDDB (2020) within the search area is approximately 5 miles west of the Cosumnes Road Upstream site.

The Cosumnes River provides suitable habitat for western pond turtle. If western pond turtles are present in the Cosumnes River at or near the sites, it is possible they utilize sandy banks and/or grasslands in or near the sites for nesting. Due to the steep and near-vertical stream banks in and adjacent to the project site, it is unlikely western pond turtles from the Cosumnes River nest in the ruderal grasslands on the landside of the levee in the site.

VALLEY ELDERBERRY LONGHORN BEETLE: The valley elderberry longhorn beetle (VELB) is listed as a federally threatened species and its host plant is the blue elderberry shrub. Eggs are laid on the leaves or stems of the shrubs and upon hatching, the larvae bore in to the stem where they remain for 2+/- years feeding on the interior portions of the stems. Following several larval instars, the larvae chews an exit hole in the stem, pupates, and emerges after approximately a month as an adult. The adults live only 4 to 5 days, mates, lays eggs, and dies. The nearest occurrence of valley elderberry longhorn beetle in the CNDDB (2020) search area is within a mile southwest of the Fig Road Downstream site.

The USFWS (2017) *Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle* direct that, if possible, elderberry shrubs should be avoided by a ground disturbance set back of at least 165 feet from the drip line of each shrub.

A number of measures are also recommended to avoid and minimize project impacts to VELB and/or its habitat including fencing, worker training, and timing of construction, among others. In cases where complete avoidance is not feasible, the Framework recommends compensatory mitigation for the loss of actual or potential VELB habitat. Mitigation is usually achieved through the purchase of credits at an USFWS-approved mitigation bank, and transplantation of the impacted shrub to the bank, if feasible. In the case of a single shrub in a riparian setting such as at the project site, the Framework recommends the purchase of 2 credits at a mitigation bank approved by USFWS and transplantation of the impacted shrub to the bank, if feasible.

As discussed above, there are no blue elderberry shrubs within the Meiss Road Upstream site (Figure 16). The nearest clusters of blue elderberry shrubs are approximately 55 feet and 165 feet east of the site. There are three blue elderberry shrubs in Meiss Road Downstream (Figure 17). There is also a cluster of blue elderberry shrubs approximately 55 feet east of the Meiss Road Downstream site.

There are no blue elderberry shrubs in the Fig Road Upstream site (Figure 18). The nearest blue elderberry shrub is approximately 160 feet southwest of the site. There are no blue elderberry shrubs within or near the Keating Road site (Figure 19). There is a single blue elderberry shrub in the east part of Mile Marker 19 (Figure 20). There are also blue elderberry shrubs approximately 90 feet and 160 feet southwest of the site, and approximately 185 feet east of the site.

Finally, there is a cluster of blue elderberry shrubs in a patch of oak woodland vegetation in the access and staging area of the Cosumnes Road Downstream site (Figure 21). This shrub cluster is on northwest side of a fence along the levee and will be retained. Access to the site will be on the levee crown or along the landside levee toe and there will be no encroachment northwest of the fence in the vicinity of the cluster of blue elderberry shrubs.

Steep slopes and dense vegetation, including poison oak, precluded a comprehensive inspection of the stems of the blue elderberry shrubs for VELB or evidence of past occupancy by the species. VELB could be impacted by the removal of riparian vegetation or indirect disturbance it is in fact occupying the the blue elderberry shrubs in or near the sites.

To compensate for potential direct impacts to VELB, the District will provide compensatory mitigation according to the Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (USFWS 2017). The project would result in the removal of blue elderberry shrubs in the Meiss Road Downstream and Mile Marker 19 sites. No blue elderberry shrubs will be removed or disturbed during construction at the remaining 4 sites.

Approximately 0.67 acres of riparian forest vegetation will be removed from the two sites where blue elderberry shrubs will be removed (i..e, Meiss Road Downstream and Mile Marker 19). Therefore, compensation will be provided via the purchase of 2.01 acres of credits (3:1 ratio) at a USFWS-approved mitigation bank, such as the French Camp Conservation Bank.

SPECIAL-STATUS FISH: The potential for occurrence of special-status fish in the project site and surrounding areas is discussed in detail in the Fisheries Biological Assessment for the project prepared by FishBio (2020). The Fisheries Biological Assessment provides information on the life history and distribution of special-status fish in and near the site. The project sites are a combination of severely eroded river banks in the lower portion and constructed levees in the upper portion, offering little native aquatic vegetation or cover habitat for aquatic species. Because the Cosumnes River gets hot in the summer before going dry most years at and near the sites each year, Central Valley steelhead use the area as a migratory corridor as opposed to rearing. Central Valley steelhead spawning and rearing habitat in the Cosumnes River is limited to much further upstream reaches of the river.

The Fisheries Assessment describes how the Cosumnes River primarily serves as a movement corridor for two salmonids that occur in the area on a seasonal basis: fall-run Chinook salmon (*Oncorhynchus tshawytscha*) and Central Valley steelhead. Delta waterways downstream and west of the site provide potentially suitable habitat for delta smelt (*Hypomesus transpacificus*) and the southern Distinct Population Segment (sDPS) of green sturgeon (*Acipenser medirostris*). The FishBio Assessment concludes that while green sturgeon could potentially occur in much further downstream reaches of the Cosumnes River, it is highly unlikely either of these species occur in or near the sites.

The Fisheries Assessment provides an analysis of how the project may affect Central Valley California steelhead and fall-run Chinook salmon and/or the habitat suitability of the Cosumnes River at and near the sites for these species. If Central Valley California steelhead and/or fall-run Chinook salmon were to occur in the area during construction, these fish are active swimmers and could readily move away from the work area. The potential release of more than minor amounts of sediment during project construction could adversely impact Central Valley California steelhead and/or fall-run Chinook salmon in or near the site.

The lower edges of the erosion repair sites will either be dry or inundated with shallow water (estimated depth less than one foot) during construction. The riverbed at most of the sites dries out entirely during most summers. It is possible there may be an isolated pocket of hot water during the late summer at one or more of the sites. The proposed installation of a silt curtain or dewatering devices during project construction will protect any fish that may be in the river from elevated levels of background turbidity in the vicinity of the repair sites.

The armoring of 1.11 acres and temporary disturbance of 1.13 acres of the Cosumnes River bank below the OHWM would result in a minor reduction of potential salmon and steelhead rearing habitat. Following construction, the aquatic habitats adjacent to the stabilized banks at each site will be comparable

to those under existing conditions, providing minimal habitat for Chinook salmon and Central Valley California steelhead beyond those of a migratory corridor.

The Assessment concludes project construction is unlikely to impact sDPS green sturgeon. First, both adult and juveniles are active and mobile swimmers that would largely be able to leave any area disturbed by project activities. The project is also located well outside the primary Sacramento River migratory corridor used by both juveniles and adults; little to no spawning occurs in the San Joaquin basin. Following construction, aquatic habitats adjacent to the stabilized bank will be comparable to those under existing conditions, providing minimal habitat for sDPS green sturgeon.

Mitigation for the armoring of 1.11 acres of the Cosumnes River bank below the OHWM and associated impacts to special-status fish and riparian habitats will be achieved by purchasing riverine credits at a ratio of 2:1 from an approved mitigation bank. The project is within the service area of the Cosumnes Floodplain Mitigation Bank (CFMB) and the purchase of 2.22 acres of Flooded Riparian credits would provide mitigation for impacts to 1.11 acres of Waters of the U.S. and associated impacts to special-status fish and riparian habitats. In the event credits are not available at CFMB, equivalent compensatory mitigation would be provided at an alternate agency-approved bank.

OTHER SPECIAL-STATUS SPECIES: Beyond Swainson's hawk, white-tailed kite, and tricolored blackbird, a few other special-status birds may fly over or forage in the area on occasion, but are not expected to nest or extensively utilize the habitats within the project sites. For example, bank swallow may nest along the portions of the Cosumnes River, but were not observed in or near the sites. Burrowing owls are not known to occur south Sacramento County, but rarely occur in riparian corridors. The only occurrence of burrowing owl in the CNDDB (2020) within the search area is in grasslands northwest of Grantline Road, approximately 4 miles northwest of the Fig Road Upstream site.

The site and surrounding areas do not provide suitable habitat for California red-legged frog, which is presumed extinct on the floor of the Central Valley. There are no potential breeding ponds in or near the site for California tiger salamander. The Cosumnes River does not provide suitable habitat for giant garter snake, which does not occur in large rivers with introduced populations of large predatory fish. There are no vernal pools or seasonal wetlands in the site for vernal pool branchiopods (i.e., fairy and tadpole shrimp).

CRITICAL HABITAT: The sites are not within designated critical habitat for California red-legged frog (USFWS, 2006a), federally listed vernal pool shrimp or plants (USFWS, 2005a), California tiger salamander (USFWS, 2005b), valley elderberry longhorn beetle (USFWS, 1980), Central Valley California steelhead (NOAA), or other federally listed species (Appendix D).

VI. AVOIDANCE, MINIMIZATION AND MITIGATION MEASURES

The following avoidance, minimization, and mitigation measures will be implemented to reduce the potential for impacts to jurisdictional Waters of the U.S., special-status species, and potential or actual habitats of special-status species:

- Minimize impacts to potentially jurisdictional Waters of the U.S. and wetlands by restricting all work to the project footprint and adjacent temporary construction areas, as proposed. Permits from ACOE, CDFW, and RWQCB shall be secured prior to the placement of any fill material within the jurisdictional Waters of the U.S. The District shall implement all permit conditions and mitigation measures related to the protection of sensitive aquatic habitats and species, including any conditions resulting from ACOE Section 7 consultations with USFWS and/or the NMFS, such as project scheduling and implementing appropriate construction Best

Management Practices.

- Project construction shall be scheduled between July 1 and October 31 to reduce the potential for sedimentation of Cosumnes River, and associated impacts to aquatic resources including special-status fish that occur in the Cosumnes River or downstream waterways on a seasonal basis. This work window may be adjusted through consultation with CDFW, NMFS and/or USFWS. During the late-summer or fall work window, the lower edge of the erosion repair sites will either be dry or inundated with shallow water (estimated depth less than one foot) during construction. A silt curtain or dewatering devices (i.e., K-rail, sandbags, etc.) shall be installed during project construction to minimize the potential for sediment release in to the river and protect any fish in the river from elevated levels of background turbidity in the vicinity of the repair sites.

- Off-site compensatory mitigation for impacts to riverine habitats and associated special-status fish species shall be provided at an approved mitigation bank. The project is within the service area of the Cosumnes Floodplain Mitigation Bank and the purchase of 2.22 acres of Flooded Riparian credits would provide mitigation for impacts to 1.11 acres of Waters of the U.S. and associated impacts to special-status fish and riparian habitats. In the event credits are not available at the Cosumnes Floodplain Mitigation Bank, equivalent compensatory mitigation would be provided at an alternate agency-approved bank.

- To compensate for potential direct impacts to VELB, the District will provide compensatory mitigation according to the USFWS Framework. The project would result in the removal of approximately 0.67 acres of riparian forest vegetation that contains a blue elderberry shrub at the Fig Road Downstream site. Therefore, compensation will be provided via the purchase of 2.01 acres of credits (3:1 ratio) at an USFWS-approved mitigation bank, such as the French Camp Conservation Bank.

- Implement standard BMPs for vegetation protection and management of invasive species, including fencing of avoided valley oaks and re-seeding disturbed areas with a seed-mix approved by CDFW.

- In order to avoid take of protected raptors and migratory birds between February 1 and August 31, a CDFW approved biologist shall conduct an initial pre-construction nest survey. The survey shall be conducted within fifteen (15) days prior to the beginning of construction activities in order to identify active nests of all species within five hundred feet (500 ft.) of the project work areas, as well as raptors' active nests within a quarter mile (1320 ft.) of the project work areas. The surveys shall incorporate methodologies from CDFW's 1994 Staff Report regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California (CDFW, 1994) and the Swainson's Hawk Technical Advisory Committee (SHTAC) survey guidelines (SHTAC, 2000). If active raptor nests are found within 1320 feet of the work area or other active nests within 500 feet of the work area, a temporary buffer of 1320 feet and 500 feet respectively shall be established and the District shall retain an on-site biologist/monitor experienced with raptor behavior. The biologist shall monitor the nest(s) and consult with the CDFW to determine the buffers to be applied and best course of action to avoid nest abandonment or take of individuals. The necessity and extent for temporal construction restrictions shall be determined by CDFW. CDFW may determine it is necessary for a designated biologist/monitor to be on-site daily while construction-related activities are within or near buffer areas. The on-site biologist/monitor shall have authority to stop work if raptors are exhibiting agitated behavior such as defensive flights at intruders, unusual getting up from a brooding position or unusual flying off the nest. If during the nesting season there is a lapse in project-related work of fifteen (15) days or longer, another focused survey shall be performed and the results sent to CDFW prior to resuming work.

- Preconstruction surveys for burrowing owl shall be undertaken for construction activities between February 1 and August 31. The surveys shall incorporate methodologies from CDFW's 2012 Staff Report on Burrowing Owl Mitigation and the California Burrowing Owl Consortium CBOC) Burrowing Owl Survey Protocol and Mitigation Guidelines (CBOC, 1993). In the event that nesting owls are located within 250 feet of the work areas, temporal construction restrictions may be necessary to eliminate the potential for noise disturbance to the burrowing owls. The necessity and extent for temporal construction restrictions as to nesting burrowing owls is dependent upon location of the nest with respect to construction and shall be determined by CDFW as described above.

- Trees and shrubs within the work area could be used by other birds protected by the Migratory Bird Treaty Act of 1918. The grasslands may be used by ground-nesting species. Any vegetation removal during the avian nesting season (February 1 through August 31) shall be immediately preceded by a survey. If active nests are found, adequate marking of the nest site shall be provided and vegetation removal in the vicinity of the nest shall be delayed until the young fledge.

- Western pond turtle may be present in the project area. If a western pond turtle is observed, it should be left alone to move out of the area on its own or may be relocated by a qualified biologist to a suitable aquatic habitat outside of the work area. The District shall exercise measures to avoid direct injury to western pond turtle, as well as measures to avoid areas where they are observed to occur.

- Pre-construction surveys for western pond turtle and their nests will be conducted for construction during April 1 through October 31. This will involve a search for nests in uplands on the landside of the levees. If nest sites are located, the District will notify CDFW and a 50-foot buffer area

around the nest shall be staked and work will be delayed until hatching is complete and the young have left the nest site.

- A biological worker awareness training program shall be implemented to educate the construction crews of the biological diversity within the project area. The worker awareness program shall include a presentation on the life history and legal status of potentially occurring special-status species and distribution of informational packages to each worker. While all of the species in Table 5 will be at least briefly addressed, the focal species of the worker awareness training program will be Swainson's hawk, white-tailed kite, tricolored blackbird, burrowing owl, western pond turtle, valley elderberry longhorn beetle, and Central Valley steelhead.

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Appendix A

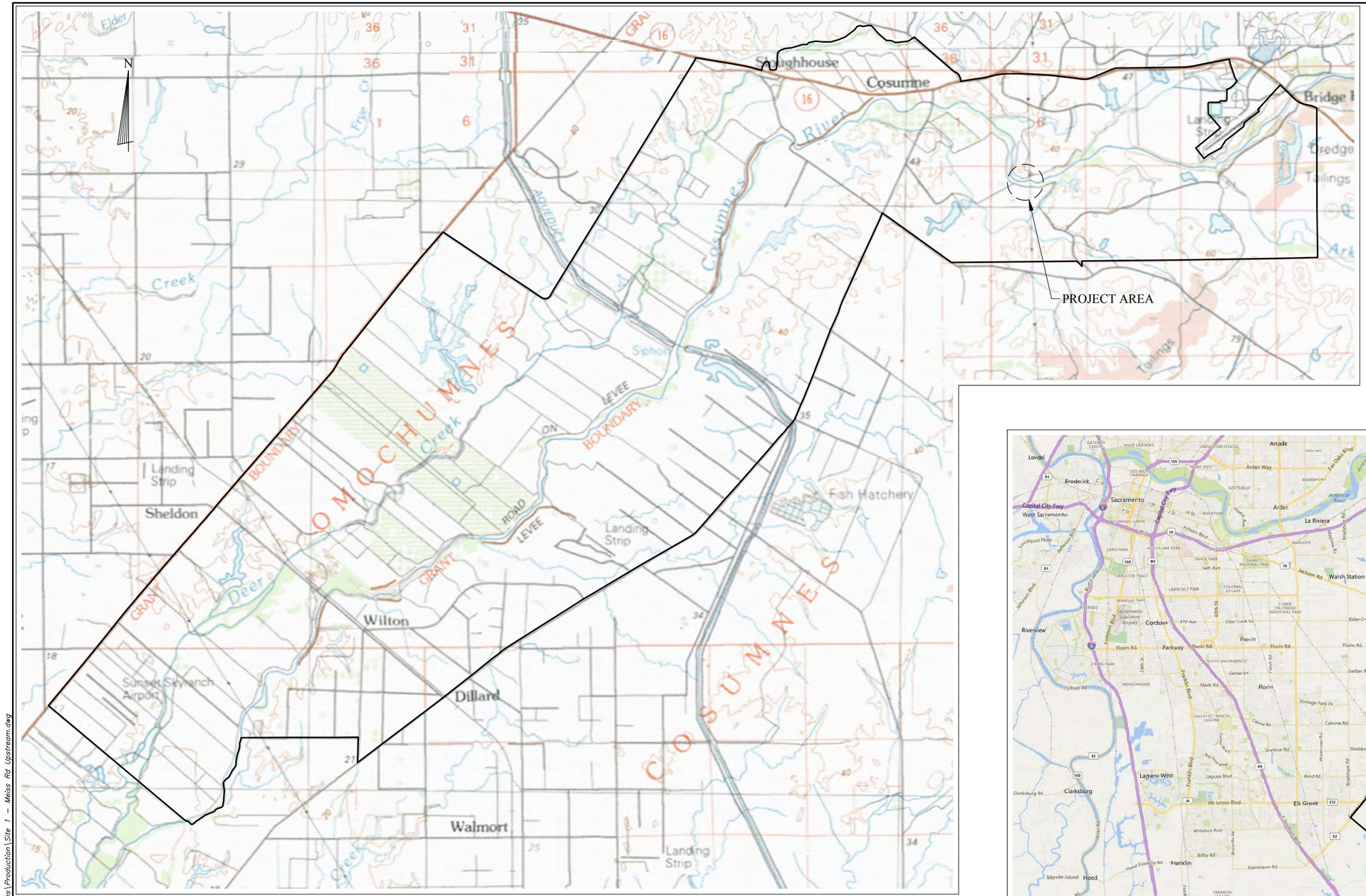
Plan and Profile Exhibits

RECLAMATION DISTRICT NO. 800

CRITICAL LEVEE REPAIR PROJECTS
SITE 1: MEISS ROAD UPSTREAM

Sacramento County **California**

WAGNER & BONSIGNORE CONSULTING CIVIL ENGINEERS A CORPORATION
2151 RIVER PLAZA DRIVE, SUITE 100 SACRAMENTO, CALIFORNIA



LOCATION MAP

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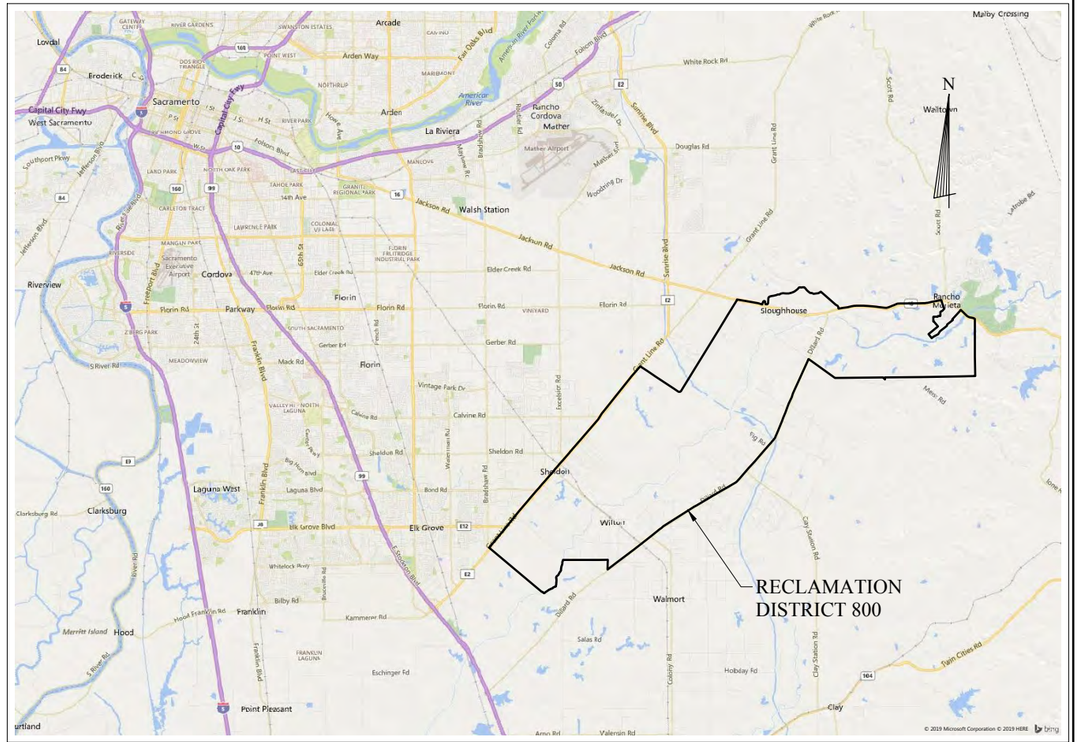

VICINITY MAP

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Plot Date: 4/16/2020
Revision Date: –

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
Approved By: –
Date: APRIL 2020

Wagner&Bonsignore
Consulting Civil Engineers, A Corporation
2151 River Plaza Drive
Suite 100
Sacramento, California 95833
Ph: 916-441-6850
Fx: 916-779-3120

DRAFT

RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
MEISS ROAD UPSTREAM

LOCATION AND VICINITY MAP

SHEET 1 OF 8 SHEETS

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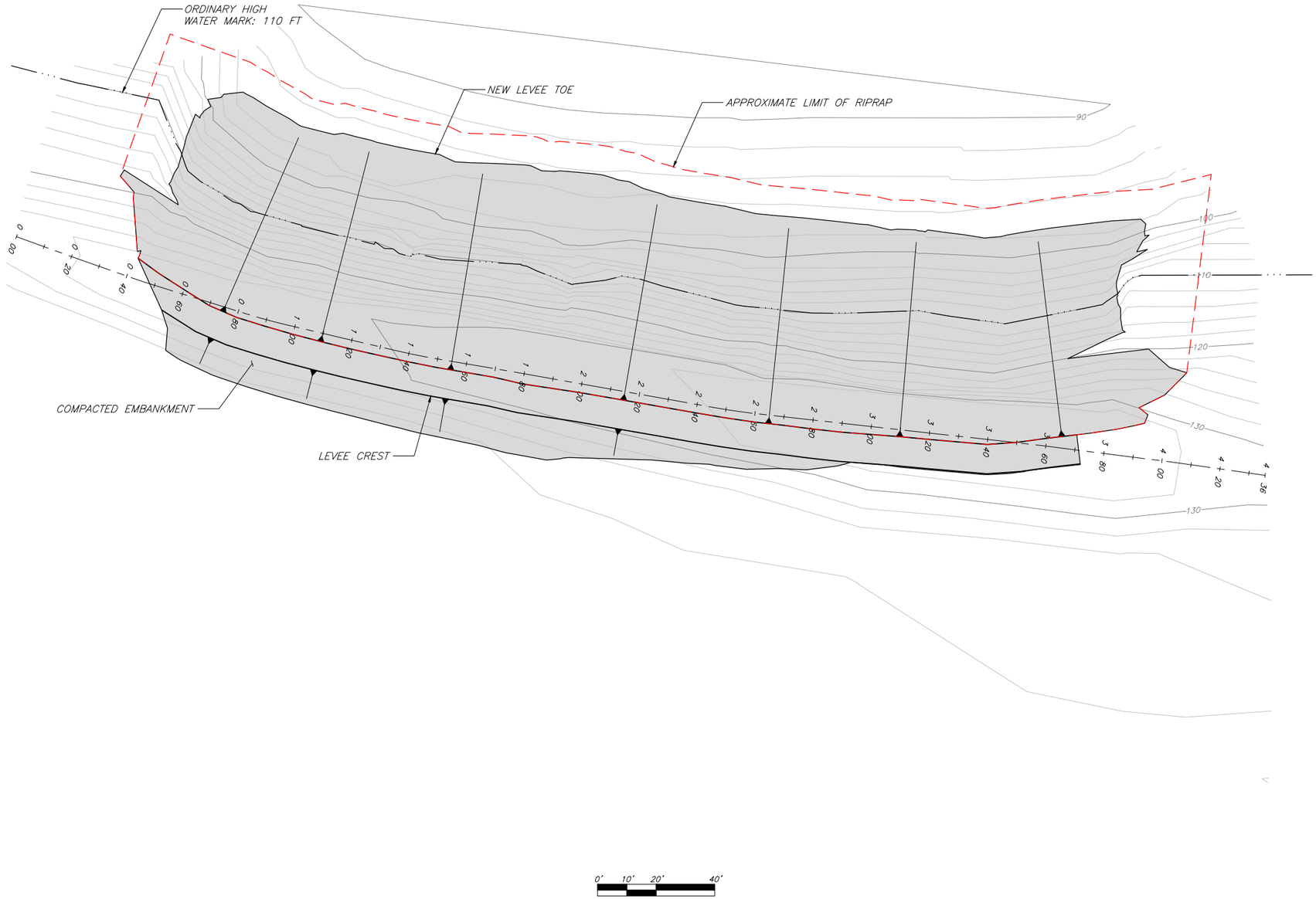

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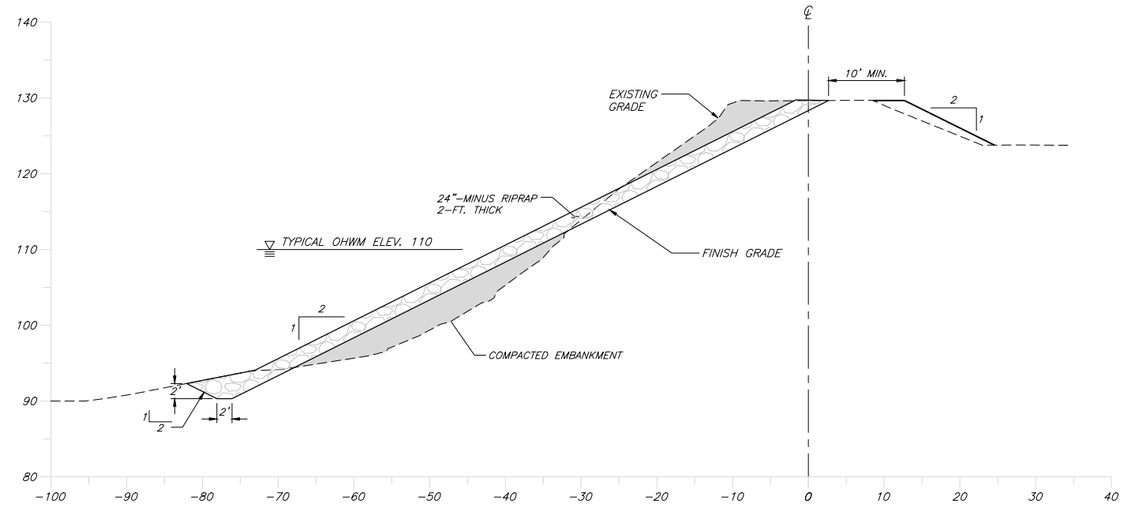
RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
MEISS ROAD UPSTREAM

PLAN

SHEET 2 OF 8 SHEETS



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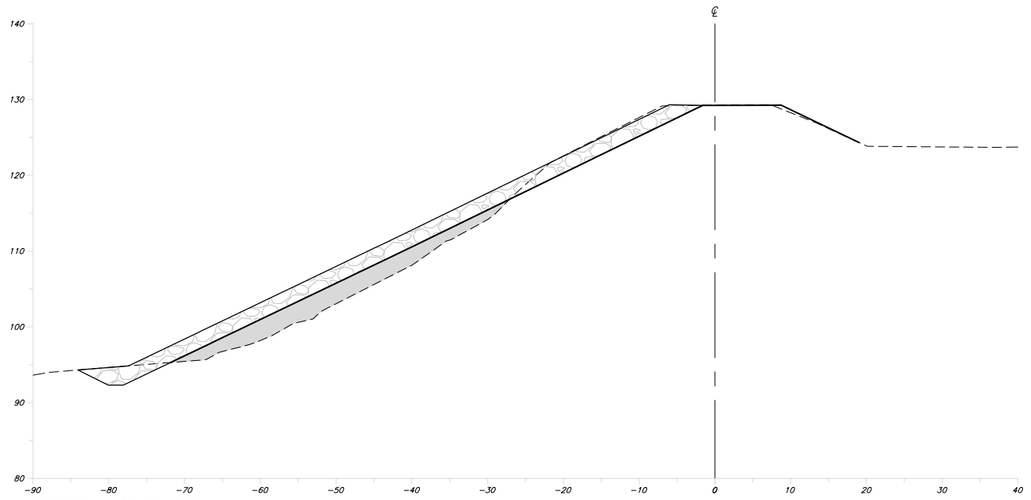

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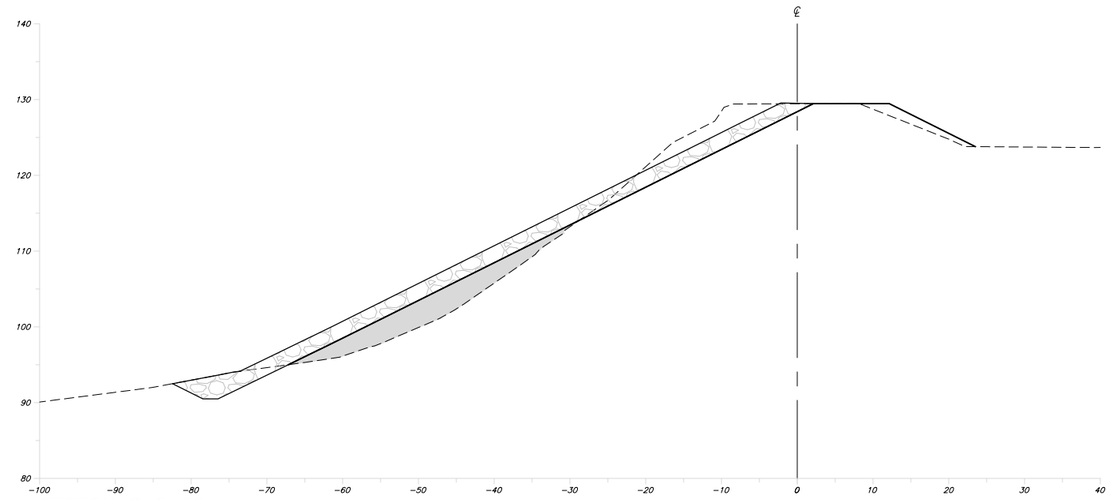

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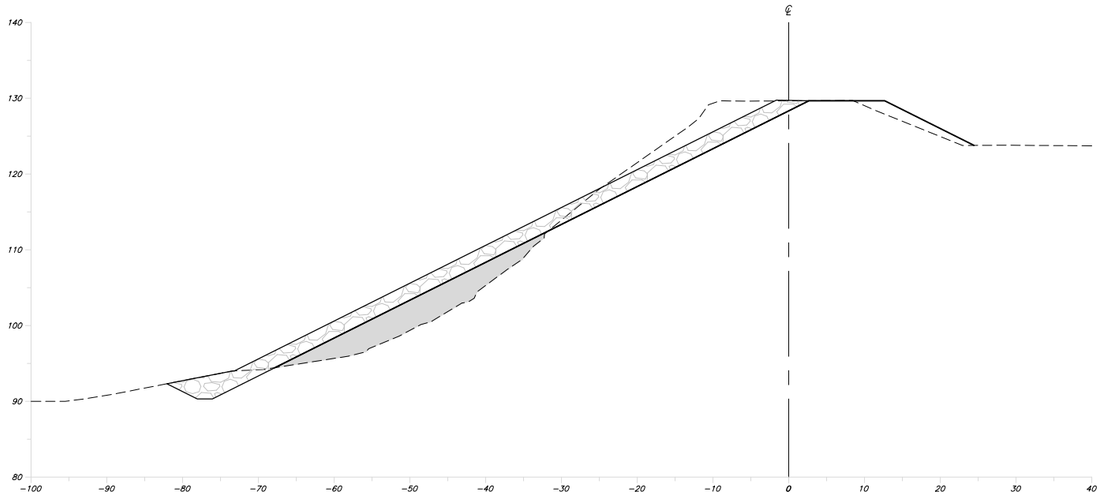
RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
MEISS ROAD UPSTREAM

SECTIONS

SHEET 3 OF 8 SHEETS



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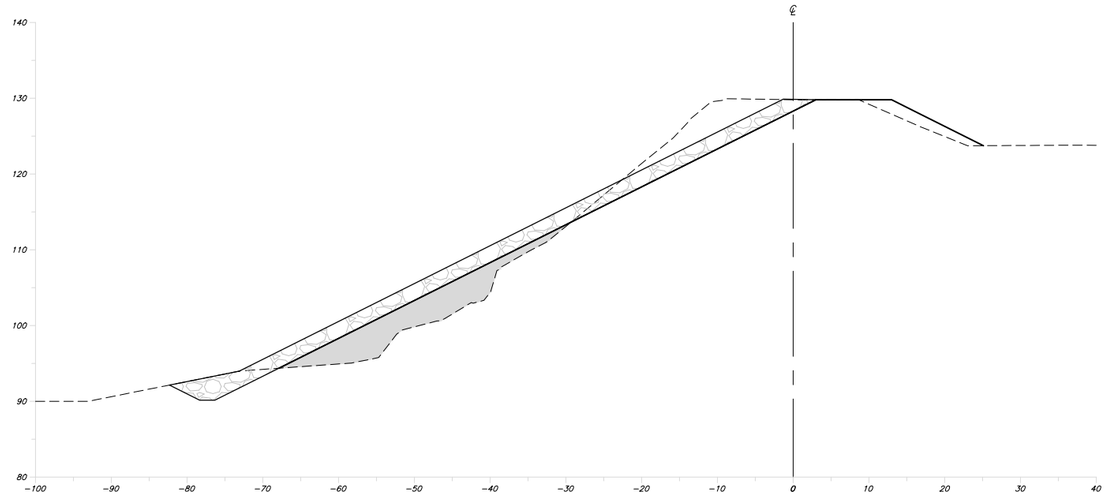

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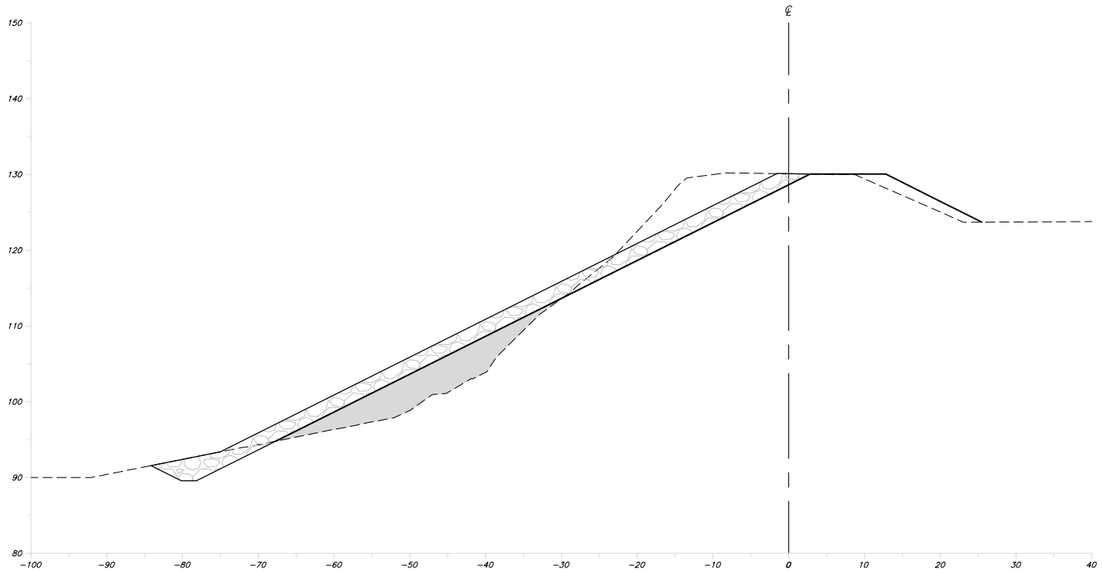

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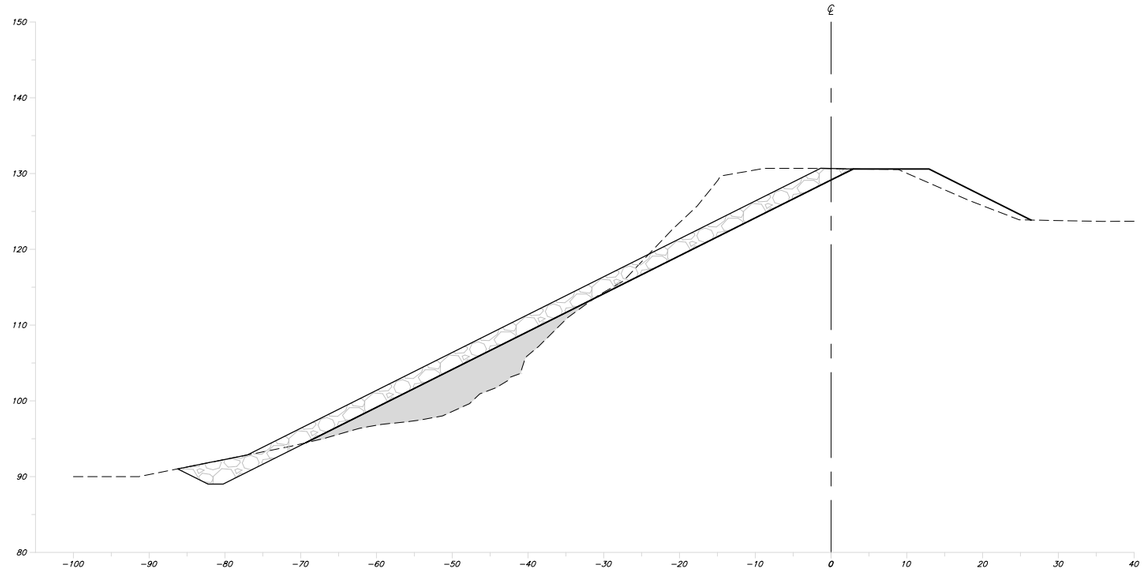

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RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
MEISS ROAD UPSTREAM

SECTIONS

SHEET 4 OF 8 SHEETS

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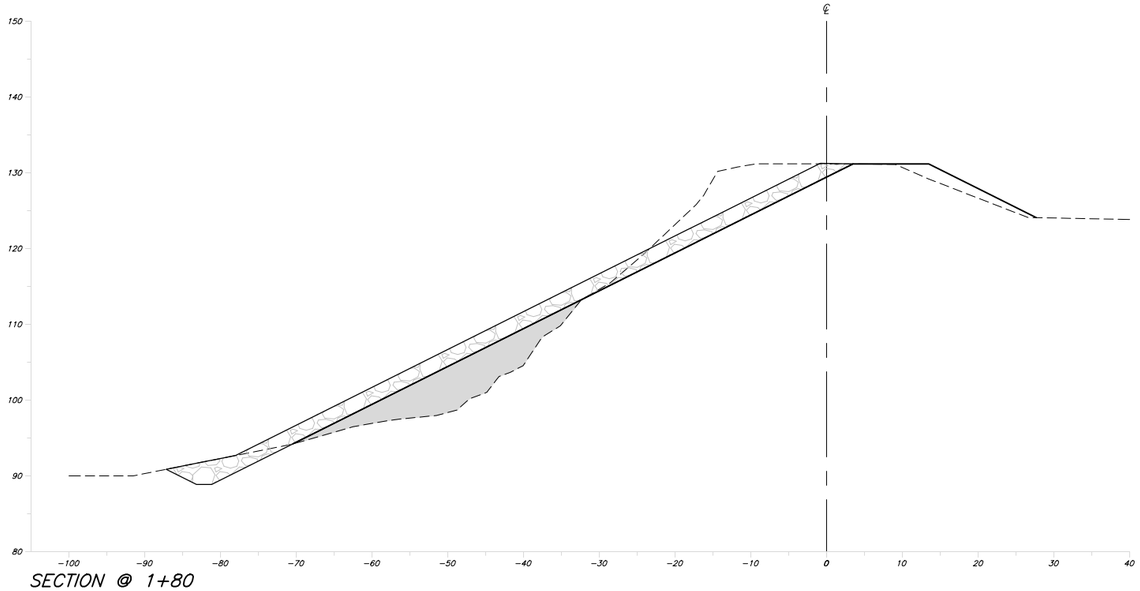

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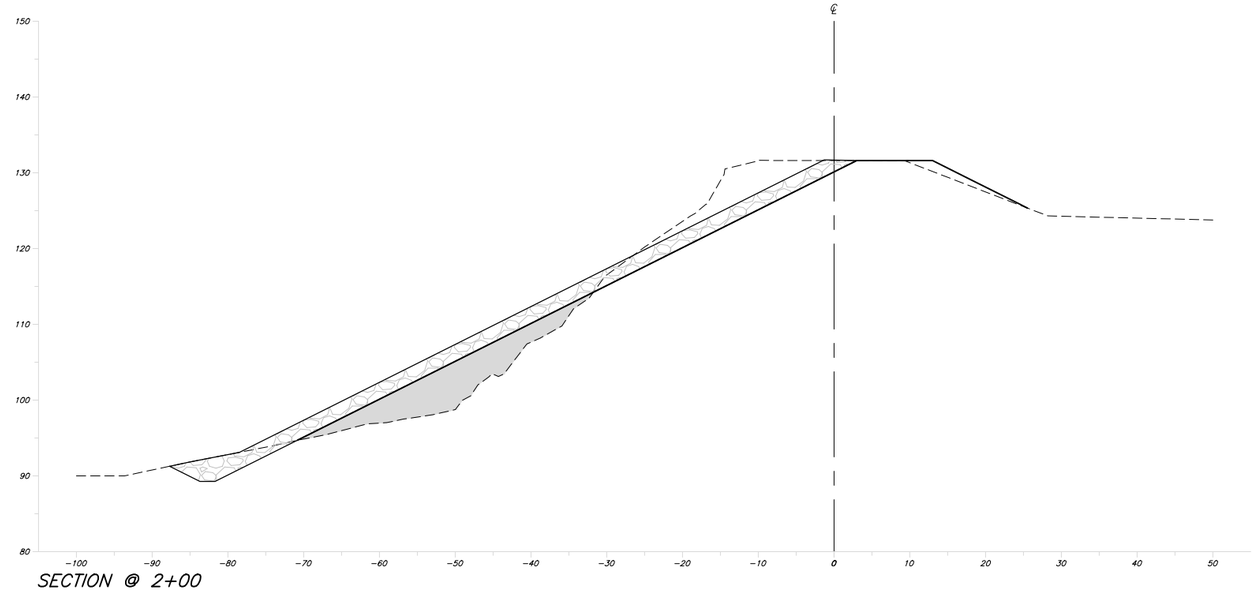

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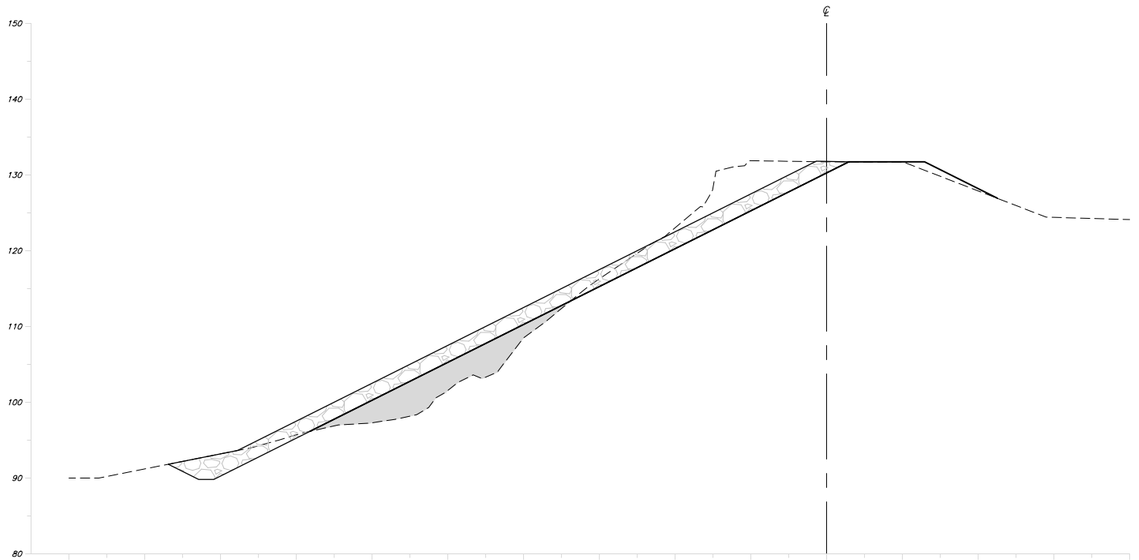

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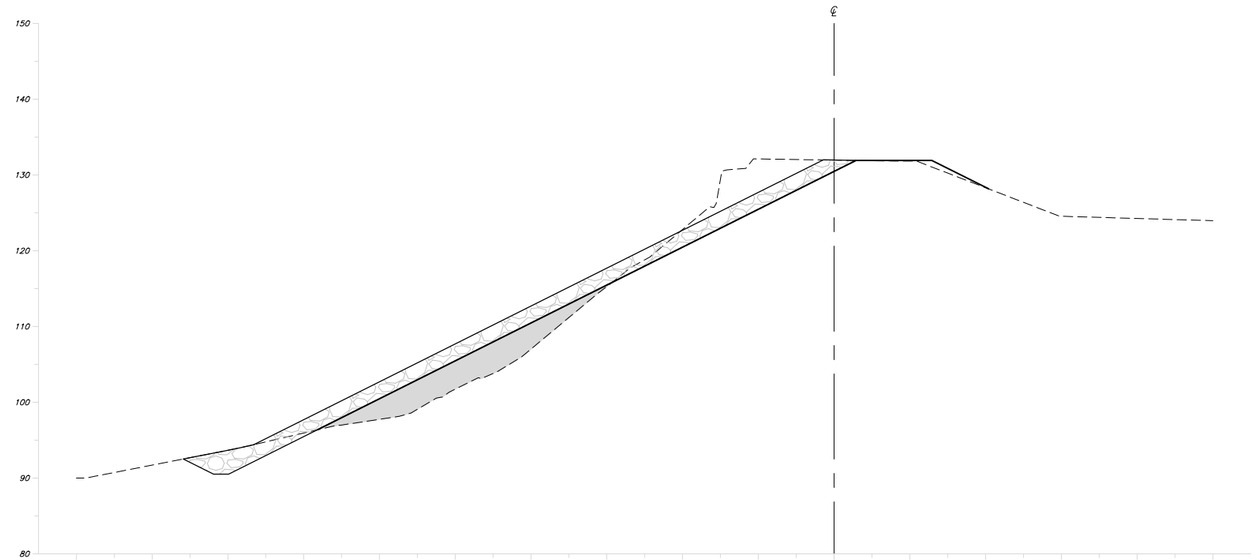

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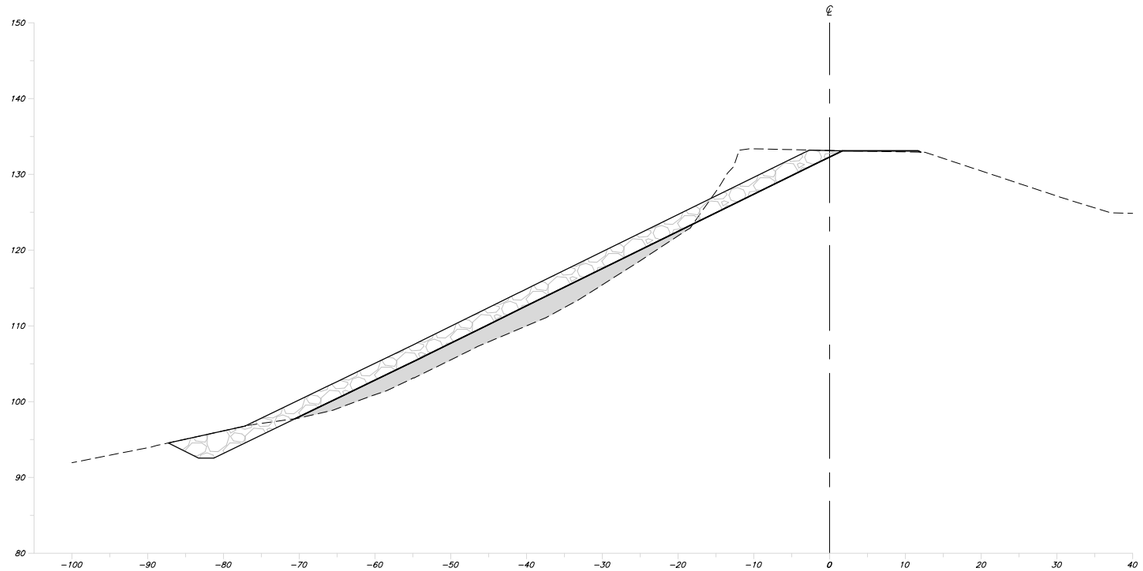
RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
MEISS ROAD UPSTREAM

SECTIONS

SHEET 5 OF 8 SHEETS



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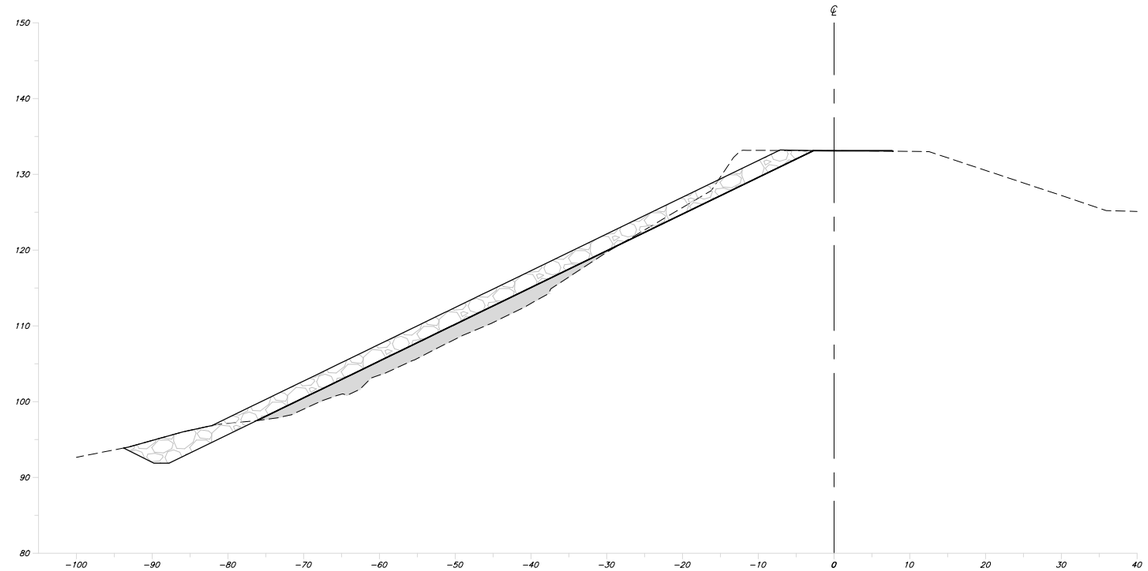

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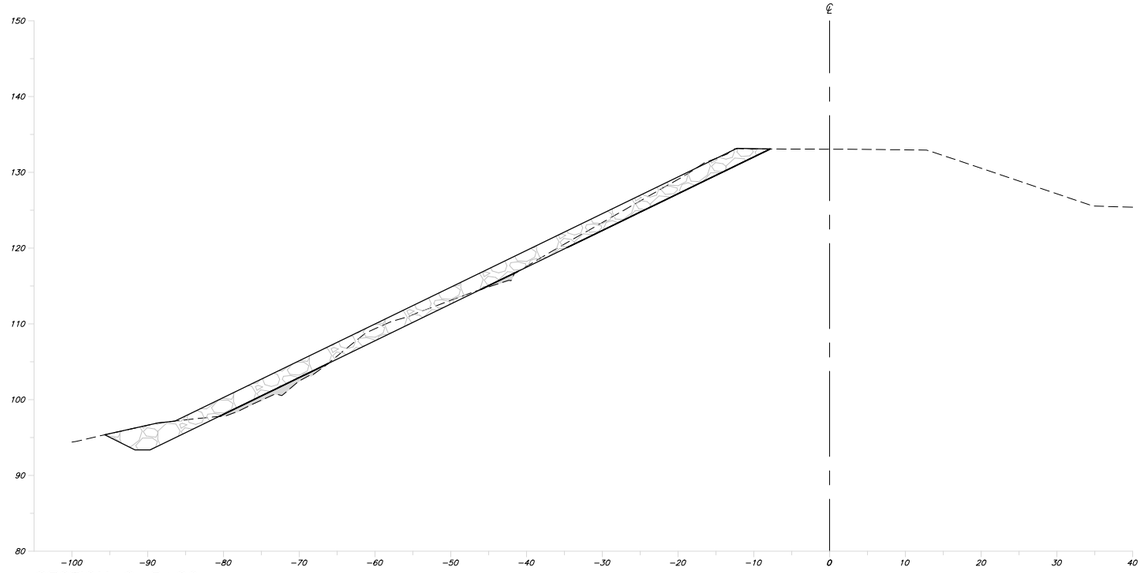

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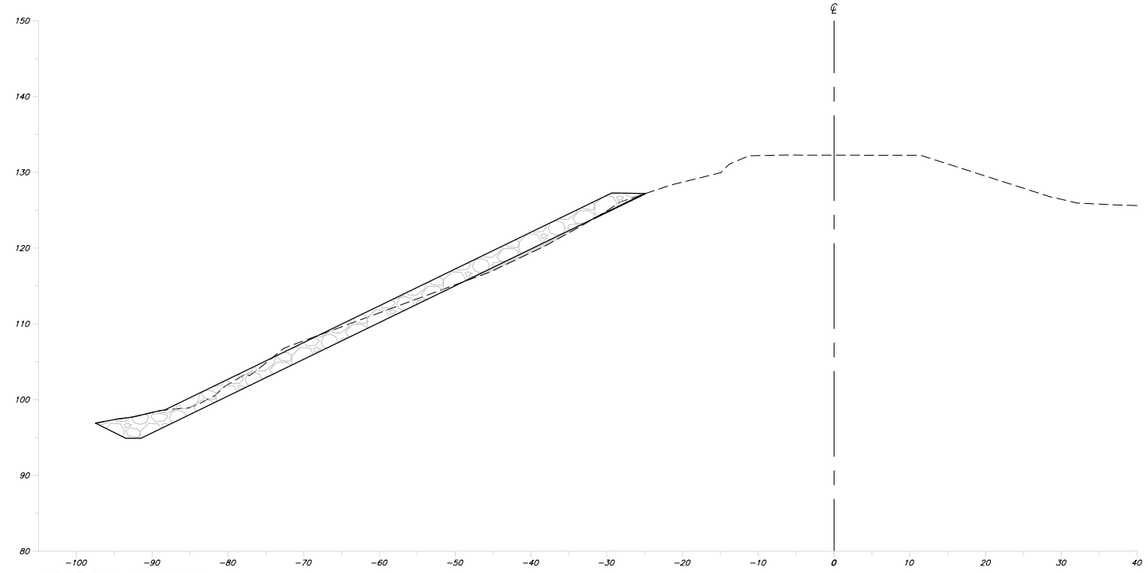

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Drawn By	P. INTHARATH
Checked By	–
Approved By	–
Date	APRIL 2020

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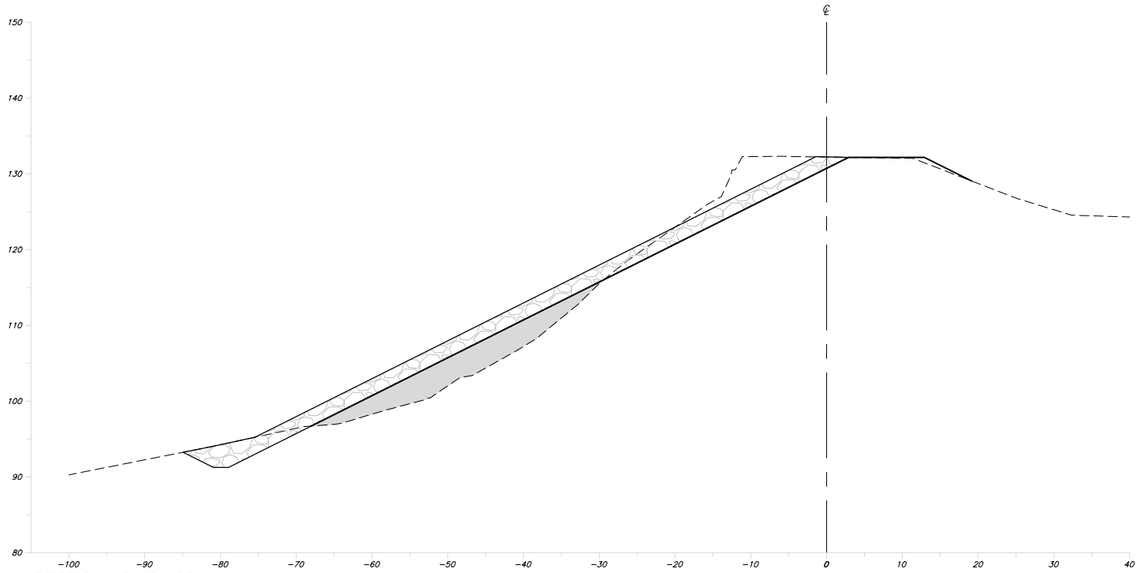
RECLAMATION DISTRICT 800

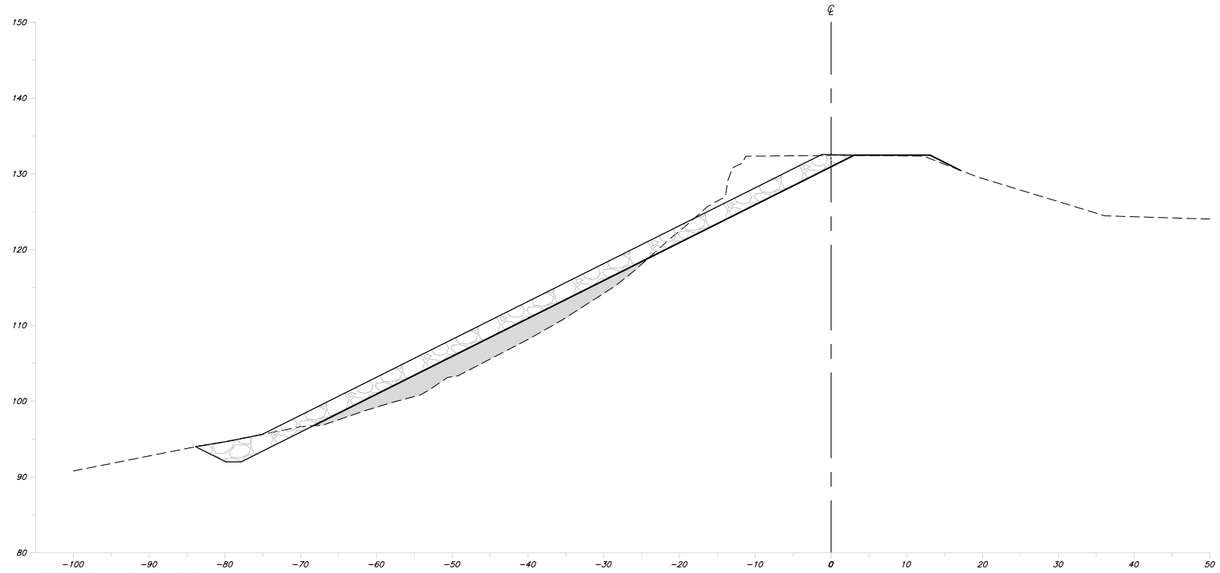
CRITICAL LEVEE REPAIRS
MEISS ROAD UPSTREAM

SECTIONS

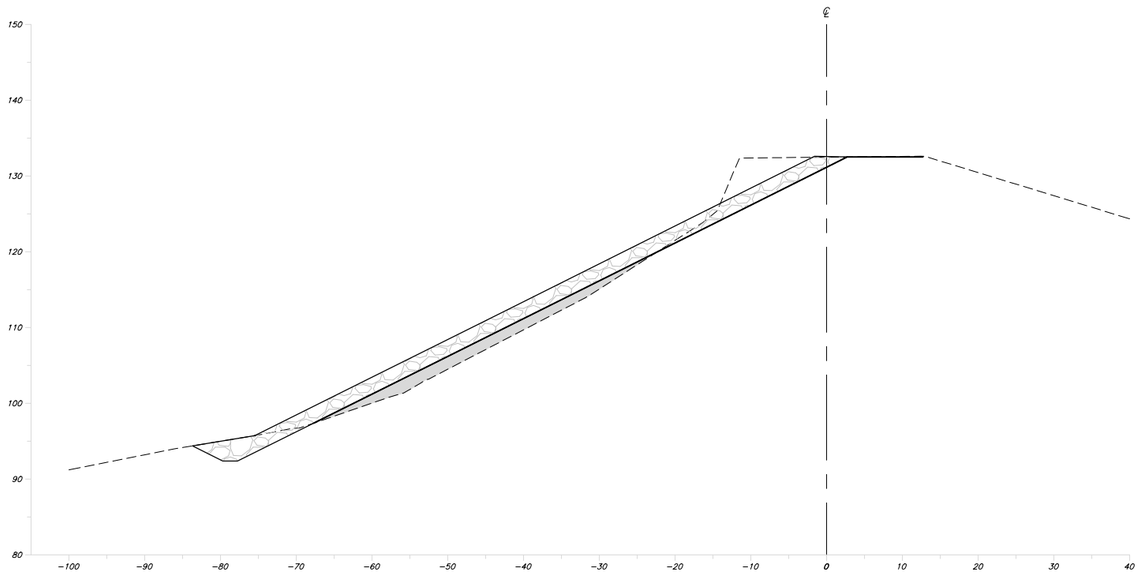
SHEET 6 OF 8 SHEETS



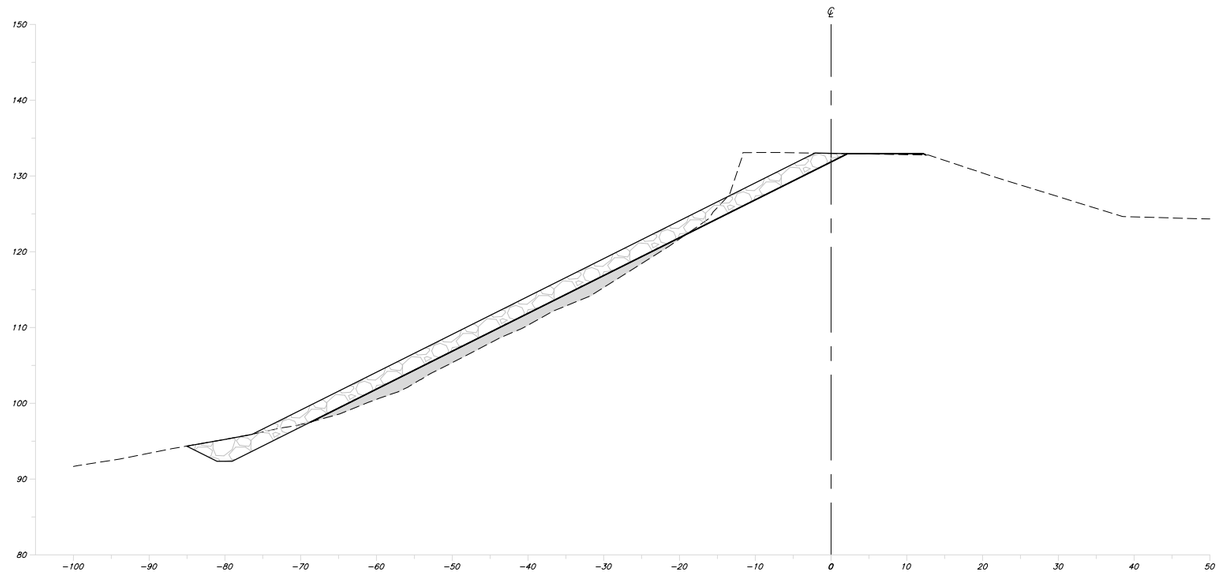
SECTION @ 2+60



SECTION @ 2+80



SECTION @ 3+00



SECTION @ 3+20

0' 5' 10' 20'

Q:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 1 - Meiss Rd Upstream.dwg

File Name: Site 1 - Meiss Rd Upstream.dwg
Plot Date: 4/16/2020
Revision Date: —

REVISIONS			
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Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
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RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
MEISS ROAD UPSTREAM

SECTIONS

SHEET 7 OF 8 SHEETS

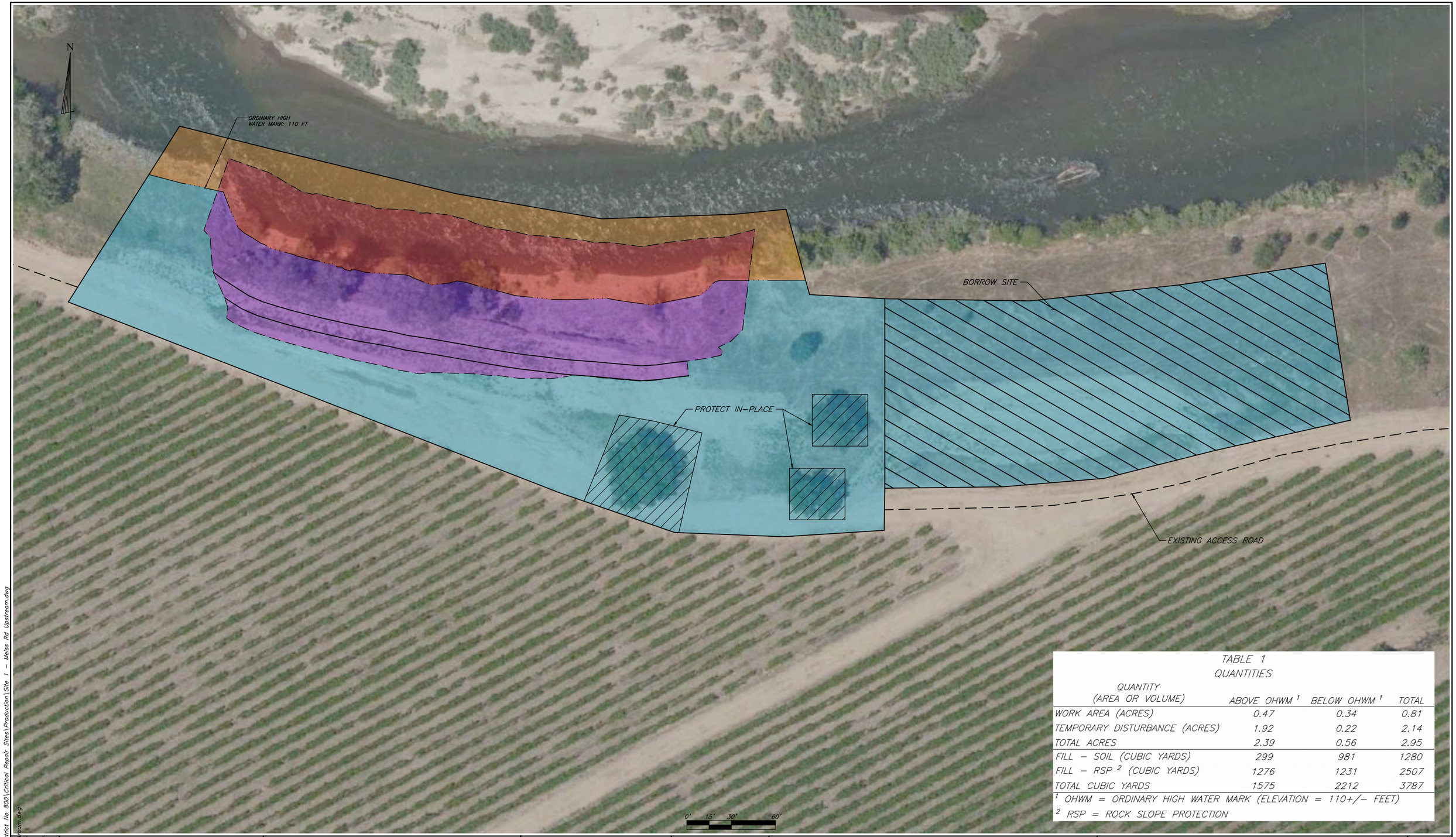

TABLE 1
QUANTITIES

QUANTITY (AREA OR VOLUME)	ABOVE OHWM [1]	BELOW OHWM [1]	TOTAL
WORK AREA (ACRES)	0.47	0.34	0.81
TEMPORARY DISTURBANCE (ACRES)	1.92	0.22	2.14
TOTAL ACRES	2.39	0.56	2.95
FILL – SOIL (CUBIC YARDS)	299	981	1280
FILL – RSP [2] (CUBIC YARDS)	1276	1231	2507
TOTAL CUBIC YARDS	1575	2212	3787

[1] OHWM = ORDINARY HIGH WATER MARK (ELEVATION = 110+/– FEET)
[2] RSP = ROCK SLOPE PROTECTION

LEGEND
- WORK AREA BELOW ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA BELOW ORDINARY HIGH WATER MARK
- WORK AREA ABOVE ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA ABOVE ORDINARY HIGH WATER MARK

File Name: Site 1 – Meiss Rd Upstream.dwg
Plot Date: 4/16/2020
Revision Date: –

REVISIONS

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RECLAMATION DISTRICT 800
CRITICAL LEVEE REPAIRS
MEISS ROAD UPSTREAM
IMPACTS

SHEET 8 OF 8 SHEETS

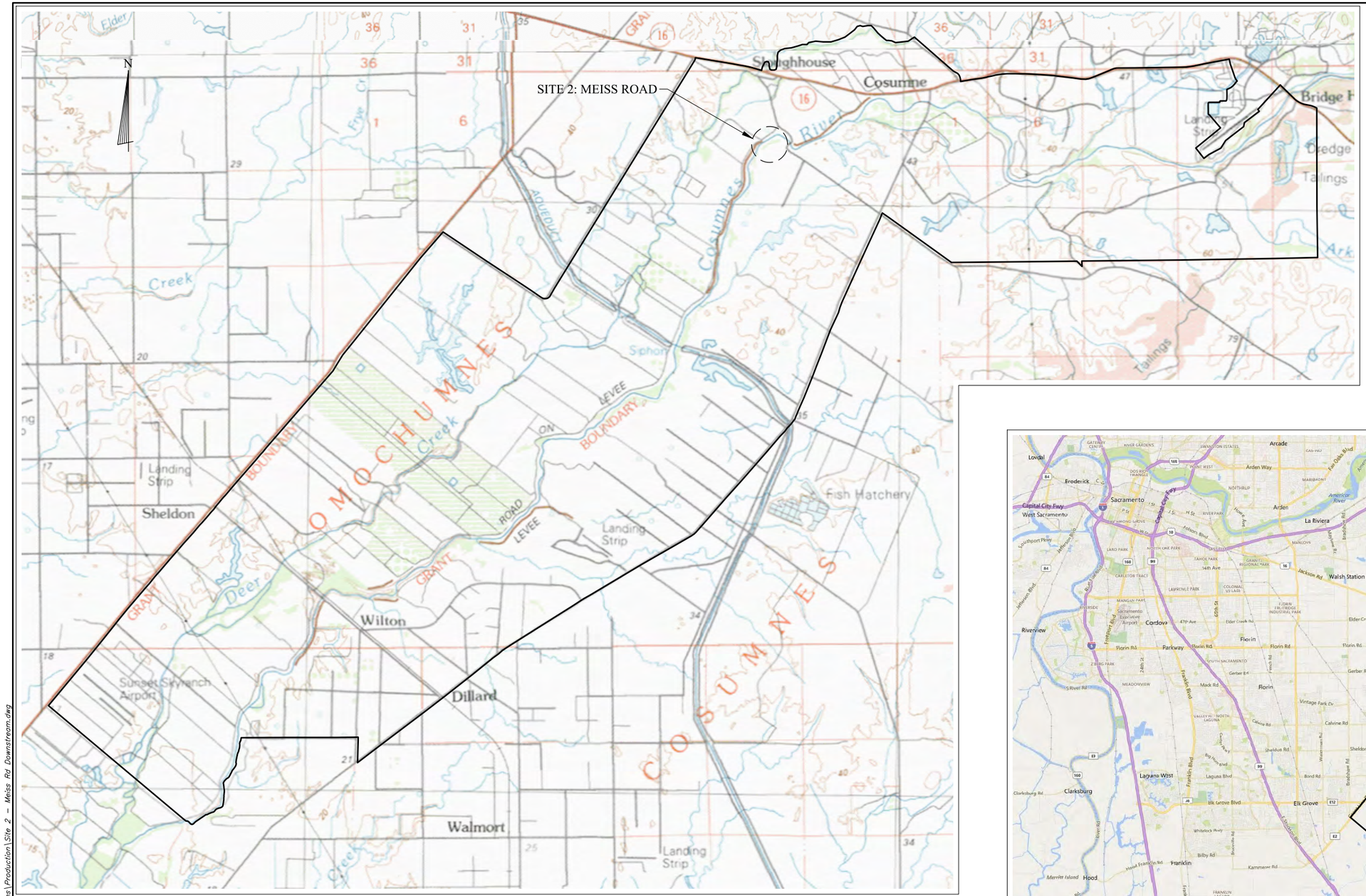
G:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 1 – Meiss Rd Upstream.dwg

RECLAMATION DISTRICT NO. 800

CRITICAL LEVEE REPAIR PROJECTS
SITE 2: MEISS ROAD DOWNSTREAM

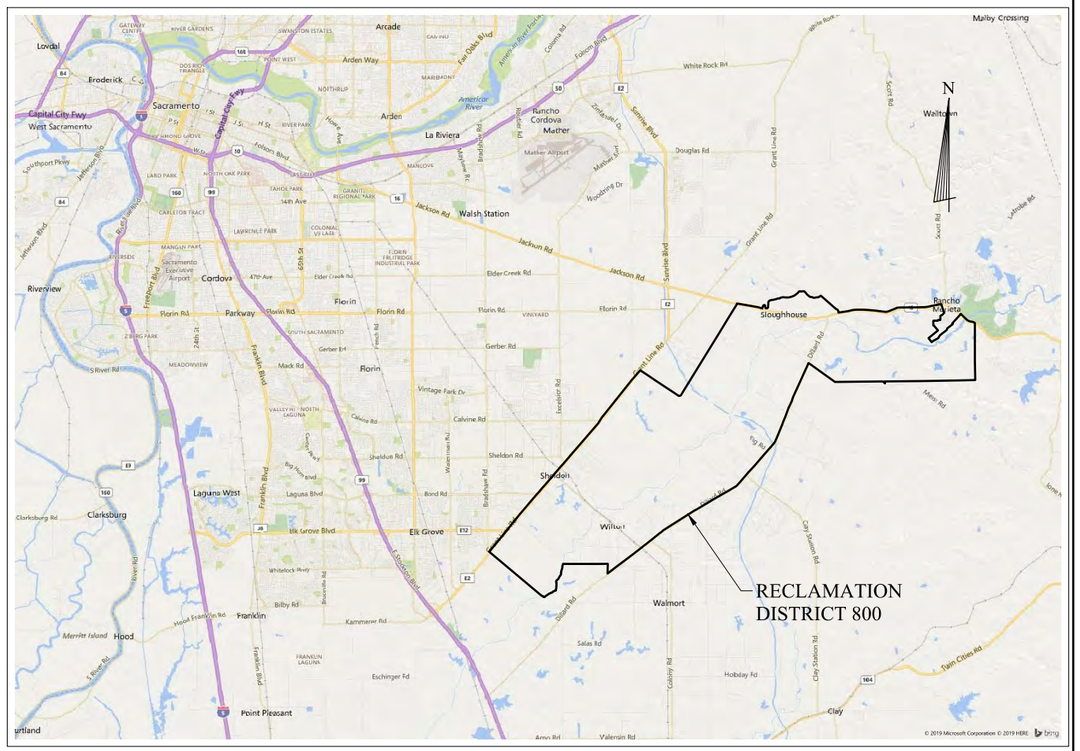
Sacramento County **California**

WAGNER & BONSIGNORE CONSULTING CIVIL ENGINEERS A CORPORATION
2151 RIVER PLAZA DRIVE, SUITE 100 SACRAMENTO, CALIFORNIA



LOCATION MAP

0' 1,500' 3,000' 6,000'



VICINITY MAP

NOT TO SCALE

Q:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 2 - Meiss Rd Downstream.dwg

Site 2 - Meiss Rd Downstream.dwg

File Name:	
Plot Date	6/30/2020
Revision Date	–

REVISIONS			
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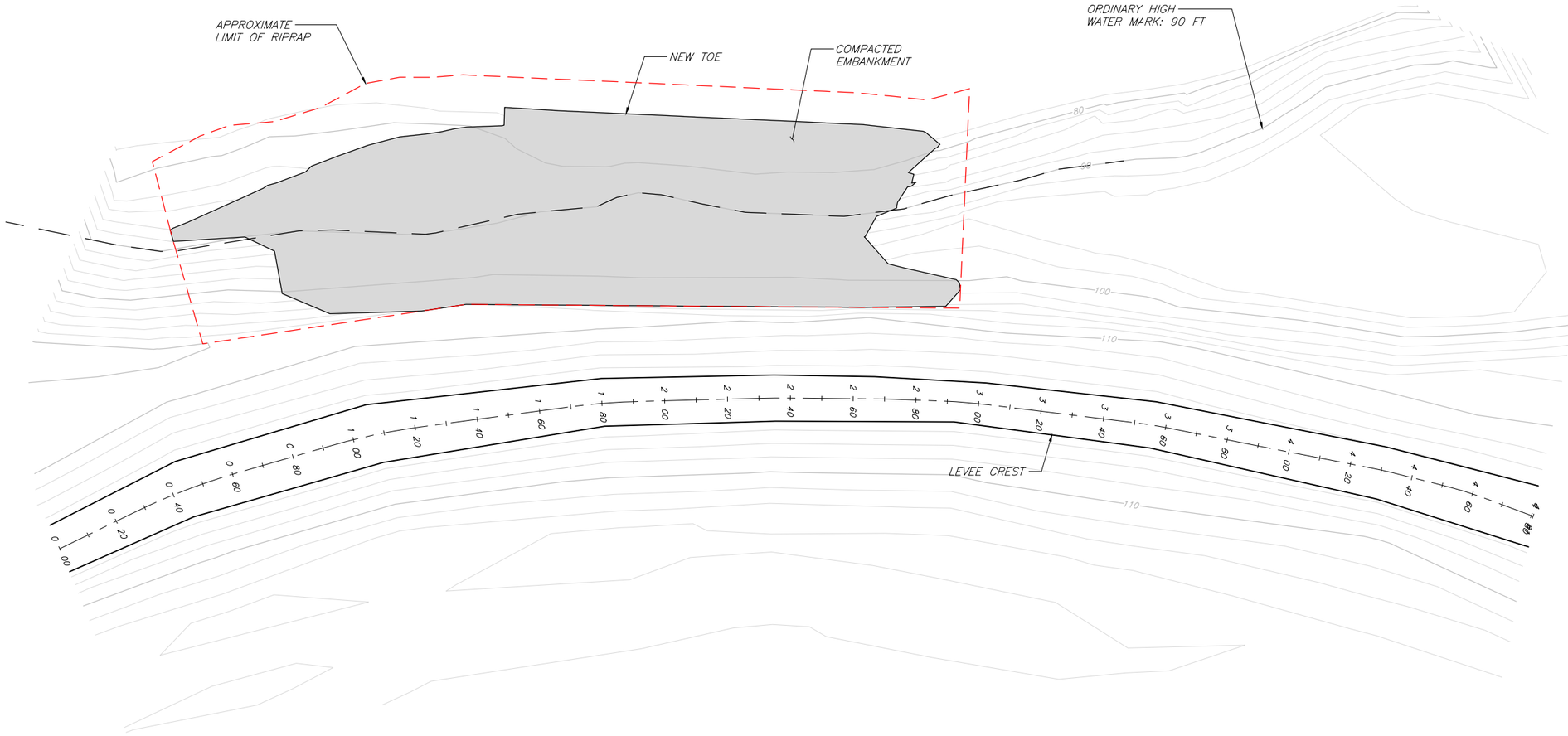
RECLAMATION DISTRICT 800

SITE 2 - MEISS ROAD DOWNSTREAM

LOCATION AND VICINITY MAP

SHEET 1 OF 10 SHEETS



0' 10' 20' 40'

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

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RECLAMATION DISTRICT 800

SITE 2 - MEISS ROAD DOWNSTREAM

PLAN

SHEET 2 OF 10 SHEETS

File Name: Site 2 – Meiss Rd Downstream.dwg
Plot Date: 6/30/2020
Revision Date: –

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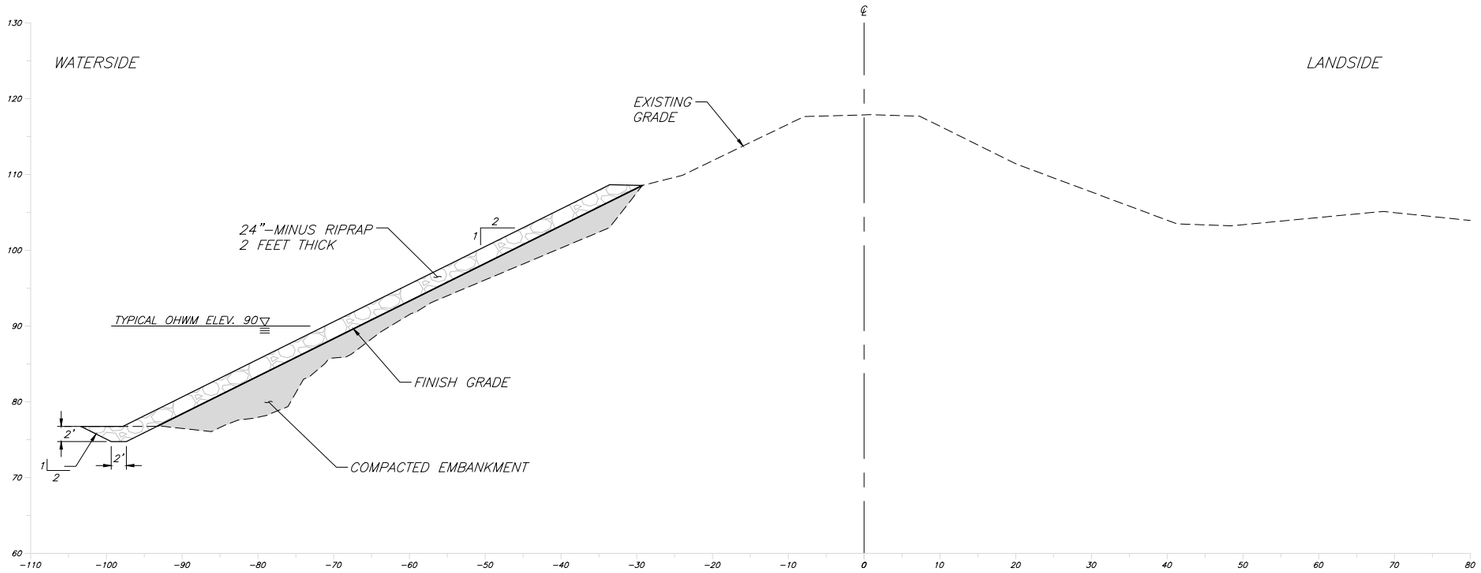
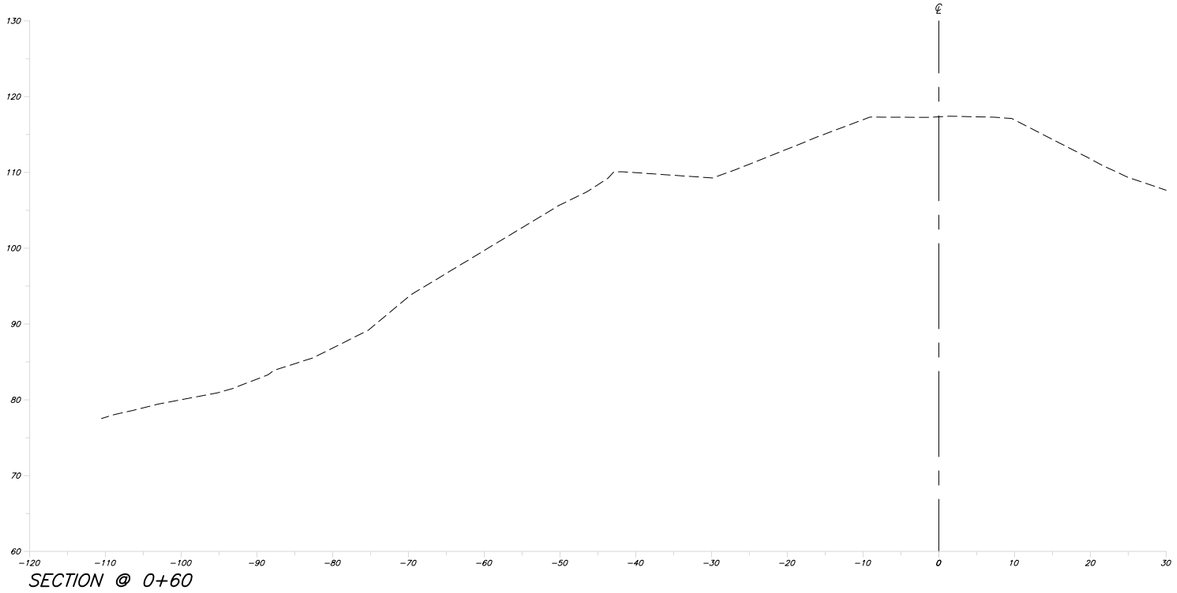
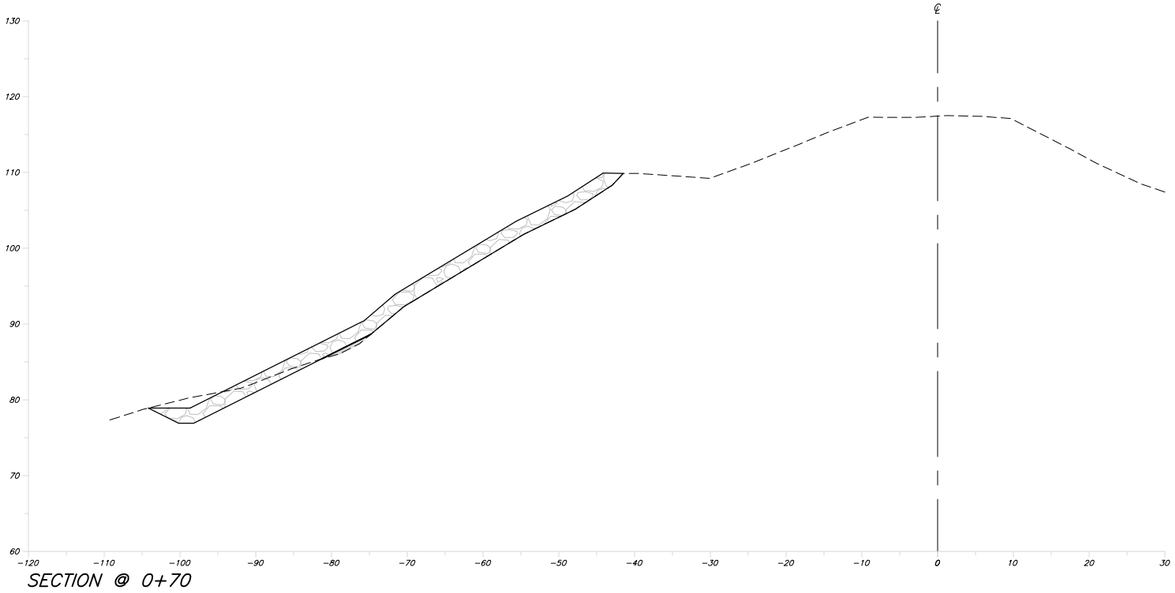


TYPICAL SECTION

NOT TO SCALE



SECTION @ 0+60



SECTION @ 0+70

0' 10' 20' 40'

REVISIONS			
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RECLAMATION DISTRICT 800

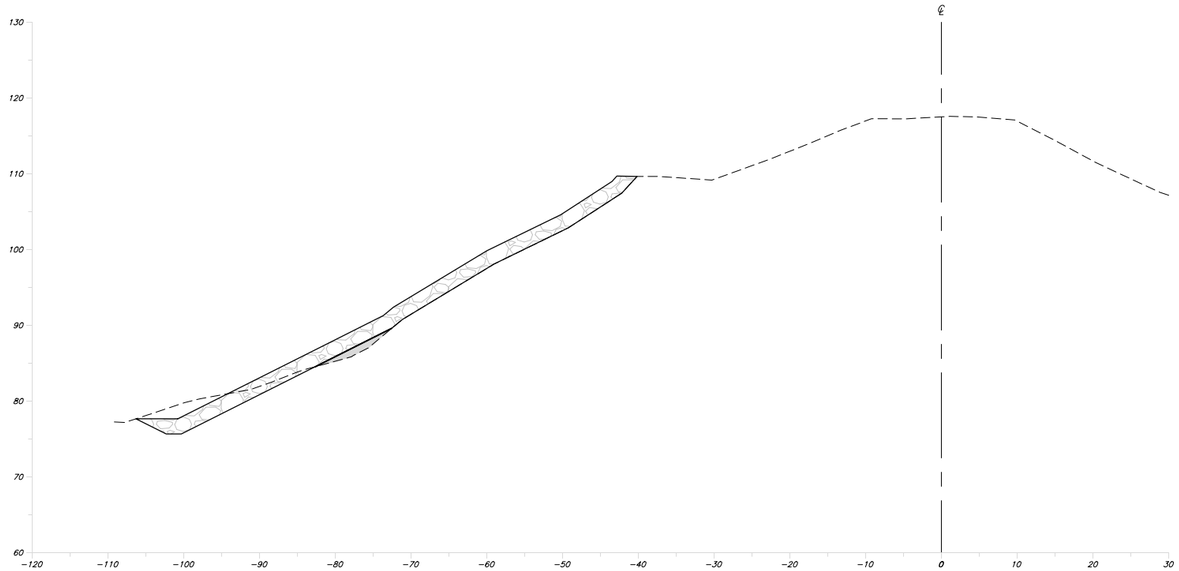
SITE 2 - MEISS ROAD DOWNSTREAM

SECTIONS

SHEET 3 OF 10 SHEETS

File Name: Site 2 – Meiss Rd Downstream.dwg
Plot Date: 6/30/2020
Revision Date: –

Q:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 2 – Meiss Rd Downstream.dwg



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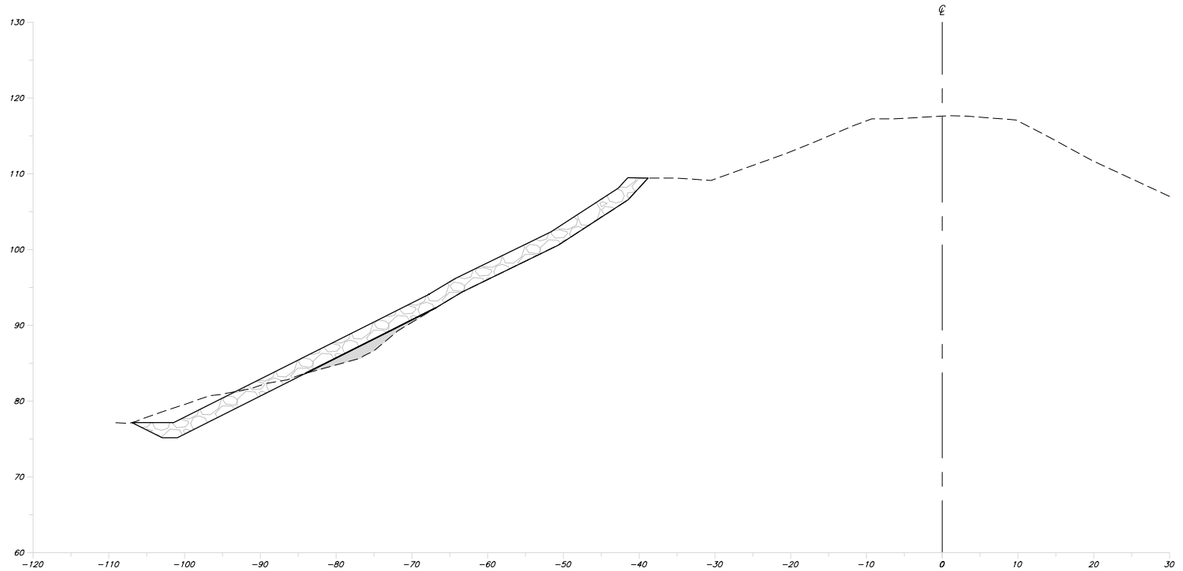

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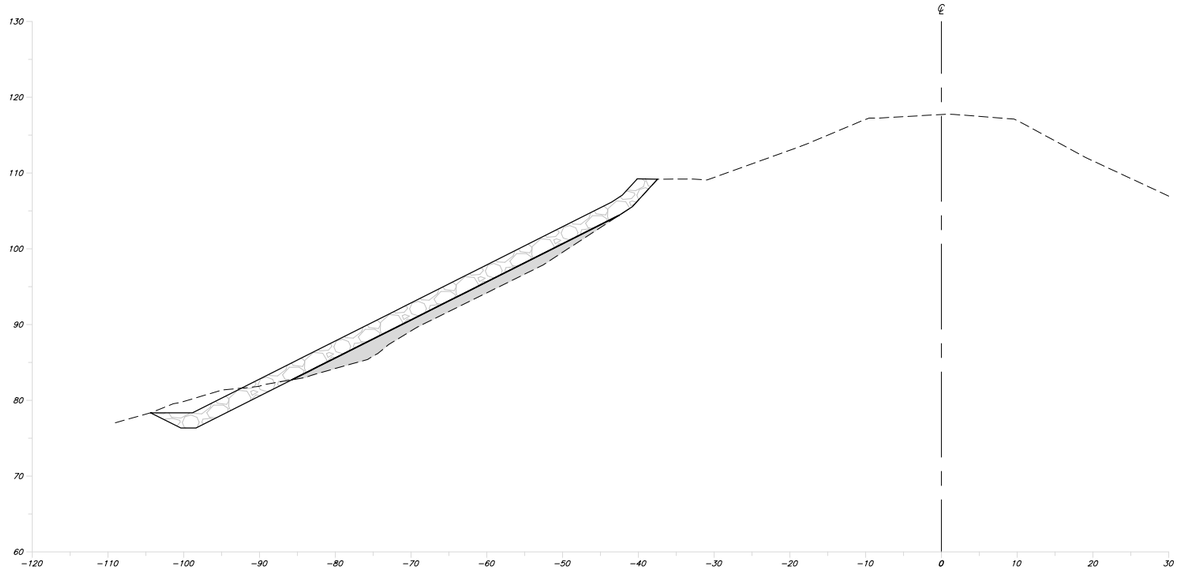

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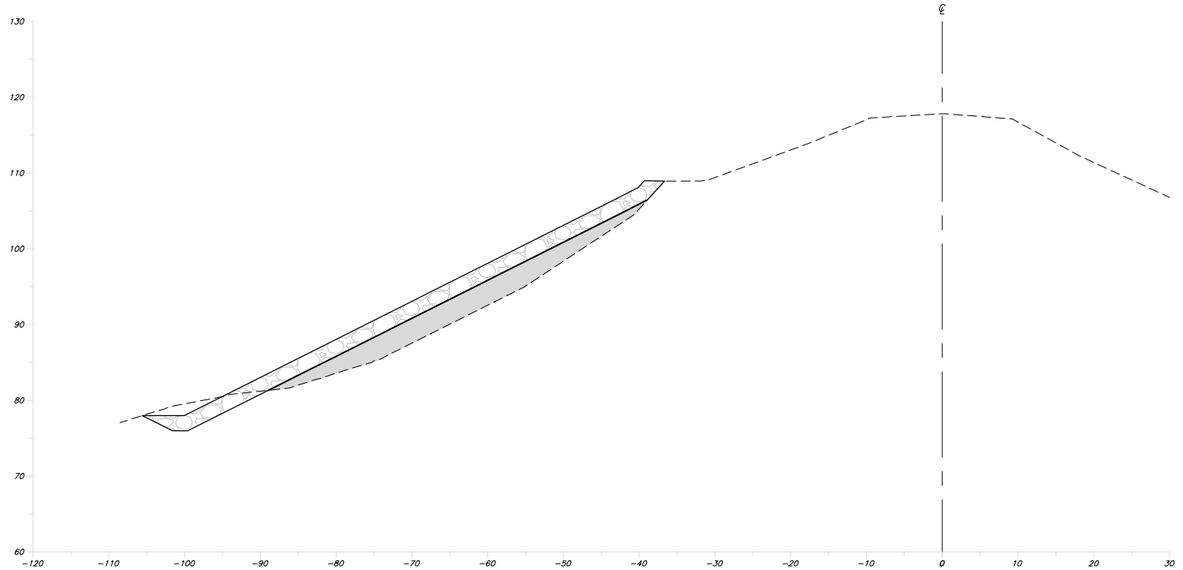

SECTION @ 1+10

0' 10' 20' 40'

REVISIONS			
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RECLAMATION DISTRICT 800

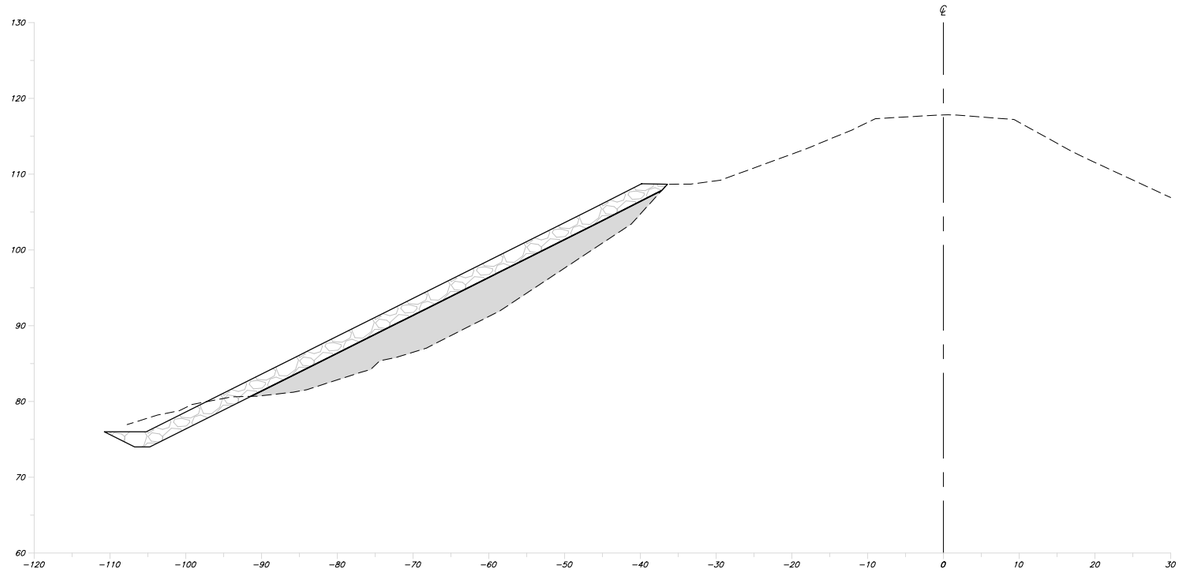
SITE 2 - MEISS ROAD DOWNSTREAM

SECTIONS

SHEET 4 OF 10 SHEETS

File Name: Site 2 – Meiss Rd Downstream.dwg
Plot Date: 6/30/2020
Revision Date: –

O:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 2 – Meiss Rd Downstream.dwg



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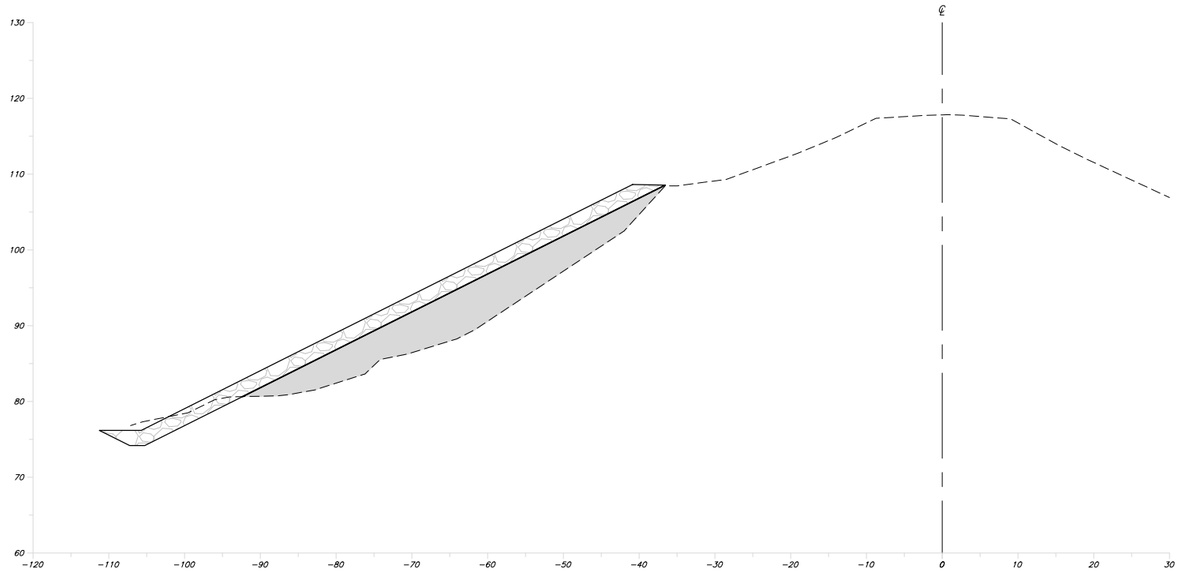

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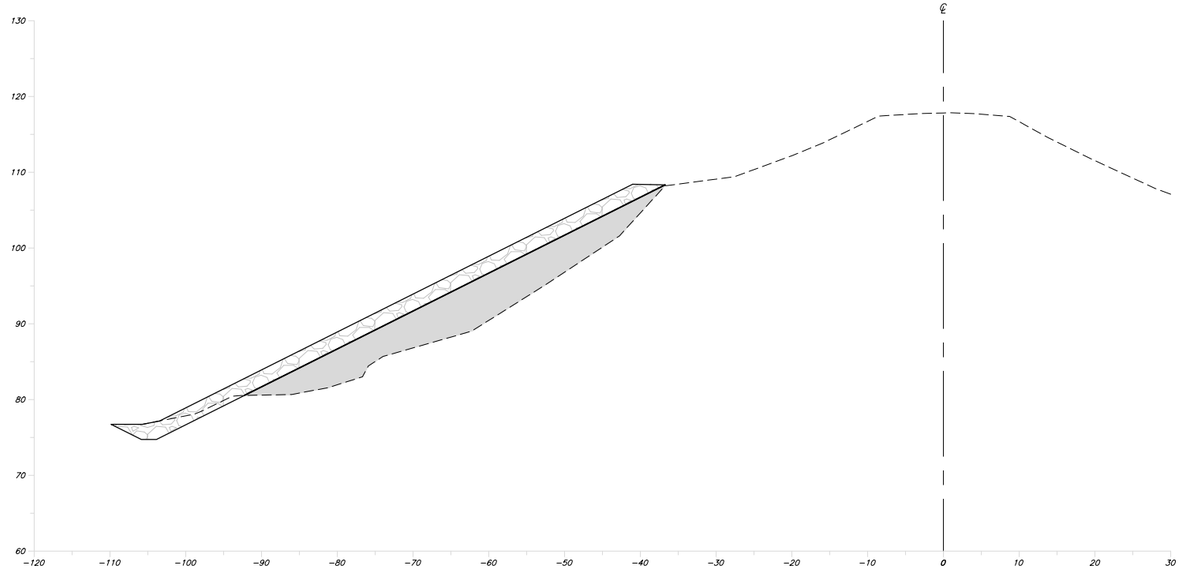

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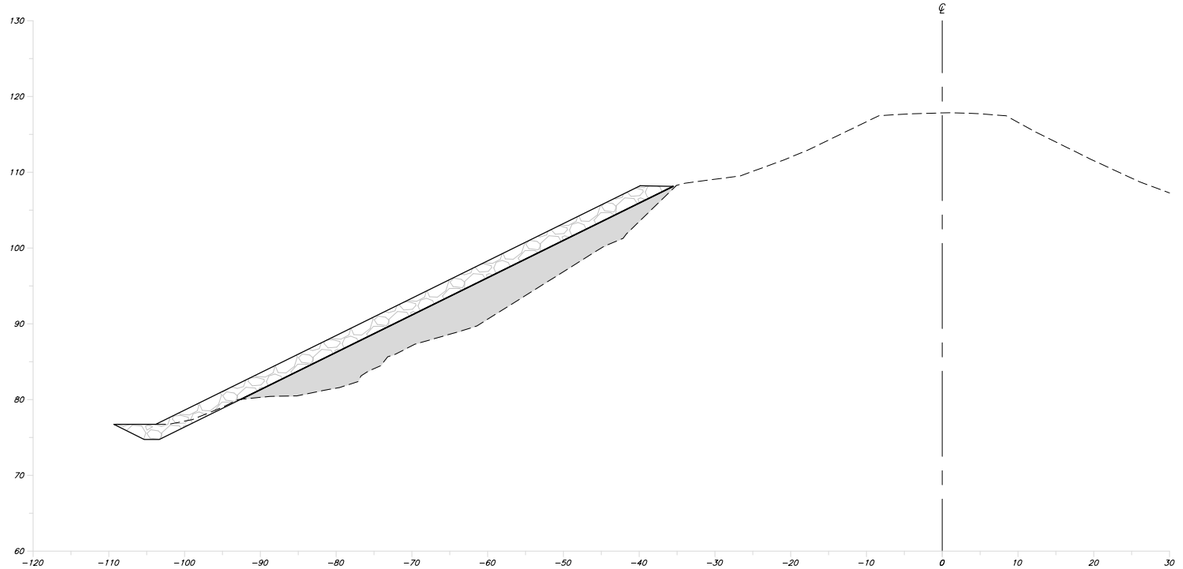

SECTION @ 1+50

0' 10' 20' 40'

Q:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 2 - Meiss Rd Downstream.dwg

File Name: Site 2 - Meiss Rd Downstream.dwg

Plot Date: 6/30/2020

Revision Date: —

REVISIONS

REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN

Drawn By: P. INTHARATH

Checked By: —

Approved By: —

Date: APRIL 2020

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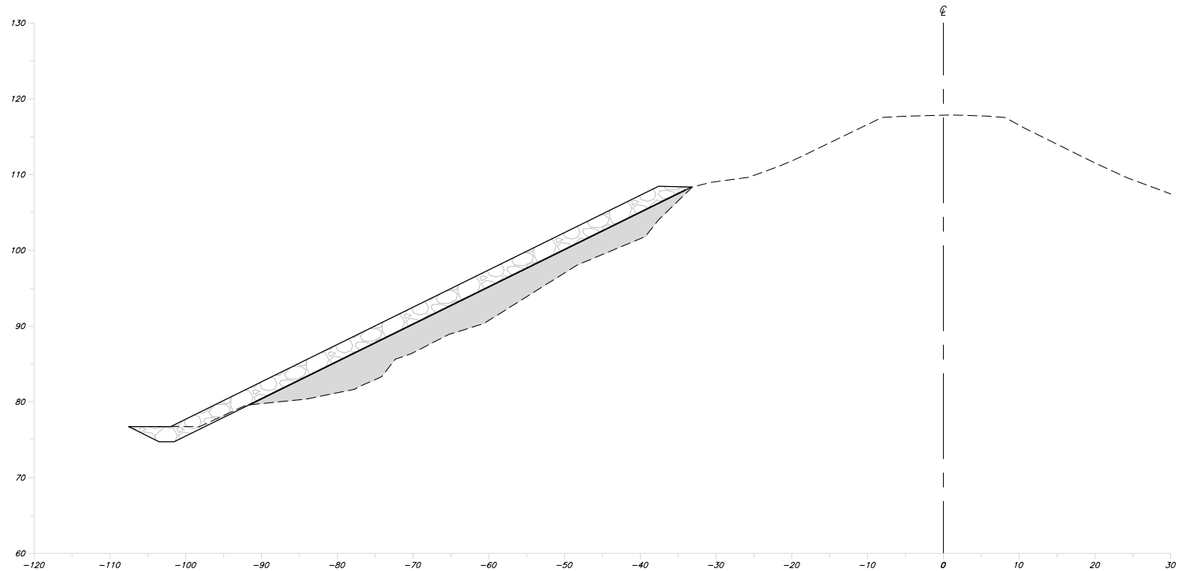
RECLAMATION DISTRICT 800

SITE 2 - MEISS ROAD DOWNSTREAM

SECTIONS

SHEET 5 OF 10 SHEETS



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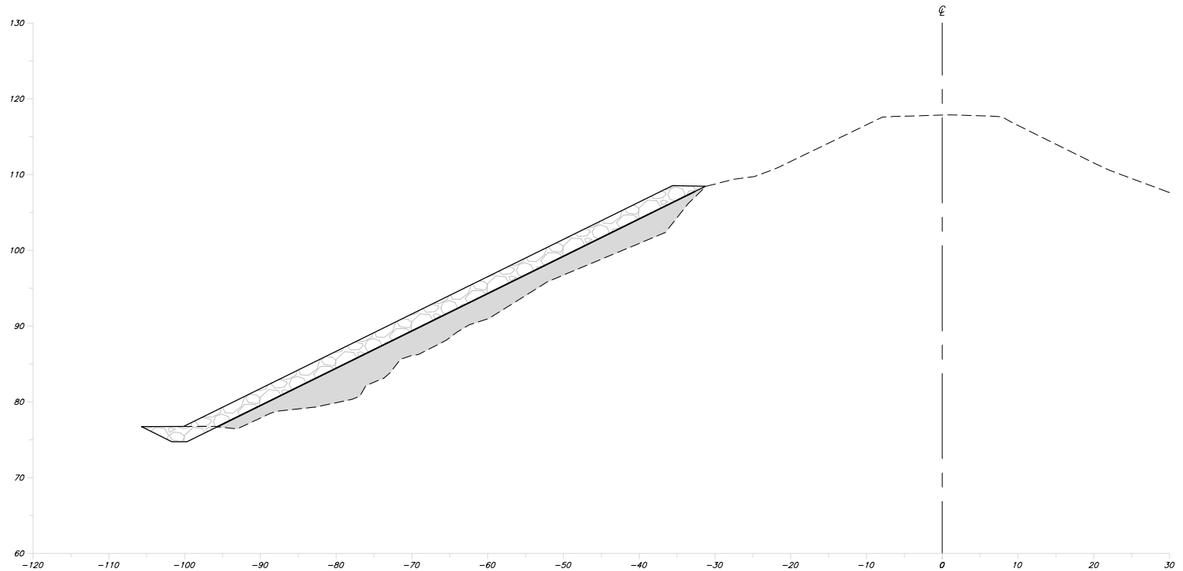
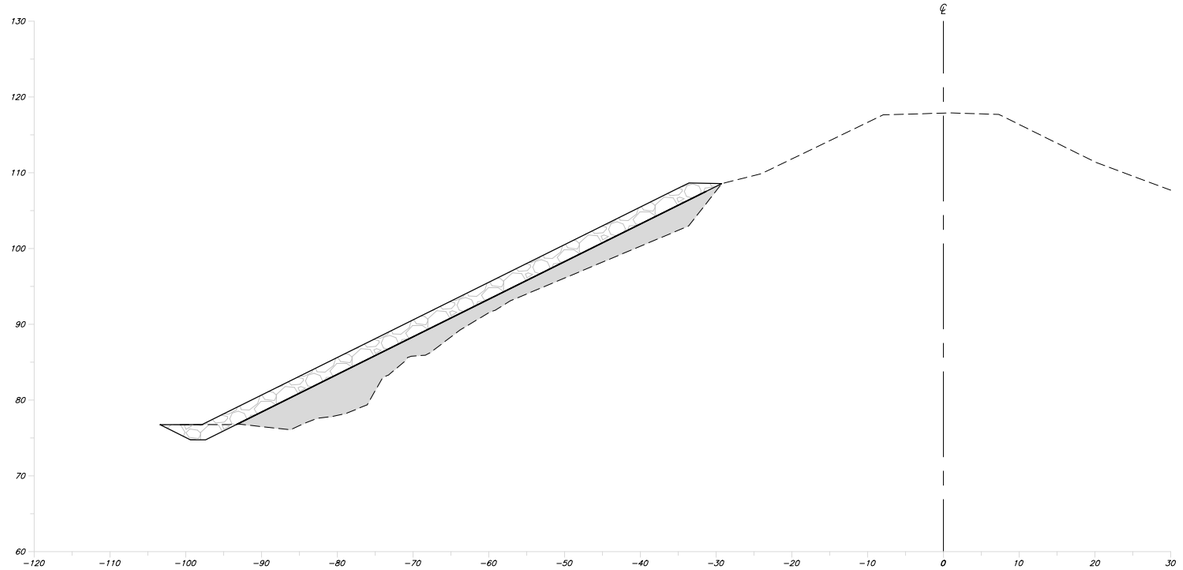


SECTION @ 1+70



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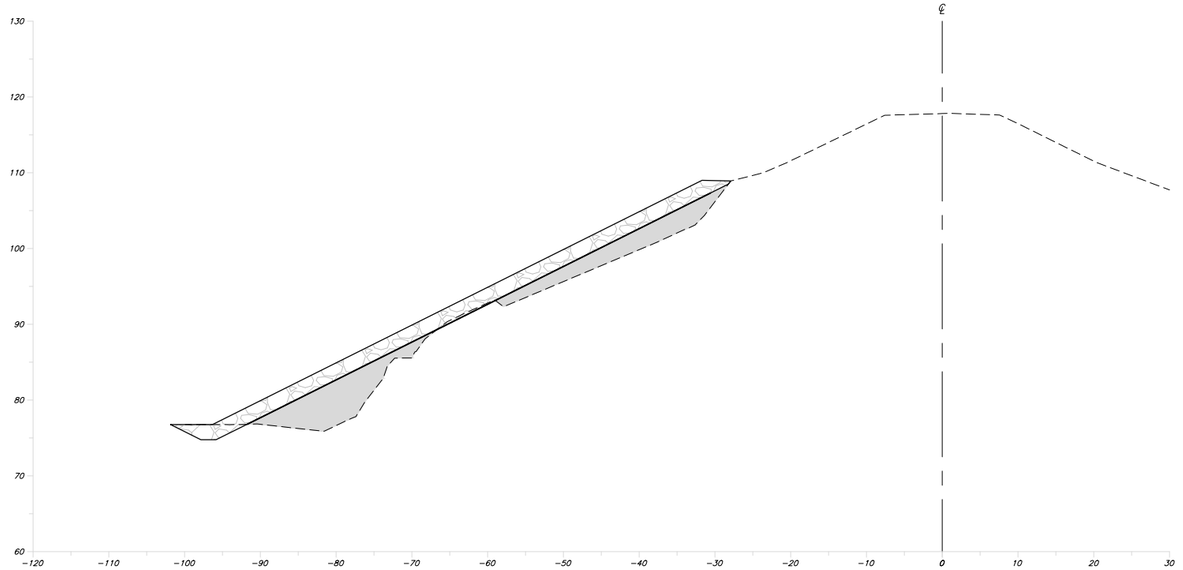

SECTION @ 1+90

0' 10' 20' 40'

File Name: Site 2 – Meiss Rd Downstream.dwg
Plot Date: 6/30/2020
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REVISIONS			
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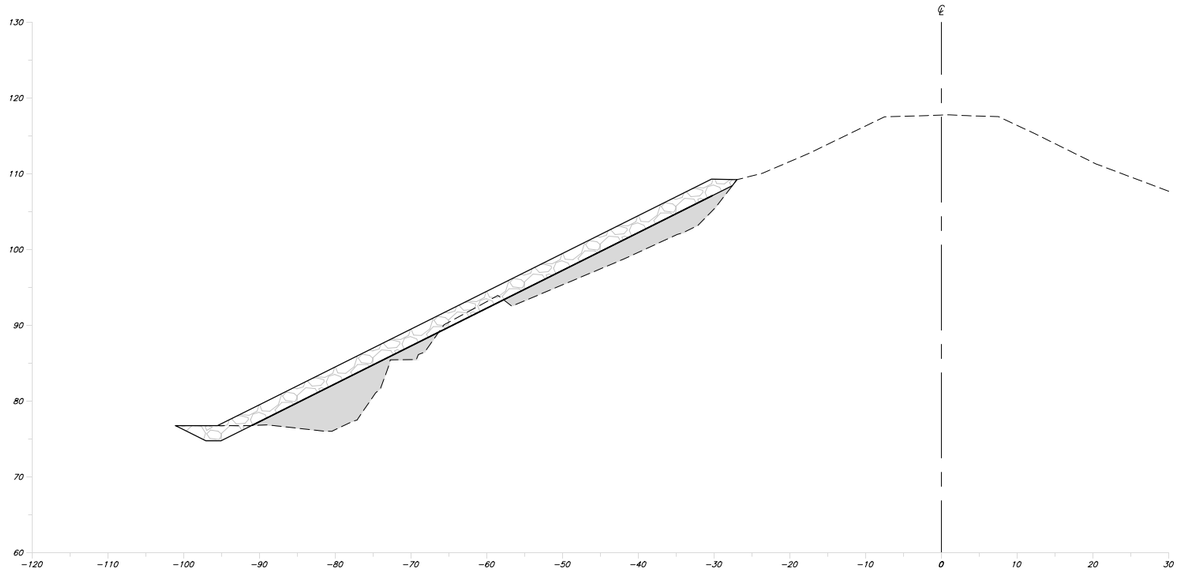
RECLAMATION DISTRICT 800

SITE 2 - MEISS ROAD DOWNSTREAM

SECTIONS

SHEET 6 OF 10 SHEETS

Q:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 2 – Meiss Rd Downstream.dwg



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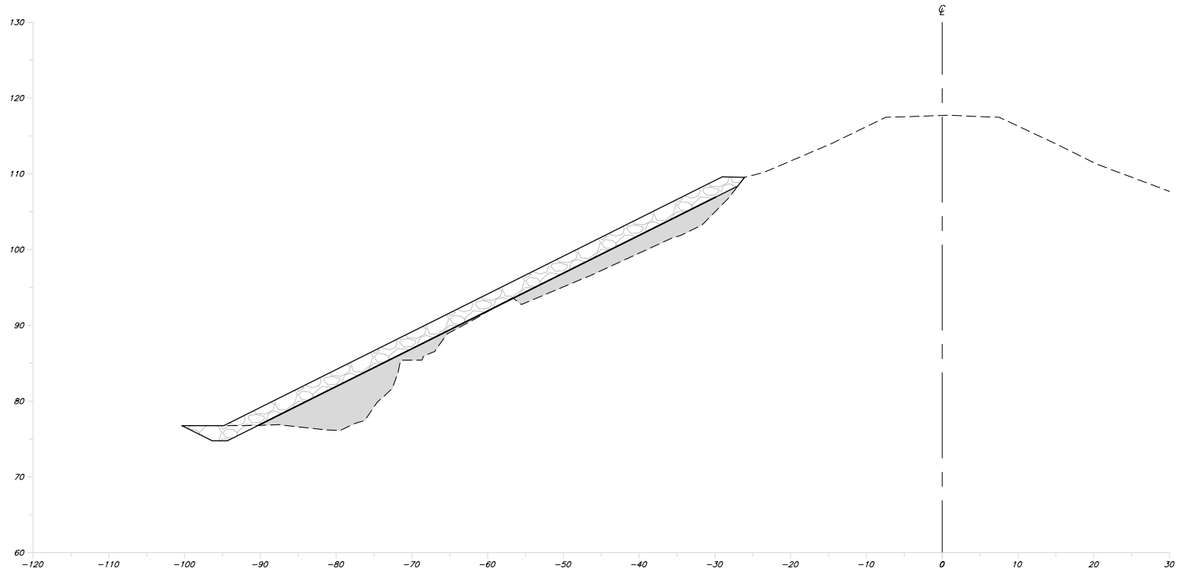

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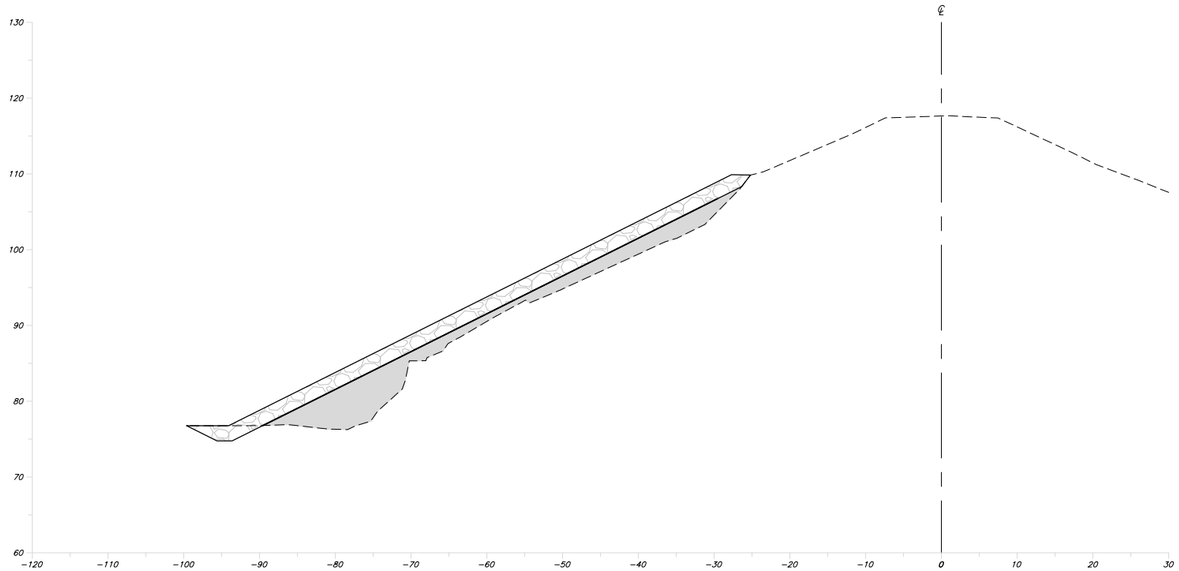

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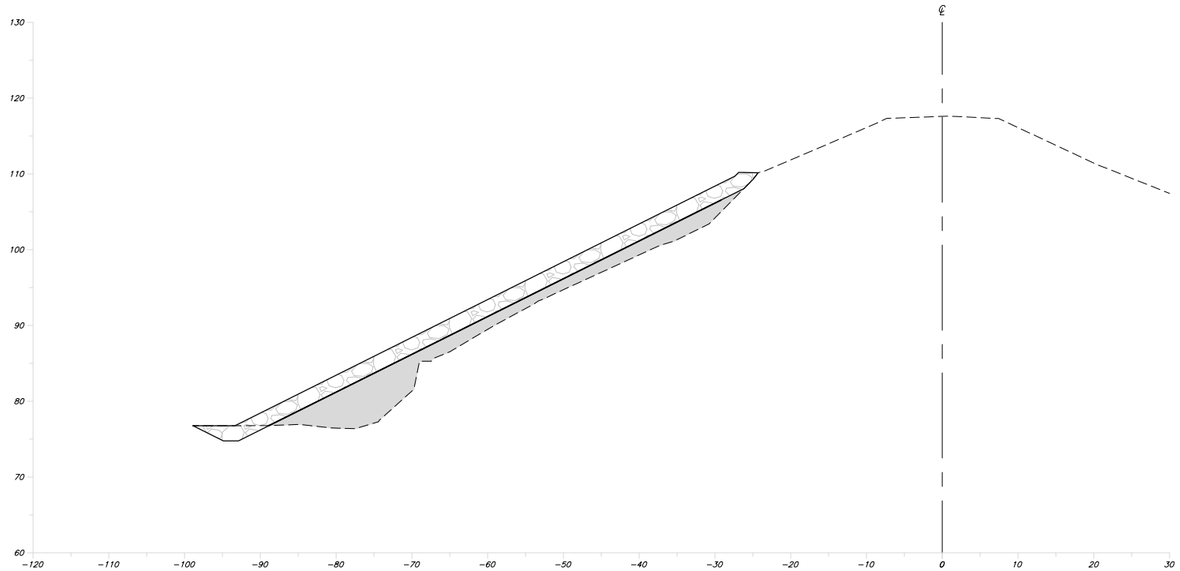

SECTION @ 2+30

0' 10' 20' 40'

Q:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 2 - Meiss Rd Downstream.dwg

File Name:	Site 2 - Meiss Rd Downstream.dwg
Plot Date	6/30/2020
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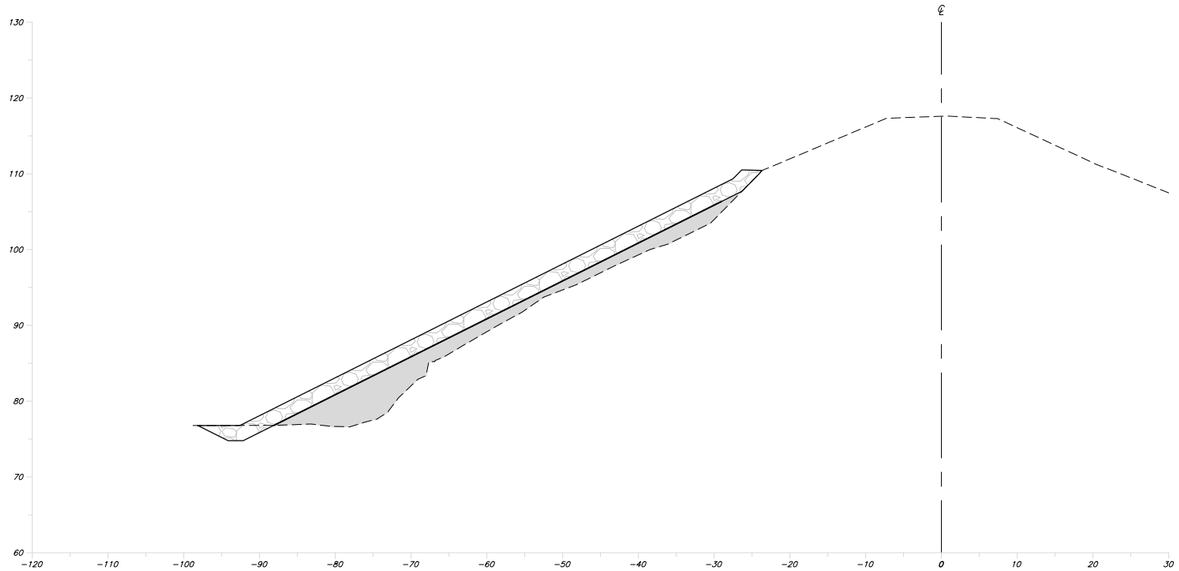
RECLAMATION DISTRICT 800

SITE 2 - MEISS ROAD DOWNSTREAM

SECTIONS

SHEET 7 OF 10 SHEETS



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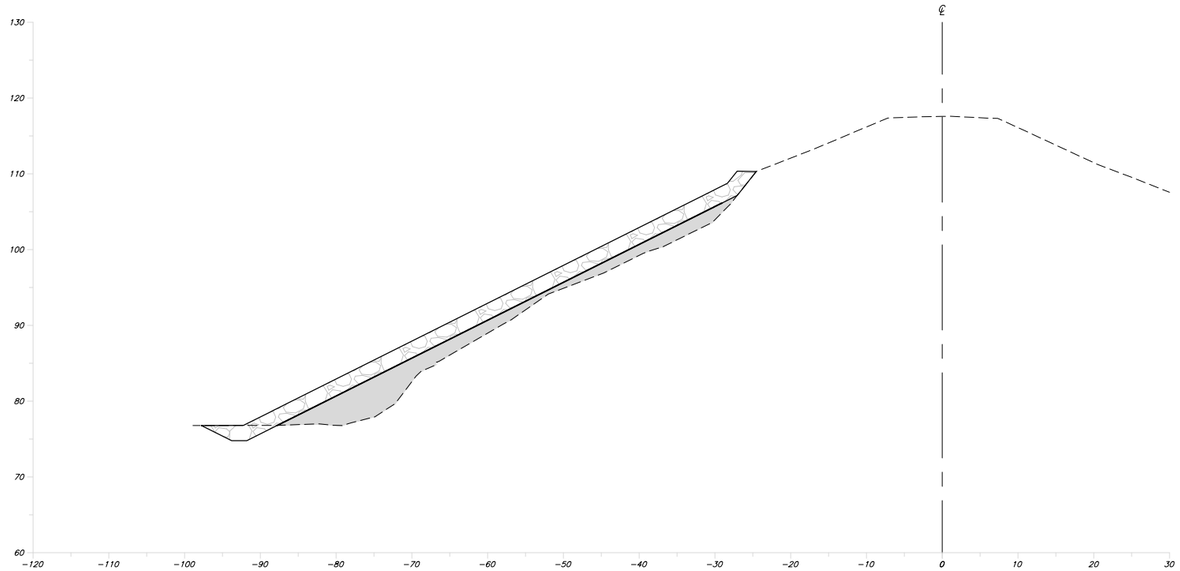

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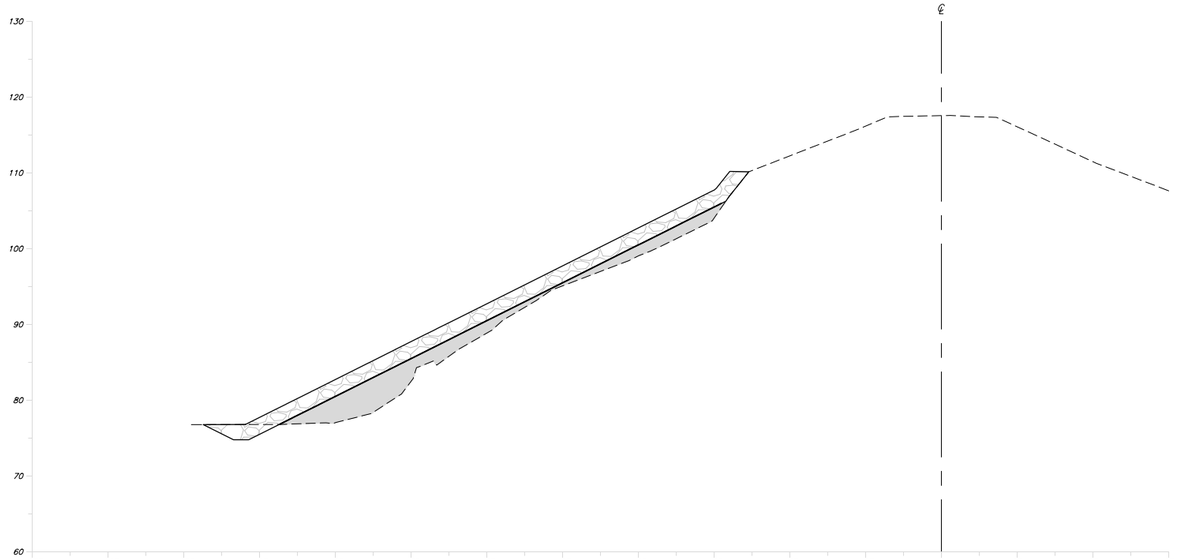

SECTION @ 2+60

SECTION @ 2+70

0' 10' 20' 40'

File Name: Site 2 – Meiss Rd Downstream.dwg
Plot Date: 6/30/2020
Revision Date: –

REVISIONS			
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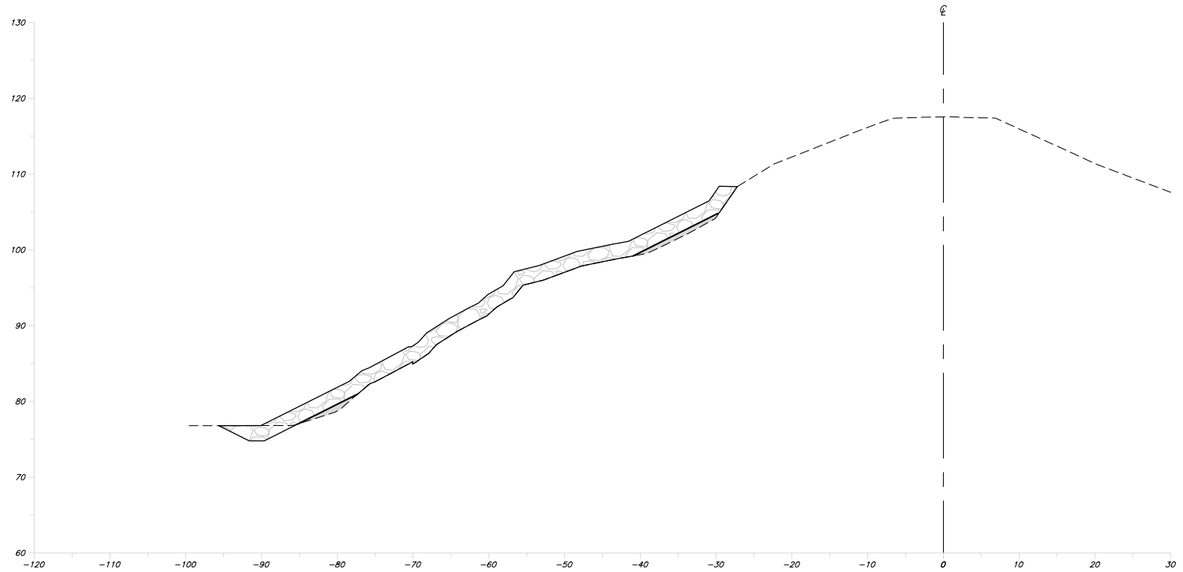
RECLAMATION DISTRICT 800

SITE 2 - MEISS ROAD DOWNSTREAM

SECTIONS

SHEET 8 OF 10 SHEETS

O:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 2 – Meiss Rd Downstream.dwg



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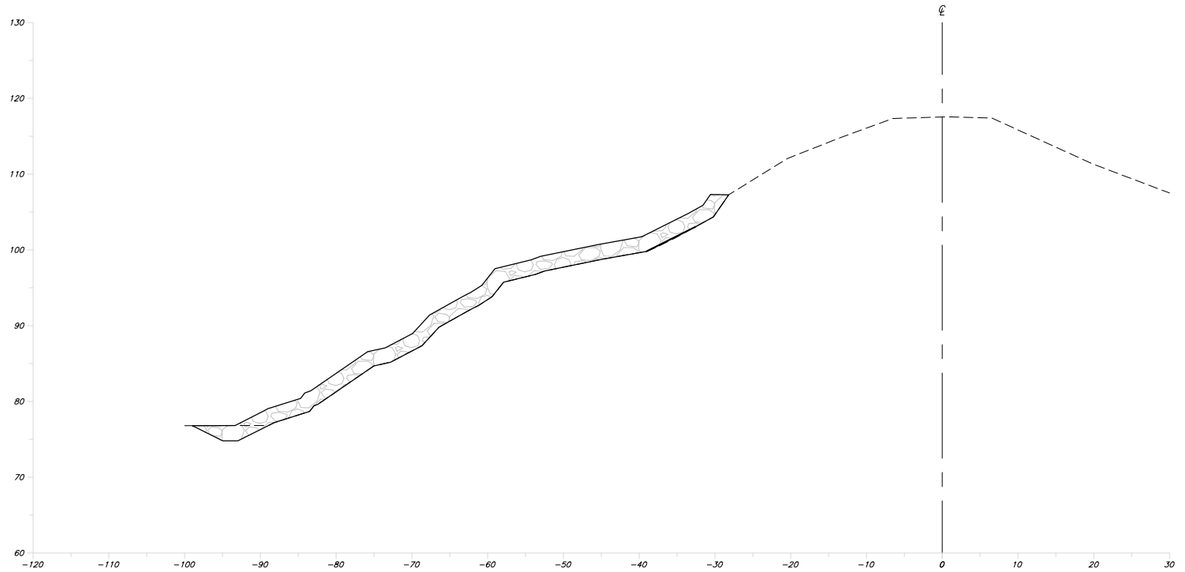

SECTION @ 2+90

0' 10' 20' 40'

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RECLAMATION DISTRICT 800

SITE 2 - MEISS ROAD DOWNSTREAM

SECTIONS

SHEET 9 OF 10 SHEETS

File Name: Site 2 – Meiss Rd Downstream.dwg
Plot Date: 6/30/2020
Revision Date: –

O:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 2 – Meiss Rd Downstream.dwg

TABLE 1
QUANTITIES

QUANTITY (AREA OR VOLUME)	ABOVE OHWM [1]	BELOW OHWM [1]	TOTAL
WORK AREA (ACRES)	0.17	0.23	0.40
TEMPORARY DISTURBANCE (ACRES) [2]	0.48	0.25	0.73
TOTAL ACRES	0.65	0.48	1.13
FILL – SOIL (CUBIC YARDS)	511	535	1046
FILL – RSP [3] (CUBIC YARDS)	693	583	1276
TOTAL CUBIC YARDS	1204	1118	2322

[1] OHWM = ORDINARY HIGH WATER MARK (ELEVATION = 90+/– FEET)
[2] INCLUDES ACREAGE OF BORROW SITES ON SHEET 11
[3] RSP = ROCK SLOPE PROTECTION

LEGEND
- WORK AREA BELOW ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA BELOW ORDINARY HIGH WATER MARK
- WORK AREA ABOVE ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA ABOVE ORDINARY HIGH WATER MARK

REVISIONS

REF.	DESCRIPTION	APVD.	DATE

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RECLAMATION DISTRICT 800
SITE 2 - MEISS ROAD DOWNSTREAM
IMPACT

SHEET 10 OF 10 SHEETS

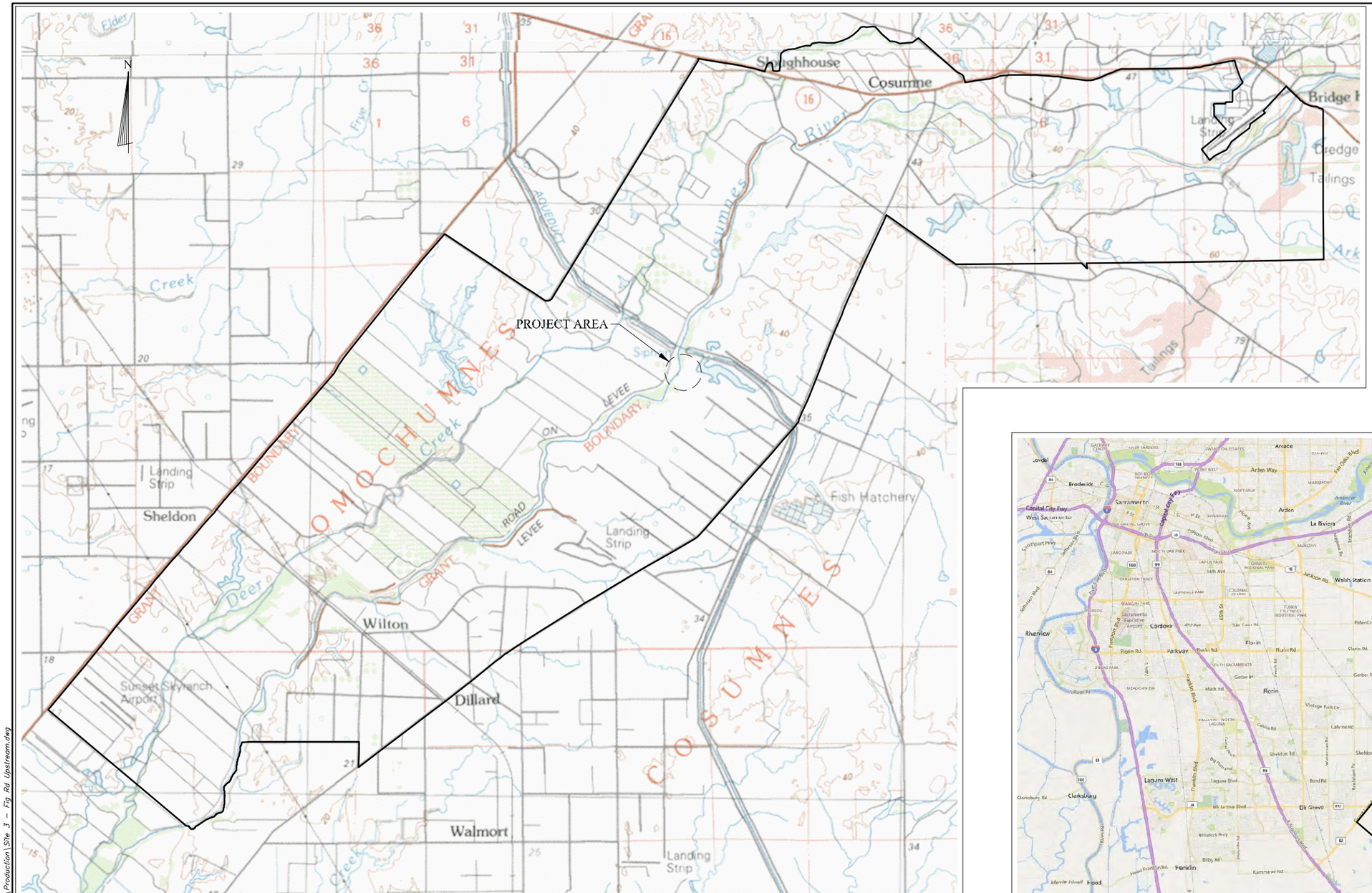
Q:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 2 – Meiss Rd Downstream.dwg

RECLAMATION DISTRICT NO. 800

CRITICAL LEVEE REPAIR PROJECTS
SITE 3: FIG ROAD UPSTREAM

Sacramento County **California**

WAGNER & BONSIGNORE CONSULTING CIVIL ENGINEERS A CORPORATION
2151 RIVER PLAZA DRIVE, SUITE 100 SACRAMENTO, CALIFORNIA



LOCATION MAP

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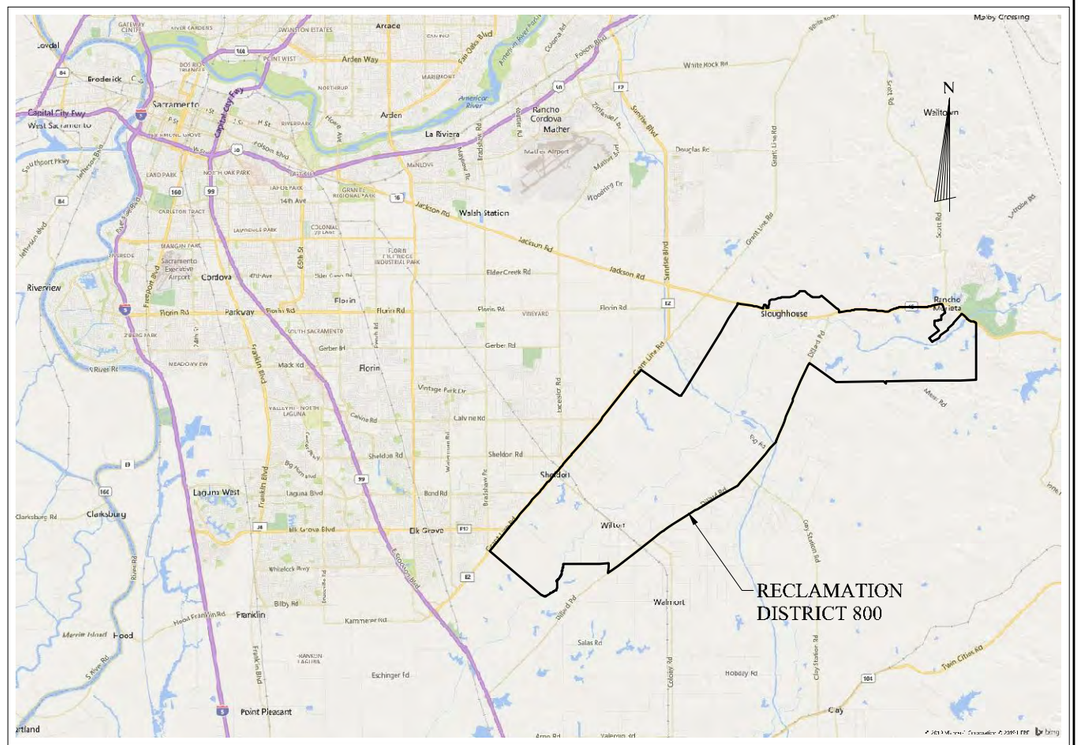

VICINITY MAP

NOT TO SCALE

O:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 3 – Fig Rd Upstream.dwg

Last Saved By	
Last Saved Date	2/26/2020
Plot Date	
Revision No.	–
Revision Date	

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By	P.W. ERVIN
Drawn By	P. INTHARATH
Checked By	–
Approved By	–
Date	FEBRUARY 2020

Wagner & Bonsignore
Consulting Civil Engineers, A Corporation
2151 River Plaza Drive
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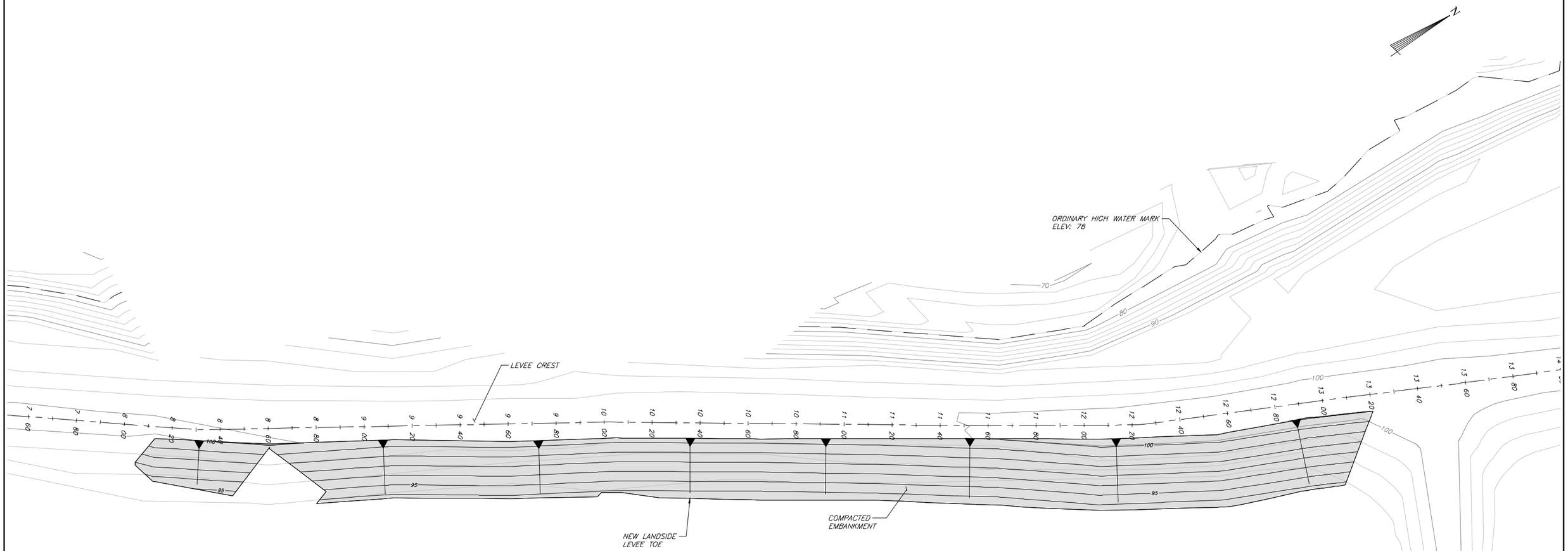
RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS FIG ROAD UPSTREAM

LOCATION AND VICINITY MAP

SHEET 1 OF 8 SHEETS



LEGEND

COMPACTED EMBANKMENT

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
Approved By: –
Date: FEBRUARY 2020

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RECLAMATION DISTRICT 800

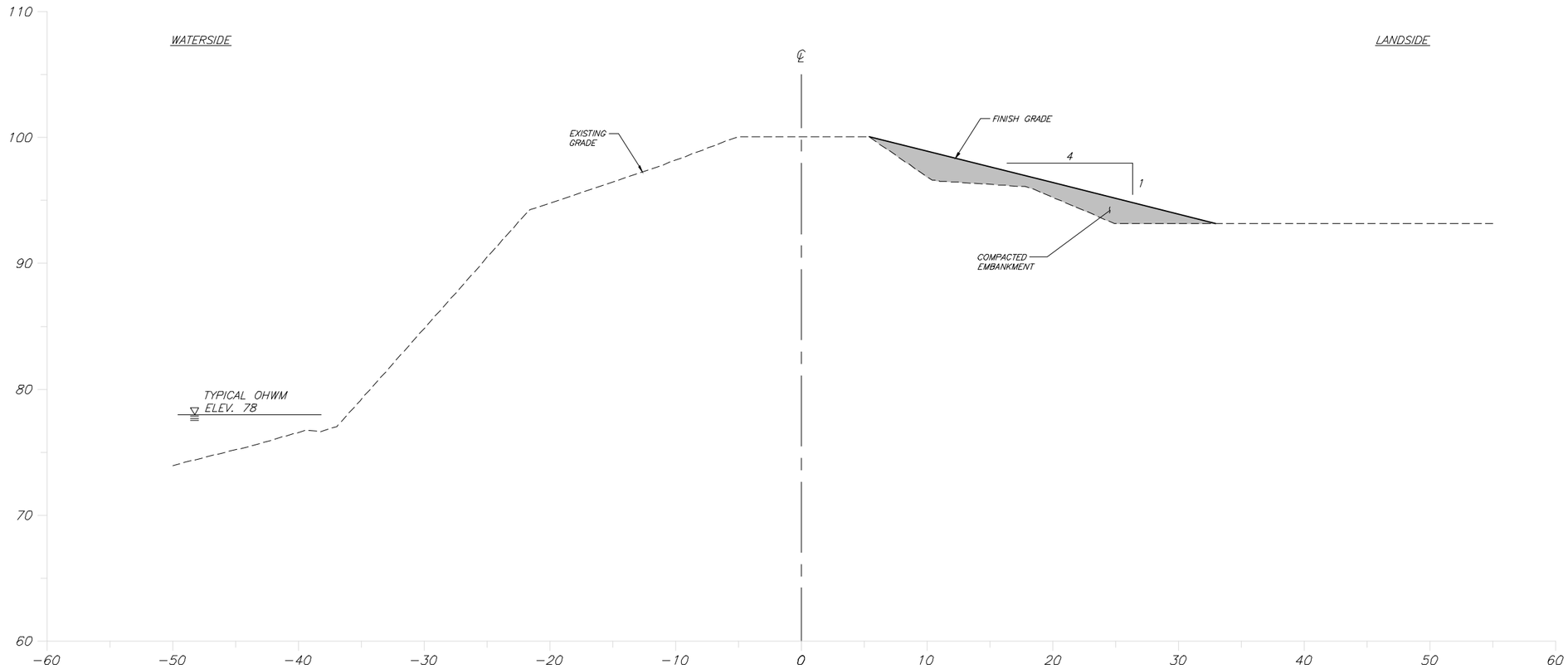
CRITICAL LEVEE REPAIRS
FIG ROAD UPSTREAM

PLAN

SHEET 2 OF 8 SHEETS

Last Saved By: Site 3 – Fig Rd Upstream
Last Plotted: 2/26/2020
Revision No.: –

G:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 3 – Fig Rd Upstream.dwg



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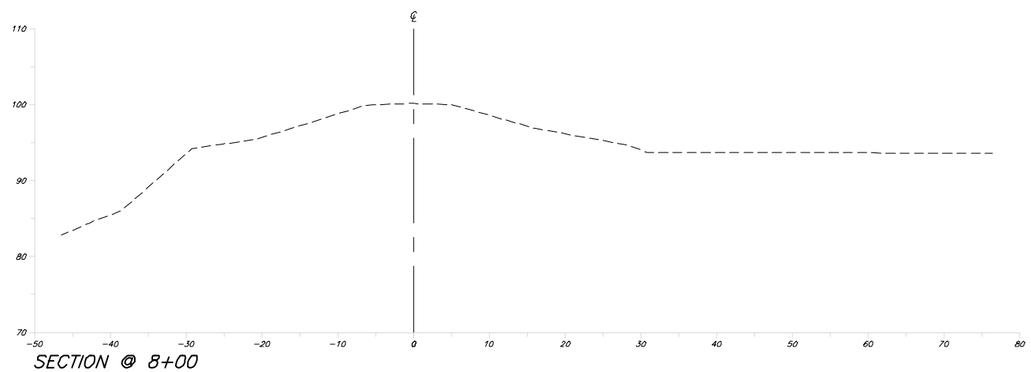

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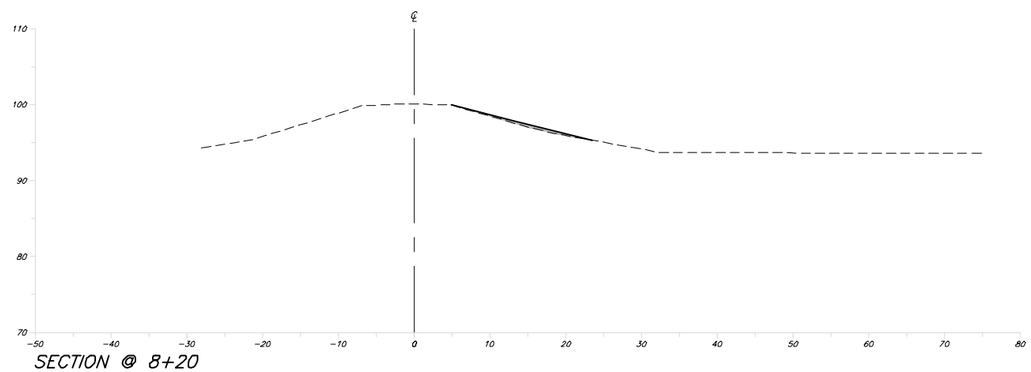

SECTION @ 8+20

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REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
Approved By: –
Date: FEBRUARY 2020

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RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
FIG ROAD UPSTREAM

SECTIONS

SHEET 3 OF 8 SHEETS

Q:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 3 – Fig Rd Upstream.dwg
Last Date: 2/26/2020
File Name: Site 3 – Fig Rd Upstream.dwg
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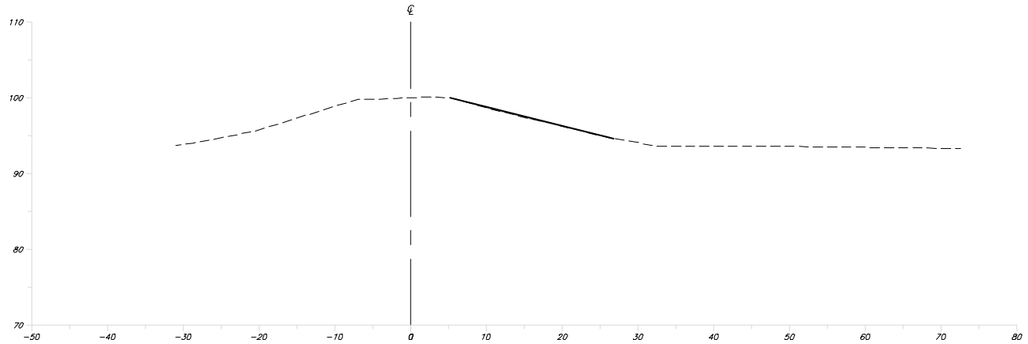
Plot Date: –



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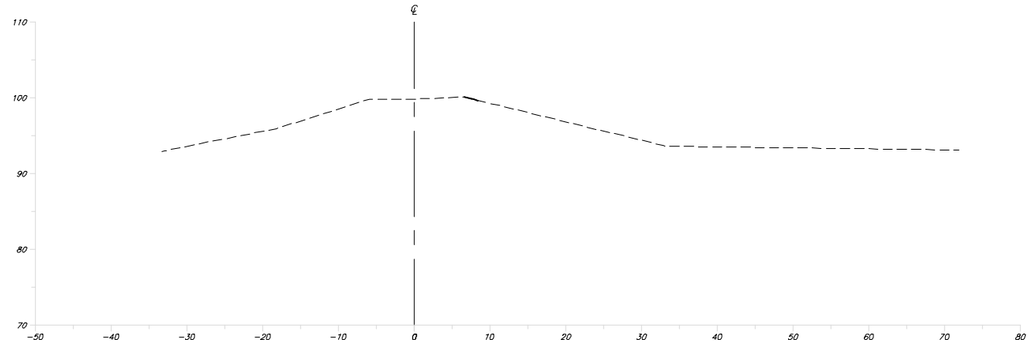

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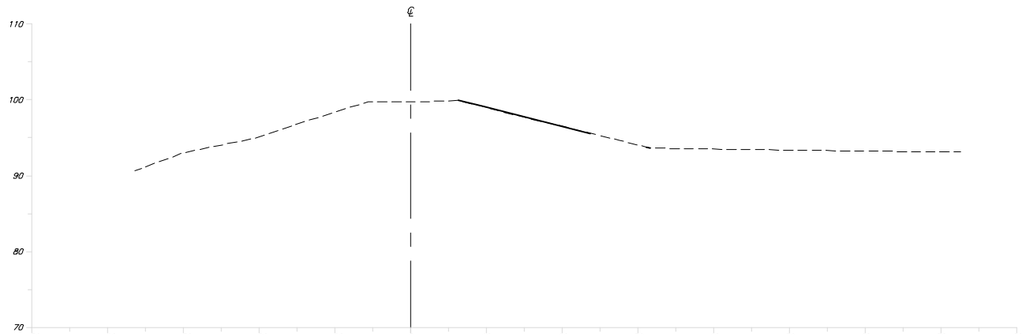

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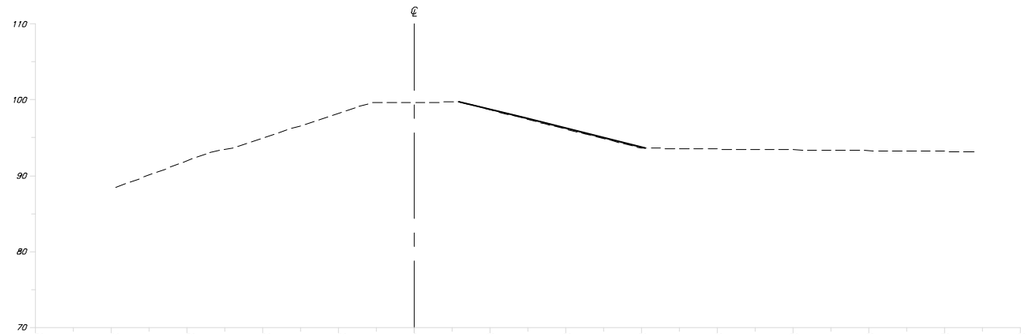

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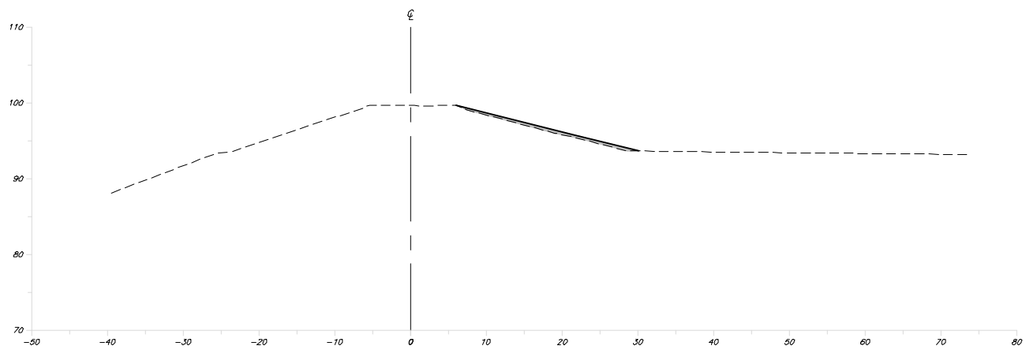

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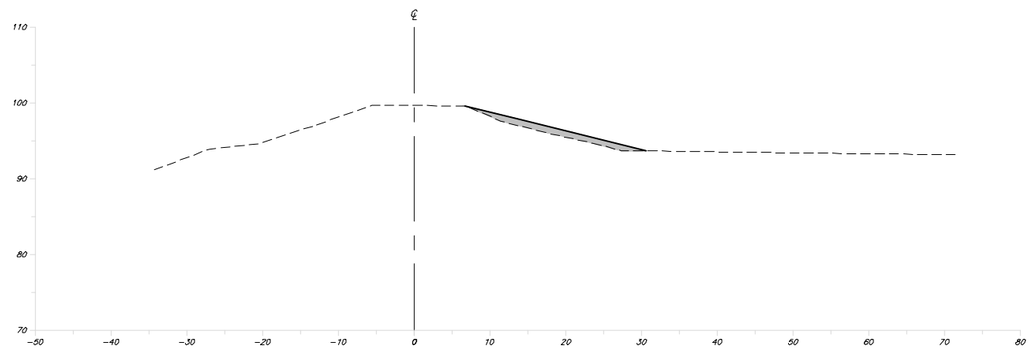

SECTION @ 9+40

0' 5' 10' 20'

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
Approved By: –
Date: FEBRUARY 2020

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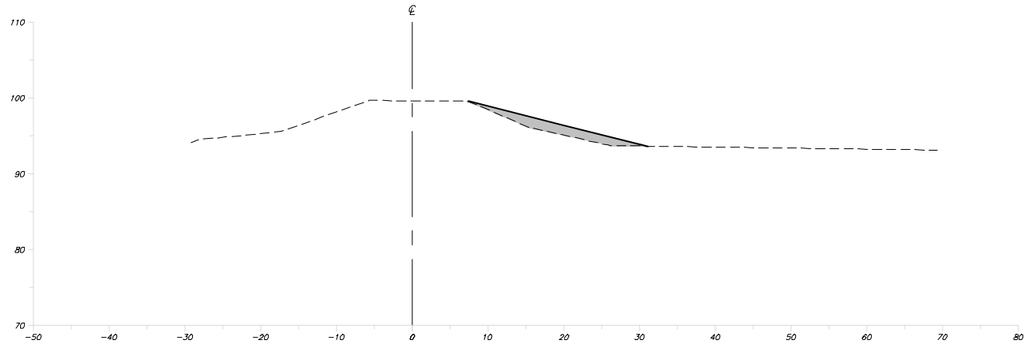
RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
FIG ROAD UPSTREAM

SECTIONS

SHEET 4 OF 8 SHEETS

File: Q:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 3 – Fig Rd Upstream.dwg
Last Saved By: –
Date: 2/26/2020
Revision By: –
Date: –



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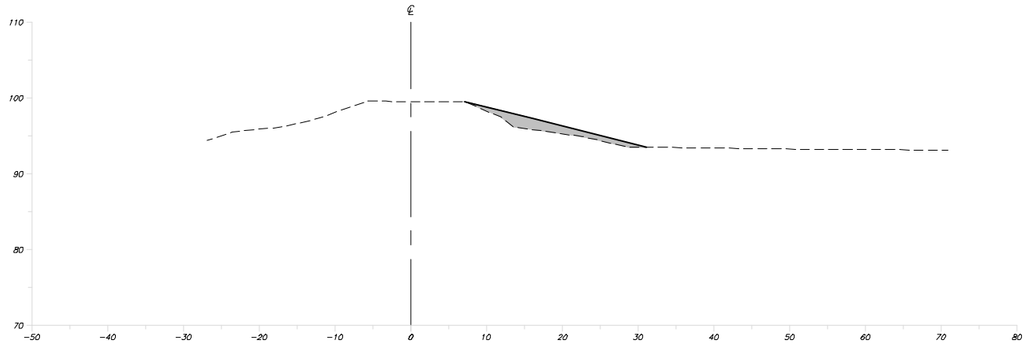

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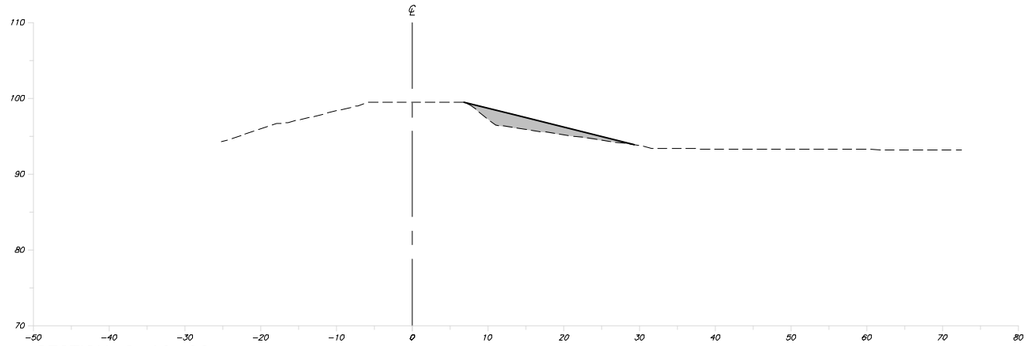

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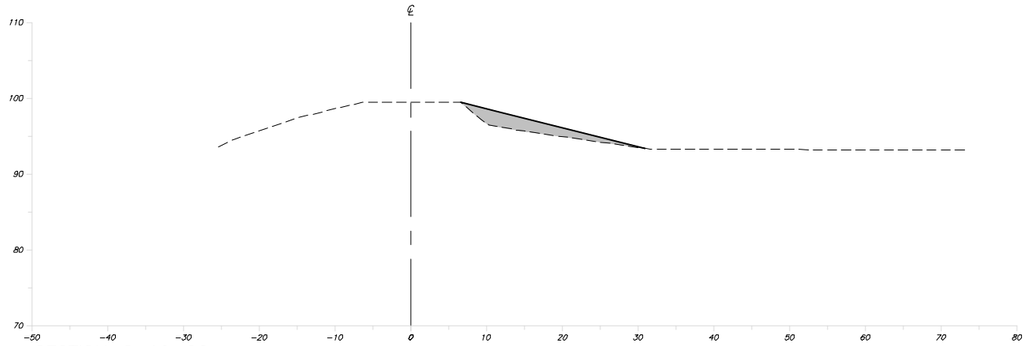

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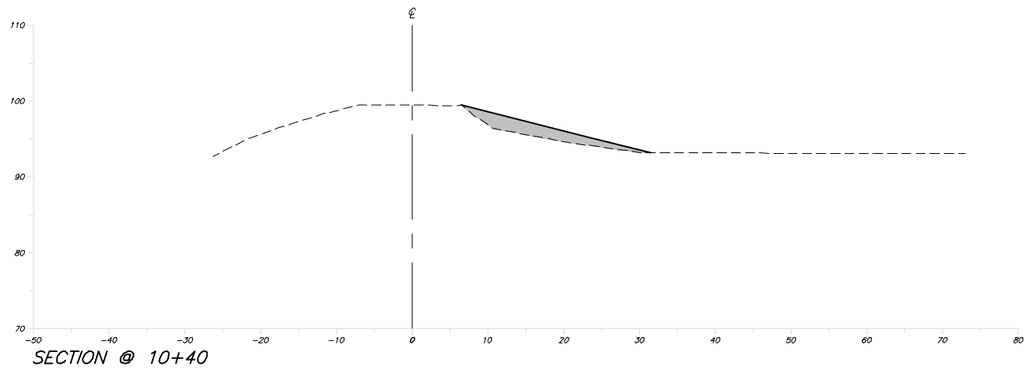

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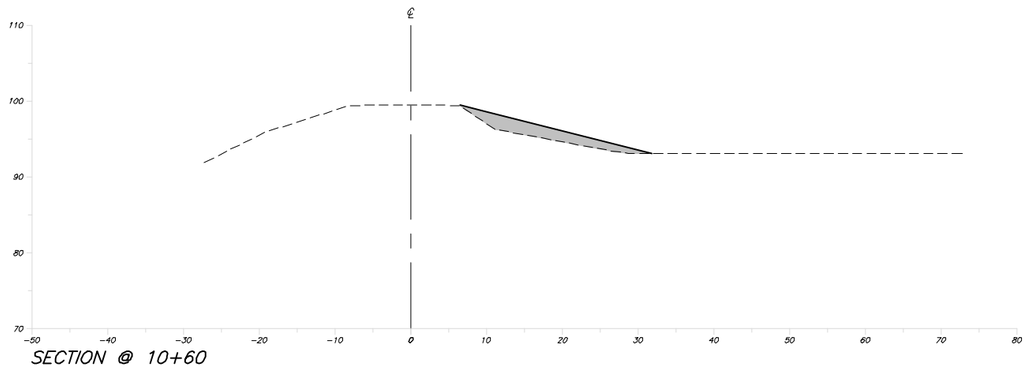

SECTION @ 10+60

0' 5' 10' 20'

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
Approved By: –
Date: FEBRUARY 2020

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RECLAMATION DISTRICT 800

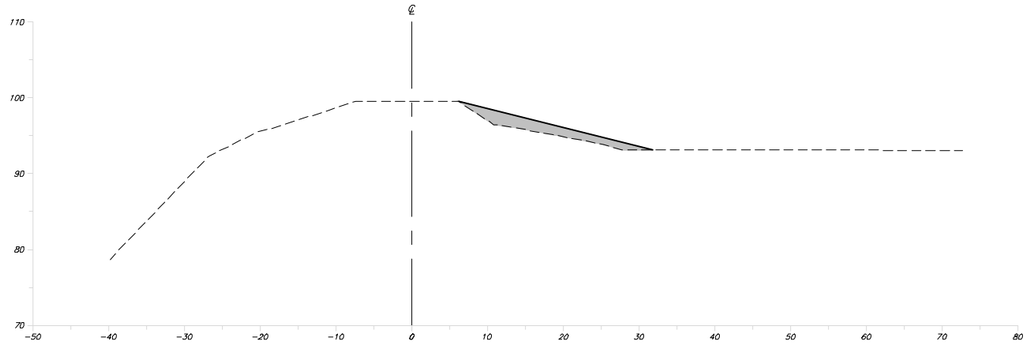
CRITICAL LEVEE REPAIRS
FIG ROAD UPSTREAM

SECTIONS

SHEET 5 OF 8 SHEETS

Use Xref: Site 3 – Fig Rd Upstream.dwg
Plot Date: 2/26/2020
Xref Dim Bar: –

O:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 3 – Fig Rd Upstream.dwg



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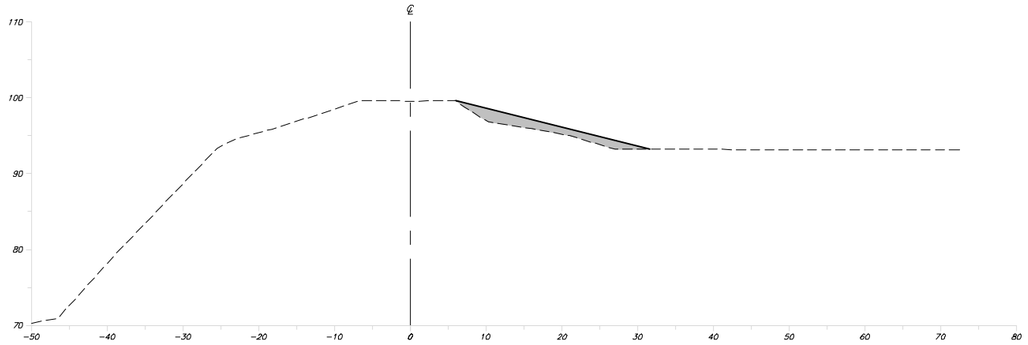

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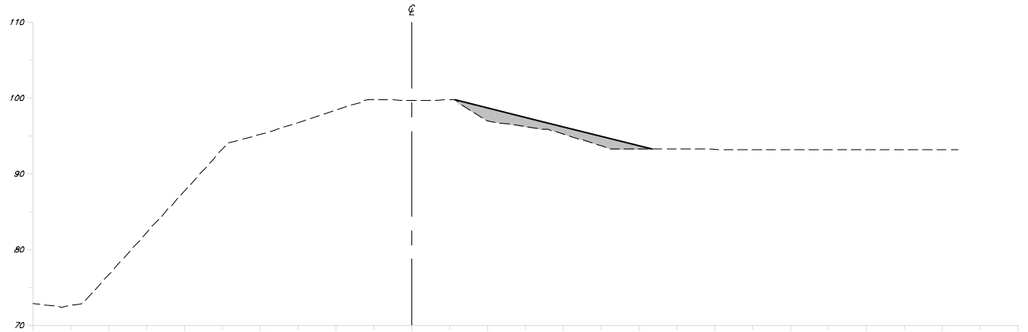

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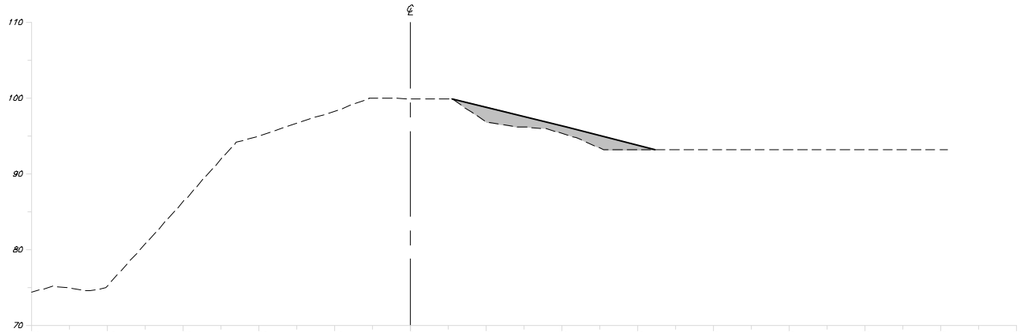

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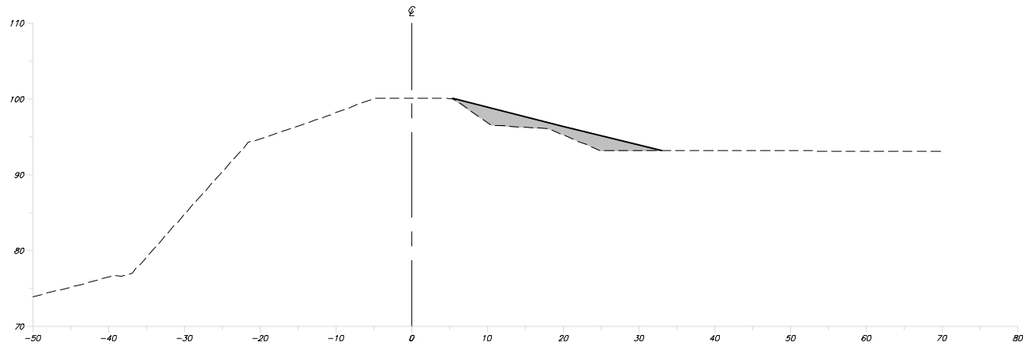

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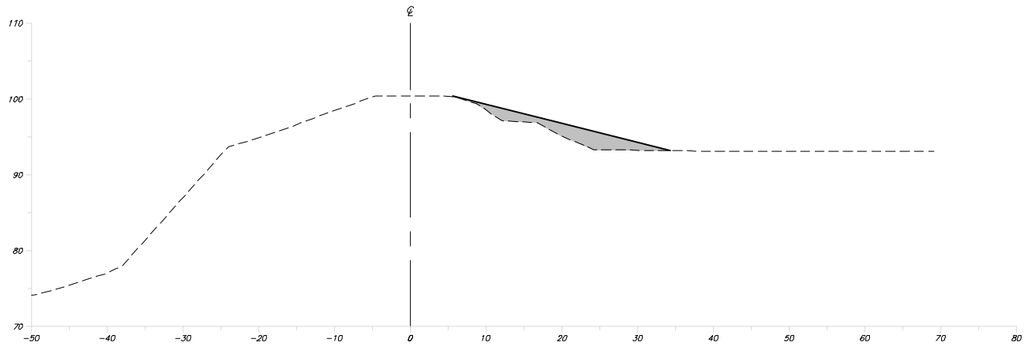

SECTION @ 11+80

0' 5' 10' 20'

G:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 3 - Fig Rd Upstream.dwg

Last Saved: Site 3 - Fig Rd Upstream.dwg
Plot Date: 2/26/2020
Plotted By: —

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: —
Approved By: —
Date: FEBRUARY 2020

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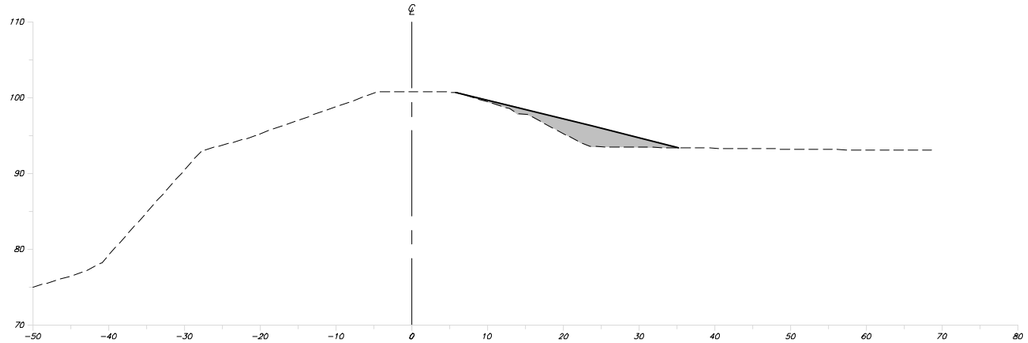
DRAFT

RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
FIG ROAD UPSTREAM

SECTIONS

SHEET 6 OF 8 SHEETS



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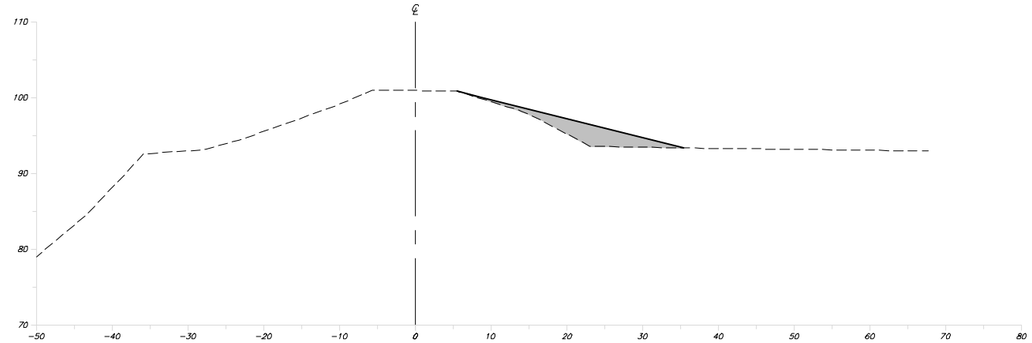

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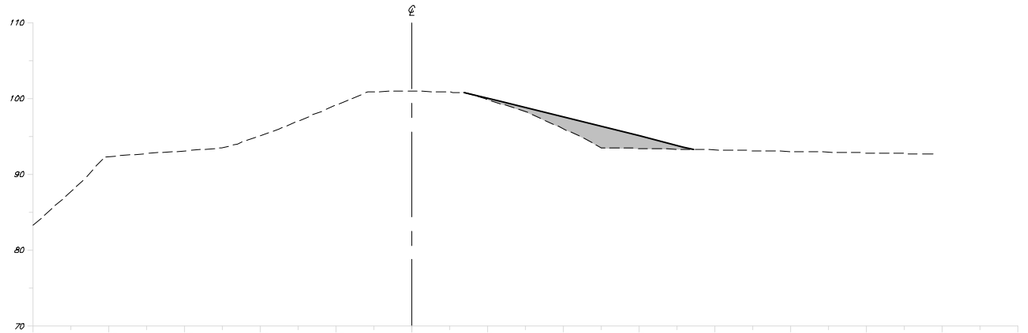

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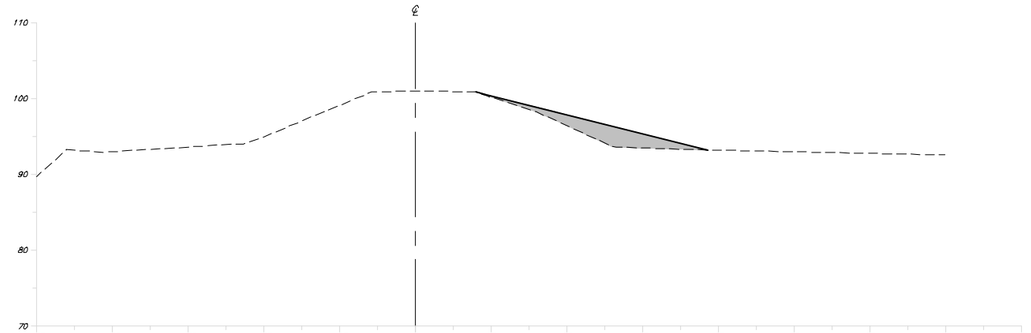

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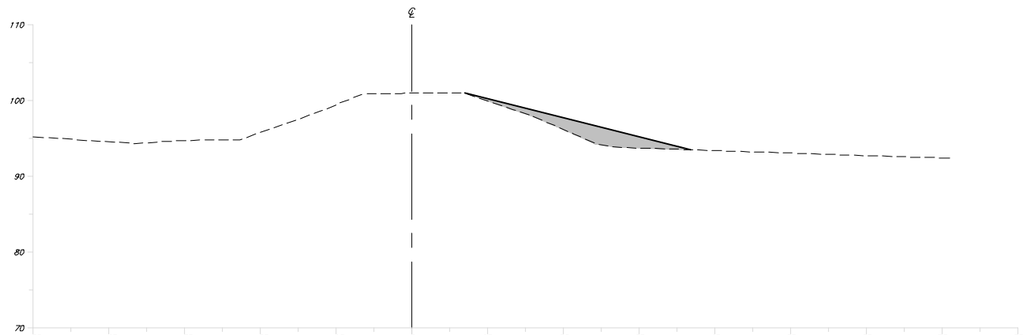

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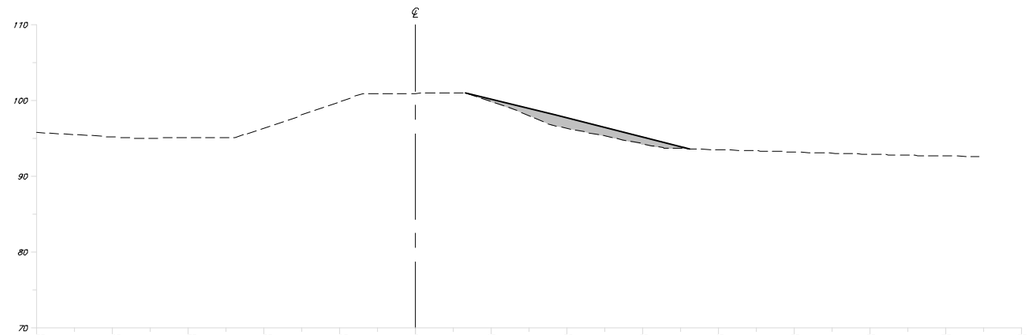

SECTION @ 13+00

0' 5' 10' 20'

G:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 3 - Fig Rd Upstream.dwg

Site 3 - Fig Rd Upstream.dwg

Date Issue	
File No.	2/26/2020
Revision No.	–
Date	

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By	P.W. ERVIN
Drawn By	P. INTHARATH
Checked By	–
Approved By	–
Date	FEBRUARY 2020

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RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
FIG ROAD UPSTREAM

SECTIONS

SHEET 7 OF 8 SHEETS

TABLE 1
QUANTITIES

QUANTITY (AREA OR VOLUME)	ABOVE OHWM [1]	BELOW OHWM [1]	TOTAL
WORK AREA (ACRES)	0.29	0.00	0.29
TEMPORARY DISTURBANCE (ACRES)	0.77	0.00	0.77
TOTAL ACRES	1.06	0.00	1.06
FILL – SOIL (CUBIC YARDS)	417	0	417
FILL – RSP [2] (CUBIC YARDS)	0	0	0
TOTAL CUBIC YARDS	417	0	417

[1] OHWM = ORDINARY HIGH WATER MARK (ELEVATION = 78+/– FEET)
[2] RSP = ROCK SLOPE PROTECTION

LEGEND
- WORK AREA ABOVE ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA ABOVE ORDINARY HIGH WATER MARK

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By	P.W. ERVIN
Drawn By	P. INTHARATH
Checked By	–
Approved By	–
Date	FEBRUARY 2020

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RECLAMATION DISTRICT 800
CRITICAL LEVEE REPAIRS
FIG ROAD UPSTREAM
IMPACT

SHEET 8 OF 8 SHEETS

Last Saved By: Inthara
Plot Date: 2/26/2020
Plotted By: –

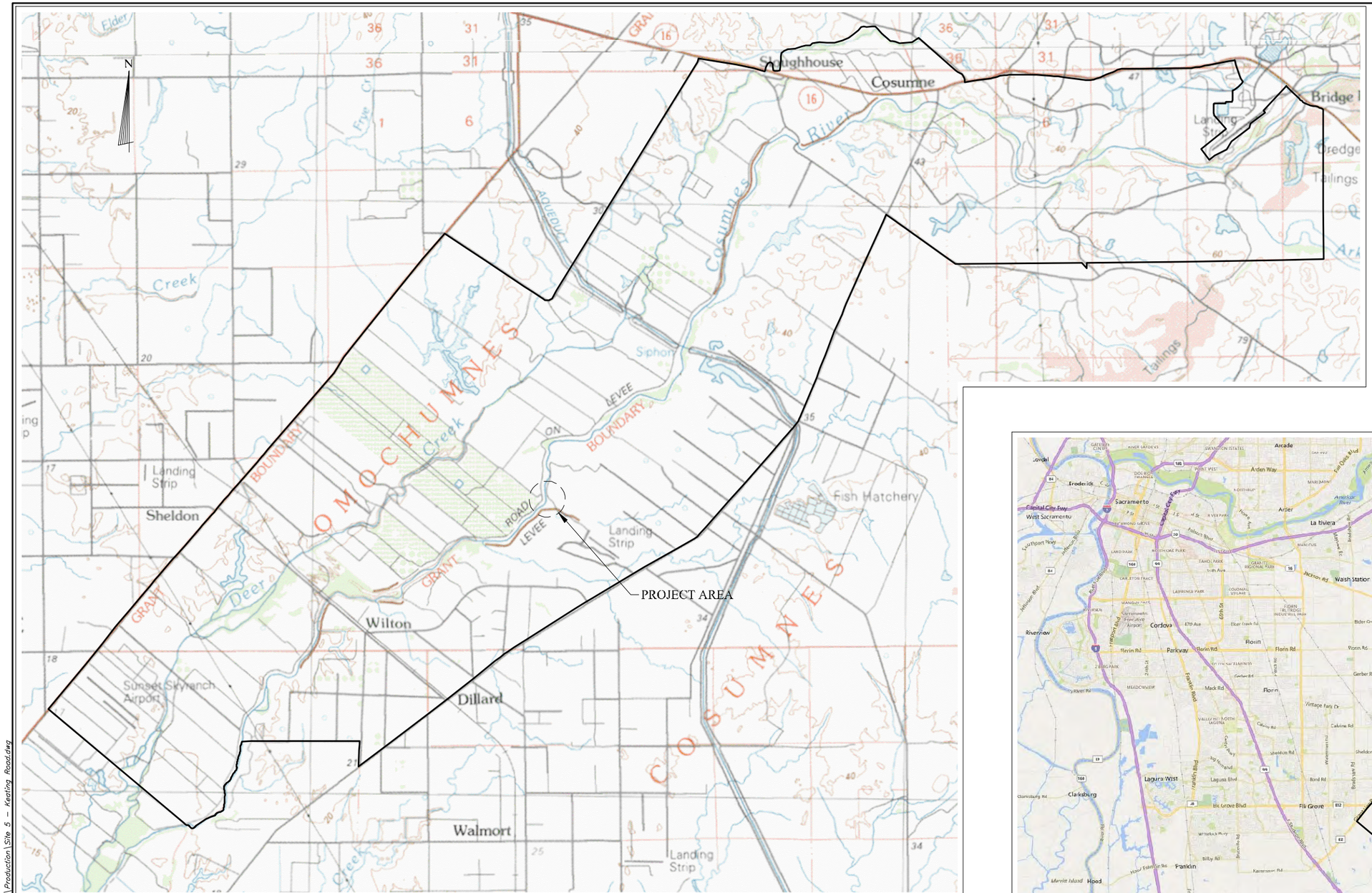
O:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 3 – Fig Rd Upstream.dwg

RECLAMATION DISTRICT NO. 800

CRITICAL LEVEE REPAIR PROJECTS
SITE 5: KEATING ROAD

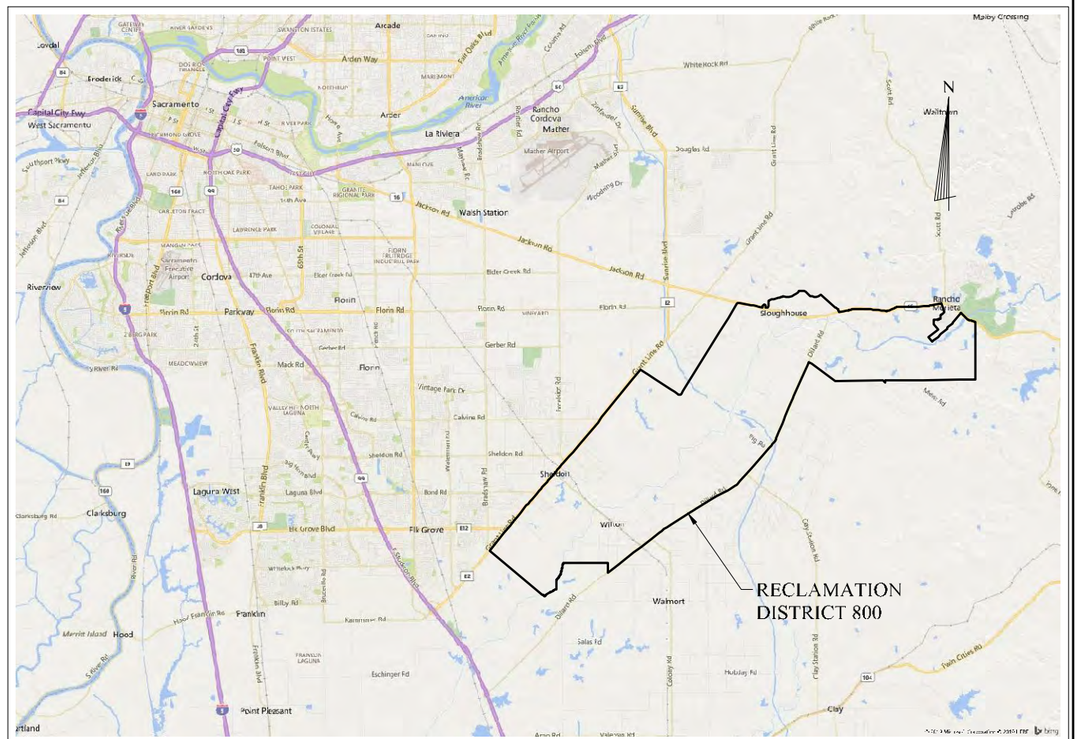
Sacramento County **California**

WAGNER & BONSIGNORE CONSULTING CIVIL ENGINEERS A CORPORATION
2151 RIVER PLAZA DRIVE, SUITE 100 SACRAMENTO, CALIFORNIA



LOCATION MAP

0' 1,500' 3,000' 6,000'



VICINITY MAP

NOT TO SCALE

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: —
Approved By: —
Date: MARCH 2020

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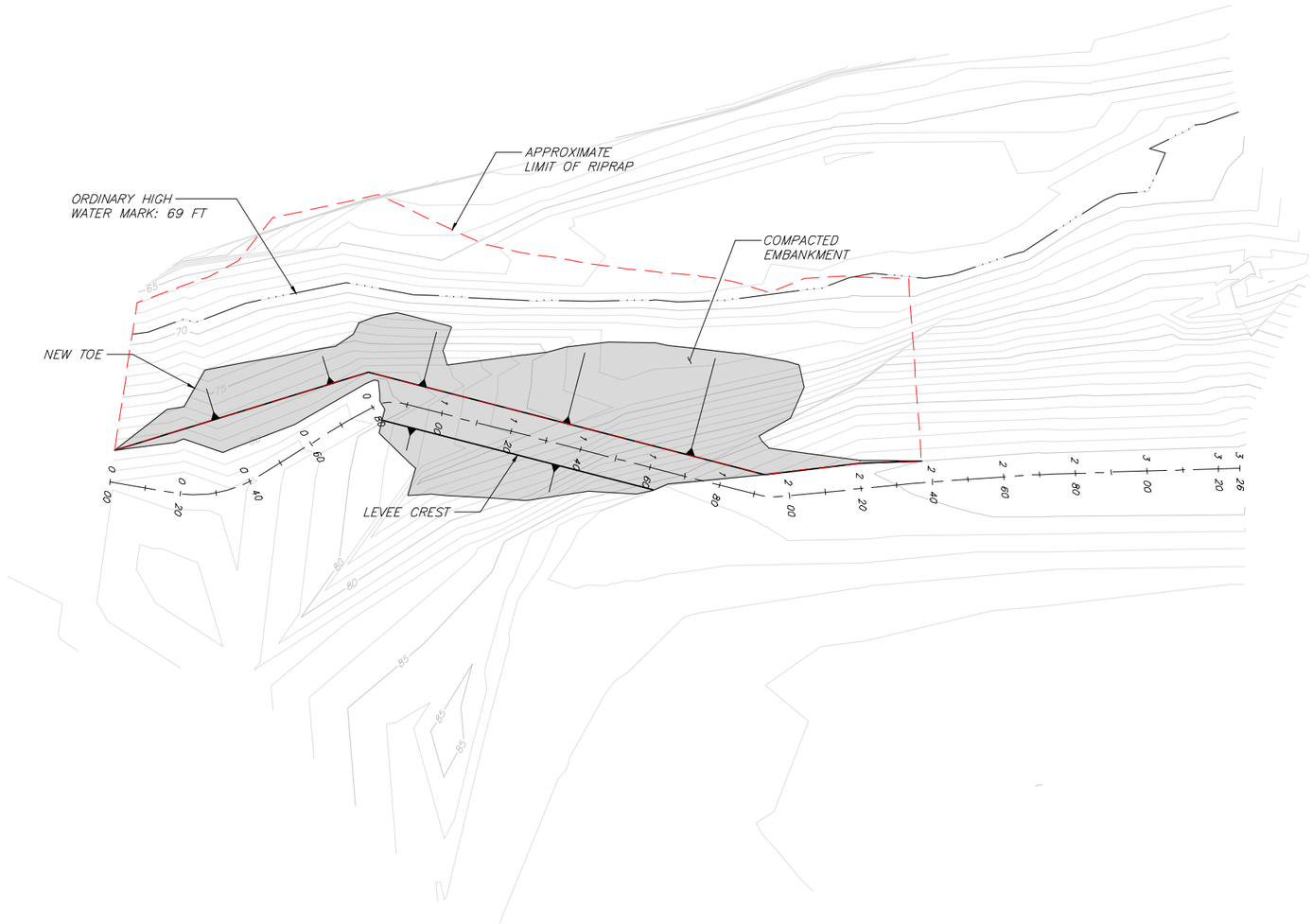
RECLAMATION DISTRICT 800

SITE 5 - KEATING ROAD

LOCATION AND VICINITY MAP

SHEET 1 OF 7 SHEETS

File Name: G:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 5 – Keating Road.dwg
Last Plot: 4/3/2020
Revision By: —
Site 5 – Keating Road.dwg



REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Design By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
Approved By: –
Date: MARCH 2020

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RECLAMATION DISTRICT 800

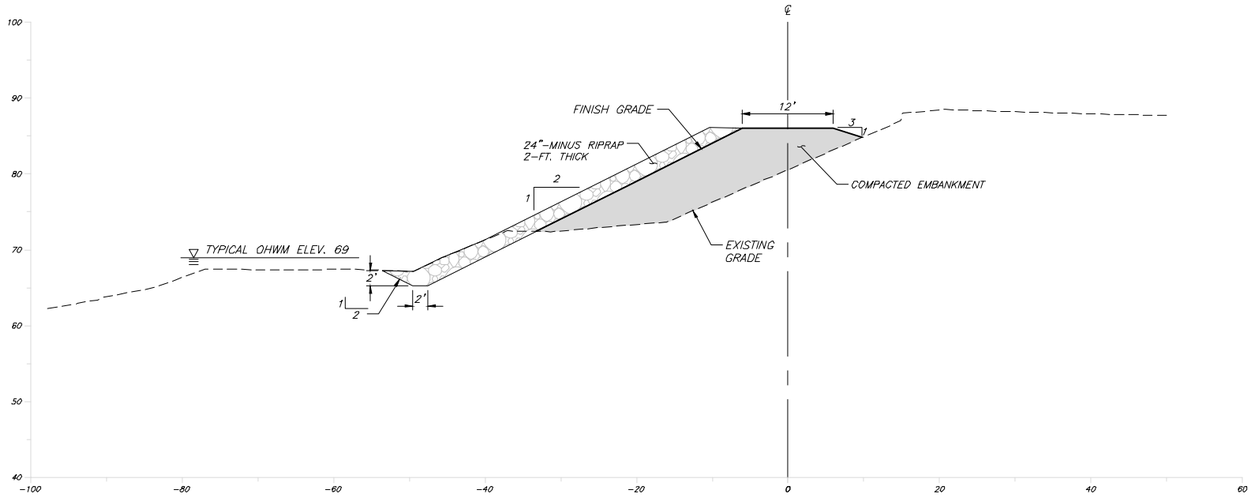
SITE 5 - KEATING ROAD

PLAN

SHEET 2 OF 7 SHEETS

Last Saved By: Site 5 – Keating Road.dwg
Plot Date: 4/3/2020
Revision Date: –

G:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 5 – Keating Road.dwg



TYPICAL SECTION

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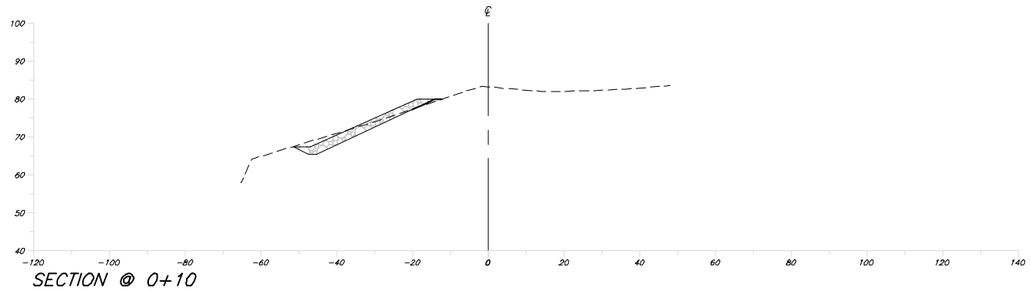

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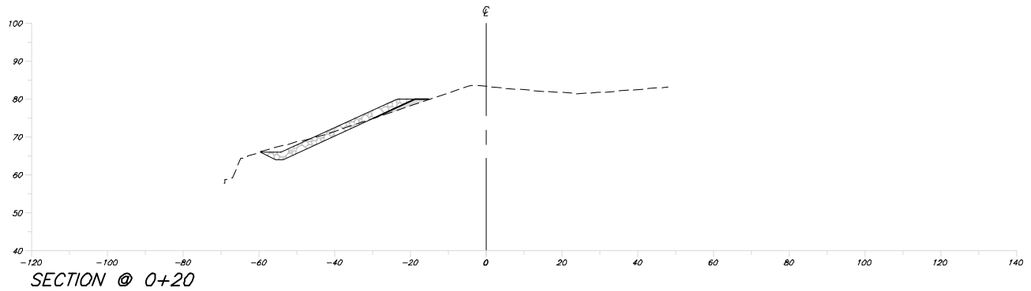
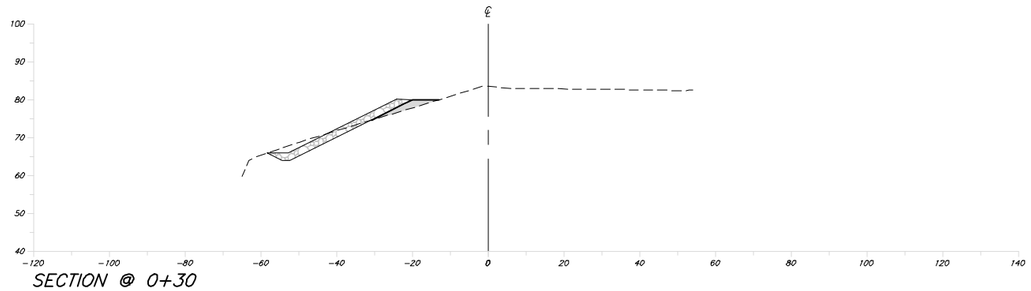


SECTION @ 0+20



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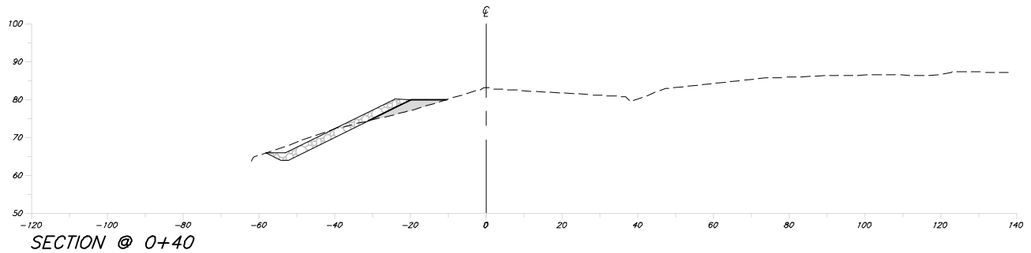

SECTION @ 0+40

0' 10' 20' 40'

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
Approved By: –
Date: MARCH 2020

Wagner & Bonsignore
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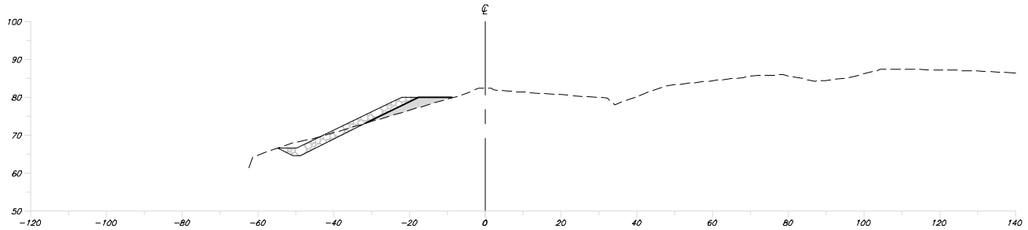
RECLAMATION DISTRICT 800

SITE 5 - KEATING ROAD

SECTIONS

SHEET 3 OF 7 SHEETS

C:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 5 – Keating Road.dwg
Site 5 – Keating Road.dwg
Last Plot: 4/3/2020
Last Plot By: –
Xref Path: –



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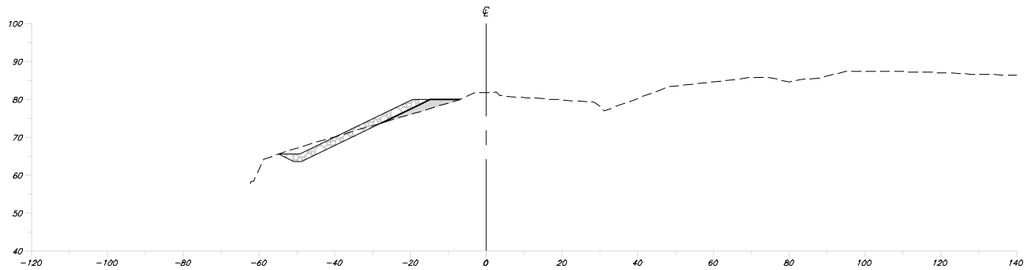

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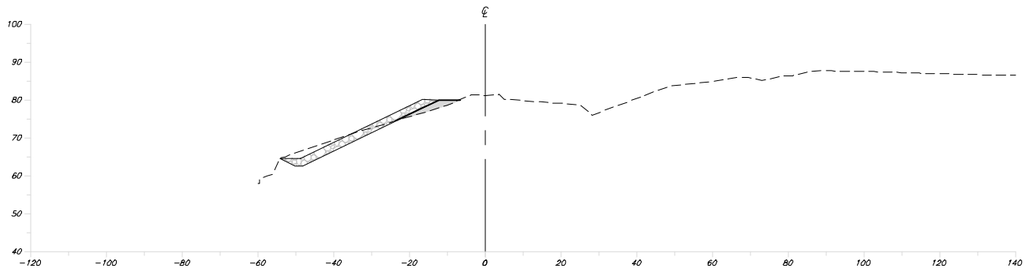

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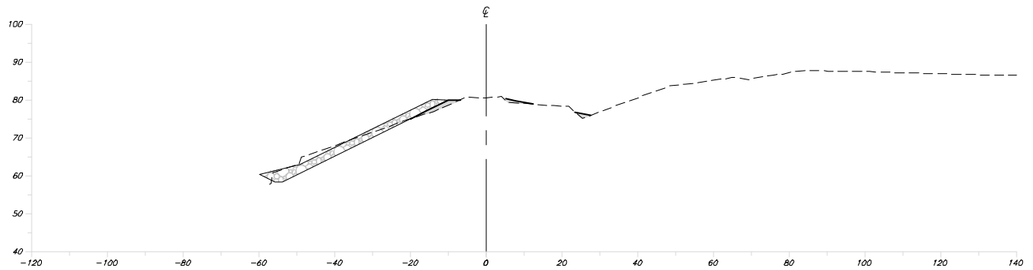

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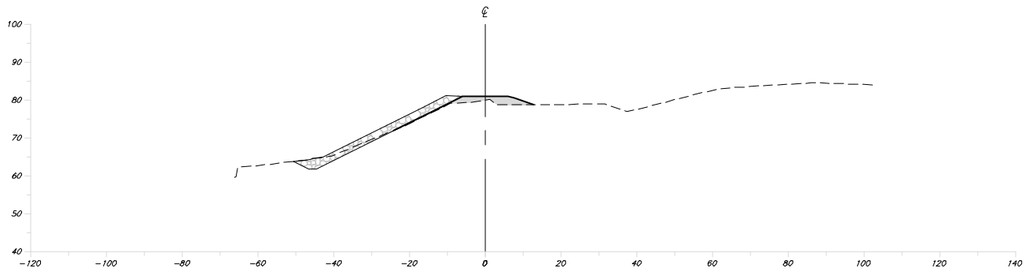

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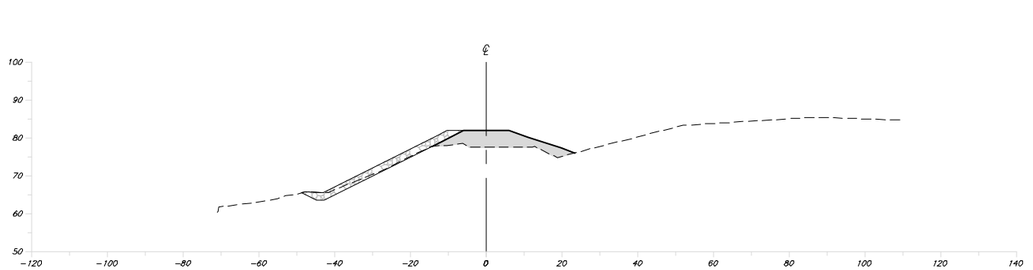

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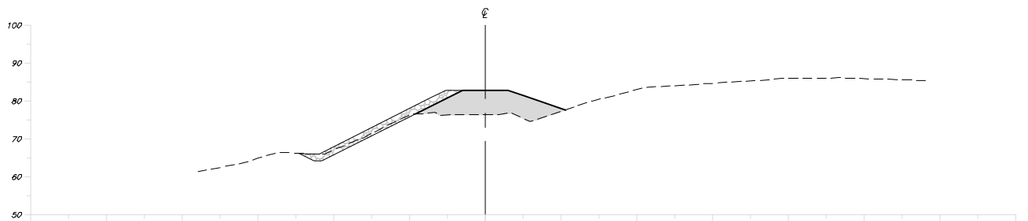

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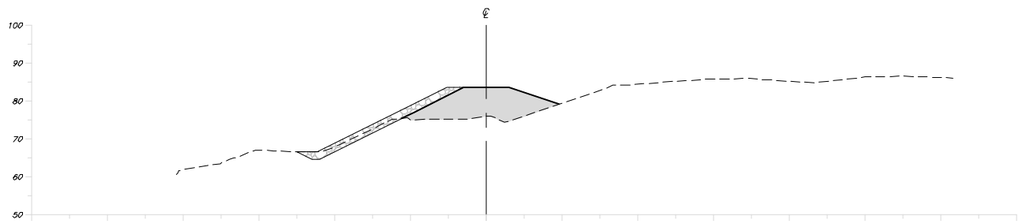

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0' 10' 20' 40'

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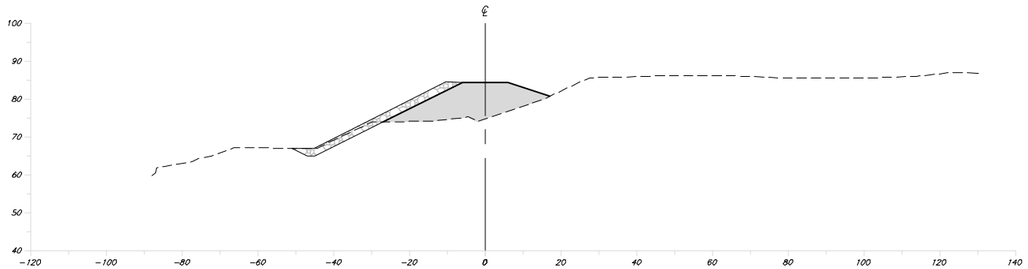
RECLAMATION DISTRICT 800

SITE 5 - KEATING ROAD

SECTIONS

SHEET 4 OF 7 SHEETS

C:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 5 – Keating Road.dwg
Last Saved By: Site 5 – Keating Road.dwg
Plot Date: 4/3/2020
Revision Date: –



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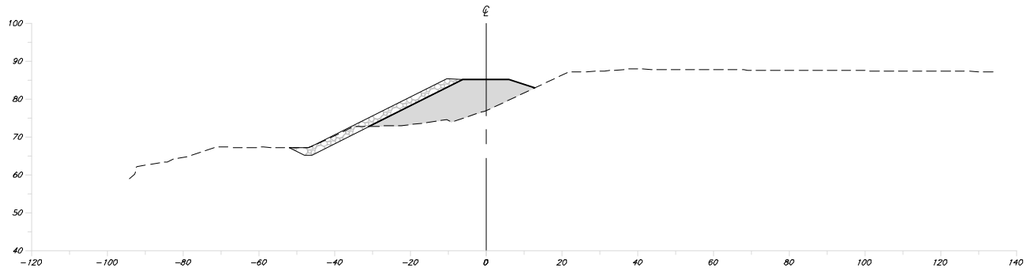

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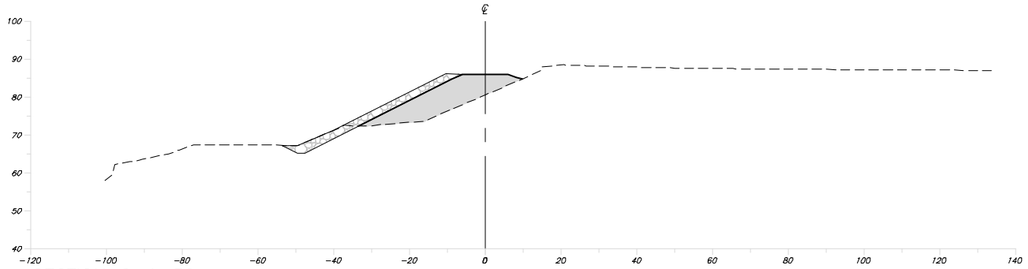

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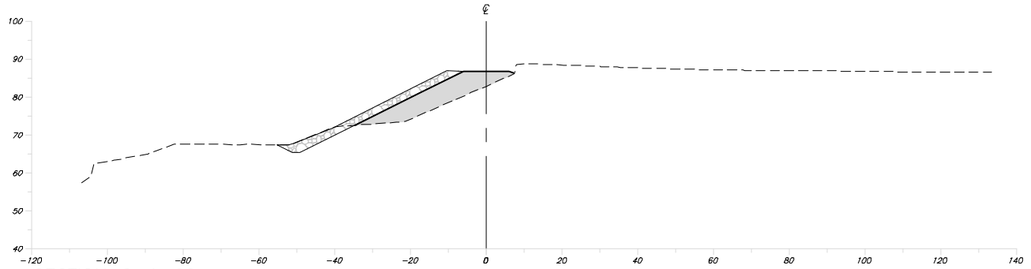

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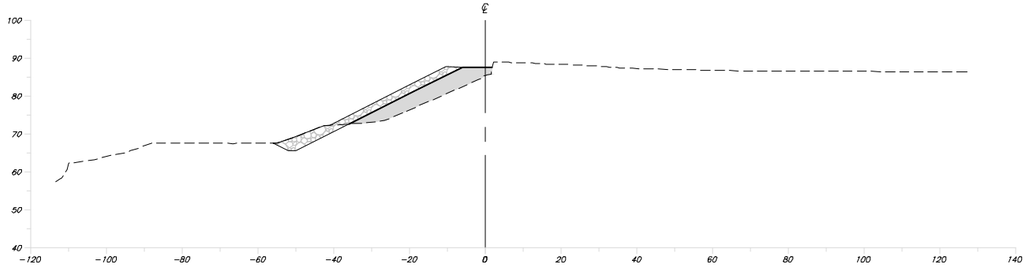

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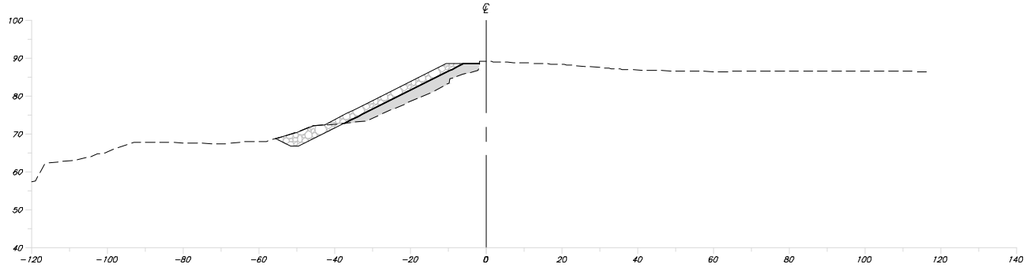

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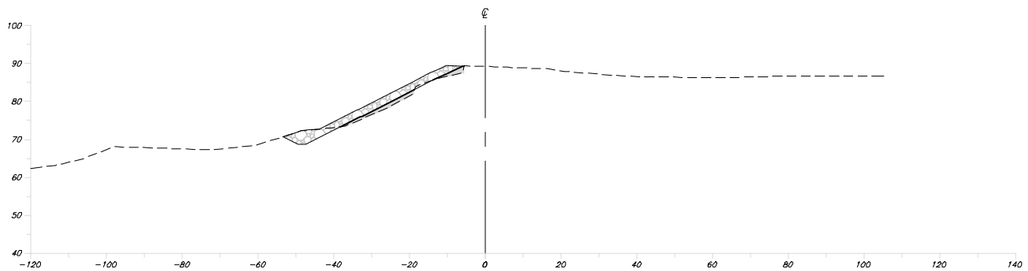

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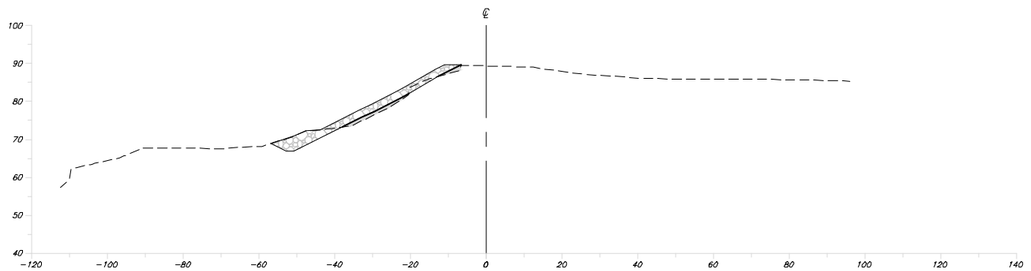

SECTION @ 2+00

0' 10' 20' 40'

C:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 5 - Keating Road.dwg

Last Save	Site 5 - Keating Road.dwg		
Plot Date	4/3/2020		
Revision Date	–		

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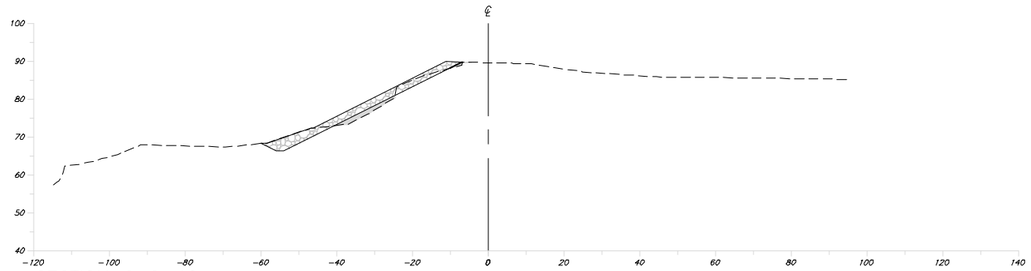
RECLAMATION DISTRICT 800

SITE 5 - KEATING ROAD

SECTIONS

SHEET 5 OF 7 SHEETS



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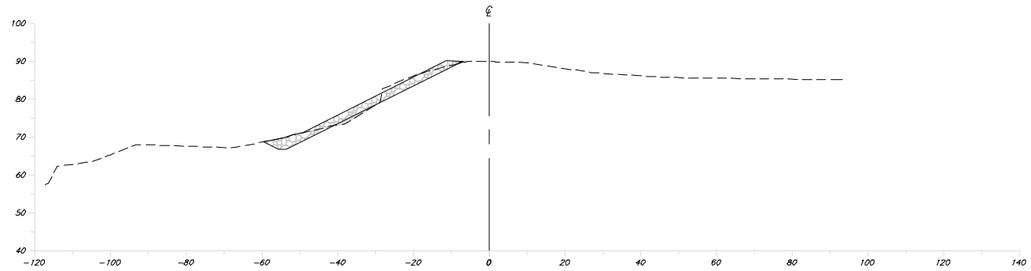

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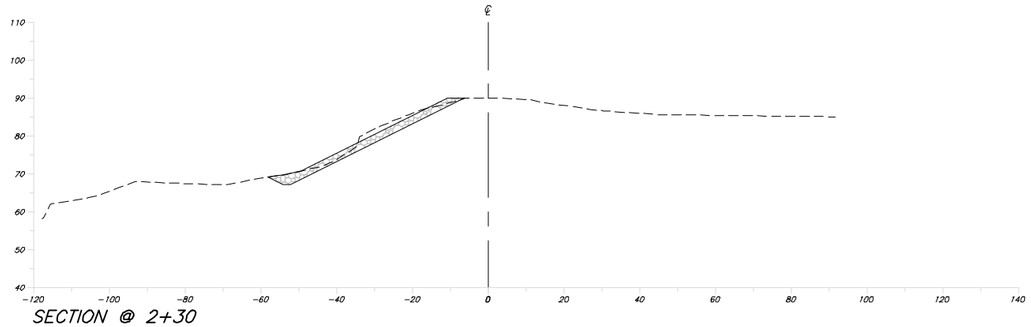

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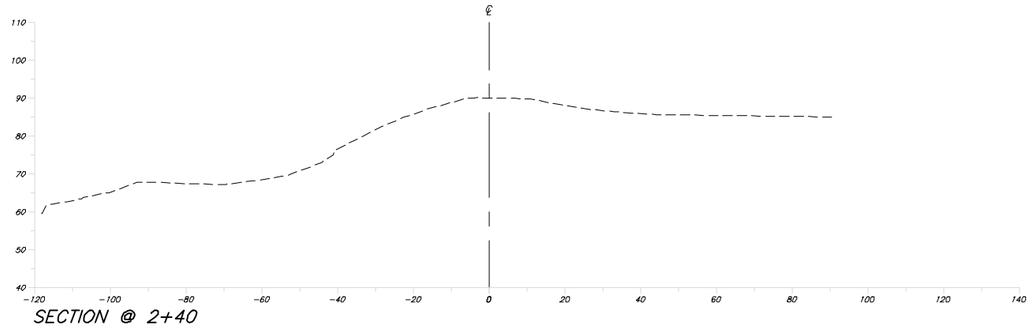

SECTION @ 2+40

0' 10' 20' 40'

C:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 5 - Keating Road.dwg

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RECLAMATION DISTRICT 800

SITE 5 - KEATING ROAD

SECTIONS

SHEET 6 OF 7 SHEETS

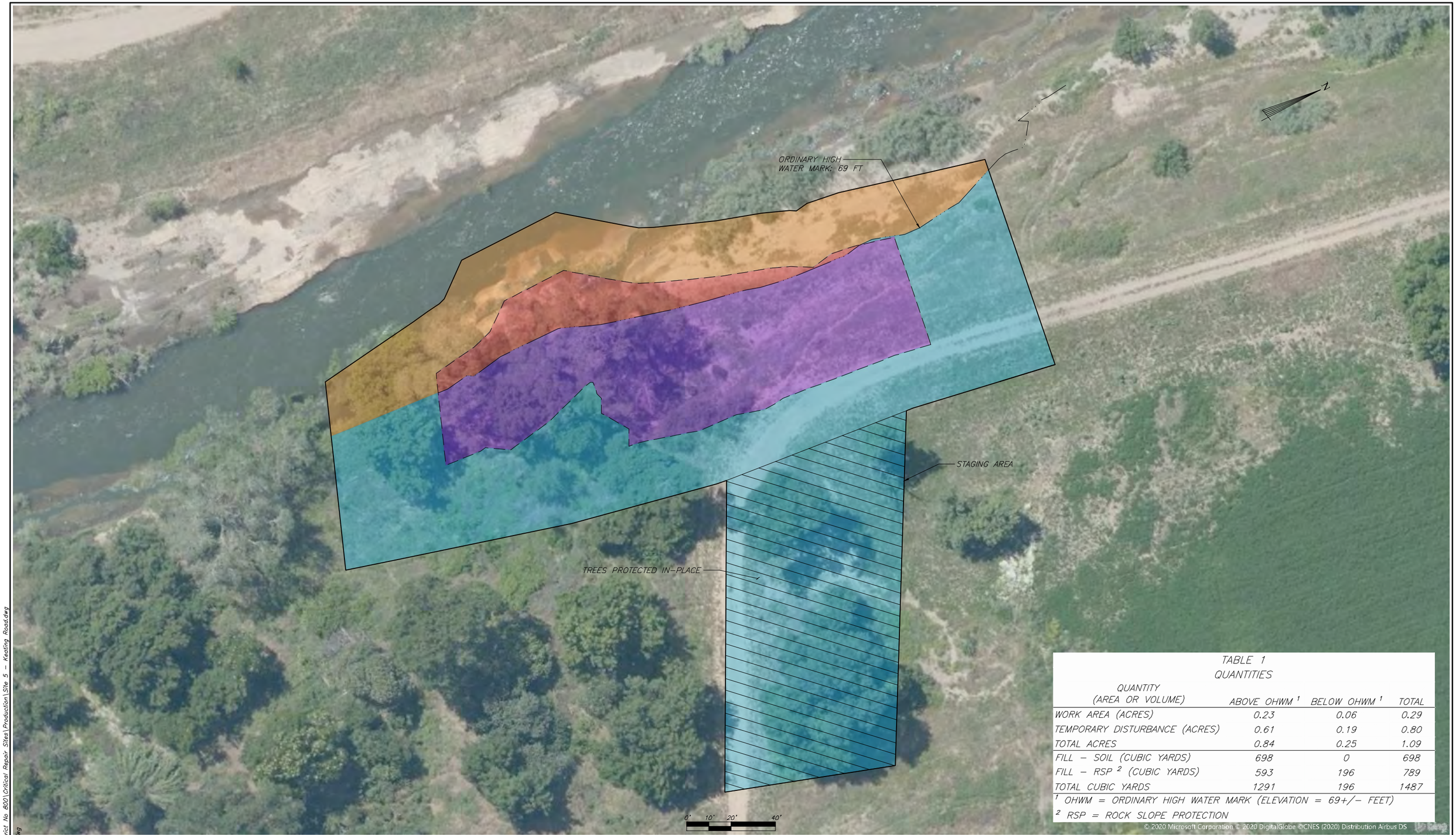

TABLE 1
QUANTITIES

QUANTITY (AREA OR VOLUME)	ABOVE OHWM [1]	BELOW OHWM [1]	TOTAL
WORK AREA (ACRES)	0.23	0.06	0.29
TEMPORARY DISTURBANCE (ACRES)	0.61	0.19	0.80
TOTAL ACRES	0.84	0.25	1.09
FILL – SOIL (CUBIC YARDS)	698	0	698
FILL – RSP [2] (CUBIC YARDS)	593	196	789
TOTAL CUBIC YARDS	1291	196	1487

[1] OHWM = ORDINARY HIGH WATER MARK (ELEVATION = 69+/– FEET)
[2] RSP = ROCK SLOPE PROTECTION

LEGEND
- WORK AREA BELOW ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA BELOW ORDINARY HIGH WATER MARK
- WORK AREA ABOVE ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA ABOVE ORDINARY HIGH WATER MARK

REVISIONS

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RECLAMATION DISTRICT 800

SITE 5 - KEATING ROAD

IMPACT

SHEET 7 OF 7 SHEETS

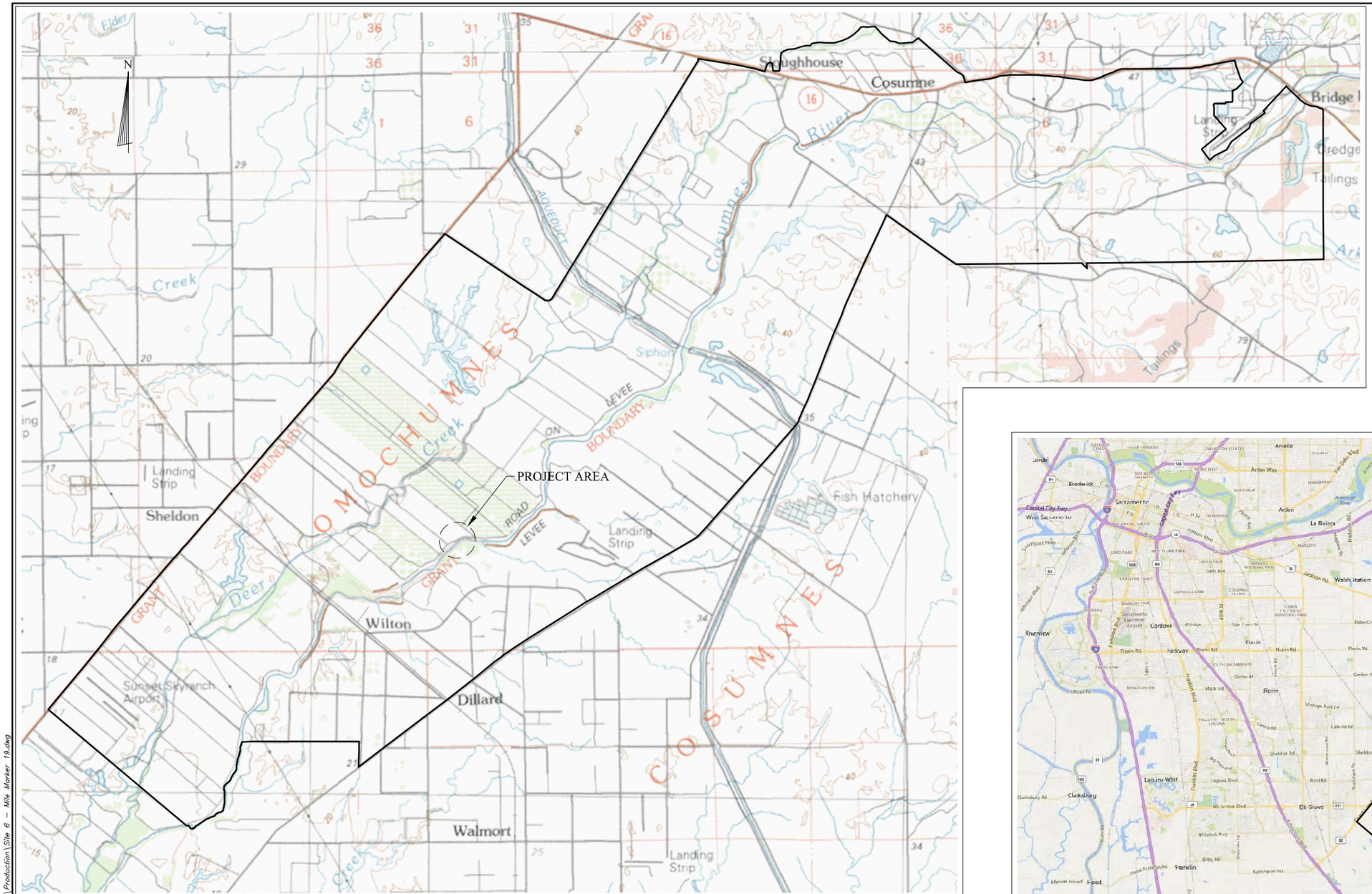
Q:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 5 – Keating Road.dwg
Last Update: Site 5 – Keating Road.dwg
Plot Date: 4/3/2020
Plotted By: –

RECLAMATION DISTRICT NO. 800

CRITICAL LEVEE REPAIR PROJECTS
SITE 6: MILE MARKER 19

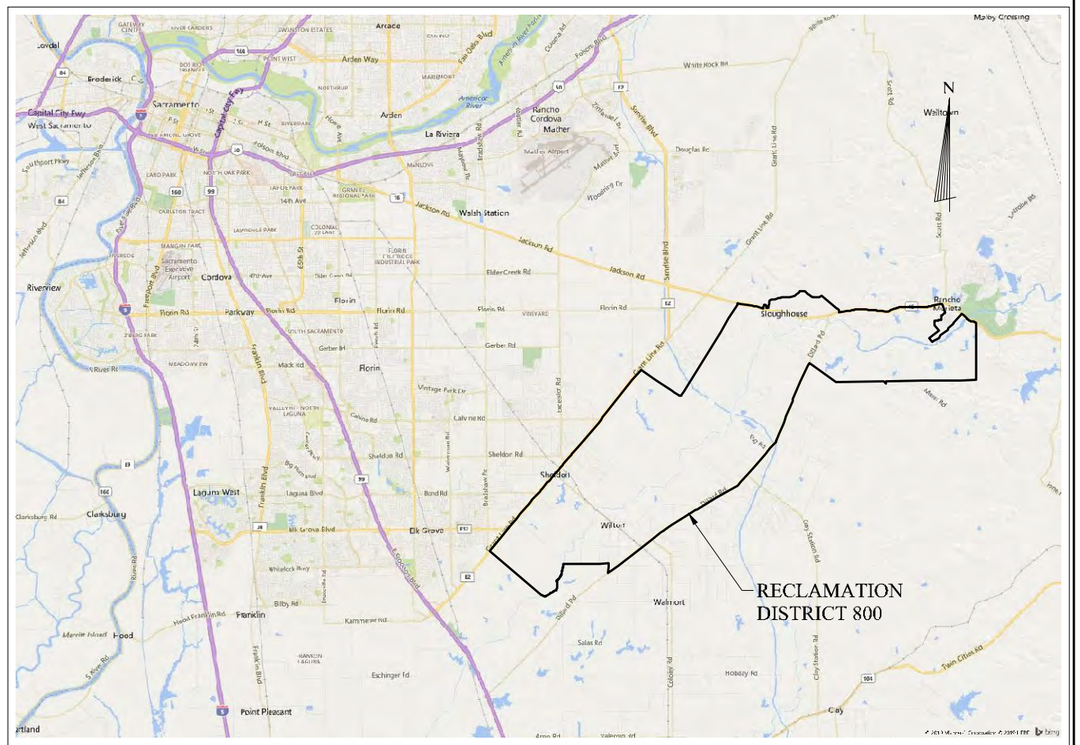
Sacramento County **California**

WAGNER & BONSIGNORE CONSULTING CIVIL ENGINEERS A CORPORATION
2151 RIVER PLAZA DRIVE, SUITE 100 SACRAMENTO, CALIFORNIA



LOCATION MAP

0' 1,500' 3,000' 6,000'



VICINITY MAP

NOT TO SCALE

O:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 6 – Mile Marker 19.dwg

Issue	Date	Revision	By
Site 6 – Mile Marker 19.dwg	4/2/2020	—	—

REVISIONS			
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Designed By	P.W. ERVIN
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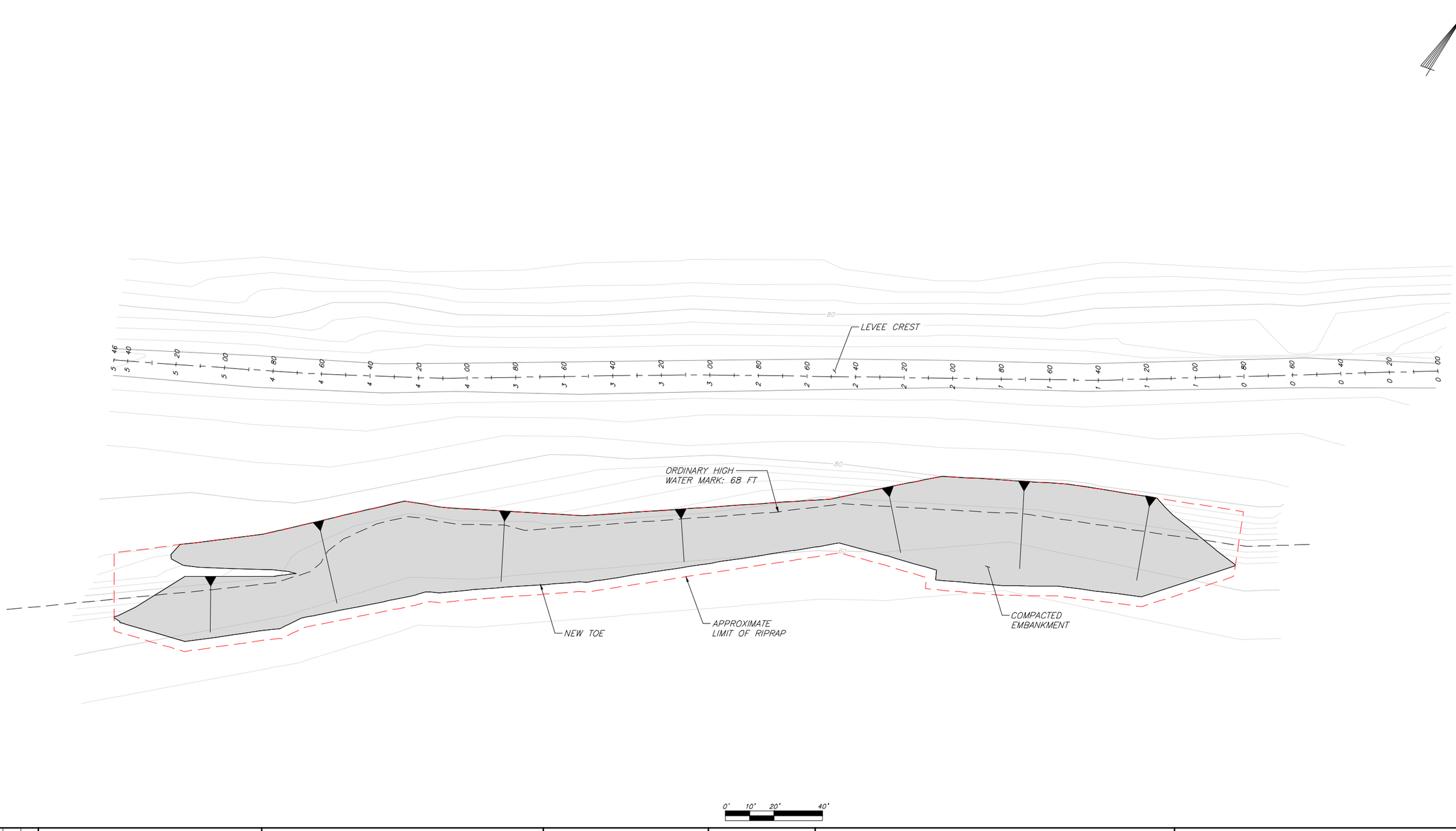
RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
MILE MARKER 19

LOCATION AND VICINITY MAP

SHEET 1 OF 9 SHEETS



G:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 6 - Mile Marker 19.dwg

Site 6 - Mile Marker 19.dwg

Last Plot Date: 4/2/2020

Revision No. –

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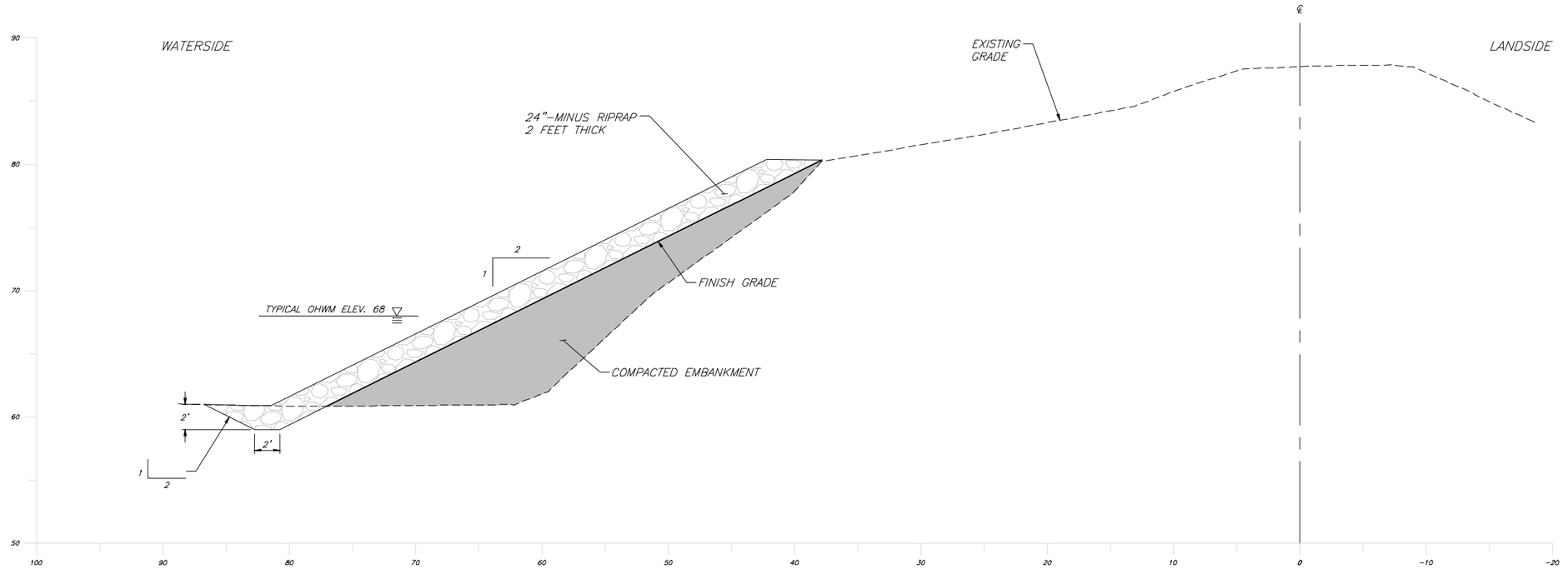
RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
MILE MARKER 19

PLAN

SHEET 2 OF 9 SHEETS



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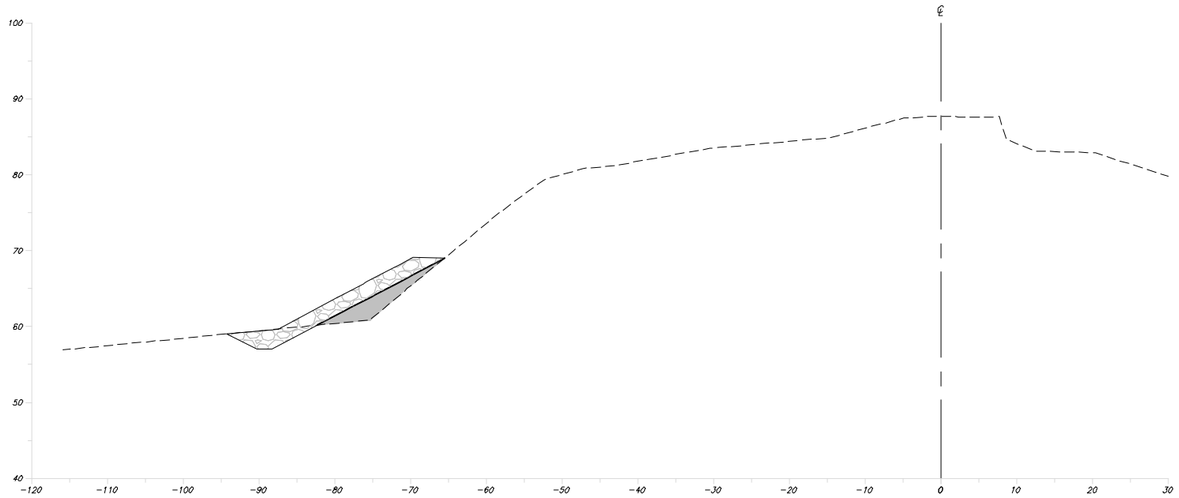

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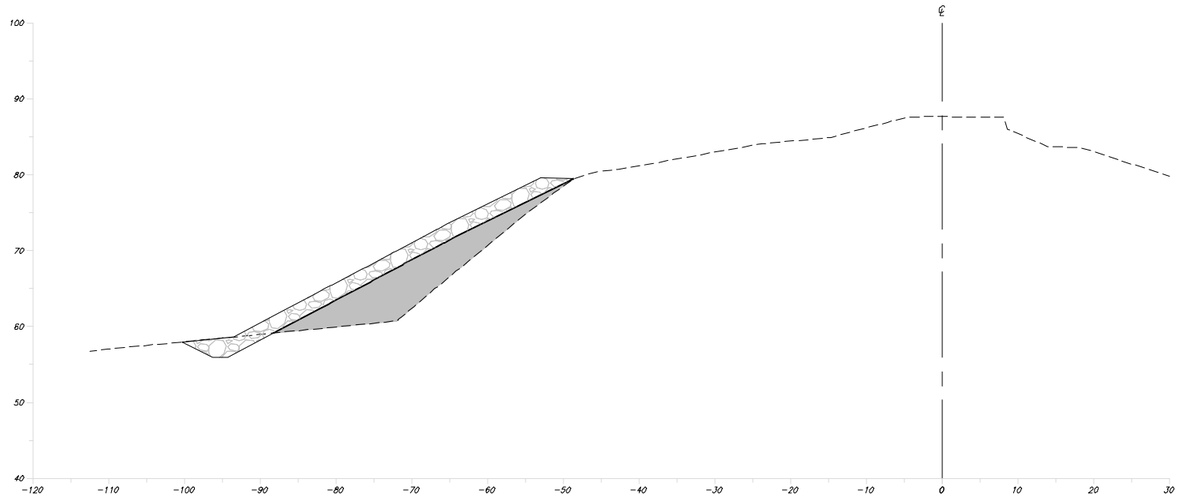

SECTION @ 1+20

0' 10' 20'

C:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 6 – Mile Marker 19.dwg

Site 6 – Mile Marker 19.dwg

Last Plot: 4/2/2020

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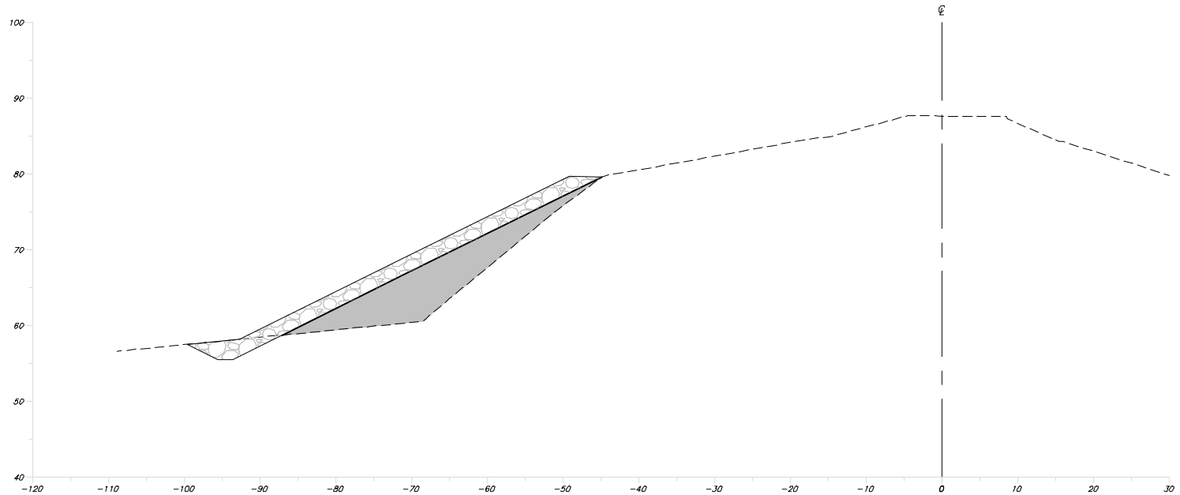
RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
MILE MARKER 19

SECTIONS

SHEET 3 OF 9 SHEETS



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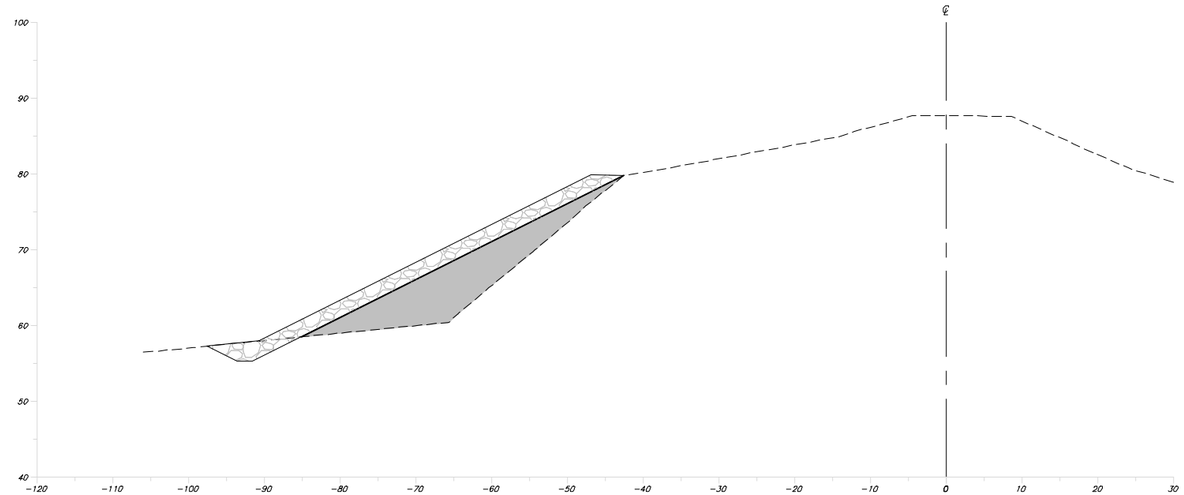

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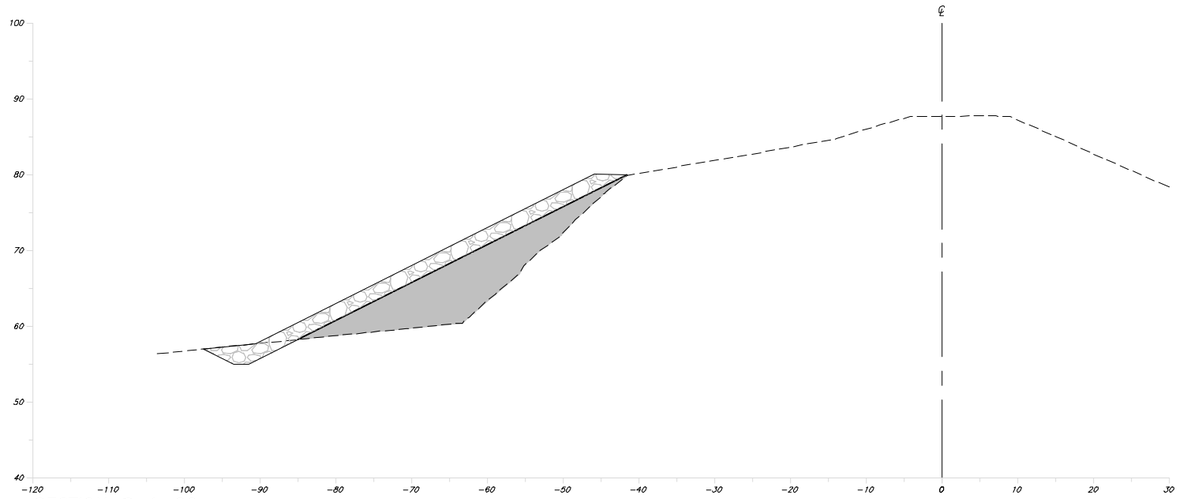

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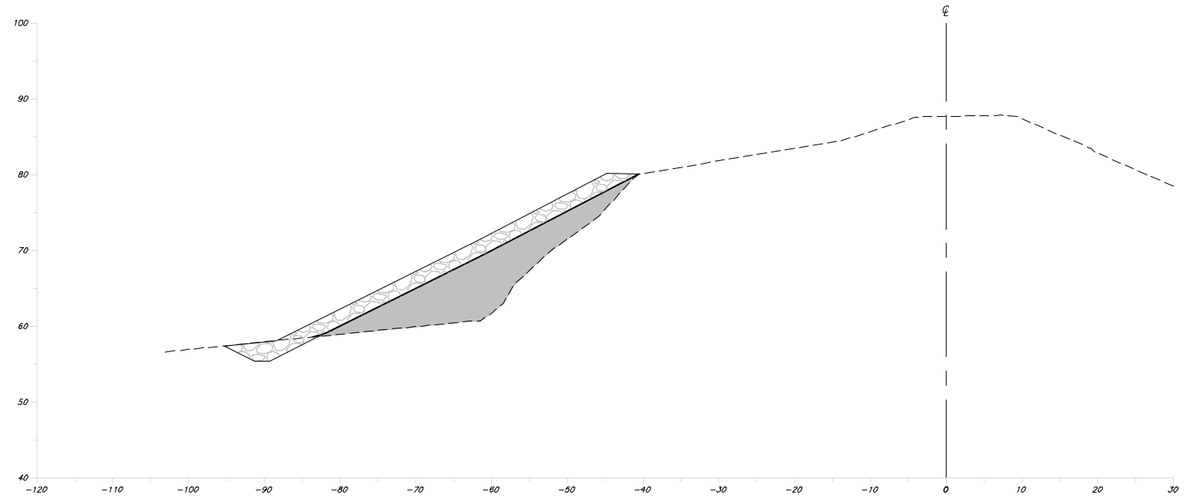

SECTION @ 2+00

0' 10' 20'

G:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 6 - Mile Marker 19.dwg

Last Saved: Site 6 - Mile Marker 19.dwg
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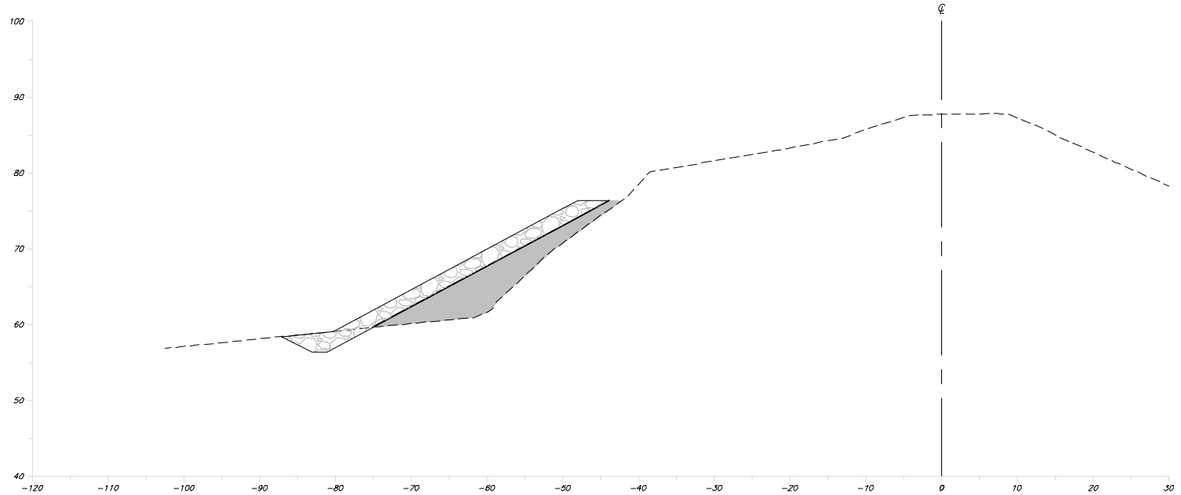
RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
MILE MARKER 19

SECTIONS

SHEET 4 OF 9 SHEETS



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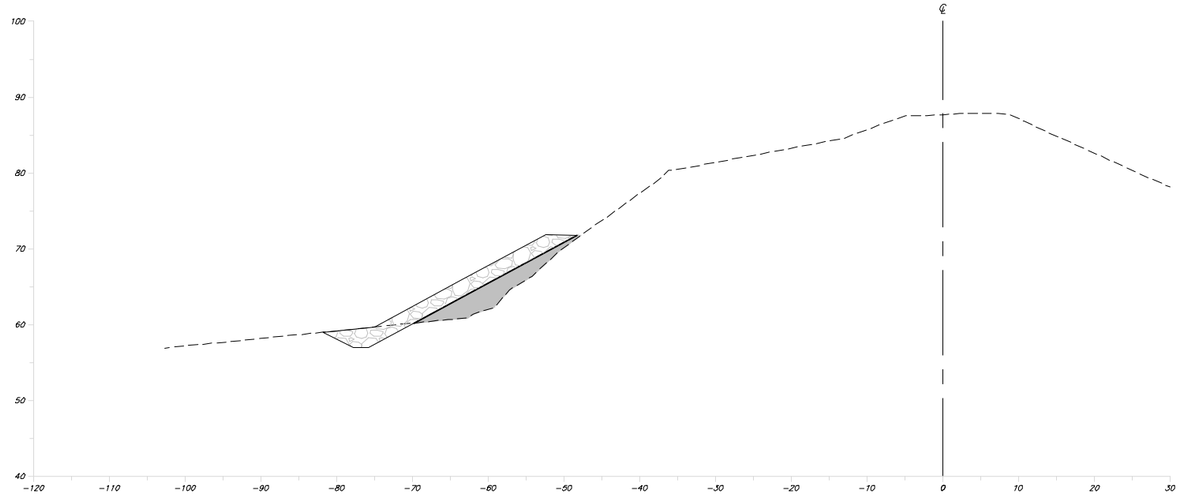

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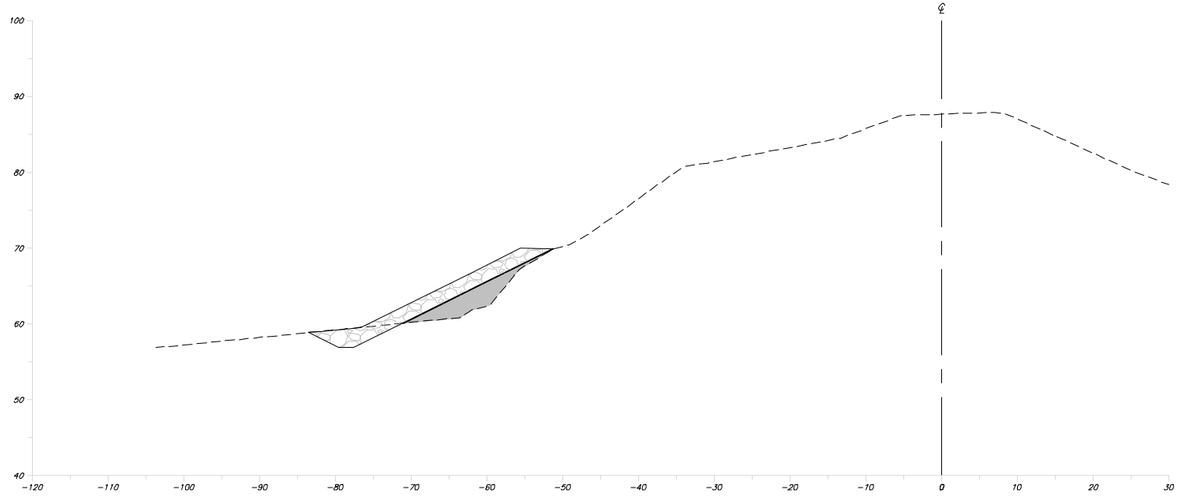

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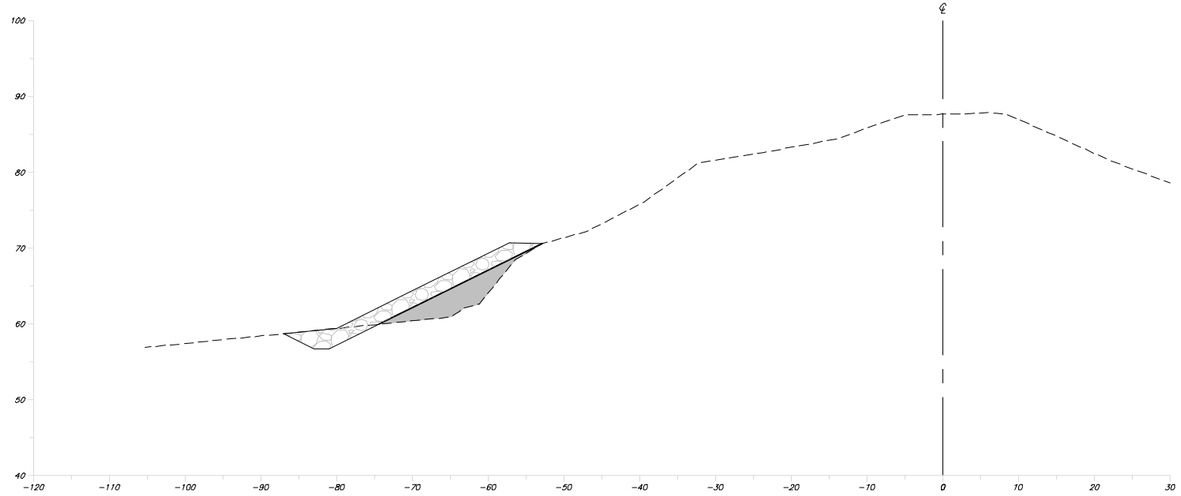

SECTION @ 2+80

0' 10' 20'

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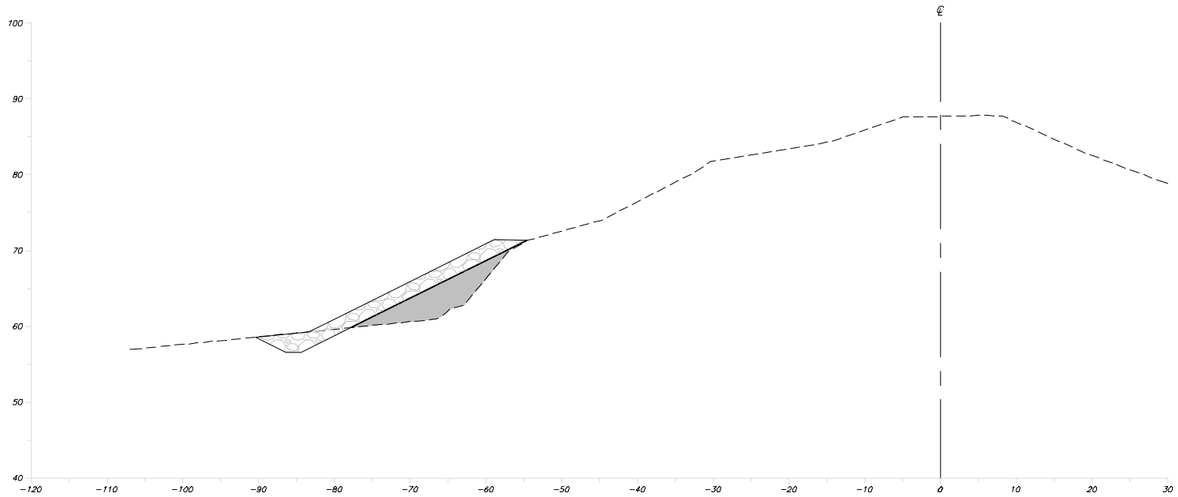
CRITICAL LEVEE REPAIRS
MILE MARKER 19

SECTIONS

SHEET 5 OF 9 SHEETS



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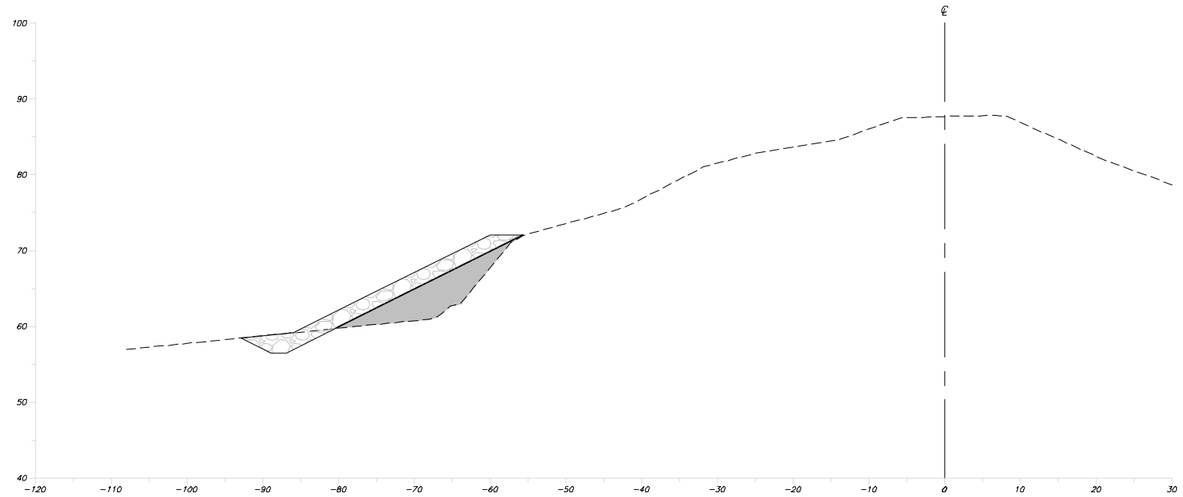

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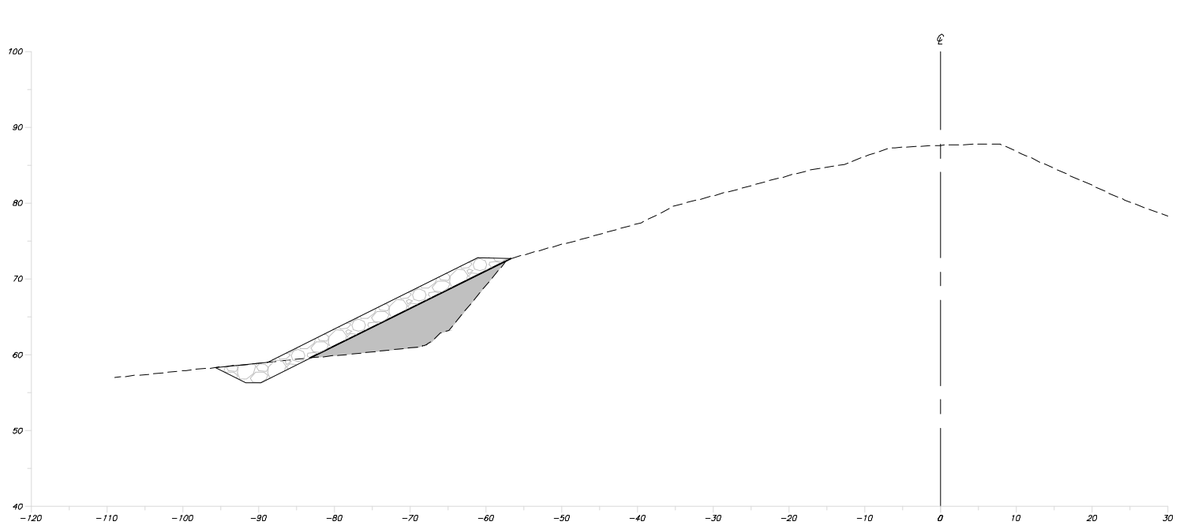

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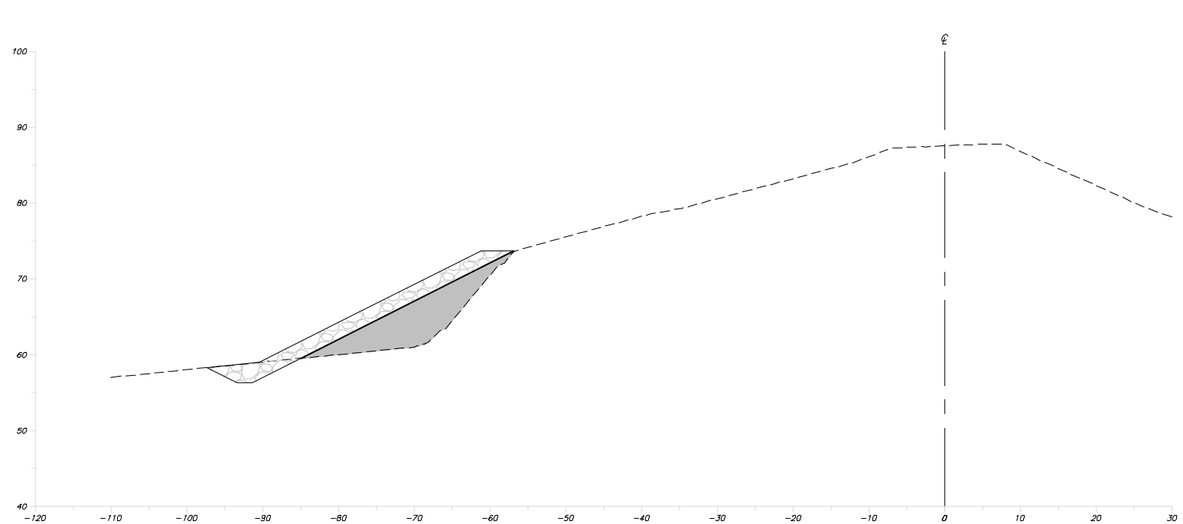

SECTION @ 3+60

0' 10' 20'

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
Approved By: –
Date: FEBRUARY 2020

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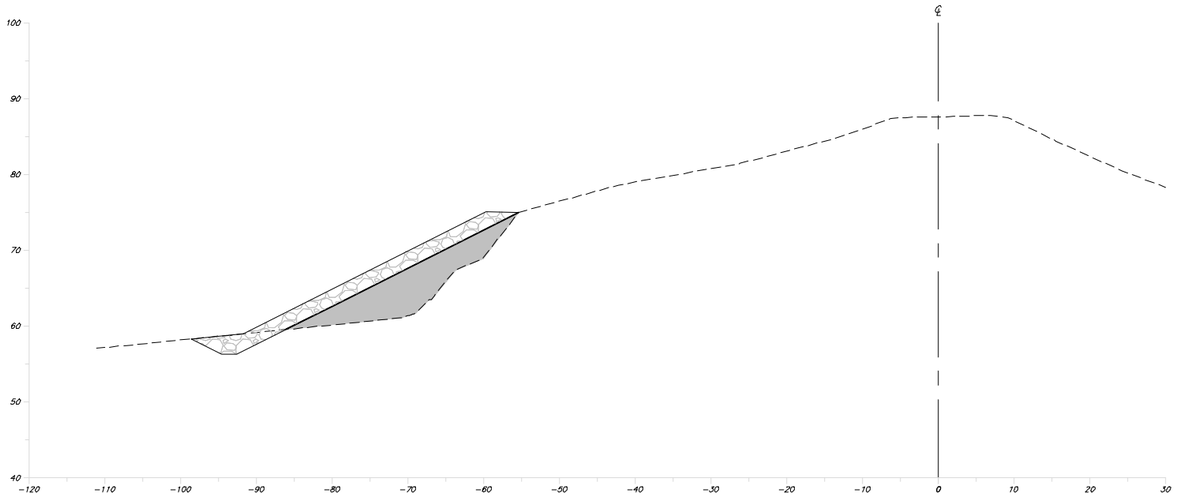
RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
MILE MARKER 19

SECTIONS

SHEET 6 OF 9 SHEETS

Q:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 6 – Mile Marker 19.dwg
Site 6 – Mile Marker 19.dwg
Last Issue: 4/2/2020
Revision Date: –



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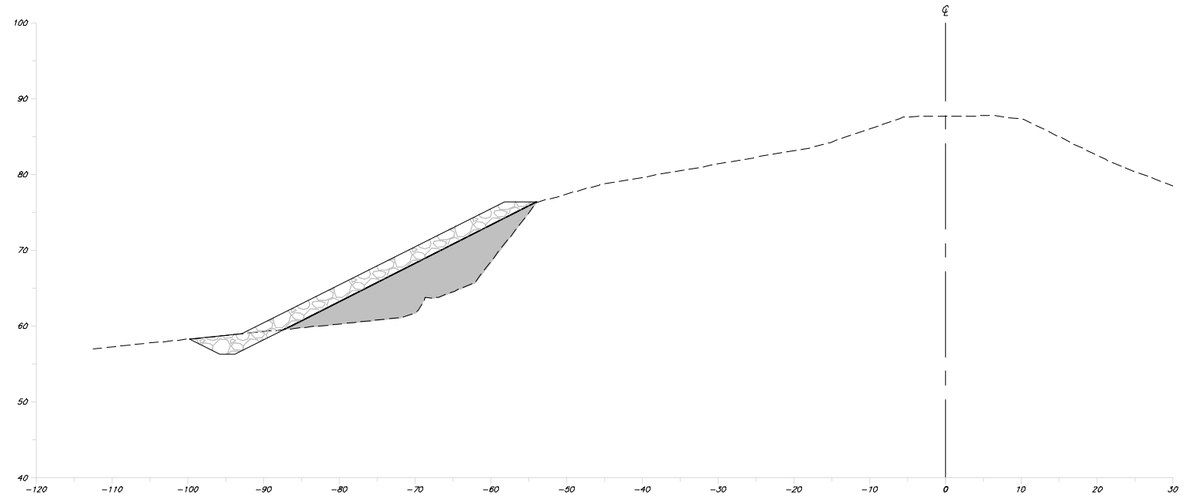

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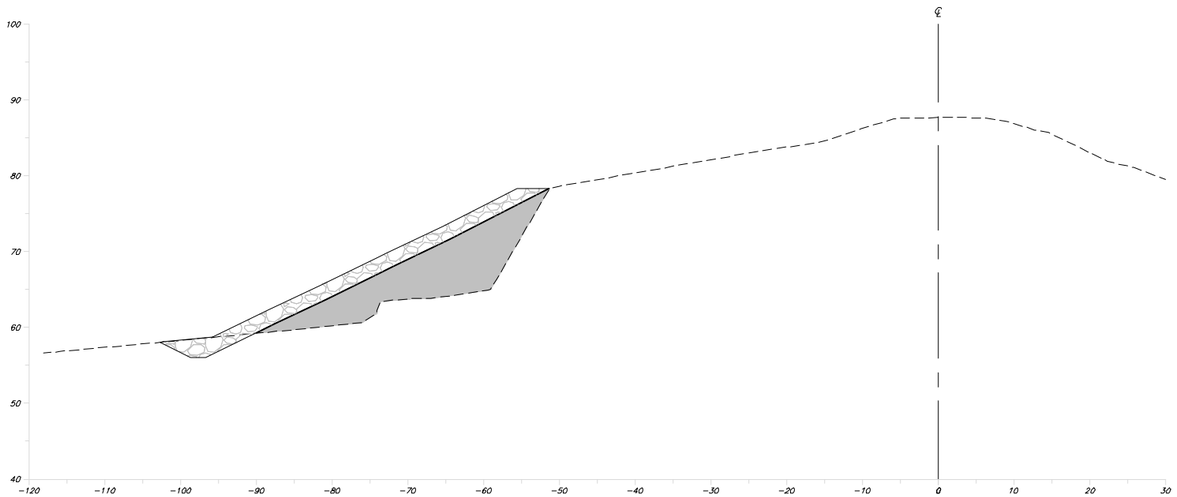

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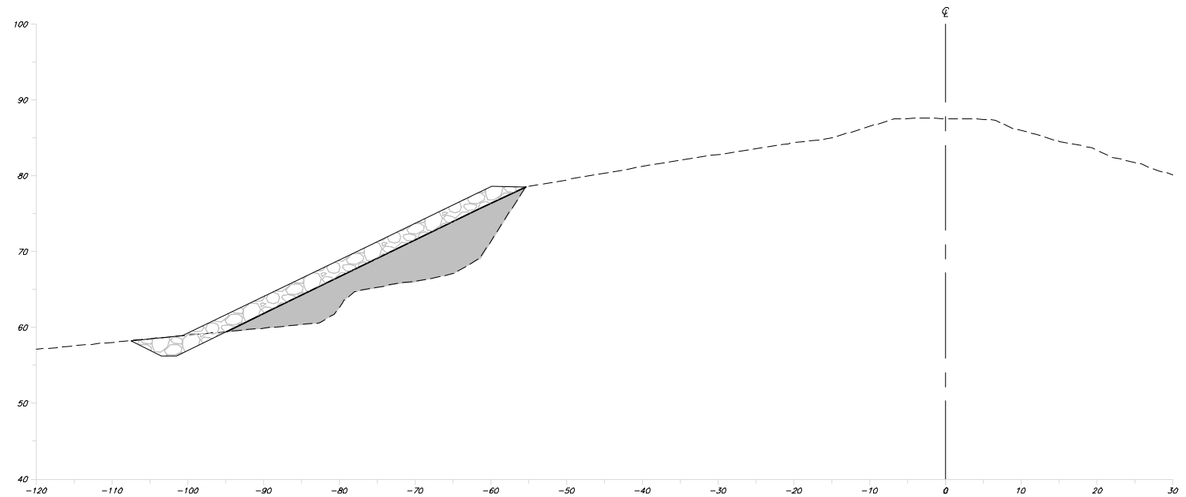

SECTION @ 4+40

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REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

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RECLAMATION DISTRICT 800

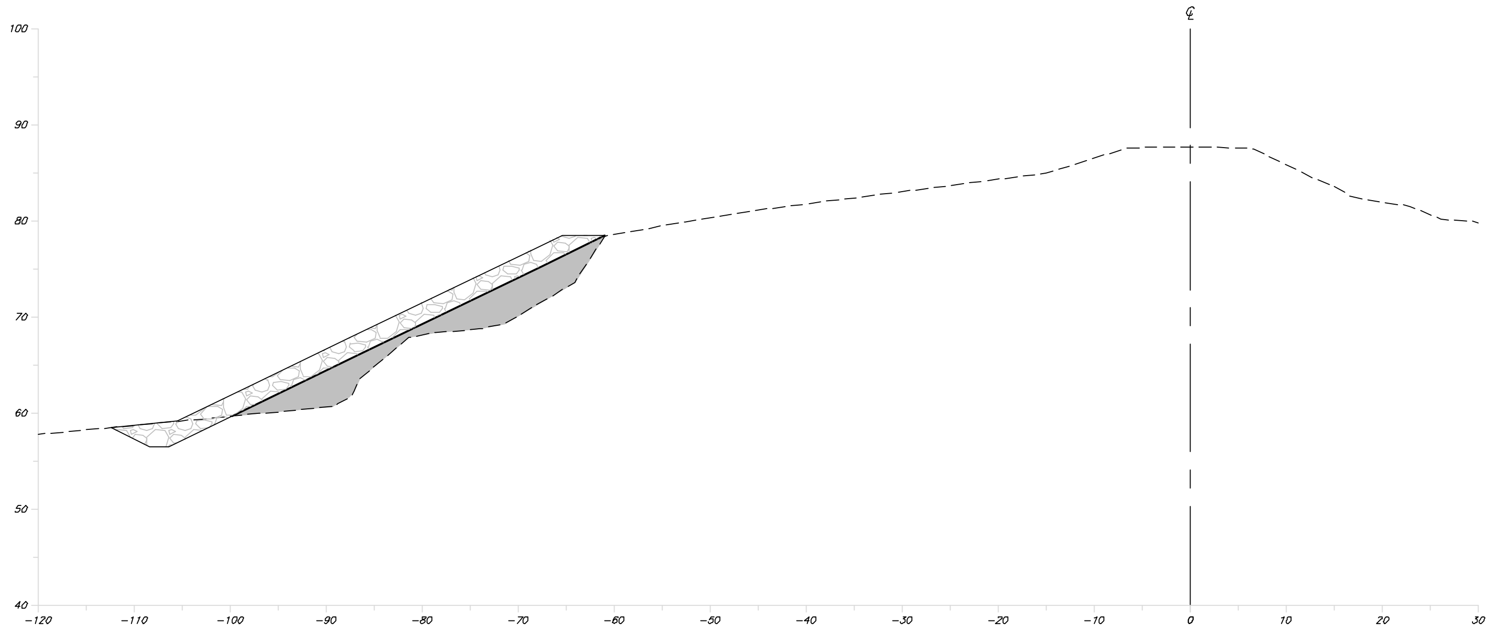
CRITICAL LEVEE REPAIRS
MILE MARKER 19

SECTIONS

SHEET 7 OF 9 SHEETS

Use Scale: Site 6 – Mile Marker 19.dwg
Plot Date: 4/2/2020
Revision Box: –

O:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 6 – Mile Marker 19.dwg



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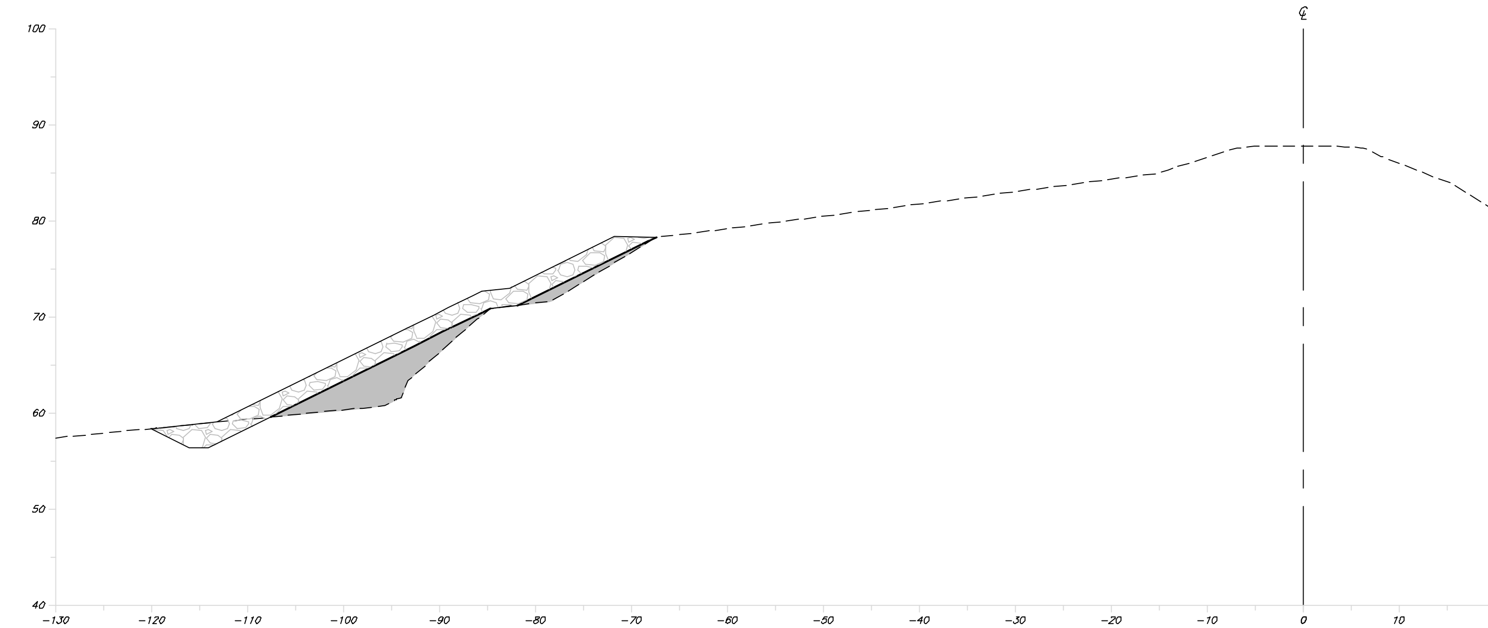

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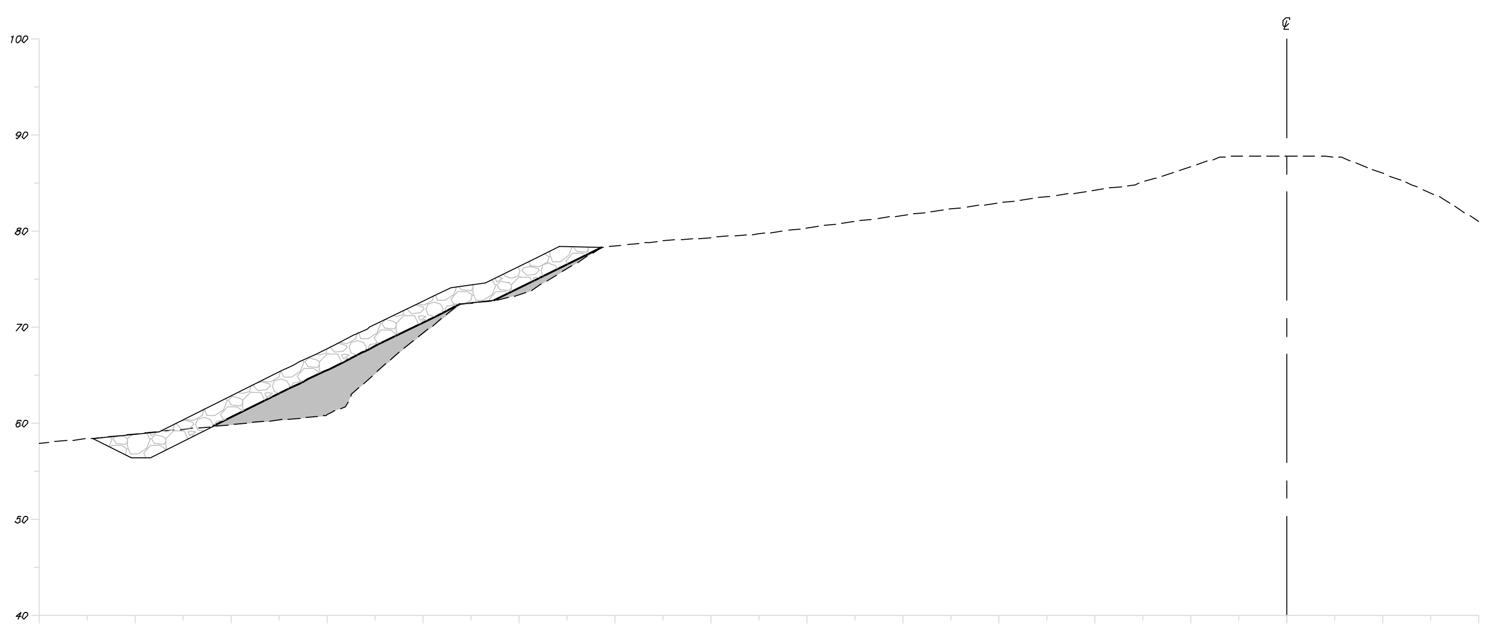

SECTION @ 5+00

SECTION @ 5+20

0' 10' 20'

Q:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 6 - Mile Marker 19.dwg

File: Site 6 - Mile Marker 19.dwg
Plot Date: 4/2/2020
Rev/Date: –

REVISIONS

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Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
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RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
MILE MARKER 19

SECTIONS

SHEET 8 OF 9 SHEETS

TABLE 1
QUANTITIES

QUANTITY (AREA OR VOLUME)	ABOVE OHWM [1]	BELOW OHWM [1]	TOTAL
WORK AREA (ACRES)	0.11	0.28	0.39
TEMPORARY DISTURBANCE (ACRES)	0.94	0.23	1.17
TOTAL ACRES	1.05	0.51	1.56
FILL – SOIL (CUBIC YARDS)	487	1111	1598
FILL – RSP [2] (CUBIC YARDS)	544	893	1437
TOTAL CUBIC YARDS	1031	2004	3035

[1] OHWM = ORDINARY HIGH WATER MARK (ELEVATION = 68+/– FEET)
[2] RSP = ROCK SLOPE PROTECTION

LEGEND
- WORK AREA BELOW ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA BELOW ORDINARY HIGH WATER MARK
- WORK AREA ABOVE ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA ABOVE ORDINARY HIGH WATER MARK

REVISIONS

REF.	DESCRIPTION	APVD.	DATE

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RECLAMATION DISTRICT 800
CRITICAL LEVEE REPAIRS
MILE MARKER 19
PLAN

SHEET 9 OF 9 SHEETS

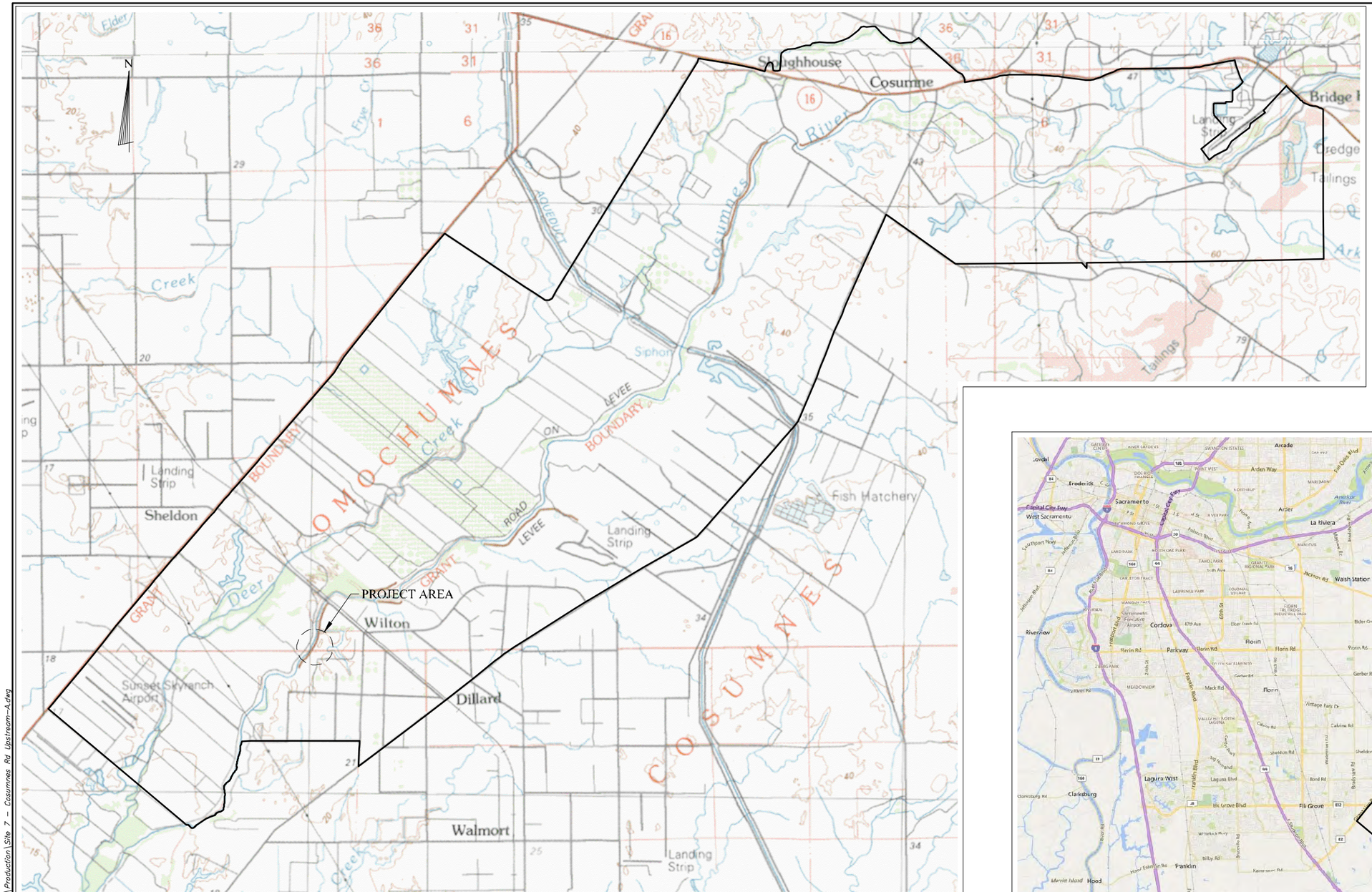
Last Date Plotted: 4/2/2020
Plotted By: –
File Name: C:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 6 – Mile Marker 19\Site 6 – Mile Marker 19.dwg

RECLAMATION DISTRICT NO. 800

CRITICAL LEVEE REPAIR PROJECTS
SITE 7: COSUMNES ROAD UPSTREAM

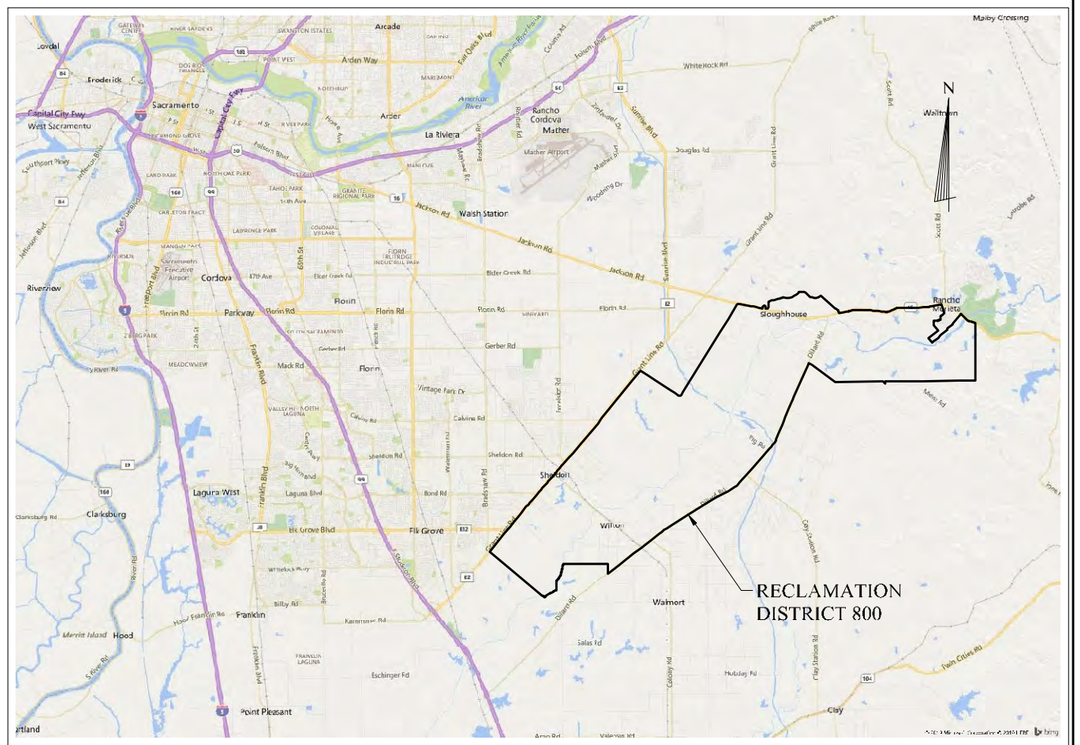
Sacramento County **California**

WAGNER & BONSIGNORE CONSULTING CIVIL ENGINEERS A CORPORATION
2151 RIVER PLAZA DRIVE, SUITE 100 SACRAMENTO, CALIFORNIA



LOCATION MAP

0' 1,500' 3,000' 6,000'



VICINITY MAP

NOT TO SCALE

REVISIONS			
REF.	DESCRIPTION	APVD.	DATE

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RECLAMATION DISTRICT 800

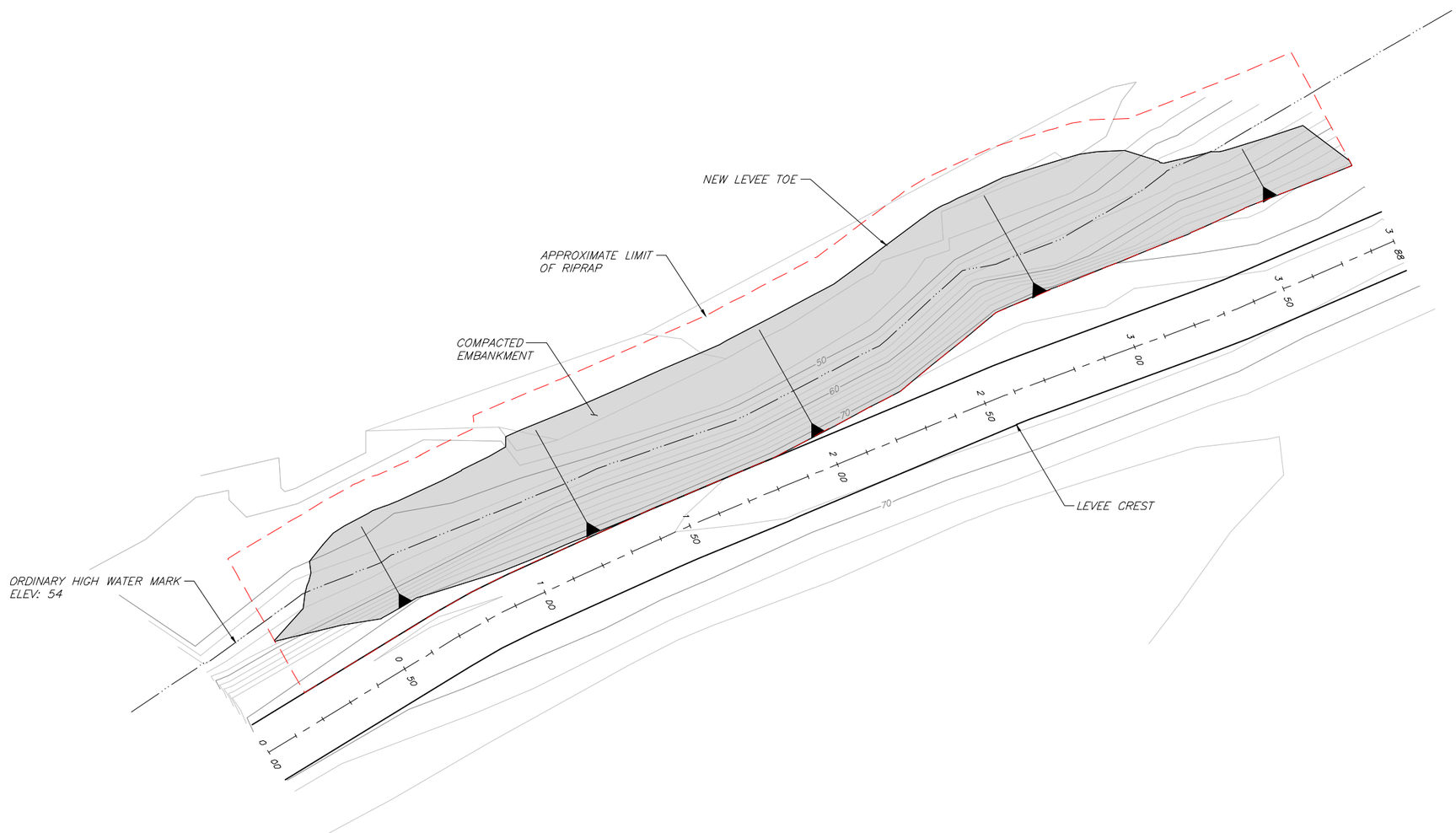
CRITICAL LEVEE REPAIRS COSUMNES ROAD UPSTREAM

LOCATION AND VICINITY MAP

SHEET 1 OF 8 SHEETS

Job Number: Site 7 – Cosumnes Rd Upstream
Plot Date: 4/1/2020
Revision No.: —

G:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 7 – Cosumnes Rd Upstream-A.dwg



0' 10' 20' 40'

C:\Drawings\Reclamation District No. 800\Critical Repair Sites\Production\Site 7 – Cosumnes Rd Upstream–A.dwg

Last Saved By	Site 7 – Cosumnes Rd Upstream–A
Plot Date	4/1/2020
Revision No.	–
Revision Date	

REVISIONS

REF.	DESCRIPTION	APVD.	DATE

Designed By	P.W. ERVIN
Drawn By	P. INTHARATH
Checked By	–
Approved By	–
Date	FEBRUARY 2020

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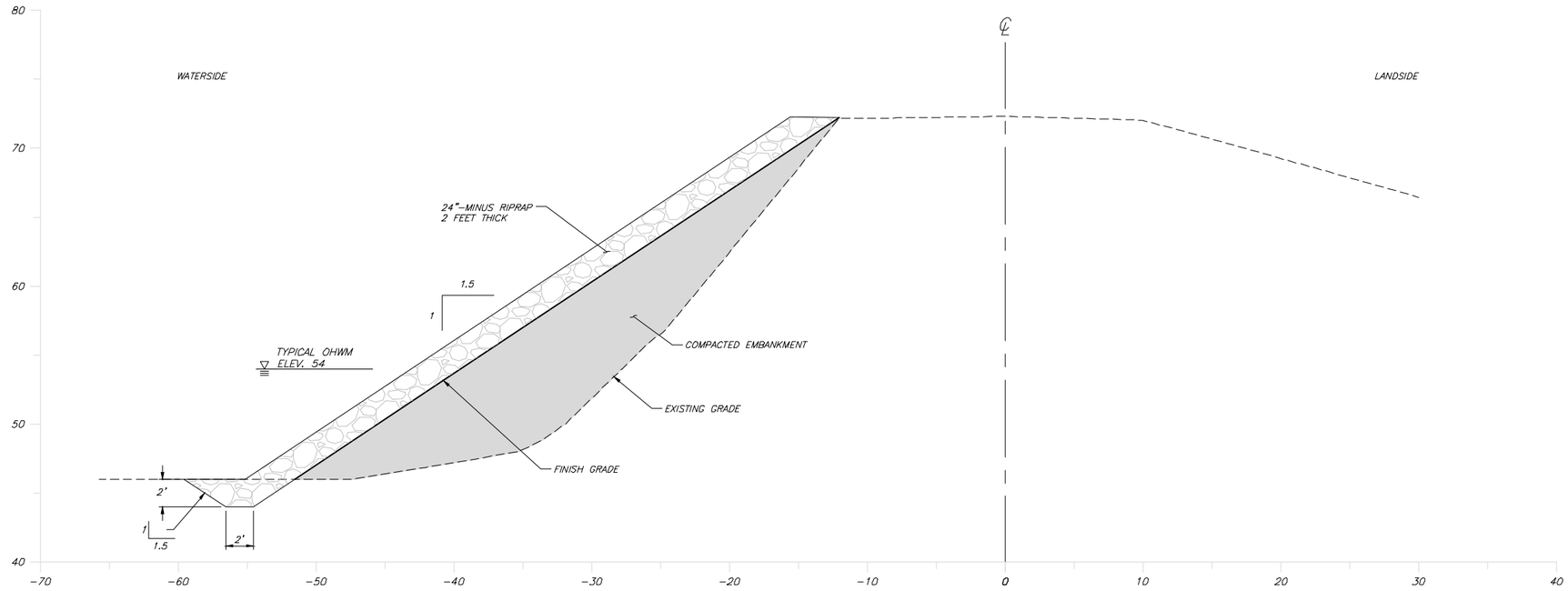
RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
COSUMNES ROAD UPSTREAM

PLAN

SHEET 2 OF 8 SHEETS



TYPICAL SECTION

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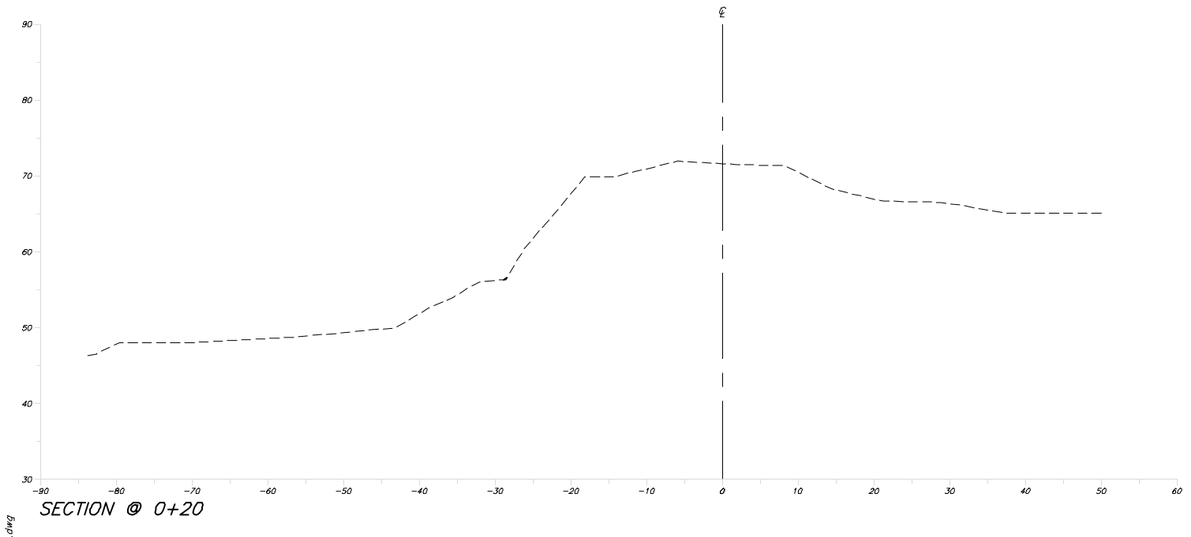

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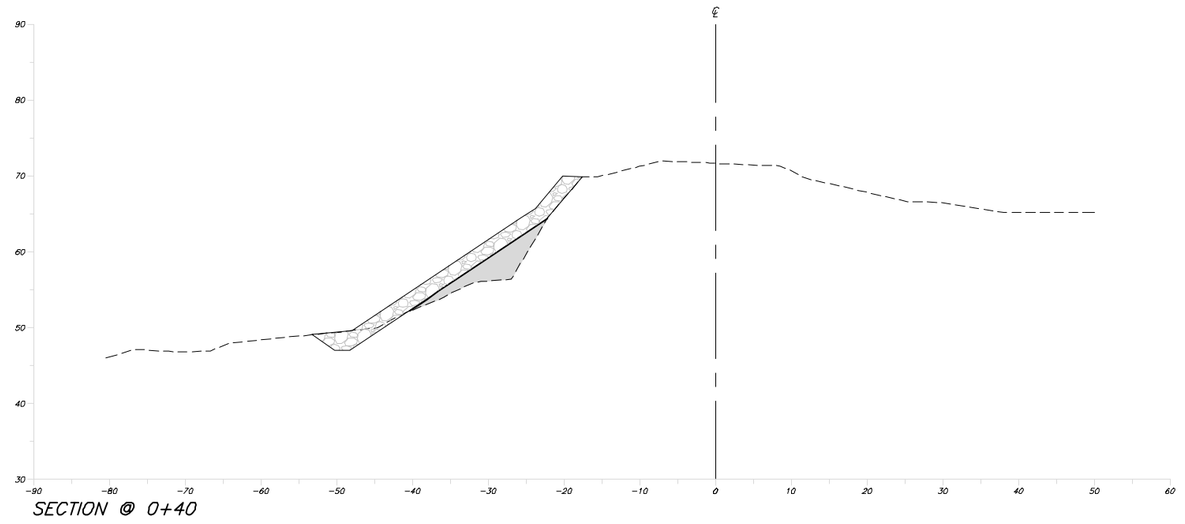

SECTION @ 0+40

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G:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 7 – Cosumnes Rd Upstream–A.dwg

Last Saved By: Site 7 – Cosumnes Rd Upstream–A.dwg
Plot Date: 4/1/2020
Plotted By: –

REVISIONS			
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Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
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Approved By: –
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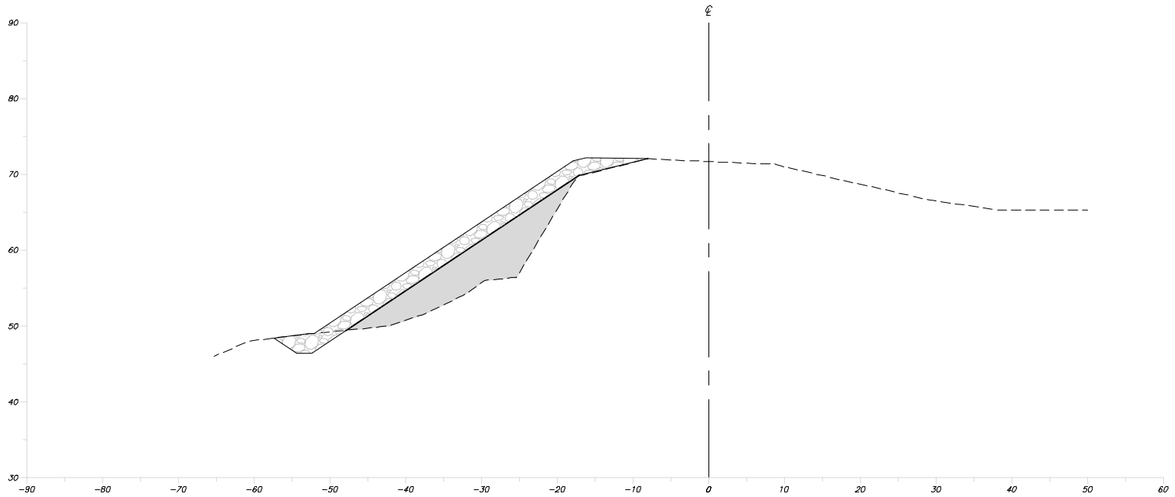
RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
COSUMNES ROAD UPSTREAM

SECTIONS

SHEET 3 OF 8 SHEETS



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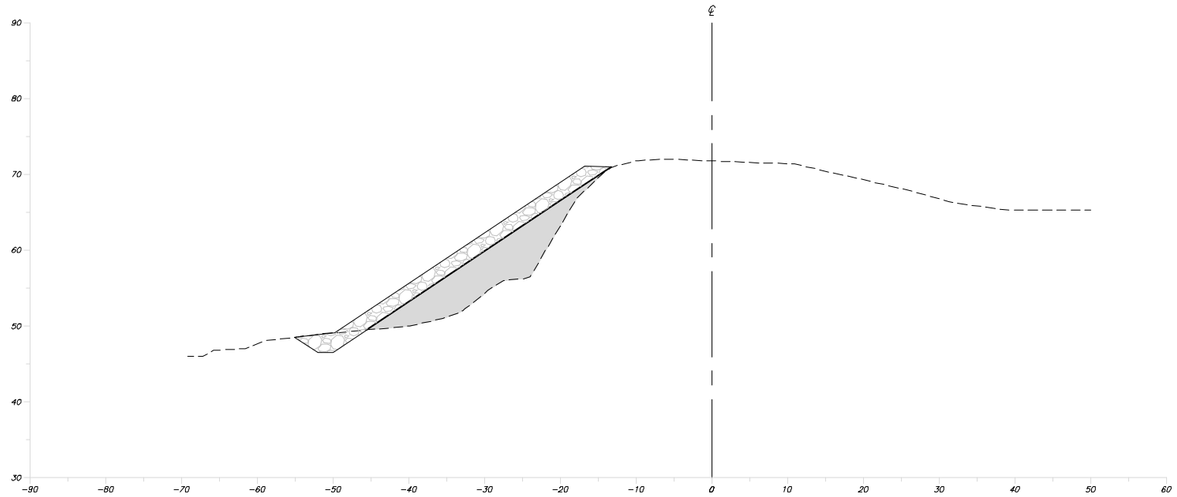

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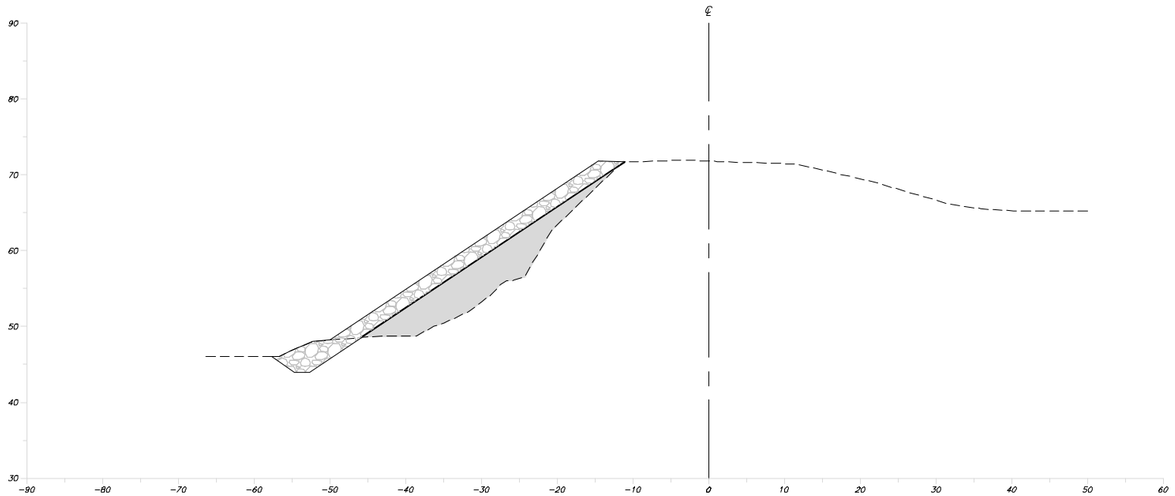

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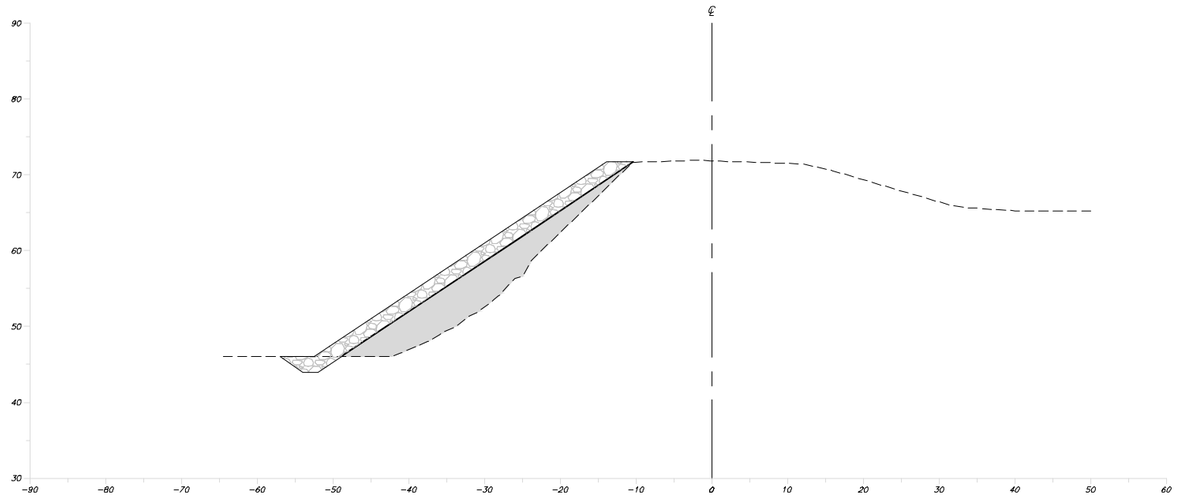

SECTION @ 1+20

0' 5' 10' 20'

Q:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 7 - Cosumnes Rd Upstream-A.dwg

Site 7 – Cosumnes Rd Upstream-A.dwg

Last Saved By: —
Plot Date: 4/1/2020
Revision No.: —

REVISIONS

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Date	FEBRUARY 2020

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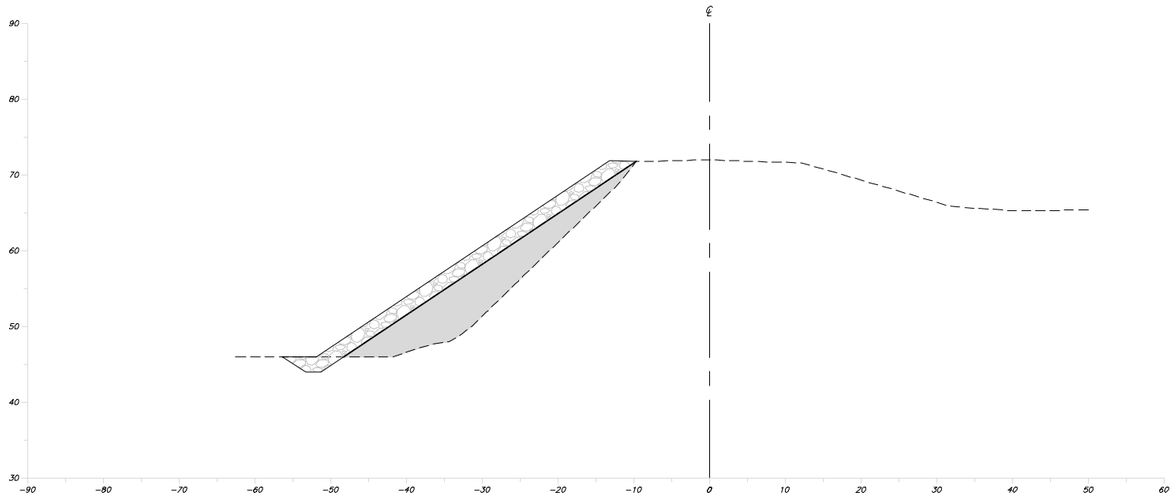
RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
COSUMNES ROAD UPSTREAM

SECTIONS

SHEET 4 OF 8 SHEETS



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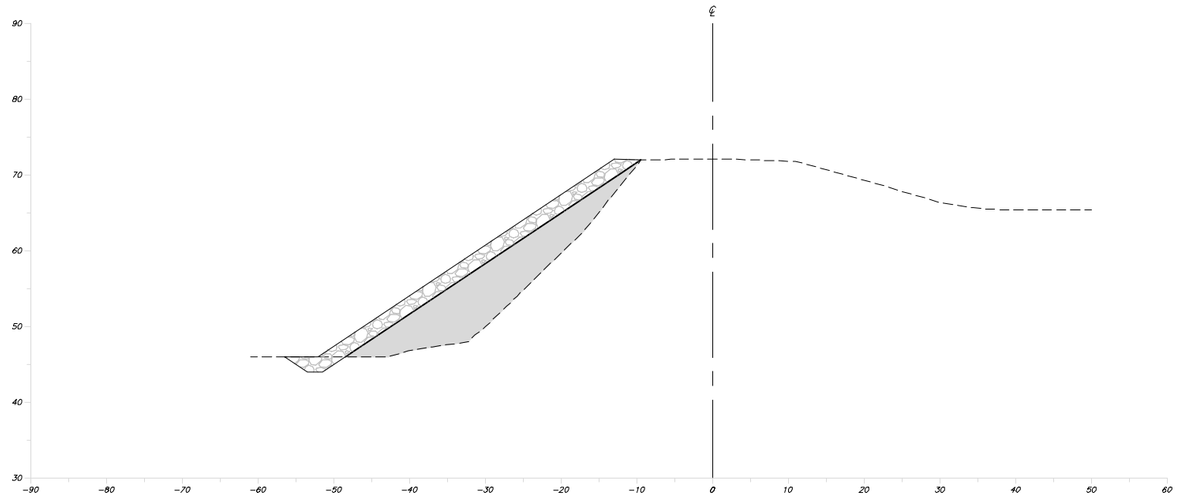

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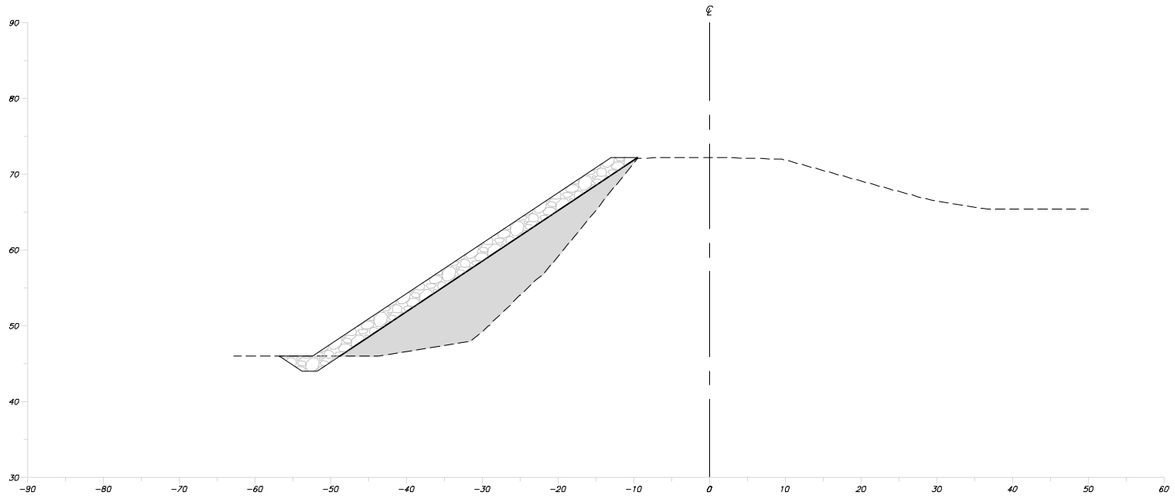

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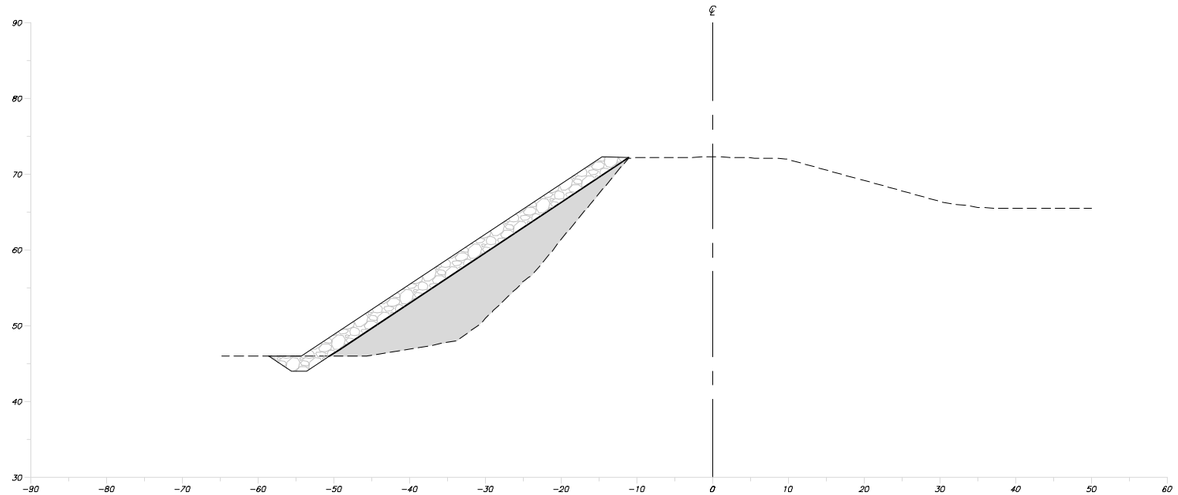

SECTION @ 2+00

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G:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 7 - Cosumnes Rd Upstream-A.dwg

Last Saved: Site 7 - Cosumnes Rd Upstream-A.dwg
Plot Date: 4/1/2020
Revision Date: –

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Designed By: P.W. ERVIN
Drawn By: P. INTHARATH
Checked By: –
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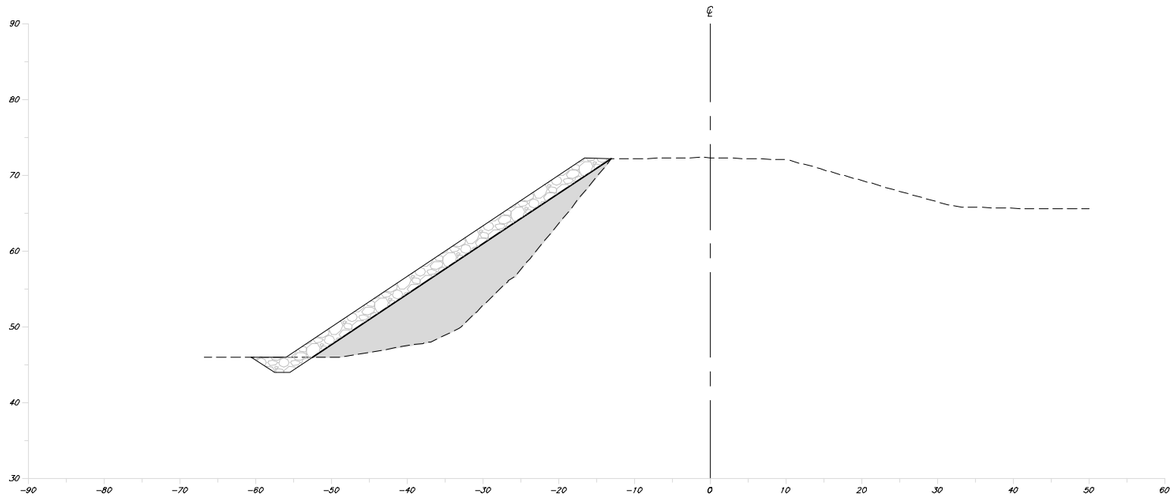
RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
COSUMNES ROAD UPSTREAM

SECTIONS

SHEET 5 OF 8 SHEETS



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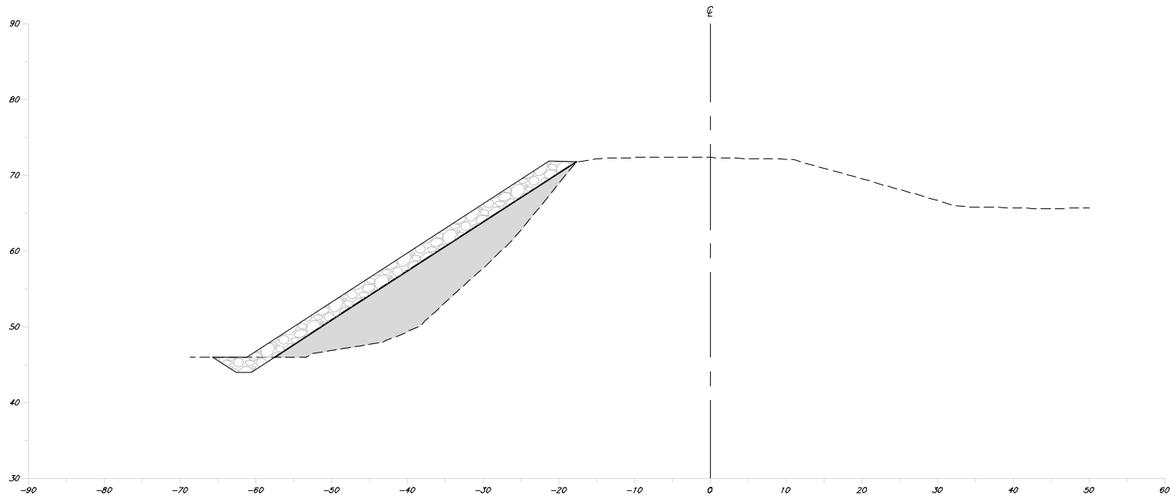

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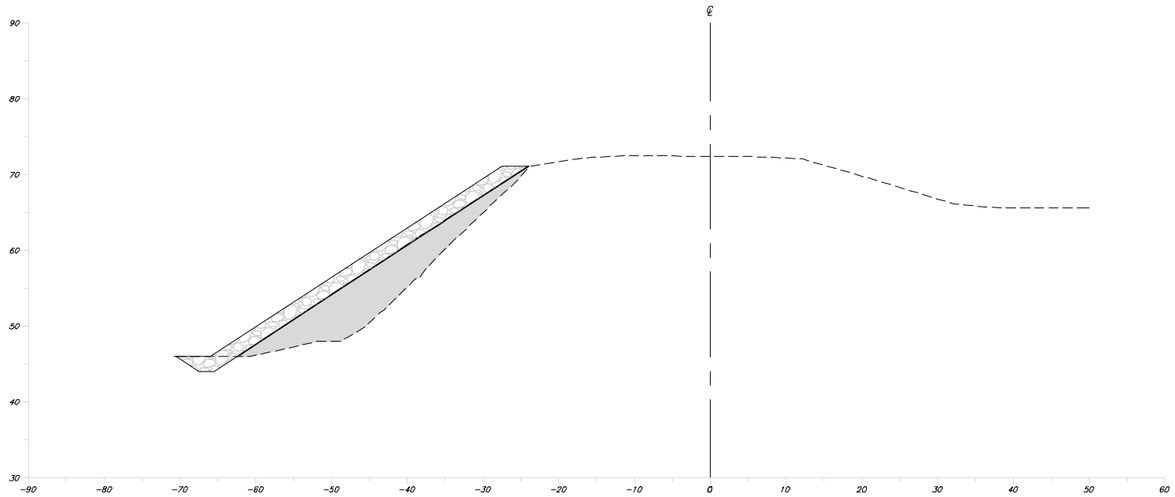

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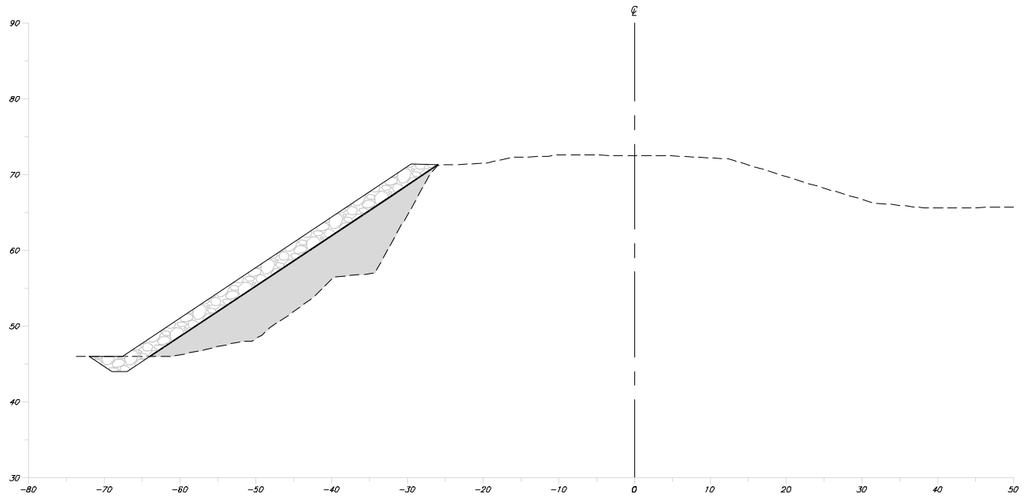

SECTION @ 2+80

0' 5' 10' 20'

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Plot Date	4/1/2020
File Name	Site 7 - Cosumnes Rd Upstream-A.dwg
Revision Date	–

REVISIONS

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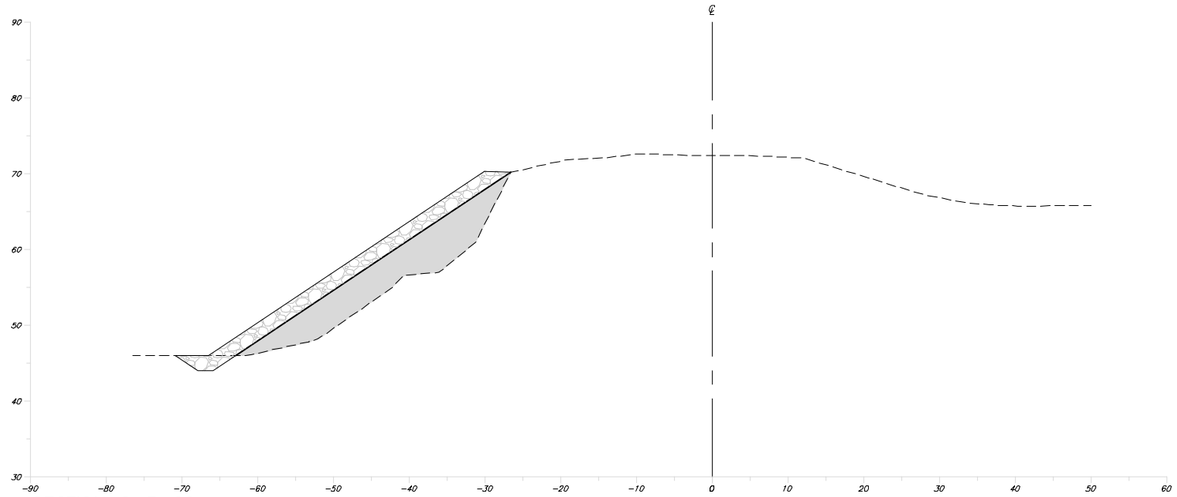
RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
COSUMNES ROAD UPSTREAM

SECTIONS

SHEET 6 OF 8 SHEETS



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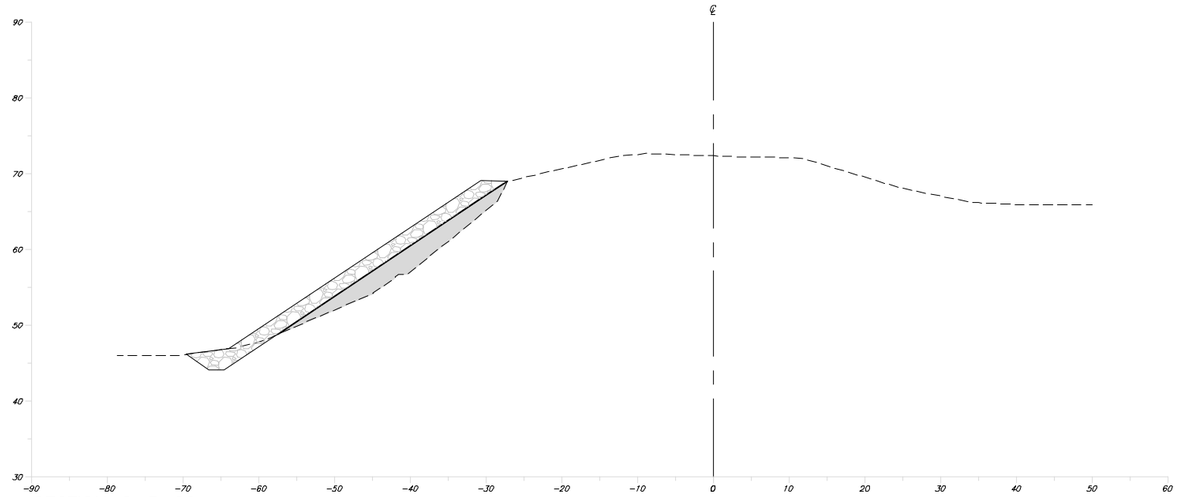

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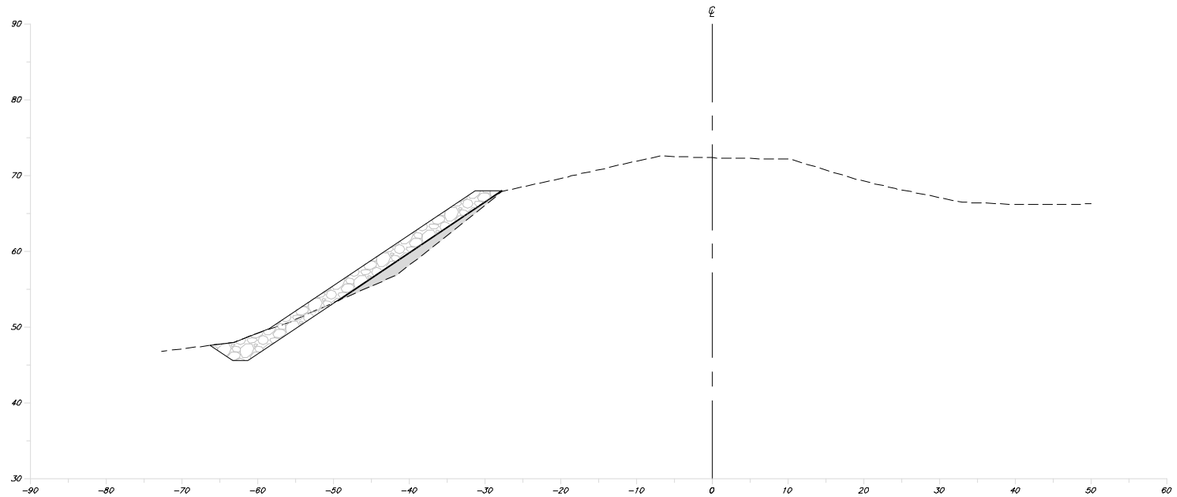

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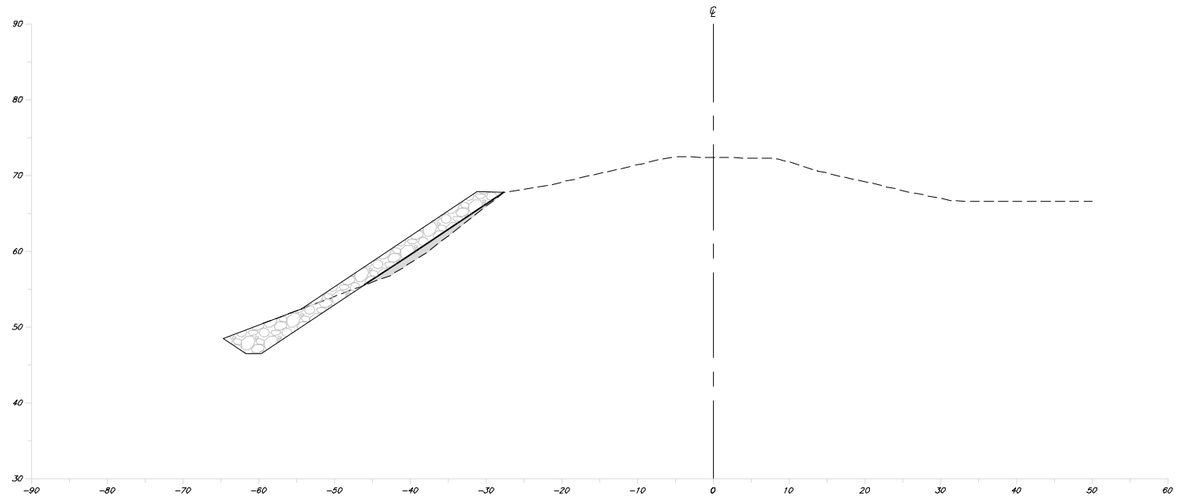

SECTION @ 3+60

0' 5' 10' 20'

REVISIONS			
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RECLAMATION DISTRICT 800

CRITICAL LEVEE REPAIRS
COSUMNES ROAD UPSTREAM

SECTIONS

SHEET 7 OF 8 SHEETS

TABLE 1
QUANTITIES

QUANTITY (AREA OR VOLUME)	ABOVE OHWM [1]	BELOW OHWM [1]	TOTAL
WORK AREA (ACRES)	1.09	0.20	1.29
TEMPORARY DISTURBANCE (ACRES)	0.16	0.24	0.40
TOTAL ACRES	1.25	0.44	1.69
FILL – SOIL (CUBIC YARDS)	1043	684	1727
FILL – RSP [2] (CUBIC YARDS)	772	474	1246
TOTAL CUBIC YARDS	1815	1158	2973

[1] OHWM = ORDINARY HIGH WATER MARK (ELEVATION = 54+/– FEET)
[2] RSP = ROCK SLOPE PROTECTION

LEGEND
- WORK AREA BELOW ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA BELOW ORDINARY HIGH WATER MARK
- WORK AREA ABOVE ORDINARY HIGH WATER MARK
- TEMPORARY WORK AREA ABOVE ORDINARY HIGH WATER MARK

REVISIONS

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RECLAMATION DISTRICT 800
CRITICAL LEVEE REPAIRS
COSUMNES ROAD UPSTREAM
IMPACTS

SHEET 8 OF 8 SHEETS

Q:\Drawings\Reclamation District No 800\Critical Repair Sites\Production\Site 7 – Cosumnes Rd Upstream–A.dwg
Last User: Site 7 – Cosumnes Rd Upstream–A.dwg
Last Plot: 4/1/2020
Plot Scale: –

Appendix B

CNDDB Summary Report and Exhibits

& USFWS IPaC Trust Resource Report

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Elk Grove (3812143) OR Sloughhouse (3812142))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G2G3	S1S2	SSC
Andrena blennospermatis Blennosperma vernal pool andrenid bee	IIHYM35030	None	None	G2	S2	
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	
Branchinecta mesovallensis midvalley fairy shrimp	ICBRA03150	None	None	G2	S2S3	
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
Desmocerus californicus dimorphus valley elderberry longhorn beetle	IICOL48011	Threatened	None	G3T2	S2	
Downingia pusilla dwarf downingia	PDCAM060C0	None	None	GU	S2	2B.2
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Gratiola heterosepala Boggs Lake hedge-hyssop	PDSCR0R060	None	Endangered	G2	S2	1B.2
Great Valley Valley Oak Riparian Forest Great Valley Valley Oak Riparian Forest	CTT61430CA	None	None	G1	S1.1	
Legenere limosa legenere	PDCAM0C010	None	None	G2	S2	1B.1
Lepidurus packardi vernal pool tadpole shrimp	ICBRA10010	Endangered	None	G4	S3S4	
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Northern Hardpan Vernal Pool Northern Hardpan Vernal Pool	CTT44110CA	None	None	G3	S3.1	
Oncorhynchus mykiss irideus pop. 11 steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	G5T2Q	S2	
Orcuttia tenuis slender Orcutt grass	PMPOA4G050	Threatened	Endangered	G2	S2	1B.1
Orcuttia viscida Sacramento Orcutt grass	PMPOA4G070	Endangered	Endangered	G1	S1	1B.1

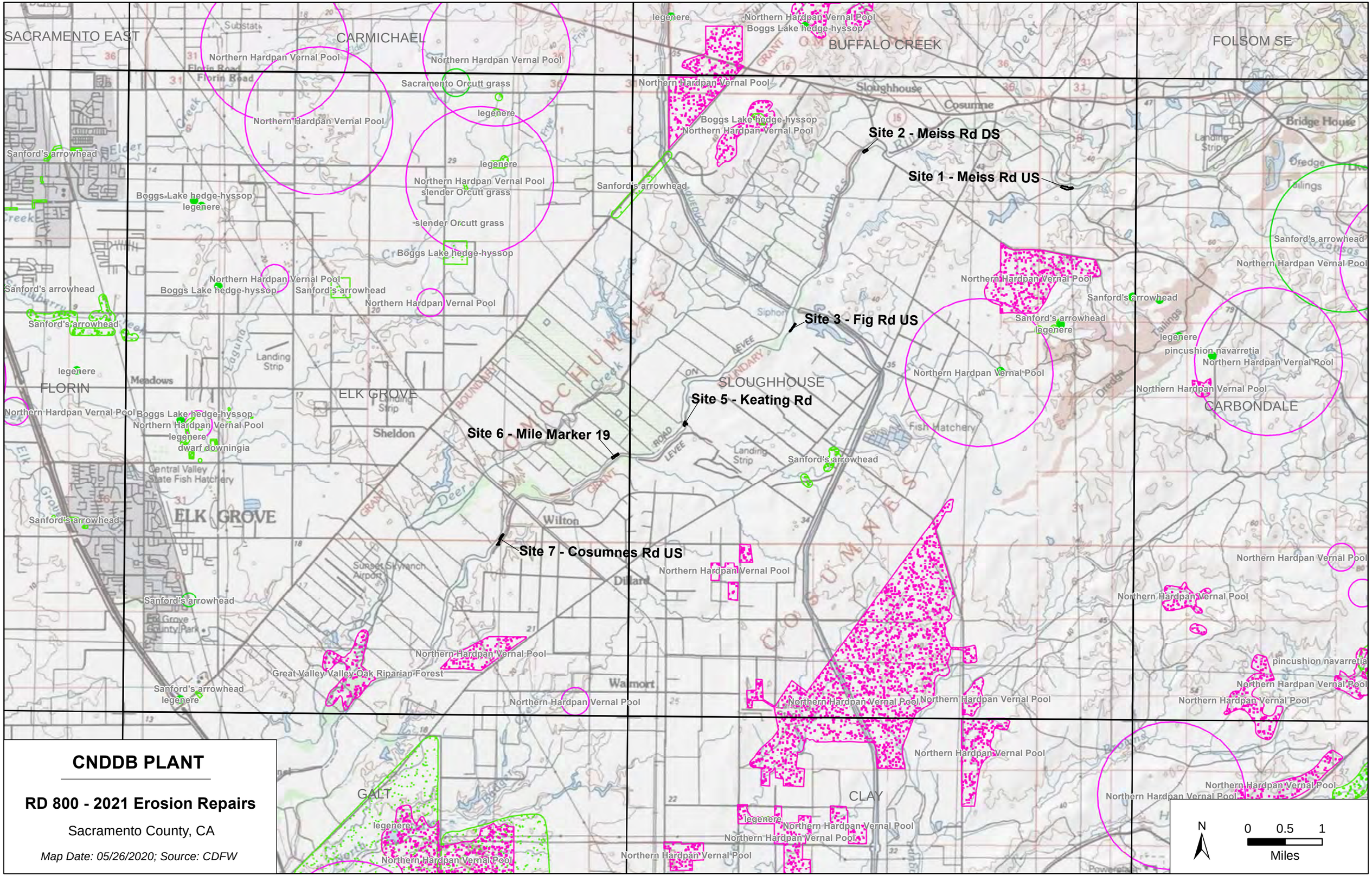
Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Sagittaria sanfordii Sanford's arrowhead	PMALI040Q0	None	None	G3	S3	1B.2
Spea hammondii western spadefoot	AAABF02020	None	None	G3	S3	SSC
Thamnophis gigas giant gartersnake	ARADB36150	Threatened	Threatened	G2	S2	

Record Count: 24

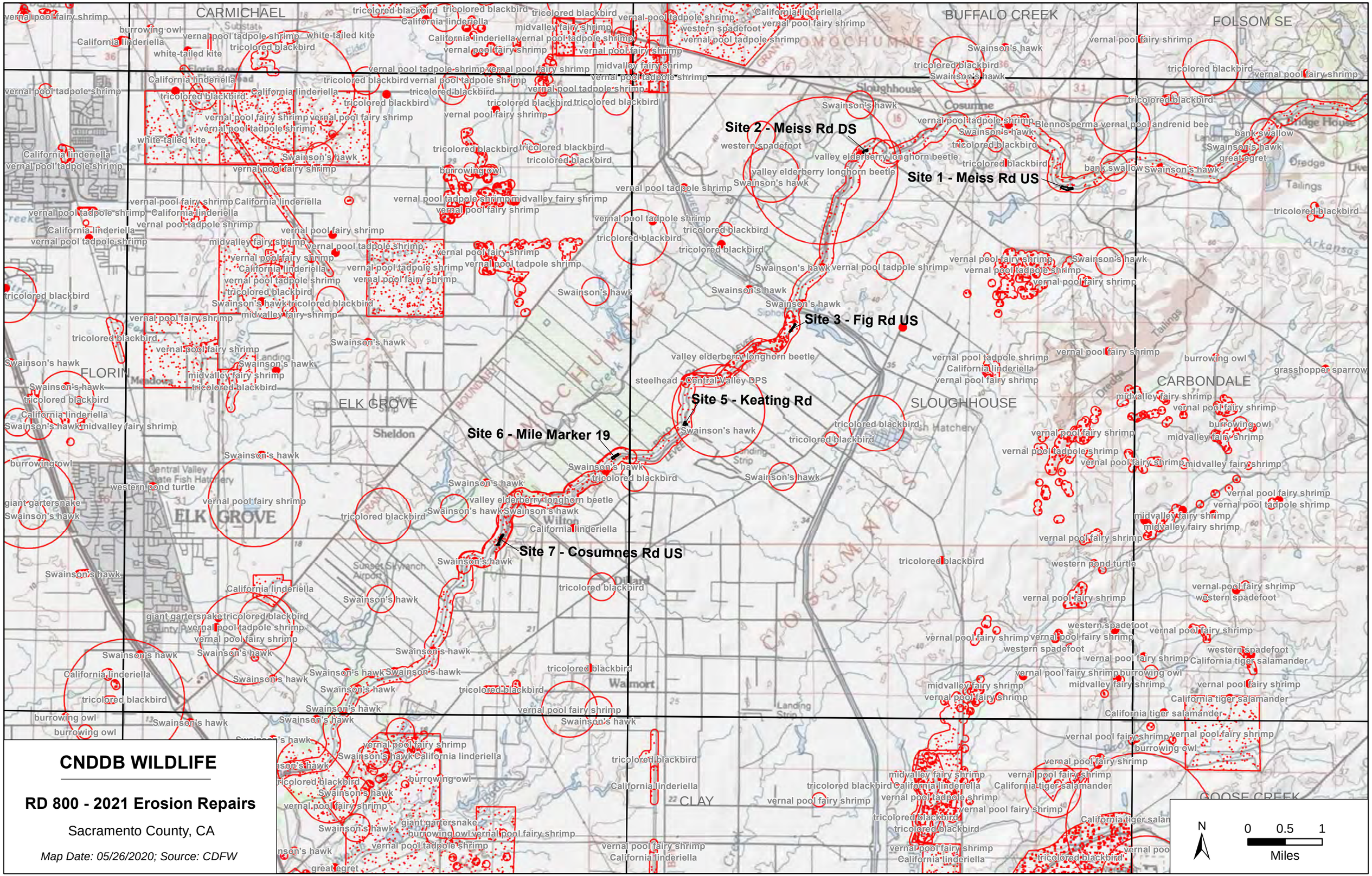


CNDDB PLANT

RD 800 - 2021 Erosion Repairs

Sacramento County, CA

Map Date: 05/26/2020; Source: CDFW



CNDDB WILDLIFE

RD 800 - 2021 Erosion Repairs

Sacramento County, CA

Map Date: 05/26/2020; Source: CDFW

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Sacramento County, California

Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Reptiles

NAME	STATUS

Giant Garter Snake Thamnophis gigas — Threatened
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/4482

Amphibians

NAME	STATUS
California Red-legged Frog Rana draytonii	Threatened
There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2891	
California Tiger Salamander Ambystoma californiense	Threatened
There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2076	

Fishes

NAME	STATUS
Delta Smelt Hypomesus transpacificus	Threatened
There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/321	

Insects

NAME	STATUS
Valley Elderberry Longhorn Beetle Desmocerus californicus dimorphus	Threatened
There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/7850	

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp Branchinecta conservatio	Endangered
There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/8246	
Vernal Pool Fairy Shrimp Branchinecta lynchi	Threatened
There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/498	

Vernal Pool Tadpole Shrimp Lepidurus packardi There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
Sacramento Orcutt Grass Orcuttia viscida There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/5507	Endangered
Slender Orcutt Grass Orcuttia tenuis There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/1063	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php

- Nationwide conservation measures for birds
  http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31
Burrowing Owl Athene cunicularia This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9737	Breeds Mar 15 to Aug 31
California Thrasher Toxostoma redivivum This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Jul 31

Clark's Grebe Aechmophorus clarkii — Breeds Jan 1 to Dec 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Common Yellowthroat Geothlypis trichas sinuosa — Breeds May 20 to Jul 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/2084

Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Lawrence's Goldfinch Carduelis lawrencei — Breeds Mar 20 to Sep 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9464

Lewis's Woodpecker Melanerpes lewis — Breeds Apr 20 to Sep 30
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9408

Long-billed Curlew Numenius americanus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/5511

Nuttall's Woodpecker Picoides nuttallii — Breeds Apr 1 to Jul 20
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Oak Titmouse Baeolophus inornatus — Breeds Mar 15 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

Rufous Hummingbird selasphorus rufus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8002

Song Sparrow Melospiza melodia — Breeds Feb 20 to Sep 5
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Spotted Towhee Pipilo maculatus clementae — Breeds Apr 15 to Jul 20
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/4243

Tricolored Blackbird Agelaius tricolor — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

Whimbrel Numenius phaeopus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9483

Wrentit Chamaea fasciata — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Yellow-billed Magpie Pica nuttalli — Breeds Apr 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9726

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For

example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

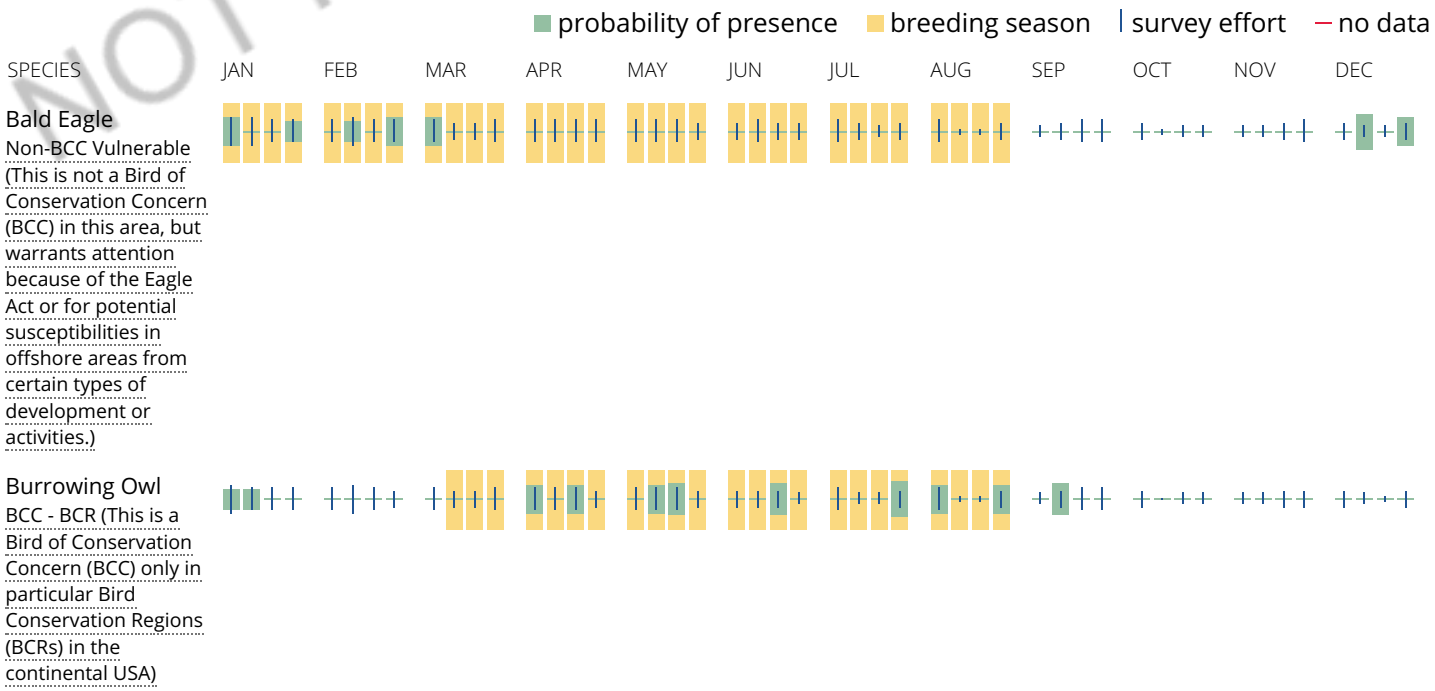
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

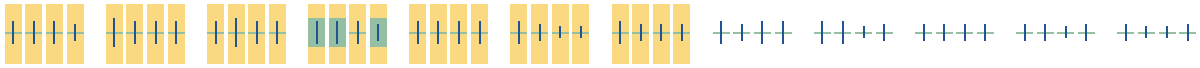
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

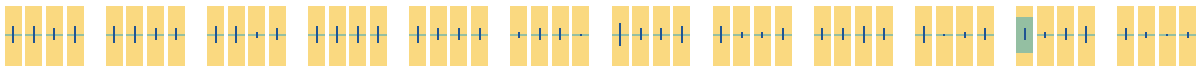
Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



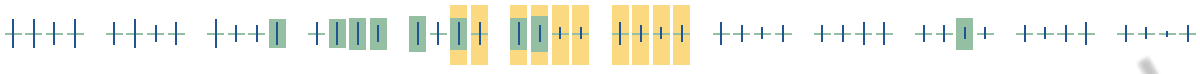
California Thrasher
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



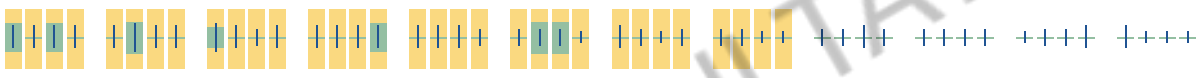
Clark's Grebe
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



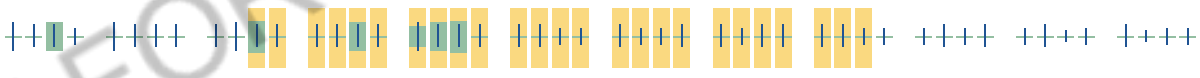
Common Yellowthroat
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



Golden Eagle
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



Lawrence's Goldfinch
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Lewis's Woodpecker
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Long-billed Curlew
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Nuttall's Woodpecker
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Oak Titmouse
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Rufous Hummingbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

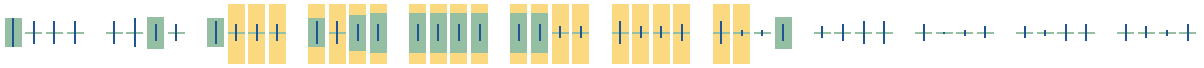
Song Sparrow
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Spotted Towhee
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

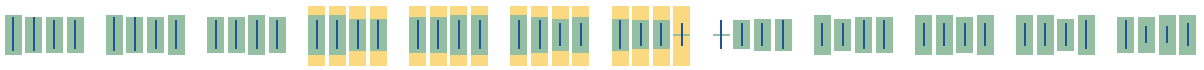
Tricolored Blackbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Whimbrel
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Wrentit
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Yellow-billed Magpie
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ “What does IPaC use to generate the migratory birds potentially occurring in my specified location”. Please be aware this report provides the “probability of presence” of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the “no data” indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential

impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Appendix C

Photographs

Meiss Road Upstream, looking west at the eroded slope; 05/17/19.

Meiss Road Upstream, looking west from the east end of the repair site; 08/05/19.

Potential soil borrow area for Meiss Road Upstream, looking west; 04/10/20.

Blue elderberry shrub just east of the Meiss Road Upstream site, looking west; 04/10/20.

Meiss Road Downstream, looking northeast at the eroded slope; 05/17/19.

Blue elderberry shrub in the northeast part of the Meiss Road Downstream site, looking southwest; 05/17/19.

Meiss Road Downstream staging area, looking northwest; 04/10/20.

Potential soil borrow area for Meiss Road Downstream, looking southwest; 04/10/20. This potential soil borrow area is a gently sloping hill vegetated in upland grasses and weeds.

Fig Road Upstream, looking southwest at the landside levee slope; 05/24/19. Work at this site is limited to adding soil to the landside of the levee.

Large black walnut in the Fig Road Upstream site, looking northeast from the west end of the repair site; 05/24/19. This tree will be removed.

Keating Road site, looking south from the north end of the repair site; 08/05/19.

Keating Road site, looking south from the central part of the repair site; 08/05/19.

Mile Marker 19, looking southwest from the east end of the repair site; 08/05/19.

Mile Marker 19, looking northeast; 04/04/19. Several trees and shrubs need to be removed at this site to accomplish the repairs.

Staging area for the Mile Marker 19 site, looking northwest; 04/10/20.

Rocked levee slope a few hundred feet upstream of the Mile Marker 19 site, looking northwest; 04/04/19.

Cosumnes Road Upstream, looking northeast at the eroded levee slope; 05/27/19.

Cosumnes Road Upstream, looking southeast at the eroded levee slope from across the river; 08/05/19.

Cosumnes Road Upstream staging and access area, looking northeast; 04/10/20. The trees in the staging and access area will be retained.

Cluster of blue elderberry shrubs on the west side of a fence in the Cosumnes Road Upstream staging and access area, looking west; 05/27/19. There will be no work in this area west of the fence.

Appendix D

Designated Critical Habitat

California tiger Salamander

Sacramento Orcutt grass

Slender Orcutt grass

Vernal pool fairy shrimp/Vernal pool tadpole shrimp

Site 2 - Meiss Rd DS

Site 1 - Meiss Rd US

Site 3 - Fig Rd US

Site 5 - Keating Rd

Site 6 - Mile Marker 19

Site 7 - Cosumnes Rd US

CARMICHAEL

BUFFALO CREEK

FOLSOM SE

LATROBE

FLORIN

ELK GROVE

SLOUGHHOUSE

CARBONDALE

IRISH HILL

GALT

CLAY

GOOSE CREEK

IONE

CRITICAL HABITAT

RD 800 - 2021 Erosion Repairs

Sacramento County, CA

Map Date: 05/26/2020; Source: USFWS, NOAA

N

0 0.5 1

Miles

TO: Diane Moore, Moore Biological Consultants

FROM: Patrick Cuthbert

DATE: March 17, 2020

SUBJECT: Biological Assessment of the USDA Grant Funded RD 800 Erosion Repair Project

FISHBIO was contracted by Moore Biological Consultants to assess potential impacts of the RD 800 Erosion Repair Project on protected fish species near and within the project area. All of the repair sites occur along the Cosumnes River, a small tributary to the San Joaquin River by way of the nearby Mokelumne River. The first approximate two miles of the Cosumnes River nearest the confluence with the Mokelumne River has been designated as critical habitat for Central Valley steelhead (*Oncorhynchus mykiss*). However, areas upstream of the confluence in the Cosumnes River have no additional designated critical habitat for Central Valley steelhead. Further, there are no critical habitat designations for the multiple runs of Chinook salmon (*Oncorhynchus tshawytscha*) typically encountered in the Central Valley or the southern Distinct Population Segment (sDPS) of green sturgeon (*Acipenser medirostris*). However, due to its proximity to the Mokelumne and San Joaquin rivers, findings on each protected species, their critical habitat, and recommendations to avoid and mitigate project effects are presented below.

Project Description

The project proponent, Reclamation District No. 800 Cosumnes District (RD 800), proposes to repair three critical erosion repairs on the waterside of the Cosumnes River levee that suffered severe erosion during the 2017 storms. The erosion at these sites is so severe, levee integrity has been compromised and further erosion could lead to a breach during a major storm event. These sites are named “Fig Road Downstream”, “Cosumnes Road Downstream”, and “Freeman Road” after the roads that provide access to each site.

The proposed scope of work is the repair and stabilization of the eroded levees and riverbanks. The work will involve both reconstructing the levees and repairing the riverbanks at a horizontal/vertical ratio of between 1.5:1 and 2:1 to conform to the theoretical levee slopes that underly the banks. Clean fill dirt will be imported to replace the soil washed away during the floods and rock slope protection (RSP) would be added to the restored slopes to reduce potential future erosion. Grading and installation of RSP would occur both above and below the ordinary high-water mark (OHWM) of the Cosumnes River.

At the Fig Road Downstream site, approximately 200 feet of levee crest will be excavated to a depth of approximately five feet. The crest will be replaced and recompacted using the excavated material. Additionally, approximately 450 of waterside

levee slope will be grubbed, stripped and prepared for material placement. Imported embankment fill material will be placed and compacted at a 2 to 1 slope to restore the levee to its previous condition. Rock slope protection will be placed on the entirety of the waterside slope to protect the repair from future erosion. A two-foot deep by two-foot wide toe trench will be utilized to stabilize the rock. A layer of geosynthetic fabric will be placed between the embankment and the rock slope protection to provide additional rock stabilization.

Cosumnes Road Downstream consists of approximately 270 linear feet of construction on the waterside levee slope south bank of the river. The waterside slope will be grubbed, stripped and prepared for material placement. Imported embankment fill material will be placed and compacted at a 1.5 to 1 slope to restore the levee to its previous condition. Rock slope protection will be placed on the entirety of the waterside slope to protect the repair from future erosion. A two-foot deep by two-foot wide toe trench will be utilized to stabilize the rock. A layer of geosynthetic fabric will be placed between the embankment and the rock slope protection to provide additional rock stabilization.

Freeman Road will use the same repair methodology as Cosumnes Road Downstream, restoring the waterside slope at a 1.5 to 1 slope with rock slope protection for approximately 450 lineal feet.

The project would involve grading disturbance of the riverbanks and channel. The project was designed to have a minimal footprint, thereby minimizing potential impacts to potential or actual habitats of special-status species. The project would involve a work area of 1.73 acres where project improvements would be constructed, and an additional 2.53 acres of temporary construction disturbance, primarily on the upper levee slope (Tables 1-3). Only 1.39 acres of the overall 4.26 acres of construction disturbance is below the OHWM; the remaining 2.87 acres is above the OHWM.

A total of 7,682 cubic yards of clean fill dirt will be placed on the riverbanks to achieve the design slopes and 4,674 cubic yards of RSP will be installed on the graded slopes. Most of the clean fill dirt required at the Fig Road Downstream site will be obtained from a local borrow pit in the field adjacent to the levee; the remaining clean fill dirt at the Fig Road Downstream site and the other sites will be from an off-site source.

The project will result in the placement of fill in 0.82 acres of Waters of the U.S. There will also be temporary construction disturbance to approximately 0.57 acres of Waters of the U.S. adjacent to the project footprint related to construction equipment and personnel accessing the work areas.

The project would require the removal of a several valley oaks (*Quercus lobata*), a few black walnuts (*Juglans californica*), two Oregon ash (*Fraxinus latifolia*) trees, and a blue

elderberry shrub (*Sambucus nigra* ssp. *caerulea*). The project would result in the removal of approximately 0.86 acres of riparian forest vegetation.

Project equipment and construction materials would be staged in highly disturbed upland areas on the landside levee at each of the erosions repair site. All construction vehicles and equipment needed to complete the project objectives would avoid working in the water. The project sites are expected to be dry during construction. However, if work is required in the wetted area of the Cosumnes River, construction crews would install a siltation screen or dewatering devices to prevent sediment release. Scheduling construction in the late summer and the purchase of credits at agency-approved mitigation banks would further minimize potential project impacts on biological resources.

Environmental Setting

The project sites occur exclusively along the Cosumnes River corridor, with the work areas occurring primarily in the terrestrial zone and extending to some degree into the wetted area along the levee lines. The Cosumnes River is unique among Central Valley tributaries in that it has not been substantially altered by large-scale water development. However, due to several small dams and a large number of water diversions dotting the channel, surface water flows are routinely reduced or even eliminated in the lower reaches between spring and early winter. Also, much like the nearby Calaveras River, the Cosumnes is primarily a rain-fed system, as only 16% of the watershed originates at elevations greater than 5,000 ft. on the western slope of the Sierra Nevada Mountain range. Further, due to Latrobe Falls at river mile 40, much of the river is unavailable to anadromous fish like Chinook salmon and steelhead. An abundance of fine sediment has been observed within the historic anadromous reach, which has led to a reduction of spawning and rearing habitat availability (Snider and Reavis 2000).

On June 4, FISHBIO and Moore Biological Consultants staff conducted a site visit to inspect the locations in which erosion repair activities would take place. The project locations occur at approximate river miles 22.5 (Fig Road – Downstream; Figure 2), 17 (Cosumnes Road – Downstream; Figure 3), and 15.75 (Freeman Road; Figure 4). The locations all consisted of fairly similar habitat: little over head vegetation to provide shaded riparian areas; silt, sand, and/or hardpan shelf dominated substrates providing little spawning habitat for salmonids; and water depths that appeared not to exceed more than 2.5 feet in depth on average. To exemplify the need for erosion repair, the streamside of many of the levees in the project areas are sheared away leading to large drops from the top of the levee and no true river side slope. Each project location is described in greater detail below and photographs from the site visit are provided in Appendix A. Quantities of area affected and material used at each repair site are presented in Tables 1-3.

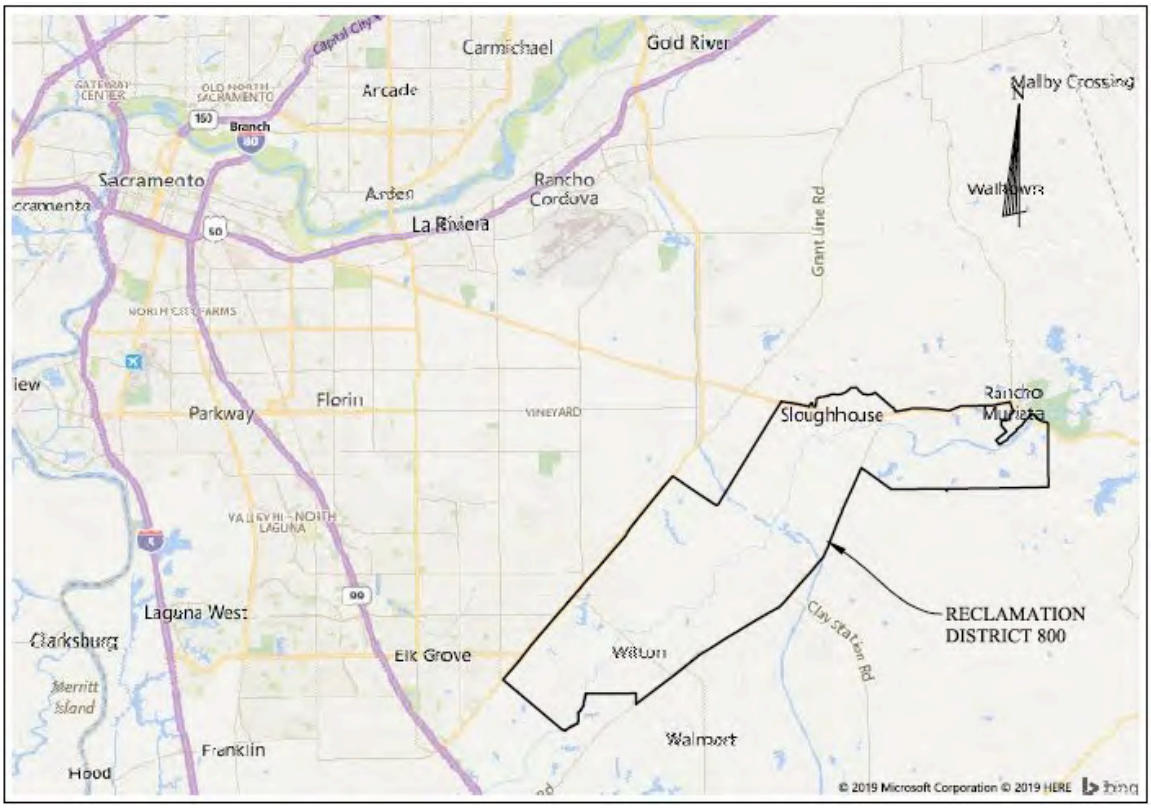


Figure 1. Overall project area encompassing multiple levee repair projects along the Cosumnes River.

Figure 2. Aerial view of the Fig Road erosion repair site (~RM 22.5).

Figure 3. Aerial view of the Cosumnes Road - Downstream erosion repair site (~RM 17).

Figure 4. Aerial view of the Freeman Road erosion repair site (~RM 15.75).

Table 1. Quantities of area affected and material used for the Fig Road repair site.

	Above OHWM	Below OHWM	Total
Work Area (acres)	0.51	0.43	0.94
Temporary Disturbance (acres)	0.75	0.29	1.04
TOTAL ACRES	1.26	0.72	1.98
Fill - Soil (cubic yards)	2,421	1,633	4,054
Fill - RSP (cubic yards)	1,674	830	2,504
TOTAL CUBIC YARDS	4,095	2,463	6,558

Note: OHWM – ordinary high water mark (Elevation = 78+/- Feet); RSP – rock slope protection

Table 2. Quantities of area affected and material used for the Cosumnes Road – Downstream repair site.

	Above OHWM	Below OHWM	Total
Work Area (acres)	0.19	0.19	0.38
Temporary Disturbance (acres)	0.56	0.16	0.72
TOTAL ACRES	0.75	0.35	1.10
Fill – Soil (cubic yards)	1,011	797	1,808
Fill – RSP (cubic yards)	549	363	912
TOTAL CUBIC YARDS	1,560	1,160	2,720

Note: OHWM – ordinary high water mark (Elevation = 54+/- Feet); RSP – rock slope protection

Table 3. Quantities of area affected and material used for the Freeman Road repair site.

	Above OHWM	Below OHWM	Total
Work Area (acres)	0.21	0.20	0.41
Temporary Disturbance (acres)	0.65	0.12	0.77
TOTAL ACRES	0.86	0.32	1.18
Fill- Soil (cubic yards)	1,432	388	1,820
Fill - RSP (cubic yards)	835	423	1,258
TOTAL CUBIC YARDS	2,267	811	3,078

Note: OHWM – ordinary high water mark (Elevation = 46+/- Feet); RSP – rock slope protection

Cosumnes River Streamflow

As previously described, the Cosumnes River watershed is limited in scale, with the drainage area only encompassing 1,200 square kilometers and is heavily reliant on rainfall for surface water flows, as much of the basin occurs at low elevation (Nobriga 1995). Further, as there are no major dams on the mainstem Cosumnes River or its three forks, temperatures and flow have large fluctuations during the year (Bottorff 1990).

Historical flow data for the Cosumnes River is available from the California Data Exchange Center (CDEC) gauge at Michigan Bar Road bridge in Sacramento County (CDEC gauge: MHB). In the last several years, California has experienced drastic changes in water year types throughout the Central Valley (Table 4), but similar to observations described in Mullen et al. (1993), flows typically decline throughout the spring and summer, and often are reduced to zero between August and October (Figure 5).

Table 4. A summary of the last several water years in California's Central Valley. Note: A water year runs between Oct 1 and Sept 30 of the following year; the water year is defined as the year in which the described ends.

Water Year	Sacramento Valley Water Year Type	San Joaquin Valley Water Year Type
2014	Critically Dry	Critically Dry
2015	Critically Dry	Critically Dry
2016	Below Normal	Dry
2017	Wet	Wet
2018	Below Normal	Below Normal

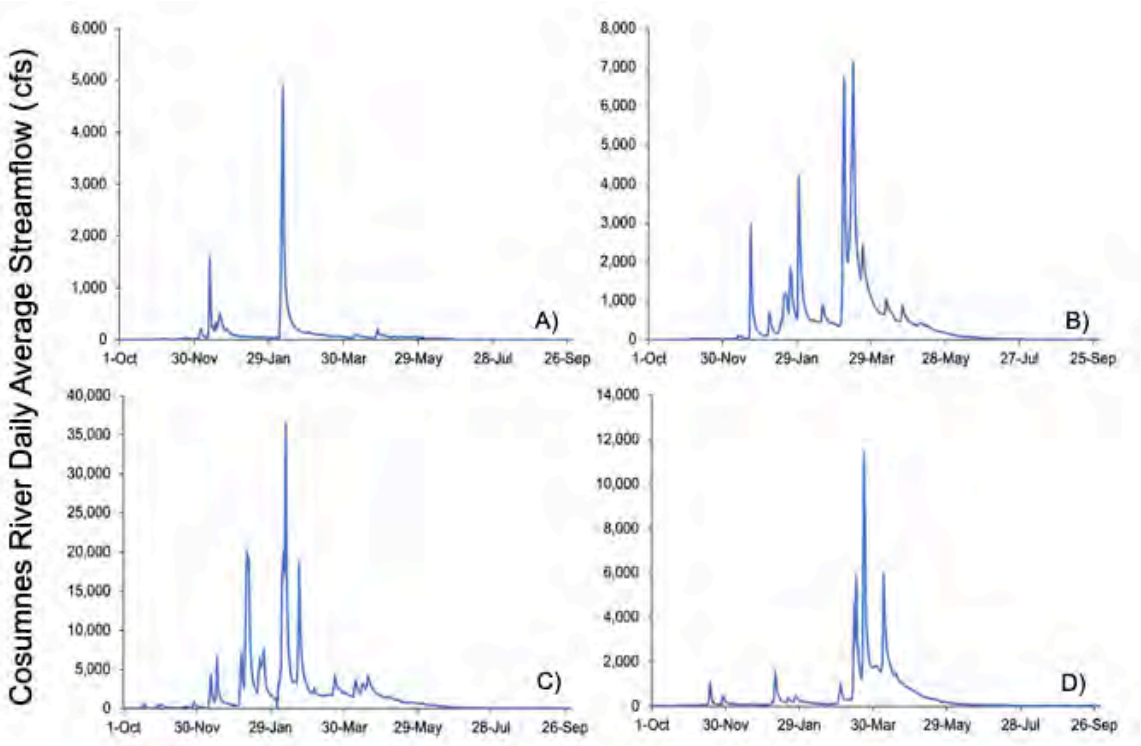


Figure 5. Daily average Cosumnes River streamflow as measured at Michigan Bar for the last four water years (e.g., 2015-2018). A) WY 2015; B) WY 2016); C) WY 2017; D) WY 2018.

Fisheries Resources

Based on data available from the UC Davis PISCES database (UC Davis 2017), native fish known to currently occur or were historically present near the project area include multiple runs of Chinook salmon, Central Valley steelhead, hardhead, threespine stickleback, prickly sculpin, riffle sculpin, Sacramento blackfish, Sacramento perch, Sacramento pikeminnow, speckled dace, Sacramento splittail, Sacramento sucker, thicktail chub, and western brook lamprey (Table 5).

Non-native species that may be present include black bullhead, bluegill sunfish, brown bullhead, brown trout, common carp, golden shiner, goldfish, green sunfish, largemouth bass, redear sunfish, redeye bass, smallmouth bass, spotted bass, wakasagi, western mosquitofish, and white crappie.

Table 5. Non-ESA-listed native fish species that may potentially utilize habitat within the project area, irrespective of temporal distribution.

Common Name	Species	Origin	Demersal/Pelagic
Chinook salmon – Central Valley fall/late fall-run ESU	*Oncorhynchus tshawytscha*	Native	Pelagic
Hardhead	*Mylopharodon conocephalus*	Native	Pelagic
Prickly sculpin	*Cottus asper*	Native	Demersal
Riffle sculpin	*Cottus gulosus*	Native	Demersal
Sacramento blackfish	*Orthodon microlepidotus*	Native	Pelagic
Sacramento perch	*Archoplites interruptus*	Native	Pelagic
Sacramento pikeminnow	*Ptychocheilus grandis*	Native	Pelagic
Speckled dace	*Rhinichthys osculus*	Native	Demersal
Sacramento splittail	*Pogonichthys macrolepidotus*	Native	Pelagic
Sacramento sucker	*Catostomus occidentalis*	Native	Demersal
Thicktail chub	*Gila crassicauda*	Native	Pelagic
Threespine stickleback	*Gasterosteus aculeatus*	Native	Pelagic
Western brook lamprey	*Lampetra richardsonii*	Native	Demersal

Two readily accessible government websites were used to determine the occurrence of critical habitat designations and fish species listed as threatened or endangered by the Endangered Species Act (ESA). The first source was a project-planning tool (Information for Planning and Conservation; IPaC) provided by the U.S. Fish and Wildlife Service (USFWS 2015; accessed January 15, 2020). The location used in the planning tool was a 25-square mile area encompassing the designated project areas in the Cosumnes River and near the town of Wilton, CA. The IPaC data viewer and automated reporting system indicated that there is no critical habitat designation for delta smelt located within the project boundaries.

The second source utilized was the NOAA Fisheries website (NOAA 2015a; accessed on January 15, 2020). GIS shapefiles were downloaded from the website and viewed using Google Earth Pro software. All shapefiles of critical habitat designations for listed Chinook salmon stocks, Central Valley steelhead, and sDPS green sturgeon were downloaded. Examination of the shape files revealed that no critical habitat designations were found in the project areas or the Cosumnes River at large.

Based on this information, this technical memorandum focuses on the following species (Table 6):

- Chinook salmon (*Oncorhynchus tshawytscha*)
- Central Valley steelhead (*Oncorhynchus mykiss*)
- sDPS Green Sturgeon (*Acipenser medirostris*)

Table 6. Federal/State endangered or threatened species summary table for the project area.

Species	Listing Status[1]	Listing Agency	Potentially Present During Construction	Potential Habitat Present	Potential to be Impacted
Central Valley steelhead (adult)	FT	USFWS	N[m2]	N	N
Central Valley steelhead (juvenile)	FT	USFWS	N[m3]	N	N
Central Valley spring-run Chinook salmon (adult)	FT / ST	USFWS / CDFW	N[4]	N	N
Central Valley spring-run Chinook salmon (juvenile)	FT / ST	USFWS / CDFW	N[5]	N	N
Sacramento River winter-run Chinook salmon (adult)	FE / SE	USFWS / CDFW	N[6]	N	N
Sacramento River winter-run Chinook salmon (juvenile)	FE / SE	USFWS / CDFW	N[7]	N	N
Green sturgeon (adult)	FT	USFWS	N[8]	N	N
Green sturgeon (juvenile)	FT	USFWS	N[9]	N	N

[1] Listing status: F = Federal, S = State, T= Threatened, E = Endangered; [m] Species is migratory and may be present short-term during migration; [2] Hallock 1989, [3] Moyle 2008, [4] Cramer and Demko 1997, [5] Yoshiyama et al. 1998, [6] Hallock and Fisher 1985, [7] Stevens 1989, [8] Hueblein et al. 2009, [9] USFWS 1995

Chinook salmon

While critical habitat designations were not found for winter- or spring-run (WR or SR) Chinook salmon near the location of the project, we chose to provide brief descriptions of each run's potential to occur near the project. Sacramento River Evolutionarily Significant Unit (ESU) WR Chinook were listed as "endangered" under the ESA in January 1994 (NOAA 1994) and this designation is maintained to this day (NOAA 2016a). WR Chinook salmon exclusively rely on the upper Sacramento River system for spawning, rearing, and migration.

Central Valley Spring-run (SR) Chinook salmon were originally listed as "threatened" under the ESA in September 1999 (NOAA 1999). An updated review in April 2016 maintained the "threatened" designation (NOAA 2016b). The NOAA ESU definition specifically refers to naturally spawned SR Chinook salmon originating from the Sacramento River and its tributaries, and SR Chinook salmon from the Feather River Hatchery Spring-Run Chinook Program.

In recent years, the San Joaquin River Restoration Program (SJRRP) has taken steps to reintroduce SR Chinook salmon to the San Joaquin River, and the San Joaquin has since been designated critical habitat for SR Chinook salmon (NOAA 2005a). As part of the SJRRP, juvenile SR Chinook salmon have been released into the San Joaquin River just upstream of the confluence with the Merced River annually beginning in 2015. The released San Joaquin River SR Chinook salmon are considered an "experimental population" under Section 10(j) of the Endangered Species Act. However, progeny of individuals that survive to adulthood and successfully reproduce are considered protected.

Fall-run (FR) Chinook salmon are the most abundant run in the San Joaquin River basin and are not currently listed under the ESA. They are, however, listed as a Species of Special Concern (SSC) under the California Endangered Species Act (CESA) due to concerns about population size and their dependence on hatcheries. The San Joaquin River, to which the Cosumnes River drains, acts as a migratory corridor for FR Chinook salmon, and fish would be quickly passing through the corridor, far downstream of the project areas. There is a substantial FR Chinook salmon population that utilizes the Mokelumne River and annual monitoring of adult migration occurs at the fish ladder at the Woodbridge Irrigation District Diversion Dam.

Potential to be exposed to project changes

Chinook salmon (all runs) are unlikely to occur in the affected area as the project areas offer low habitat value for rearing and little potential spawning habitat for anadromous salmonids. WR Chinook salmon are highly unlikely to be exposed to project changes or activities due to their heavy reliance on the upper Sacramento River system for spawning, rearing, and migration.

Similarly, SR Chinook salmon are also primarily relegated to the Sacramento River system throughout the freshwater portion of their lifecycle. In recent years, the SJRRP has taken steps to reintroduce SR Chinook salmon to the San Joaquin River, and portions of the San Joaquin River are designated critical habitat for SR Chinook salmon (NOAA 2005a). As part of the SJRRP, juvenile SR Chinook salmon have been released into the San Joaquin River just upstream of the confluence with the Merced River annually beginning in 2015. The released San Joaquin River SR Chinook salmon are considered an "experimental population" under Section 10(j) of the Endangered Species Act. However, progeny of individuals that survive to adulthood and successfully reproduce are

considered protected. Given so few juveniles are released on an annual basis and poor survival during juvenile migration, the likelihood of adults returning is very low. The likelihood of impacting juveniles, if any are produced, is even more unlikely given (1) an expectation of low to no adults returning; (2) poor juvenile survival from the spawning grounds in the tributaries to the migratory corridor; (3) the overall distance of the project area from the primary spawning and rearing habitat available in the San Joaquin River Restoration Area; and (4) the elevated summer temperatures experienced in the Cosumnes River would preclude adult SR Chinook from holding there over the summer period (Nobriga 1995).

FR Chinook salmon utilize the nearby San Joaquin River; however, this is primarily as a migratory corridor as they move through the Delta and into the upper tributaries (e.g., Mokelumne, Stanislaus, Tuolumne, Merced, etc.) for spawning and rearing. As referenced, there is also a substantial FR Chinook salmon population that utilizes the Mokelumne River. Observations of adult migration in the Mokelumne typically occurs between September and February (EBMUD 2015). Data from rotary screw traps in the tributaries, including the Mokelumne (EBMUD 2013), and from the Mossdale Trawl show that most juvenile Chinook salmon outmigrate between late January and early June. Adult FR Chinook salmon typically begin their migration to spawning grounds in the San Joaquin River tributaries in early September and continue until late December. Due to the limited amount of flow available in the Cosumnes River during the early portion of the migratory period, it is highly unlikely that FR Chinook salmon would be encountered in the project area during the primary summer work window.

Nobriga (1995) notes that CDFG regional files (Region 2, Rancho Cordova) show that the Cosumnes had historically supported a FR Chinook salmon run at least up to the Michigan Bar Road Bridge. In the 1950s and 1960s, the run averaged roughly 1,000 fish, but had declined to 100-200 fish by the mid-1980s. There were no reports of a Cosumnes River salmon run during the 1990s. Further, it notes that the Cosumnes River has generally been considered incapable of supporting SR Chinook salmon due to excessive summer water temperatures. Snider and Reavis (2000) noted that since the mid-1970s, estimated escapement of FR Chinook spawners reached 1,000 fish only once and has generally been 200 fish or less. They concluded that abundance declined due to substantial flow reductions during critical salmon migration periods and inadequate spawning and rearing habitat.

Central Valley Steelhead

Steelhead (*Oncorhynchus mykiss*) is a species of salmonid native to California, commonly known by two names: steelhead (the anadromous form) and rainbow trout (the resident/freshwater form). The California Central Valley steelhead has been listed as "threatened" under the ESA since January 2006. Adult anadromous steelhead can be expected to enter freshwater streams between August and November; however, spawning typically takes place between December and April. Juveniles begin to emerge from late

winter to summer and will then spend between one and three years in freshwater before emigrating in the spring (Williams 2006). Recent habitat modeling conducted by Lindley et al. (2006) suggests that waterways on the floor of the Central Valley are unfavorable spawning and rearing locations for steelhead due to their excessively high summer temperatures. This same study also noted that many of the small tributaries of the San Joaquin are generally too degraded to support viable populations.

Abundance data reveal that populations in the Central Valley are relatively low for naturally occurring steelhead. *O. mykiss* counts at the Red Bluff Diversion Dam from 1967 to 1993 revealed a precipitous decline in returns to the upper Sacramento River. While more recent data are scarce, an updated report from NOAA Fisheries (Good et al. 2005) estimated an average of 3,628 naturally spawning female steelhead occurring in the Central Valley between 1998 and 2000 based on the adipose-fin-clip ratio.

The 2014 Salmonid Recovery Plan (NOAA 2014) notes that the Cosumnes River is listed as having both historic and current populations of steelhead, but an "uncertain" population extinction risk. As such, it has been designated as a Core 3 stream. A Core 3 stream is one where populations are present on an intermittent basis and are characterized as reliant on nearby population for their continued existence. This designation is unsurprising as the California Department of Fish and Wildlife operates a fish hatchery on the nearby Mokelumne River, and some straying of returning fish should be anticipated when appropriate passage conditions exist in the Cosumnes River.

Potential to be exposed to project changes

The potential impacts from the project to steelhead would be low to none. Adult migration monitoring at the Woodbridge Irrigation District Dam have documented the presence of adult *O. mykiss* in the lower Mokelumne River, being observed between September and March (EBMUD 2015), however, there is little documentation of these adults utilizing the Cosumnes. Juvenile outmigrants have been observed in the Mokelumne between mid-December and Mid-June in recent years, however no specific data is available for the Cosumnes River. Considering the low number of observations within the Cosumnes River, the predominate midchannel habitat utilization of migrating adult *O. mykiss*, as well as the poor-quality habitat available for spawning and rearing in the project area, it can be assumed that any *O. mykiss* use of areas affected by the project would be highly limited. Individual *O. mykiss* occurring in the area may be limited to those straying from the primary migratory corridor. The timing of adult migration to spawning grounds and juvenile emigration may potentially overlap with the timing of the project activities. However, if steelhead were to occur in the area, the adult and intermediate life stages of these fish are active swimmers and would likely avoid any area impacted by erosion repair activities.

Much like Chinook salmon, *O. mykiss* presence may be limited by elevated water temperatures. Therefore, *O. mykiss* presence would be highly unlikely during the summer

period as flows are reduced to non-existent in some habitats, leading to excessive water temperatures. While no water temperature data for locations near the project area are readily available, Nobriga (1995) notes that the Cosumnes River had been considered to be incapable of supporting a steelhead run due to excessive summer temperatures.

The relative footprint of the individual project areas should have negligible impacts on habitat available for *O. mykiss* smolts that may be entering or leaving the project area. Therefore, the proposed project should have minimal impact on local *O. mykiss* populations. Following project implementation, aquatic habitats adjacent to the project areas will be comparable to those under existing conditions, as fringe habitats would likely remain unaffected, and therefore will continue to provide minimal quality habitat for *O. mykiss*.

Green Sturgeon

Green sturgeon (*Acipenser medirostris*) are an iteroparous, anadromous species that reproduces from March to July in California, with a peak spawning period from mid-April to mid-June (Emmett et al. 1991, Poytress et al. 2009). Spawning adults prefer deep (>10 ft.), cool (46–57°F), and fast-flowing water (Moyle 2002). Eggs usually hatch within two weeks (Moyle 2002) and larvae probably reside near natal sites (Kynard et al. 2005). Freshwater rearing juveniles prefer elevated flows and temperatures between 52–64°F (Cech et al. 2000; Van Eenennaam et al. 2005). Juveniles migrate downstream to the estuary during summer and fall after typically spending one year in the freshwater environment. Juveniles rear in estuarine nursery grounds, usually until Age 3, before migrating to marine waters (Nakamoto et al. 1995). Subadults require approximately 6–10 years to become sexually mature (Nakamoto et al. 1995). Post-spawned adults likely require a two to four-year period before their next reproductive effort (NOAA 2005b).

The southern Distinct Population Segment (sDPS) of North American green sturgeon was listed as “threatened” under the ESA in 2006 (NOAA 2006). This listing status was recently reviewed and found that no change was needed (NOAA 2015b) Its designated critical fresh- and brackish-water habitat in California includes portions of the Sacramento, lower Feather, and lower Yuba rivers; the Sacramento-San Joaquin Delta; and the Suisun, San Pablo, and San Francisco bays (NOAA 2009). The mainstem San Joaquin River above the Stanislaus River confluence is not considered critical freshwater habitat because sturgeon do not appear to occupy the area in a viable manner (NOAA 2009). According to the CDFW Sturgeon Report Card data, only six green sturgeon were reported between 2008 and 2012 upstream of Stockton (Jackson and Van Eenennaam 2013). However, what appeared to be a single green sturgeon was recently observed in upstream habitats of the Stanislaus River, a tributary of the San Joaquin River far upstream of the project location (Observed by FISHBIO staff, November 2017); this siting was confirmed by Cramer Fish Sciences by using eDNA (Anderson et al. 2018). Furthermore, no green sturgeon eggs were detected from March to May 2012 using egg mats positioned at four sites between Sturgeon Bend (downstream of confluence with

Stanislaus River) and Grayson Road Bridge (upstream of the confluence with Tuolumne River; Jackson and Van Eenennaam 2013).

Potential to be exposed to project changes

The proposed project is highly unlikely to impact sDPS green sturgeon. As previously stated, little to no spawning occurs in the San Joaquin Basin. The project areas are located well outside the primary Sacramento River migratory corridor used by both juveniles and adults. It should also be noted that both adults and juveniles are mobile swimmers that would largely be able to leave any area disturbed by project implementation.

Currently, the overall depth of the Cosumnes River should be considered ill-suited and would preclude green sturgeon from the environment. The mainstem San Joaquin River, to which the Cosumnes is tributary, would appear to have locations suitable for green sturgeon, but recent research calls this into question. Israel and Klimley (2008) note that channelization of the estuary has likely negatively impacted the amount of subtidal and intertidal habitat available for green sturgeon foraging. Furthermore, they note that only 4.6% of total river kilometers in the Central Valley have suitable spawning habitat characteristics, of which only 12% is currently utilized by these fish. Therefore, the presence of adult or juvenile green sturgeon in the upper tributaries and the project area is highly unlikely.

If adults were present, they would likely occupy the deepest portion of the river channel to seek cooler temperatures. Spawning success for any adults is highly unlikely during the summer months, as Van Eenennaam et al. (2005) state that temperatures greater than 23°C (73.4°F) lead to complete egg mortality prior to hatching. As the work window is scheduled for the summer, the proposed project should have no impact on populations of sDPS green sturgeon. Following the implementation of the project, aquatic habitats adjacent to the project area will be comparable to those under existing conditions, providing minimal habitat for sDPS green sturgeon.

Avoidance and Mitigation Recommendations

The planned timing for erosion repair activities during the summer and early-fall is an appropriate work window that provides adequate protection for special status fisheries resources that may occur near the project areas. The presence of species of concern is expected to be minimal, if any, during the summer months when construction is scheduled to take place; based on available streamflow data and characteristics, it is likely that one or more of the work areas will be entirely dry. As described above, the species that may be present during activities (particularly salmonids; *O. tshawytscha* and *O. mykiss*) are strong swimmers that can leave the temporarily disturbed zone if they happen to enter one of the project sites.

The erosion repairs will have minimal impacts on aquatic resources in and downstream of the work areas. The current habitat provided within the project area offers little to no utility to the primary species of concern. Additionally, though historic populations of spring-run Chinook salmon and sDPS green sturgeon occurred in the San Joaquin River, they are currently almost exclusively distributed throughout the Sacramento River, aside from the experimental spring-run Chinook population introduced in 2015 and several individual green sturgeon observed in the lower reaches of the Stanislaus River, a tributary of the San Joaquin River well upstream of the Cosumnes River.

The removal of less than an acre of riparian forest vegetation is not viewed as a significant reduction of canopy that enhances the habitat of special-status fish. Most of the vegetation that will be removed is relatively high on the riverbanks and does not shade the river corridor.

Fine sediments may be incidentally introduced to the river as a result of project activities, but their effect should be negligible. Best management practices utilized during construction will be implemented to intercept and capture sediment prior to entering waters of the U.S., as well as erosion control measures along the perimeter of all work areas. A proposed turbidity standard for the adequate protection of fish and wildlife habitats in California states that turbidity (measured in NTUs) should not exceed 20% above natural background turbidity (Bash et al. 2001). Any increase in turbidity resulting from erosion repair activities is not likely to exceed background levels commonly observed during a rain event. If excessive turbidity is observed and persistent, work may be halted and suspended sediments will be allowed to dissipate prior to continuing work.

The table below (Table 7) provides a guideline for construction activities to best protect listed species and shows the potential for each species of concern to be present in the project area on a bi-monthly timescale. Based on timing of potential presence alone, the period between mid-June to mid-September would provide the greatest protection for ESA listed species. Given the environmental setting of the project, we find no significant increase in risk of exposure under the proposed schedule of project activities occurring in either the late summer or early fall if additional time is required to implement the project.

Table 7. The potential of each species of special concern, their pertinent life stages, and their likelihood of occurrence in the project area.

Species	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec	
Steelhead (adult)																								
Steelhead (juvenile)																								
Spring-Run Chinook salmon (adult)																								
Spring-Run Chinook salmon (juv.)																								
Fall-Run Chinook salmon (adult)																								
Fall-Run Chinook salmon (juv.)																								
Green sturgeon				1	1	1	1	1	1	1	1	1												

Note: White boxes = potentially present in the project area; Gray Boxes = unlikely to be present in the project area
[1] Species not documented in San Joaquin River in recent years; however, this is the period when adults typically migrate to spawn.

Summary and Conclusions

This review assessed the potential for protected fish species to be exposed to the project, the possible effects of the project on those fish species, and recommendations to help avoid and mitigate any potential negative impacts. Overall, the project site features characteristics of a relatively disturbed area, provides low amounts of suitable habitat for cold-water fishes, and routinely intermittently dries during the summer periods, even in wet water year types.

Review of available reports and data regarding the project area identified three species for further assessment: Chinook salmon, steelhead, and green sturgeon. Chinook salmon and steelhead both use the nearby San Joaquin River as a migratory corridor but are unlikely to rear or spawn within the project sites located upstream in the Cosumnes River. Green sturgeon are similarly unlikely to use habitat near the project areas and lack a major source population in the nearby San Joaquin River, further reducing their potential for being present.

Following project completion, aquatic habitats within the Cosumnes River will be comparable to those under existing conditions, providing minimal habitat for listed species. In conclusion, this review identified minimal potential for sensitive fish species to be present in the project area during the work window and found that any effects resulting from the erosion repairs would likely be negligible on fish and their habitat.

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Attachment A

Site Photos from the Cosumnes River Site Visit

Fig Rd - Downstream, Cosumnes Rd. – Downstream, and Freeman Rd.

June 2019

Figure 1-A. South bank at the Fig Road - Downstream repair site, view looking upstream. The bank shows severe signs of erosion with sheering at the top of the levee. Near shore gravel bar appears to originate from levee spilling into channel via erosion processes.

Figure 2-A. South bank at the Fig Road – Downstream repair site, view looking downstream. Again, severe signs of erosion near the top of levee and a shallow gravel bar that extends to near mid-channel.

Figure 3-A. South bank at the Cosumnes Road – Downstream repair site, view looking upstream. Again, severe signs of erosion near the top of levee. A clay substrate shelf has begun to form at the nearshore with very little emergent vegetation or shaded riparian area.

Figure 4-A. South bank at the Cosumnes Road – Downstream repair site, view downhill of the top of the levee showing the extent of the clay substrate shelf intrusion into the main channel.

Figure 5-A. South bank at the Freeman Road repair site, looking downstream at of the top of the levee showing similar effects of erosion as other sites, resulting in steep, unprotected banks with clay substrate shelf and little shaded riparian area.

Figure 6-A. South bank at the Freeman Road repair site, looking upstream at of the top of the levee illustrating the extent of the clay substrate shelf and similar erosion issues.

TO: Diane Moore, Moore Biological Consultants

FROM: Patrick Cuthbert

DATE: April 27, 2020

SUBJECT: Biological Assessment of the RD 800 2021 Critical Erosion Repair Project

FISHBIO was contracted by Moore Biological Consultants to assess potential impacts of the RD 800 2021 Critical Erosion Repair Project on protected fish species near and within the project area. All of the repair sites occur along the Cosumnes River, a small tributary to the San Joaquin River by way of the nearby Mokelumne River. The first approximate two miles of the Cosumnes River nearest the confluence with the Mokelumne River has been designated as critical habitat for Central Valley steelhead (*Oncorhynchus mykiss*). However, areas upstream of the confluence in Cosumnes River have no additional designated critical habitat for Central Valley steelhead. Further, there are no critical habitat designations for the multiple runs of Chinook salmon (*Oncorhynchus tshawytscha*) typically encountered in the Central Valley or the southern Distinct Population Segment (sDPS) of green sturgeon (*Acipenser medirostris*). However, due to its proximity to the Mokelumne and San Joaquin rivers, findings on each protected species, their critical habitat, and recommendations to avoid and mitigate project effects are presented below.

Project Description

The project proponent, Reclamation District No. 800 Cosumnes District (RD 800), proposes to repair six critical erosion repairs on the waterside of the Cosumnes River levee that suffered severe erosion during the 2017 storms. The erosion at these sites is so severe, levee integrity has been compromised and further erosion could lead to a breach during a major storm event. Five of these sites are named "Meiss Road Upstream", "Meiss Road Downstream", "Fig Road Upstream", "Keating Road", "and "Cosumnes Road Upstream" after the roads that provide access to each site. The final site, "Mile Marker 19", is named after its location along the Cosumnes River.

The proposed scope of work is the repair and stabilization of the eroded levees and riverbanks. At five of the six sites, the work will involve both reconstructing the levees and repairing the riverbanks at a horizontal/vertical ratio of 2:1 at all sites except for Cosumnes Road Upstream which will have a 1.5:1 slope, to conform to the theoretical levee slopes that underly the banks. Clean fill dirt will be imported to replace the soil washed away during the floods and rock slope protection (RSP) would be added to the restored slopes to reduce potential future erosion. Grading and installation of RSP would occur both above and below the ordinary high-water mark (OHWM) of the Cosumnes River. At Fig Road Upstream, the work is limited to strengthening to landside of the levee.

At the Meiss Road Upstream site, approximately 350 feet of levee crest will be excavated to a depth of approximately five feet. The excavated material will be placed and compacted on the waterside slope to restore the slope to its previous condition. The crest will be replaced using material from the adjacent borrow site. Additionally, approximately 370 feet of waterside levee slope will be grubbed, stripped and prepared for material placement. RSP will be placed on the entirety of the waterside slope to protect the repair from future erosion. A two-foot deep by two-foot wide toe trench will be utilized to stabilize the rock.

At the Meiss Road Downstream site, approximately 230 feet of waterside levee slope will be grubbed, stripped and prepared for material placement. Fill material will be imported from a local borrow site located approximately one-half mile from the project site, placed and compacted on the waterside levee slope to restore the slope to its previous condition. RSP will be placed on the entirety of the waterside slope to protect the repair from future erosion. A two-foot deep by two-foot wide toe trench will be utilized to stabilize the rock.

At the Fig Road Upstream site, approximately 520 feet of landside levee slope will be grubbed, stripped and prepared for material placement. Fill material from a local borrow site located approximately 1,000 feet from the project site. Fill material will be placed and compacted at a 4:1 slope to restore the slope to its previous condition. This work will be omitted from the fisheries assessment as there is no instream work component.

At the Keating Road site, approximately 240 feet of waterside and landside levee slope will be grubbed, stripped and prepared for material placement. Imported fill material will be placed and compacted to restore the waterside slope, landside slope and levee crest to their previous condition. The waterside of the levee will be placed at a horizontal/vertical ratio of 2:1 while the landside will be placed at 3:1. RSP will be placed on the entirety of the waterside and landside slopes to protect the repair from future erosion. A two-foot deep by two-foot wide toe trench will be utilized on the waterside slope to stabilize the rock.

At the Mile Marker 19 site, approximately 470 feet of waterside levee slope will be grubbed, stripped and prepared for material placement. Imported fill material will be placed and compacted to restore the slope to its previous condition. RSP will be placed on the entirety of the waterside slope to protect the repair from future erosion. A two-foot deep by two-foot wide toe trench will be utilized to stabilize the rock.

At the Cosumnes Road Upstream site, approximately 370 feet of waterside levee slope will be grubbed, stripped and prepared for material placement. Imported fill material will be placed and compacted to restore the levee slope to its previous condition. RSP will be placed on the entirety of the waterside slope to protect the repair from future erosion. A two-foot deep by two-foot wide toe trench will be utilized to stabilize the rock.

The project would involve grading disturbance of the riverbanks and channel. The project was designed to have a minimal footprint, thereby minimizing potential impacts to potential or actual habitats of special-status species. The project would involve a work area of 3.47 acres where project improvements would be constructed, and an additional 6.01 acres of temporary construction disturbance, primarily on the upper levee slope (Table 1).

Table 1. Anticipated extent temporary and permanent impact area. *Note: this assessment will not evaluate the Fig Road Upstream site as there is no work below the OHWM.

	Repair Site	Above OHWM (acres)	Below OHWM (acres)	Total
Work Area	Meiss Road Upstream	0.47	0.34	0.81
	Meiss Road Downstream	0.17	0.23	0.40
	Fig Road Upstream*	0.29	0.00	0.29
	Keating Road	0.23	0.06	0.29
	Mile Marker 19	0.11	0.28	0.39
	Cosumnes Road	1.09	0.20	1.29
SUBTOTAL		**2.36**	**1.11**	**3.47**
Temporary Disturbance	Meiss Road Upstream	1.92	0.22	2.14
	Meiss Road Downstream	0.48	0.25	0.73
	Fig Road Upstream*	0.77	0.00	0.77
	Keating Road	0.61	0.19	0.80
	Mile Marker 19	0.94	0.23	1.17
	Cosumnes Road	0.16	0.24	0.40
SUBTOTAL		**4.88**	**1.13**	**6.01**
TOTAL PROJECT AREA		**7.24**	**2.24**	**9.48**

Only 2.24 acres of the overall 9.48 acres of construction disturbance is below the OHWM; the remaining 7.24 acres is above the OHWM.

A total of 6,766 cubic yards of clean fill dirt will be placed on the riverbanks to achieve the design slopes and 7,255 cubic yards of RSP will be installed on the graded slopes (Table 2). The clean fill dirt required at the Meiss Road Upstream site will be obtained from a pasture near the site; the clean fill dirt for the other sites will be from an off-site source.

The project will result in the placement of fill in 1.11 acres of Waters of the U.S. (Table 1). There will also be temporary construction disturbance to approximately 1.13 acres of Waters of the U.S. adjacent to the project footprint related to construction equipment and personnel accessing the work areas.

The project would require the removal of several valley oaks (*Quercus lobata*), black walnuts (*Juglans californica*), Fremont's cottonwood (*Populus fremontii*), and Oregon ash (*Fraxinus latifolia*), and a few trees of other species. A few blue elderberry shrubs (*Sambucus nigra* ssp. *caerulea*) would also be removed. The project would result in the removal of approximately 1.43 acres of riparian forest vegetation.

Table 2. Anticipated volumes of materials used as part of the erosion repair project. *Note: this assessment will not evaluate the Fig Road Upstream site as there is no work below the OHWM.

	Repair Site	Above OHWM (cubic yards)	Below OHWM (cubic yards)	Total
Fill Type: Soil	Meiss Road Upstream	299	981	1,280
	Meiss Road Downstream	511	535	1,046
	Fig Road Upstream	417	0	417
	Keating Road	698	0	698
	Mile Marker 19	487	1,111	1,598
	Cosumnes Road	1,043	684	1,727
SUBTOTAL		**3,455**	**3,311**	**6,766**
Fill Type: RSP	Meiss Road Upstream	1,276	1,231	2,507
	Meiss Road Downstream	693	583	1,276
	Fig Road Upstream	0	0	0
	Keating Road	593	196	789
	Mile Marker 19	544	893	1,437
	Cosumnes Road	722	474	1,246
SUBTOTAL		**3,878**	**3,377**	**7,255**
TOTAL FILL VOLUME		**7,333**	**6,668**	**14,021**

OHWM = ordinary high-water mark (Site 1 = 110 ft; Site 2 = 90 ft; Site 3 = 78 ft; Site 5 = 69 ft; Site 6 = 68 ft; Site 7 = 54 ft)

Environmental Setting

The project sites occur exclusively along the Cosumnes River corridor, with the work areas occurring primarily in the terrestrial area and extending to some degree into the wetted area along the levee lines. The Cosumnes River is unique among Central Valley tributaries in that it has not been substantially altered by large-scale water development. However, due to several small dams and a large number of water diversions dotting the channel, surface water flows are routinely reduced or even eliminated in the lower reaches between spring and early winter. Also, much like the nearby Calaveras River, the Cosumnes is primarily a rain-fed system, as only 16% of the watershed originates at elevations greater than 5,000 ft. on the western slope of the Sierra Nevada Mountain

range. Further, due to Latrobe Falls at river mile 40, much of the river is unavailable to anadromous fish like Chinook salmon and steelhead. Further, an abundance of fine sediment has been observed within the historic anadromous reach which has led to a reduction of spawning and rearing habitat availability and possibly affecting the timing and volume of surface flows (Snider and Reavis 2000).

On June 4, FISHBIO and Moore Biological Consultants staff conducted site visits to inspect the locations in which erosion repair activities would take place. The project locations occur at approximate river miles 17 (Chamberlain Road Upstream), 19 (Mile Marker 19), 20.25 (Keating Road), 22.5 (Fig Road Upstream), 25.5 (Meiss Road Downstream), and 29 (Meiss Road Upstream). Note that as all of the work done at the Fig Road Upstream site will occur above the OHWM, this fisheries assessment is not applicable to that project component. The project locations all consisted of fairly similar habitat: little overhead vegetation to provide shaded riparian areas; silt, sand, and/or hardpan shelf dominated substrates providing little spawning habitat for salmonids; and water depths that appeared not to exceed more than 2.5 feet in depth on average. To exemplify the need for erosion repair, many of the levees featured in the project areas appear to have been sheared away leading to large drops from the top of the levee and no true river side slope. Each project location is described in greater detail below and photos from the site visit are provided in Appendix A.

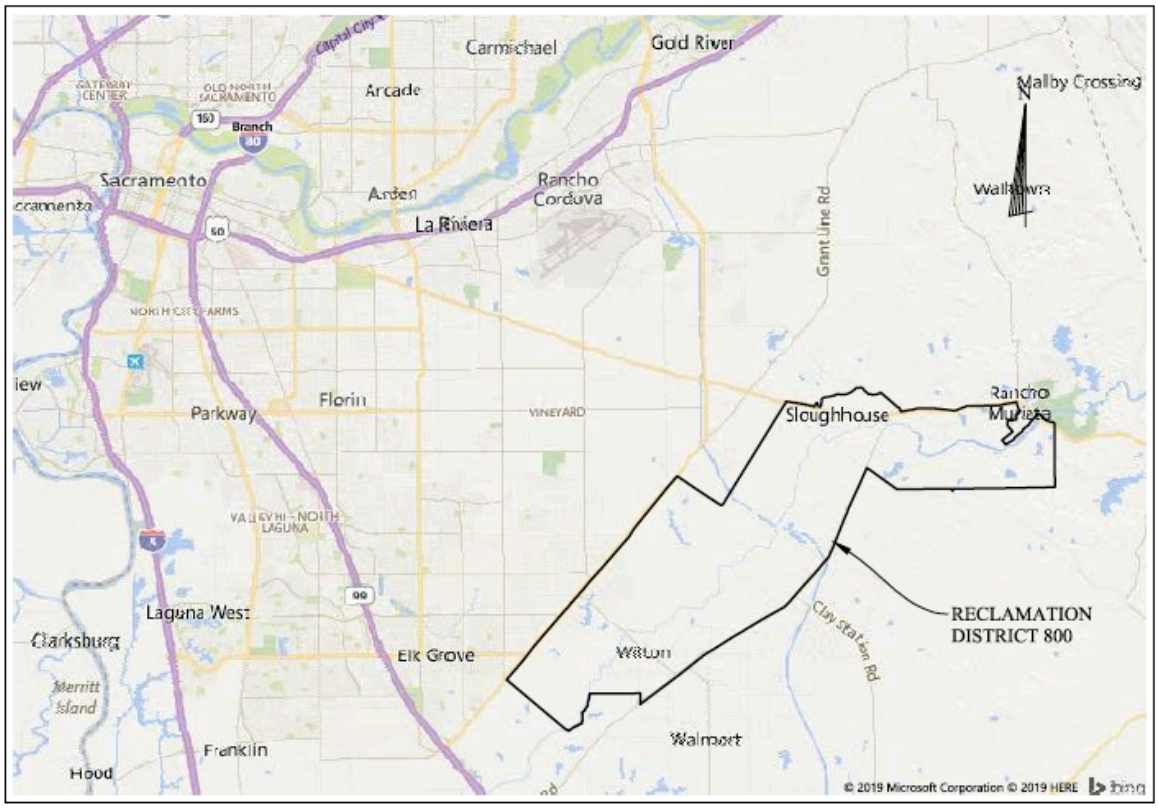

Figure 1. Overall project area encompassing multiple levee repair projects along the Cosumnes River.

Figure 2. Aerial imagery and area of effect map for the Cosumnes Road Upstream project area. Imagery provided by Moore Biological Consultants.

Figure 3. Aerial imagery and area of effect map for the Mile Marker 19 project area. Imagery provided by Moore Biological Consultants.

Figure 4. Aerial imagery and area of effect map for the Keating Road project area. Imagery provided by Moore Biological Consultants.

Figure 5. Aerial imagery and area of effect map for the Fig Road Upstream project area. As previously noted, none of this work occurs in stream and is not evaluated in this assessment. Imagery provided by Moore Biological Consultants.

Figure 6. Aerial imagery and area of effect map for the Meiss Road Downstream project area. Imagery provided by Moore Biological Consultants.

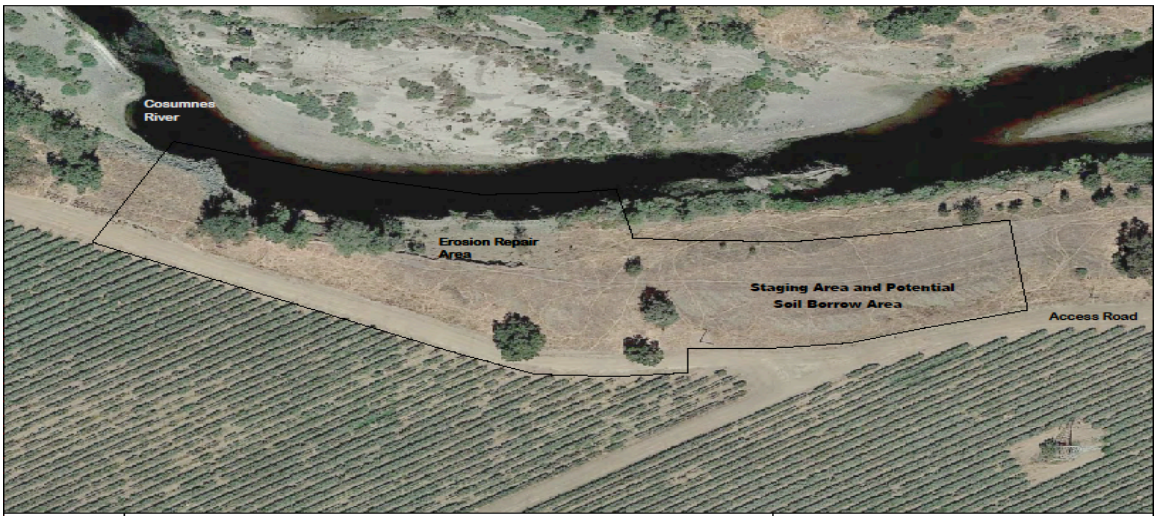

Figure 7. Aerial imagery and area of effect map for the Meiss Road Upstream project area. Imagery provided by Moore Biological Consultants.

Cosumnes River Streamflow

As previously described, the Cosumnes River watershed is limited in scale, with the drainage area encompassing only 1,200 square kilometers and is heavily reliant on rainfall for surface water flows, as much of the basin occurs at low elevation (Nobriga 1995). Further, as there are no major dams on the mainstem Cosumnes River or its three forks, temperatures and flow have large fluctuations during the year (Bottorff 1990). Historical flow data for the Cosumnes River is available from the California Data

Exchange Center (CDEC) gauge at Michigan Bar Road bridge in Sacramento County (CDEC gauge: MHB). In the last several years, California has experienced drastic changes in water year types throughout the Central Valley (Table 3), but similar to observations described in Mullen et al. (1993), flows typically declined throughout the spring and summer, and often are reduced to or near zero between August and October (Figure 8).

Table 3. A summary of the last several water year types in California's Central Valley. Note: a water year runs between Oct 1 and Sept 30 of the following year; the water year is defined as the year in which the described ends.

Water Year	Sacramento Valley Water Year Type	San Joaquin Valley Water Year Type
2014	Critically Dry	Critically Dry
2015	Critically Dry	Critically Dry
2016	Below Normal	Dry
2017	Wet	Wet
2018	Below Normal	Below Normal

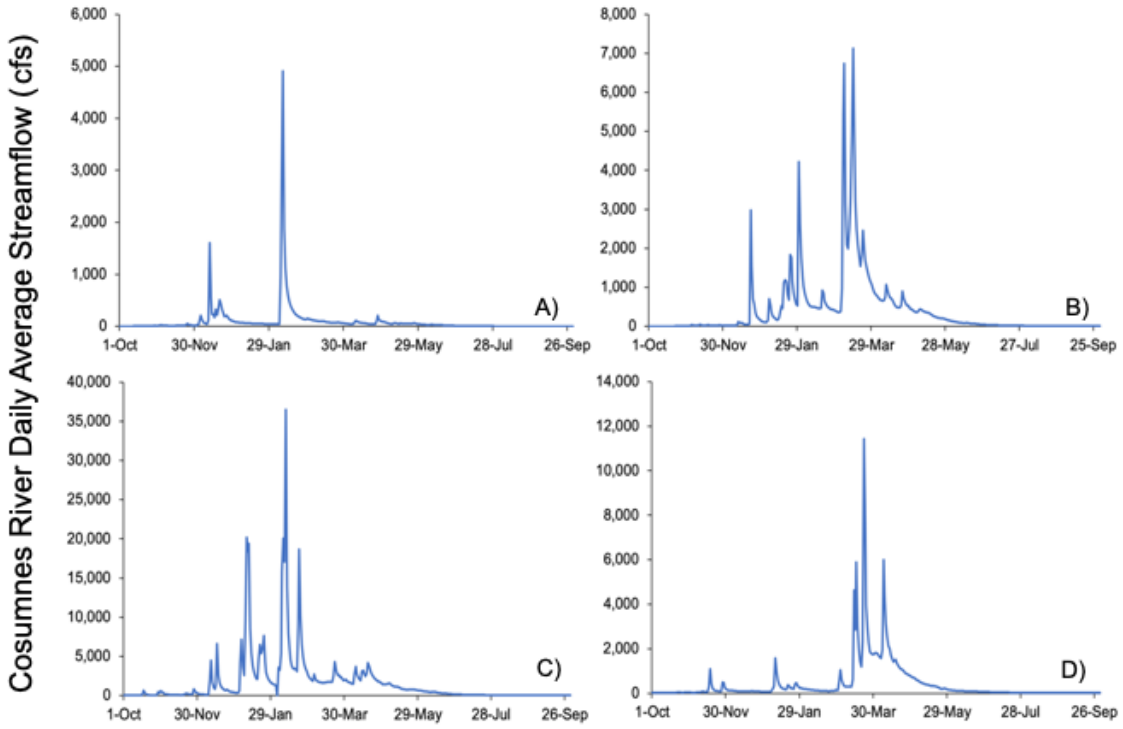

Figure 8. Daily average Cosumnes River streamflow as measured at Michigan Bar for the last four water years (e.g., 2015-2018). A) WY 2015; B) WY 2016); C) WY 2017; D) WY 2018.

Fisheries Resources

Based on data available from the UC Davis PISCES database (UC Davis 2017), native fish known to currently occur or were historically present near the project area include

multiple runs of Chinook salmon, Central Valley steelhead, hardhead, threespine stickleback, prickly sculpin, riffle sculpin, Sacramento blackfish, Sacramento perch, Sacramento pikeminnow, speckled dace, Sacramento splittail, Sacramento sucker, thicktail chub, and Western brook lamprey (Table 4).

Non-native species that may be present include black bullhead, bluegill sunfish, brown bullhead, brown trout, common carp, golden shiner, goldfish, green sunfish, largemouth bass, redear sunfish, redeye bass, smallmouth bass, spotted bass, wakasagi, Western mosquitofish, and white crappie.

Table 4. Non-ESA-listed native fish species that may potentially utilize habitat within the project area, irrespective of temporal distribution.

Common Name	Species	Origin	Demersal/Pelagic
Chinook salmon – Central Valley fall/late fall-run ESU	*Oncorhynchus tshawytscha*	Native	Pelagic
Hardhead	*Mylopharodon conocephalus*	Native	Pelagic
Prickly sculpin	*Cottus asper*	Native	Demersal
Riffle sculpin	*Cottus gulosus*	Native	Demersal
Sacramento blackfish	*Orthodon microlepidotus*	Native	Pelagic
Sacramento perch	*Archoplites interruptus*	Native	Pelagic
Sacramento pikeminnow	*Ptychocheilus grandis*	Native	Pelagic
Speckled dace	*Rhinichthys osculus*	Native	Demersal
Sacramento splittail	*Pogonichthys macrolepidotus*	Native	Pelagic
Sacramento sucker	*Catostomus occidentalis*	Native	Demersal
Thicktail chub	*Gila crassicauda*	Native	Pelagic
Threespine stickleback	*Gasterosteus aculeatus*	Native	Pelagic
Western brook lamprey	*Lampetra richardsonii*	Native	Demersal

Two readily accessible government websites were used to determine the occurrence of critical habitat designations and fish species listed as threatened or endangered by the Endangered Species Act (ESA). The first source was a project-planning tool (Information for Planning and Conservation; IPaC) provided by the U.S. Fish and Wildlife Service (USFWS 2015; accessed April 13, 2020). The location used in the planning tool was a 25-square mile area encompassing the designated project areas in the Cosumnes River and near the town of Wilton, CA. The IPaC data viewer and automated reporting system indicated that there is no critical habitat designation for delta smelt located within the project boundaries.

The second source utilized was the NOAA Fisheries website (NOAA 2015; accessed on April 13, 2020). GIS shapefiles were downloaded from the website and viewed using Google Earth Pro software. All shapefiles of critical habitat designations for listed Chinook salmon stocks, Central Valley steelhead, and sDPS green sturgeon were

downloaded. Examination of the shape files revealed that no critical habitat designations were found in the project areas or the Cosumnes River at large.
Based on this information, this technical memorandum focuses on the following species (Table 5):

- Chinook salmon (*Oncorhynchus tshawytscha*)
- Central Valley steelhead (*Oncorhynchus mykiss*)
- sDPS Green Sturgeon (*Acipenser medirostris*)

Table 5. Federal/State endangered or threatened species summary table for the project area.

Species	Listing Status[1]	Listing Agency	Potentially Present During Construction	Potential Habitat Present	Potential to be Impacted
Central Valley steelhead (adult)	FT	USFWS	N[m2]	N	N
Central Valley steelhead (juvenile)	FT	USFWS	N[m3]	N	N
Central Valley spring-run Chinook salmon (adult)	FT / ST	USFWS / CDFW	N[4]	N	N
Central Valley spring-run Chinook salmon (juvenile)	FT / ST	USFWS / CDFW	N[5]	N	N
Sacramento River winter-run Chinook salmon (adult)	FE / SE	USFWS / CDFW	N[6]	N	N
Sacramento River winter-run Chinook salmon (juvenile)	FE / SE	USFWS / CDFW	N[7]	N	N
Green sturgeon (adult)	FT	USFWS	N[8]	N	N
Green sturgeon (juvenile)	FT	USFWS	N[9]	N	N

[1] Listing status: F = Federal, S = State, T= Threatened, E = Endangered; [m] Species is migratory and may be present short-term during migration; [2] Hallock 1989, [3] Moyle 2008, [4] Cramer and Demko 1997, [5] Yoshiyama et al., 1998, [6] Hallock and Fisher 1985, [7] Stevens 1989, [8] Hueblein et al., 2009, [9] USFWS 1995

Chinook salmon

While critical habitat designations were not found for winter- or spring-run (WR or SR) Chinook salmon near the location of the project, we chose to provide brief descriptions of each run's potential to occur near the project. Sacramento River Evolutionarily Significant Unit (ESU) WR Chinook were listed as "endangered" under the ESA in January 1994 (NOAA 1994) and this designation is maintained to this day (NOAA 2016a). WR Chinook salmon exclusively rely on the upper Sacramento River system for spawning, rearing, and migration.

Central Valley Spring-run (SR) Chinook salmon were originally listed as "threatened" under the ESA in September 1999 (NOAA 1999). An updated review in April 2016 maintained the "threatened" designation (NOAA 2016b). The NOAA ESU definition specifically refers to naturally spawned SR Chinook salmon originating from the Sacramento River and its tributaries, and SR Chinook salmon from the Feather River Hatchery Spring-Run Chinook Program.

In recent years, the San Joaquin River Restoration Program (SJRRP) has taken steps to reintroduce SR Chinook salmon to the San Joaquin River, and the San Joaquin has since been designated critical habitat for SR Chinook salmon (NOAA 2005a). As part of the SJRRP, juvenile SR Chinook salmon have been released into the San Joaquin River just upstream of the confluence with the Merced River annually beginning in 2015. The released San Joaquin River SR Chinook salmon are considered an "experimental population" under Section 10(j) of the Endangered Species Act. However, progeny of individuals that survive to adulthood and successfully reproduce are considered protected.

Fall-run (FR) Chinook salmon are the most abundant run in the San Joaquin River basin and are not currently listed under the ESA. They are, however, listed as a Species of Special Concern (SSC) under the California Endangered Species Act (CESA) due to concerns about population size and their dependence on hatcheries. The San Joaquin River, to which the Cosumnes River drains, acts as a migratory corridor for FR Chinook salmon, and fish would be quickly passing through the corridor, far downstream of the project areas. There is a substantial FR Chinook salmon population that utilizes the Mokelumne River and annual monitoring of adult migration occurs at the fish ladder at the Woodbridge Irrigation District Diversion Dam.

Potential to be exposed to project changes

Chinook salmon (all runs) are unlikely to occur in the affected area as the project areas offer low habitat value for rearing and little potential spawning habitat for anadromous salmonids. WR Chinook salmon are highly unlikely to be exposed to project changes or activities due to their heavy reliance on the upper Sacramento River system for spawning, rearing, and migration.

Similarly, SR Chinook salmon are also primarily relegated to the Sacramento River system throughout the freshwater portion of their lifecycle. In recent years, the SJRRP has taken steps to reintroduce SR Chinook salmon to the San Joaquin River, and portions of the San Joaquin River are designated critical habitat for SR Chinook salmon (NOAA 2005a). As part of the SJRRP, juvenile SR Chinook salmon have been released into the San Joaquin River just upstream of the confluence with the Merced River annually beginning in 2015. The released San Joaquin River SR Chinook salmon are considered an "experimental population" under Section 10(j) of the Endangered Species Act. However, progeny of individuals that survive to adulthood and successfully reproduce are considered protected. Given so few juveniles are released on an annual basis and poor survival during juvenile migration, the likelihood of adults returning is very low. The likelihood of impacting juveniles, if any are produced, is even more unlikely given (1) an expectation of low to no adults returning; (2) poor juvenile survival from the spawning grounds in the tributaries to the migratory corridor; (3) the overall distance of the project area from the primary spawning and rearing habitat available in the San Joaquin River

Restoration Area; and (4) the elevated summer temperatures experienced in the Cosumnes River would preclude adult SR Chinook from holding there over the summer period (Nobriga 1995).

FR Chinook salmon utilize the nearby San Joaquin River; however, this is primarily as a migratory corridor as they move through the Delta and into the upper tributaries (e.g., Mokelumne, Stanislaus, Tuolumne, Merced, etc.) for spawning and rearing. As referenced, there is also a substantial FR Chinook salmon population that utilizes the Mokelumne River. Observations of adult migration in the Mokelumne typically occurs between September and February (EBMUD 2015). Data from rotary screw traps in the tributaries, including the Mokelumne (EBMUD 2013), and from the Mossdale Trawl show that most juvenile Chinook salmon outmigrate between late January and early June. Adult FR Chinook salmon typically begin their migration to spawning grounds in the San Joaquin River tributaries in early September and continue until late December. Due to the limited amount of flow available in the Cosumnes River during the early portion of the migratory period, it is highly unlikely that FR Chinook salmon would be encountered in the project area during the primary summer work window.

Nobriga (1995) notes that CDFG regional files (Region 2, Rancho Cordova) show that the Cosumnes had historically supported a FR Chinook salmon run at least up to the Michigan Bar Road Bridge. In the 1950s and 1960s, the run averaged roughly 1,000 fish, but had declined to 100-200 fish by the mid-1980s. There were no reports of a Cosumnes River salmon run during the 1990s. Further, it notes that the Cosumnes River has generally been considered incapable of supporting SR Chinook salmon due to excessive summer water temperatures. Snider and Reavis (2000) noted that since the mid-1970s, estimated escapement of FR Chinook spawners reached 1,000 fish only once and has generally been 200 fish or less. They concluded that abundance declined due to substantial flow reductions during critical salmon migration periods and inadequate spawning and rearing habitat.

Central Valley Steelhead

Steelhead (*Oncorhynchus mykiss*) is a species of salmonid native to California, commonly known by two names: steelhead (the anadromous form) and rainbow trout (the resident/freshwater form). The California Central Valley steelhead has been listed as "threatened" under the ESA since January 2006. Adult anadromous steelhead can be expected to enter freshwater streams between August and November; however, spawning typically takes place between December and April. Juveniles begin to emerge from late winter to summer and will then spend between one and three years in freshwater before emigrating in the spring (Williams 2006). Recent habitat modeling conducted by Lindley et al. (2006) suggests that waterways on the floor of the Central Valley are unfavorable spawning and rearing locations for steelhead due to their excessively high summer temperatures. This same study also noted that many of the small tributaries of the San Joaquin are generally too degraded to support viable populations.

Abundance data reveal that populations in the Central Valley are relatively low for naturally occurring steelhead. *O. mykiss* counts at the Red Bluff Diversion Dam from 1967 to 1993 revealed a precipitous decline in returns to the upper Sacramento River. While more recent data are scarce, an updated report from NOAA Fisheries (Good et al. 2005) estimated an average of 3,628 naturally spawning female steelhead occurring in the Central Valley between 1998 and 2000 based on the adipose-fin-clip ratio.

The 2014 Salmonid Recovery Plan notes that the Cosumnes River is listed as having both historic and current populations of steelhead, but an "uncertain" population extinction risk. As such, it has been designated as a Core 3 stream. A Core 3 stream is one where populations are present on an intermittent basis and are characterized as reliant on nearby population for their continued existence. This designation is unsurprising as the California Department of Fish and Wildlife operates a fish hatchery on the nearby Mokelumne River, and some straying of returning fish should be anticipated.

Potential to be exposed to project changes

The potential impacts from the project to steelhead would be low to none. Adult migration monitoring at the Woodbridge Irrigation District Dam have documented the presence of adult *O. mykiss* in the lower Mokelumne River, being observed between September and March (EBMUD 2015), however, there is little documentation of these adults utilizing the Cosumnes. Juvenile outmigrants have been observed in the Mokelumne between mid-December and Mid-June in recent years, however, no specific data is available for the Cosumnes River. Considering the low number of observations within the Cosumnes River, the predominate midchannel habitat utilization of migrating adult *O. mykiss*, as well as the poor-quality habitat available for spawning and rearing in the project area, it can be assumed that any *O. mykiss* use of areas affected by the project would be highly limited. Individual *O. mykiss* occurring in the area may be limited to those straying from the primary migratory corridor. The timing of adult migration to spawning grounds and juvenile emigration may potentially overlap with the timing of the project activities. However, if steelhead were to occur in the area, the adult and intermediate life stages of these fish are active swimmers and would likely avoid any area impacted by erosion repair activities.

Much like Chinook salmon, *O. mykiss* presence may be limited by elevated water temperatures. Therefore, *O. mykiss* presence would be highly unlikely during the summer period as flows are reduced to non-existent in some habitats, leading to excessive water temperatures. While no water temperature data for locations near the project area are readily available, Nobriga (1995) notes that the Cosumnes River had been considered to be incapable of supporting a steelhead run due to excessive summer temperatures.

The relative footprint of the individual project areas should have negligible impacts on habitat available for *O. mykiss* smolts that may be entering or leaving the project area. Therefore, the proposed project should have minimal impact on local *O. mykiss*

populations. Following project implementation, aquatic habitats adjacent to the project areas will be comparable to those under existing conditions, as fringe habitats would likely remain unaffected, and therefore will continue to provide minimal quality habitat for *O. mykiss*.

Green Sturgeon

Green sturgeon (*Acipenser medirostris*) are an iteroparous, anadromous species that reproduces from March to July in California, with a peak spawning period from mid-April to mid-June (Emmett et al. 1991, Poytress et al. 2009). Spawning adults prefer deep (>10 ft.), cool (46–57°F), and fast-flowing water (Moyle 2002). Eggs usually hatch within two weeks (Moyle 2002) and larvae probably reside near natal sites (Kynard et al. 2005). Freshwater rearing juveniles prefer elevated flows and temperatures between 52–64°F (Cech et al. 2000; Van Eenennaam et al. 2005). Juveniles migrate downstream to the estuary during summer and fall after typically spending one year in the freshwater environment. Juveniles rear in estuarine nursery grounds, usually until Age 3, before migrating to marine waters (Nakamoto et al. 1995). Subadults require approximately 6–10 years to become sexually mature (Nakamoto et al. 1995). Post-spawned adults likely require a two to four-year period before their next reproductive effort (NOAA 2005b).

The southern Distinct Population Segment (sDPS) of North American green sturgeon was listed as "threatened" under the ESA in 2006 (NOAA 2006). This listing status was recently reviewed and found that no change was needed (NOAA 2015b) Its designated critical fresh- and brackish-water habitat in California includes portions of the Sacramento, lower Feather, and lower Yuba rivers; the Sacramento-San Joaquin Delta; and the Suisun, San Pablo, and San Francisco bays (NOAA 2009). The mainstem San Joaquin River above the Stanislaus River confluence is not considered critical freshwater habitat because sturgeon do not appear to occupy the area in a viable manner (NOAA 2009). According to the CDFW Sturgeon Report Card data, only six green sturgeon were reported between 2008 and 2012 upstream of Stockton (Jackson and Van Eenennaam 2013). However, what appeared to be a single green sturgeon was recently observed in upstream habitats of the Stanislaus River, a tributary of the San Joaquin River far upstream of the project location (Observed by FISHBIO staff, November 2017); this siting was confirmed by Cramer Fish Sciences by using eDNA (Anderson et al. 2018). Furthermore, no green sturgeon eggs were detected from March to May 2012 using egg mats positioned at four sites between Sturgeon Bend (downstream of confluence with Stanislaus River) and Grayson Road Bridge (upstream of the confluence with Tuolumne River; Jackson and Van Eenennaam 2013).

Potential to be exposed to project changes

The proposed project is highly unlikely to impact sDPS green sturgeon. As previously stated, little to no spawning occurs in the San Joaquin Basin. The project areas are located well outside the primary Sacramento River migratory corridor used by both

juveniles and adults. It should also be noted that both adults and juveniles are mobile swimmers that would largely be able to leave any area disturbed by project implementation.

Currently, the overall depth of the Cosumnes River should be considered ill-suited and would preclude green sturgeon from the environment. The mainstem San Joaquin River, to which the Cosumnes is a tributary, would appear to have locations suitable for green sturgeon, but recent research calls this into question. Israel and Klimley (2008) note that channelization of the estuary has likely negatively impacted the amount of subtidal and intertidal habitat available for green sturgeon foraging. Furthermore, they note that only 4.6% of total river kilometers in the Central Valley have suitable spawning habitat characteristics, of which only 12% is currently utilized by these fish. Therefore, the presence of adult or juvenile green sturgeon in the upper tributaries and the project area is highly unlikely.

If adults were present, they would likely occupy the deepest portion of the river channel to seek cooler temperatures. Spawning success for any adults is highly unlikely during the summer months, as Van Eenennaam et al. (2005) state that temperatures greater than 23°C (73.4°F) lead to complete egg mortality prior to hatching. As the work window is scheduled for the summer, the proposed project should have no impact on populations of sDPS green sturgeon. Following the implementation of the project, aquatic habitats adjacent to the project area will be comparable to those under existing conditions, providing minimal habitat for sDPS green sturgeon.

Avoidance and Mitigation Recommendations

The planned timing for erosion repair activities during the summer and early fall is an appropriate work window that provides adequate protection for special status fisheries resources that may occur near the project areas. The presence of species of concern is expected to be minimal, if any, during the summer months when construction is scheduled to take place; based on available streamflow data and characteristics, it is likely that one or more of the work areas will be entirely dry. As described above, the species that may be present during activities (particularly salmonids; *O. tshawytscha* and *O. mykiss*) are strong swimmers that can leave the temporarily disturbed zone if they happen to enter one of the project sites.

The erosion repairs will have minimal impacts on aquatic resources in and downstream of the work areas. The current habitat provided within the project area offers little to no utility to the primary species of concern. Additionally, though historic populations of spring-run Chinook salmon and sDPS green sturgeon occurred in the San Joaquin River, they are currently almost exclusively distributed throughout the Sacramento River, aside from the experimental spring-run Chinook population introduced in 2015 and several individual green sturgeon observed in the lower reaches of the Stanislaus River, a tributary of the San Joaquin River well upstream of the Cosumnes River.

The removal of 1.43 acres of riparian forest vegetation is not viewed as a significant reduction of canopy that enhances the habitat of special-status fish. Most of the vegetation that will be removed is relatively high on the riverbanks and does not shade the river corridor.

Fine sediments may be incidentally introduced to the river as a result of project activities, but their effect should be negligible. Best management practices utilized during construction will be implemented to intercept and capture sediment prior to entering waters of the U.S., as well as erosion control measures along the perimeter of all work areas. A proposed turbidity standard for the adequate protection of fish and wildlife habitats in California states that turbidity (measured in NTUs) should not exceed 20% above natural background turbidity (Bash et al. 2001). Any increase in turbidity resulting from erosion repair activities is not likely to exceed background levels commonly observed during a rain event. If excessive turbidity is observed and persistent, work may be halted and suspended sediments will be allowed to dissipate prior to continuing work.

The table below (Table 6) provides a guideline for construction activities to best protect listed species and shows the potential for each species of concern to be present in the project area on a bi-monthly timescale. Based on timing of potential presence alone, the period between mid-June to mid-September would provide the greatest protection for ESA listed species. Given the environmental setting of the project, we find no significant increase in risk of exposure under the proposed schedule of project activities occurring in either the late summer or early fall if additional time is required to implement the project.

Table 6. The potential of each species of special concern, their pertinent life stages, and their likelihood of occurrence in the project area.

Species	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec	
Steelhead (adult)																								
Steelhead (juvenile)																								
Spring-Run Chinook salmon (adult)																								
Spring-Run Chinook salmon (juv.)																								
Fall-Run Chinook salmon (adult)																								
Fall-Run Chinook salmon (juv.)																								
Green sturgeon				1	1	1	1	1	1	1	1	1												

Note: White boxes = potentially present in the project area; Gray Boxes = unlikely to be present in the project area
[1] Species not documented in San Joaquin River; however, this is the period when adults typically migrate to spawn.

Summary and Conclusions

This review assessed the potential for protected fish species to be exposed to the project, the possible effects of the project on those fish species, and recommendations to help avoid and mitigate any potential negative impacts. Overall, the project site features characteristics of a relatively disturbed area, provides low amounts of suitable habitat for

cold-water fishes, and routinely intermittently dries during the summer periods, even in wet water year types.

Review of available reports and data regarding the project area identified three species for further assessment: Chinook salmon, steelhead, and green sturgeon. Chinook salmon and steelhead both use the nearby San Joaquin River as a migratory corridor but are unlikely to rear or spawn within the project sites located upstream in the Cosumnes River. Green sturgeon are similarly unlikely to use habitat near the project areas and lack a major source population in the nearby San Joaquin River, further reducing their potential for being present.

Following project completion, aquatic habitats within the Cosumnes River will be comparable to those under existing conditions, providing minimal habitat for listed species. In conclusion, this review identified minimal potential for sensitive fish species to be present in the project area during the work window and found that any effects resulting from the erosion repairs would likely be negligible on fish and their habitat.

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Attachment A

Site Photos from the Cosumnes River Site Visit

Meiss Rd. Upstream and Downstream, Keating Rd.,
Mile Mark 19, and Cosumnes Rd. Upstream

June 2019

Figure 1-A. Photo from the downstream end of the Meiss Road Upstream site. This site exhibits a wide sandy beach on the north bank and evidence of previous erosion repair on the south bank.

Figure 2-A. Looking downstream at the Meiss Road Upstream site. Vegetation along the south bank consists of shrubs and willows and offers little shaded riparian at current flows.

Figure 3-A. Photo from the downstream end of Meiss Road Downstream site. While the project area features a small riffle at the upstream end, adding habitat complexity, there is little in the way of shaded riparian area and substrates primarily consisted of sand and silt with sparse cobble.

Figure 4-A. Photo from levee at Keating Road site. Significant erosion at levee toe had led to the formation of sandy substrates in "upland" area. Vegetation along both banks consists primarily of shrubs and willows offering little shaded riparian area.

Figure 5-A. Photo from water's edge at Keating Road site. Inputs from erosion along both banks has led to excessive sedimentation in certain areas. Substrates at this site consisted primarily of sand, silt, and mud.

Figure 6-A. North bank, looking downstream at the Mile Marker 19 site. The banks here were near vertical and dominated by various common riparian vegetation. Substrates in this area consisted primarily of sand, silt, and mud.

Figure 7-A. Several compacted cars lined the bank at the Mile Marker 19 site. Most likely placed as erosion control in a previous era.

Figure 8-A. Looking upstream from the Cosumnes Road Upstream site. Clear evidence of significant erosion at the top of the levee. Little substantial vegetation on the levee's slope to help mitigate erosive forces during extreme flow events.

APPENDIX D
CULTURAL RESOURCES STUDY

The cultural resources study for the project contains confidential information and is therefore not included in the public review version of this document. The cultural resources study is available to qualified reviewers at the offices of Wagner and Bonsignore, RD 800 District Engineers.