County Road 66B over Colusa Drain Bridge Replacement Project

Draft Initial Study / Proposed Mitigated Negative Declaration

BRLO-5911(063)

Lead Agency:

Glenn County Agency of Public Works
P.O. Box 1070 / 777 N. Colusa Street
Willows, CA 95988

September 2021

Prepared By:

Glenn County Public Works Agency – Engineering
Lead Consultant: Quincy Engineering
Supporting Consultant: Gallaway Enterprises

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Table of Contents

List of Figures

List of Tables

List of Appendices

List of Acronyms

AASHTO	American Association of State Highway Transportation Officials
GCAPCD or Air District	Glenn County Air Pollution Control District
BMPs	Best Management Practices
BSA	Biological Survey Area
CAP	Climate Action Plan
Caltrans	California Department of Transportation
Cal Water	California Water Service Company
CBC	California Building Code
CC	Community Commercial
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFGC	California Fish and Game Commission
CFR	Code of Federal Regulations
County	Glenn County
CNDDB	California Natural Diversity Database
CRHR	California Register of Historical Resources
CRWQCB	California Regional Water Quality Control Board
CVFPB	Central Valley Flood Protection Board
CWHR	California Wildlife Habitat Relationships
dBA	decibel
DTSC	Department of Toxic Substances Control
EIR	Environmental Impact Report
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
ft	Feet
GHG	Greenhouse gas
ISA	Initial Site Assessment
LID	Low Impact Development
LRA	Local Responsibility Area
LSA	Limited Soils Assessment
MBTA	Migratory Bird Treaty Act
MND	Mitigated Negative Declaration
MMRP	Mitigation Monitoring and Reporting Program
NAHC	Native American Heritage Commission
NEIC	Northeast Information Center
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollution Discharge Elimination Permit
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NOx	Oxides of Nitrogen
OWOUS	Other Waters of the United States
PGA	Peak Ground Acceleration
Phase I ESA	Phase I Environmental Site Assessment
PM	Parcel Map
$PM_{2.5}$	Fine Particulate Matter
PM_{10}	Respirable Particulate Matter
RC	Resource Constraint
REC	Recognized Environmental Condition
ROG	Reactive Organic Gases
RPW	Relatively Permanent Water
R3	Medium High Density Residential
SDC	Caltrans Seismic Design Criteria
SLIC	Spills, leaks, investigations and cleanup

SMP	Soils Management Plan
SNC	Sensitive Natural Community
sq ft	Square feet
SWPPP	Stormwater Pollution Prevention Plan
SRA	State Responsibility Area
TNW	Traditional Navigable Waters
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
UST	Underground Storage Tank
VMT	Vehicle-miles-traveled

Draft Initial Study / Proposed Mitigated Negative Declaration
Environmental Coordination and Review

I. PROJECT DESCRIPTION

A. Project Title: County Road 66B over Colusa Drain Bridge Replacement Project - Bridge No. 11C0068 - BRLO-5911(063)

B. Project Sponsor/Lead Agency:
Glenn County Public Works Agency
777 N Colusa Street
Willows, CA 95988

Property Owners:
Glenn County Public Works Agency
777 N Colusa Street
Willows, CA 95988

C. County Contact: Talia Richardson PE, Interim Director
Glenn County Public Works Agency
777 N Colusa Street
Willows, CA 95988
(530) 934-6530

D. Project Location: The Project is located on County Road (CR) 66B at its crossing over the Colusa Drain in Glenn County, California, Latitude 39.428501, Longitude -122.05000. (**Figure 1 – Project Location Map**).

E. Assessor's Parcel Number (APN): The project will be located within the existing public right-of-way and narrow portions of APNs 013-250-021, 013-250-037, and 013-210-034, which will result in minimal right-of-way acquisitions.

F. Project Size: The project is approximately 1,400 feet in length totaling approximately 4.6 acres in size.

G. General Plan Designation: Public Right-of-Way (ROW), and Intensive Agriculture

H. Zoning: Public ROW, FS-80 (Farmland Security Zone – minimum 80 acres), AP-80 (Agricultural Preserve Zone – minimum 80 acres), AE-40 (Exclusive Agricultural Zone – minimum 40 acres

I. Environmental Setting: The project site is located on CR66B in the southeastern area of Glenn County, California, within the United States Geological Survey (USGS) Princeton USGS Quadrangle, within the Larkin Child Land Grant in the vicinity of Section 11, Township 18N, Range 2W.

The Project is located along an existing roadway within the County of Glenn's right-of-way. The survey area is characterized as asphalt roadway, gravel road shoulder, a narrow strip of disturbed annual grassland dominated by ruderal vegetation, and private land used for agricultural purposes. The adjacent agricultural land is traditionally used for rice production. Also, the Colusa Drain flows north to south through the survey area. The vegetation within the survey area is frequently managed either mechanically (as in the Colusa Drain and the rice fields) or via herbicides.

The average annual precipitation is 17.95 inches and the average annual temperature is 61.5° F (WRCC 2018) in the region where the survey area is located. The Project site sits at approximately 74 feet above mean sea level and is sloped between 0-1 percent. Soils within the survey area are silty clays or clay loams with a deep restrictive layer located more than 80 inches in depth.

J. Project Description:
The Glenn County Public Works Agency, in cooperation with the Federal Highway Administration (FHWA) and the California Department of Transportation (Caltrans), is proposing to replace

Bridge No. 11C-0068 on County Road 66B over Colusa Drain. The primary objective of this project is to replace the existing structurally deficient bridge with a new wider structure. The project is funded through the Federal Aid Highway Bridge Program (HBP) and Federal Toll Credits. The bridge was last inspected in February 2016 and found to be structurally deficient with a sufficiency rating of 55.7, which qualifies it for rehabilitation under the HBP program. However, bridge replacement can be considered an appropriate "rehabilitation" option if it proves to be the most effective solution, which is the case for this project. FHWA does not typically authorize rehabilitation projects for structurally deficient timber bridges.

The project site is located approximately 2 miles west of State Route 45 in the south eastern portion of Glenn County near the town of Princeton, Colusa County. Traffic is primarily local and supports the agricultural operations in the general vicinity. County Road 66B is bordered by rice fields and crosses the Colusa Drain at the project location. Reclamation District 2047 constructed the Colusa Drain in 1919 originally to serve as a bypass. In addition to agricultural water, the drain now conveys both summer and winter flows to the Knights Landing outfall gates on the Sacramento River in Yolo County.

The existing bridge was originally constructed in 1940 and is approximately 54' long and 20' wide with a 19' clear width. It is a three span timber structure supported by reinforced concrete abutments and piers founded on driven cast-in-steel-shell (CISS) piles. The outside spans are 16' long and the middle span is 18' long. In 1974, the bridge was rehabilitated with a new timber deck. There are no railings on the existing bridge, only a 6x6 timber curb.

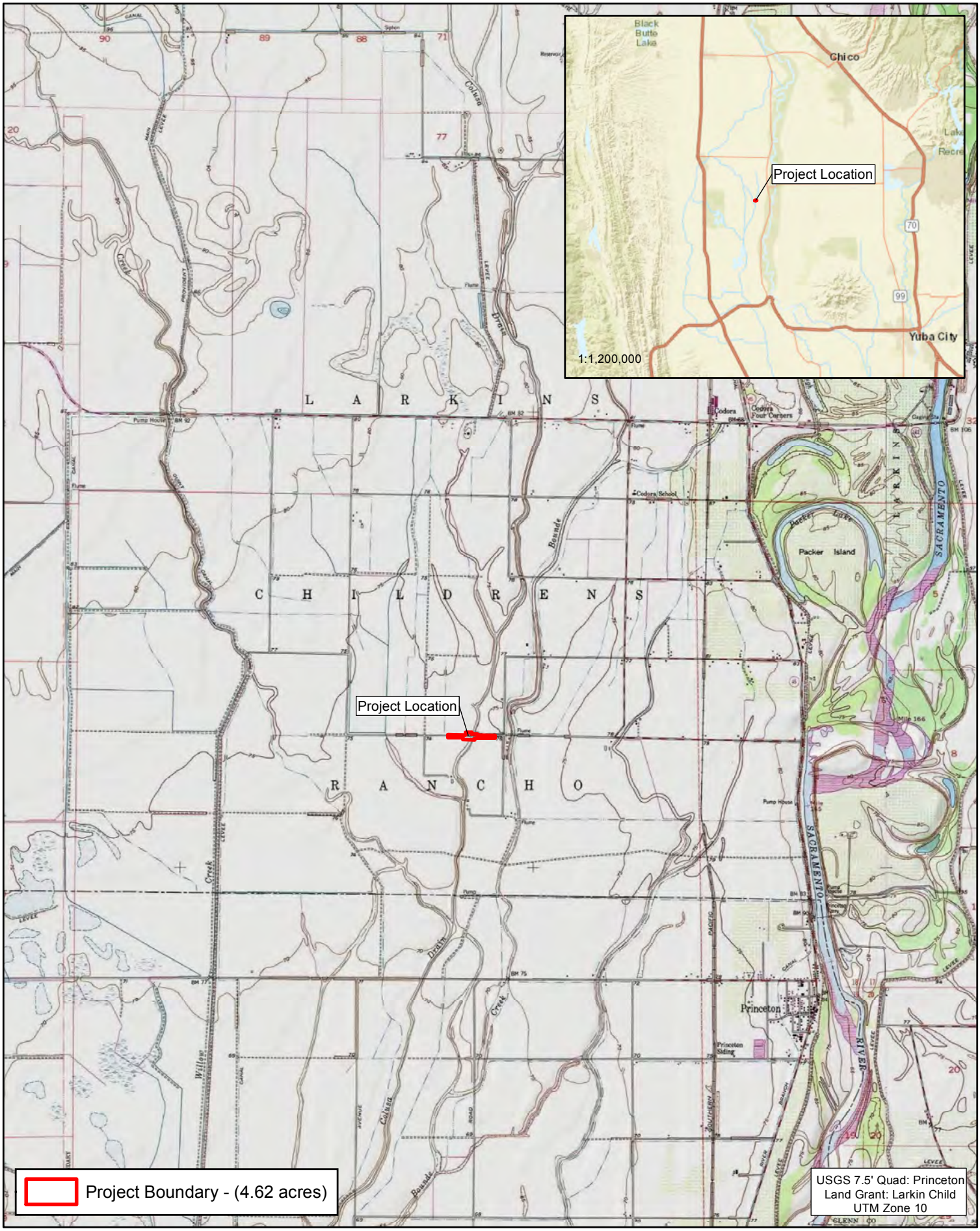
The new roadway for County Road 66B will be designed in accordance with the site constraints, Glenn County design standards, and AASHTO's Policy on Geometric Design of Highways and Streets. Utilizing Glenn County Standards, the roadway width for rural and agricultural developments is two-12' lanes with two-4' unpaved shoulders for a total width of 32'. This width is preferred by the County for traffic safety due to oversized agricultural equipment that frequently uses the road and bridge with the added consideration for the anticipated width increase of modern farm equipment.

There are currently property access points at three of the four corners of the existing bridge that are used by residents and heavy agricultural equipment. These access openings accommodate ingress and egress of a loaded double semi- truck trailers and will remain open during the harvest season. The access road alignments proposed accommodate truck turns for a double semi-truck trailer, but only in a direction away from the bridge. Providing adequate truck turns toward the bridge would require the access roads to be shifted further into the adjacent properties, therefore requiring the take of productive farmland. The proposed access road alignment limits both environmental and R/W impacts.

County Road 66B at the project site will be closed during construction. This will result in an approximate 7-mile detour, but will greatly decrease overall impacts, reduce the R/W need, and will decrease the total construction time. Closing the road will also limit environmental impacts due to the ability to limit construction staging to the existing roadway area.

Glenn County currently has a 60' R/W along centerline of County Road 66B, extending 40' to the north and 20' to the south of centerline **(Figure 2 – Site Plan)**. The area surrounding the bridge is privately owned parcels. It is anticipated that additional R/W will be required for temporary construction easements and R/W acquisitions. Based on preliminary R/W mapping, the following parcels will be affected by the project. In addition to the private properties, it is anticipated that coordination with Provident Irrigation District will be required when dealing with the canal. There are no known utilities or utility easements in the vicinity of the bridge site. Utility coordination or relocation is not anticipated for this project.

Equipment anticipated to be used in construction of the replacement bridge includes dozers, cranes, dump trucks, concrete trucks, concrete pumps, and pile driving equipment. Removal of the existing bridge will require excavators, hoe rams, cranes, and dump trucks. Construction is anticipated to be completed in one construction season.



NORTH

1:50,000

0 0.5 1 Miles

Data Sources: ESRI, USGS, Glenn County, Quincy Engineering

County of Glenn CR 66B Bridge 11C-0068
Project Vicinity Map
Figure 1

gallaway ENTERPRISES

GE: #16-078 Map Date: 05/08/18

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K. Public Agency Approvals:

1. California Regional Water Quality Control Board – NPDES and §401 Water Quality Certification
2. California Department of Fish and Wildlife – Streambed Alternation Agreement §1602 and an Incidental Take Permit, as appropriate to satisfy California Endangered Species Act requirements
3. Central Valley Flood Protection Board Encroachment Permit
4. U.S. Army Corps of Engineers – Clean Water Act §404 Permit
5. U.S. Fish and Wildlife §7 Endangered Species Act Consultation

L. Regulatory Guidance

This document is an Initial Study, prepared pursuant to the California Environmental Quality Act (CEQA), for the proposed County Road 66B over Colusa Drain Bridge Replacement Project. This Initial Study has been prepared in accordance with CEQA, Public Resources Code Sections 21000 et seq. and the CEQA Guidelines found in Chapter 14 of the California Code of Regulations (CCR).

An Initial Study is conducted by a lead agency to determine if a project may have a significant effect on the environment. In accordance with CEQA Guidelines Section 15064(a)(1), an environmental impact report (EIR) must be prepared if there is substantial evidence in light of the whole record that the proposed project under review may have a significant effect on the environment. A negative declaration may be prepared if the lead agency finds that there is no substantial evidence, in light of the whole record, that the project may have a significant effect on the environment. A negative declaration is a written statement describing the reasons why a proposed project will not have a significant effect on the environment and, therefore, why the proposed project will not require the preparation of an EIR (CEQA Guidelines Section 15371). Furthermore, CEQA Section 15070 indicates that a public agency shall prepare a proposed negative declaration or mitigated negative declaration for a project subject to CEQA when the initial study has identified significant effects, but:

> (1) Revisions in the project plans or proposals in accordance with the CEQA Guidelines Section 15070(b) made by or agreed to by the applicant before the proposed mitigated negative declaration and initial study is released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur, and
>
> (2) There is no substantial evidence, in light of the whole record before the agency, that the proposed project as revised may have a significant effect on the environment.

M. Native American Tribal Consultation: 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?

☒ **Yes** ☐ **No**

N. Prepared By:

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Rancho Cordova, CA 95670

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117 Meyers Street, Suite 120
Chico, CA 95928

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
XX	XX	XX	XXXXXX	X	X

30% PLANS
REGISTERED CIVIL ENGINEER 11/22/16
DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER XXXXXXXX No. XXXXX Exp. XX/XX/XX CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

QUINCY ENGINEERING
XXXXXXXXX
XXXXXXXXX
XXXXXXXXX

NOTE:

FOR COMPLETE RIGHT OF WAY AND ACCURATE ACCESS DATA, SEE RIGHT OF WAY RECORD MAPS AT THE COUNTY OFFICE.

SURVEY CONTROL DATA

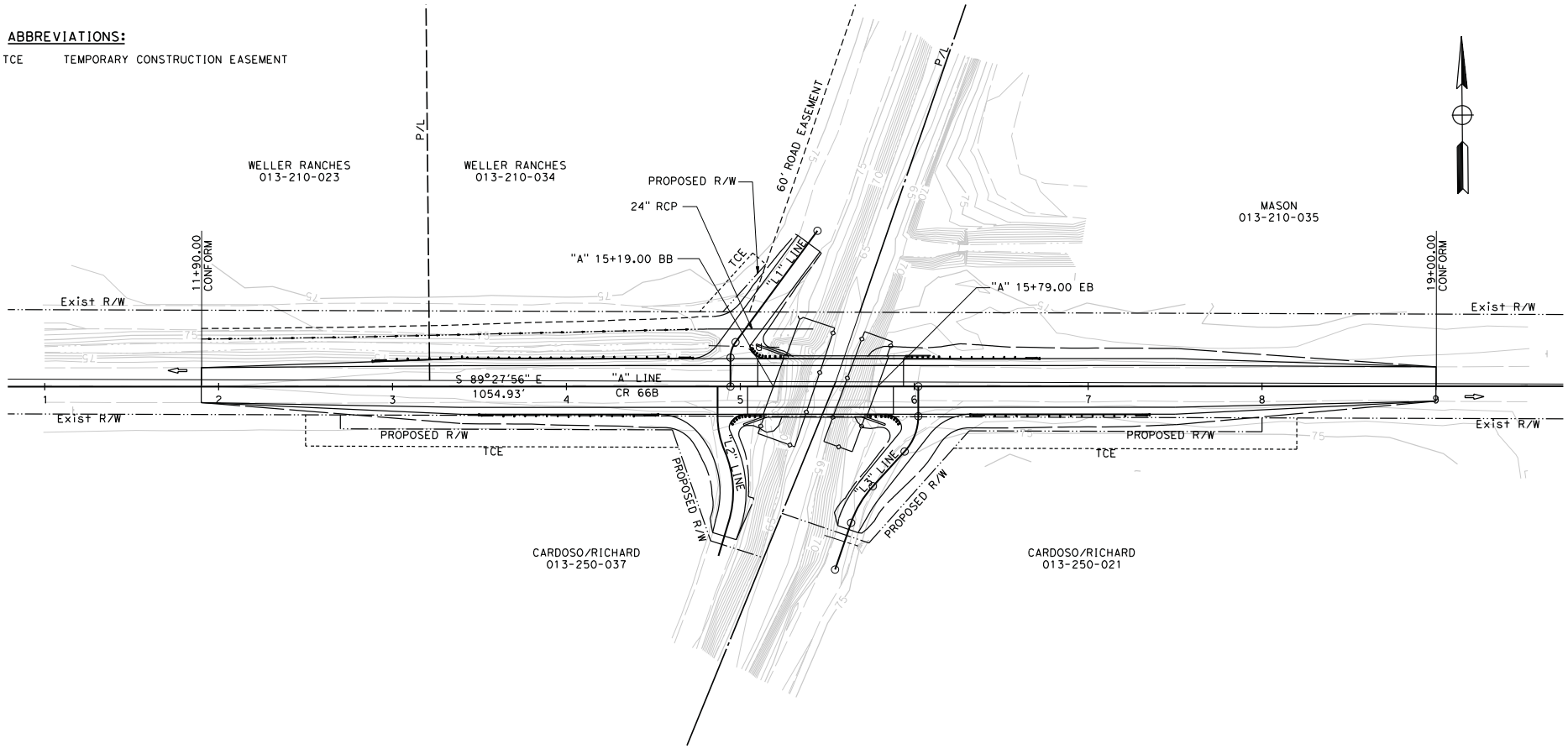
No.	NORTHING	EASTING	ELEV	LINE	STATION	OFFSET	DESCRIPTION
XX	XXXX.XX	XXXX.XX	XXX.XX	"A"	XXX+XX.XX	XX.XX' L+	MONUMENT
XX	XXXX.XX	XXXX.XX	XXX.XX	"A"	XXX+XX.XX	XX.XX' R+	PK NAIL
XX	XXXX.XX	XXXX.XX	XXX.XX	"A"	XXX+XX.XX	XX.XX' LT	DISK

LEGEND:

- DIRECTION OF TRAFFIC
- SURVEY CONTROL POINT
- LIMITS OF RSP

ABBREVIATIONS:

TCE TEMPORARY CONSTRUCTION EASEMENT



LAYOUT

SCALE: 1"=30'

L-1

REVISED BY	DATE REVISED
XX	XX/XX/XX
XX	XX/XX/XX
XX	XX/XX/XX

CALCULATED-DESIGNED BY	CHECKED BY
XXXXXXXXXXXXXX	XXXXXXXXXXXXXX

CONSULTANT FUNCTIONAL SUPERVISOR
XXXXXXXXXXXXXX

XXXXXXXXXXXXX - DEPARTMENT OF TRANSPORTATION
XXXXXXXXXXXXXXX

LAST REVISION 00-00-00
DATE PLOTTED => 2/15/2017
TIME PLOTTED => 8:32:53 AM

BORDER LAST REVISED 7/2/2010
USERNAME => krassip
DGN FILE => S:\Client\Glenn\CR66B\500 - Design (PS&E)\505 - CADD Files\Roadway\G01100_Grading01NC.dgn
RELATIVE BORDER SCALE 0 1 2 3
UNIT 0000
PROJECT NUMBER & PHASE 00000000001

Figure 2

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II. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below could be potentially affected by this project, but, due to the inclusion of specific mitigation measures, will result in impacts that are a "Less Than Significant with Mitigation Incorporated," as indicated by the environmental checklist on the following pages.

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

III. DIRECTOR 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 have a potentially significant impact unless mitigated, but at least one effect has been adequately analyzed in an earlier document pursuant to applicable legal standards, and has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT (EIR) 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, there WILL NOT be a significant effect in this case because all potentially significant effects have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards and 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. No further study is required.

T Richardson — 09/08/21

Signature — Date

Talia Richardson, PE, Interim Director Glenn County Public Works Agency

Printed Name

IV. EVALUATION OF ENVIRONMENTAL IMPACTS

- Responses to the following questions and related discussion indicate if the proposed project will have or potentially have a significant adverse impact on the environment.

- A brief explanation is required for all answers except "No Impact" answers that are adequately supported by referenced information sources. 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 or general standards.

- 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.

- Once it has been 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 is at least one "Potentially Significant Impact" entry when the determination is made an EIR is required.

- Negative Declaration: "Less than Significant with Mitigation Incorporated" applies when the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less than Significant Impact." The initial study will describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section 4, "Earlier Analysis," may be cross-referenced).

- Earlier analyses may be used where, pursuant to tiering, a program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration [Section 15063(c)(3)(D)].

- Initial studies may incorporate references to information sources for potential impacts (e.g. the general plan or zoning ordinances, etc.). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated. A source list attached, and other sources used or individuals contacted are cited in the discussion.

- 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 significant.

A. Aesthetics Except as provide in Public Resources Code Section 21099, would the project or its related activities:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
1. Have a substantial adverse effect on a scenic vista?			X	
2. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
3. 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 point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?				X
4. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?				X

DISCUSSION:

A.1. Less than Significant. The proposed project involves the construction of a new bridge and the demolition of the existing bridge across Colusa Drain along County Road 66B. The proposed project will not change regulations or policies (or their implementation) relative to aesthetic/visual resources. Project construction will not change the established visual character and planned future use of the surrounding area as similar components (i.e. bridge) already exist at the location. Placement of the new bridge will not interfere with the views of scenic vistas from the adjacent residence and public right-of-way. Although the rural setting and unique geography of Glenn County and its surrounding area have created a number of scenic vistas and corridors, the proposed project only includes bridge replacement, roadway, and approach rehabilitation along the existing roadway alignments for improved safety and will not have a substantial adverse effect on a scenic vista.

A.2. No Impact. There are no designated resources within a state scenic highway in the project area. Furthermore, there are no officially recognized scenic roadways in Glenn County. The proposed project would not result in a significant change to the appearance of the existing roadway, nor would it eliminate access to scenic views or alter the landscapes surrounding the project site.

A.3. No Impact. The proposed project will not substantially degrade the existing visual character or quality of the site and its surroundings. The project would not create structures with a substantial vertical presence. Temporary visual impacts may occur during construction activities, when heavy equipment and construction materials will be present within the project area. Neither the function nor the general appearance of the surrounding area would be substantially modified by the proposed project.

A.4. No Impact. The improvements associated with this project do not include the installation of lighting or reflective surfaces that could contribute to substantial sources of light or glare. Additionally, construction will not occur during the evening or nighttime hours.

MITIGATION: None required.

B. Agriculture and Forest Resources: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
1. 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?			X	
2. Conflict with existing zoning for agricultural use, or a Williamson Act contract?			X	
3. 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))?				X
4. Result in the loss of forest land or conversion of forest land to non-forest use?				X
5. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?		X		

DISCUSSION:

The project is located in an agricultural area of County jurisdiction. There is farmland designated as Prime farmland in the project area as defined by the Farmland Mapping and Monitoring Program (FMMP). There are also parcels within the project area that have Williamson Act contracts. See Appendix A Farmlands Study for the County Road 66B Bridge Replacement Project.

It is anticipated that no Williamson Act contracts will be terminated, although parcels currently under contract may require minor revisions, due to the revisions to access for adjacent property owners, temporary construction easement and minor modifications to farmland resulting from minor right of way acquisitions. The remaining acreage from each parcel will continue to meet Glenn County's criteria for eligibility as Williamson Act contract parcels. Government Code §51295 states that when a project acquires or modifies only a portion of a parcel of land subject to a Williamson Act contract, the contract is deemed null and void only as to that portion of the contracted farmland taken. The remaining land continues to be subject to the contract unless it is adversely affected with property

acquired by eminent domain or in lieu of eminent domain. Section 15206 of the California Environmental Act Guidelines identifies the cancellation of 100 acres or more of a Williamson Act contract by a project as a significant impact under the California Environmental Quality Act. Although the project bisects land that is in Williamson Act contracts, the project only affects 0.19 acres of Williamson Act contract land (0.14 acres temporary and 0.04 acre permanent). As stated above, it is anticipated that no Williamson Act contracts will be terminated, although parcels currently under contract will require minor revisions due to the new right of way acquisitions resulting from fill slope intrusions onto adjoining properties.

When farmland is affected on State funded projects, Caltrans consults with the U.S. Department of Agriculture's Natural Resources Conservation Service. Caltrans uses the U.S. Department of Agriculture's Farmland Conversion Impact Rating Form NRCS-CPA-1006 to determine impacts to farmland. The evaluation form is submitted to the U.S. Department of Agriculture's Natural Resources Conservation Service, which assigns a score for a site's relative value. The Natural Resources Conservation Service returns the evaluation form, and Caltrans completes a site assessment with the score assigned from the Natural Resources Conservation Service. A combined score under 160 indicates no further consideration for protection. Government Code Section 658.4 c (3) of the Farmland Protection Policy Act states that "sites receiving scores totaling 160 or more be given increasingly higher levels of consideration for protection." In compliance with Title 7 Code of Federal Regulation 658.4 (4) (ii), the County will implement Caltrans avoidance measures to minimize farmland impacts. The proposed project will permanently impact 0.04 acres of prime farmland. A Farmland Conversion Impact Rating Form was submitted to Caltrans to utilize and consult with the Natural Resource Conservation Service. Based on the minimal amount of impacts to farmlands, it is expected that the U.S. Department of Agriculture's Farmland Conversion Impact Rating will be well below the 160 point threshold.

B.1. Less Than Significant. The proposed project will have both permanent and temporary impacts on farmland identified as Prime by the FMMP. The proposed project will permanently convert 0.04 acres and temporarily impact 0.14 acres of farmland of prime farmland. The total amount of farmland designated in the County, as of 2016, of Important Farmland (Prime, Farmland of Statewide Importance, Unique and Farmland of Local Importance) is 293,310 acres, therefore the impacts and permanent conversion to Prime Farmland is 0.000014 percent. Upon completion of the project, the land designated as prime that is affected by the temporary construction activities will be reverted to its original condition and use. Due to the minor amount of farmland conversion, this impact is considered to be less than significant.

B.2. Less Than Significant. The proposed project will have both permanent and temporary impacts on parcels that have Williamson Act contracts. Permanent (0.04 acres) and temporary (0.14 acres) easements will affect 0.18 acres of land with Williamson Act contracts. According to Glenn County as of 2019, the total amount of land with Williamson Act contracts (including lands entered into the Farmland Security Act) in the County is approximately 331,330 acres; therefore, the permanent impacts and temporary conversion affecting Williamson Act contract land are 0.000012 percent and 0.000042 percent, respectively.

Cancellation of Williamson Act contracts is regulated under Government Code Sections 51290-51295. Under Section 51290, the Department of Conservation is authorized to tentatively cancel a contract to accommodate a public facility. Government Code Section 51292 outlines the specific requirements for partial cancellation of a Land Conservation Act (LCA) contract under two "consistency" findings that must be made by the Department of Conservation. The two consistency findings are:

1. The location is not based primarily on a consideration of the lower cost of acquiring land in an agricultural preserve.
2. If the land is agricultural land covered under a contract pursuant to this chapter for any public improvement, that there is no other land within or outside the preserve on which it is reasonably feasible to locate the public improvement.

The federal Farmland Protection Policy Act of 1981 applies to all federally funded projects that take right-of-way in farmland. Caltrans necessitates the analysis of impacts to farmlands through the assessment tool "NRCS-CPA-1006 - Farmland Conversion Impact Rating for Corridor Type Projects". A Farmland Conversion Impact Rating Form was submitted to Caltrans to utilize and consult with the Natural Resource Conservation Service. Typical outcomes of this evaluation process include a range of actions including documentation that no further action is required or Caltrans completing a Corridor

Assessment Criteria Evaluation and based on the points compare the relative valuation of the various project alternatives and make a final corridor selection that may allow for the minimization of conversion of agricultural lands to no agricultural lands. Due to the minor amount of Williamson Act land conversion this impact is considered to be less than significant.

B.3. No Impact. The proposed project would not conflict with existing zoning for, or cause the rezoning of forestland (as defined in Public Resources Code §1220(g)), timberland (as defined in Public Resources Code §4526), or Timberland Production (as defined in Government Code §51104(g)), because the project site and the surrounding area does not contain forest land. The proposed project is located in the northern portion of California's Central Valley, a non-forested region.

B.4. No Impact. The proposed project would not cause the rezoning or loss of forestland or timberland to non-forest use due to its location within Glenn County. The project is located within the valley of the northern portion of California's Central Valley, and, as such does not contain forest land.

B.5 Less Than Significant With Mitigation: The construction activities have the potential to temporarily disrupt access to the adjacent properties. There is also the potential that temporary staging and access areas on lands identified as statewide importance, unique by the FMMP or with Williamson Act contracts, could modify the soil conditions at those locations. With the implementation of Mitigation Measure B.1 there will be a less than significant impact with mitigation incorporated.

MITIGATION:

Mitigation Measure B.1: Preservation of Agricultural Access and Land

The following are recommended avoidance and mitigation measures that shall be implemented prior to the start of construction and continue throughout project activities.

1. The advance notification and coordination with local property owners/growers will be conducted to minimize short-term impacts related to construction activities. Before any work that could interfere with agricultural activities, the work will be coordinated with appropriate property owners/growers.
2. The extent of work within temporary construction easements on private land will be minimized to the extents necessary to provide access and construct infrastructure such as driveways and bridges on private land.

Timing & Implementation: The County shall provide advance notification and coordination with property owners/growers and confirm that soils amendments meet specifications prior to and post construction.

C. Air Quality Where available, the significance criteria established by the applicable air quality management district or air pollution 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
1. Conflict with or obstruct implementation of the applicable air quality plan?			X	
2. 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?		X		
3. Expose sensitive receptors to substantial pollutant concentrations?			X	
4. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?			X	

DISCUSSION:

The proposed project is in the Northern Sacramento Valley Planning Area (NSVPA), which includes the following counties: Butte, Colusa, Glenn, Shasta, Sutter, Tehama, and Yuba. The NSVPA is bounded on the north and west by the Coastal mountain range and on the east by the southern portion of the Cascade mountain range and the northern portion of the Sierra Nevada Mountains. High temperatures and low humidity, with prevailing winds from the south, characterize summer conditions. Occasional rainstorms, interspersed with stagnant and sometimes foggy weather, characterize winter conditions. Southern winds continue to predominate during the winter. Two types of inversions occur in the NSVPA: 1) during the summer, sinking air forms a lid over the region and distributes photochemical smog and 2) air cools next to the ground while air aloft remains warm causing poor dispersion of ground level pollutant emissions.

The California Air Resources Board (CARB) prepares and submits to the EPA a State Implementation Plan (SIP) explaining how the state will attain compliance with Federal clean air standards. The NSVPA is subject to federal, state, and local regulations. The NSVPA adopted an updated 2012 Triennial Air Quality Attainment Plan as its component of the SIP in compliance with the Federal and California Clean Air Acts.

The Glenn County Air Pollution Control District (GCAPCD) is responsible for attainment of the National and California Air Quality Standards in Glenn County. The GCAPCD's primary role when reviewing projects is to evaluate their consistency with ambient air quality standards and the provisions of SIP and Attainment Plan. The following table identifies criteria pollutants and the applicable state and federal attainment status:

Table 1: Glenn County Ambient Air Quality Attainment Status

Pollutant	State Designation	Federal Designation
ozone	Attainment	--
8-hour ozone	--	Unclassified/Attainment
Carbon monoxide	Unclassified	Unclassified/Attainment
Nitrogen Dioxide	Attainment	Unclassified/Attainment
Sulfur Dioxide	Attainment	Unclassified
PM10	Nonattainment	Unclassified
PM2.5	Attainment	Unclassified/Attainment

(California Air Resources Board, 2019)

C.1. Less Than Significant Impact With Mitigation Incorporated. The proposed project is the replacement of a structurally deficient bridge. It does not involve the construction of new expanded facilities. The proposed project will be required to comply with all applicable rules, regulations, and control measures including permitting, prohibitions, and limits to emissions that work to reduce air pollution throughout California. Therefore, it will not conflict with or obstruct implementation of any air quality plans in Glenn County. The proposed project would not create a source of new vehicle traffic, such as a new housing development or commercial uses, and thus there would be no added vehicle trips to the existing roadway network, and no long-term air quality impacts. The proposed project is located within the Northern Sacramento Valley Air Basin (NSVAB) and the jurisdiction of GCAPCD. Construction activities may result in ground disturbance due to vegetation removal and placement of bridge components. To comply with Caltrans Standard Specifications, the County shall comply with all Best Available Mitigation Measures (BAMMs), as described in Mitigation Measure C.1, for the control of construction related particulate emissions

C.2. Less Than Significant With Mitigation Incorporated. Bridges and roadways are conduits that enable vehicular traffic to move from one point to another. The project involves replacement of an existing bridge, and does not generate new traffic, thereby generating more emissions, as would new development (i.e., residential or commercial land uses).

Implementation of the proposed project would result in the generation of short-term construction-related air pollutant emissions. Diesel fumes may be noticeable near the site; however, diesel fumes will be a short-term effect. All equipment must comply with California emissions standards and Caltrans Standard Specifications. Exhaust emissions from construction equipment would contain reactive organic gases (ROG), nitrogen oxides (NOx), carbon monoxide (CO) and particulate matter less than 10 microns in diameter (PM10). Particulate matter less than 10 microns emissions would also result from windblown dust (fugitive dust) generated during construction activities. As shown in Table 1, per the California Ambient Air Quality Standards (CAAQS) the project area is designated as a non-attainment area for PM10.

The proposed project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard. Each of the above impacts are temporary, local, and construction related.

Because the project is receiving funding from the Highway Bridge Program, the project must comply with Caltrans Standard Specifications (Section 7-1.01F, Air Pollution Control and Section 10.1, Dust Control), therefore, the contractor is required to comply with other local jurisdiction rules, regulations, ordinances, and statutes.

The incorporation of Mitigation Measure C.1 would reduce impacts associated with PM10 to a less than significant level. Air quality mitigation measures are consistent with the requirements of Glenn County General Plan and the GCAPCD and Caltrans Standard Specifications for pollution and dust control.

C.3. Less Than Significant Impact There are two residences in the vicinity to the project area. Both residential dwellings exists over 1,000 ft. from the project site. Project activities consist of removal of the current structure and replacement with a new bridge structure as well as roadway approach work. There are no schools, hospitals, or other sensitive receptors in the area and no substantial pollutant concentrations are anticipated to occur. Temporary construction activities would result in particulate emissions in an area designated as non-attainment. However, implementation of BAMM's and the incorporation of Mitigation Measure C.1 would minimize fugitive dust to the maximum extent possible.

C.4. Less Than Significant Impact Other than construction activities (diesel odors may be noticeable near the construction site), no long-term odor producing activities would result from the project. Therefore, the proposed project would not result in less than significant objectionable odor impacts.

MITIGATION:

Mitigation Measure C.1: (Air Quality)

To comply with the Glenn County Air Pollution Control District's (GAPCD) regulations (section 76 visible emissions), the County shall comply with all Best Available Mitigation Measures (BAMMs) for the control of construction related particulate emissions. The contractor shall submit an Air Quality Attainment Plan to the County for approval. The approved plan shall include all applicable BAMMs as specified by GCAPCD's Standard Construction Phase Mitigation Measures, including but not limited to the following:

1. Haul trucks must be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.

2. Construction equipment exhaust emissions shall not exceed GCAPCD Section 76 Visible Emissions (40 percent opacity or Ringelmann 2.0). Operators of vehicles and equipment found to exceed opacity limits shall act to repair the equipment within 72 hours or remove the equipment from service.

3. The area disturbed by demolition, clearing, grading, earth moving, or excavation operations shall be minimized at all times.

4. Suspend grading or earth moving activities when wind speeds exceed 20 mph

5. Minimize unnecessary idling time to 5 minutes.

6. Water shall be applied as needed to prevent fugitive dust impacts offsite.

7. All onsite vehicles should be limited to a speed of 15mph on unpaved roads.

MITIGATION MONITORING C.1.: Public Works staff shall ensure the construction documents incorporate Best Available Mitigation Measures and the development of an Air Quality Attainment Plan as appropriate by the contactor. Public Works staff will ensure that construction, grading, and erosion control operations are conducted in accordance with GCAPCD standards.

D. Biological Resources Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
1. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species as listed and mapped in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?		X		
2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?		X		
3. 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?		X		
4. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?			X	
5. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?			X	
6. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?			X	

DISCUSSION:

A Natural Environment Study (NES) was prepared by Gallaway Enterprises in September 2020 (Appendix B). The purpose of the NES is to document the current endangered, threatened, sensitive and rare species, and their critical habitats that occur in the biological survey area (BSA) of the project. The BSA includes the project site as well as a 250-foot buffer of the projects site so that indirect effects on special status species could be identified. Primary references consulted include species lists and information gathered using the United States Fish and Wildlife Service (USFWS) Information, Planning, and Conservation System (IPaC), California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB), the California Native Plant Society's (CNPS) list of rare and endangered plants, and literature review. A Draft Delineation of Jurisdictional Waters of the United States was also prepared for the project is in June 2018 by Gallaway Enterprises (Appendix C). The surveys involved an examination of botanical resources, soils, hydrological features, and determination of wetland characteristics based on the United States Army Corps of Engineers (USACE) Wetlands Delineation Manual (Environmental Laboratory 1987) and other current regulations, manuals and interpretations of jurisdiction currently in effect.

The project site contains the habitat types of riverine, rice, barren, and annual grassland. The riverine habitat is associated with Colusa Drain which traverses the project site. Rice and annual grassland is found on the agricultural fields of the four corners of the project site. Barren habitats are comprised of the existing roadway, gravel road shoulders and sidewalks.

There is no National Marine Fisheries Service (NMFS) or United States Fish and Wildlife designated Critical Habitat in or near the project site.

D.1. Less Than Significant with Mitigation Incorporated. The special-status species with a potential to occur within the project area are western pond turtle (*Emys maramorata*), tri-colored blackbird *(Agelaius tricolor),* Giant garter snake *(Thamnophis gigas)* and various bird species protected under the Migratory Bird Treaty Act (MBTA). The potential of occurrence for the aforementioned species is considered to be moderate to high due to suitable habitat and favorable conditions.

Giant Garter Snake
Giant garter snakes are listed as threatened under the ESA and CESA. According to the USFWS Recovery Plan for the Giant Garter Snake, the project site is within the Colusa Basin Recovery Unit (USFWS 2017). Giant garter snakes are the largest species of garter snake. Dull yellow striping and a wide head commonly distinguishes GGS from other common species of garter snake. Giant garter snakes are found in the wetlands of the Sacramento and San Joaquin Valleys from Chico, Butte County to Mendota Wildlife Area, Fresno County. Suitable habitat includes marshes, sloughs, back waters of rivers, irrigation canals, drainage canals, agricultural wetlands, flooded rice fields, and occasionally streams with low gradient and slow to stagnant waters. Giant garter snakes breed from March to April and females give birth to live young from July to early September. Giant garter snakes stay active as long as temperatures are warm, and start to move underground into small mammal burrows or crevices around October 1 to avoid potentially lethal autumn and winter temperatures (USFWS 2017). Giant garter snakes overwinter in upland hibernacula. Current threats facing the GGS are habitat loss and fragmentation as a result of urbanization and conversion of wetlands, changes in water availability, levee and canal maintenance, water management and water deliveries that do not account for the giant garter snake, small populations, and invasive aquatic species (USFWS 2017).

Survey Results
Suitable habitat components or primary constituent elements (PCE) for GGS consist of (1) a fresh-water aquatic component with protective emergent vegetative cover that will allow foraging, (2) an upland component near the aquatic habitat that can be used for thermoregulation and for summer shelter in burrows, and (3) an upland refugia component that will serve as winter hibernacula (USFWS 2017). There is suitable aquatic and upland habitat that contains the PCEs for GGS within and surrounding the BSA. In addition, there are two (2) GGS CNDDB occurrences within 5 miles of the BSA.

Aquatic Habitat
Suitable aquatic habitat for GGS consists of marshes, ponds, small lakes, low gradient streams, irrigation ditches, drainage canals, and agricultural wetlands (e.g. rice fields) (USFWS 2017). The BSA contains suitable aquatic habitat for GGS in the form of Colusa Drain, the unnamed drainage ditch, and surrounding rice paddies. Water is present in these areas during the GGS's active season (Gallaway Enterprises personal observation) and vegetation was observed along the edges and banks of the Colusa Drain for foraging and refuging GGS.

Upland Habitat
Suitable upland habitat for GGS consists of land that is not typically inundated during the active season and is adjacent to suitable aquatic habitat. Suitable upland habitat often contains bankside vegetative cover and small mammal burrows or other forms of refuge (USFWS 2017). The BSA contains suitable upland habitat for GGS. There is vegetative cover on the banks of Colusa Drain, and there are many small mammal burrows are present within the unpaved access roads and annual grassland areas directly adjacent to aquatic habitat.

Project Impacts
Construction activities will result in temporary and permanent impacts to GGS aquatic and upland habitat. In order to reduce potential impacts to giant garter snake to a less than significant level Mitigation Measure D.1 is included.

Western Pond Turtle

The western pond turtle is a SSC in California. Western pond turtles are drab, darkish colored turtles with a yellowish to cream colored head. They range from the Washington Puget Sound to the California Sacramento Valley. Suitable aquatic habitats include slow moving to stagnant water, such as back waters and ponded areas of rivers and creeks, semi-permanent to permanent ponds and irrigation ditches. Preferred habitats include features such as hydrophytic vegetation, for foraging and cover, and basking areas to regulate body temperature. In early spring through early summer, female turtles begin to move over land in search for nesting sites. Eggs are laid on the banks of slow moving streams. The female digs a hole approximately four inches deep and lays up to eleven eggs. Afterwards the eggs are covered with sediment and are left to incubate under the warm soils. Eggs are typically laid between March and August (Zeiner et al. 1990). Current threats facing the western pond turtle include loss of suitable aquatic habitats due to rapid changes in water regimes and removal of hydrophytic vegetation.

Survey Results

Suitable western pond turtle habitat occurs within Colusa Drain and the unnamed drainages present in the BSA, when water is present. Colusa Drain generally lacks emergent rocks and logs on which western pond turtles bask for thermoregulation; however, the ditches feature fresh emergent vegetation for foraging, cover, and open banks for basking. Western pond turtles are frequently found within irrigation canals and drainages throughout their range in the Central Valley.

Project Impacts

Construction activities have the potential to impact western pond turtle. In order to reduce potential impacts to western pond turtle to a less than significant level Mitigation Measure D.2 is included.

Tricolored Blackbird

Tricolored blackbirds are listed as threatened under the CESA. They range from southern Oregon through the Central Valley, and coastal regions of California into the northern part of Mexico. Tricolored blackbirds are medium-size birds with black plumage and distinctive red marginal coverts, bordered by whitish feathers. Tricolored blackbirds nest in large colonies within agricultural fields, marshes with thick herbaceous vegetation, or in clusters of large blackberry bushes near a source of water and suitable foraging habitat. They are nomadic migrators, so documenting occurrence at any location does not mean that they will necessarily return to that area. Current threats facing tricolored blackbirds include colonial breeding in regards to small population size, habitat loss, overexploitation, predation, contaminants, extreme weather events, drought, water availability, and climate change (CDFW 2018).

Survey Results

There is suitable nesting habitat for tricolored blackbirds within the BSA where dense patches of blackberry brambles occur, and the surrounding rice fields provide suitable foraging habitat. Further, there are ten (10) tricolored blackbird CNDDB occurrences within 5 miles of the BSA (CNDDB 2018). Tricolored blackbirds were observed within 500 feet of the BSA during the biological habitat assessment performed by Gallaway Enterprises.

Project Impacts

Construction activities will be initiated outside of the avian nesting season, on October 1, and will be continuous until the project is completed in late April. In the event that construction activities cannot be initiated outside of the avian nesting season, Mitigation Measure D.3. is proposed. With the implementation of Mitigation Measure D.3. there will be less than significant impact to tricolored blackbird.

Migratory Birds and Raptors

Nesting birds are protected under the MBTA (16 USC 703) and the CFGC (3503). The MBTA (16 USC §703) prohibits the killing of migratory birds or the destruction of their occupied nests and eggs except in accordance with regulations prescribed by the USFWS. The bird species covered by the MBTA includes nearly all of those that breed in North America, excluding introduced (i.e. exotic) species (50 Code of Federal Regulations §10.13). Activities that involve the removal of vegetation including trees, shrubs, grasses, and forbs or ground disturbance has the potential to affect bird species protected by the MBTA.

The CFGC (§3503.5) states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes (hawks, eagles, and falcons) or Strigiformes (all owls except barn owls) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto". Take includes the disturbance of an active nest resulting in the abandonment or loss of young. The CFGC (§3503) also states that "it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto".

Survey Results
The habitats present within the BSA provide nesting habitat for a variety of migratory bird and raptor species. During the field survey, no old bird nests were found under the bridge; however, it is possible for cliff swallows, barn swallows, and black phoebes, which commonly nest on the sides or pillars of bridges, to occupy the area.

Project Impacts
Construction activities will be initiated outside of the avian nesting season. In the event that construction activities cannot be initiated outside of the avian nesting season, Mitigation Measure D.4. is proposed. With the implementation of Mitigation Measure D.4. there will be a less than significant impact to migratory birds or raptors.

Project Impacts
With the implementation of avoidance and minimization measures specified above there will be no direct or indirect impacts to avian threatened species (i.e. tricolored blackbird) or avian species protected under the MBTA and CFGC.

Compensatory Mitigation
There will be no compensatory mitigation necessary for project activities in regards to avian threatened species (i.e. tricolored blackbird) or avian species protected under the MBTA and CFGC.

To avoid impacts to bird and raptor species, including tri-colored blackbird, protected under the MBTA and the California Fish and Game Commission (CFGC), Mitigation Measure D.4 has been included.

D.2. Less Than Significant with Mitigation Incorporated. No Sensitive Natural Communities (SNC) as identified by the California Department of Fish and Wildlife or riparian habitat has been mapped within the BSA. Additionally there is no Critical Habitat as designated by the U.S. Fish and Wildlife Service, within or adjacent to the project site. The project's impact would be less than significant.

D.3. Less Than Significant with Mitigation Incorporated. The types of aquatic resources identified within the BSA are distinguished as non-relatively permanent water, relatively permanent water, and irrigated wetland. The survey area contains 2.04 acres of Waters of the U.S.

The proposed project includes the replacement of the bridge over Colusa Drain with a new wider structure which will directly fill portions of the aquatic resources within the project site. The estimated amount of permanent impacts is 0.063 acres and the estimated amount of temporary impacts is 0.092 acres. These impacts will be a result of bridge replacement, and associated infrastructure improvements. This is considered a potentially significant impact. Mitigation Measure D.5 will reduce these impacts to a less than significant level.

Mitigation Measure D.5 requires the County to obtain final permits from the USACE, CVRWQCB, CVFPB and CDFW prior to the construction of the project. With this mitigation measure, potential impacts to biological resources at the site will be less than significant with mitigation incorporated.

D.4.- D.6. Less Than Significant Impact. The proposed project consists of the widening and replacement of existing transportation facilities. The extents and scope of the improvements to the roadway, bridge, and associated infrastructure will not be significantly different than what currently exists. The project will not result in the fragmentation of an existing wildlife habitat nor conflict with any local policies or ordinances protecting biological resources. The project's impact would be less than significant.

MITIGATION:

MITIGATION D.1. (Giant Garter Snake):
Initial construction and the installation of exclusion fencing will be initiated during the active period of GGS; therefore, GGS individuals are expected to avoid harm's way during initial vegetation removal and ground-disturbing activities. Construction activities will continue as temperatures decrease and GGS enter their dormant season. With the installation of exclusion fencing during the GGS active season and the continuation of construction activities throughout the GGS inactive season, GGS individuals will not be expected to move into the project area. Avoidance and minimization measures will also be implemented to minimize the potential for take. To ensure no direct take of GGS occur due to the proposed project, the following avoidance and minimization measures will be implemented.

Avoidance and Minimization Efforts
The following recommendations, when implemented, will avoid and minimize impacts to this species:

- The applicant is proposing to work outside of the snake's active season. Construction and ground disturbing activities will be initiated during the active season, continue through the inactive season, and is anticipated to be completed before the inactive season is over.
- Twenty-four hours prior to the commencement of construction activities, the project area shall be surveyed for giant garter snakes by a qualified biologist. The biologist will provide a written report that adequately documents the monitoring efforts within 24 hours of commencement of construction activities. The project area shall be re-inspected by the monitoring biologist whenever a lapse in construction activity of 2 weeks or greater has occurred.
- A Worker Environmental Awareness Training Program for construction personnel shall be conducted by a qualified biologist for all construction workers, including contractors, prior to the commencement of construction activities.
- During construction operations, stockpiling of construction materials, portable equipment, vehicles, and supplies will be restricted to the designated construction staging areas and all operations will be confined to the minimal area necessary.
- A qualified biologist shall be onsite to monitor for GGS during all vegetation removal and initial ground-disturbing activities. After the initial ground-disturbing activities have been completed, the qualified biologist will monitor the installation of exclusion fencing around the project boundary. The qualified biologist will monitor excavation of suitable GGS habitat and bridge removal.
- Project-related vehicles will observe a 20-mile-per-hour speed limit within construction areas, except on existing paved roads where they will adhere to the posted speed limits.
- High visibility fencing will be erected around the habitats of the snake to identify and protect these areas from encroachment of personnel and equipment. These areas will be avoided by all construction personnel. The fencing shall be inspected by the Contractor before the start of each work day and maintained by the Contractor until completion of the project. Fencing will be established in the uplands immediately adjacent to aquatic snake habitat and extending up to 200 feet from construction activities, where feasible. Snake exclusionary fencing will be buried at least 6 inches below the ground to prevent snakes from attempting to burrow or move under the fence.
- Best Management Practices (BMPs) will be implemented to minimize the potential for erosion and sedimentation into nearby waterbodies.
- After completion of construction activities, the applicant will remove any temporary fill and construction debris and, wherever feasible, restore disturbed areas to pre-project conditions. Restoration work includes such activities as re-vegetating the banks and active channels with a seed mix similar to pre-project conditions.
- A photo documentation report showing pre- and post-project area conditions will be submitted 1 month after the implementation of the restoration.

Compensatory Mitigation
The project will permanently and temporarily impact upland and aquatic GGS habitat. To mitigate permanent and temporary impacts to GGS habitat the following is recommended:

- Permanent loss of GGS habitat will be compensated by purchasing creation credits at the Colusa Basin Conservation Bank or at another USFWS and CDFW approved conservation bank with a service area that accommodates the project location. Credits shall be purchased prior to the start of construction. Table 3 shows the amount of credits that will need to be purchased.

- Temporary disturbance to snake habitat shall be restored to pre-project conditions within 1 year of completion of construction.
    - Restoration and monitoring shall follow the USFWS Guidelines for Restoration and/or Replacement of Giant Garter Snake Habitat (1997). If restoration is unsuccessful, as determined by the USFWS, consultation will be reinitiated.

MITIGATION MONITORING D.1.: Public Works staff shall ensure the incorporation of avoidance and minimization measures into the plans. Public Works staff shall document the final purchase of required mitigation credits, or other method of compensatory mitigation documenting relief thereof, prior to commencement of construction activities.

MITIGATION D.2. (Western Pond Turtle):
The following measures recommended in order to avoid and minimize potential impacts to western pond turtle:

- Immediately prior to conducting in-stream work, a qualified biologist shall conduct a survey to determine the presence or absence of western pond turtles. If western pond turtles are observed where they could be potentially impacted by project activities, as determined by the onsite biologist, then work shall not be conducted within 100 feet of the sighting until the turtle(s) have left the project site or a qualified biologist has relocated the turtle(s) immediately outside of the project site.
- If turtle eggs are uncovered during construction activities, then all work shall stop within a 25 foot radius of the nest and the onsite biologist should be notified immediately. The 25 foot buffer should be marked with identifiable markers that do not consist of fencing or materials that may block the migration of young turtles to the water or attract predators to the nest site. No work will be allowed within the 25 foot buffer until CDFW has been consulted
- All portions of the project site that could result in inadvertently trapping turtles, such as open pits, trenches, and de-watered areas will be covered and/or exclusion fencing will be installed to prevent turtles from entering these areas.

MITIGATION MONITORING D.2.: Public Works staff will require final copies of the pre-construction surveys for western pond turtle, prior to the commencement of construction. Should the species occur on the project site, a qualified biologist shall be retained on-site during ground-disturbance.

MITIGATION D.3. (Tri-Colored Blackbird):
There is suitable tri-colored blackbird nesting habitat present within the BSA in the form of blackberry thickets. The following are avoidance and minimization measures for tricolored blackbird:

- Project activities, including site grubbing and vegetation removal, within the BSA shall be initiated outside of the bird nesting season (February 1 – August 31).
- If project activities cannot be initiated outside of the bird nesting season, or if there is a lapse in construction of more than 7 days during the bird nesting season, then the following will occur:
    - A qualified biologist will conduct a pre-construction survey within 7 days prior to starting work.
    - If an active tricolored blackbird nest (i.e. with egg(s) or young) is observed within 250 feet of the project boundary during the pre-construction survey, then a species protection buffer will be established. The species protection buffer will be defined by the qualified biologist in consultation with CDFW.
- Construction activity shall be prohibited within the buffer zones until the young have fledged or the nest fails. Nests shall be monitored once per week by a qualified biologist and a report submitted to the County weekly.

MITIGATION MONITORING D.3.: Public Works staff will confirm project initiation timing and/or require final copies of the pre-construction surveys for tri-colored blackbird, prior to the commencement of construction. Should the species occur on the project site, a qualified biologist shall be retained on-site during vegetation or ground disturbance.

MITIGATION D.4. (Migratory and Nesting Birds):
To avoid impacts to avian threatened species (i.e. tricolored blackbird) or avian species protected under the MBTA and the CFGC, the following avoidance and minimization measures are recommended.

- Any vegetation removal and/or ground disturbance activities should take place during the avian non-breeding season (September 1 – January 31).
- If project activities cannot be initiated outside of the avian nesting season, or if there is a lapse in construction of more than 7 days during the avian nesting season, then a migratory bird and raptor survey shall be conducted within the BSA by a qualified biologist. The qualified biologist shall:
    - Conduct a survey for all birds protected by the MBTA and CFGC within 7 days prior to construction activities, and map all nests located within 200 feet of construction areas;
    - Develop buffer zones around active nests as recommended by a qualified biologist. Construction activity shall be prohibited within the buffer zones until the young have fledged or the nest fails. Nests shall be monitored at least once per week by a qualified biologist and a report submitted to the County monthly.
- All staging and construction activity will be limited to designated areas within the BSA and designated routes for construction equipment shall be established in order to limit disturbance to the surrounding area.

The following are recommended exclusion and monitoring activities to avoid and minimize impacts to avian species protected under the MBTA and CFGC that have the potential to nest on the existing bridge:

- The removal of the current bridge will be conducted during the avian non-breeding season (September 1 – January 31) so as to avoid impacts to avian species that may potentially nest on the bridge.
- If the current bridge cannot be removed outside of the avian breeding season (February 1 – August 31) then the following exclusion and monitoring activities shall take place.

  Exclusion
    - All avian nests should be removed from the bridge prior to February 1 so as to deter avian species from nesting on the bridge.
    - Any exclusionary devices that are deemed necessary in order to prevent avian species from nesting on the existing bridge should be established by a qualified biologist prior to February 1. Exclusionary devices shall be maintained by the County or a qualified biologist until the current bridge is removed or the end of the avian breeding season.

  Monitoring
    - Weekly, or as necessary, monitoring or additional exclusion activities will be conducted by a qualified biologist on the current bridge after February 1 until the current bridge is removed or the end of the avian breeding season (August 31).

MITIGATION MONITORING D.4.: Public Works staff will confirm project initiation timing and/or require final copies of the pre-construction surveys for migratory and nesting birds, prior to the commencement of construction. Should the species occur on the project site, a qualified biologist shall be retained on-site during vegetation or ground disturbance.

MITIGATION D.5. (Regulatory Permits):
Prior to commencing construction, the County shall have available the final copies of the permits and authorizations required by the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, California Regional Water Quality Control Board, California Department of Fish and Wildlife, and the Central Valley Flood Protection Board or copies of relevant correspondence documenting that no permit is required, as applicable.

MITIGATION MONITORING D.5.: Public Works staff will require final copies of the required permits or letters documenting relief thereof, prior to the commencement of construction.

E. Cultural Resources Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
1. Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?		X		
2. Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?			X	
3. Disturb any human remains, including those interred outside of dedicated cemeteries?		X		

DISCUSSION:

E.1. – E.3. Less Than Significant with Mitigation Incorporated. Based on the recommendations of Caltrans Professionally Qualified Staff an Archaeological Survey Report (ASR), Historic Property Survey Report (HPSR) and a Finding of No Adverse Effect without Standard Conditions of the project site was conducted by Genesis Society and JRP Historical Consulting (Appendix D). The investigation consisted of an on-site records search and document review at the NEIC. Maps and records on file at this facility were consulted, along with the National Register of Historic Places Listed Properties and Determined Eligible Properties, the California Register of Historical Places, the California Points of Historical Interest, the California Inventory of Historical Resources, the California Landmarks Registry, and the Directory of Properties in the Historic Property Data File. Based upon the records search, local topography, and regional history, the project site is in an area considered to be low to moderate sensitive for prehistoric, protohistoric, and historic cultural resources. The records search resulted in no previously recorded cultural resources within the APE Field survey. The results of a search of the NAHC's Sacred Lands File for the Project Area indicated that the NAHC has no record of any sacred sites in or within the immediate vicinity of the Project Area. However, there is always a possibility of unearthing an archaeological site or cultural resources during ground-disturbing activities, therefore in the event that resources are inadvertently discovered, implementation of Mitigation Measures E.1, and R.1. (see Section R. Tribal Cultural Resources) will mitigate potential impacts to a less than significant impact.

Letters were sent to the Tribes identified by the NAHC regarding the project and inviting consultation; however, no Tribes requested consultation on the project.

On June 5, 2018, Mr. Sean Jensen of Genesis Society conducted an archaeological survey of the APE. The survey consisted of a pedestrian inspection of the APE. As a result of the pedestrian survey, no archaeological resources, historic or prehistoric, were identified in the Project Area.

Historic resources were evaluated by JRP Historical Consulting in November 2020. During consultation efforts with Caltrans, the Colusa Drain was identified as being potentially eligible for listing on the National Register of Historic Properties. The draft Finding of No Adverse Effect without Standard Conditions document evaluated the Colusa Drain Canal resource within the project site and determined the proposed project will not have an adverse effect on historic properties including the canal.

MITIGATION:

MITIGATION E.1. (Unidentified Cultural Resources): A note shall be placed on all grading and construction plans which informs the construction contractor that if any bones, pottery fragments or other potential cultural resources are encountered during construction, all work shall cease within the area of the find equivalent to a 25 foot radius around the materials (100 feet for human remains) pending an examination of the site and materials by a professional archaeologist. If during ground

disturbing activities, any bones, pottery fragments or other potential cultural resources are encountered, the contractor shall cease all work within 25 feet of the materials and notify Glenn County Public Works staff at (530) 934-6530. A professional archaeologist who meets the Secretary of the Interior's Professional Qualification Standards for prehistoric and historic archaeology and who is familiar with the archaeological record of Glenn County, shall be retained to evaluate the significance of the find. Further, County Public Works staff shall notify the local tribe(s) on the consultation list maintained by the State of California Native American Heritage Commission to provide local tribes the opportunity to monitor evaluation of the site. Site work shall not resume until the archaeologist conducts sufficient research, testing and analysis of the archaeological evidence to make a determination that the resource is either not cultural in origin or not potentially significant. If a potentially significant resource is encountered, the archaeologist shall prepare a mitigation plan for review and approval by the Glenn County Public Works Agency, including recommendations for total data recovery, Tribal monitoring, disposition protocol, or avoidance, if applicable. All measures determined by Glenn County to be appropriate shall be implemented pursuant to the terms of the archaeologist's report. The preceding requirement shall be incorporated into construction contracts and plans to ensure contractor knowledge and responsibility for proper implementation.

MITIGATION MONITORING E.1: Public Works staff will verify that the wording is included on construction plans. Should cultural resources be encountered, the contractor shall be responsible for reporting any such findings to Public Works staff, and contacting a professional archaeologist, in consultation with Public Works staff, to evaluate the find.

F. Energy Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
1. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?				X
2. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?				X

DISCUSSION:

F.1. No Impact. The proposed project will not result in any potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation. Construction energy consumption would largely occur from fuel consumption by heavy equipment during bridge construction and subsequent demolition of the existing bridge, transportation of materials to and from the site, and construction worker trips to and from the project site. Energy consumption during construction related activities would vary substantially depending on the level of activities, length of construction period, construction operations, type of equipment used, and number of personnel present. Despite this variability, the overall scope of construction is moderate and would be completed within one construction season. The proposed project is the installation of a new safer bridge with improved roadway approaches, as such, it will not use any energy resources during operation.

F.2. No Impact. Many of the state and federal regulations regarding energy efficiency focus on increasing building efficiency and renewable energy generation, as well as reducing water consumption and vehicle miles traveled. The proposed project includes conservation measures to meet or exceed the regulatory requirements including limiting idling time of heavy equipment during construction activities. The project will comply with Glenn County and Caltrans standards regarding engine efficiency and limiting idling time during project construction.

MITIGATION: None Required.

G. Geology/Soils Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
1. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:			X	
a. 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.				X
b. Strong seismic ground shaking?			X	
c. Seismic-related ground failure, including liquefaction?			X	
d. Landslides?			X	
2. Result in substantial soil erosion or the loss of topsoil?			X	
3. 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?				X
4. 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?			X	
5. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				X
6. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		X		

DISCUSSION:

G.1(a)-(d). Less Than Significant Impact. The site is not within an Alquist-Priolo Earthquake fault zone and is not within an aftershock epicenter region. There are no known active faults in Glenn County. The closest active fault is the Cleveland Hill fault zone, located approximately 35 miles east of the project site near Lake Oroville. Like most of Central California, the site can be expected to be subjected to seismic ground shaking at some future time. However, active faults are quite distant from the project site and ground shaking due to a seismic event is expected to have a lower intensity at the project site. As the project appears to be located such that the probability of significant ground shaking is low, and because the project does not propose the addition of significant structures that would be at risk to seismic activity, potential geologic impacts would be less than significant.

Liquefaction is a phenomenon where loose saturated, granular soils lose their inherent shear strength due to excess water pressure that builds up during repeated movement from seismic activity. Factors that contribute to the potential for liquefaction include a low relative density of granular materials, a shallow groundwater table, and a long duration and high acceleration of seismic shaking. Liquefaction usually results in horizontal and vertical movements from lateral spreading of liquefied materials and post-earthquake settlement of liquefied materials. Liquefaction potential is greatest where the groundwater level is shallow, and submerged loose, fine sands occur within a depth of approximately 50 feet or less. According to Section 3.3.1 of Environmental Setting Technical Paper, Glenn County General Plan, Volume III, Glenn County is in a relatively inactive seismic area. During the past 100 years, the County has experienced only minor earthquakes within its boundaries and secondary impacts from earthquakes centered out of the area. The United States Geologic Survey (USGS) and California Geologic Survey (CGS) produced a Seismic Shaking Hazards in California map (revised April 2003), which depicts the peak ground acceleration (pga) percentage that has a ten percent potential of occurring in the next fifty years. The project site is rated as 10%–20% on a scale of 0%–100%, quite low. Additionally, no earthquake greater than a magnitude 5.5 have occurred in Glenn County in over 200 years (CGS Map 49, California Earthquakes, 1800-2000). These two facts, and the relatively flat slope of the project site, create a less than significant impact regarding risk of damage from earthquakes. Under existing regulations, all future structures will incorporate AASHTO, SDC, and MTD standards into the design and construction that are designed to minimize potential impacts associated with strong ground-shaking during an earthquake.

The potential for landslides on the project site is considered remote due to the lack of significant topography on the project site and on the surrounding parcels. Therefore, the project would result in a Less Than Significant Impact.

G.2. Less Than Significant Impact. The project is the replacement of a structurally deficient bridge within Glenn County. Project activities at Bridge 11C0068 include vegetation removal, removal of existing bridge structure, the installation/construction of the new single-span, precast bridge structure, and construction of roadway approaches on both side of the new structure. During construction the project would be required to prepare a Stormwater Pollution Prevention Plan (SWPPP) in compliance with the Construction General Permit. Specific erosion control and surface water protection methods would be implemented within the project site, such as straw wattles and silt fencing, covering materials and dumpsters, storing fuel and other potentially hazardous materials away from the canal, and the use of erosion control seeding. These control measures are standard in the construction industry and are commonly utilized to minimize soil erosion and water quality degradation. The project will have a less than significant impact on loss of top soil.

G.3. No Impact. No major earthquakes have been recorded within Glenn County. The project will not expose people or structures to potential substantial adverse effects due to rupture or a known earthquake fault, seismic ground shaking, seismic-related ground failure including liquefaction. The project will not result in on or off-site landslide, lateral spreading, subsidence, liquefaction or collapse. The project site would not be subject to landslide free zone due to its relative flat topography and gently sloping hills

G.4. Less than Significant. The soil present within the project site consists primarily of alluvial deposits which consists of silt and clay. The site is not located on expansive soil and would not create substantial risks to life or property. Bridge design and all construction will comply with AASHTO, SDC, and MTD requirements.

G.5. No Impact. No septic tanks, sewer or alternative wastewater disposal systems are proposed for the subject property. The project will result in no impact relative to policies governing sewer service control.

G.6. Less Than Significant with Mitigation Incorporated. The project is not anticipated to cause a substantial adverse change in the significance, directly or indirectly destroy a unique paleontological resource or site, geological feature, or unique geological feature. Due to the developed character of the site, the potential to encounter surface-level paleontological resources is considered low. However, there is the potential for accidental discovery of paleontological resources. In the event that resources are inadvertently discovered, implementation of Mitigation Measure E.1. would reduce impacts to a

less-than-significant level. See Impact E.1. Cultural Resources for mitigation measure specifics. Therefore, impacts would be considered less than significant with mitigation incorporated.

MITIGATION: Mitigation Measure E.1. (Undocumented Cultural Resources)

H. Greenhouse Gas Emissions Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
1. Generate greenhouse gas (GHG) emissions, either directly or indirectly, that may have a significant impact on the environment?		X		
2. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			X	

DISCUSSION:

H.1 Less than Significant With Mitigation Incorporated. It is anticipated that bridge replacement activities would generate short-term temporary GHG emissions associated with construction equipment. Examples of sources for construction related GHGs are equipment fossil fuel combustion, material transportation, and purchased electricity. This is considered a less than significant impact with mitigation incorporated. See the Mitigation Measure C.1 discussed in Section C, Air Quality, minimize and reduce temporary emissions associated with the construction activities.

H.2 Less than Significant Due to the temporary nature of impacts resulting from construction activities on a relatively small bridge replacement project, the project will not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. This is considered a less than significant impact.

MITIGATION: Mitigation Measure C.1 (Air Quality)

I. Hazards and Hazardous Materials Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
1. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
2. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?		X		
3. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?			X	
4. 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?			X	
5. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?				X
6. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			X	
7. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?				X

DISCUSSION:

An Initial Site Assessment (ISA) was developed by Crawford & Associates, Inc. for the proposed project to identify recognized soil or groundwater contamination and hazardous material issues that may affect the planned project improvements. (Appendix E).

Based on the records reviewed and the site reconnaissance

- The project site was not identified in the database records reviewed.
- The database records search did not identify any facilities in the vicinity that have potentially impacted the project site.
- Site reconnaissance, historical topographic maps, and historical aerial photographs indicate historical land use adjacent to the project site has the potential to have impacted the project site with agricultural chemicals.

Based on the public records, historical aerial photographs and historical topographic maps reviewed for the ISA, the site reconnaissance performed on 24 May 2018, and a telephone conversation with UC Agricultural Extension, Crawford & Associates, Inc. makes the following recommendation:

- A recognized environmental condition (REC) was identified with respect to agricultural chemical use in the rice fields surrounding the project site. Crawford & Associates recommends that soil and surface water within the proposed construction limits be screened for the presence of agricultural chemicals at concentrations that present an exposure risk. If bridge demolition or construction activities are expected to encounter groundwater, the groundwater should also be screened.

I.1. Less Than Significant Impact. The project will not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Hazardous materials will be used during construction activities (e.g., equipment maintenance, fuel, solvents, roadway resurfacing and re-striping materials). However, all hazardous material use would be required to comply with all applicable local, state, and federal standards associated with the handling and storage of hazardous materials. Use of hazardous materials in accordance with applicable standards ensures that any exposure of the public to hazard materials would result in a less than significant impact.

I.2. Less Than Significant With Mitigation Incorporated. The ISA developed by Crawford & Associates identified two Recognized Environmental Conditions (REC) within the project boundary. The rice fields surrounding the project site may contain agricultural chemicals at concentrations that present and exposure risk. The proposed project will have impacts on the adjacent agricultural soils, therefore Mitigation Measure I.1 is required. The second is surface water and groundwater in the area. If bridge demolition or construction activities are expected to expose workers to surface water or groundwater, the waters shall also be screened for contaminants. Groundwater depths in the area were identified in the ISA as being as high was 8.6 feet below ground surface. The expected depth of construction activities is 8 feet. Based on the expected construction depths and techniques, construction activities may encounter potentially contaminated water, therefore if surface water or groundwater is encountered during construction, screening is required. With the incorporation of Mitigation Measure I.1, there will be a less than significant impact in regards to the accidental release of hazardous materials into the environment. This is a less than significant impact with mitigation.

Additionally, the existing structures were assessed for Asbestos Containing Construction Material (ACCM) and Lead-Containing Materials (LCM). No asbestos or ACCM was identified in the bridge components inspected. Paint samples collected from the bridge contained <0.010% by weight of lead, below threshold levels. The pained materials on the bridge do not require special handling, abatement, or disposal.

I.3. Less Than Significant. The proposed project does not involve any emission or handling of any hazardous materials, substances, or waste within one-quarter mile of an existing school. No existing or proposed school facilities are located within one-quarter mile radius of the project site. As stated previously, the use and handling of hazardous materials during construction activities would occur in accordance with applicable federal, state, and local laws including CalOSHA requirements. This is considered a less than significant impact.

I.4. Less Than Significant. The project is not included on a list of sites containing hazardous materials, and would not result in a significant hazard to the public or to the environment. The project site is not included on the Cortese list compiled pursuant to Government Code Section 65962.5. The nearest sites containing hazardous materials are located approximately 22 miles northwest of the project area in Orland California. This topic is considered a less than significant impact**.**

I.5. No Impact. The project site is not located in the vicinity of a public or private airport; therefore, there will be no impact.

I.6. Less Than Significant. Development of the proposed project will result in the temporary closure of the bridge during construction. The closure is expected to last approximately 4 months and result in an approximately 7 mile detour. Available detours include Road V to Norman to SR 45 or Road V to CR 62 to SR 45. Emergency response or evacuation plans do not include CR 66B in Glenn County. The proposed project will neither hinder the implementation, nor physically interfere with, emergency response or evacuation plans. The proposed project is considered to have a less than significant impact.

I.7. No Impact. The Fire Severity Zone Maps adopted by Cal Fire in 2007 identifies the project site in a Local Responsibility Area - unincorporated. The project does not involve the construction of significant structures that would be considered residential in nature, and thus would not expose people or associated structures to risk of loss, injury or death involving wildland fires. The project is the replacement of a structurally deficient bridge. The new bridge would improve emergency access to the area. No structures are proposed as part of the proposed project, therefore there is no impact.

MITIGATION:

MITIGATION I.1 (Hazard Material Screening):

Prior to construction, the soil and water within the proposed construction limits shall be screened for the presence of agricultural chemicals at concentrations sufficient to be an exposure hazard. If excavation for the new bridge abutments encounters groundwater, this should also be screened for agricultural chemicals. Should any constituents of concern be found in excess concentrations, the applicant shall prepare a Soil Management Plan (SMP) or equivalent report for water resources, which shall be distributed to construction personnel. The SMP or equivalent report shall establish protocols for handling, sampling, storage, and disposal of any suspected contaminated soils or water generated during construction activities.

MITIGATION MONITORING I.1: Public works staff will require final copies of the required assessment/plan documenting relief thereof, prior to commencing construction at the site.

J. Hydrology/ Water Quality Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
1. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?		X		
2. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?			X	
3. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:			X	
a. result in substantial erosion or siltation on- or off-site;			X	
b. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;			X	
c. 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; or			X	
d. impede or redirect flood flows?		X		
4. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?			X	
5. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?			X	

DISCUSSION:

J.1. Less Than Significant Impact With Mitigation. As identified in Section D of this document (Mitigation Measure D.5), the project will obtain all appropriate regulatory permits including certification from a RWQCB per Section 401 Water Quality Certification of the Clean Water Act prior to construction activities. A Section 401 permit is contingent on sufficient evidence that a project would not pose a threat to water quality or quantity leaving the proposed project's site. Additionally, the project would be required to prepare a Storm Water Pollution Prevention Plan and implement all applicable erosion control BMPs, which include: the installation of straw wattles, and silt fencing to prevent silt/sediment from entering the waterways, and re-seeding of disturbed upland areas post construction. As described in the Air Quality Section C of this document, the project will be required to adhere BAMMs standard mitigation measures for fugitive dust control, Mitigation Measure C.1 (Air Quality).

Existing State permitting requirements by the RWQCB, will ensure that the project will not result in the violation of any water quality standards or waste discharge requirements. Due to the scope and nature of the proposed project it is not expected that the project would degrade ground water quality. With these standard permitting and water quality requirements in place, potential impacts to water quality from the project are considered to be less than significant with mitigation.

J.2. No Impact. The proposed project involves the replacement of an existing bridge and does not propose activities requiring increases in groundwater use. No new extraction wells or buildings with the potential to increase water usage are proposed.

J.3 (a). Less Than Significant Impact. The channel slopes are susceptible to erosion and bank protection will be necessary at the abutments. Rock slope protection will be placed at both abutments to protect against channel erosion. The limits of RSP at each abutment will extend from the top of bank down to the toe of slope and approximately 10' upstream and downstream of the proposed edge of deck. The embankment at the existing drainage outfall located at the northwest corner of the bridge will also be reinforced with rock slope protection to minimize erosion. The result of the proposed project will be a site that is less susceptible to erosion and siltation, therefore this is considered a less than significant impact.

J.3 (b). Less Than Significant Impact. No change in local drainage pattern is proposed. Water will continue to drain into roadside ditches along the toe of slope in fill sections. There is an existing drainage ditch located at the northwest corner of the bridge that runs parallel to County Road 66B. This ditch will need to be realigned to the north to accommodate the fill limits of the proposed roadway profile. The implementation of Stormwater Pollution Prevention Plan and BMPs during construction activities will minimize soil erosion and siltation. Additionally, the proposed project will not alter the existing drainage pattern of the site, including through the alteration of the course of Colusa Drain in a manner that will result in substantial erosion or siltation on- or off-site

J.3 (c). Less Than Significant Impact. The project would alter the existing drainage patterns at the site, however, it would not result in substantial erosion or siltation on- or off-site, or create excessive runoff because prior to construction the project would have to demonstrate compliance with County/State post-construction storm water management requirements including the General Construction Permit requirements of the NPDES, as well as, the preparation of a SWPPP that incorporates water quality control BMP's. The proposed project will not substantially alter the existing drainage pattern in a manner that would create environmental impacts, therefore this is considered a less than significant impact.

J.3 (d). Less Than Significant Impact with Mitigation. Crawford & Associates prepared a Bridge Design Hydraulic Study Report (BDHSR) (Appendix F) for the project which analyzed potential changes in hydrological conditions based on project activities at the bridge. The report also documents the scour potential and recommends scour countermeasures for the proposed condition. The BDHSR utilized the Hydraulic Engineering Center River Analysis System (HEC-RAS) and a survey provided by Quincy Engineering, Inc. to estimate the hydraulic conveyance capacity under project conditions. The BDHSR concluded that the proposed bridge replacement would have an insignificant impact on the water surface elevations at the project site and would improve channel hydraulics. As identified in Section D of this document (Mitigation Measure D.5), the project will obtain all appropriate regulatory permits including an Encroachment Permit from the Central Valley Flood Protection Board which will ensure that the proposed project will not impeded or redirect flood flows in a manner which would cause significant environmental impacts. With the implementation of Mitigation Measure D.5. there will be a **less than significant impact.**

J.4. Less Than Significant Impact. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map No. 06021C0850D, the project site is predominately in Zone X, A and AE (part of the Special Flood hazard Area). The project site is not located in an area that is prone to seiche or tsunami. Risks associated with inundation and the release of pollutants by flood, seiche or tsunami, would not occur beyond existing conditions. This is considered a less than significant impact.

J.5. Less than Significant Impact. The implementation is the proposed project is not expected to substantially degrade water quality with the implementation of the SWPPP and BMPs. The project will

not conflict or obstruct implementation of a water quality control plan or sustainable groundwater management plan. The impact to water quality will be less than significant.

MITIGATION: Mitigation Measure D.5. (Regulatory Permits)

K. Land Use and Planning Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
1. Physically divide an established community?			X	
2. 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?				X

DISCUSSION:

K.1. Less Than Significant. The project will not physically divide an established community. There will be a temporary detour provided to provide circulation around the project site which will result in approximately a 7 mile detour. There are several options for detours in this rural environment. This disruption will be temporary during construction activities Therefore, the project is anticipated to have a less than significant impact.

K.2. No Impact. The project implements General Plan goals and policies which strive to enhance community connectivity and improve public safety and access. The project is also identified in the Glenn County Regional Transportation Plan. There will be no conflicts with land use plans, policies or regulations adopted for the purpose of avoiding or mitigating an environmental effect. This is considered no impact.

MITIGATION: None Required.

L. Mineral Resources Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
1. 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?				X
2. 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?				X

DISCUSSION:

L.1.-2. No Impact. There are no active mines and no known areas with mineral resource deposits within the vicinity of the project site. The majority of the closest mining operations are located to the northwest, between Artois and Willows. The project would not result in the loss of availability of a known mineral resource or mineral resource recovery site. Mineral resources are not associated with the project or located on the project site. Therefore, the project would have no impact on mineral resources.

MITIGATION: None Required.

M. Noise Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
1. 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?			X	
2. Generation of excessive groundborne vibration or groundborne noise levels?			X	
3. 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?				X

DISCUSSION:
The Glenn County General Plan identifies land use compatibility standards for exterior community noise for a variety of sensitive land uses. For residential designations, a maximum allowable noise exposure level of 60 Ldn/CNEL outdoors and 45 Ldn/CNEL indoors decibel level is generally identified as being an acceptable noise environment requiring no special noise insulation or noise abatement features. This standard is applicable to properties containing noise sensitive land uses are generally defined as locations where people reside or where the presence of unwanted sound could adversely affect the use of the land.

The Glenn County Noise Control Ordinance provides the County with a means of assessing complaints of alleged noise violations and to address noise level violations. The ordinance sets forth exterior and interior noise level standards that are applicable to sensitive areas within Glenn County, including residential uses. Among the noise generating activities subject to the noise ordinance are noise sources associated with construction. If project operations occur between 7:00a.m. to 10:00p.m. the maximum decibel level is 70 dB. From 10:00p.m. to 7:00a.m. decibels must remain below 65dB.

M.1.-2. Less Than Significant Impact The proposed project will be required to comply with all applicable rules, regulations and control measures including permitting, prohibitions and limits to emissions that work to reduce air pollution throughout California. The nearest residents to the project site are approximately 1,000 feet away. While construction activities would generate noise, it is anticipated at this distance noise levels would not exceed established acceptable levels. The project would be expected to comply with the noise ordinance with regard to allowable construction times and noise limits.

M.3. No Impact. The project site is not located in an airport land use plan area or in the vicinity of a private airstrip. The project would not expose people residing to or working in the project area to excessive noise levels. There would be no impact.

MITIGATION: None required.

N. Population and Housing Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
1. 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)?				X
2. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				X

DISCUSSION:
N.1.-N.2. No Impact. The proposed project is a bridge replacement project located in a rural portion of Glenn County. The proposed project will not induce substantial population growth in the area, directly or indirectly, or displace a substantial number of people or existing housing. The project will not displace people or housing nor necessitate the construction of replacement housing elsewhere. Therefore, the project will not impact population or housing. The Project impacts to population/housing are therefore considered to have no impact.

MITIGATION: None Required.

O. Public Services Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, 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
Fire protection?			X	
Police protection?			X	
Schools?			X	
Parks?			X	
Other public facilities?			X	

DISCUSSION:

O.1.-5. Less Than Significant Impact. The proposed project would not construct buildings, businesses or other facilities that would result in an increased population in the area. Temporary delays to traffic may occur during construction activities due to the planned detour. There would be no long- term demands on public services such as fire protection, police protection, schools, or parks generated by this project. No changes in fire protection or police protection are proposed as part of this project. Therefore, the proposed project is not anticipated to impact public services.

The proposed project would not cause any permanent closures to the roadway, nor block access to private property. Temporary average detours are not anticipated to exceed 15 minutes. The construction is expected to occur from October 1 – April 30 and take one construction season weather and conditions permitting. Temporary road delays and closures during construction may affect traffic patterns near the construction site and potentially affect fire and police response times for multiple apparatus events; however, any such impacts would be minor and not significantly affect long-term service ratios, response times, or other performance objectives for public services. Project proponents would notify local emergency service providers of construction activities and would ensure coordination with local providers to establish alternative routes and appropriate signage. No changes in fire protection or police protection services are proposed as part of this project. The proposed project would not add to the area's population or increase demands on police or fire services. The effects of the temporary road closure would not cause significant environmental impacts as it relates to police and fire service. Therefore, relative to the provision of police and fire service, the proposed project would generate less than significant impacts.

MITIGATION: None Required.

P. Recreation	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
1. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				X
2. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				X

DISCUSSION:

P.1.-2. No Impact. The project does not propose dwelling units, businesses or other structures that might increase the area's human population. The project site does not include existing recreational facilities. Similarly, the proposed project would not construct recreational facilities.

The proposed project would not generate additional demands on parks and recreational facilities. The proposed project does not include the development of recreational facilities or other structures that would necessitate the development or modification of any recreational facilities. Relative to recreation, the proposed project would result in no impact.

MITIGATION: None Required.

Q. Transportation Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
1. Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?				X
2. Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?				X
3. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				X
4. Result in inadequate emergency access?			X	

Q.1. No Impact. The proposed project is a bridge replacement that would result in the replacement of a single-lane bridge with a 32' clear width bridge, consisting of two-12' paved lanes and two-4' unpaved shoulders. The project will not conflict with an applicable plan, ordinance or policy regarding the effectiveness of the performance of the circulation system. The proposed project would not generate additional traffic, as it would not construct facilities or land uses that would generate additional vehicular traffic such as a retail center or residential subdivision. No impact is anticipated.

Q.2. No Impact. The project is not expected to result in additional vehicular trips, or to impact levels of service and trip distributions within the project area. The proposed project will not conflict with an applicable congestion management program and will not affect travel demand measures. Roadway safety conditions are expected to improve upon project completion, as the project will include a new wider bridge and provide safer, wider transitions to the bridge structure. No impact is anticipated.

Q.3. No Impact. The proposed project will not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that will result in substantial safety risks. The project site is not located in the vicinity of a public airport. This project will not obstruct air traffic patterns. No impact is anticipated.

Q.4. Less than Significant. During the construction phase, emergency vehicle access to, and passage through, the project site would be ensured through adherence to applicable roadway and/or lane closures and detour standards. The project will be required to adhere to pertinent local and state construction site regulations. Thus, temporary traffic control activities during the construction phase of the proposed project would not prevent emergency vehicle movement throughout the area. In addition, the existing bridge would remain in operation during construction activities. The proposed improvements, which would bring the existing facilities in the project site up to current design standards, would provide safer passage for emergency vehicles. Therefore, relative to emergency access, impacts would be less than significant.

MITIGATION: None Required.

R. Tribal Cultural Resources	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
1. 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		X		
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 Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.		X		

DISCUSSION:
The project is not anticipated to cause a substantial adverse change in the significance of a tribal cultural resource. The project site is in an area considered to be low to moderate archaeological sensitivity. The project site was located within the traditional boundaries of the Wintun-Wailaki, Enterprise Rancheria, Paskenta Band of Nomlaki Indians and the Mechoopda Indian Tribe of Chico Rancheria. Letters, in compliance with Assembly Bill 52 (AB52) were sent to representatives of the aforementioned groups on November 5, 2020. None of the Tribes responded requesting consultation on the project.

R.1.a. – 1.b. Less Than Significant with Mitigation Incorporated. An ASR, HPSR and HRER were developed for the proposed project (Appendix D). The investigation consisted of an on-site records search and document review at the NEIC. Maps and records on file at this facility were consulted, along with the National Register of Historic Places Listed Properties and Determined Eligible Properties, the California Register of Historical Places, the California Points of Historical Interest, the California Inventory of Historical Resources, the California Landmarks Registry, and the Directory of Properties in the Historic Property Data File.

One historic resource, the Colusa Drain, was assumed to be eligible for the National Register of Historic Places (NRHP) and is listed in the California Register of Historical Resources (CRHR). The Colusa Drain Canal is assumed eligible as a contributor to the Sacramento River Flood Control Project and six irrigation districts that it serves. These properties have possible significance under NRHP Criterion A for contributions to regional history of northern California flood control and the development of agriculture in the region. The Colusa Drain may also have regional significance under Criterion C as a contributor to the design and engineering of the Sacramento River Flood Control Project. The assumed period of significance for the Colusa Drain Canal, for purposes of this undertaking, is 1921 to 1950. It is assumed eligible at the local level of significance.

A Sacred Lands File and Native American Contacts List Request to the Native American Heritage Commission (NAHC). NAHC responded to the request on May 31, 2018 indicating that NAHC files contain no listing for sacred lands in the vicinity of the proposed project site. On November 5th, 2020,

letters containing a Project description, a map location, and a request for information were sent to four Tribal contacts. None of the Tribes responded.

The extensive land modifications within the APE and surrounding areas makes the likelihood of intact cultural resources within the APE low. In the event that resources are inadvertently discovered, Implementation of Mitigation R.1 would reduce impacts to less than significant with mitigation incorporated.

MITIGATION:

MITIGATION R.1. (Tribal Cultural Resources): If during ground disturbing activities, any potentially paleontological, prehistoric, protohistoric, and/or historic cultural resources or tribal cultural resources are encountered, the supervising contractor shall cease all work within 25 feet of the find (100 feet for human remains) and notify the County. A professional archaeologist meeting the Secretary of the Interior's Professional Qualification Standards for prehistoric and historic archaeology and being familiar with the archaeological record of Glenn County, shall be retained to evaluate the significance of the find. County staff shall notify all local tribes on the consultation list maintained by the State of California Native American Heritage Commission, to provide local tribes the opportunity to monitor evaluation of the site. If human remains are uncovered, the project team shall notify the Glenn County Coroner pursuant to Section 7050.5 of California's Health and Safety Code. Site work shall not resume until the archaeologist conducts sufficient research, testing and analysis of the archaeological evidence to make a determination that the resource is either not cultural in origin or not potentially significant. If a potentially significant resource is encountered, the archaeologist shall prepare a mitigation plan for review and approval by the County, including recommendations for total data recovery, Tribal monitoring, disposition protocol, or avoidance, if applicable. All measures determined by the County to be appropriate shall be implemented pursuant to the terms of the archaeologist's report. The preceding requirement shall be incorporated into construction contracts and documents to ensure contractor knowledge and responsibility for the proper implementation.

MITIGATION MONITORING R.1: Public Works staff will verify that the above wording is included on construction plans. Should paleontological, prehistoric, protohistoric, and/or historic cultural resources or tribal cultural resources be encountered, the supervising contractor shall be responsible for reporting any such findings to Public Works staff, and contacting a professional archaeologist or paleontologist in consultation with Public Works staff, to evaluate the find.

S. Utilities and Service Systems Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
1. 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?		X		
2. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?			X	
3. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?			X	
4. 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?			X	
5. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?			X	

DISCUSSION:

S.1. Less Than Significant With Mitigation. The proposed project would not require wastewater treatment, new electric power, natural gas or telecommunications facilities. The existing bridge allows drainage to fall directly into the channel underneath the small wood rail. The proposed profile has a crest vertical curve which will provide sufficient gradient for drainage of roadway and bridge surfaces near Colusa drain. The replacement bridge will be crowned at the centerline and utilize concrete barrier rail or curb to collect storm water and direct it off the bridge. Eventually, the bridge and roadway drainage will empty into Colusa Drain or roadway ditches. The project does require the rehabilitation of an existing drainage system, including surface and subsurface drainage infrastructure to capture and direct runoff from CR66B to Colusa Drain at the northwest corner of the bridge. Rock slope protection is proposed as part of this drainage infrastructure, and the placement of the RSP will likely be within the jurisdictional of the RWQCB, USACE, CDFW and CVFPB. Mitigation Measure D.5, as described in the Biological section of this document, requires the County to obtain final permits from the USACE, CVWQCB, CVFPB and CDFW prior to the construction of the project. With this mitigation measure, potential impacts to the environment as a result of the rehabilitation of drainage systems will be less than significant with mitigation incorporated.

S.2.-S.3. No Impact. The proposed project does not require the ongoing use of water as there are no landscaping components involved. The proposed project will not involve the need for wastewater treatment or the expansion of wastewater treatment facilities. No impact is anticipated.

S.4.-S.5. Less Than Significant Impact. The project will not 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. During construction, a limited amount of construction waste would be generated. Waste would only be sent to permitted landfill facilities with adequate capacity to accept construction waste. The project would not create a long-term source of solid waste needing disposal. Disposal and recycling of materials generated by the construction of the new road and bridge will be

handled and disposed of in accordance with Federal, State, and local requirements. This impact would be less than significant.

MITIGATION: Mitigation Measure D.5 (Regulatory Permits)

T. 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
1. Substantially impair an adopted emergency response plan or emergency evacuation plan?				X
2. 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?				X
3. 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?				X
4. 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?				X

DISCUSSION:
T.1.-T.4. No Impact. The project is not located in or near state responsibility areas or lands classified as moderate, high or very high fire hazard severity zones; therefore, it will not substantially impair an adopted emergency response plan or emergency evacuation plan, exacerbate wildfire risks, require the installation or maintenance of associated infrastructure, or expose people or structures to significant risks. The project site is identified as an area outside of Cal Fire's 'Very High Fire Hazard Severity Zone' (i.e., it is a non-VHFHSZ) as identified by Cal Fire (see the following: https://databasin.org/datasets/fbb8a20def844e168aeb7beb1a7e74bc. The project site is located in a Local Responsibility Area (LRA) pursuant to the Fire Hazard Severity Zone and is served by the Glenn County Fire Department as shown in the SRA map last modified by Cal Fire on June 20, 2019. The proposed project would have no impact on wildfire.

MITIGATION: None Required.

U. MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
1. 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?			X	
2. 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)?			X	
3. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?			X	

DISCUSSION:

U.1 Less Than Significant with Mitigation Incorporated. With the implementation of the mitigation measures included in this Initial Study, (see sections Agricultural Resources, Air Quality, Biological Resources, Cultural Resources, and Hazards and Hazardous Materials, the proposed project would not degrade the environment; result in an adverse impact on fish, wildlife, or plant species including special status species, or prehistoric or historic resources.

U.2 No Impact. The project is the replacement of a structurally deficient bridge which spans Colusa Drain on Glenn County Road 66B with a wider bridge for safety purposes. The project does not involve the addition of new expanded structures, facilities, or growth inducing effects, which would be considered cumulatively considerable with regards to past or future projects.

U.3 No Impact. Based on the preceding environmental analysis and adherence to applicable local, state and federal regulations, as noted in this document, the proposed project would not result in potentially significant cumulative, direct or indirect adverse effects on human beings.

V. MITIGATION MONITORING AND REPORTING PROGRAM

MM No.	Mitigation Measure	Timeframe for Implementation	Responsible Monitoring Agency	Verification of Compliance		
				Agency & Initials	Date	Notes
Agricultural Resources						
	Mitigation Measure B.1: Preservation of Agricultural Access and Land The following are recommended avoidance and mitigation measures that shall be implemented prior to the start of construction and continue throughout project activities. 1. The advance notification and coordination with local property owners/growers will be conducted to minimize short-term impacts related to construction activities. Before any work that could interfere with agricultural activities, the work will be coordinated with appropriate property owners/growers. 2. The extent of work within temporary construction easements on private land will be minimized to the extents necessary to provide access and construct infrastructure such as driveways and bridges on private land.	The County shall provide advance notification and coordination with property owners/growers and confirm that soils amendments meet specifications prior to and post construction.	Glenn County Public Works Agency			

MM No.	Mitigation Measure	Timeframe for Implementation	Responsible Monitoring Agency	Verification of Compliance		
				Agency & Initials	Date	Notes
Air Quality						
Mitigation Measure C.1: (Air Quality) To comply with the Glenn County Air Pollution Control District's (GAPCD) regulations (section 76 visible emissions), the County shall comply with all Best Available Mitigation Measures (BAMMs) for the control of construction related particulate emissions. The contractor shall submit an Air Quality Attainment Plan to the County for approval. The approved plan shall include all applicable BAMMs as specified by GCAPCD's Standard Construction Phase Mitigation Measures, including but not limited to the following: 1. Haul trucks must be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained. 2. Construction equipment exhaust emissions shall not exceed GCAPCD Section 76 Visible Emissions (40 percent opacity or Ringelmann 2.0). Operators of vehicles and equipment found to exceed opacity limits shall act to repair the equipment within 72 hours or remove the equipment from service. 3. The area disturbed by demolition, clearing, grading, earth moving, or excavation operations shall be minimized at all times. 4. Suspend grading or earth moving activities when wind speeds exceed 20 mph 5. Minimize unnecessary idling time to 5 minutes. 6. Water shall be applied as needed to prevent fugitive dust impacts offsite. 7. All onsite vehicles should be limited to a speed of 15mph on unpaved roads.	Air Quality Attainment Plan – Prior to initiation of construction	Glenn County Public Works Agency			

MM No.	Mitigation Measure	Timeframe for Implementation	Responsible Monitoring Agency	Verification of Compliance		
				Agency & Initials	Date	Notes
Biological Resources						
MITIGATION D.1. (Giant Garter Snake) Initial construction and the installation of exclusion fencing will be initiated during the active period of GGS; therefore, GGS individuals are expected to avoid harm's way during initial vegetation removal and ground-disturbing activities. Construction activities will continue as temperatures decrease and GGS enter their dormant season. With the installation of exclusion fencing during the GGS active season and the continuation of construction activities throughout the GGS inactive season, GGS individuals will not be expected to move into the project area. Avoidance and minimization measures will also be implemented to minimize the potential for take. To ensure no direct take of GGS occur due to the proposed project, the following avoidance and minimization measures will be implemented. **Avoidance and Minimization Efforts** The following recommendations, when implemented, will avoid and minimize impacts to this species: • The applicant is proposing to work outside of the snake's active season. Construction and ground disturbing activities will be initiated during the active season, continue through the inactive season, and is anticipated to be completed before the inactive season is over. • Twenty-four hours prior to the commencement of construction activities, the project area shall be surveyed for giant garter snakes by a qualified biologist. The biologist will provide a written report that adequately documents the monitoring efforts within 24 hours of commencement of construction activities. The project area shall be re-inspected by the monitoring biologist whenever a lapse in construction activity of 2 weeks or greater has occurred. • During construction operations, stockpiling of construction materials, portable equipment, vehicles, and supplies will be restricted to the designated construction staging areas and all operations will be confined to the minimal area necessary.	Public Works staff shall ensure the incorporation of avoidance and minimization measures into the plans. Public Works staff shall document the final purchase of required mitigation credits, or other method of compensatory mitigation documenting relief thereof, prior to commencement of construction activities.	Glenn County Public Works Agency			

MM No.	Mitigation Measure	Timeframe for Implementation	Responsible Monitoring Agency	Verification of Compliance		
				Agency & Initials	Date	Notes
MITIGATION D.1. (Giant Garter Snake) Continued • A qualified biologist shall be onsite to monitor for GGS during all vegetation removal and initial ground-disturbing activities. After the initial ground-disturbing activities have been completed, the qualified biologist will monitor the installation of exclusion fencing around the project boundary. The qualified biologist will monitor excavation of suitable GGS habitat and bridge removal. • Project-related vehicles will observe a 20-mile-per-hour speed limit within construction areas, except on existing paved roads where they will adhere to the posted speed limits. • High visibility fencing will be erected around the habitats of the snake to identify and protect these areas from encroachment of personnel and equipment. These areas will be avoided by all construction personnel. The fencing shall be inspected by the Contractor before the start of each work day and maintained by the Contractor until completion of the project. Fencing will be established in the uplands immediately adjacent to aquatic snake habitat and extending up to 200 feet from construction activities, where feasible. Snake exclusionary fencing will be buried at least 6 inches below the ground to prevent snakes from attempting to burrow or move under the fence. • Best Management Practices (BMPs) will be implemented to minimize the potential for erosion and sedimentation into nearby waterbodies. • After completion of construction activities, the applicant will remove any temporary fill and construction debris and, wherever feasible, restore disturbed areas to pre-project conditions. Restoration work includes such activities as re-vegetating the banks and active channels with a seed mix similar to pre-project conditions. • A photo documentation report showing pre- and post-project area conditions will be submitted 1 month after the implementation of the restoration.	See previous pages	See previous pages			

MM No.	Mitigation Measure	Timeframe for Implementation	Responsible Monitoring Agency	Verification of Compliance		
				Agency & Initials	Date	Notes
MITIGATION D.1. (Giant Garter Snake) Continued **Compensatory Mitigation** The project will permanently and temporarily impact upland and aquatic GGS habitat. To mitigate permanent and temporary impacts to GGS habitat the following is recommended: • Permanent loss of GGS habitat will be compensated by purchasing creation credits at the Colusa Basin Conservation Bank or at another USFWS and CDFW approved conservation bank with a service area that accommodates the project location. Credits shall be purchased prior to the start of construction. Table 3 shows the amount of credits that will need to be purchased. • Temporary disturbance to snake habitat shall be restored to pre-project conditions within 1 year of completion of construction. ○ Restoration and monitoring shall follow the USFWS Guidelines for Restoration and/or Replacement of Giant Garter Snake Habitat (1997). If restoration is unsuccessful, as determined by the USFWS, consultation will be reinitiated.	See previous pages	See previous pages			

MM No.	Mitigation Measure	Timeframe for Implementation	Responsible Monitoring Agency	Verification of Compliance		
				Agency & Initials	Date	Notes
MITIGATION D.2. (Western Pond Turtle) The following measures recommended in order to avoid and minimize potential impacts to western pond turtle: • Immediately prior to conducting in-stream work, a qualified biologist shall conduct a survey to determine the presence or absence of western pond turtles. If western pond turtles are observed where they could be potentially impacted by project activities, as determined by the onsite biologist, then work shall not be conducted within 100 feet of the sighting until the turtle(s) have left the project site or a qualified biologist has relocated the turtle(s) immediately outside of the project site. • If turtle eggs are uncovered during construction activities, then all work shall stop within a 25 foot radius of the nest and the onsite biologist should be notified immediately. The 25 foot buffer should be marked with identifiable markers that do not consist of fencing or materials that my block the migration of young turtles to the water or attract predators to the nest site. No work will be allowed within the 25 foot buffer until CDFW has been consulted • All portions of the project site that could result in inadvertently trapping turtles, such as open pits, trenches, and de-watered areas will be covered and/or exclusion fencing will be installed to prevent turtles from entering these areas.		Public Works staff will require final copies of the pre-construction surveys for western pond turtle, prior to the commencement of construction. Should the species occur on the project site, a qualified biologist shall be retained on-site during ground-disturbance.	Glenn County Public Works Agency			

MM No.	Mitigation Measure	Timeframe for Implementation	Responsible Monitoring Agency	Verification of Compliance		
				Agency & Initials	Date	Notes

MITIGATION D.3. (Tri-Colored Blackbird)
There is suitable tri-colored blackbird nesting habitat present within the BSA in the form of blackberry thickets. The following are avoidance and minimization measures for tricolored blackbird:
• Project activities, including site grubbing and vegetation removal, within the BSA shall be initiated outside of the bird nesting season (February 1 – August 31).
• If project activities cannot be initiated outside of the bird nesting season, or if there is a lapse in construction of more than 7 days during the bird nesting season, then the following will occur:
  ○ A qualified biologist will conduct a pre-construction survey within 7 days prior to starting work.
  ○ If an active tricolored blackbird nest (i.e. with egg(s) or young) is observed within 250 feet of the project boundary during the pre-construction survey, then a species protection buffer will be established. The species protection buffer will be defined by the qualified biologist in consultation with CDFW.
• Construction activity shall be prohibited within the buffer zones until the young have fledged or the nest fails. Nests shall be monitored once per week by a qualified biologist and a report submitted to the County weekly.
	Public Works staff will confirm project initiation timing and/or require final copies of the pre-construction surveys for tri-colored blackbird, prior to the commencement of construction. Should the species occur on the project site, a qualified biologist shall be retained on-site during vegetation or ground disturbance.	Glenn County Public Works Agency			

MM No.	Mitigation Measure	Timeframe for Implementation	Responsible Monitoring Agency	Verification of Compliance		
				Agency & Initials	Date	Notes

MITIGATION D.4. (Migratory and Nesting Birds)
To avoid impacts to avian threatened species (i.e. tricolored blackbird) or avian species protected under the MBTA and the CFGC, the following avoidance and minimization measures are recommended.
The following are avoidance and minimization measures for California avian threatened species and species protected under the MBTA and the CFGC:
 	
• Any vegetation removal and/or ground disturbance activities should take place during the avian non-breeding season (September 1 – January 31).
• If project activities cannot be initiated outside of the avian nesting season, or if there is a lapse in construction of more than 7 days during the avian nesting season, then a migratory bird and raptor survey shall be conducted within the BSA by a qualified biologist. The qualified biologist shall:
  ○ Conduct a survey for all birds protected by the MBTA and CFGC within 7 days prior to construction activities, and map all nests located within 200 feet of construction areas;
  ○ Develop buffer zones around active nests as recommended by a qualified biologist. Construction activity shall be prohibited within the buffer zones until the young have fledged or the nest fails. Nests shall be monitored at least once per week by a qualified biologist and a report submitted to the County monthly.
• All staging and construction activity will be limited to designated areas within the BSA and designated routes for construction equipment shall be established in order to limit disturbance to the surrounding area.
	Public Works staff will confirm project initiation timing and/or require final copies of the pre-construction surveys for migratory and nesting birds, prior to the commencement of construction. Should the species occur on the project site, a qualified biologist shall be retained on-site during vegetation or ground disturbance.	Glenn County Public Works Agency			

MM No.	Mitigation Measure	Timeframe for Implementation	Responsible Monitoring Agency	Verification of Compliance		
				Agency & Initials	Date	Notes
MITIGATION D.4. (Migratory and Nesting Birds) Continued The following are recommended exclusion and monitoring activities to avoid and minimize impacts to avian species protected under the MBTA and CFGC that have the potential to nest on the existing bridge: • The removal of the current bridge will be conducted during the avian non-breeding season (September 1 – January 31) so as to avoid impacts to avian species that may potentially nest on the bridge. • If the current bridge cannot be removed outside of the avian breeding season (February 1 – August 31) then the following exclusion and monitoring activities shall take place. Exclusion • All avian nests should be removed from the bridge prior to February 1 so as to deter avian species from nesting on the bridge. • Any exclusionary devices that are deemed necessary in order to prevent avian species from nesting on the existing bridge should be established by a qualified biologist prior to February 1. Exclusionary devices shall be maintained by the County or a qualified biologist until the current bridge is removed or the end of the avian breeding season. Monitoring • Weekly, or as necessary, monitoring or additional exclusion activities will be conducted by a qualified biologist on the current bridge after February 1 until the current bridge is removed or the end of the avian breeding season (August 31).	See previous pages	See previous pages			

MM No.	Mitigation Measure	Timeframe for Implementation	Responsible Monitoring Agency	Verification of Compliance		
				Agency & Initials	Date	Notes
MITIGATION D.5. (Regulatory Permits): Prior to commencing construction, the County shall have available the final copies of the permits and authorizations required by the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, California Regional Water Quality Control Board, California Department of Fish and Wildlife, and the Central Valley Flood Protection Board or copies of relevant correspondence documenting that no permit is required, as applicable.		Public Works staff will require final copies of the required permits or letters documenting relief thereof, prior to the commencement of construction.	Glenn County Public Works Agency			

MM No.	Mitigation Measure	Timeframe for Implementation	Responsible Monitoring Agency	Verification of Compliance		
				Agency & Initials	Date	Notes
Cultural Resources						
MITIGATION E.1. (Unidentified Cultural Resources): A note shall be placed on all grading and construction plans which informs the construction contractor that if any bones, pottery fragments or other potential cultural resources are encountered during construction, all work shall cease within the area of the find equivalent to a 25 foot radius around the materials (100 feet for human remains) pending an examination of the site and materials by a professional archaeologist. If during ground disturbing activities, any bones, pottery fragments or other potential cultural resources are encountered, the contractor shall cease all work within 25 feet of the materials and notify Glenn County Public Works staff at (530) 934-6530. A professional archaeologist who meets the Secretary of the Interior's Professional Qualification Standards for prehistoric and historic archaeology and who is familiar with the archaeological record of Glenn County, shall be retained to evaluate the significance of the find. Further, County Public Works staff shall notify the local tribe(s) on the consultation list maintained by the State of California Native American Heritage Commission to provide local tribes the opportunity to monitor evaluation of the site. Site work shall not resume until the archaeologist conducts sufficient research, testing and analysis of the archaeological evidence to make a determination that the resource is either not cultural in origin or not potentially significant. If a potentially significant resource is encountered, the archaeologist shall prepare a mitigation plan for review and approval by the Glenn County Public Works Agency, including recommendations for total data recovery, Tribal monitoring, disposition protocol, or avoidance, if applicable. All measures determined by Glenn County to be appropriate shall be implemented pursuant to the terms of the archaeologist's report. The preceding requirement shall be incorporated into construction contracts and plans to ensure contractor knowledge and responsibility for proper implementation.	Public Works staff will verify that the wording is included on construction plans. Should cultural resources be encountered, the contractor shall be responsible for reporting any such findings to Public Works staff, and contacting a professional archaeologist, in consultation with Public Works staff, to evaluate the find.	Glenn County Public Works Agency			

MM No.	Mitigation Measure	Timeframe for Implementation	Responsible Monitoring Agency	Verification of Compliance		
				Agency & Initials	Date	Notes
Hazards and Hazardous Materials						
MITIGATION I.1 (Hazard Material Screening): Prior to construction, the soil and water within the proposed construction limits shall be screened for the presence of agricultural chemicals at concentrations sufficient to be an exposure hazard. If excavation for the new bridge abutments encounters groundwater, this should also be screened for agricultural chemicals. Should any constituents of concern be found in excess concentrations, the applicant shall prepare a Soil Management Plan (SMP) or equivalent report for water resources, which shall be distributed to construction personnel. The SMP or equivalent report shall establish protocols for handling, sampling, storage, and disposal of any suspected contaminated soils or water generated during construction activities.		Public works staff will require final copies of the required assessment/plan documenting relief thereof, prior to commencing construction at the site.	Glenn County Public Works Agency			

MM No.	Mitigation Measure	Timeframe for Implementation	Responsible Monitoring Agency	Verification of Compliance		
				Agency & Initials	Date	Notes
Tribal Cultural Resources						
	MITIGATION R.1. (Tribal Cultural Resources): If during ground disturbing activities, any potentially paleontological, prehistoric, protohistoric, and/or historic cultural resources or tribal cultural resources are encountered, the contractor shall cease all work within 25 feet of the find (100 feet for human remains) and notify the County. A professional archaeologist meeting the Secretary of the Interior's Professional Qualification Standards for prehistoric and historic archaeology and being familiar with the archaeological record of Glenn County, shall be retained to evaluate the significance of the find. County staff shall notify all local tribes on the consultation list maintained by the State of California Native American Heritage Commission, to provide local tribes the opportunity to monitor evaluation of the site. If human remains are uncovered, the project team shall notify the Glenn County Coroner pursuant to Section 7050.5 of California's Health and Safety Code. Site work shall not resume until the archaeologist conducts sufficient research, testing and analysis of the archaeological evidence to make a determination that the resource is either not cultural in origin or not potentially significant. If a potentially significant resource is encountered, the archaeologist shall prepare a mitigation plan for review and approval by the County, including recommendations for total data recovery, Tribal monitoring, disposition protocol, or avoidance, if applicable. All measures determined by the County to be appropriate shall be implemented pursuant to the terms of the archaeologist's report. The preceding requirement shall be incorporated into construction contracts and documents to ensure contractor knowledge and responsibility for the proper implementation.	Public Works staff will verify that the wording is included on construction plans. Should paleontological, prehistoric, protohistoric, and/or historic cultural resources or tribal cultural resources be encountered, the contractor shall be responsible for reporting any such findings to Public Works staff, and contacting a professional archaeologist or paleontologist in consultation with Public Works staff, to evaluate the find.	Glenn County Public Works Agency			

VI. REFERENCES

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Personal Communications

Sharla Stockton, Glenn County Agricultural Department. Personal Communication regarding Williamson Act lands sourced from the Glenn County Assessor's Office. September 25, 2020.

Appendix A:
Farmlands Study for the County Road 66B Bridge Replacement Project

gallaway
ENTERPRISES

117 Meyers Street • Suite 120 • Chico CA 95928 • 530-332-9909

December 12, 2018

Caltrans District 3 – North Region Local Assistance
ATTN: Chris Carrol Associate Environmental Planner
703 B Street
Marysville, CA 95901

RE: Farmlands Study for the County Road 66B Bridge Replacement Project, Glenn County

Mr. Carrol;

Gallaway Enterprises has reviewed the County Road 66B Bridge Replacement Project (Project) to determine if there is potential for impact to adjacent agricultural lands from the Project's proposed construction activity. Specifically, this study focused on farmland of prime, unique, and local importance within the proposed project.

The purpose of the Project is to replace the existing, structurally deficient bridge over the Colusa Drain with a new wider structure. The Project site is located approximately 2 miles west of State Route 45 near the town of Princeton, Colusa County. County Road 66B is bordered by rice fields and crosses the Colusa Drain at the Project location. Reclamation District 2047 constructed the Colusa Drain in 1919 originally to serve as a bypass. In addition to agricultural water, the drain now conveys both summer and winter flows to the Knights Landing outfall gates on the Sacramento River in Yolo County. County Road 66B at the Project location is straight and provides access to residences, farm support shops, and rice fields. The Project will result in permanent and temporary impacts to farmland. The following are the justifications for the evaluations in Part VI of the AD1006 form wherein a larger numeric score reflects a higher potential impact to farmland resources.

Evaluation 1: How much land is in nonurban use within a radius of 1.0 mile from where the project is intended?
The bridge is located in rural agricultural/residential setting. More than 95 percent of the land surrounding the Project site is considered nonurban; therefore, it is valued at the maximum of 15 points.

Evaluation 2: How much of the perimeter of the site borders on land in nonurban use?
Nearly the entire Project perimeter borders land used for farming rice therefore it is valued at the maximum of 10 points.

Evaluation 3: How much of the site has been farmed (managed for a scheduled harvest or timber activity) more than 5 of the last 10 years?
Approximately 50 percent of farmland within the site has been farmed more than 5 of the last 10 years; therefore, this criterion is rated at a 10 out of a possible 20.

Evaluation 4: Is the site subject to State or unit of local government policies or programs to protect farmland or covered by private programs to protect farmland?
The parcels north of the bridge (APNs 013-210-023, 013-210-034, and 013-210-035) which will be affected by construction activities is, according to the most recent 2015-2016 mapping, enrolled under a Williamson Act contract and is classified as prime farmland. In addition, all of the land surrounding the Project is designated as agricultural in the County's General Plan land use map and are subject to the County's agricultural preservation of Goal NRG-1: To preserve and maintain a viable and diverse agricultural industry within Glenn County. The maximum of 20 points is given for this criterion.

Evaluation 5: How close is the site to an urban built-up area?
The site is approximately 2.7 miles from the community of Princeton which is considered as urban built-up because of the presence of housing, commercial buildings, and other services. The maximum of 15 points is added to this evaluation.

Evaluation 6: How close is the site to water lines, sewer lines and/or other local facilities and services whose capacities and design would promote nonagricultural use?
Local facilities and services exist more than 1 but less than 3 miles from the site; therefore, this criterion is rated as 10 out of a possible 15.

Evaluation 7: Is the farm unit(s) containing the site (before the project) as large as the average-size farming unit in the county?
According to the 2012 Census of Agriculture, Acreage of Farm Units in Operation for Glenn County, California the average size of a farm is 510 acres. The surrounding parcels range from 38.6 acres to 101.4 acres in size. The largest parcel, 101.4, is 19% of 510, therefore the farm units within the Project site are below average by at least 81%. Deducting 1 point for each 5 percent below the average results in a reduction of 10 points from a total of 10, therefore this criterion is rated at a 0 out of a possible 10.

Evaluation 8: If this site is chosen for the project, how much of the remaining land on the farm will become nonfarmable because of interference with land patterns?
The proposed Project will permanently convert 0.04 acres and temporarily convert 0.14 acres of farmland; however the remaining farmland will not be affected, and therefore will not become non-farmable because of interference with land patterns. As a result, this criterion is rated at 0 out of 10 because less than 5 percent of the acres will be directly converted by the Project.

Evaluation 9: Does the site have available adequate supply of farm support services and markets, i.e., farm suppliers, equipment dealers, processing and storage facilities and farmer's markets?
This topic is somewhat subjective and difficult to quantify, however it is assumed that the site has an adequate supply of farm support services and markets, therefore this criterion is rated at a 5 out of a possible 5.

Evaluation 10: Does the site have substantial and well-maintained on-farm investments such as barns, other storage buildings, fruit trees and vines, field terraces, drainage, irrigation, waterways, or other soil and water conservation measures?
This topic is somewhat subjective and difficult to quantify, however the parcels appear to contain substantial and well-maintained on-farm investments in what would be considered to be a moderate amount of on-farm investment. There is no recommended method of determining the final rating for moderate on-farm investments, only the allowance to assign between 19 to 1 point(s). Conservatively, this criterion is rated at a 15 out of 20 possible points.

Evaluation 11: Would the project at this site, by converting farmland to nonagricultural use, reduce the demand for farm support services so as to jeopardize the continued existence of these support services and thus, the viability of the farms remaining in the area?
The proposed Project would not reduce the demand for farm support services so as to jeopardize the continued existence of these support services and the viability of the farms remaining in the area. This criterion is rated at a 0 out of a possible 10.

Evaluation 12: Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of surrounding farmland to nonagricultural uses?
The proposed Project involves the replacement of a structurally deficient bridge on the existing alignment and is not considered to be an incompatible use that would lead to the eventual conversion of surrounding farmland to nonagricultural use. This criterion is rated at a 0 out of a possible 10.

Please find attached a U.S. Department of Agriculture Form AD-1006 that shows this Project earning a score of 100 Assessment Points in Part VI. When the scores in Part VI exceed 60 points the Caltrans District Environmental Branch submits the appropriate forms to NRCS. Part IV "Land Evaluation Information" must be completed by NRCS prior to determining the final score. Final scores should be evaluated under the guidelines of §7 CFR 658.4. Projects with a score of less than 160 (Site Assessment Criteria and Land Evaluation Information combined) need not be given further consideration for protection and no additional sites need to be evaluated.

The total amount of acres converted (taken out of production) is 0.04 acres. According to the most recently available data from the Farmland Mapping and Monitoring Program (FMMP) in 2016 there was 293,310 acres of Important Farmland in Glenn County (Prime Farmland, Farmland of Statewide Importance, Unique Farmland and Farmland of Local Importance). The permanent impacts as a result of the proposed Project represent a loss of 0.00000013% of the total Important Farmland in the County. Due to the minor amount of land converted and the lack of public interest, this is considered a less than significant impact.

The area is designated for agricultural land use and the Project would not increase the chances to increase urbanization of the area. In addition, neither NEPA nor the Farmland Protection Policy Act (FPPA) requires a project to be modified solely to avoid or minimize the effects of conversion of farmland to non-agricultural uses.

Parcel Number 013-210-034 is enrolled under the Williamson Act and will be temporarily (0.14 acres) and permanently (0.04 acres) impacted by the Project. Since the land to be acquired permanently for right-of-way is minimal there will be no effect on the eligibility for the Williamson Act program. Therefore, there will be no adverse effects to the farmland.

Regards,

Kevin Sevier
Vice President
kevin@gallawayenterprises.com

Enclosed: Attachment A: Form AD-1006
Attachment B: Farmland Conversion Map

Attachment A: Form AD-1006

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request 12/12/2018
Name of Project County Road 66B Bridge Replacement	Federal Agency Involved Caltrans (FHWA)
Proposed Land Use Bridge and Road	County and State Glenn County, California
PART II *(To be completed by NRCS)*	Date Request Received By NRCS / Person Completing Form:

Does the site contain Prime, Unique, Statewide or Local Important Farmland? *(If no, the FPPA does not apply - do not complete additional parts of this form)*	YES ☑ NO ☐	Acres Irrigated 2.03	Average Farm Size 510 acres
Major Crop(s) Rice	Farmable Land In Govt. Jurisdiction Acres: 2.03 % 44	Amount of Farmland As Defined in FPPA Acres: 2.03 % 44	
Name of Land Evaluation System Used n/a	Name of State or Local Site Assessment System n/a	Date Land Evaluation Returned by NRCS n/a	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating			
	Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	0.04			
B. Total Acres To Be Converted Indirectly	0.0			
C. Total Acres In Site	2.03			
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland				
B. Total Acres Statewide Important or Local Important Farmland				
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted				
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value				
PART V (To be completed by NRCS) Land Evaluation Criterion Relative Value of Farmland To Be Converted (Scale of 0 to 100 Points)				

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(Criteria are explained in 7 CFR 658.5 b. For Corridor project use form NRCS-CPA-106)*	**Maximum Points**	Site A	Site B	Site C	Site D
1. Area In Non-urban Use	(15)	15			
2. Perimeter In Non-urban Use	(10)	10			
3. Percent Of Site Being Farmed	(20)	10			
4. Protection Provided By State and Local Government	(20)	20			
5. Distance From Urban Built-up Area	(15)	15			
6. Distance To Urban Support Services	(15)	10			
7. Size Of Present Farm Unit Compared To Average	(10)	0			
8. Creation Of Non-farmable Farmland	(10)	0			
9. Availability Of Farm Support Services	(5)	5			
10. On-Farm Investments	(20)	15			
11. Effects Of Conversion On Farm Support Services	(10)	0			
12. Compatibility With Existing Agricultural Use	(10)	0			
TOTAL SITE ASSESSMENT POINTS	160	100	0	0	0
PART VII ***(To be completed by Federal Agency)***					
Relative Value Of Farmland *(From Part V)*	100	0	0	0	0
Total Site Assessment *(From Part VI above or local site assessment)*	160	100	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	100	0	0	0

Site Selected: Proposed Project-A	Date Of Selection 12/12/2018	Was A Local Site Assessment Used? YES ☐ NO ☑

Reason For Selection:

The replacement of the bridge on the existing alignment will have the fewest impacts on farmland in the area.

Name of Federal agency representative completing this form:	Date:

(See Instructions on reverse side) **Form AD-1006 (03-02)**

STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

Step 1 - Federal agencies (or Federally funded projects) involved in proposed projects that may convert farmland, as defined in the Farmland Protection Policy Act (FPPA) to nonagricultural uses, will initially complete Parts I and III of the form. For Corridor type projects, the Federal agency shall use form NRCS-CPA-106 in place of form AD-1006. The Land Evaluation and Site Assessment (LESA) process may also be accessed by visiting the FPPA website, http://fppa.nrcs.usda.gov/lesa/.

Step 2 - Originator (Federal Agency) will send one original copy of the form together with appropriate scaled maps indicating location(s)of project site(s), to the Natural Resources Conservation Service (NRCS) local Field Office or USDA Service Center and retain a copy for their files. (NRCS has offices in most counties in the U.S. The USDA Office Information Locator may be found at http://offices.usda.gov/scripts/ndISAPI.dll/oip_public/USA_map**,** or the offices can usually be found in the Phone Book under U.S. Government, Department of Agriculture. A list of field offices is available from the NRCS State Conservationist and State Office in each State.)

Step 3 - NRCS will, within 10 working days after receipt of the completed form, make a determination as to whether the site(s) of the proposed project contains prime, unique, statewide or local important farmland. (When a site visit or land evaluation system design is needed, NRCS will respond within 30 working days.

Step 4 - For sites where farmland covered by the FPPA will be converted by the proposed project, NRCS will complete Parts II, IV and V of the form.

Step 5 - NRCS will return the original copy of the form to the Federal agency involved in the project, and retain a file copy for NRCS records.

Step 6 - The Federal agency involved in the proposed project will complete Parts VI and VII of the form and return the form with the final selected site to the servicing NRCS office.

Step 7 - The Federal agency providing financial or technical assistance to the proposed project will make a determination as to whether the proposed conversion is consistent with the FPPA.

INSTRUCTIONS FOR COMPLETING THE FARMLAND CONVERSION IMPACT RATING FORM

(For Federal Agency)

Part I: When completing the "County and State" questions, list all the local governments that are responsible for local land use controls where site(s) are to be evaluated.

Part III: When completing item B (Total Acres To Be Converted Indirectly), include the following:

1. Acres not being directly converted but that would no longer be capable of being farmed after the conversion, because the conversion would restrict access to them or other major change in the ability to use the land for agriculture.
2. Acres planned to receive services from an infrastructure project as indicated in the project justification (e.g. highways, utilities planned build out capacity) that will cause a direct conversion.

Part VI: Do not complete Part VI using the standard format if a State or Local site assessment is used. With local and NRCS assistance, use the local Land Evaluation and Site Assessment (LESA).

1. Assign the maximum points for each site assessment criterion as shown in § 658.5(b) of CFR. In cases of corridor-type project such as transportation, power line and flood control, criteria #5 and #6 will not apply and will, be weighted zero, however, criterion #8 will be weighed a maximum of 25 points and criterion #11 a maximum of 25 points.

2. Federal agencies may assign relative weights among the 12 site assessment criteria other than those shown on the FPPA rule after submitting individual agency FPPA policy for review and comment to NRCS. In all cases where other weights are assigned, relative adjustments must be made to maintain the maximum total points at 160. For project sites where the total points equal or exceed 160, consider alternative actions, as appropriate, that could reduce adverse impacts (e.g. Alternative Sites, Modifications or Mitigation).

Part VII: In computing the "Total Site Assessment Points" where a State or local site assessment is used and the total maximum number of points is other than 160, convert the site assessment points to a base of 160.
Example: if the Site Assessment maximum is 200 points, and the alternative Site "A" is rated 180 points:

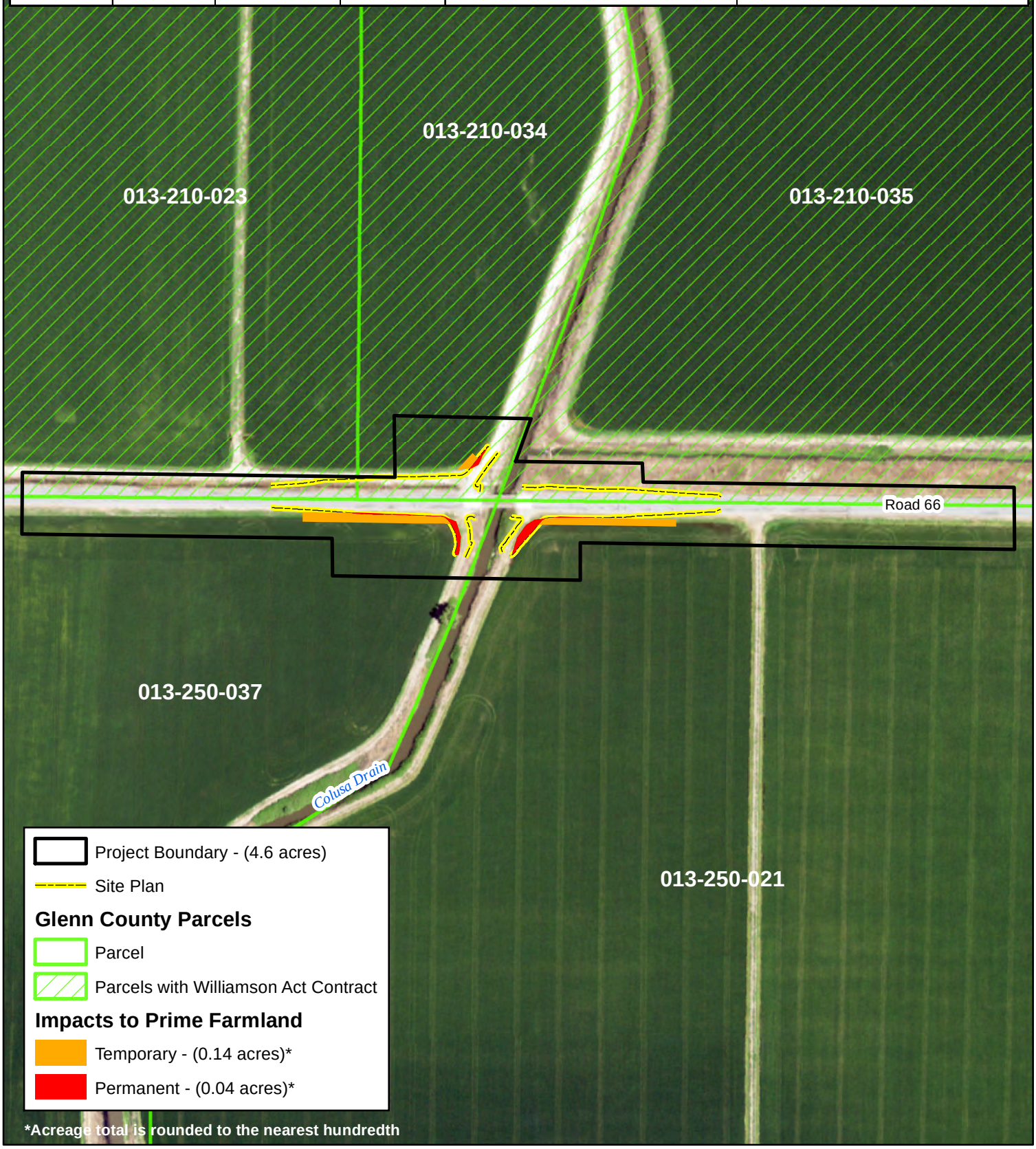
$$\frac{\text{Total points assigned Site A}}{\text{Maximum points possible}} = \frac{180}{200} \text{ X } 160 = 144 \text{ points for Site A}$$

For assistance in completing this form or FPPA process, contact the local NRCS Field Office or USDA Service Center.

NRCS employees, consult the FPPA Manual and/or policy for additional instructions to complete the AD-1006 form.

Attachment B: Farmland Conversion Map

Farmland Conversion Table					
APN	Williamson Act	FMMP Designation	Parcel Acreage	Permanent Impacts to Prime FMMP Acreage	Temporary Impacts to Prime FMMP Acreage
013-210-023	Ongoing	Prime Farmland	40.6	0.000	0.000
013-210-034	Ongoing	Prime Farmland	65.4	0.004	0.008
013-210-035	Ongoing	Prime Farmland	101.4	0.000	0.000
013-250-037	None	Prime Farmland	40.6	0.015	0.071
013-250-021	None	Prime Farmland	38.6	0.018	0.058



1:2,500

0 100 200 Feet

NORTH

Data Sources: ESRI, NAIP 07/11/2016, FMMP, USGS, Glenn County, Quincy Engineering

County of Glenn CR 66B Bridge 11C-0068
Farmland Conversion

gallaway ENTERPRISES

GE: #16-078 Map Date: 12/11/18

Appendix B:
Natural Environment Study for the County Road 66B Bridge Replacement Project

COUNTY OF GLENN CR 66B BRIDGE REPLACEMENT PROJECT

Natural Environment Study

Glenn County, California
Rancho Larkin's Children Land Grant
Princeton Quadrangle
District 03-GLE-66B

BRLO-5911(063)

November 2020

Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

Natural Environment Study

STATE OF CALIFORNIA

Department of Transportation

Caltrans District 3

Prepared By: Jody Gallaway Date: 11/4/2020

Jody Gallaway, Senior Biologist
(530) 332-9909
Gallaway Enterprises
117 Meyers Street, Suite 120
Chico CA 95928

Prepared By: _____ Date: 11/10/20

Cole Grube, Assistant Director
(530) 934-6530
Glenn County Agency of Public Works
777 N Colusa Street
Willows, CA 95988

Recommended for Approved By: Brooks Taylor Date: 11/24/2020

Brooks Taylor, District Biologist
(530) 740-4807
North Region Environmental Planning M-1
Caltrans, District 3

Approved By: Laura Loeffler Date: 11/24/20

Laura Loeffler, Branch Chief
(530) 741-4592
North Region Environmental Planning M-1
Caltrans, District 3

Summary

The Glenn County Public Works Agency, in cooperation with the Federal Highway Administration (FHWA) and the California Department of Transportation (Caltrans), is proposing to replace Bridge No. 11C-0068 on County Road (CR) 66B over Colusa Drain. The primary objective of this project is to replace the existing structurally deficient bridge with a new wider structure. The project is funded through the Federal Aid Highway Bridge Program (HBP) and Federal Toll Credits. The bridge was last inspected in February 2016 and found to be structurally deficient with a sufficiency rating of 55.7.

Land within the Biological Study Area (BSA) includes barren roadway, annual grassland, rice, and riverine habitat. During the site visit, 12 invasive plant species recognized by the U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) and/or the California Invasive Plant Council (Cal-IPC) were identified within the BSA. Special-status species that have the potential to occur within the BSA include a variety of bird and raptor species protected by the Migratory Bird Treaty Act (MBTA), the federal and State threatened giant garter snake (GGS, *Thamnophis gigas*), the State threatened tricolored blackbird (*Agelaius tricolor)*, and the western pond turtle (*Emys marmorata*), which is a State Species of Special Concern (SSC).

With the implementation of avoidance and minimization measures, the project will have no impact on the tricolored blackbird and no adverse impact on western pond turtle; however, the project may affect and is likely to adversely affect GGS. Impacts to GGS and GGS habitat will be mitigated for at United States Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) approved conservation bank. Appropriate steps to prevent the spread of invasive and noxious plants and their seeds to and from the project site will be implemented. Mitigation for impacts to jurisdictional waters of the U.S. (WOTUS) will be addressed through the purchase of credits at a U.S. Army Corps of Engineers (Corps) approved mitigation bank or payment to a Corps approved in-lieu fund. Additionally, a CDFW §1602 Streambed Alteration Agreement and §2081 Incidental Take Permit for GGS, Regional Water Quality Control Board (RWQCB) §401 Water Quality Certification permit, Central Valley Flood Protection Board (CVFPB) encroachment permit, and a Corps Nationwide 3(a) §404 permit shall be obtained for the project.

Table of Contents

List of Figures

List of Tables

List of Appendices

List of Abbreviated Terms

APE	Area of Potential Effect
BSA	Biological Study Area
BMP	Best Management Practices
Cal-IPC	California Invasive Plant Council
Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
Corps	United States Army Corps of Engineers
County	Glenn County
CR	County Road
CRPR	California Rare Plant Rank
CWA	Clean Water Act
EPA	Environmental Protection Agency
ESA	Endangered Species Act
GGS	Giant Garter Snake
GIS	Geographic Information System
HBP	Highway Bridge Program
IPaC	Information for Planning and Consultation
MBTA	Migratory Bird Treaty Act
NEPA	National Environmental Policy Act
NES	Natural Environment Study
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resource Conservation Service

OHWM	Ordinary High Water Mark
PCE	Primary Constituent Element
RSP	Rock Slope Protection
RWQCB	Regional Water Quality Control Board
SSC	State Species of Special Concern
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WOTUS	Waters of the United States

1 Introduction

The purpose of the County of Glenn CR 66B Bridge Replacement Project (project) is to replace the existing, structurally deficient bridge over Colusa Drain with a new, wider structure to provide a safe crossing that meets current standards (**Figure 1: Regional Location Map, Figure 2: Project Location Map)**. The purpose of this Natural Environment Study (NES) is to evaluate potential project impacts to special-status species and their habitats within the project vicinity.

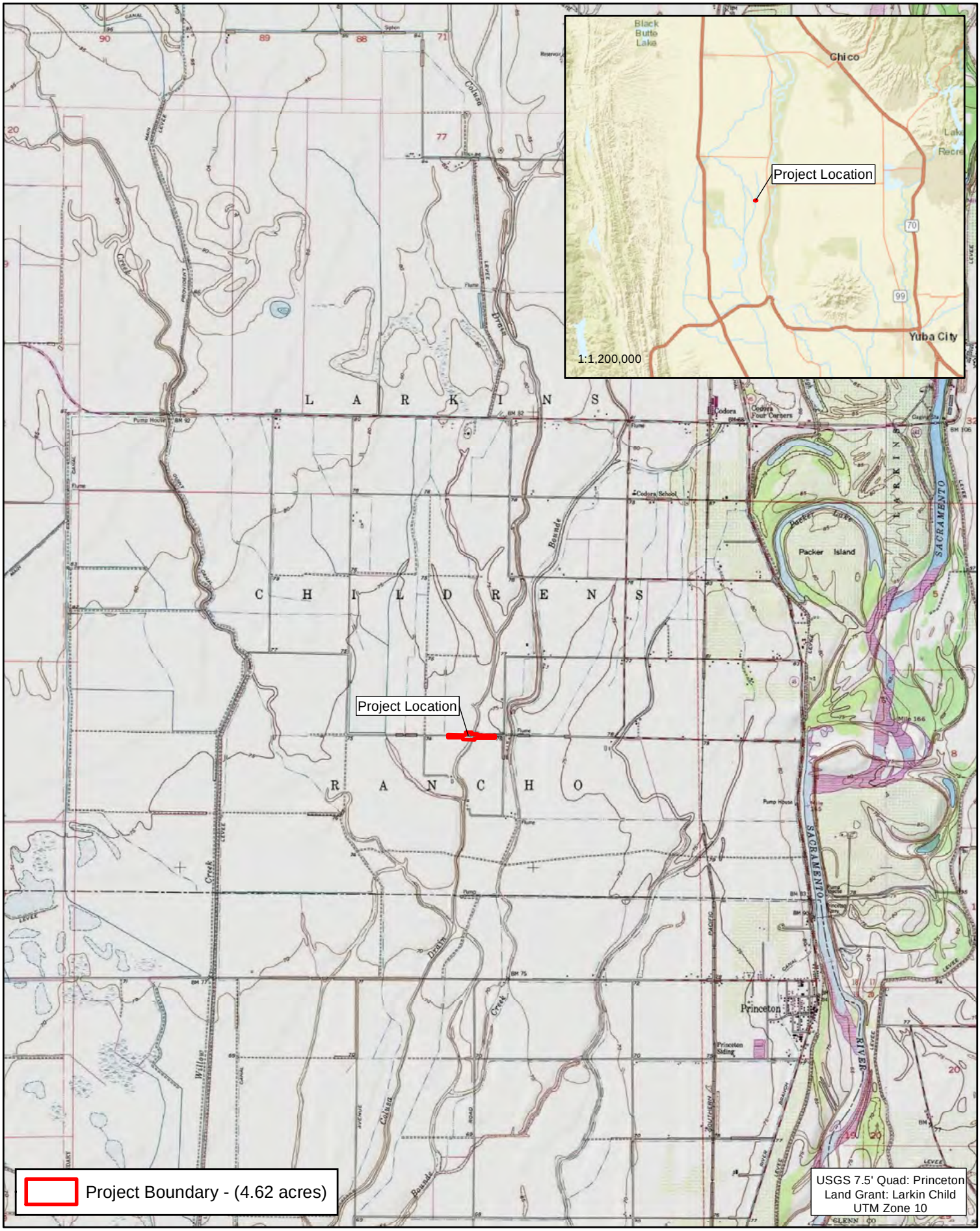
Project History

The project is located in Glenn County, California on Road 66B, which is located in an area surrounded by agricultural rice fields. Traffic is primarily local agricultural use. Caltrans will be the lead agency for National Environmental Policy Act (NEPA) compliance through delegation from the FHWA and Glenn County (County), the owner of the project, will be the lead agency for CEQA compliance. Glenn County will be the maintaining agency of the proposed bridge structure.

The existing bridge was originally constructed in 1940 and is approximately 54 feet long and 20 feet wide. The bridge is now signed as a single-lane bridge and no longer meets the safety and functional needs of the public who use CR 66B. A broken girder identified during routine inspection in 2013 resulted in the bridge posted for reduced safe load capacity and one lane of traffic. The 18.7 foot clear width is too narrow for two lanes of traffic, and the existing bridge has no shoulder. The existing timber deck is rated in poor condition. The inspection report notes signs of active decay, abrasion wear, and a significant amount of longitudinal checks in the timber members. Bridge replacement is the most effective option available in order to resolve these safety deficiencies.

Project Description

The Glenn County Public Works Agency, in cooperation with the FHWA and Caltrans, is proposing to replace Bridge No. 11C-0068 on CR 66B over Colusa Drain. The primary objective of this project is to replace the existing structurally deficient bridge with a new wider structure. The project is funded through the HBP and Federal Toll Credits. The bridge was last inspected in February 2016 and found to be structurally deficient with a sufficiency rating of 55.7, which qualifies it for rehabilitation under the HBP program; however, bridge replacement can be considered an appropriate “rehabilitation” option if it



NORTH

1:50,000

0 0.5 1 Miles

Data Sources: ESRI, USGS, Glenn County, Quincy Engineering

County of Glenn CR 66B Bridge 11C-0068
Regional Location
Figure 1

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GE: #16-078 Map Date: 05/08/18

NORTH

1:35,000

0 1,000 2,000 Feet

Data Sources: ESRI, NAIP 07/11/2016, USGS, Glenn County, Quincy Engineering

County of Glenn CR 66B Bridge 11C-0068
Project Location
Figure 2

gallaway ENTERPRISES

GE: #16-078 Map Date: 05/22/18

proves to be the most effective solution, which is the case for this project as FHWA does not typically authorize rehabilitation for structurally deficient timber bridges.

The project site is located in Glenn County, approximately 2 miles west of State Route 45, near the town of Princeton, Colusa County. Traffic is primarily local and supports the agricultural operations in the general vicinity. County Road 66B is bordered by rice fields and crosses the Colusa Drain at the project location.

The existing bridge was originally constructed in 1940 and is approximately 54 feet long and 20 feet wide. The proposed bridge structure will be a single span, precast prestressed concrete voided slab bridge. The new bridge will satisfy the current roadway width geometry standards as well as provide approved bridge railing and approach guardrail.

BIOLOGICAL STUDY AREA

The BSA is the area in which biological surveys are conducted, with the exception of the delineation of WOTUS, which was conducted within the project boundary (also defined as the area of potential effect [APE]). The botanical surveys and wetland delineation are conducted within the APE as impacts to WOTUS and botanical species will only occur within this area. To account for GGS, the BSA incorporates areas 200 feet from the APE and encompasses 19.7 acres (Figure 3).

PROPOSED BRIDGE STRUCTURE

The proposed new bridge is a single-span, precast, prestressed, voided slab bridge with 32 foot clear width and 40 mile-per-hour design speed. The new bridge will replace the existing structure on the current, existing alignment.

Precast superstructure planks would be formed, cast, and cured off site during foundation construction and then immediately erected upon completion of the abutments. This construction sequence leads to a significant time savings resulting in a shorter construction window, reduced traffic detour duration, and an increased likelihood to complete construction between planting and harvest seasons. This bridge type does not require falsework within the channel, minimizing environmental impacts during construction.

ROADWAY APPROACHES

County Road 66B at the project location is straight and provides access to residences, farm support shops, and rice fields. The existing asphalt approach roadway is approximately 20

NORTH

1:3,200

0 90 180 Feet

Data Sources: ESRI, NAIP 08/02/2016, USGS, Glenn County, Quincy Engineering

County of Glenn CR 66B Bridge 11C-0068
Biological Study Area
Figure 3

gallaway ENTERPRISES

GE: #16-078 Map Date: 08/03/18

feet wide while the clear width of the existing bridge is approximately 18 feet wide. The minimum roadway width for a rural and agricultural development according to local Glenn County Standards is 32 feet clear width, consisting of two (2) 12-foot paved lanes and two 4-foot paved shoulders, and is recommended for this project.

There are currently property access points at three (3) of the four (4) corners of the existing bridge. Approach end treatments off the bridge will need to be designed to ensure these access points are maintained and include minimal take of productive farmland.

It is assumed that CR 66B at the project site will be closed during construction. This will result in an approximate 7-mile detour but will greatly decrease overall impacts, reduce the right-of-way need, and will decrease the total construction time.

IN-CHANNEL WORK AND TEMPORARY ACCESS ROADS

The project may involve a modification or alteration of the streambed with the installation of rock slope protection (RSP) to protect the bridge embankment. Access to the canal will be required to remove the existing bridge supports. Depending on the flows during construction, a temporary stream diversion may be required.

There are currently property access points at three (3) of the four (4) corners of the existing bridge that are used by residents and heavy agricultural equipment. The County has specifically requested that these access openings accommodate entry and exit of a loaded double semi-truck trailer, which is utilized during the harvest season. The access road alignments proposed accommodate truck turns for a double semi-truck trailer, but only with an entry and exit away from the bridge. Providing adequate truck turns toward the bridge would require the access roads to be shifted further into the adjacent properties, therefore requiring the take of productive farmland. The proposed access road alignment limits both environmental and right-of-way impacts.

A quantity estimate of both temporary fill materials required for construction and permanent features within Colusa Drain are presented in **Table 1**.

Table 1. Impacts to Waters of the United States

Type of impact	Cubic yards	Acreage of impact
Fill of other waters	324	0.05
Fill of wetlands	359	0.013
Temporary impacts to wetland features	N/A	0.092

STAGING AREAS, RIGHTS OF WAY, AND UTILITIES

Glenn County currently has a 60-foot right-of-way along the centerline of CR 66B, extending 40 feet to the north and 20 feet to the south of centerline. The area surrounding the bridge is privately owned parcels. It is anticipated that additional right-of-way will be required for temporary construction easements and right-of-way acquisitions.

Because the bridge will likely be closed during construction, contractor staging areas, material storage, and construction operations are expected to primarily occur on or along the existing roadway.

There are no utilities on the existing bridge or around the existing project site. Utility relocation is not anticipated for this project.

CONSTRUCTION EQUIPMENT AND SCHEDULE

The project will be completed in one (1) construction season. Clearing and grubbing will be performed outside of the avian nesting season (February 1 – August 31). Project constraints include agricultural planting season (April 1 –May 31) and agriculture harvest season (September 1 – October 31). The rice fields surrounding the project area require summer flood irrigation from April through late July. In the fall, water is drained from the rice fields into Colusa Drain and harvest is completed. Due to this schedule, and in order to minimize disturbance to local agricultural operations, construction will occur from October 1 – April 30. During this period Colusa Drain is not utilized for irrigation purposes and water levels will be at their lowest, allowing for bridge accessibility.

Equipment anticipated to be used in construction of the replacement bridge includes dozers, cranes, dump trucks, concrete trucks, concrete pumps, and pile driving equipment. Removal of the existing bridge will require excavators, hoe rams, cranes, and dump trucks. A stream diversion within Colusa Drain is anticipated.

2 Study Methods

The biological and botanical surveys were conducted by Gallaway Enterprises after consulting the United States Fish and Wildlife Services (USFWS) Information for Planning and Consultation (IPaC) species list, CDFW Natural Diversity Database (CNDDB) search, and the California Native Plant Societies (CNPS) list of rare and endangered plants gathered for the BSA (**Appendix A: Species Lists**). Additionally, a map was obtained from the CNDDB Geographic Information System (GIS) database, which provided general locations of species that had recorded CNDDB occurrences within a 5-mile radius of the project location (**Figure 4: CNDDB Occurrences**). Based on the results of the species lists and CNDDB map, appropriate biological and botanical surveys were conducted.

Regulatory Requirements

The following describes federal, State, and local environmental laws and policies that are relevant to the California Environmental Quality Act (CEQA) review process and to this NES.

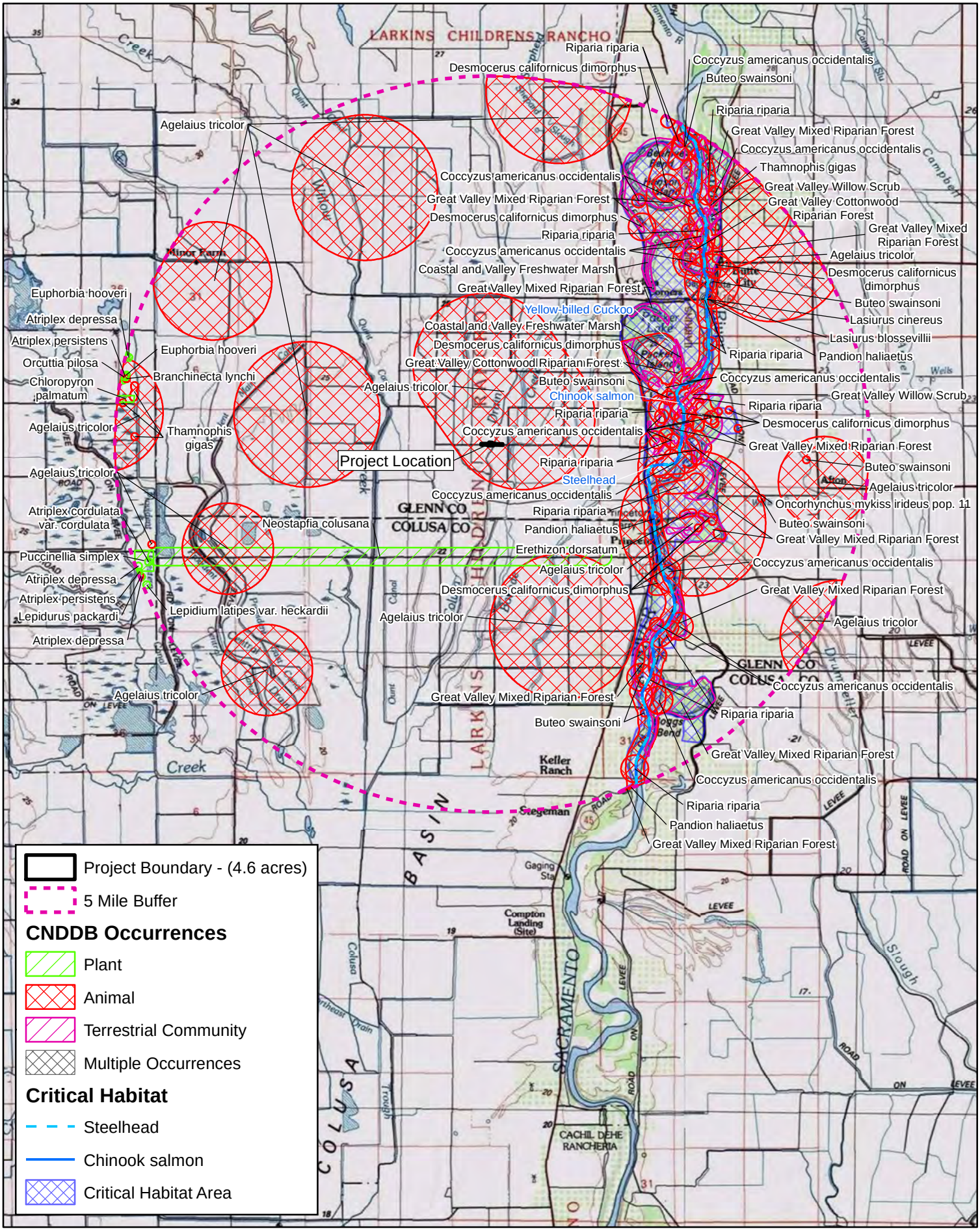
Federal

Federal Endangered Species Act

The United States Congress passed the Federal Endangered Species Act (ESA) in 1973 to protect species that are endangered or threatened with extinction. The ESA is intended to operate in conjunction with the NEPA to help protect the ecosystems upon which endangered and threatened species depend. The ESA makes it unlawful to "take" a listed animal without a permit. Take is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct." Through regulations, the term "harm" is defined as "an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering."

Migratory Bird Treaty Act

The MBTA (16 USC §703) prohibits the killing of migratory birds or the destruction of their occupied nests and eggs except in accordance with regulations prescribed by the USFWS. Bird species covered by the MBTA includes nearly all of those that breed in North America, excluding introduced (i.e. exotic) species (50 Code of Federal Regulations §10.13). Activities



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NORTH

Data Sources: ESRI, USGS, CNDDB, USFWS, Quincy Engineering

County of Glenn CR 66B Bridge 11C-0068
CNDDB and Critical Habitat Occurrences
Figure 4

gallaway ENTERPRISES

GE: #16-078 Map Date: 05/09/18

that involve the removal of vegetation including trees, shrubs, grasses, and forbs or ground disturbance has the potential to affect bird species protected by the MBTA.

Waters of the United States, Clean Water Act, Section 404

The Corps and the U.S. Environmental Protection Agency (EPA) regulate the discharge of dredged or fill material into jurisdictional WOTUS, under the Clean Water Act (CWA, §404). The term "waters of the United States" is an encompassing term that includes "wetlands" and "other waters." Wetlands have been defined for regulatory purposes as follows: "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (33 CFR 328.3, 40 CFR 230.3). Wetlands generally include swamps, marshes, bogs, and similar areas." Other Waters of the United States are seasonal or perennial water bodies, including lakes, stream channels, drainages, ponds, and other surface water features, that exhibit an ordinary high-water mark (OHWM) but lack positive indicators for one or more of the three wetland parameters (i.e. hydrophytic vegetation, hydric soil, and wetland hydrology) (33 CFR 328.4).

The Corps may issue either individual permits on a case-by-case basis or general permits on a program level. General permits are pre-authorized and are issued to cover similar activities that are expected to cause only minimal adverse environmental effects. Nationwide permits are general permits issued to cover particular fill activities. All nationwide permits have general conditions that must be met for the permits to apply to a particular project, as well as specific conditions that apply to each nationwide permit.

Executive Orders 13112; Prevention and Control of Invasive Species

On February 3, 1999, Executive Order 13112 was signed establishing the National Invasive Species Council. Executive Order 11312 directs all federal agencies to prevent and control introductions of invasive nonnative species in a cost-effective and environmentally sound manner to minimize their economic, ecological, and human health impacts. Executive Order 11312 established a national Invasive Species Council made up of federal agencies and departments and a supporting Invasive Species Advisory Committee composed of state, local, and private entities. The Invasive Species Council and Advisory Committee oversees and facilitates implementation of the Executive Order, including preparation of a National Invasive Species Management Plan.

Section two (2) of the Executive Order states:

(a) Each Federal agency whose actions may affect the status of invasive species shall, to the extent practicable and permitted by law, (1) identify such actions; (2) subject to the availability of appropriations, and within Administration budgetary limits, use relevant programs and authorities to: (i) prevent the introduction of invasive species; (ii) detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner; (iii) monitor invasive species populations accurately and reliably; (iv) provide for restoration of native species and habitat conditions in ecosystems that have been invaded; (v) conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species; and (vi) promote public education on invasive species and the means to address them; and (3) not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions.

(b) Federal agencies shall pursue the duties set forth in this section in consultation with the Invasive Species Council, consistent with the Invasive Species Management Plan and in cooperation with stakeholders, as appropriate, and, as approved by the Department of State, when Federal agencies are working with international organizations and foreign nations.

State of California

California Endangered Species Act

The California Endangered Species Act (CESA) is similar to the ESA, but pertains to State-listed endangered and threatened species. The CESA requires State agencies to consult with the CDFW when preparing documents to comply with the CEQA. The purpose is to ensure that the actions of the lead agency do not jeopardize the continued existence of a listed species or result in the destruction, or adverse modification of habitat essential to the continued existence of those species. In addition to formal listing under the federal and

State endangered species acts, "Species of Special Concern" receive consideration by CDFW. Species of Special Concern are those whose numbers, reproductive success, or habitat may be threatened.

California Environmental Quality Act Guidelines §15380

Although threatened and endangered species are protected by specific federal and State statutes, CEQA Guidelines §15380(d) provides that a species not listed on the federal or State list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled based on the definition in the ESA and the section of the California Fish and Game Code (CFGC) dealing with rare, threatened, and endangered plants and animals. The CEQA Guidelines (§15380) allows a public agency to undertake a review to determine if a significant effect on species that have not yet been listed by either the USFWS or CDFW (e.g. candidate species, species of concern) would occur. Thus, CEQA provides an agency with the ability to protect a species from a project's potential impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted.

Clean Water Act, Section 401

The CWA (§401) requires water quality certification and authorization for placement of dredged or fill material in wetlands and other WOTUS. In accordance with the CWA (§401), criteria for allowable discharges into surface waters have been developed by the State Water Resources Control Board, Division of Water Quality. The resulting requirements are used as criteria in granting National Pollutant Discharge Elimination System (NPDES) permits or waivers, which are obtained through the RWQCB per the CWA (§402). Any activity or facility that will discharge waste (such as soils from construction) into surface waters, or from which waste may be discharged, must obtain an NPDES permit or waiver from the RWQCB. The RWQCB evaluates an NPDES permit application to determine whether the proposed discharge is consistent with the adopted water quality objectives of the basin plan.

Streambed Alteration Agreement

The CDFW is a trustee agency that has jurisdiction under the CFGC (§1600 et seq.). The CFGC (§1602), requires that a State or local government agency, public utility, or private entity must notify CDFW if a proposed project will "substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by the department, or use any material from the streambeds… except when the

department has been notified pursuant to Section 1601." If an existing fish or wildlife resource may be substantially adversely affected by the activity, CDFW may propose reasonable measures that will allow protection of those resources. If these measures are agreeable to the parties involved, they may enter into an agreement with CDFW identifying the approved activities and associated mitigation measures.

California Fish and Game Code

The CFGC (§3503.5) states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes (hawks, eagles, and falcons) or Strigiformes or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Take includes the disturbance of an active nest resulting in the abandonment or loss of young. The CFGC (§3503) also states that "it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto."

CDFW Incidental Take Permit

Incidental Take Permits (ITP) allow a permittee to take a CESA-listed species if such taking is incidental to, and not the purpose of, carrying out an otherwise lawful activity. These permits are most commonly issued for construction, utility, transportation, and other infrastructure-related projects. Permittees must implement species-specific minimization and avoidance measures, and fully mitigate the impacts of the project. (Fish & G. Code § 2081 (b); Cal. Code Regs., tit. 14, §§ 783.2-783.8)

Central Valley Flood Protection Board Encroachment Permit

Approval by the Central Valley Flood Protection Board (CVFPB) is required for projects or uses which encroach into rivers, waterways, and floodways within and adjacent to federal and State authorized flood control projects and within designated floodways adopted by the CVFPB. You must obtain CVFPB approval before you begin certain uses or construction work, or any proposed project within these areas.

The CVFPB exercises jurisdiction over the levee section, the waterward area between project levees, a minimum 10-foot-wide strip adjacent to the landward levee toe, within 30 feet of the top of the banks of unleveed project channels, and within designated floodways adopted by the CVFPB. Activities outside of these limits which could adversely affect the flood control project are also under CVFPB jurisdiction.

Rare and Endangered Plants

The CNPS maintains a list of plant species native to California with low population numbers, limited distribution, or otherwise threatened with extinction. This information is published in the Inventory of Rare and Endangered Vascular Plants of California. Potential impacts to populations of CNPS-ranked plants receive consideration under CEQA review. The CNPS California Rare Plant Rank (CRPR) categorizes plants as the following:

- Rank 1A: Plants presumed extinct in California;
- Rank 1B: Plants rare, threatened, or endangered in California or elsewhere;
- Rank 2: Plants rare, threatened, or endangered in California, but more numerous elsewhere;
- Rank 3: Plants about which we need more information; and
- Rank 4: Plants of limited distribution.

The California Native Plant Protection Act (CFGC §1900-1913) prohibits the taking, possessing, or sale within the State of any plants with a State designation of rare, threatened, or endangered as defined by CDFW. An exception to this prohibition allows landowners, under specific circumstances, to take listed plant species, provided that the owners first notify CDFW and give the agency at least 10 days to retrieve (and presumably replant) the plants before they are destroyed. Fish and game Code §1913 exempts from the 'take' prohibition "the removal of endangered or rare native plants from a canal, lateral ditch, building site, or road, or other right of way."

Studies Required

Gallaway Enterprises conducted biological and botanical habitat assessments within the BSA and a protocol-level rare plant survey within the APE. Biological and botanical surveys were conducted following review of the USFWS IPaC report, CNDDB Rarefind 5 report, CNPS list, and the CNDDB occurrence map (**Figure 4: CNDDB Occurrences**). The project boundary or United States Geological Survey (USGS) "Princeton" 7.5 minute quadrangle in which the project is located were used to derive the agency species lists **(Appendix A: Species Lists)**. Based on the results of the species lists, Gallaway Enterprises conducted a general habitat assessment and protocol-level rare plant botanical survey to identify any rare, endangered, threatened, or sensitive species and their habitats that may have the potential to occur within the BSA.

Personnel and Survey Dates

Gallaway Enterprises visited the site on May 31 and July 10, 2018. During the visits, biologist Brittany Reaves conducted a general biological habitat assessment, and senior botanist and certified arborist Elena Gregg conducted a protocol-level rare plant survey for plants with blooming periods that overlapped the survey dates, and a general botanical habitat assessment for plants with blooming periods outside the survey dates.

Mrs. Gregg has over 15 years of professional experience conducting rare plant surveys, wetland delineations, and habitat assessments in California. She has a working knowledge of CNPS, CDFW, and USFWS survey protocols and holds a CDFW collection permit for listed plant species. Through her extensive field experience in a wide array of habitats and eco-regions in Northern California, Mrs. Gregg has gained knowledge of locally invasive plants species and noxious weeds.

Mrs. Reaves has over 3 years of experience surveying at the protocol and general level for listed reptiles and amphibians and other special-status wildlife species. Mrs. Reaves has experience surveying for federally listed species such as California red-legged frog (*Rana draytonii*), assisting in dewatering activities including fish relocation, surveying for nesting birds and raptors, and conducting habitat assessments for listed species. Mrs. Reaves has also installed bird and bat exclusion at a variety of bridge replacement projects.

BIOLOGICAL HABITAT ASSESSMENT

The biological evaluation was conducted on July 10, 2018 by walking the entire BSA, where accessible, and identifying specific habitat types and elements. If habitat was observed for special-status species it was then evaluated for quality based on vegetation composition and structure, physical features (e.g. water, soils), microclimate, surrounding area, presence of predatory species and available resources (e.g. prey items, nesting substrates). The undersides of the bridges were also closely inspected for signs of nesting or roosting by birds and bats. Biological and botanical species observed within the BSA are listed in **Appendix B**.

BOTANICAL SURVEY

A protocol-level botanical survey was conducted on May 31, 2018 to determine the potential for special-status plant species to occur within the BSA. The survey was conducted in accordance with the standardized guidelines issued by the regulatory agencies (USFWS 1996, CDFW 2018) and the CNPS (2001). The survey was conducted by walking in all

accessible areas of the APE and noting the habitat elements present (e.g. soils, geology, hydrology, topography, aspect, elevation, etc.) and vegetation communities present. If present, natural and man-made disturbance patches were noted as well as the successional stage of vegetation. All observed plants were identified to genus (**Appendix B**).

Agency Coordination and Professional Contacts

A field meeting with Caltrans biologist Brooks Taylor, Cole Grube and Matt Vader of Glenn County, Rick Sowers and Nick Anderson of Crawford & Associates, Han Bin Lang of WRECO, Jim Foster, Jason Jurrens, Scott McCauley, Krassimir Panayotov, and Jim Thornton, of Quincy Engineering, and Jody Gallaway of Gallaway Enterprises, was held at the project site on September 22, 2016 to discuss construction methodology and techniques to avoid effects to special-status resources.

Limitations That May Influence Results

The protocol-level botanical survey was conducted on May 31, during the blooming period (BP) for most plants. Vernal pool smallscale (*Atriplex persistens*) and Hoover's spurge (*Euphorbia hooveri*) have BPs that fall outside of the date of the protocol-level survey; however, these plants require vernal pool habitat that does not occur within the BSA. There were no other limitations that may influence results of the habitat assessments.

3 Results: Environmental Setting

Description of the Existing Biological and Physical Conditions

The study area lies within the northern Central Valley of California. The BSA is surrounded by agricultural land, with an irrigation drainage system (Colusa Drain) running through the project boundary from north to south. Two (2) unnamed, ephemeral drainages run horizontally through the BSA along CR 66B, each hydrologically connected to Colusa Drain. The agricultural land surrounding the project site consists solely of rice fields.

Study Area

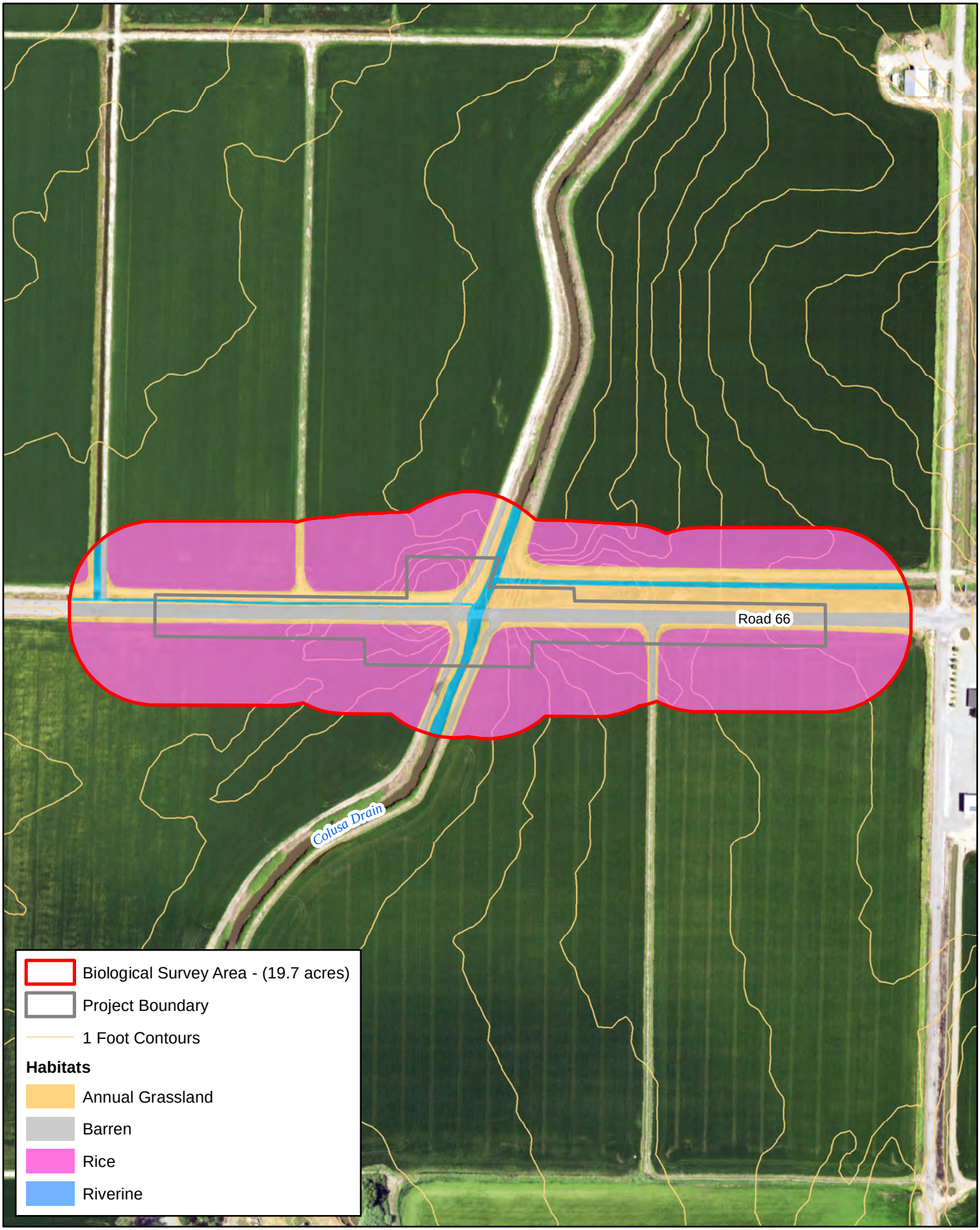
Within the BSA, an approximately 54-foot-long existing bridge occurs over Colusa Drain. Colusa Drain flows north to south through the BSA. During the spring and summer, flows within Colusa Drain consist of agricultural irrigation water. Low flows are anticipated from mid-September to through March after the rice has been harvested and the primary hydrologic input is rainwater. Vegetation communities and soils within the BSA are heavily influenced by agricultural farming practices, particularly irrigational flooding for rice farming. All construction related activities will be restricted to the limits of the APE.

Physical Conditions

The BSA is topographically flat and experiences regular disturbance due to existing farming conditions. The BSA sits at an elevation of approximately 73.8 feet above sea level and is sloped between 0-1 percent. There are two (2) soil map units within the BSA that are recognized by the USDA NRCS. The soil types found within the BSA are predominately silty clays or clay loams (NRCS 2016). The average annual precipitation is 17.95 inches and the average annual temperature is 61.5° F in the region where the survey area is located. (Western Regional Climate Center 2018). Vegetation within the BSA and Colusa Drain is managed; however, Himalayan blackberry (*Rubus armeniacus*) and willow (*Salix* sp.) thickets are present on the banks of Colusa Drain. Colusa Drain features a mud substrate, with fairly steep banks. Colusa Drain is bordered by unpaved access roads featuring small mammal burrows, and irrigated rice fields are adjacent. The two unnamed drainages present could be described as roadside ditches, with shallower banks and ephemeral flows.

Biological Conditions in the Biological Study Area

The BSA consists of annual grassland, riverine, rice, and barren habitat types (**Figure 5: Habitat Map**). Habitat types within the BSA are described below based on Mayer and Laudenslayer's *A Guide to Wildlife Habitats of California* (1988).



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NORTH

Data Sources: ESRI, NAIP 07/11/2016, USGS, Glenn County, Quincy Engineering

County of Glenn CR 66B Bridge 11C-0068
Habitat Map
Figure 5

gallaway ENTERPRISES

GE: #16-078 Map Date: 08/08/18

RIVERINE

Riverine habitat is characterized by intermittent or continually running water. Colusa Drain and the unnamed ephemeral drainages provide riverine habitat within the BSA. Unlike most riverine habitats, the water flow within Colusa Drain is influenced and controlled by local agricultural irrigation, precluding many aquatic and fish species that may normally be present within riverine habitat. Water flows within Colusa Drain are high in the spring and summer during rice-growing season and low in the fall and winter when fields are drained and irrigation ceases. Dominant vegetation within this habitat type consists primarily of floating water primrose (*Ludwigia peploides*), Himalayan blackberry, and willow. Himalayan blackberry and willow provide suitable nesting substrate for some avian species.

RICE

Rice habitat consists of flood irrigated crops that are seed-producing annual grasses. This habitat type is dominated by rice species (*Oryza* spp.) grown in leveed fields that are flooded much of the growing period, and dried out to mature and to facilitate harvesting. As these fields are intentionally flooded for much of the growing season, they are considered wetlands. Emergent rice, vegetated checks, and shallow, warm water provide shelter and habitat for aquatic species and small mammals that in turn provide ample prey for larger animals. Many species of wildlife and especially waterfowl, shorebirds, and wading birds have adapted to rice.

BARREN

Barren habitat is typified by less than two (2) percent vegetative cover. Within the BSA, CR 66B, the existing bridge, and the unpaved access roads are classified as barren. While barren habitat generally does not provide high quality habitat to wildlife, the unpaved access roads feature many small mammal burrows. Bridges can be used for cover and breeding activities by birds and bats. Unvegetated roadside areas can sometimes be used by ground-nesting birds, such as killdeer (*Charadrius vociferous*).

ANNUAL GRASSLAND

Annual grassland occurs in patches within the upland habitat within the BSA. Annual grasslands occur on open flat to gently rolling lands and are dominated by grasses and annual plants, with the dominant species varying depending on the climate and soils. This habitat type often occurs on its own or as an understory in wooded habitat types. Some of the dominant plant species observed in the annual grassland habitat within the BSA include black mustard (*Brassica nigra*), rip-gut brome (*Bromus diandrus*), yellow star thistle (*Centaurea solstitialis*), and soft chess (*Bromus hordeaceus*). In some areas within the BSA,

Himalayan blackberry grows from within riverine habitat, up onto banks into the annual grassland habitat. A variety of ground nesting avian species, reptiles, and small mammals use grassland habitat for breeding, while many other wildlife species only use it for foraging or require other habitat characteristics such as rocky outcroppings, cliffs, caves, or ponds in order to find shelter and cover for escapement (Mayer and Laudenslayer 1988). Common species found utilizing this habitat type include western fence lizards (*Sceloporus occidentalis*), common garter snakes (*Thamnophis elegans*), California ground squirrels (*Otospermophilus beecheyi*), jackrabbits (*Lepus californicus*), and a variety of avian species.

Regional Species and Habitats and Natural Communities of Concern

The following special-status species were identified under the USFWS IPaC, CNDDB, and the CNPS species lists (**Appendix A: Species Lists**) as having potential to occur within the USGS Princeton 7.5 minute and surrounding quadrangles. Species that have the potential to occur within the BSA are based on suitable habitat within the BSA, CNDDB occurrences within a 5-mile radius of the BSA, and observations made during biological and botanical surveys. A summary of special-status species and their potential to occur within the BSA is provided in **Table 2**.

Table 2. Listed and Candidate Species Potentially Occurring or Known to Occur in the County of Glenn CR 66B Bridge Replacement Project BSA.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent	Potential to Occur/Rationale
SENSITIVE NATURAL COMMUNITIES					
Coastal and Valley Freshwater Marsh	N/A	SNC	Freshwater marshes dominated by rush (*Juncus spp.)*, cattails (*Typha spp.)*, and *Scirpus spp.*	A	None. Coast and Valley Freshwater Marsh does not occur within the BSA.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent	Potential to Occur/Rationale
SENSITIVE NATURAL COMMUNITIES					
Great Valley Cottonwood Riparian Forest	N/A	SNC	Dense, broad-leafed, winter deciduous riparian forest dominated by Fremont cottonwood (*Populus fremontii ssp. fremontii*) and Goodding's black willow (*Salix gooddingii*).	A	None. Great Valley Cottonwood Riparian Forest does not occur within the BSA.
Great Valley Mixed Riparian Forest	N/A	SNC	Large corridors of riparian forest dominated by valley oaks (*Quercus lobata*).	A	None. Great Valley Mixed Riparian Forest does not occur within the BSA.
Great Valley Willow Scrub	N/A	SNC	Riparian scrub dominated by willow (*Salix spp.*).	A	None. Great Valley Willow Scrub does not occur within the BSA.
PLANTS					
Heartscale	*Atriplex cordulata var. cordulata*	CNPS 1B.2	Saline or alkaline soils, chenopod scrub, meadows and seeps, valley and foothill grassland (sandy). (BP: Apr-Oct)	A	None. Species was not observed during protocol-level survey.
Brittlescale	*Atriplex depressa*	CNPS 1B.2	Usually in alkali scalds or alkaline clay in meadows or annual grassland; rarely associated with riparian, marshes, or vernal pools. (BP: Apr-Oct)	A	None. Species was not observed during protocol-level survey.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent	Potential to Occur/Rationale
PLANTS					
Vernal pool smallscale	*Atriplex persistens*	CNPS 1B.2	Alkaline vernal pools. (BP: June, Aug-Oct)	A	None. There are no vernal pools within or adjacent to the BSA.
Palmate-bracted bird's-beak	*Chloropyron palmatum*	FE/SE/ CNPS 1B.1	Chenopod scrub, valley/foothill grassland in alkaline soils. (BP: May - Oct)	A	None. No chenopod scrub habitat within the BSA and not observed during protocol-level survey. No effect.
Hoover's spurge	*Euphorbia hooveri*	FT/CNPS 1B.2	Vernal pools. (BP: Jul - Oct)	A	None. There are no vernal pools within or adjacent to the BSA. No effect.
Heckard's pepper-grass	*Lepidium latipes var. heckardii*	CNPS 1B.2	Valley and foothill grassland (alkaline flats). (BP: Mar-May)	A	None. Not observed during protocol-level surveys.
Colusa grass	*Neostapfia colusana*	FT/SE/ CNPS 1B.1	Vernal pools (adobe, large). (BP: May-Aug)	A	None. There are no vernal pools within or adjacent to the BSA and the only nearby CNDDB occurrence (#13) has been determined to be extirpated. Not observed during protocol-level surveys. No effect.
Hairy Orcutt grass	*Orcuttia pilosa*	FE/SE/ CNPS 1B.1	Vernal pools. (BP: May-Sep)	A	None. There are no vernal pools within or adjacent to the BSA. Not observed during protocol-level surveys. No effect.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent	Potential to Occur/Rationale
PLANTS					
California alkali grass	*Puccinellia simplex*	CNPS 1B.2	Alkaline, vernally mesic; sinks, flats, and lake margins. (BP: Mar-May)	A	None. Not observed during protocol-level surveys.
INVERTEBRATES					
Conservancy fairy shrimp	*Branchinecta conservatio*	FE	Moderately turbid, deep, cool-water vernal pool.	A	None. There are no vernal pools within or adjacent to the BSA, and no CNDDB occurrences within 5 miles. No effect.
Crotch bumble bee	*Bombus crotchii*	SC	Native grasslands and shrublands featuring Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia, and Eriogonum.	A	None. The land within the BSA does not contain suitable foraging or overwintering habitat due to the highly disturbed agricultural nature of the site and none of the typical associate plant species are present.
Vernal pool fairy shrimp	*Branchinecta lynchi*	FT	Moderately turbid, deep, cool-water vernal pool.	A	None. There are no vernal pools within or adjacent to the BSA. No effect.
Vernal pool tadpole shrimp	*Lepidurus packardi*	FE	Moderately turbid, deep, cool-water vernal pool.	A	None. There are no vernal pools within or adjacent to the BSA. No effect.
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	FT	Blue elderberry shrubs in riparian zones.	A	None. There are no elderberry shrubs within the BSA. No effect.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent	Potential to Occur/Rationale
FISH					
Delta smelt	*Hypomesus transpacificus*	FT/SE	Endemic to the San Francisco Bay and Sacramento–San Joaquin Delta Estuary. Found only from the San Pablo Bay upstream through the Delta in Contra Costa, Sacramento, San Joaquin, Solano, and Yolo Counties.	A	None. Delta smelt are not known to occur in Glenn County; therefore, the project will have no effect on Delta smelt (50 CFR Part 27, April 7, 2010).
Steelhead Central Valley DPS	*Oncorhynchus mykiss irideus*	FT	Sacramento and San Joaquin Rivers and their tributaries.	A	None. Colusa Drain is an agricultural irrigation canal that is not known to support anadromous fish species. There are known barriers between Colusa Drain and the Sacramento River. No effect.
Chinook salmon Central Valley spring-run ESU	*Oncorhynchus tshawytscha*	FT/ST	Sacramento River and its tributaries.	A	None. Colusa Drain is an agricultural irrigation canal that is not known to support anadromous fish species. There are known barriers between Colusa Drain and the Sacramento River. No effect.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent	Potential to Occur/Rationale
FISH					
Chinook salmon Sacramento River winter-run ESU	*Oncorhynchus tshawytscha*	FE/SE	Sacramento River and its tributaries.	A	None. Colusa Drain is an agricultural irrigation canal that is not known to support anadromous fish species. There are known barriers between Colusa Drain and the Sacramento River. No effect.
Green sturgeon southern DPS	*Acipenser medirostris*	FT/SSC	Sacramento River and its tributaries.	A	None. Colusa Drain is an agricultural irrigation canal that is not known to support anadromous fish species. There are known barriers between Colusa Drain and the Sacramento River. No effect.
MAMMALS					
Western red bat	*Lasiurus blossevillii*	SSC	Solitary species; roosts in trees often in riparian forests and occasionally oak woodlands.	A	None. There are no suitable roosting trees present within the BSA.
Pallid bat	*Antrozous pallidus*	SSC	Colonial species; roosts during the day in buildings, small crevices, bridges, and occasionally under exfoliating bark, hollow trees, and bole cavities. Common in open dry environments.	A	None. There is no suitable day roosting habitat present on the bridge. No signs of bats using the bridge as a day or night roost were observed.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent	Potential to Occur/Rationale
REPTILES & AMPHIBIANS					
Western pond turtle	*Emys marmorata*	SSC	Artificial ponds, pond margins, backwaters of rivers, and sloughs vegetated by heavy riparian and/or emergent vegetation and basking areas.	HP	**Moderate**. There is suitable aquatic habitat present within the BSA. Basking and nesting habitat is limited, as the banks of Colusa Drain are fairly steep and there are no emergent logs or rocks present. There are no CNDDB occurrences within 5 miles of the BSA.
California red-legged frog	*Rana draytonii*	FT/ SSC	Inhabits quiet pools of streams, marshes, and occasionally ponds.	A	None. California red-legged frogs have been extirpated from the Central Valley since 1960 (USFWS 2002). No effect.
Giant garter snake	*Thamnophis gigas*	FT/ST	Agricultural wetlands and other wetlands such as irrigation and drainage canals, low gradient streams, marshes ponds, sloughs, small lakes, and their associated uplands. (sea level - 400 feet elevation)	HP	**High**. There is suitable aquatic and upland habitat for GGS present and CNDDB occurrences within 5 miles the BSA. May affect, and is likely to adversely affect.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent	Potential to Occur/Rationale
BIRDS					
Tricolored blackbird	*Agelaius tricolor*	ST	Fresh emergent wetlands, blackberry brambles, agricultural fields and grasslands.	HP	**High**. The blackberry and willow thickets provide nesting habitat and adjacent rice fields provide foraging habitat within the BSA. There are multiple nearby CNDDB occurrences, and tricolored blackbirds were observed within 500 feet of the BSA during the biological habitat assessment.
Swainson's Hawk	*Buteo swainsoni*	ST	Open grasslands, shrublands and agricultural fields, often near riparian forests.	A	None. There is no suitable nesting habitat and marginal foraging habitat present in the BSA. No effect.
Yellow-billed cuckoo	*Coccyzus americanus*	FT/SE	Open woodlands, riparian areas, orchards and moist, overgrown thickets.	A	None. There is no suitable nesting habitat within or adjacent the BSA. Nearby CNDDB occurrences are limited to the vicinity of the Sacramento River. No effect.
Bank swallow	*Riparia riparia*	ST	Along water ways with sharply cut banks made up of brittle soils.	A	None. There are no sharply cut banks suitable for bank swallow nesting colonies within the BSA.

Common Name	Scientific Name	Status	General Habitat Description	Habitat Present/ Absent	Potential to Occur/Rationale
BIRDS					
Northern spotted owl	*Strix occidentalis caurina*	FT/ST	Inhabits older coniferous forest stands.	A	None. There is no suitable habitat present within or adjacent the BSA. No effect.
Code Designations					
Absent [A] - no habitat present and no further work needed. Habitat Present [HP] -habitat is, or may be present. The species may be present. Present [P] - the species is present. Critical Habitat [CH] - project footprint is located within a designated critical habitat unit, but does not necessarily mean that appropriate habitat is present. Status: Federal Endangered (FE); Federal Threatened (FT); Federal Candidate (FC), Federal Species of Concern (FSC); State Endangered (SE); State Threatened (ST); Fully Protected (FP); State Rare (SR); State Candidate (SC), State Species of Special Concern (SSC); California Native Plant Society (CNPS); Sensitive Natural Community (SNC)					

4 Results: Biological Resources, Discussion of Impacts and Mitigation

Habitats and Natural Communities of Special Concern

There are no CDFW-designated natural communities of special concern within or adjacent to the BSA.

There are six (6) features that qualify as potentially jurisdictional WOTUS within the BSA, including four (4) agricultural wetlands and three (3) drainages including Colusa Drain. Project activities will result in temporary impacts to 0.092 acres of wetland features. Project activities will result in permanent impacts to 0.013 acres of agricultural wetlands and 0.05 acres of other waters. A Draft Delineation of WOTUS Map is included as **Appendix C**.

Special-Status Plant Species

Based on the results of the habitat assessment and protocol-level rare plant survey conducted, the BSA was determined to not contain any special-status plant species or suitable habitat for special-status plant species (**Table 2**).

Special-Status Animal Species Occurrences

GIANT GARTER SNAKE

Giant garter snakes are listed as threatened under the ESA and CESA. According to the USFWS Recovery Plan for the Giant Garter Snake, the project site is within the Colusa Basin Recovery Unit (USFWS 2017). Giant garter snakes are the largest species of garter snake. Dull yellow striping and a wide head commonly distinguishes GGS from other common species of garter snake. Giant garter snakes are found in the wetlands of the Sacramento and San Joaquin Valleys from Chico, Butte County to Mendota Wildlife Area, Fresno County. Suitable habitat includes marshes, sloughs, back waters of rivers, irrigation canals, drainage canals, agricultural wetlands, flooded rice fields, and occasionally streams with low gradient and slow to stagnant waters. Giant garter snakes breed from March to April and females give birth to live young from July to early September. Giant garter snakes stay active as long as temperatures are warm, and start to move underground into small mammal burrows or crevices around October 1 to avoid potentially lethal autumn and winter temperatures (USFWS 2017). Giant garter snakes overwinter in upland hibernacula. Current threats facing

the GGS are habitat loss and fragmentation as a result of urbanization and conversion of wetlands, changes in water availability, levee and canal maintenance, water management and water deliveries that do not account for the giant garter snake, small populations, and invasive aquatic species (USFWS 2017).

Survey Results

Suitable habitat components or primary constituent elements (PCE) for GGS consist of (1) a fresh-water aquatic component with protective emergent vegetative cover that will allow foraging, (2) an upland component near the aquatic habitat that can be used for thermoregulation and for summer shelter in burrows, and (3) an upland refugia component that will serve as winter hibernacula (USFWS 2017). There is suitable aquatic and upland habitat that contains the PCEs for GGS within and surrounding the BSA. In addition, there are two (2) GGS CNDDB occurrences within 5 miles of the BSA.

Aquatic Habitat

Suitable aquatic habitat for GGS consists of marshes, ponds, small lakes, low gradient streams, irrigation ditches, drainage canals, and agricultural wetlands (e.g. rice fields) (USFWS 2017). The BSA contains suitable aquatic habitat for GGS in the form of Colusa Drain, the unnamed drainage ditch, and surrounding rice paddies. Water is present in these areas during the GGS's active season (Gallaway Enterprises personal observation) and vegetation was observed along the edges and banks of the Colusa Drain for foraging and refuging GGS.

Upland Habitat

Suitable upland habitat for GGS consists of land that is not typically inundated during the active season and is adjacent to suitable aquatic habitat. Suitable upland habitat often contains bankside vegetative cover and small mammal burrows or other forms of refuge (USFWS 2017). The BSA contains suitable upland habitat for GGS. There is vegetative cover on the banks of Colusa Drain, and there are many small mammal burrows are present within the unpaved access roads and annual grassland areas directly adjacent to aquatic habitat.

Project Impacts

Construction activities resulting in temporary and permanent impacts to GGS aquatic and upland habitat will occur and are depicted in **Figure 6**. The project may affect, and is likely to adversely affect GGS.

Initial construction and the installation of exclusion fencing will be initiated during the active period of GGS; therefore, GGS individuals are expected to avoid harm's way during initial vegetation removal and ground-disturbing activities. Construction activities will continue as temperatures decrease and GGS enter their dormant season. With the installation of exclusion fencing during the GGS active season and the continuation of construction activities throughout the GGS inactive season, GGS individuals will not be expected to move into the project area. Avoidance and minimization measures will also be implemented to minimize the potential for take. To ensure no direct take of GGS occur due to the proposed project, the following avoidance and minimization measures will be implemented.

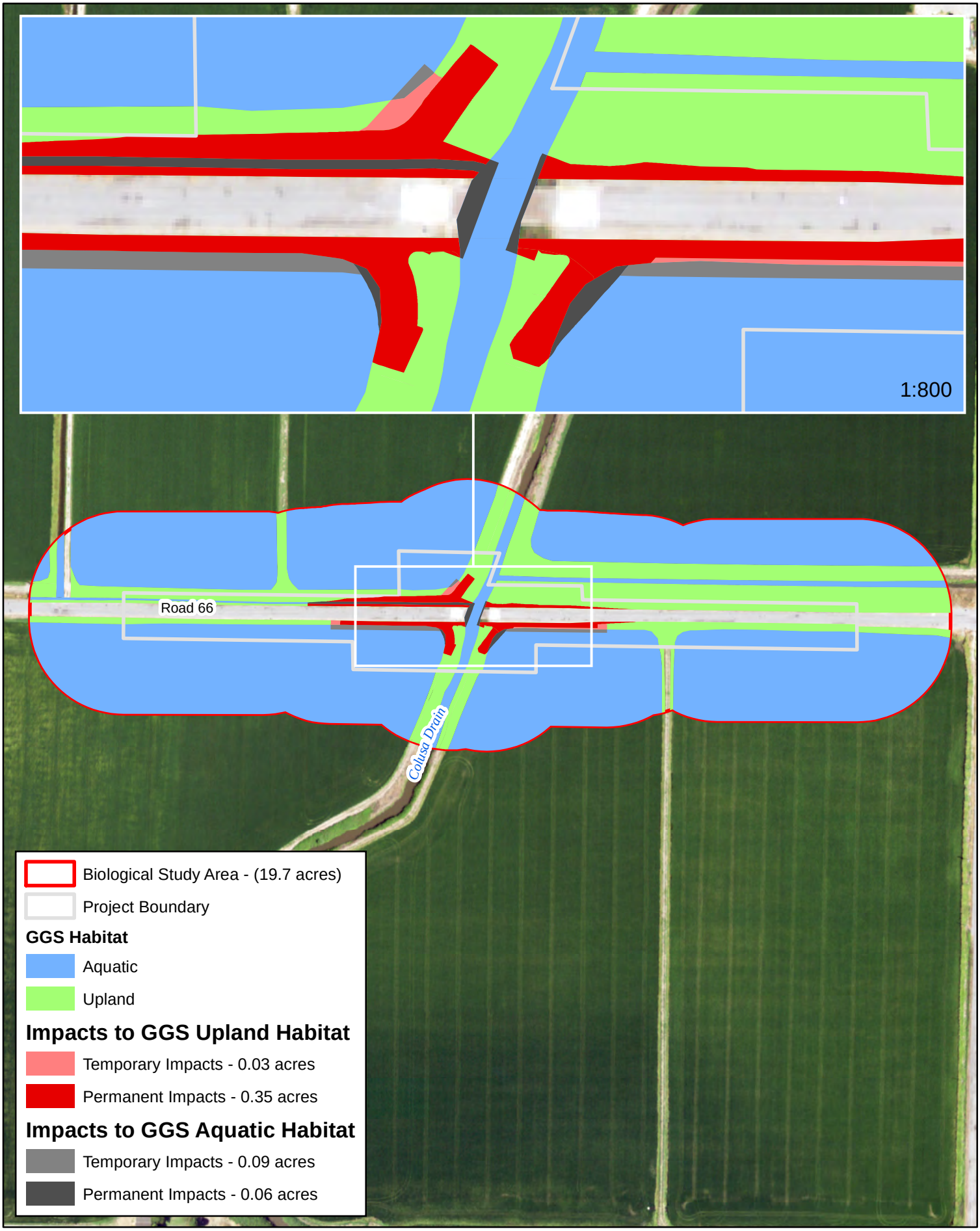
Avoidance and Minimization Efforts

The following recommendations, when implemented, will avoid and minimize impacts to this species:

- The applicant is proposing to work outside of the snake's active season. Construction and ground disturbing activities will be initiated during the active season, continue through the inactive season, and is anticipated to be completed before the inactive season is over.

- Twenty-four hours prior to the commencement of construction activities, the project area shall be surveyed for giant garter snakes by a qualified biologist. The biologist will provide a written report that adequately documents the monitoring efforts within 24 hours of commencement of construction activities. The project area shall be re-inspected by the monitoring biologist whenever a lapse in construction activity of 2 weeks or greater has occurred.

- A Worker Environmental Awareness Training Program for construction personnel shall be conducted by a qualified biologist for all construction workers, including contractors, prior to the commencement of construction activities.



NORTH

1:3,200

0 100 200 Feet

Data Sources: ESRI, NAIP 07/11/2016, USGS, Glenn County, Quincy Engineering

County of Glenn CR 66B Bridge 11C-0068
GGS Impacts Map
Figure 6

gallaway ENTERPRISES

GE: #16-078 Map Date: 11/26/18

- During construction operations, stockpiling of construction materials, portable equipment, vehicles, and supplies will be restricted to the designated construction staging areas and all operations will be confined to the minimal area necessary.

- A qualified biologist shall be onsite to monitor for GGS during all vegetation removal and initial ground-disturbing activities. After the initial ground-disturbing activities have been completed, the qualified biologist will monitor the installation of exclusion fencing around the project boundary. The qualified biologist will monitor excavation of suitable GGS habitat and bridge removal.

- Project-related vehicles will observe a 20-mile-per-hour speed limit within construction areas, except on existing paved roads where they will adhere to the posted speed limits.

- High visibility fencing will be erected around the habitats of the snake to identify and protect these areas from encroachment of personnel and equipment. These areas will be avoided by all construction personnel. The fencing shall be inspected by the Contractor before the start of each work day and maintained by the Contractor until completion of the project. Fencing will be established in the uplands immediately adjacent to aquatic snake habitat and extending up to 200 feet from construction activities, where feasible. Snake exclusionary fencing will be buried at least 6 inches below the ground to prevent snakes from attempting to burrow or move under the fence.

- Best Management Practices (BMPs) will be implemented to minimize the potential for erosion and sedimentation into nearby waterbodies.

- After completion of construction activities, the applicant will remove any temporary fill and construction debris and, wherever feasible, restore disturbed areas to pre-project conditions. Restoration work includes such activities as re-vegetating the banks and active channels with a seed mix similar to pre-project conditions.

- A photo documentation report showing pre- and post-project area conditions will be submitted 1 month after the implementation of the restoration.

Compensatory Mitigation

The project will permanently and temporarily impact upland and aquatic GGS habitat. To mitigate permanent and temporary impacts to GGS habitat the following is recommended:

- Permanent loss of GGS habitat will be compensated by purchasing creation credits at the Colusa Basin Conservation Bank or at another USFWS and CDFW approved conservation bank with a service area that accommodates the project location. Credits shall be purchased prior to the start of construction. **Table 3** shows the amount of credits that will need to be purchased.

- Temporary disturbance to snake habitat shall be restored to pre-project conditions within 1 year of completion of construction.

    - Restoration and monitoring shall follow the USFWS *Guidelines for Restoration and/or Replacement of Giant Garter Snake Habitat* (1997). If restoration is unsuccessful, as determined by the USFWS, consultation will be reinitiated.

Table 3. GGS Permanent and Temporary Impacts to Upland and Aquatic Habitat and Total Acres to be Mitigated or Required Action.

Impacted Habitat	Acres	Mitigation Ratio	Required Action	Acres to be Mitigated
Upland Permanent	0.35	3:1	Purchase Credits at an Approved USFWS GGS Mitigation Bank	1.05
Upland Temporary	0.03	1:1	Restore	0.03
Aquatic Permanent	0.06	3:1	Purchase Credits at an Approved USFWS GGS Mitigation Bank	0.18
Aquatic Temporary	0.09	1:1	Restore	0.09
			Total Mitigation Acres	**1.35**

Cumulative Effects

There are no current or planned projects that will have cumulative effects on GGS or GGS habitat within the project BSA.

WESTERN POND TURTLE

The western pond turtle is a SSC in California. Western pond turtles are drab, darkish-colored turtles with a yellowish to cream colored head. They range from the Washington Puget Sound to the California Sacramento Valley. Suitable aquatic habitats include slow moving to stagnant water, such as back waters and ponded areas of rivers and creeks, semi-permanent to permanent ponds and irrigation ditches. Preferred habitats include features such as hydrophytic vegetation, for foraging and cover, and basking areas to regulate body temperature. In early spring through early summer, female turtles begin to move over land in search for nesting sites. Eggs are laid on the banks of slow moving streams. The female digs a hole approximately four inches deep and lays up to eleven eggs. Afterwards the eggs are covered with sediment and are left to incubate under the warm soils. Eggs are typically laid between March and August (Zeiner et al. 1990). Current threats facing the western pond turtle include loss of suitable aquatic habitats due to rapid changes in water regimes and removal of hydrophytic vegetation.

Survey Results

Suitable western pond turtle habitat occurs within Colusa Drain and the unnamed drainages present in the BSA, when water is present. Colusa Drain generally lacks emergent rocks and logs on which western pond turtles bask for thermoregulation; however, the ditches features fresh emergent vegetation for foraging and cover and open banks for basking. Western pond turtles are frequently found within irrigation canals and drainages throughout their range in the Central Valley.

Project Impacts

Impacts to western pond turtles will be avoided with the implementation of avoidance and minimization measures and by conducting a survey immediately prior to in-stream work; however, if turtles are discovered within the project boundary they may need to be relocated by a qualified biologist, which may lead to impacts.

Avoidance and Minimization Efforts

The following are avoidance and minimization measures recommended in order to avoid and minimize potential impacts to western pond turtle:

- Immediately prior to conducting in-stream work, a qualified biologist shall conduct a survey to determine the presence or absence of western pond turtles. If western pond turtles are observed where they could be potentially impacted by project

activities, as determined by the onsite biologist, then work shall not be conducted within 100 feet of the sighting until the turtle(s) have left the project site or a qualified biologist has relocated the turtle(s) immediately outside of the project site.

- If turtle eggs are uncovered during construction activities, then all work shall stop within a 25 foot radius of the nest and the onsite biologist should be notified immediately. The 25 foot buffer should be marked with identifiable markers that do not consist of fencing or materials that my block the migration of young turtles to the water or attract predators to the nest site. No work will be allowed within the 25 foot buffer until CDFW has been consulted.

- All portions of the project site that could result in inadvertently trapping turtles, such as open pits, trenches, and de-watered areas will be covered and/or exclusion fencing will be installed to prevent turtles from entering these areas.

Compensatory Mitigation

No compensatory mitigation will be required since the implementation of the avoidance and minimization measures discussed above will ensure that no take of western pond turtle will occur.

Cumulative Effects

There are no current or planned projects that will have cumulative effects on western pond turtles that occur within the project BSA.

TRICOLORED BLACKBIRD

Tricolored blackbirds are listed as threatened under the CESA. They range from southern Oregon through the Central Valley, and coastal regions of California into the northern part of Mexico. Tricolored blackbirds are medium-size birds with black plumage and distinctive red marginal coverts, bordered by whitish feathers. Tricolored blackbirds nest in large colonies within agricultural fields, marshes with thick herbaceous vegetation, or in clusters of large blackberry bushes near a source of water and suitable foraging habitat. They are nomadic migrators, so documenting occurrence at any location does not mean that they will necessarily return to that area. Current threats facing tricolored blackbirds include colonial breeding in regards to small population size, habitat loss, overexploitation, predation, contaminants, extreme weather events, and drought, water availability, and climate change (CDFW 2018).

Survey Results

There is suitable nesting habitat for tricolored blackbirds within the BSA where dense patches of blackberry brambles occur, and the surrounding rice fields provide suitable foraging habitat. Further, there are ten (10) tricolored blackbird CNDDB occurrences within 5 miles of the BSA (CNDDB 2018). Tricolored blackbirds were observed within 500 feet of the BSA during the biological habitat assessment performed by Gallaway Enterprises.

Project Impacts

Construction activities will be initiated outside of the avian nesting season, on October 1, and will be continuous until the project is completed in late April. With the implementation of avoidance and minimization measures, there will be no direct or indirect impacts to tricolored blackbird.

Avoidance and Minimization Efforts

There is suitable nesting habitat present within the BSA in the form of blackberry thickets. The following are recommended avoidance and minimization measures for tricolored blackbird:

- Project activities, including site grubbing and vegetation removal, within the BSA shall be initiated outside of the bird nesting season (February 1 – August 31).
- If project activities cannot be initiated outside of the bird nesting season, or if there is a lapse in construction of more than 7 days during the bird nesting season, then the following will occur:
    - A qualified biologist will conduct a pre-construction survey within 7 days prior to starting work.
    - If an active tricolored blackbird nest (i.e. with egg(s) or young) is observed within 250 feet of the project boundary during the pre-construction survey, then a species protection buffer will be established. The species protection buffer will be defined by the qualified biologist in consultation with CDFW. Construction activity shall be prohibited within the buffer zones until the young have fledged or the nest fails. Nests shall be monitored once per week by a qualified biologist and a report submitted to the County weekly.

Compensatory Mitigation

No compensatory mitigation will be required since the implementation of the avoidance and minimization measures discussed above will ensure that no impacts to or take of tricolored blackbird will occur.

Cumulative Effects

There are no current or planned projects that will have cumulative effects on tricolored blackbirds that occur within the project BSA.

MIGRATORY BIRDS

Nesting birds are protected under the MBTA (16 USC 703) and the CFGC (3503). The MBTA (16 USC §703) prohibits the killing of migratory birds or the destruction of their occupied nests and eggs except in accordance with regulations prescribed by the USFWS. The bird species covered by the MBTA includes nearly all of those that breed in North America, excluding introduced (i.e. exotic) species (50 Code of Federal Regulations §10.13). Activities that involve the removal of vegetation including trees, shrubs, grasses, and forbs or ground disturbance has the potential to affect bird species protected by the MBTA.

The CFGC (§3503.5) states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes (hawks, eagles, and falcons) or Strigiformes (all owls except barn owls) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto". Take includes the disturbance of an active nest resulting in the abandonment or loss of young. The CFGC (§3503) also states that "it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto".

Survey Results

The habitats present within the BSA provide nesting habitat for a variety of migratory bird and raptor species. During the field survey, no old bird nests were found under the bridge; however, it is possible for cliff swallows, barn swallows, and black phoebes, which commonly nest on the sides or pillars of bridges, to occupy the area.

Project Impacts

Construction activities will be initiated outside of the avian nesting season. With the implementation of avoidance and minimization measures, there will be no impacts to migratory birds or raptors.

Avoidance and Minimization Efforts

To avoid impacts to avian threatened species (i.e. tricolored blackbird) or avian species protected under the MBTA and the CFGC, the following avoidance and minimization measures are recommended.

The following are avoidance and minimization measures for California avian threatened species and species protected under the MBTA and the CFGC:

- Any vegetation removal and/or ground disturbance activities should take place during the avian non-breeding season (September 1 – January 31).
- If project activities cannot be initiated outside of the avian nesting season, or if there is a lapse in construction of more than 7 days during the avian nesting season, then a migratory bird and raptor survey shall be conducted within the BSA by a qualified biologist. The qualified biologist shall:
    - Conduct a survey for all birds protected by the MBTA and CFGC within 7 days prior to construction activities, and map all nests located within 200 feet of construction areas;
    - Develop buffer zones around active nests as recommended by a qualified biologist. Construction activity shall be prohibited within the buffer zones until the young have fledged or the nest fails. Nests shall be monitored at least once per week by a qualified biologist and a report submitted to the County monthly.
- All staging and construction activity will be limited to designated areas within the BSA and designated routes for construction equipment shall be established in order to limit disturbance to the surrounding area.

The following are recommended exclusion and monitoring activities to avoid and minimize impacts to avian species protected under the MBTA and CFGC that have the potential to nest on the existing bridge:

- The removal of the current bridge will be conducted during the avian non-breeding season (September 1 – January 31) so as to avoid impacts to avian species that may potentially nest on the bridge.

- If the current bridge cannot be removed outside of the avian breeding season (February 1 – August 31) then the following exclusion and monitoring activities shall take place.

  Exclusion

  - All avian nests should be removed from the bridge prior to February 1 so as to deter avian species from nesting on the bridge.
  - Any exclusionary devices that are deemed necessary in order to prevent avian species from nesting on the existing bridge should be established by a qualified biologist prior to February 1. Exclusionary devices shall be maintained by the County or a qualified biologist until the current bridge is removed or the end of the avian breeding season.

  Monitoring

  - Weekly, or as necessary, monitoring or additional exclusion activities will be conducted by a qualified biologist on the current bridge after February 1 until the current bridge is removed or the end of the avian breeding season (August 31).

Project Impacts

With the implementation of avoidance and minimization measures specified above there will be no direct or indirect impacts to avian threatened species (i.e. tricolored blackbird) or avian species protected under the MBTA and CFGC.

Compensatory Mitigation

There will be no compensatory mitigation necessary for project activities in regards to avian threatened species (i.e. tricolored blackbird) or avian species protected under the MBTA and CFGC.

Cumulative Effects

There are no foreseeable new actions that have potential to threaten migratory birds within the BSA or contribute to cumulative effects of migratory bird species.

5 Results: Permits and Technical Studies for Special Laws or Conditions

Federal Endangered Species Act Consultation Summary

The USFWS was contacted in July of 2018 for a list of endangered, threatened, sensitive, and rare species, and their habitats within the project's BSA. The NMFS was also contacted to obtain a list of endangered and threatened fish species and critical habitat.

The proposed project has been determined to have no effect on northern spotted owl, western yellow-billed cuckoo, valley elderberry longhorn beetle, conservancy fairy shrimp, vernal pool fairy shrimp, vernal pool tadpole shrimp, California red-legged frog, delta smelt, Central Valley steelhead, Chinook salmon Central Valley spring-run ESU, Chinook salmon Sacramento River winter-run ESU, green sturgeon southern DPS, palmate-bracted bird's-beak, Hoover's spurge, hairy Orcutt grass, or Colusa grass; however, the project may affect and is likely to adversely affect GGS.

As a result of impacts to federally listed species due to the proposed project, Caltrans will initiate formal consultation with the USFWS for impacts to GGS and to obtain concurrence that there will be no impacts to the federally listed species listed above.

California Endangered Species Act Consultation Summary

The CDFW was contacted in July of 2018 for a list of endangered, threatened, sensitive, and rare species and their habitats within the project's BSA. The list was later referenced to determine appropriate biological and botanical surveys and potential species occurrence within the project BSA. The County will obtain an Incidental Take Permit or consistency determination authorizing activities that may impact GGS habitat or have the potential to take GGS.

Wetlands and Other Waters Coordination Summary

Gallaway Enterprises conducted a delineation of WOTUS within the BSA.

The project site was surveyed on-foot by Gallaway Enterprises staff on May 31, 2018 to identify potentially jurisdictional features. The surveys involved an examination of botanical resources, soils, hydrological features, and determination of wetland characteristics based

on the United States Army Corps of Engineers Wetlands Delineation Manual (1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (2008). The boundaries of non-tidal, non-wetland waters, when present, were delineated at the OHWM as defined in 33 Code of Federal Regulations (CFR) 328.3 and further described in the U.S. Army Corps of Engineers *Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (2008). The OHWM represents the limit of Corps jurisdiction over non-tidal waters (e.g., streams and ponds) in the absence of adjacent wetlands (33 CFR 328.04) (Curtis et al. 2011).

As there are potentially jurisdictional other waters that will be impacted by project activities, a CDFW §1602 Streambed Alteration Agreement, RWQCB §401 Water Quality Certification permit and a Corps Nationwide §404 3(a) permit are necessary. The project will result in 0.003 acre of temporary and 0.05 acre (433.2 linear feet) of permanent impacts to other waters, and 0.089 acres of temporary and 0.063 acres of permanent impacts to agricultural wetland features. Mitigation for impacts to jurisdictional WOTUS will be addressed through the purchase of credits at a Corps approved mitigation bank or payment to a Corps approved in-lieu fund.

Invasive Species

Many non-native plant species occur in California's natural lands. Some of these non-natives have become naturalized and are relatively benign; however, there are a number of these non-natives that are considered highly invasive. The non-native plants that are considered invasive are tracked and ranked by their invasiveness by the USDA NRCS and the Cal-IPC. Within the BSA, twelve (12) invasive plant species were observed that are included on the USDA and/or Cal-IPC invasive and noxious weed plant list as having a moderate or higher degree of invasiveness in California **(Table 4)**. It is recommended that general best management practices (BMP) be implemented prior and during construction activities as recommended under the Cal-IPC Preventing the Spread of Invasive Plants: Best Management Practices for Transportation and Utility Corridors (2012). The following are the recommended general BMP's under Cal-IPC.

- Schedule activities to minimize potential for introduction and spread of invasive plants.
- Designate specific areas for cleaning tools, vehicles, equipment, clothing and gear.

- Designate waste disposal areas for invasive plant materials, and contain invasive plant material during transport.
- Plan travel routes to avoid areas infested with invasive plants.
- Clean tools, equipment, and vehicles before transporting materials and before entering and leaving worksites.
- Clean clothing, footwear and gear before leaving infested areas.
- Prepare worksites to limit the introduction and spread of invasive plants.
- Minimize soil and vegetation disturbance.

Table 4. Invasive Plant Species Identified within the BSA.

Scientific Name	Common Name	Ecology	CAL-IPC	USDA California State
Avena barbata	Wild Oats	Winter annual grass that grows in every grassland area in California. It does well in sandy/poor soils, often on the roadsides. It is one of the annual grasses that was introduces as a forage species and has replaced the native perennial grasses.	Moderate	N/A
Brassica nigra	Black mustard	Winter annual herb that grows allelopathic chemicals that prevent germination of native plants. The spread of this species can increase frequency of fires in chaparral and coastal sage scrub, changing these habitats to annual grassland.	Moderate	N/A

Scientific Name	Common Name	Ecology	CAL-IPC	USDA California State
Bromus diandrus	Ripgut brome	Annual grass that has displaced much of the native grass throughout California. It becomes very dry and flammable during the dry season, increasing wildfire frequency, leading to conversion of shrubland and woodland to grassland. This species is reported to hybridize with downy and red brome.	Moderate	N/A
Centaurea solstitialis	Yellow star-thistle	Winter annual invading 12 million acres in California. This species inhabits open hills, grasslands, open woodlands, fields, roadsides, and rangelands. It is considered one of the most serious rangeland weeds as it propagates rapidly by seed, and one large plant can produce 75,000 seeds.	High	CW
Cynodon dactylon	Bermuda grass	Creeping perennial grass commonly used in garden plantings as turf species. Readily escapes to natural lands, particularly in riparian and wet areas.	Moderate	CW

Scientific Name	Common Name	Ecology	CAL-IPC	USDA California State
Festuca perennis	Italian ryegrass	Annual grass found throughout California except in desert ecosystems. It prefers areas with fertile, well-drained soils, including roadsides, fields, orchards and vineyards. It is commonly cultivated for erosion control, pasture forage, and turf.	Moderate	N/A
Foeniculum vulgare	Sweet fennel	A hardy, perennial herb with yellow flowers and feathery leaves. Typically inhabits waste places, roadsides, and other disturbed areas.	Moderate	N/A
Hordeum murinum	Wall hare barely	An annual grass that is not native to California. Inhabits mostly disturbed sites. Very frequently encountered in Valley and foothill grasslands. Hare barley may have arrived in California with Spanish settlers and is more common than Mediterranean barley in disturbed, dry upland areas.	Moderate	N/A

Scientific Name	Common Name	Ecology	CAL-IPC	USDA California State
Ludwigia peploides	Floating water primrose	A perennial aquatic plant that forms very dense, virtually impenetrable mats which restrict fishing and boat access. It outcompetes native aquatic plants. Can be found throughout California in rice fields, ditches, ponds, slow moving streams, and along edges of lakes and reservoirs.	High	N/A
Myriopyllum aquaticum	Parrot's feather	A stout aquatic perennial that forms dense mats of intertwined brownish stems in water. It forms dense mats that can entirely cover the surface of the water in shallow lakes and other waterways.	High	N/A
Rubus armeniacus	Himalayan blackberry	Sprawling, evergreen shrub found throughout much of northern California. Often associated with moist areas and riparian areas.	High	N/A
Torilis arvensis	Hedge-parsley	Occurs in disturbed habitats throughout California. The mature fruit has small hooks that cling to clothing, hair, or fur, facilitating long distance dispersal.	Moderate	N/A

CODE DESIGNATIONS
Moderate – Ecological impacts are substantial, but not sever; moderate to high rates of dispersal but establishment dependent on ecological disturbance; limited to widespread distribution. **High** – Ecological impacts sever; moderate to high rates of dispersal and establishment; widely distributed. **CW** = C List (noxious weeds)

6 References

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Appendix A – Species Lists

United States Fish and Wildlife Service, IPaC

California Department of Fish and Game Natural Diversity Database

California Native Plant Society

National Marine Fisheries Service

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To: November 03, 2020
Consultation Code: 08ESMF00-2018-SLI-2514
Event Code: 08ESMF00-2021-E-00731
Project Name: County of Glenn CR 66B Bridge Replacement

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2018-SLI-2514

Event Code: 08ESMF00-2021-E-00731

Project Name: County of Glenn CR 66B Bridge Replacement

Project Type: BRIDGE CONSTRUCTION / MAINTENANCE

Project Description: bridge replacement

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/39.42861482902849N122.04977768476522W

Counties: Glenn, CA

Endangered Species Act Species

There is a total of 10 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. 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.

Birds

NAME	STATUS
Northern Spotted Owl *Strix occidentalis caurina* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **proposed** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Giant Garter Snake *Thamnophis gigas* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891 Species survey guidelines: https://ecos.fws.gov/ipac/guideline/survey/population/205/office/11420.pdf	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7850 Habitat assessment guidelines: https://ecos.fws.gov/ipac/guideline/assessment/population/436/office/11420.pdf	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
Colusa Grass *Neostapfia colusana* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5690	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Kevin Sevier

From: Brittany Reaves
Sent: Tuesday, November 03, 2020 10:25 AM
To: 'nmfswcrca.specieslist@noaa.gov'
Subject: County Road 66B Bridge 11C-0068 Federal Aid Project No. BRLO-5911(063)

County Road 66B Bridge 11C-0068 Federal Aid Project No. BRLO-5911(063)

Quad Name **Princeton**
Quad Number **39122-D1**

ESA Anadromous Fish

SONCC Coho ESU (T) -
CCC Coho ESU (E) -
CC Chinook Salmon ESU (T) -
CVSR Chinook Salmon ESU (T) - **X**
SRWR Chinook Salmon ESU (E) - **X**
NC Steelhead DPS (T) -
CCC Steelhead DPS (T) -
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) -
CCV Steelhead DPS (T) - **X**
Eulachon (T) -
sDPS Green Sturgeon (T) - **X**

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -
CCC Coho Critical Habitat -
CC Chinook Salmon Critical Habitat -
CVSR Chinook Salmon Critical Habitat - **X**
SRWR Chinook Salmon Critical Habitat - **X**
NC Steelhead Critical Habitat -
CCC Steelhead Critical Habitat -
SCCC Steelhead Critical Habitat -
SC Steelhead Critical Habitat -
CCV Steelhead Critical Habitat - **X**
Eulachon Critical Habitat -
sDPS Green Sturgeon Critical Habitat - **X**

ESA Marine Invertebrates

Range Black Abalone (E) -
Range White Abalone (E) -

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) -
Olive Ridley Sea Turtle (T/E) -
Leatherback Sea Turtle (E) -
North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

Blue Whale (E) -
Fin Whale (E) -
Humpback Whale (E) -
Southern Resident Killer Whale (E) -
North Pacific Right Whale (E) -
Sei Whale (E) -
Sperm Whale (E) -

ESA Pinnipeds

Guadalupe Fur Seal (T) -
Steller Sea Lion Critical Habitat -

Essential Fish Habitat

Coho EFH -
Chinook Salmon EFH - **X**
Groundfish EFH -
Coastal Pelagics EFH -
Highly Migratory Species EFH -

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds

See list at left and consult the NMFS Long Beach office
562-980-4000

MMPA Cetaceans -
MMPA Pinnipeds -

Brittany Reaves
Biologist
Gallaway Enterprises
(530) 332-9909

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Willows (3912252) OR Glenn (3912251) OR Llano Seco (3912158) OR Logandale (3912242) OR Princeton (3912241) OR Butte City (3912148) OR Maxwell (3912232) OR Moulton Weir (3912231) OR Sanborn Slough (3912138))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
Baker's navarretia *Navarretia leucocephala ssp. bakeri*	PDPLM0C0E1	None	None	G4T2	S2	1B.1
bald eagle *Haliaeetus leucocephalus*	ABNKC10010	Delisted	Endangered	G5	S3	FP
bank swallow *Riparia riparia*	ABPAU08010	None	Threatened	G5	S2	
bent-flowered fiddleneck *Amsinckia lunaris*	PDBOR01070	None	None	G3	S3	1B.2
black-crowned night heron *Nycticorax nycticorax*	ABNGA11010	None	None	G5	S4	
Brazilian watermeal *Wolffia brasiliensis*	PMLEM03020	None	None	G5	S2	2B.3
brittlescale *Atriplex depressa*	PDCHE042L0	None	None	G2	S2	1B.2
burrowing owl *Athene cunicularia*	ABNSB10010	None	None	G4	S3	SSC
cackling (=Aleutian Canada) goose *Branta hutchinsii leucopareia*	ABNJB05035	Delisted	None	G5T3	S3	WL
California alkali grass *Puccinellia simplex*	PMPOA53110	None	None	G3	S2	1B.2
California black rail *Laterallus jamaicensis coturniculus*	ABNME03041	None	Threatened	G3G4T1	S1	FP
California linderiella *Linderiella occidentalis*	ICBRA06010	None	None	G2G3	S2S3	
caper-fruited tropidocarpum *Tropidocarpum capparideum*	PDBRA2R010	None	None	G1	S1	1B.1
Coastal and Valley Freshwater Marsh *Coastal and Valley Freshwater Marsh*	CTT52410CA	None	None	G3	S2.1	
Colusa grass *Neostapfia colusana*	PMPOA4C010	Threatened	Endangered	G1	S1	1B.1
Conservancy fairy shrimp *Branchinecta conservatio*	ICBRA03010	Endangered	None	G2	S2	
Crotch bumble bee *Bombus crotchii*	IIHYM24480	None	Candidate Endangered	G3G4	S1S2	
Ferris' milk-vetch *Astragalus tener var. ferrisiae*	PDFAB0F8R3	None	None	G2T1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
giant gartersnake *Thamnophis gigas*	ARADB36150	Threatened	Threatened	G2	S2	
great blue heron *Ardea herodias*	ABNGA04010	None	None	G5	S4	
great egret *Ardea alba*	ABNGA04040	None	None	G5	S4	
Great Valley Cottonwood Riparian Forest *Great Valley Cottonwood Riparian Forest*	CTT61410CA	None	None	G2	S2.1	
Great Valley Mixed Riparian Forest *Great Valley Mixed Riparian Forest*	CTT61420CA	None	None	G2	S2.2	
Great Valley Valley Oak Riparian Forest *Great Valley Valley Oak Riparian Forest*	CTT61430CA	None	None	G1	S1.1	
Great Valley Willow Scrub *Great Valley Willow Scrub*	CTT63410CA	None	None	G3	S3.2	
Greene's tuctoria *Tuctoria greenei*	PMPOA6N010	Endangered	Rare	G1	S1	1B.1
hairy Orcutt grass *Orcuttia pilosa*	PMPOA4G040	Endangered	Endangered	G1	S1	1B.1
heartscale *Atriplex cordulata var. cordulata*	PDCHE040B0	None	None	G3T2	S2	1B.2
Heckard's pepper-grass *Lepidium latipes var. heckardii*	PDBRA1M0K1	None	None	G4T1	S1	1B.2
hoary bat *Lasiurus cinereus*	AMACC05030	None	None	G5	S4	
Hoover's spurge *Euphorbia hooveri*	PDEUP0D150	Threatened	None	G1	S1	1B.2
North American porcupine *Erethizon dorsatum*	AMAFJ01010	None	None	G5	S3	
northern harrier *Circus hudsonius*	ABNKC11011	None	None	G5	S3	SSC
osprey *Pandion haliaetus*	ABNKC01010	None	None	G5	S4	WL
palmate-bracted bird's-beak *Chloropyron palmatum*	PDSCR0J0J0	Endangered	Endangered	G1	S1	1B.1
Peruvian dodder *Cuscuta obtusiflora var. glandulosa*	PDCUS01111	None	None	G5T4?	SH	2B.2
San Joaquin spearscale *Extriplex joaquinana*	PDCHE041F3	None	None	G2	S2	1B.2
silver-haired bat *Lasionycteris noctivagans*	AMACC02010	None	None	G5	S3S4	
snowy egret *Egretta thula*	ABNGA06030	None	None	G5	S4	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
song sparrow ("Modesto" population) *Melospiza melodia*	ABPBXA3010	None	None	G5	S3?	SSC
steelhead - Central Valley DPS *Oncorhynchus mykiss irideus pop. 11*	AFCHA0209K	Threatened	None	G5T2Q	S2	
Swainson's hawk *Buteo swainsoni*	ABNKC19070	None	Threatened	G5	S3	
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Threatened	G2G3	S1S2	SSC
valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	IICOL48011	Threatened	None	G3T2	S3	
vernal pool fairy shrimp *Branchinecta lynchi*	ICBRA03030	Threatened	None	G3	S3	
vernal pool smallscale *Atriplex persistens*	PDCHE042P0	None	None	G2	S2	1B.2
vernal pool tadpole shrimp *Lepidurus packardi*	ICBRA10010	Endangered	None	G4	S3S4	
water star-grass *Heteranthera dubia*	PMPON03010	None	None	G5	S2	2B.2
watershield *Brasenia schreberi*	PDCAB01010	None	None	G5	S3	2B.3
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
western red bat *Lasiurus blossevillii*	AMACC05060	None	None	G5	S3	SSC
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
white-faced ibis *Plegadis chihi*	ABNGE02020	None	None	G5	S3S4	WL
woolly rose-mallow *Hibiscus lasiocarpos var. occidentalis*	PDMAL0H0R3	None	None	G5T3	S3	1B.2

Record Count: 55

CNPS California Native Plant Society

Inventory of Rare and Endangered Plants

*The database used to provide updates to the Online Inventory is under construction. View updates and changes made since May 2019 here.

Plant List

23 matches found. *Click on scientific name for details*

Search Criteria

Found in Quads 3912252, 3912251, 3912158, 3912242, 3912241, 3912148, 3912232 3912231 and 3912138;

Modify Search Criteria | Export to Excel | Modify Columns | Modify Sort | Display Photos

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Amsinckia lunaris	bent-flowered fiddleneck	Boraginaceae	annual herb	Mar-Jun	1B.2	S3	G3
Astragalus tener var. ferrisiae	Ferris' milk-vetch	Fabaceae	annual herb	Apr-May	1B.1	S1	G2T1
Atriplex cordulata var. cordulata	heartscale	Chenopodiaceae	annual herb	Apr-Oct	1B.2	S2	G3T2
Atriplex depressa	brittlescale	Chenopodiaceae	annual herb	Apr-Oct	1B.2	S2	G2
Atriplex persistens	vernal pool smallscale	Chenopodiaceae	annual herb	Jun,Aug,Sep,Oct	1B.2	S2	G2
Azolla microphylla	Mexican mosquito fern	Azollaceae	annual / perennial herb	Aug	4.2	S4	G5
Brasenia schreberi	watershield	Cabombaceae	perennial rhizomatous herb (aquatic)	Jun-Sep	2B.3	S3	G5
Centromadia parryi ssp. rudis	Parry's rough tarplant	Asteraceae	annual herb	May-Oct	4.2	S3	G3T3
Chloropyron palmatum	palmate-bracted bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	May-Oct	1B.1	S1	G1
Cuscuta obtusiflora var. glandulosa	Peruvian dodder	Convolvulaceae	annual vine (parasitic)	Jul-Oct	2B.2	SH	G5T4?
Euphorbia hooveri	Hoover's spurge	Euphorbiaceae	annual herb	Jul-Sep(Oct)	1B.2	S1	G1
Extriplex joaquinana	San Joaquin spearscale	Chenopodiaceae	annual herb	Apr-Oct	1B.2	S2	G2
Heteranthera dubia	water star-grass	Pontederiaceae	perennial herb (aquatic)	Jul-Oct	2B.2	S2	G5
Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	Malvaceae	perennial rhizomatous herb (emergent)	Jun-Sep	1B.2	S3	G5T3
Lepidium latipes var. heckardii	Heckard's pepper-grass	Brassicaceae	annual herb	Mar-May	1B.2	S1	G4T1
Myosurus minimus ssp. apus	little mousetail	Ranunculaceae	annual herb	Mar-Jun	3.1	S2	G5T2Q

Navarretia leucocephala ssp. bakeri	Baker's navarretia	Polemoniaceae	annual herb	Apr-Jul	1B.1	S2	G4T2
Neostapfia colusana	Colusa grass	Poaceae	annual herb	May-Aug	1B.1	S1	G1
Orcuttia pilosa	hairy Orcutt grass	Poaceae	annual herb	May-Sep	1B.1	S1	G1
Puccinellia simplex	California alkali grass	Poaceae	annual herb	Mar-May	1B.2	S2	G3
Tropidocarpum capparideum	caper-fruited tropidocarpum	Brassicaceae	annual herb	Mar-Apr	1B.1	S1	G1
Tuctoria greenei	Greene's tuctoria	Poaceae	annual herb	May-Jul(Sep)	1B.1	S1	G1
Wolffia brasiliensis	Brazilian watermeal	Araceae	perennial herb (aquatic)	Apr,Dec	2B.3	S2	G5

Suggested Citation

California Native Plant Society, Rare Plant Program. 2020. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 03 November 2020].

Appendix B – Species Observed during the 2018 Site Visits

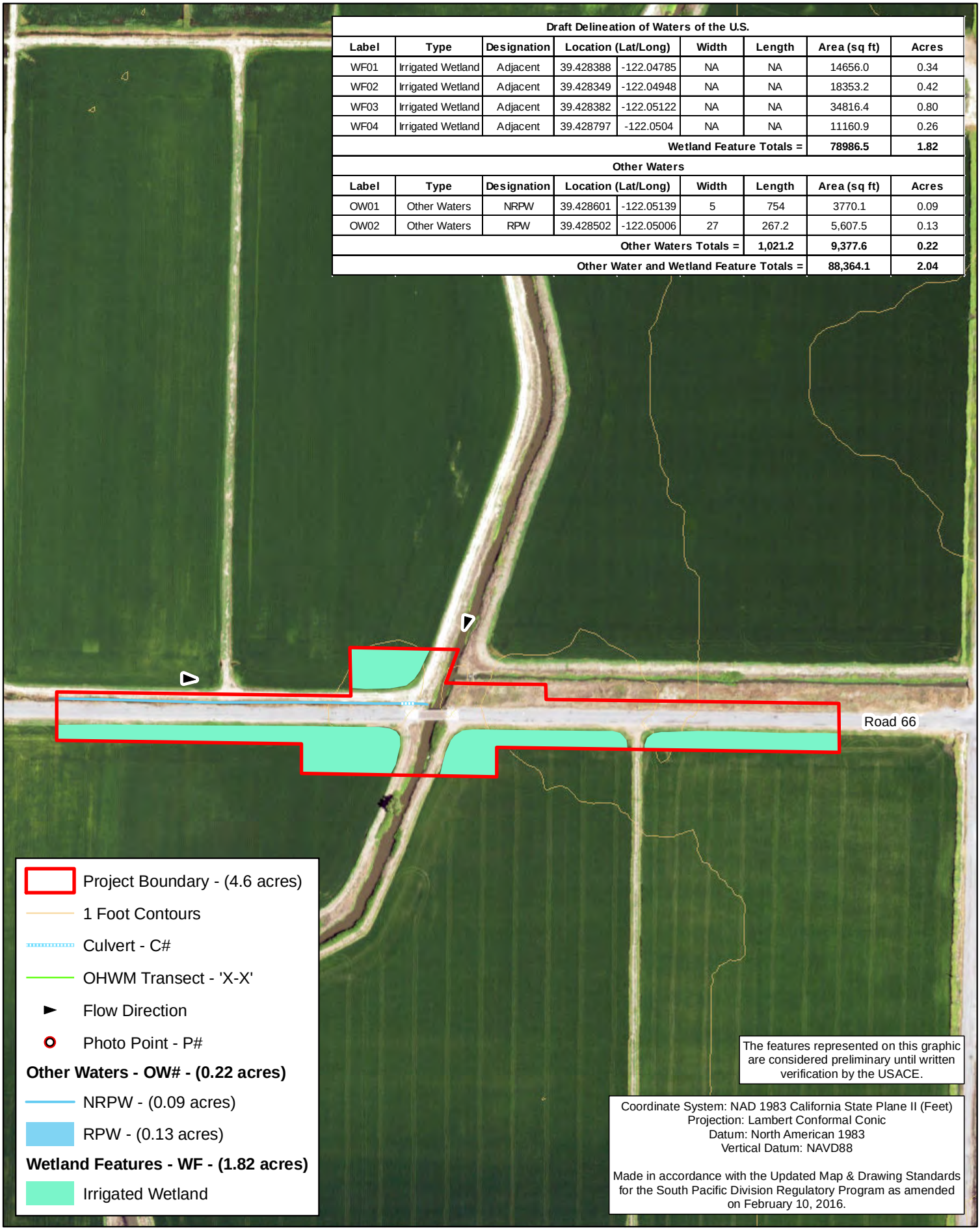
Plant Species Observed within the CR 66B Bridge Replacement Project May, 31 2018	
Scientific Name	**Common Name**
Artemisia douglasiana	California mugwort
Avena barbata	Wild oats
Brassica nigra	Black mustard
Bromus diandrus	Rip-gut brome
Bromus hordeaceus	Soft chess
Centaurea solstitialis	Yellow star thistle
Convulvulus arvensis	Bindweed
Cynodon dactylon	Bermuda grass
Cyperus eragrostis	Tall nutsedge
Cyperus strigosus	False nutsedge
Erigeron bonariensis	South American horseweed
Erodium botrys	Long-beaked stork's-bill
Erodium cicutarum	Cut-leaf filaree
Euphorbia maculata	Spotted spurge
Festuca perennis	Rye-grass
Foeniculum vulgare	Sweet fennel
Hordeum murinum	Wall hare barley
Lemna sp.	Duckweed
Ludwigia peploides	Marsh purslane
Malvella leprosa	Alkali mallow
Marrubium vulgare	Horehound
Myriophyllum aquaticum	Parrot's feather
Oryza sp.	Rice
Panicum capillare	Witchgrass
Persicaria sp.	Smartweed
Phalaris paradoxa	Hood canarygrass
Polygonum aviculare	Prostrate knotweed
Polypogon monspeliensis	Rabbitsfoot grass
Pseudognaphalium luteoalbum	Weedy cudweed
Rubus armeniacus	Himalayan blackberry
Rumex crispus	Curly dock
Silybum marianum	Milk thistle
Sonchus asper	Sow thistle
Sorghum halepense	Johnsongrass
Torilis arvensis	Hedge parsley
Trifolium sp.	Clover
Verbena sp.	Vervain
Veronica anagallis-aquatica	Water speedwell

Animal Species Observed within the CR 66B Bridge Replacement Project July 10, 2018	
Scientific Name	**Common Name**
Aix sponsa	Wood duck

Scientific Name	Common Name
Corvus brachyrhynchos	American crow
Sayornis nigricans	Black phoebe

Appendix C – Draft Delineation of Waters of the US Map

Draft Delineation of Waters of the U.S.								
Label	**Type**	**Designation**	**Location (Lat/Long)**		**Width**	**Length**	**Area (sq ft)**	**Acres**
WF01	Irrigated Wetland	Adjacent	39.428388	-122.04785	NA	NA	14656.0	0.34
WF02	Irrigated Wetland	Adjacent	39.428349	-122.04948	NA	NA	18353.2	0.42
WF03	Irrigated Wetland	Adjacent	39.428382	-122.05122	NA	NA	34816.4	0.80
WF04	Irrigated Wetland	Adjacent	39.428797	-122.0504	NA	NA	11160.9	0.26
						Wetland Feature Totals =	**78986.5**	**1.82**
Other Waters								
Label	**Type**	**Designation**	**Location (Lat/Long)**		**Width**	**Length**	**Area (sq ft)**	**Acres**
OW01	Other Waters	NRPW	39.428601	-122.05139	5	754	3770.1	0.09
OW02	Other Waters	RPW	39.428502	-122.05006	27	267.2	5,607.5	0.13
						Other Waters Totals = **1,021.2**	**9,377.6**	**0.22**
						Other Water and Wetland Feature Totals =	**88,364.1**	**2.04**



NORTH

1:3,000 1 inch = 250 feet

0 100 200 Feet

Data Sources: ESRI, NAIP 07/11/2016, USGS, Glenn County, Quincy Engineering

County of Glenn CR 66B Bridge 11C-0068
Draft Delineation of Waters of the U.S.

Delineation By: E. Gregg
Map By: V.Birdseye

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GE: #16-078 Map Date: 06/27/18

Appendix D – Project Location Photos

Glenn County CR 66B Project Site Photos
Taken May 31 and July 10, 2018

Bridge over Colusa Drain at CR 66B, looking west. 7/10/18

Colusa Drain viewed from the bridge, looking south. 7/10/18

Colusa Drain viewed from the bridge, looking north. 7/10/18

Unpaved access road on southwest side of the project site, looking south. 7/10/18

Drainage ditch along CR 66B, looking west. 5/31/18

Bridge structure viewed from the side, looking west. 5/31/18

Appendix C:
Draft Delineation of Aquatic Resources for the County Road 66B Bridge Replacement Project

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DRAFT DELINEATION OF JURISDICTIONAL WATERS OF THE UNITED STATES

County of Glenn CR 66B Bridge 11C-0068

Glenn County, California

June 2018

Prepared for:

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Prepared by:

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Contents

List of Tables and Figures

List of Appendices and Exhibits

DRAFT DELINEATION OF JURISDICTIONAL WATERS OF THE UNITED STATES,

County of Glenn CR 66B Bridge 11C-0068, Glenn County, California

Introduction and Project Location

Gallaway Enterprises conducted a delineation of waters of the U.S. (WOTUS) and aquatic resources for the County of Glenn County Road (CR) 66B Bridge 11C-0068 replacement project (Project) consisting of a 4.6-acre survey area located along Road 66B at the bridge over the Colusa Drain within unincorporated Glenn County, CA (**Figure 1 and 2**). The Project site is surrounded by agricultural land used for rice production. The Project is located within the Princeton USGS Quadrangle, within the Larkin Child Land Grant in the vicinity of Section 11, Township 18N, Range 2W.

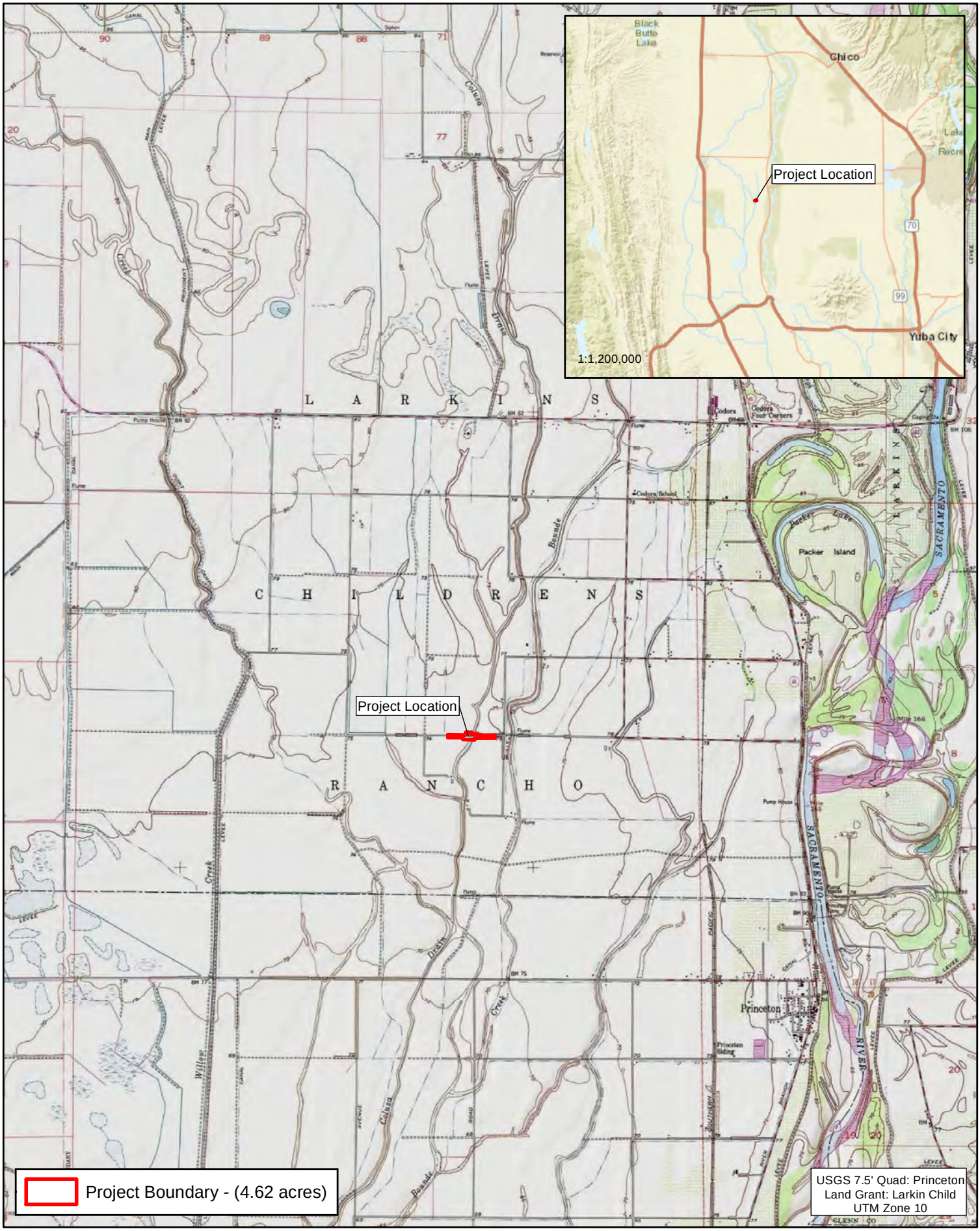
The Project site is accessible from County Road 66B in Glenn County, CA. From the Sacramento area, take I-5 North toward Willows and take exit 595 for Road 68. Turn right onto Road 68 and stay on Road 68/Norman Road for approximately 7 miles and turn left onto Road V. Continue on Road V for 1.7 miles and turn right onto Road 66. The Project is approximately 0.7 miles from the intersection with Road V and occurs on both sides of Road 66.

A WOTUS survey was conducted on May 31, 2018 by senior botanist Elena Gregg. Data regarding the location and extent of wetlands and other waters of the U.S. were collected using a Trimble Geo Explorer 6000 Series GPS Receiver. The survey involved an examination of botanical resources, soils, hydrological features, and determination of wetland characteristics based on the *United States Army Corps of Engineers Wetlands Delineation Manual* (1987); the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (2008); the *U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook* (2007); the *Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States*, (2008) and the *State of California 2016 Wetland Plant List.* Gallaway Enterprises have prepared this report in compliance with the Minimum Standards for Acceptance of Aquatic Resources Delineation Reports (January 2016).

Environmental Setting and Site Conditions

The Project is located along an existing roadway within the County of Glenn's right-of-way. The survey area is characterized as asphalt roadway, gravel road shoulder, a narrow strip of disturbed annual grassland dominated by ruderal vegetation, and private land used for agricultural purposes. The adjacent agricultural land is currently in rice production. A review of historic aerials identified that these rice fields have been continually used for rice production since prior to the 1970's (**Exhibit A**). Also, the Colusa Drain flows north to south through the survey area. The vegetation within the survey area is frequently managed either mechanically (as in the Colusa Drain and the rice fields) or via herbicides.

The average annual precipitation is 17.95 inches and the average annual temperature is 61.5° F (WRCC 2018) in the region where the survey area is located. The Project site sits at approximately 74 feet above sea level and is sloped between 0-1 percent. Soils within the survey area are silty clays or clay loams with a deep restrictive layer located more than 80 inches in depth.



NORTH

1:50,000

0 0.5 1 Miles

Data Sources: ESRI, USGS, Glenn County, Quincy Engineering

County of Glenn CR 66B Bridge 11C-0068
Regional Location
Figure 1

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GE: #16-078 Map Date: 05/08/18

NORTH

1:35,000

0 1,000 2,000 Feet

Data Sources: ESRI, NAIP 07/11/2016, USGS, Glenn County, Quincy Engineering

County of Glenn CR 66B Bridge 11C-0068
Project Location
Figure 2

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GE: #16-078 Map Date: 05/22/18

Survey Methodology

The entire survey area was surveyed on-foot by Gallaway Enterprises staff on May 31, 2018 to identify any potentially jurisdictional features. The survey, mapping efforts, and report production were performed according to the valid legal definitions of WOTUS in effect on May 31, 2018. The boundaries of non-tidal, non-wetland waters, when present, were delineated at the ordinary high water mark (OHWM) as defined in 33 Code of Federal Regulations (CFR) 328.3. The OHWM represents the limit of U.S. Army Corps of Engineers (Corps) jurisdiction over non-tidal waters (e.g., streams and ponds) in the absence of adjacent wetlands (33 CFR 328.04) (Curtis, et. al. 2011). Wetland perimeters based on the *United States Army Corps of Engineers Wetlands Delineation Manual* (1987) and the *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Arid West Region* (2008) (Arid West Manual) were recorded and defined according to their topographic and hydrologic orientation. Photographs were taken to show WOTUS and/or areas with dark aerial signatures. The locations of the photo points are depicted in **Figure 3** and the associated photographs are provided at the end of the report.

Many of the terms used throughout this report have specific meanings relating to the federal wetland delineation process. Term definitions are based on the Corps *Wetlands Delineation Manual* (1987); the Arid West Manual; *Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States, (2008)* and the Corps *Jurisdictional Determination Form Instructional Guidebook* (2007). The terms defined below have specific meaning relating to the delineation of Waters of the U.S. as described in 33 CFR Part 328 and 40 CFR Parts 110, 112, and 116, and 122.

Determination of Hydrophytic Vegetation

The presence of hydrophytic vegetation was determined using the methods outlined in the Corps *Wetlands Delineation Manual* (1987) and the Arid West Manual. Areas were considered to have positive indicators of hydrophytic vegetation if they pass the dominance test, meaning more than 50 percent of the dominant species are OBL, FACW, FAC. Plant species were identified to the lowest taxonomy possible. Plant indicator status was determined by reviewing the State of California 2016 Wetland Plant List (derived from the 2016 National Wetland Plant List) for the Arid West Region. In situations where dominance can be misleading due to seasonality, the prevalence index will be used to determine hydrophytic status of the community surrounding sample sites.

Plant indicator status categories:

Obligate wetland plants (OBL) – plants that occur almost always (estimated probability 99%) in wetlands under normal conditions, but which may also occur rarely (estimated probability 1%) in non-wetlands.

Facultative wetland plants (FACW) - plants that usually occur (estimated probability 67% to 99%) in wetlands under normal conditions, but also occur (estimated probability 1% to 33%) in non-wetlands.

Facultative plants (FAC) – Plants with a similar likelihood (estimated probability 33% to 67%) of occurring in both wetlands and non-wetlands.

Facultative upland plants (FACU) – Plants that occur sometimes (estimated probability1% to 33%) in wetlands, but occur more often (estimated probability 67% to 99%) in non-wetlands.

Obligate upland plants (UPL) – Plants that occur rarely (estimated probability 1%) in wetlands, but occur almost always (estimated probability 99%) in non-wetlands under natural conditions.

Ground Photographs Table			
Label	Direction	Latitude	Longitude
P01	N & E	39.42834529	-122.05024
P02	E & W	39.42860402	-122.0502738
P03	E	39.42856652	-122.0524376
P04	W	39.42852602	-122.0483386

NORTH

1:3,000 1 inch = 250 feet

0 100 200 Feet

Data Sources: ESRI, NAIP 07/11/2016, USGS, Glenn County, Quincy Engineering

County of Glenn CR 66B Bridge 11C-0068
Ground Photographs Map
Figure 3

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GE: #16-078 Map Date: 06/26/18

Determination of Hydric Soils

Soil survey information was reviewed for the current site condition. Field samples were evaluated using the Munsell soil color chart (2009 Edition), hand texturing, and assessment of soil features (e.g. oxidized root channels, evidence of hardpan, Mn and Fe concretions). Information regarding local soil and series descriptions is provided in **Appendix A.** No test pits were dug within the site since there were no areas that contained potentially jurisdictional wetland features.

Determination of Wetland Hydrology

Wetland hydrology was determined to be present if a site supported one or more of the following characteristics:

- Landscape position and surface topography (e.g. position of the site relative to an up-slope water source, location within a distinct wetland drainage pattern, and concave surface topography),
- Inundation or saturation for a long duration either inferred based on field indicators or observed during repeated site visits, and
- Residual evidence of ponding or flooding resulting in field indicators such as scour marks, sediment deposits, algal matting, surface soil cracks and drift lines.

The presence of water or saturated soil for approximately 12% of the growing season typically creates anaerobic conditions in the soil, and these conditions affect the types of plants that can grow and the types of soils that develop (Wetland Training Institute 1995).

Determination of Ordinary High Water Mark

Gallaway utilized methods consistent with the Arid West Manual and *Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States, (2008)* to determine the OHWM. The lateral extents of non-tidal water bodies (e.g. intermittent and ephemeral streams) were based on the OHWM, which is "the line on the shore established by the fluctuations of water" (Corps 2005). The OHWM was determined based on multiple observed physical characteristics of the area, which can include scour, multiple observed flow events (from current and historical aerial photos), shelving, and changes in the character of soil, presence of mature vegetation, deposition, and topography. Due to the wide extent of some floodplains, adjacent riparian scrub areas characterized by hydric soils, hydrophytic vegetation, and hydrology may be included within the OHWM of a non-tidal water body (Curtis, et. al. 2011). Inclusion of minor special aquatic areas is an acceptable practice as outlined in the Arid West Manual. Areas that exhibited drainage patterns but lacked an OHWM were not mapped as other waters of the United States.

OHWM Transects:

Representative OHWM widths measured in the field are shown as transect lines and measured in feet as required by the Corps *Updated Map and Drawing Standards for the South Pacific Division Regulatory Program (2016)*. These transect lines are used to ensure that the other waters of the U.S. identified within the survey area are mapped and calculated at the appropriate average width for each channel segment based on the Corps definition of OHWM as defined in the Arid West OHWM Field Guide and the *Ordinary High Water Mark Identification RGL 05-05 (2005)* (RGL 05-05). If the average width of a feature changes, this change is shown on the delineation map as a feature transition and a new average channel width is determined. At each transect line Gallaway uses multiple observed physical indicators in determining the OHWM. The lateral extents of the transect lines identify the location of the OHWM

where benches, drift, exposed root hairs, changes in substrate/particle size, and, if appropriate, changes in vegetation were observed. If any other physical indicators as described in the Arid West OHWM Field Guide or RGL 05-05 are observed, these indicators are also utilized to help determine the location of the OHWM.

Jurisdictional Boundary Determination and Acreage Calculation

The wetland-upland boundary was determined based on the presence or inference of positive indicators of all mandatory criteria. Soil samples were taken within wetland and upland areas. The site was traversed on foot to identify wetland features and boundaries. The spatial data obtained during the preparation of this wetland delineation was collected using a Trimble Geo Explorer 6000 Series GPS Receiver. No readings were taken with fewer than 5 satellites. Point data locations were recorded for at least 25 seconds at a rate of 1 position per second. Area and line data were recorded at a rate of 1 position per second while walking at a slow pace. All GPS data were differentially corrected for maximum accuracy. In some cases, when visual errors and degrees of precision are identified due to environmental factors negatively influencing the precision of the GPS instrument (i.e. dense tree cover, steep topography, and other factors affecting satellite connection) mapping procedures utilized available topographic and aerial imagery datasets in order to improve accuracy in feature alignment and location.

Non-Jurisdictional Boundary Determination and Acreage Calculation

Areas were determined to be potentially non-jurisdictional if they did not meet the wetland test parameters or were consistent with the description of non-jurisdictional features as presented in the Corps Jurisdictional Determination Form Instructional Guidebook (2007). No potentially non-jurisdictional features were observed within the Project survey area.

Results

Table 1 Summarizes the area calculations for the pre-jurisdictional features within the survey area. A complete Draft Wetland Delineation map, utilizing a 1” to 250’ scale, is included as **Figure 4**.

Table 1. Results from the Delineation of Waters of the U.S. for the County of Glenn CR 66B Bridge 11C-0068 Project.

Draft Delineation of Waters of the U.S.						
Other Waters						
Label	**Type**	**Designation**	**Width (ft)**	**Length (ft)**	**Area (sq ft)**	**Acres**
OW1	Other Waters	NRPW	5	754	3770.1	0.09
OW2	Other Waters	RPW	27	267.2	5,607.5	0.13
Other Waters Totals =				**1,021.2**	**9,377.6**	**0.22**
Wetland Features						
WF1	Irrigated Wetland	Adjacent	N/A	N/A	14656.0	0.34
WF2	Irrigated Wetland	Adjacent	N/A	N/A	18353.2	0.42
WF3	Irrigated Wetland	Adjacent	N/A	N/A	34816.4	0.80
WF4	Irrigated Wetland	Adjacent	N/A	N/A	11160.9	0.26
Wetland Features Totals =				**N/A**	**78,986.5**	**1.82**
Other Waters and Wetlands Totals =				**1,021.2**	**88,364.1**	**2.04**

Draft Delineation of Waters of the U.S.								
Label	Type	Designation	Location (Lat/Long)		Width	Length	Area (sq ft)	Acres
WF01	Irrigated Wetland	Adjacent	39.428388	-122.04785	NA	NA	14656.0	0.34
WF02	Irrigated Wetland	Adjacent	39.428349	-122.04948	NA	NA	18353.2	0.42
WF03	Irrigated Wetland	Adjacent	39.428382	-122.05122	NA	NA	34816.4	0.80
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						Other Waters Totals = **1,021.2**	**9,377.6**	**0.22**
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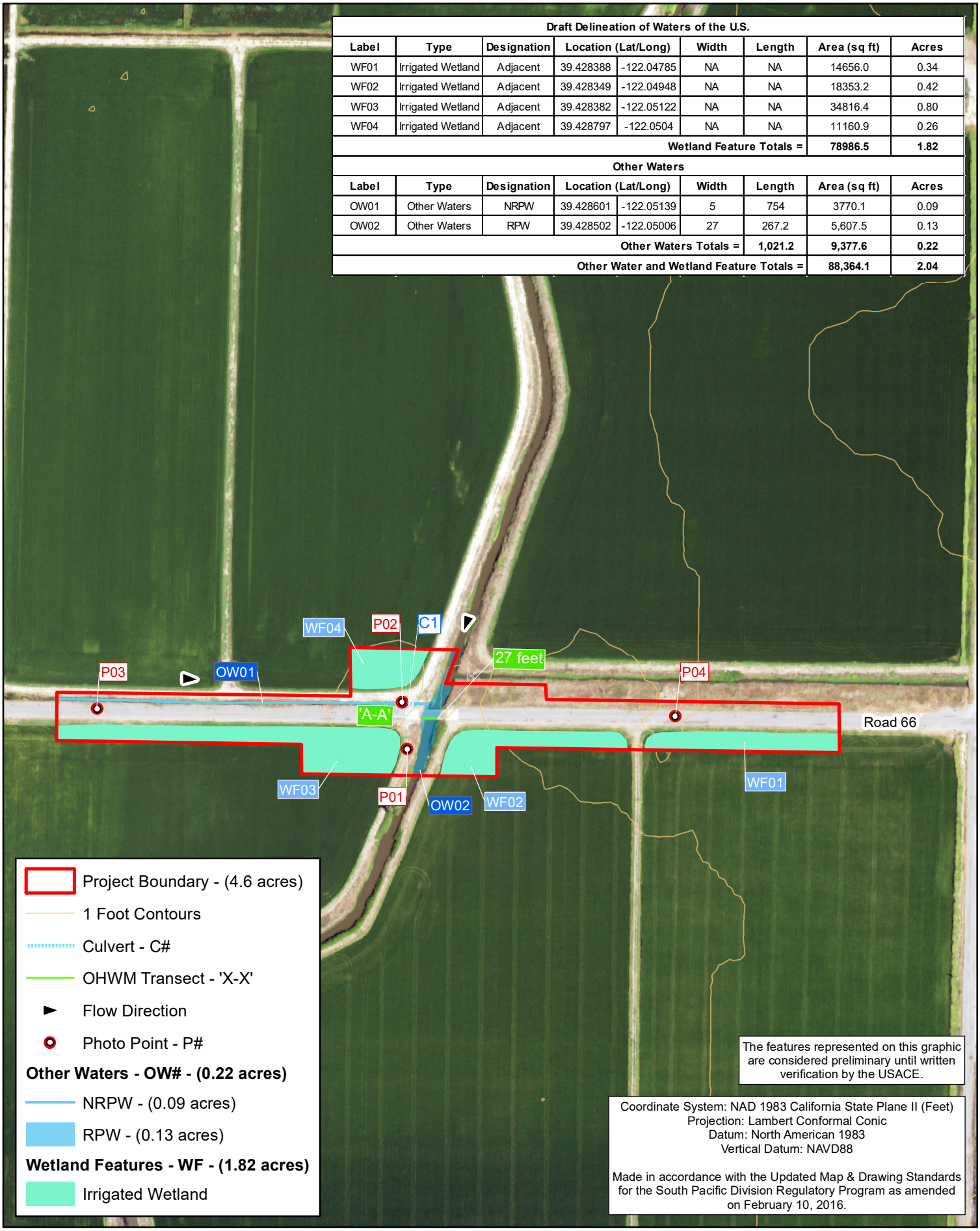

NORTH

1:3,000 1 inch = 250 feet

0 100 200 Feet

Data Sources: ESRI, NAIP 07/11/2016, USGS, Glenn County, Quincy Engineering

County of Glenn CR 66B Bridge 11C-0068
Draft Delineation of Waters of the U.S.
Figure 4

Delineation By: E. Gregg
Map By: V.Birdseye

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GE: #16-078 Map Date: 06/27/18

Waters of the United States: Other Waters

Two features were identified within the survey area as potential other waters of the U.S. (**Figure 4**). Other waters of the U.S. are seasonal or perennial water bodies, including lakes, stream channels, ephemeral and intermittent drainages, ponds, and other surface water features, that exhibit an ordinary high-water mark but lack positive indicators for one or more of the three wetland parameters (hydrophytic vegetation, hydric soil, and wetland hydrology) (33 CFR 328.4). The boundaries of other waters of the U.S. were delineated based on the observed OHWM, and topographic studies. The delineation of the OHWM was conducted using indications of physical characteristics such as where benches, drift, exposed root hairs, changes in substrate/particle size, and, if appropriate, changes in vegetation were observed. The above definition was applied when delineating all other waters of the U.S. All drainages identified within the survey area exhibited an OHWM and contained bed, bank and scour morphology.

Of the other water features present within the Project, 1 has been identified as Relatively Permanent Waters (RPW) and the other has been identified as an ephemeral, Non-relatively Permanent Waters (NRPW). Relatively Permanent Waters are defined as tributaries that flow for more than 3 months and have a documented hydrologic connection to a TNW. Non-relatively Permanent Waters are defined as tributaries that flow for less than 3 months and have a documented hydrologic connection to a RPW or TNW. The RPW located within the survey area is the Colusa Drain (OW 02). The NRPW located within the survey area is a roadside ditch (OW 01).

All of the other waters identified within the Project survey area contained appropriate morphology of bed and bank with a distinguishable OHWM. Flowing water was observed in all of the other waters during the field visit.

Waters of the United States: Wetlands

The only wetlands present within the Project survey area are irrigated rice fields. Since rice fields are regularly inundated with water during the growing season of the rice crop, all three wetland parameters are met within active irrigated rice fields. Therefore, these irrigated wetlands meet the Corps definition of potentially jurisdictional wetlands. Irrigated wetlands can only be determined to be potentially non-jurisdictional if after allowing the land to remain fallow the land does not pond water for long enough duration to result in hydric conditions.

During the aerial photography review conducted prior to the site visit of the survey area, the site was assessed for the presence of wetland signatures. Where aerial photographs identified potential wetlands, but were found to lack wetland parameters when ground-truthed, photographs were taken (**Figure 3**).

Soils

The entire Project site has been historically disturbed from either the roadway construction the irrigation ditch construction or farming practices. Field observations of soil characteristics included soil color, texture, structure, and the visual assessment of soil features (e.g. the presence, or absence of redoximorphic features, the depth of restrictive layers such as hardpans, and root depth). Gallaway's soil texture evaluations rendered predominately clay loams. The geographic region in which the Project site is found is often characterized as having a deep naturally occurring hardpan.

Gallaway queried the National Cooperative Soil Survey database to further evaluate the current soil conditions. A copy of the soil survey map and a description of mapped soil units for the survey area are included as **Appendix A**. Two soil map units occur within the survey area. The 2 identified map units are

listed below in **Table 2**. Based on Gallaway's review, both of the soil map units identified within the survey area have a hydric status. These 2 soils contain hydric inclusions occupying 10 percent of the map unit and occur in depressions or draiangeway landforms. A copy of the soil survey map and a description of mapped soil units for the survey area are included as **Appendix A**.

Table 2. Soil Map Units, NRCS hydric soil designation, and approximate totals for the County of Glenn CR 66B Bridge 11C-0068 Project.

Map Unit Symbol	Map Unit Name	% Hydric Component in Map Unit	Landform of Hydric Component	% Map Unit in Survey Area
Maa	Marvin silty clay, slightly saline-alkali, 0 to 1 percent slopes	10	Depressions	61.4%
Mba	Marvin silty clay loam, slightly saline-alkali, 0 to 1 percent slopes	10	Drainageways	38.6%

Vegetation

During the May site visit, vegetation within the upland portions of the Project was dominated by rip-gut brome (*Bromus diandrus*) (UPL), perennial rye-grass (*Festuca perennis*) (FAC), black mustard (*Brassica nigra*) (NL), wild oats (*Avena barbata*) (UPL), filaree (*Erodium cicutarium*) (NL), and johnsongrass (*Sorghum halepense*) (FACU). The vegetation within drainages is regularly managed; therefore, the vegetation present was primarily herbaceous plant species. The dominate plant species observed within the drainages included Himalayan blackberry (*Rubus armeniacus*) (FAC), perennial rye-grass, annual beardgrass (*Polypogon monspeliensis*) (FACW), common smartweed (*Persicaria hydropiperoides*) (OBL), yellow waterweed (*Ludwigia peploides*) (OBL), and tall flat sedge (*Cyperus eragrostis*) (FACW).

Hydrology

Precipitation, surface runoff, and artificial water diversion function as the main hydrological inputs for the WOTUS located within the survey area.

The Colusa Drain (OW 2) is an irrigation canal that has been historically channelized. This RPW is hydrologically connected to the Colusa Basin Drainage Canal that is, in turn, hydrologically connected to the Sacramento River, a TNW. The ephemeral roadside ditch (OW 1) is directly connected to the Colusa Drain via a culvert. The adjacent irrigated wetlands/rice fields are hydrologically connected to the Colusa Drain via controlled outfalls.

The irrigated wetlands (WF 01-04) are irrigated for rice production. The irrigation water comes from diverting and pumping water into the fields from the Colusa Drain. The overflow and runoff from the irrigated wetlands is subsequently drained back into the Colusa Canal.

Site Photos Taken on May 31, 2018

P 01 – Overview of bridge looking north

P 02 – Culvert out falling into OW 2 looking east

P 01 – Colusa Drain (OW 2) and rice field outfall looking east

P 03 – Overview of site looking east

P 02 – Roadside ditch (OW 1) looking west

P 04 – Overview of site looking west

Glossary

Abutting: When referring to wetlands that are adjacent to a tributary, abutting defines those wetlands that are not separated from the tributary by an upland feature, such as a berm or dike.

Adjacent: Adjacent as used in "Adjacent to traditional navigable water," is defined in Corps and EPA regulations as "bordering, contiguous, or neighboring." Wetlands separated from other waters of the U.S. by man-made dikes or barriers, natural river berms, beach dunes and the like are 'adjacent wetlands. A wetland "Abuts" a tributary if it is not separated from the tributary by uplands, a berm, dike, or similar feature.

While all wetlands that meet the agencies' definitions are considered adjacent wetlands, only those adjacent wetlands that have a continuous surface connection because they directly abut the tributary (e.g., they are not separated by uplands, a berm, dike, or similar feature) are considered jurisdictional under the plurality standard. (CWA Jurisdiction Following Rapanos v US and Carabell v US 12-02-08).

The regulations define "adjacent" as follows: "[t]he term adjacent means bordering, contiguous, or neighboring. Wetlands separated from other waters of the United States by man-made dikes or barriers, natural river berms, beach dunes and the like are 'adjacent wetlands.'" Under this definition, a wetland does not need to meet all criteria to be considered adjacent. The agencies consider wetlands to be bordering, contiguous, or neighboring, and therefore "adjacent" if at least one of following three criteria is satisfied:

(1) There is an unbroken surface or shallow sub-surface hydrologic connection between the wetland and jurisdictional waters; or

(2) The wetlands are physically separated from jurisdictional waters by "manmade dikes or barriers, natural river berms, beach dunes, and the like;" or,

(3) Where a wetland's physical proximity to a jurisdictional water is reasonably close, that wetland is "neighboring" and thus adjacent. For example, wetlands located within the riparian area or floodplain of a jurisdictional water will generally be considered neighboring, and thus adjacent. One test for whether a wetland is sufficiently proximate to be considered "neighboring" is whether there is a demonstrable ecological interconnection between the wetland and the jurisdictional waterbody. For example, if resident aquatic species (e.g., amphibians, reptiles, fish, mammals, or waterfowl) rely on both the wetland and the jurisdictional waterbody for all or part of their life cycles (e.g., nesting, rearing, feeding, etc.), that may demonstrate that the wetland is neighboring and thus adjacent. The agencies recognize that as the distance between the wetland and jurisdictional water increases, the potential ecological interconnection between the waters is likely to decrease.

The agencies will also continue to assert jurisdiction over wetlands "adjacent" to traditional navigable waters as defined in the agencies' regulations. Under EPA and Corps regulations and as used in this guidance, "adjacent" means "bordering, contiguous, or neighboring." Finding a continuous surface connection is not required to establish adjacency under this definition. The Rapanos decision does not affect the scope of jurisdiction over wetlands that are adjacent to traditional navigable waters. The agencies will assert jurisdiction over those adjacent wetlands that have a continuous surface connection with a relatively permanent, non-navigable tributary, without the legal obligation to make a significant nexus finding.

Atypical situation (significantly disturbed): In an atypical (significantly disturbed) situation, recent human activities or natural events have created conditions where positive indicators for hydrophytic vegetation, hydric soil, or wetland hydrology are not present or observable.

Channel. "An open conduit either naturally or artificially created which periodically or continuously contains moving water, or which forms a connecting link between two bodies of standing water" (Langbein and Iseri 1960:5).

Channel bank. The sloping land bordering a channel. The bank has steeper slope than the bottom of the channel and is usually steeper than the land surrounding the channel.

Cobbles. Rock fragments 7.6 cm (3 inches) to 25 .4 cm (10 inches) in diameter.

Debris flow. A moving mass of rock fragments, soil, and mud where more than 50% of the particles are larger than sand-sized.

Drift. Organic debris oriented to flow direction(s) (larger than small twigs).

Effective discharge. Discharge that is capable of carrying a large proportion of sediment over time.

Emergent hydrophytes. Erect, rooted, herbaceous angiosperms that may be temporarily to permanently flooded at the base but do not tolerate prolonged inundation of the entire plant; e.g., bulrushes (*Scirpus spp*.), salt marsh cord grass.

Ephemeral stream. An ephemeral stream has flowing water only during and for a short duration after, precipitation events in a typical year. Ephemeral streambeds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

Facultative wetland (FACW). Wetland indicator category; species usually occurs in wetlands (estimated probability 67–99%) but occasionally found in non-wetlands.

Flat. A level landform composed of unconsolidated sediments usually mud or sand. Flats may be irregularly shaped or elongate and continuous with the shore, whereas bars are generally elongate, parallel to the shore, and separated from the shore by water.

Freshwater Emergent Wetland. Fresh emergent wetlands are characterized by erect, rooted herbaceous hydrophytes and are flooded frequently enough that the roots of the plants flourish in an anaerobic environment. They are most common on gently rolling topography yet also occur in depressions at the edges of rivers and lakes. Supportive soils tend to contain high amounts of silt and clay with coarser sediments and organic matter intermixed. Characteristic plant species include cattails (Typha sp.) and rushes (Scirpus sp.).

Gravel. A mixture composed primarily of rock fragments 2mm (0 .08 inch) to 7.6 cm (3 inches) in diameter. Usually contains much sand.

Growing season The frost-free period of the year (see U.S. Department of Interior, National Atlas 1970:110-111 for generalized regional delineation).

Herbaceous. With the characteristics of an herb; a plant with no persistent woody stem above ground.

Hydric soil. Soil is hydric that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic (oxygen-depleted) conditions in its upper part (i.e., within the shallow rooting zone of herbaceous plants).

Hydrophyte, **hydrophytic.** Any plant growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content.

Intermittent stream. An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Jurisdictional Wetland. Sites that meet the definition of wetland provided below and that fall under COE regulations pursuant to Section 404 of the CWA are considered jurisdictional wetlands.

Litter. Organic debris oriented to flow direction(s) (small twigs and leaves).

Man-induced wetlands. A man-induced wetland is an area that has developed at least some characteristics of naturally occurring wetlands due to either intentional or incidental human activities.

Non-persistent emergents. Emergent hydrophytes whose leaves and stems break down at the end of the growing season so that most above-ground portions of the plants are easily transported by currents, waves, or ice. The breakdown may result from normal decay or the physical force of strong waves or ice. At certain seasons of the year there are no visible traces of the plants above the surface of the water; e.g., wild rice (*Zizania aquatica*), arrow arum (*Peltandra virginica*).

Non-Relatively Permanent Water: A non-relatively permanent water (NRPW) is defined as a tributary that is not a TNW and that typically flows for periods for less than 3 months. NRPWs are jurisdictional when the have a documented significant nexus to TNWs. All NRPWs must also contain appropriate morphology of bed, bank and scour and be clearly connected to a TNW.

Normal circumstances. This term refers to the soil and hydrologic conditions that are normally present, without regard to whether the vegetation has been removed.

Obligate hydrophytes. Species that are found only in wetlands e.g., cattail (*Typha latifolia*) as opposed to ubiquitous species that grow either in wetland or on upland-e .g., red maple (*Acer rubrum*).

Obligate wetland (OBL). Wetland indicator category; species occurs almost always (estimated probability 99%) under natural conditions in wetlands.

Other Waters of the United States. Other waters of the United States are seasonal or perennial water bodies, including lakes, stream channels, drainages, ponds, and other surface water features, that exhibit an ordinary high-water mark but lack positive indicators for one or more of the three wetland parameters (hydrophytic vegetation, hydric soil, and wetland hydrology) (33 CFR 328.4).

Palustrine the Palustrine System includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean derived salts is below 0.5 parts per thousand. It also includes wetlands lacking such vegetation, but with all of the following four characteristics: (1) area less than 8 ha (20 acres); (2) active wave-formed or bedrock shoreline features lacking; (3) water depth in the deepest part of basin less than 2 m (6.6 feet) at low water; and (4) salinity due to ocean-derived salts is less than 0.5 parts per thousand.

Perennial stream. A perennial stream has flowing water year-round during atypical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

Persistent emergent. Emergent hydrophytes that normally remain standing at least until the beginning of the next growing season; e.g. ., cattails (*Typha spp*.) or bulrushes (*Scirpus spp.*).

Pioneer species. A species that colonizes a previously uncolonized area.

Ponded. Ponding is a condition in which free water covers the soil surface (e.g., in a closed depression) and is removed only by percolation, evaporation, or transpiration.

Problem area. Problem areas are those where one or more wetland parameters may be lacking because of normal seasonal or annual variations in environmental conditions that result from causes other than human activities or catastrophic natural events**.**

Relatively Permanent Waters of the U.S. Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months)

Ruderals. Disturbance-adapted herbaceous plant.

Scour. Soil and debris movement.

Sheetflow. Overland flow occurring in a continuous sheet; a relatively high-frequency, low-magnitude event.

Shrub. A woody plant which at maturity is usually less than 6 m(20 feet) tall and generally exhibits several erect, spreading, or prostrate stems and has a bushy appearance ; e.g., speckled alder (*Alnus rugosa*) or buttonbush (*Cephalanthus occidentalis*).

Succession. Changes in the composition or structure of an ecological community.

Traditional Navigable Waters (TNWs)."[a]ll waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide." These waters are referred to in this guidance as traditional navigable waters. The traditional navigable waters include all of the "navigable waters of the United States," as defined in 33 C.F.R. Part 329 and by numerous decisions of the federal courts, plus all other waters that are navigable-in-fact (for example, the Great Salt Lake, UT, and Lake Minnetonka, MN). Thus, the traditional navigable waters include, but are not limited to, the "navigable waters of the United States" within the meaning of Section 10 of the Rivers and Harbors Act of 1899 (also known as "Section 10 waters").

Tree. A woody plant which at maturity is usually 6 m (20 feet) or more in height and generally has a single trunk, unbranched for 1 m or more above the ground, and a more or less definite crown; e.g., red maple (*Acer rubrum*), northern white cedar (*Thuja occidentalis*).

Water table. The upper surface of a zone of saturation . No water table exists where that surface is formed by an impermeable body (Langbein and Iseri 1960:21).

Waters of the United States. This is the encompassing term for areas under federal jurisdiction pursuant to Section 404 of the CWA. Waters of the United States are divided into "wetlands" and "other waters of the United States".

Watershed (drainage basin). An area of land that drains to a single outlet and is separated from other watersheds by a divide.

Wetland. Wetlands are defined as "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3 [b], 40 CFR 230.3). To be considered under federal jurisdiction, a wetland must support positive indicators for hydrophytic vegetation, hydric soil, and wetland hydrology.

Xeric. Relating or adapted to an extremely dry habitat

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Appendix A: NRCS Soils Map and Soil Series Description

United States Department of Agriculture

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Glenn County, California

County Road 66B

May 29, 2018

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:2,620 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Glenn County, California
Survey Area Data: Version 13, Sep 14, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 21, 2015—Oct 18, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Maa	Marvin silty clay, slightly saline-alkali, 0 to 1 percent slope	2.8	61.4%
Mba	Marvin silty clay loam, slightly saline-alkali, 0 to 1 percent slopes	1.8	38.6%
Totals for Area of Interest		**4.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the

development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Glenn County, California

Maa—Marvin silty clay, slightly saline-alkali, 0 to 1 percent slope

Map Unit Setting

National map unit symbol: hd9l
Elevation: 0 to 1,700 feet
Mean annual precipitation: 19 inches
Mean annual air temperature: 61 degrees F
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Marvin and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Marvin

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 13 inches: silty clay loam
H2 - 13 to 29 inches: clay
H3 - 29 to 60 inches: clay

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 30 to 48 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 10.0
Available water storage in profile: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Willows

Percent of map unit: 10 percent
Landform: Depressions

Hydric soil rating: Yes

Zamora

Percent of map unit: 5 percent
Hydric soil rating: No

Mba—Marvin silty clay loam, slightly saline-alkali, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: hd9r
Elevation: 20 feet
Mean annual precipitation: 16 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 260 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Marvin and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Marvin

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 13 inches: silty clay loam
H2 - 13 to 29 inches: clay
H3 - 29 to 60 inches: clay

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 30 to 48 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 10.0
Available water storage in profile: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Willows

Percent of map unit: 10 percent
Landform: Drainageways
Hydric soil rating: Yes

Zamora

Percent of map unit: 5 percent
Hydric soil rating: No

References

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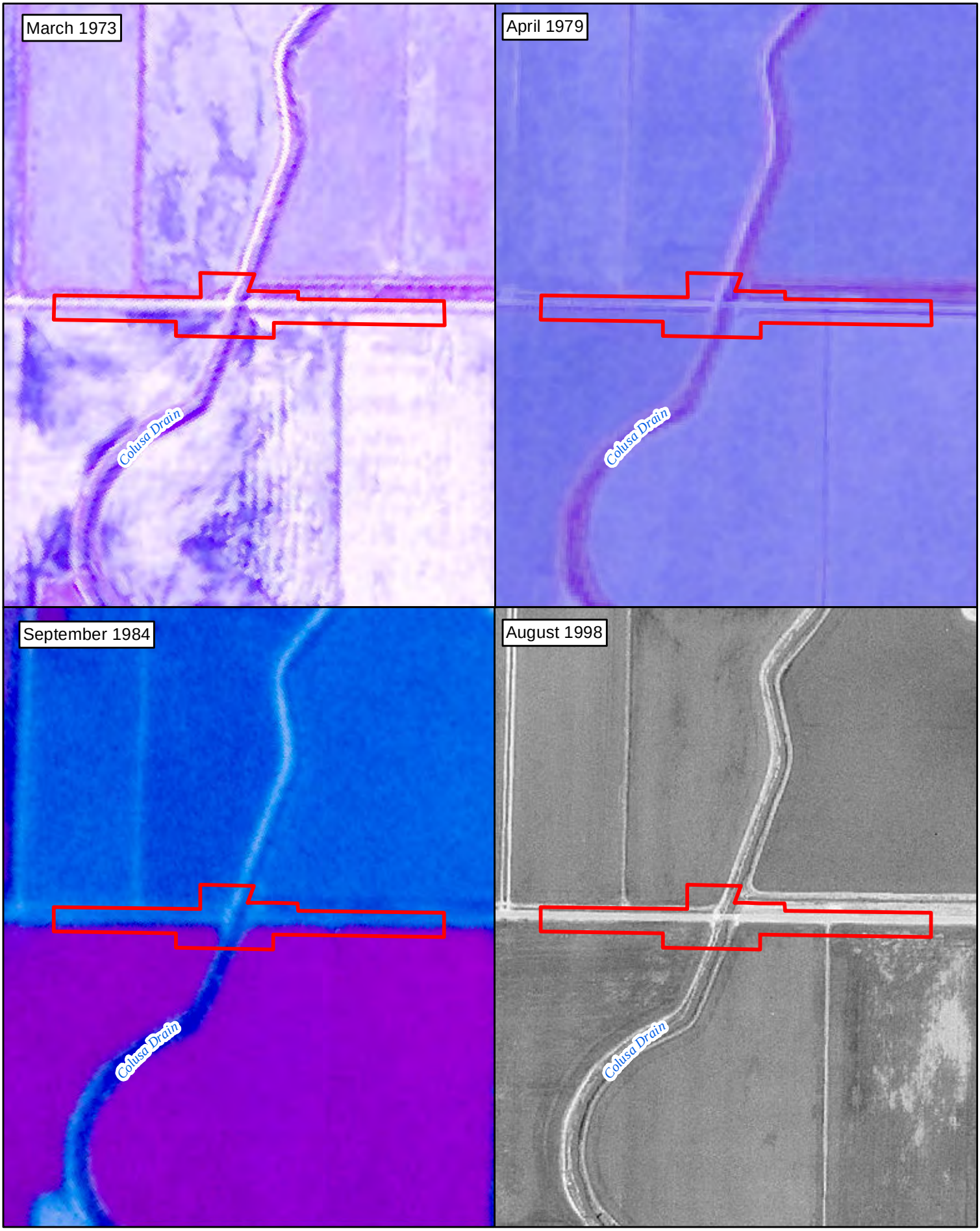
Exhibit A: Historic Aerial Photographs



1:6,000

0 210 420 Feet

NORTH

Data Sources: ESRI, USGS, Glenn County, Quincy Engineering

County of Glenn CR 66B Bridge 11C-0068
Historical Aerial Assessment
Exhibit A1

gallaway ENTERPRISES

GE: #16-078 Map Date: 06/27/18

1:6,000

0 200 400 Feet

NORTH

Data Sources: ESRI, USGS, Glenn County, Quincy Engineering

County of Glenn CR 66B Bridge 11C-0068
Historical Aerial Assessment
Exhibit A2

gallaway ENTERPRISES

GE: #16-078 Map Date: 06/27/18

Appendix D:
Archaeological Survey Report, Historical Property Survey Report, Historical Resource Evaluation Report and Finding of No Adverse Effect without Standard Conditions for the County Road 66B Bridge Replacement Project

HISTORIC PROPERTY SURVEY REPORT

1. UNDERTAKING DESCRIPTION AND LOCATION

District	*County*	*Federal Project. Number. (Prefix, Agency Code, Project No.)*	*Location*
03	Glenn	BRLO 5911 (063)	Gle-CR66B/Colusa Drain

The environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 U.S.C. 327 and the Memorandum of Understanding dated December 23, 2016, and executed by FHWA and Caltrans.

The studies for this undertaking were carried out in a manner consistent with Caltrans' regulatory responsibilities under Section 106 of the National Historic Preservation Act (36 CFR Part 800) and pursuant to the January 2014 *First Amended Programmatic Agreement among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act* (Section 106 PA).

Project Description:

Glenn County with assistance fromthe California Department of Transportation (Caltrans), proposes to replace the existing 1-lane, wooden-decked bridge (Bridge No. 11C0068) on County Road 66B over the Colusa Drain canal with a cast-in-place post-tensioned concrete slab bridge. The existing bridge is approximately 54 feet in length and 20 feet in width and consists of a three-span timber structure supported by reinforced concrete abutments and piers founded on driven Cast-In-Steel-Shell piles. The outside spans are 16 feet long and the middle span is 18 feet long. The bridge was originally constructed in 1940, and the wooden deck was replaced in 1974.

The project would involve replacement of the existing structure with a cast-in-place, post-tensioned, concrete slab bridge founded on driven piles situated at the abutment supports, thus eliminating structural supports within the stream channel. The existing bridge and intermediate support foundations would be removed from the project site. Additionally, the project would include road widening, road cut/fill, detours, grinding, establishment of clear recovery zones, utility relocation, ground disturbance, vegetation removal, and pile driving.

The roadway width would include two 12-foot wide lanes with two four-foot wide paved shoulders for a total width of 32 feet.

The general project vicinity is depicted on Figure 1: Vicinity Map and the project location is depicted on the map labeled Figure 2: Project Location, which are in the Archaeological Survey Report (ASR) in **Attachment A** of this Historic Property Survey Report (HPSR).

2. AREA OF POTENTIAL EFFECTS

In accordance with Section 106 PA Stipulation VIII.A, the Area of Potential Effects (APE) for the project was established in consultation with Cole Grube, Glenn County Public Works Department, William Larson, Caltrans Associate Environmental Planner – Archaeology and Darlene Wulff, Caltrans District 3 Local Assistance Engineer, and was approved on May 21, 2019. The APE maps are located in Figure 3 in the ASR (**Attachment A** of this HPSR).

The APE was established so as to incorporate all ground disturbing impacts associated with construction and improvements proposed in conjunction with the Project.

The APE generally consists of a linear corridor extending approximately 1,600 feet in length (east-west) and ranging from between 100 feet and 260 feet in width, and generally centered on the

Colusa Drain. The APE is located approximately 2 miles west of State Route 45, and approximately 3 miles northwest of the community of Princeton, in Glenn County, California.

The maximum depth of construction activity (i.e., the vertical APE) is estimated to not exceed 16 feet below the existing ground surface for the deficient footing and 20 feet for the driven piles. The depth of road excavation will vary between 6" and 28", and will occur primarily within existing fill material. All work will take place within the existing right-of-way, the Temporary Construction Easement (TCE), and/or within permanently acquired right-of-way. Relocation of utilities is not expected to be a requirement of this project, and temporary traffic control will be necessary during construction activities.

The APE as delineated on Figure 3 is the boundary within and adjacent to which cultural studies have been conducted. No construction activities will occur outside the area that has been surveyed or evaluated by Mr. Jensen for this report. A limited amount of equipment and materials will be stored directly on the roadway, within the APE, during daily construction operations. Both temporary construction easements and permanent acquisition of right-of-way will be required for portions of the project. Relocation of utilities is not expected to be a requirement of this project.

The APE (described in detail below) was subjected to intensive archaeological survey on June 5, 2018.

3. CONSULTING PARTIES / PUBLIC PARTICIPATION

☒ Local Government:

Letter soliciting input from the Glenn County Planning Commission was sent May 13, 2020. Upon follow up on May 28, 2020 the Planning Department replied that they had no comment. Correspondence with interest parties is included in **Attachment B** of this HPSR.

☒ Native American Heritage Commission (NAHC)

Letter to NAHC, May 31, 2018 (included in **Attachment A** of this HPSR).

Response from the NAHC dated July 9, 2018 (included in **Attachment A** of this HPSR).

☒ Native American Tribes, Groups and Individuals

Letters describing and a map depicting the project area were sent to Ronald Kirk of the Grindstone Rancheria of Wintun-Wailaki, Glenda Nelson of the Enterprise Rancheria, Andrew Freeman of the Paskenta Band of Nomlaki Indians, and Dennis Ramirez of the Mechoopda Indian Tribe of Chico Rancheria, the parties listed by the Native American Heritage Commission, on July 9, 2018. One written response was received on July 10, 2018. Mr. Creig Marcus of the Enterprise Rancheria responded, via email, indicating that "This project is not in our aboriginal territory."

In an effort to communicate the results of the pedestrian survey efforts to potentially interested Native American groups, tribes and individuals, telephone calls were made to the above-listed parties (sans the Enterprise Rancheria) on August 13, 2018. In all three cases, detailed voicemails were left with the parties, requesting any information, questions, or

concerns that they may have regarding the project. To date, no responses have been received (Letters and Communications Log included in **Attachment A** of this HPSR).

☒ Local Historical Society / Historic Preservation Group

- Orland Historical and Cultural Society
  PO Box 183
  Orland, CA 95963
  May 13, 2020 letter sent to historical society.
  May 28, 2020 sent message via Facebook. Society responded that they did not have concerns about the significance of the bridge, but thought it would be nice to recreate the wood texture of the deck on the new bridge.
- Jody Meza
  Willows Free Library
  201 N. Lassen St.
  Willows, CA 95988
  May 13, 2020 letter sent to library.
  May 28, 2020 follow up e-mail sent. No response was received.
- Glenn Genealogy Group
  1121 Marin Street
  Orland, CA 95963
  May 13, 2020 letter sent to organization.
  No additional means of contact available.
- Bayliss Branch Library
  7830 Road 39
  Glenn, CA 95943
  May 13, 2020 letter sent to library.
  Additional contact information is same as Willows Free Library. No response was received.

Correspondence with interest parties is included in **Attachment B** of this HPSR.

4. SUMMARY OF IDENTIFICATION EFFORTS

☒ National Register of Historic Places (NRHP)

☒ California Register of Historical Resources (CRHR)

☒ National Historic Landmark (NHL)

☒ California Historical Landmarks (CHL)

☒ California Points of Historical Interest

☒ California Historical Resources Information System (CHRIS)

☒ Caltrans Historic Bridge Inventory

☒ Caltrans Cultural Resources Database (CCRD)

☒ Other Sources consulted: Northeast Information Center, CSU-Chico. Records Search dated 6/5/2018.

☒ Results: According to the records maintained by the NEIC, none of the APE has been subjected to previous investigation by a qualified professional archaeologist. Likewise, no investigations have been conducted within ¼-mile of the APE. The records search results are in the ASR in **Attachment A** of this HPSR.

No prehistoric or historic-era sites have been recorded or otherwise identified within the APE boundary, nor within ¼-mile of the APE. Additionally, no prehistoric sites, traditional use areas or other cultural issues of concern have been identified by the Native American groups and individuals contacted. The Native American Heritage Commission (NAHC) has no record of Sacred Land listings within, adjacent or close to the project area. The data file and determinations of effect for the Office of Historic Preservation also failed to document resources in the APE. Lastly, the California Inventory failed to identify potential historic resources within the APE.

Of note, however, is P-11-604, the Colusa Basin Drainage Canal (i.e., Colusa Drain Canal), portions of which was originally recorded in 1986 as part of the Yolo County Historic Resources Inventory, and other portions recorded in 1992, 1998, 2002, 2007 and 2015. In 1998, the Army Corps of Engineers found the Colusa Basin Drainage Canal to have several construction periods and some features of the canal had not reached 50 years of age when the Corps proposed a project at that time. In its planning, the Corps noted possible integrity issues, tacitly accepting historic significance for the Colusa Basin Drainage Canal. During consultation for that project the Corps and SHPO concurred that the project posed no effect on the canal. No formal determination of eligibility of the Colusa Basin Canal was made at that time. The entirety of the Colusa Drain Canal has not been fully inventoried and evaluated. The Office of Historic Preservation's Built Environment Resource Directory (BERD) for Glenn County lists the "RD 2047 Colusa Basin Drainage Canal" at Sidds Road with a status code of 6Y (Determined ineligible for NR by consensus through Section 106 process) as of 9/30/2015 (Ref. # FHWA_2015_0813_001).

The Caltrans Historic Bridge Inventory was reviewed. The subject structure, Bridge No. 11C0068, is listed as a Category 5 structure, i.e. not eligible for the NRHP. The Caltrans Historic Bridge Inventory Sheet is in **Attachment C** of this HPSR.

5. PROPERTIES IDENTIFIED

☒ Caltrans, in accordance with Section 106 PA Stipulation VIII.C.5 and as applicable PRC 5024 MOU Stipulation VIII.C.5 has determined there are cultural resources within the APE that were **previously determined not eligible** for inclusion in the NRHP and/or not eligible for registration as a CHL with SHPO concurrence and those determinations remain valid. Copy of SHPO/Keeper correspondence is attached.

☒ Bridges listed as **Category 5** (previously determined not eligible for listing in the NRHP) in the Caltrans Historic Bridge Inventory are present within the APE

and those determinations remain valid. Appropriate pages from the Caltrans Historic Bridge Inventory are in **Attachment C** of this HPSR. Bridge 11C0068.

☒ The following properties within the APE are **considered eligible** for inclusion in the NRHP for the purposes of this project only because evaluation was not possible, in accordance with Section 106 PA Stipulation VIII.C.4.

Colusa Drain Canal, Glenn County, CA (Not State Owned)

Cultural Studies Office (CSO) approval regarding the assumption of eligibility is in **Attachment D** of this HPSR.

6. FINDING FOR THE UNDERTAKING

☒ Caltrans, pursuant to Section 106 PA Stipulation X.B.2, has determined a **Finding of No Adverse Effect (without Standard Conditions)** is appropriate for this undertaking, and requests SHPO's concurrence in this determination.

The Finding of No Adverse Effect Without Standard Conditions is in **Attachment E** of this HPSR.

7. CEQA CONSIDERATIONS

☒ Not applicable; **Caltrans is not the lead agency under CEQA**.

8. LIST OF ATTACHED DOCUMENTATION

☒ Archaeological Survey Report (ASR): Sean Michael Jensen, August 2018. **Attachment A**. Peer Reviewer: William Larson, August 2018.

☒ Correspondence: Local government, local historical societies/ historic preservation group. **Attachment B**.

☒ Caltrans Historic Bridge Inventory Sheet: **Attachment C**.

☒ CSO Approval of Assumption of Eligibility. **Attachment D**.

☒ Finding of No Adverse Effect Without Standard Conditions: JRP Historical Consulting, LLC, 2021. **Attachment E**.

☒ Other:

Attachment 1 of the ASR (**Attachment A** of this HPSR): Correspondence: Native American Heritage Commission (NAHC). Native American Representatives on the NAHC contact list, Communications log.

Attachment 2 of the ASR (**Attachment A** of this HPSR): Copy of Records Search, Northeast Information Center, dated 6/5/2018.

9. HPSR PREPARATION AND CALTRANS APPROVAL

Prepared by: _____ 4/10/2021
Sean Michael Jensen, Principal Investigator Date
Prehistoric Archaeology, Historical Archaeology

Genesis Society
127 Estates Drive
Chico, CA 95928

Prepared by: Cheryl Brookshear April 2, 2021
Cheryl Brookshear, JRP Historical Consulting, LLC Date
PQS-equivalent Architectural Historian

Reviewed for
Approval by: _____
District 3 Caltrans PQS Date
William Larson, PQS-PI: Prehistoric Archaeology

Approved by: _____
District 3 EBC Date
Laura Loeffler

Attachment A

Archaeological Survey Report (ASR): Sean Michael Jensen, August 2018.
Peer Reviewer: William Larson, Caltrans District 3, August 2018

ARCHAEOLOGICAL SURVEY REPORT
FOR
COUNTY ROAD 66B BRIDGE REPLACEMENT over the
COLUSA DRAIN PROJECT

Glenn County, California
BRLO 5911 (063)

Prepared by Name	Sean Michael Jensen Chico, California	5-3019 Date
Reviewed by Name	William Larson, PQS-PI: Prehistoric Archaeology	Date
Prepared for Name	Laura Loeffler EBC	Date

USGS Princeton 7.5'

Circa 4.6 Acres

August 2018

Table of Contents

Figures

Summary of Findings

Glenn County (County) in conjunction with the California Department of Transportation (Caltrans) as assigned by the Federal Highway Administration (FHWA) proposes to replace the bridge (Bridge No. 11C0068) along County Road 66B crossing the Colusa Drain in Glenn County, California.

This document reports efforts to identify potential archaeological resources within the Area of Potential Effects (APE) in support of the County Road 66B Bridge Replacement over the Colusa Drain Project (Project), and involves a records search undertaken at the Northeast Information Center of the California Historical Resources Information System, at CSU-Chico, consultation with the Native American Heritage Commission (NAHC), consultation with interested Native American Individuals/Groups/Tribes, and an intensive pedestrian survey of the APE.

All survey objectives were met for this project.

No archaeological resources were identified within the APE.

It is Caltrans' policy to avoid cultural resources whenever possible. If a known site or sites couldn't be avoided by the project, further investigation(s) would be needed. If buried cultural materials are encountered during construction, it is Caltrans' policy that work stop in that area until a qualified archaeologist can evaluate the nature and significance of the find. If the project was to change and include areas not previously surveyed, additional survey work will be required.

Introduction

The APE (described in detail below) was subjected to intensive archaeological survey on June 5, 2018. The APE generally consists of a linear corridor extending approximately 1,600 feet in length (east-west) and ranging from between 100 feet and 260 feet in width, and generally centered on the Colusa Drain. The APE is located approximately 2 miles west of State Route 45, and approximately 3 miles northwest of the community of Princeton, in Glenn County, California. The proposed project includes replacing the existing, structurally deficient bridge. The general project vicinity is depicted on Figure 1: Vicinity Map. The project's location is depicted on Figure 2: Project Location, and the specific APE is depicted on Figure 3: APE Map.

The pedestrian survey was conducted by Mr. Sean Michael Jensen, M.A., administrator for Genesis Society, Chico, California. Mr. Jensen is a professional archaeologist, with 32 years of experience in archaeology and history of the western United States, who meets the Secretary of Interior's Standards for Professional Qualification, as demonstrated in his inclusion on the California Historical Resources Information System's list of qualified consultants. Mr. Jensen has undertaken over 2,000 separate federal, State and local agency projects distributed throughout California, Oregon, Washington, Arizona, Montana, Nevada, and Hawaii.

Highway Project Location and Description

Glenn County (County) in conjunction with the California Department of Transportation (Caltrans) as assigned by the Federal Highway Administration (FHWA) proposes to replace the bridge (Bridge No. 11C0068) along County Road 66B crossing the Colusa Drain in Glenn County, California.

The present project is located within Caltrans District 3, Glenn County, County Road 66B Bridge Replacement over the Colusa Drain Project (Project), and further identified as BRLO 5911 (063).

The APE generally consists of a linear corridor extending approximately 1,600 feet in length (east-west) and ranging from between 100 feet and 300 feet in width, and generally centered on the Colusa Drain. The APE is located approximately 2 miles west of State Route 45, and approximately 3 miles northwest of the community of Princeton, in Glenn County, California. The proposed project involves replacing the existing 1-lane, wooden-decked bridge with a cast-in-place post-tensioned concrete slab bridge. The existing bridge is approximately 54 feet in length and 20 feet in width, and consists of a three-span timber structure supported by reinforced concrete abutments and piers founded on driven Cast-In-Steel-Shell piles. The outside spans are 16 feet long and the middle span is 18 feet long. The bridge was originally constructed in 1940, and the wooden deck was replaced in 1974.

The present project would involve replacement of the existing structure with a cast-in-place post-tensioned concrete slab bridge founded on driven piles situated at the abutment supports, thus eliminating structural supports within the stream channel. Additionally, the project will include road widening, bridge work, road cut/fill, detours, grinding, establishment of clear recovery zones, utility relocation, ground disturbance, vegetation removal, and pile driving.

The roadway width would include 2-12' wide lanes with 2-4' paved shoulders for a total width of 32'.

The maximum depth of construction activity (i.e., the vertical APE) is estimated to not exceed 16 feet below the existing ground surface for the efficient footing and 20 feet for the driven piles. The depth of road excavation will vary between 6" and 28", and will occur primarily within existing fill material. All work will take place within the existing right-of-way and/or within permanently acquired right-of-way. Relocation of utilities is not expected to be a requirement of this project, and temporary traffic control will be necessary during construction activities.

See Vicinity Map (Figure 1) for the general project location, and Project Location Map (Figure 2) that depicts the project location on a topographic-based USGS quadrangle.

The project will rely on federal funding and meets the definition of an "undertaking" according to 36 CFR §800.16(y). Caltrans, acting as the lead agency under the delegated authority of the Federal Highway Administration, is providing oversight of this undertaking in accordance with the *Programmatic Agreement Among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it Pertains to the Administration of the Federal-Aid Highway Program in California* (Caltrans PA) (January 1, 2014)

Area of Potential Effects (APE)

The Area of Potential Effects (APE) (Figure 3) for the project was established in consultation with and signed by Cole Grube, Glenn County Public Works Department, William Larson, Caltrans Associate Environmental Planner – Archaeology and Darlene Wulff, Caltrans District 3 Local Assistance Engineer, and was approved on May 21, 2019. The APE Map is identified as Figure 3 in both the Historic Property Survey Report, and this Archaeological Survey Report.

The APE was established so as to incorporate all ground disturbing impacts associated with bridge replacement proposed in conjunction with the Project.

The APE generally consists of a linear corridor extending approximately 1,600 feet in length (east-west) and ranging from between 100 feet and 260 feet in width, and generally centered on the Colusa Drain.

The APE as delineated on Figure 3 is the boundary within and adjacent to which cultural studies have been conducted. No construction activities will occur outside the area that has been surveyed or

evaluated by Mr. Jensen for this report. A limited amount of equipment and materials will be stored directly on the roadway, within the APE, during daily construction operations. Both temporary construction easements and permanent acquisition of right-of-way will be required for portions of the project. Relocation of utilities is not expected to be a requirement of this project.

Sources Consulted

Summary of Methods and Results

Prior to conducting the pedestrian field survey, the official Glenn County archaeological records maintained by the Northeast Information Center were examined for any existing recorded prehistoric or historic sites (NEIC File No.: 18-102, dated June 5, 2018).

In addition to examining the official records of Glenn County as maintained by the Northeast Information Center, the following were also reviewed by the Information Center, or separately:

- The National Register of Historic Places (1988, Supplements through 7-00).
- The California Register of Historical Resources (2012).
- Directory of Properties in the Historic Property Data File for Glenn County (2012).
- Office of Historic Preservation Determination of Eligibility (2012).
- The California Inventory of Historic Resources (2014).
- California Points of Historical Interest (1992).
- California Historical Landmarks (2012).
- Historic Spots in California (1990).
- Gold Districts of California (1980).
- Handbook of North American Indians, Vol. 8, California (1978).
- The Caltrans State and Local Bridge Survey (2016).
- USGS Princeton, CA quadrangle (1906, 1913, 1918, 1936, 1953, 1958, 1970, 1974, 2012, 2015).
- NETR Aerial Photographs (1947, 1998, 2005, 2009, 2010, 2012, 2014).

The records search area was established at 1/4-mile radius of the APE.

According to the records maintained by the NEIC, none of the APE has been subjected to previous investigation by a qualified professional archaeologist. Likewise, no investigations have been conducted within ¼-mile of the APE.

No prehistoric or historic-era sites have been recorded or otherwise identified within the APE boundary, nor within ¼-mile of the APE. Additionally, no prehistoric sites, traditional use areas or other cultural issues of concern have been identified by the Native American groups and individuals contacted. The Native American Heritage Commission (NAHC) has no record of Sacred Land listings within, adjacent or close to the project area. The data file and determinations of effect for the Office of Historic Preservation also failed to document resources in the APE. Lastly, the California Inventory failed to identify potential historic resources within the APE.

Of note, however, is that site P-11-604, the Colusa Basin Drainage Canal (i.e., Colusa Drain Canal), was originally recorded in 1986 as part of the Yolo County Historic Resources Inventory, and later updated in 1992, 1998, 2002, 2007 and 2015. The Colusa Basin Drainage Canal was recommended not eligible for NRHP listing by the Army Corps of Engineers, and in 1998 they received a consensus determination of ineligibility by the Office of Historic Preservation (Widell 1998).

Summary of Native American Consultation

The NAHC was requested to supply any information they had concerning Sacred Land listings for the project area. The NAHC indicated that there are no Sacred Land listings for the project area or adjacent lands (response dated July 9, 2018, included in Attachment 1). The contact list from the Native American Heritage Commission included the following individuals and groups, all of whom were contacted and requested to supply any information they might have concerning prehistoric sites or traditional use areas within the project area (request letters dated July 9, 2018):

1. Ronald Kirk, Grindstone Rancheria of Wintun-Wailaki.
2. Glenda Nelson, Enterprise Rancheria.
3. Andrew Freeman, Paskenta Band of Nomlaki Indians.
4. Dennis Ramirez, Mechoopda Indian Tribe of Chico Rancheria.

One written response was received on July 10, 2018. Mr. Creig Marcus of the Enterprise Rancheria responded, via email, indicating that "This project is not in our aboriginal territory."

In an effort to communicate the results of the pedestrian survey efforts to potentially interested Native American groups, tribes and individuals, telephone calls were made to the above-listed parties (sans the Enterprise Rancheria) on August 13, 2018. In all three cases, detailed voicemails were left with the parties, requesting any information, questions, or concerns that they may have regarding the project. To date, no responses have been received.

Consultation will continue for the life of the project.

Background

Environment

The project area consists of northern Sacramento Valley lands located east of the Coast Range foothills, approximately one mile west of State Route 45 and the Sacramento River, and approximately 6 miles southeast of the community of Willows. Rice fields and other agricultural crops dominate the terrain surrounding the APE.

With the exception of the Sacramento River, situated approximately two miles east of the project area, there are no natural sources of surface water within close proximity to the APE.

Based on previous cultural resources studies undertaken within the general APE vicinity, coupled with the absence of prehistoric cultural materials being documented within most of these previous investigation areas, the APE appeared to be situated within lands of low to moderate archaeological sensitivity with respect to prehistoric sites. With the exception of built environment features, the APE appeared to represent low sensitivity with respect to historic-period sites. While historic-period built environment components had been identified within the APE (i.e., the Colusa Drain), the postulate of low sensitivity, for non-built environment features, was based on the considerable disturbance to both the surface and subsurface setting, resulting from decades of historic agricultural, contemporary road construction, and contemporary placement of buried and overhead utilities.

Prehistory

The earliest residents in the Great Central Valley are represented by the Fluted Point and Western Pluvial Lakes Traditions, which date from about 11,500 to 7,500 years ago (Moratto 2004). Within portions of

the Central Valley of California, fluted projectile points have been found at Tracy Lake (Heizer 1938) and around the margins of Buena Vista Lake in Kern County. Similar materials have been found to the north, at Samwel Cave near Shasta Lake and near McCloud and Big Springs in Siskiyou County. These early peoples are thought to have subsisted using a combination of generalized hunting and lacustrine exploitation (Moratto 2004).

These early cultural assemblages were followed by an increase in Native population density after about 7,500 years ago. One of the most securely dated of these assemblages in north-central California is from the Squaw Creek Site located north of Redding. Here, a charcoal-based C-14 date suggests extensive Native American presence around 6,500 years ago, or 4,500 B.C. Most of the artifactual material dating to this time period has counterparts further south, around Borax (Clear) Lake to the west, and the Farmington Area in a Valley setting east of Stockton. Important artifact types from this time period include large wide-stemmed projectile points and manos and metates.

In the Northern Sacramento Valley, in the general vicinity of the project area, aboriginal populations continued to expand between 6,500 and 4,500 years ago. Early Penutian-speaking arrivals in this area may be represented by the archaeological complex known in the literature as the "Windmiller" or "Early Horizon." These sites date to about 4,000-5,000 years ago, with the connection to Penutian-speaking peoples suggested on the basis of extended burials, large leaf-shaped and stemmed projectile points similar to points of the Stemmed Point Tradition in the Plateau and portions of the Great Basin, large villages established along major waterways, and elaborate material culture with a wide range of ornamental and other non-utilitarian artifact types being present (Ragir 1972). The continuation of this pattern through the "Middle Horizon", or from about 1,000 B.C. to A.D. 300, has also been documented at riverine sites within the Sacramento Valley, including several sites along both the Sacramento River, located approximately two miles east of the APE.

Sometime around AD 200-300, the Valley may have experienced another wave of Penutian immigration. Arriving ultimately from southern Oregon and the Columbia and Modoc Plateau region and proceeding down the major drainage systems (including the Feather, Yuba and American Rivers and of course the Sacramento River), these Penutian-speaking arrivals may have displaced the earlier populations, including remnant Hokan-speaking peoples still resident within the Valley. Presumably introduced by these last Penutian-speaking peoples to arrive were more extensive use of bulbs and other plant foods, animal and fishing products more intensively processed with mortars and pestles, and perhaps the bow and arrow and associated small stemmed- and corner-notched projectile points.

Ethnography

The project area is located within territory which, at the time of Contact with European/American culture (*circa* AD 1850), was claimed by the Nomlaki (Goldschmidt 1978) who claimed lands west of the Sacramento River south to around Princeton, although close to the border shared with the Patwin to the south (Johnson 1978). The Patwin claimed lands from this point southward to below Knights Landing.

Both the Patwin and the Nomlaki were Penutian speakers, (Shipley 1978) for whom the basic social unit was the family, although the village may also have functioned as a social, political and economic unit. Villages were usually located near water sources, with major villages inhabited mainly in the winter as it was necessary to go out into the hills and higher elevation zones to establish temporary camps during food gathering seasons (i.e., spring, summer and fall). Villages typically consisted of a scattering of bark houses, numbering from four or five to several dozen in larger villages, each house containing a single family of from three to seven people.

As with all northern California Indian groups, economic life for these Penutian speaking groups revolved around hunting, fishing and the collecting of plant foods. Deer were an important meat source and were

hunted by individuals by stalking or snaring, or by groups in community drives. Salmon runs, and other food resources available along the Sacramento River and some of its major tributaries, also contributed significantly to local economies. While much of the fish protein was consumed immediately, a significant percentage, particularly during the fall salmon run, was prepared for storage and consumed during winter months. Acorns represented one of the most important vegetal foods and were particularly abundant within the Oak Park Woodland which flanked both sides of the Sacramento River.

Relations between Euro-Americans and Native Americans in the northern Sacramento Valley followed the course of interaction documented in most other parts of North America, but with particularly devastating consequences for the Sacramento Valley Indians. John Work's fur trapping expedition through the region in 1832-33 resulted in the introduction of several communicable diseases, the results of which were devastating to Native culture and society (Work 1945; Cook 1955, 1976).

History

The first Euroamerican arrivals into the area include participants in Spanish and Mexican expeditions and early fur trapping ventures, several of which came through and made brief stays within this portion of the Northern Sacramento Valley. However, history in this area of the Valley really begins with the appearance of Euroamerican emigrants such as Granville Swift who accompanied the Kelsey Party in 1843 on their journey to California. Swift served in John Sutter's campaign for California independence (the Bear Flag Revolt) and later served as a militia Captain in Fremont's California Battalion. Swift later settled immediately north of Orland, between the core of the City and Stony Creek, and established cattle ranching operations that at one time extended south through the present project vicinity, down to Woodland and westerly into the foothill regions west of Willows.

Small, independent companies and individual steamboat operators established shipping routes on the upper Sacramento River during the early historic period; at its peak, river navigation on the Sacramento reached Red Bluff. The 1871 completion of the railroad to Red Bluff eliminated the need for many of the riverboat operations, although River steam boats like The Dover and Weitchepec continued service through 1911, with some reports claiming that operations continued to service Red Bluff as late as 1918 and the town of Tehama as late as 1936 (McGowan 1961:395-306).

Glenn County was organized in 1891 from portions of northern Colusa County, which was one of the original 27 counties in the State; the boundaries of which have changed overtime. The first Americans settled in southern Colusa County in 1846 and the small settlement grew into the town of Colusa in 1850 along the Sacramento River, becoming the county seat in 1854.

The nearby communities of Princeton and Colusa emerged in the 1860's to service the historic transportation industry along the Sacramento River, and local farms which had begun to drain large tracts of land along and west of the Sacramento River during this same period.

The area that would become Glenn County was the most abundant grain growing region in the Sacramento valley into the early 1870s. To increase yields, some farmers in Princeton, located a short distance east of the project area, dug gravity fed ditches from the Sacramento River to irrigate their low-lying lands during periods of high water. Shipping points with large grain warehouses along the Sacramento River at Jacinto, Princeton, and Sidds Landing, sprung up as millions of sacks of grain and barley were sent to market.

Of considerable importance to the theme of 19th and 20th century agriculture is the Glenn-Colusa Irrigation District and the Colusa Drain Canal; this latter feature proceeds through the present APE.

The Colusa Drain Canal begins in Glenn County at a point approximately eight miles

southeast of the head of the 65-mile long Glenn-Colusa Irrigation District (GCID) Main Canal, the primary water conveyance source for the largest irrigation district in the Sacramento Valley. The Colusa Drain Canal travels south-southeasterly from Glen County through Colusa County terminating in Yolo County west of Knights Landing. Initially built from 1921-1922 by the then newly organized RD No. 2047, the Colusa Drain Canal traversed six irrigation districts including the Glenn-Colusa, Provident, Princeton-Codora-Glenn, Jacinto, Maxwell, and the Compton-Delevan irrigation districts.

The Sacramento River Flood Control Project was created through an act of Congress in 1917, and authorized construction of levees, weirs and bypasses in the Sacramento Valley (James and Singer 2008:131). Initially operating under multiple agencies, in 1957 the Army Corps of Engineers (USACOE) turned over control of the system to the state of California, who in turn accepted responsibility for, and maintenance of, the completed system. Over the next six decades, the USACOE conducted numerous (nearly annually) maintenance, repair and construction projects along segments of the Colusa Drain Canal, including the segment located within the present APE. These actions resulted in substantial changes to the design, materials, workmanship and feeling of this canal segment.

Field Methods

The entire APE was subjected to pedestrian survey, accomplished by walking parallel transects, spaced at 5-meter intervals along the entire APE. In searching for cultural resources, the surveyor took into account the results of background research and was alert for any unusual contours, soil changes, distinctive vegetation patterns, exotic materials, artifacts, feature or feature remnants and other possible markers of cultural sites.

Study Findings and Conclusions

This document reports efforts to identify potential archaeological resources within the APE in support of the County Road 66B Bridge Replacement over the Colusa Drain Project. Tasks undertaken to this end included conducting a records search undertaken at the Northeast Information Center of the California Historical Resources Information System, at CSU-Chico, consultation with the NAHC, consultation with interested Native American Individuals/Groups/Tribes, and an intensive pedestrian survey of the APE.

The records search indicated that no prehistoric or historic-era sites have been recorded or otherwise identified within the APE boundary, nor within 1/4-mile of the APE boundary. Additionally, no prehistoric sites, traditional use areas or other cultural issues of concern have been identified by the Native American groups and individuals contacted. The Native American Heritage Commission (NAHC) has no record of Sacred Land listings within, adjacent or close to the project area. The data file and determinations of effect for the Office of Historic Preservation also failed to document resources in the APE. Lastly, the California Inventory failed to identify potential historic resources within the APE.

No archaeological resources were identified within or immediately adjacent to the APE during the background investigation, the present pedestrian survey, or the consultation efforts.

It seems unlikely that buried cultural materials related to prehistoric occupation are present within the APE. Although the presence of buried cultural material is always a possibility, in the present case the foregoing conclusion is based on the results of previous archaeological survey on lands in the vicinity and containing similar geomorphological characteristics. No prehistoric sites have been documented within the records search radius, and the closest prehistoric sites are located over one mile from the project APE. Further, while the APE is situated within/upon Late Holocene alluvial deposits, the closest sources of surface water, which typically increase a land area's sensitivity for archaeological resources, are situated

approximately two miles easterly. Additionally, road and canal construction and maintenance, which have been ongoing for nearly a century, have not identified archaeological resources within or near the APE. Geotechnical boring was not undertaken as a component of this project, and none is foreseen. Consequently, the likelihood of encountering intact, buried, prehistoric deposits at this locale appears to be unlikely.

Other Resources

No other resources were identified during the present project.

Unidentified Cultural Materials

If previously unidentified cultural materials are unearthed during construction, it is Caltrans' policy that work be halted in that area until a qualified archaeologist can assess the significance of the find. Additional archaeological survey will be needed if project limits are extended beyond the present survey limits.

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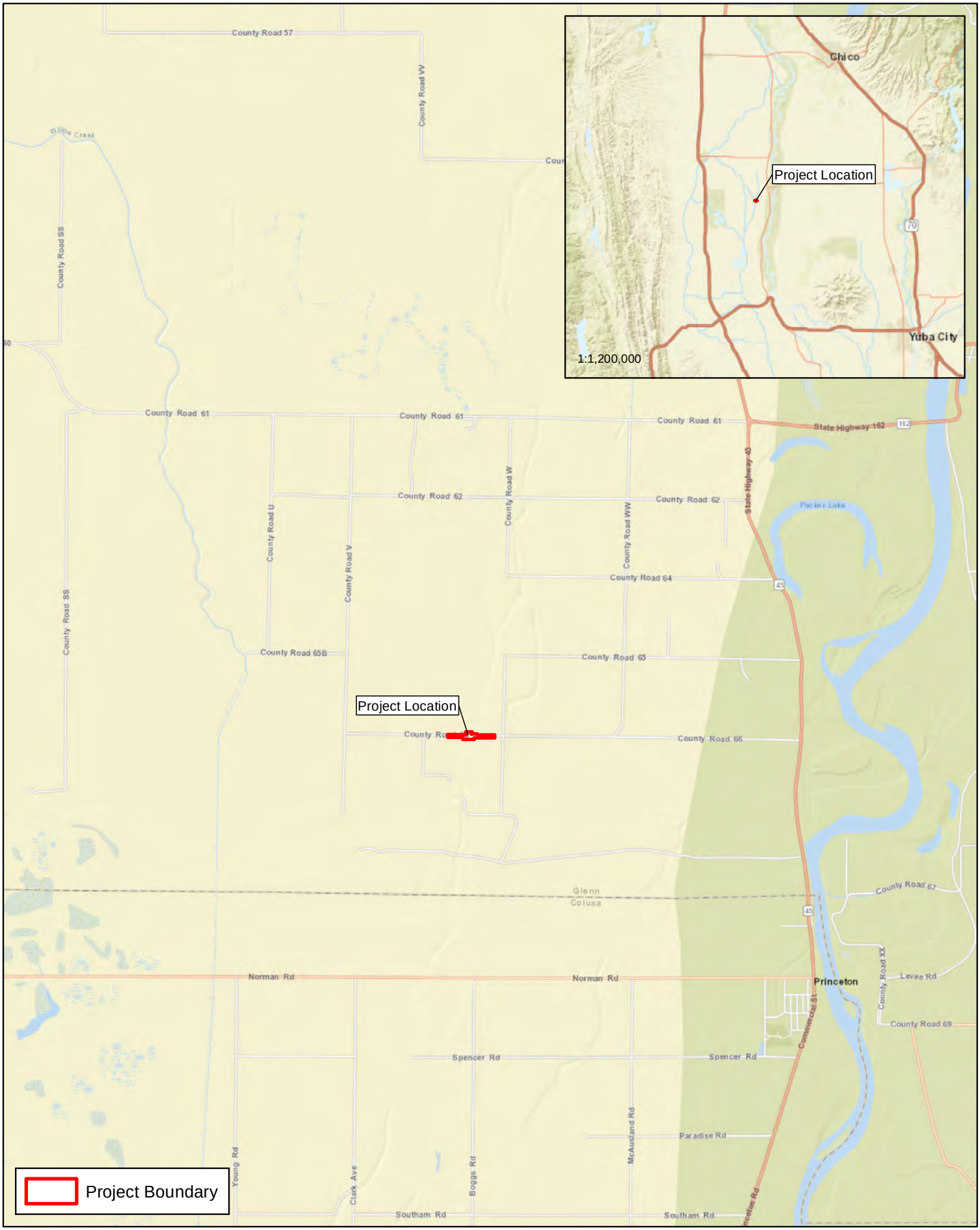
FIGURE 1



1:50,000

0 0.5 1 Miles

NORTH

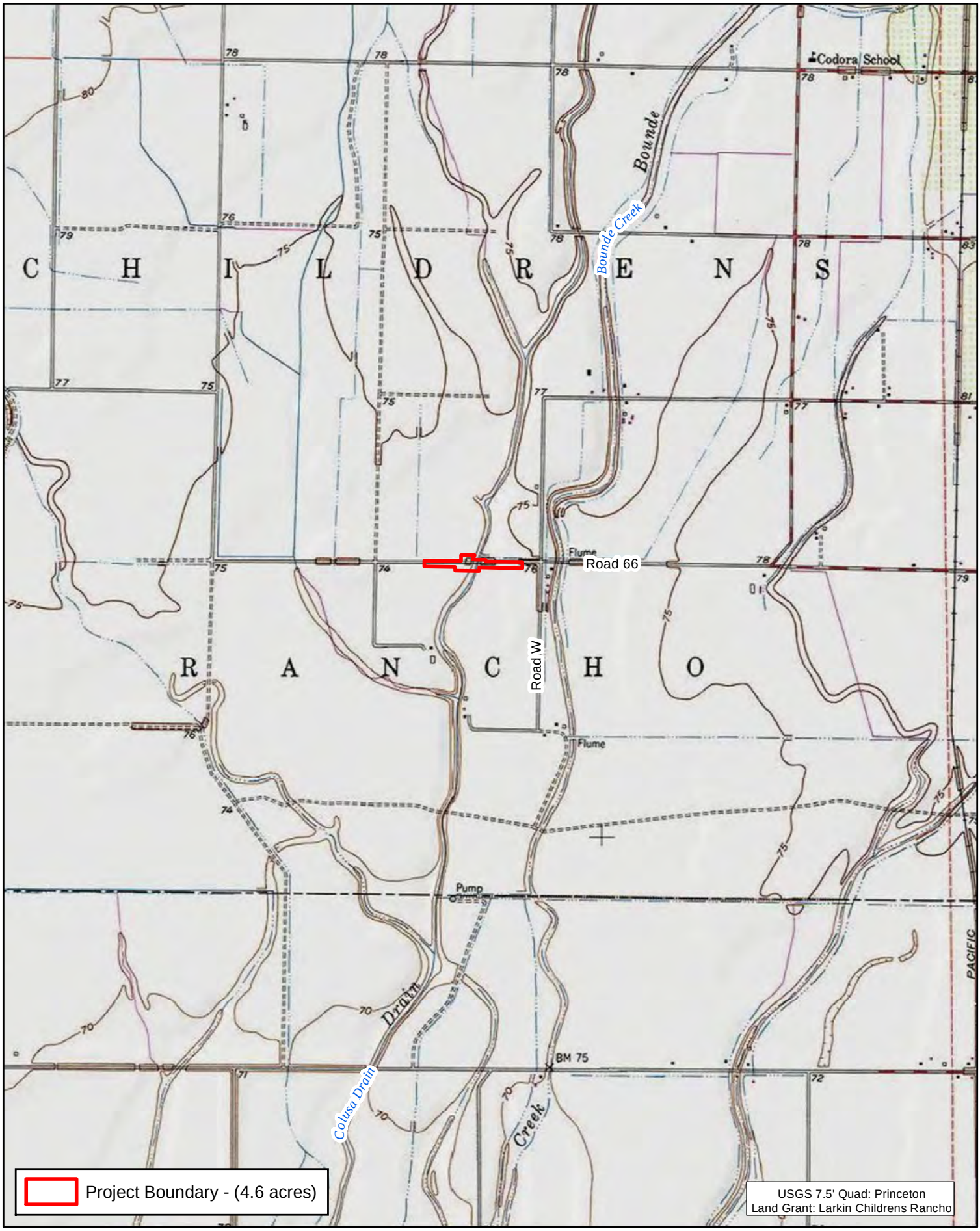
Data Sources: ESRI, USGS, Glenn County, Quincy Engineering

County of Glenn CR 66B Bridge 11C-0068
Project Vicinity
Figure 1

gallaway ENTERPRISES

GE: #16-078 Map Date: 08/17/18

FIGURE 2



NORTH

1:24,000

0 680 1,360 Feet

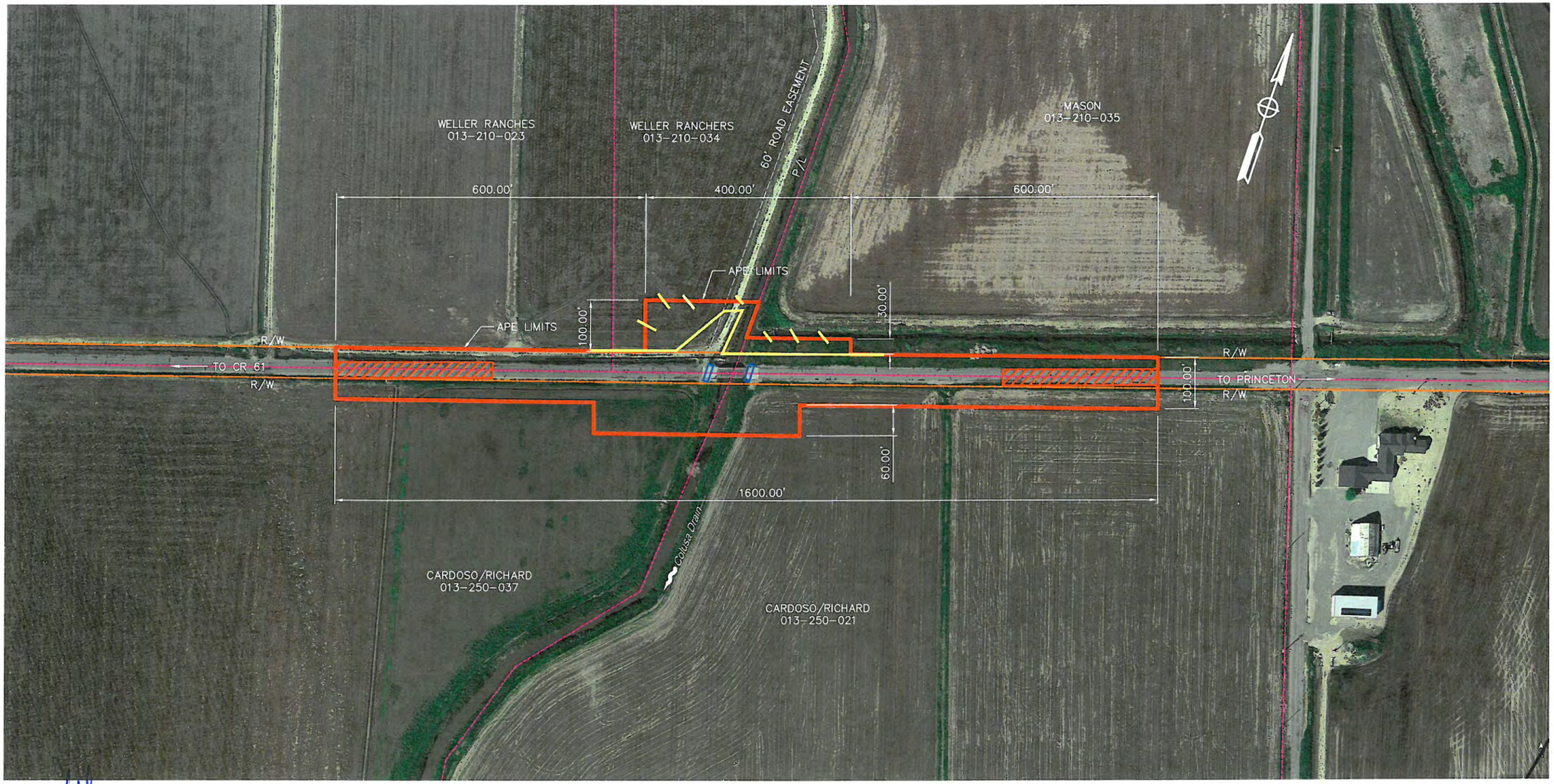
Data Sources: ESRI, USGS
Glenn County, Quincy Engineering

County of Glenn CR 66B Bridge 11C-0068
Project Location
Figure 2

gallaway ENTERPRISES

GE: #16-078 Map Date: 05/31/18

FIGURE 3



5/21/19

ocal Agency Representative — Date
lenn County

William E Larson — 5/21/19

altrans PQS — Date

5/21/19

ocal Assistance Project Engineer — Date
altrans Distict 3

AREA OF POTENTIAL EFFECTS MAP

COUNTY ROAD 66B BRIDGE REPLACEMENT
BRIDGE No. 11C-0068

Federal Aid Project BRLO-5911(063)

Glenn County, Planning and Public Works
Caltrans District 3

RIGHT OF WAY

PROPERTY LINE

Estimated Footing Excavation Limits
Approx. Dimensions
45' long x 12' wide x 12' deep

APE

Potential
Staging Area

SCALE 1"=200'

0 1 2 3

ORIGINAL SCALE IN INCHES

FILNt\Glenn\CR66B\500 – Design (PS&E)\505 – CADD Files\Roadway\G01100r_APE.dwg

USERNAME Scottm DATE PLOTTED 2/14/2017 3:12:47 PM TIME PLOTTED 3:12:47 PM

ATTACHMENT 1

GENESIS SOCIETY

a Corporation Sole

127 ESTATES DRIVE
CHICO, CALIFORNIA 95928
(530) 680-6170
seanjensen@comcast.net

May 31, 2018

Native American Heritage Commission

1550 Harbor Boulevard,
West Sacramento, California 95691

Subject: ***County Road 66B Bridge Replacement Project, circa 4.6-acres, Glenn County, California.***

Dear Commission:

We have been requested to conduct the archaeological survey, for the above-cited project, and are requesting any information you may have concerning archaeological sites or traditional use areas for this area. Any information you might supply will be used to supplement the archaeological and historical study being prepared for this project.

Project Name:	CR66B Bridge Replacement Project
County:	Glenn
Map:	USGS Princeton 7.5'
Location:	Portion of Larkin Childrens Rancho Land Grant

Thanks in advance for your assistance.

Regards,

Sean Michael Jensen

Sean Michael Jensen, Administrator

NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710

July 9, 2018

Sean Michael Jensen
Genesis Society

Sent by E-mail: seanjensen@comcast.net

RE: Proposed County Road 66B Bridge Replacement Project, near the Community of Princeton; Princeton USGS Quadrangle, Glenn County, California

Dear Mr. Jensen:

A record search of the Native American Heritage Commission (NAHC) *Sacred Lands File* was completed for the area of potential project effect (APE) referenced above with negative results. Please note that the absence of specific site information in the *Sacred Lands File* does not indicate the absence of Native American cultural resources in any APE.

Attached is a list of tribes culturally affiliated to the project area. I suggest you contact all of the listed Tribes. If they cannot supply information, they might recommend others with specific knowledge. The list should provide a starting place to locate areas of potential adverse impact within the APE. By contacting all those on the list, your organization will be better able to respond to claims of failure to consult. If a response has not been received within two weeks of notification, the NAHC requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact via email: gayle.totton@nahc.ca.gov.

Sincerely,

Gayle Totton

Gayle Totton, M.A., PhD.
Associate Governmental Program Analyst
(916) 373-3714

Native American Heritage Commission
Native American Contact List
Glenn County
7/9/2018

Enterprise Rancheria - Estom Yumeka Maidu Tribe
Glenda Nelson, Chairperson
2133 Monte Vista Avenue — Maidu
Oroville, CA, 95966
Phone: (530) 532 - 9214
Fax: (530) 532-1768
info@enterpriserancheria.org

Grindstone Rancheria of Wintun-Wailaki
Ronald Kirk, Chairperson
P.O. Box 63 — Nomlaki
Elk Creek, CA, 95939 — Patwin
Phone: (530) 968 - 5365 — Wailaki
Fax: (530) 968-5366

Mechoopda Indian Tribe of Chico Rancheria
Dennis Ramirez, Chairperson
125 Mission Ranch Blvd — KonKow
Chico, CA, 95926 — Maidu
Phone: (530) 899 - 8922
Fax: (530) 899-8517
dramirez@mechoopda-nsn.gov

Paskenta Band of Nomlaki Indians
Andrew Alejandre, Chairperson
P.O. Box 709 — Nomlaki
Corning, CA, 96021 — Wintu
Phone: (530) 528 - 3538
Fax: (530) 528-3595
office@paskenta.org

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed County Road 66B Bridge Replacement Project, Glenn County.

GENESIS SOCIETY

a Corporation Sole

127 ESTATES DRIVE
CHICO, CALIFORNIA 95928
(530) 680-6170
seanjensen@comcast.net

July 9, 2018

Native American Individuals, Groups and Tribes

Subject: ***County Road 66B Bridge Replacement Project, circa 4.6-acres, Glenn County, California.***

Dear Interested Native Americans:

Enclosed is a USGS topo-based map showing the location for a bridge replacement project within Glenn County, California.

We have been requested to conduct the archaeological survey, and are requesting any information you may have concerning archaeological sites or traditional use areas for this area. Any information you might supply will be used to supplement the archaeological and historical study being prepared for this project.

Project Name:	County Road 66B Bridge Replacement Project
County:	Glenn
Map:	USGS Princeton 7.5’
Location:	Portion of Larkin Childrens Rancho Land Grant

Due to federal funding, Caltrans will provide oversight to ensure compliance with Section 106 of the National Historic Preservation Act as well as other federal laws and regulations.

Thanks for your help. Please call with any questions.

Regards,

Sean Michael Jensen

Sean Michael Jensen, Administrator

Creig Marcus <creigm@enterpriserancheria.org> 7/10/2018 10:35 AM

Consultation, CR66N

To seanjensen@comcast.net

Good morning Sean,

This project is not in our aboriginal territory.

Thank you for the notification.

Sincerely,

Creig Marcus

Subject: [CatchallEmail -] Consultation, CR66B

Glenda Nelson,

I have attached a formal consultation request letter and USGS-based map for a bridge replacement project in Glenn County. Please contact me with any questions.

Regards,

Sean Michael Jensen, Administrator
Genesis Society
127 Estates Drive
Chico, CA 95928

530-680-6170

COMMUNICATIONS LOG, COUNTY ROAD 66B BRIDGE REPLACEMENT PROJECT

Contacted Party	Date	Medium	Comments
Enterprise Rancheria, Glenda Nelson and Creig Marcus	July 9, 2018 July 10, 2018	Email Email	Delivered email containing consultation letter and project map. Received email from Creig Marcus indicating that the project is not located within the Tribe's aboriginal territory.
Grindstone Rancheria of the Wintun-Wailaki, Ronald Kirk	July 9, 2018 August 13, 2018	USPS Mail Telephone	Delivered, via regular mail, consultation letter and project map. Detailed telephone voicemail left. No response.
Mechoopda Indian Tribe of Chico Rancheria, Dennis Ramirez	July 9, 2018 August 13, 2018	Email Telephone	Delivered email containing consultation letter and project map. Detailed telephone voicemail left. No response.
Paskenta Band of Nomlaki Indians, Andrew Alejandre	July 9, 2018 August 13, 2018	Email Telephone	Delivered email containing consultation letter and project map. Detailed telephone voicemail left. No response.

ATTACHMENT 2

Northeast Center of the California Historical Resources Information System

BUTTE GLENN LASSEN MODOC PLUMAS SHASTA SIERRA SISKIYOU SUTTER TEHAMA TRINITY

123 West 6th Street, Suite 100
Chico CA 95928
Phone (530) 898-6256
neinfocntr@csuchico.edu

ACCESS AGREEMENT

I.C. File #: W18-102

I, the undersigned, have been granted access to historical resources information on file at the Northeast Information Center of the California Historical Resources Information System.

SJ I understand that any CHRIS Confidential Information I receive shall not be disclosed to individuals who do not qualify for access to such information, as specified in Section III (A-E) of the CHRIS Information Center Rules of Operation Manual, or in publicly distributed documents without written consent of the Information Center Coordinator.

SJ I agree to submit historical Resource Records and Reports based in part on the CHRIS information released under this Access Agreement to the Information Center within sixty (60) calendar days of completion.

SJ I agree to pay for CHRIS services provided under this Access Agreement within sixty (60) calendar days of receipt of billing.

SJ I understand that failure to comply with this Access Agreement shall be grounds for denial of access to CHRIS Information.

Print Name: Sean Jensen Date: 6/5/18 Signature: [signature]

Affiliation: GENESIS SOCIETY

Address: 127 ESTATES DRIVE City/State/Zip: CHICO, CA 95928

Billing Address (if different):

Office#: Cell#: 530-680-6170 Email: seanjensen@comcast.net

Project Name: CR66B / MORSENMAN ESTATES

Purpose of Access: PROJECT PLANNING

County: BUTTE/GLENN Township/Range/Section: T18N, R2W / T22N, R1E

USGS 7.5' Quad: PRINCETON / ~~CHICO~~ RICHARDSON SPRINGS

STAFF USE ONLY

Time:

IN: 10:00

OUT: 10:34

[signature]
Information Center Staff

Backlog ( )

In-House Fees:	1 hours @ $100.00/hour	$ 100.00
Staff Charges:	___ hours @ $40.00/hour	$
Photocopy Charges:	28 copies @ $0.15/page	$ 4.20
Other:		$
TOTAL:		$ 104.20

*** THIS IS NOT AN INVOICE ***

Structure Maintenance & Investigations

SM&I

Historical Significance - Local Agency Bridges

April 2016

District 03

Glenn County

Bridge Number	Bridge Name	Location	Historical Significance	Year Built	Year Wid/Ext
11C0001	GLENN-COLUSA CANAL	0.2 MI W RD D	5. Bridge not eligible for NRHP	1964	
11C0002	GLENN-COLUSA CANAL	0.6 MI N/O ROAD 68	5. Bridge not eligible for NRHP	1962	
11C0003	GLENN-COLUSA CANAL	0.5 MI S/O ROAD 62	5. Bridge not eligible for NRHP	1948	
11C0004	GLENN-COLUSA CANAL	0.3 MI E/O ROAD 'F'	5. Bridge not eligible for NRHP	1946	
11C0006	GLENN-COLUSA CANAL	1.2 MI W/O SH 99	5. Bridge not eligible for NRHP	1948	1980
11C0009	GLENN-COLUSA CANAL	2.1 MI N OF S.H. 162	5. Bridge not eligible for NRHP	1961	
11C0010	GLENN-COLUSA CANAL	4.82 MI EAST OF I-5	5. Bridge not eligible for NRHP	1948	1980
11C0011	GLENN-COLUSA CANAL	0.3 MI N CO RD #39	5. Bridge not eligible for NRHP	1950	2002
11C0012	CENTRAL IRRIGATION CANAL	0.6 MI N RD 34	5. Bridge not eligible for NRHP	1950	
11C0013	CENTRAL IRRIGATION CANAL	0.5 MI W ROAD XX	5. Bridge not eligible for NRHP	1948	
11C0014	PACKARD DRAW	0.5 MI WEST OF ROAD Z	5. Bridge not eligible for NRHP	1930	
11C0015	BRANCH HOWARD SLOUGH	1.3 MI EAST OF ROAD Z	5. Bridge not eligible for NRHP	1937	
11C0016	HOWARD SLOUGH	1.7 MI EAST OF CR Z	5. Bridge not eligible for NRHP	1950	
11C0017	HOWARD SLOUGH	1.8 MI EAST OF CR Z	5. Bridge not eligible for NRHP	1920	
11C0018	STONY CREEK	0.2 MI E OF RD 306	5. Bridge not eligible for NRHP	1900	
11C0019	BUTTE CREEK	2.0 MI EAST OF CR Z	5. Bridge not eligible for NRHP	1930	1942
11C0020	BUTTE CREEK	2.7 MI E RD Z	5. Bridge not eligible for NRHP	1940	
11C0025	PROVIDENT CANAL	6.04 MI EAST OF RD 99W	5. Bridge not eligible for NRHP	1948	
11C0026	COLUSA DRAIN	0.6 MI W RD WW	5. Bridge not eligible for NRHP	1941	
11C0031	DRY CREEK	1.58 MI N COLUSA CO LINE	5. Bridge not eligible for NRHP	1951	1983
11C0033	ELK CREEK	17.2 MI N COLUSA CO LINE	5. Bridge not eligible for NRHP	1951	
11C0035	GRINDSTONE CREEK	23 MI N COLUSA CO LINE	5. Bridge not eligible for NRHP	1950	
11C0037	CENTRAL IRRIGATION CANAL	WEST OF S.H. 45	5. Bridge not eligible for NRHP	1936	
11C0038	CENTRAL IRRIGATION CANAL	0.3 MI WEST OF SH 45	5. Bridge not eligible for NRHP	1948	
11C0040	S FORK WILLOW CREEK	2.2 MI N S.H. 162	5. Bridge not eligible for NRHP	1967	
11C0041	NORTH FORK WILLOW CREEK	3.6 MI N OF S.H. 162	5. Bridge not eligible for NRHP	1966	
11C0042	WHITE CABIN CREEK	5.8 MI N OF S.H. 162	5. Bridge not eligible for NRHP	1919	1950
11C0043	WILSON CREEK	0.5 MI SOUTH OF RD #33	5. Bridge not eligible for NRHP	1982	
11C0046	HAMBRIGHT CREEK	5.25 MI W OF I-5	5. Bridge not eligible for NRHP	1967	
11C0048	WILLOW CREEK	0.4 MI S OF S.H. 162	5. Bridge not eligible for NRHP	1940	
11C0053	WILLOW CREEK	0.2 MI S/O SH 162	5. Bridge not eligible for NRHP	1965	
11C0055	GLENN-COLUSA CANAL	JUST E OF SACRAMENTO ST	5. Bridge not eligible for NRHP	1948	
11C0056	SALT CREEK	2.5 MI E of Co. Rd. 306	5. Bridge not eligible for NRHP	1997	
11C0057	SALT CREEK	0.3 MI S OF RD #200	5. Bridge not eligible for NRHP	1948	
11C0058	BRANCH SALT CREEK	0.6 MI W OF RD #306	5. Bridge not eligible for NRHP	1997	
11C0059	WILLOW CREEK	0.65 MI E HWY 99W	5. Bridge not eligible for NRHP	1945	1960
11C0060	WALKER CREEK	0.9 MI E HWY 99W	5. Bridge not eligible for NRHP	1974	
11C0063	WILLOW CREEK	6 MI E OF 99W	5. Bridge not eligible for NRHP	1949	1950
11C0064	COLUSA DRAIN	0.1 MI E OF RD W	5. Bridge not eligible for NRHP	1977	
11C0065	PRINCETON CODORA CANAL	0.05 MI W OF S.H. 45	5. Bridge not eligible for NRHP	1930	1983
11C0066	COLUSA DRAIN	0.1 MI E RD W	5. Bridge not eligible for NRHP	1960	
11C0068	COLUSA DRAIN	2 MI W OF SH 45	5. Bridge not eligible for NRHP	1940	1974
11C0070	MCKEE OVERFLOW	1.1 MI N HWY 162	5. Bridge not eligible for NRHP	1935	

METADATA SHEET

voided P-06-000203/CA-COL-219H
voided P-57-000140/CA-YOL-183H
voided P-57-000143/CA-YOL-186H

The original resource record by Kathleen Les, dated June 1986, recorded both the Colusa Drainage Canal and the Knights Landing Ridge Cut together. The subsequent supplements have been for one or the other resource separately. Because these resources are shown and named as different structures on the USGS maps, the recordings were separated out and the two structures were given individual Primary and Trinomials.

Additionally, the Colusa Drainage Canal crosses into two counties: Colusa and Yolo and according to IC policy, was issued Primary and Trinomial Numbers for both counties.

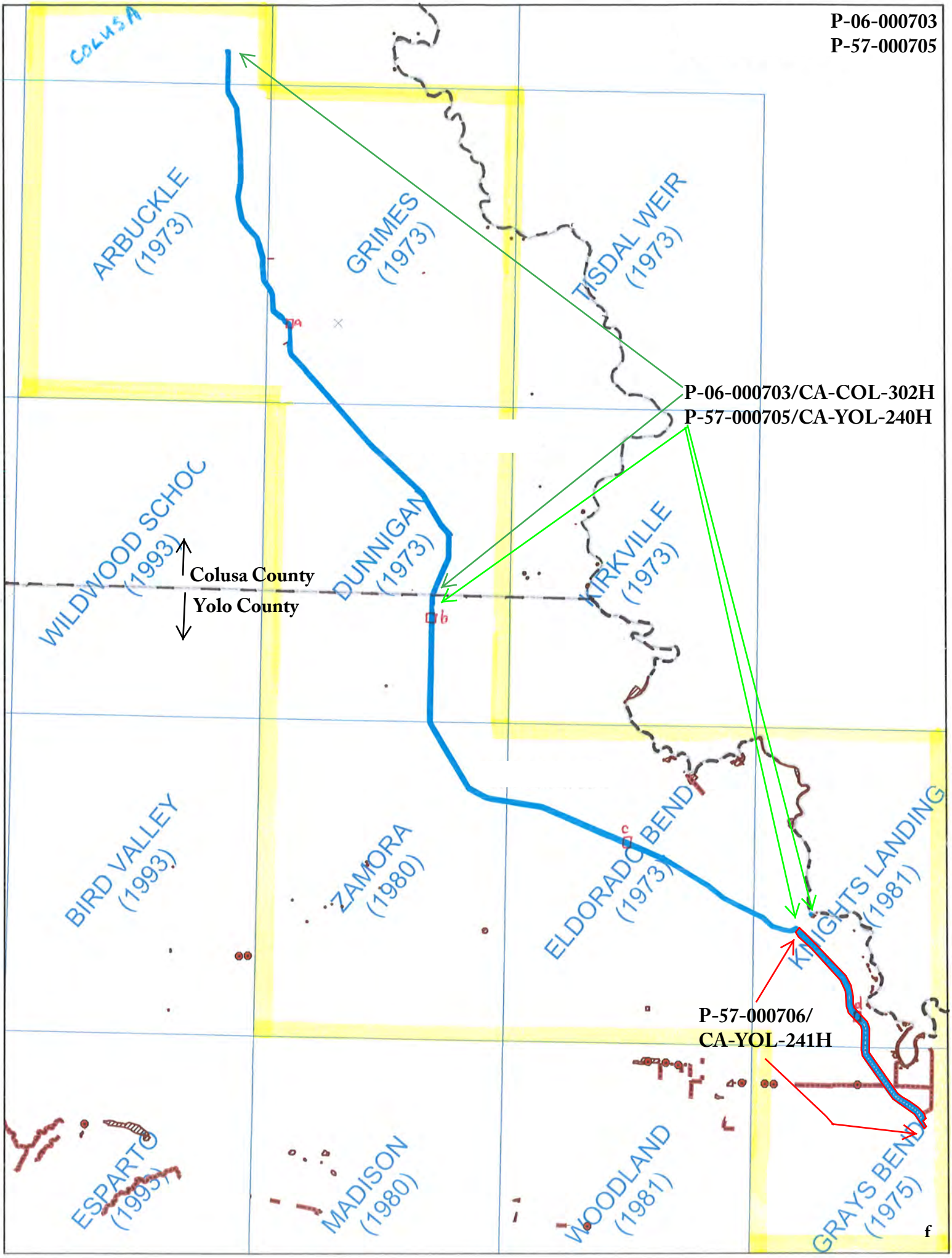
All previous Primary Numbers /Trinomials have been voided and new ones issued to prevent any further confusion.

Please see the following Primary Numbers:

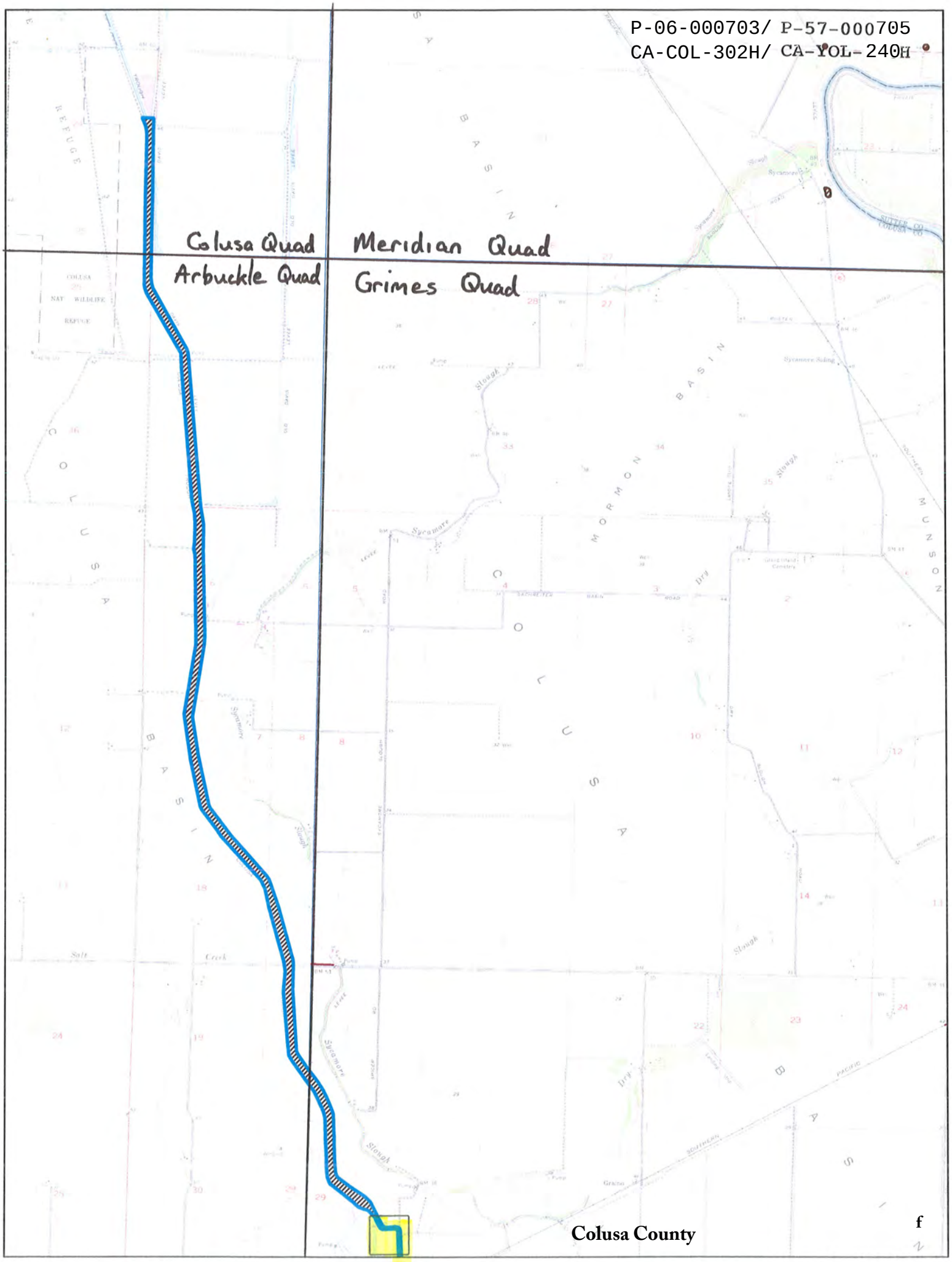
Colusa Drainage Canal: P-06-000703/CA-COL-302H
Colusa Drainage Canal: P-57-000705/CA-YOL-240H

Knights Landing Ridge Cut: P-57-000706/CA-YOL-241H

Date: May 14, 2014
NWIC Staff: Annette Neal

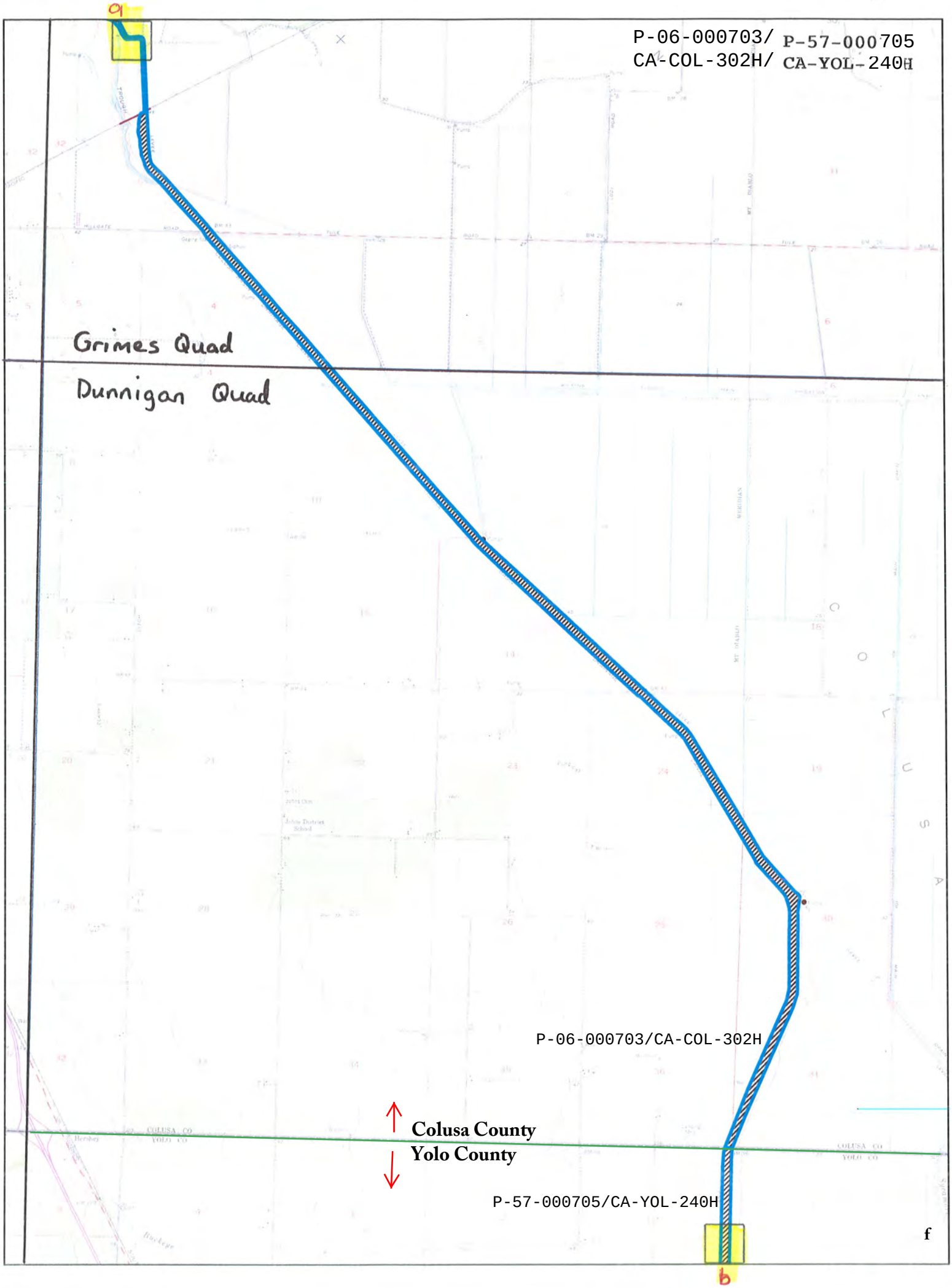

P-06-000703
P-57-000705
COLUSA
ARBUCKLE (1973)
GRIMES (1973)
TISDAL WEIR (1973)
P-06-000703/CA-COL-302H
P-57-000705/CA-YOL-240H
WILDWOOD SCHOC (1993)
Colusa County
Yolo County
DUNNIGAN (1973)
KIRKVILLE (1973)
BIRD VALLEY (1993)
ZAMORA (1980)
ELDORADO BEND (1973)
KNIGHTS LANDING (1981)
P-57-000706/
CA-YOL-241H
ESPARTO (1993)
MADISON (1980)
WOODLAND (1981)
GRAYS BEND (1975)
f

P-06-000703/ P-57-000705
CA-COL-302H/ CA-YOL-240H

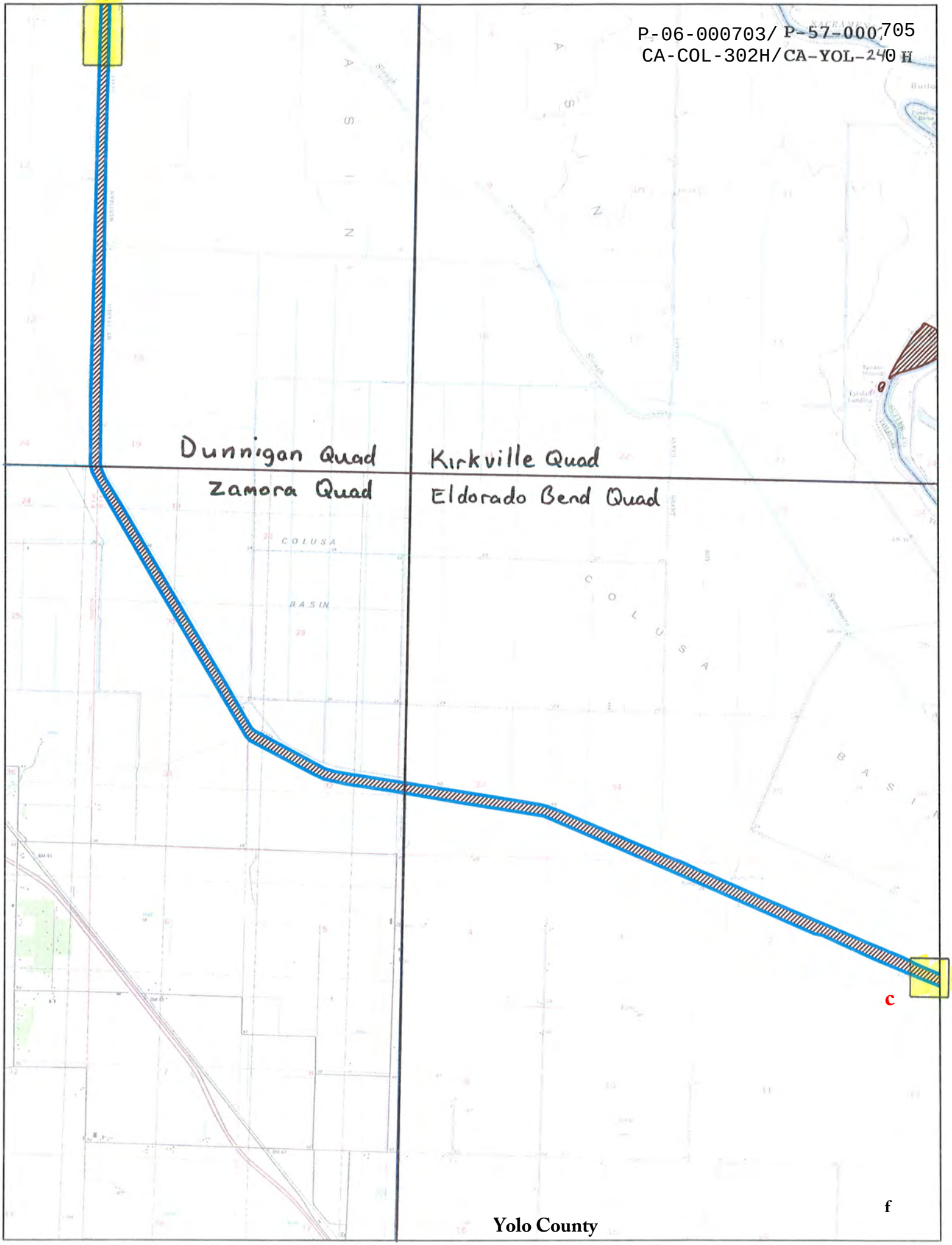


Colusa County

f


a
P-06-000703/ P-57-000705
CA-COL-302H/ CA-YOL-240H
Grimes Quad
Dunnigan Quad
P-06-000703/CA-COL-302H
Colusa County
Yolo County
P-57-000705/CA-YOL-240H
b

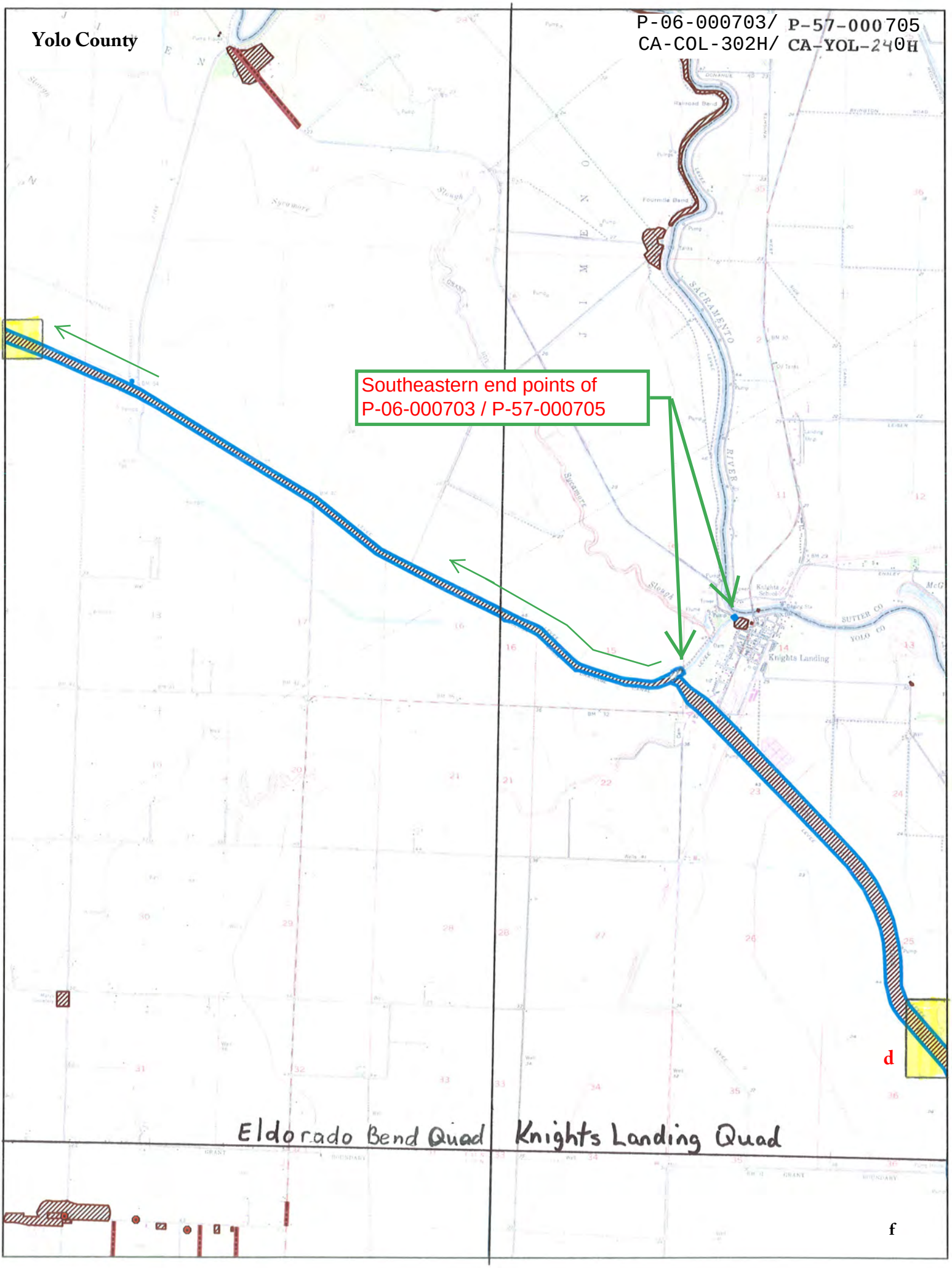
f


b
Dunnigan Quad
Kirkville Quad
Zamora Quad
Eldorado Bend Quad
COLUSA
BASIN
c
f

Yolo County

Yolo County

P-06-000703/ P-57-000705
CA-COL-302H/ CA-YOL-240H



State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

CONTINUATION SHEET

Primary # ~~P-06-203~~ P-06-000703
HRI#
Trinomial

 *Resource Name or # Colusa Basin Drainage Canal

*Recorded by: J. Coleman *Date: December 2012 ☐ Continuation ☒ Update

This site consists of the Colusa Basin Drainage Canal (CBDC). It was originally recorded in 1886 (1986) by Kathleen Les, and has been thoroughly recorded and updated in 1992 (Shapiro et. al.), 1998 (Deitz), 2002 (Blosser and Walters), and 2007 (Melvin at. al.). The CBDC consists of a series of levees around Colusa Trough that were initially completed in 1911 and later incorporated into Reclamation Districts. The purpose of the CBDC was to provide relief from periodic inundation in the upper Colusa Basin by draining overflowing waters into the Yolo Basin to the south (Les 1986). The CBDC comprises as a whole comprises 35 miles worth of levee systems that had a major impact on the local farming economy (Les 1986). The canal averages 175 feet wide and was constructed with a series of side irrigation ditches, pumphouses, iron orchard valves, headgates, and culverts. The portion of the CBDC around the eastern side of the project area covers approximately two miles.

This site was relocated during survey for the Carl Jacobson Wetland Reserve Program Project for the Natural Resoruces Conservation Service. This resource was relocated and found to have undergone no changes since its last update in 2008. The levee appears to be in good condition and has no apparent impact from either erosion, fatigue, or recreational activities. No artifacts were discovered in association with this resource. Though the entire length of the CBDC is 35 miles long, the segment being updated is only two miles long and consists of a twelve-foot high earthen levee with a gravel road on top. The embankment has ground surface visibility and contains light gravel base eroding downward from the road. Although as a whole the CBDC represents an incredible construction feat that greatly impacted local agriculture, P-06-203 as a minor two-mile segment by itself does not retain historic integrity and true meaning as a resource as a whole. As such P-06-203 does not satisfy National Register of Historic Places (NRHP) criteria for listing eligibility. SAS therefore recommends this segment of P-06-203 as ineligible for NRHP listing.

Crew: J. Coleman and G. Hutson
Date: December 2012
Affiliation: Solano Archaeological Services, 131 Sunset Ave., Ste E 120, Suisun, CA 94585

P-06-203 levee road, facing north.

e

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

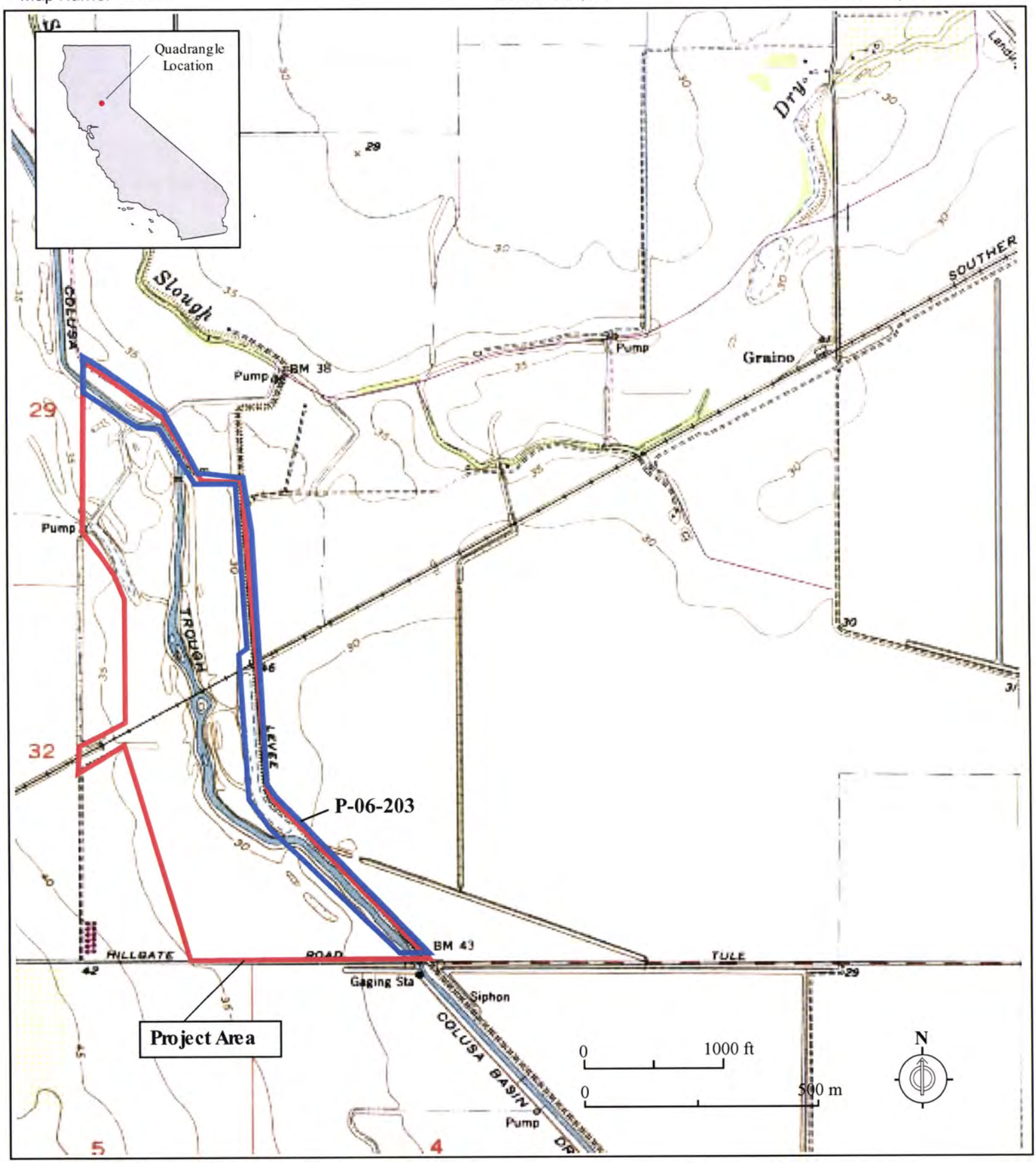
Primary # ~~P-06-203~~ P-06-000703
HRI#
Trinomial

*Resource Name or #: Colusa Basin Drainage Canal

*Map Name: Grimes

*Scale: 1:24,000

*Date of Map: 1954, PR 1973



*Required information

e

State of California c The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

Primary # ~~P-57-000143/P-06-000203~~
Trinomial ~~CA-YOL-186H/ CA-COL-219H~~

*Resource Name or #CA-YOL-186H/CA-COL-219H (Assigned by Recorder) Colusa Basin Drainage Canal

*A1. **Dimensions:** a. Length ~22 miles ( ) H b. Width 175 feet ( )

Method of Measurement: 9 Paced 9 Taped 9 Visual estimate 9 Other: Map measurements

Method of Determination (Check any that apply.): 9 Artifacts 9 Features 9 Soil 9 Vegetation 9 Topography

9 Cut bank 9 Animal burrow 9 Excavation 9 Property boundary 9 Other (Explain):x
Historical files of Army Corps of Engineers, topo maps

Reliability of Determination: 9 High X 9 Low Explain: Design memorandum on file **Limitations** (Check any tha apply): 9 Restricted access 9 Paved/built over 9 Site limits incompletely defined

9 Disturbances 9 Vegetation 9 Other (Explain):

A2. Depth: 9 None 9 Unknown Method of Determination:

*A3. **Human Remains:** 9 Present 9 Absentx 9 Possible 9 Unknown (Explain):

*A4. **Features**: (Number, briefly describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map.) None
The features, including the levee, discussed in the 1992 site record, Section 12, were integral aspects of the levee construction in 1956-1958, as documented in Design Memorandum No.3, 1957.

*A5. **Cultural Constituents:** (Describe and quantify artifacts, ecofacts, cultural residues, etc., not associated with features.)

*A6. **Were Specimens Collected?** 9 No x 9 Yes (If yes, attach Artifact Record or catalog and identify where specimens are curated.)

*A7. **Site Condition:** 9 Good 9 Fair 9 Poor (Describe disturbances.):

*A8. **Nearest Water:** (Type, distance, and direction.)

*A9. **Elevation:**

A10. Environmental Setting: (Describe culturally relevant variables such as vegetation, fauna, soils, geology, landform, slope, aspect, exposure, etc.)

A11. Historical Information: The reason for the updated site record is that archival research has revealed that the Canal and the levee on the east side or left bank (as looking downstream) are resources constructed in separate eras for different purposes. The levee does not meet the age criterion of 50 years and should not be recorded as such. Levee construction by the Army Corps of Engineers occurred between 1956-1958. The associated pump houses, iron orchard valves, head gates, culverts and side irrigation ditches were constructed with the levee. As a matter of record, the original site record for the Colusa Basin Drainage Canal, as recorded by PAR Environmental Services, Inc. In 1992 and subsequently receiving the above trinomials, states in Sections 9 and 30 that the canal is constructed of concrete. The attached photos show that is not the case.

*A12. **Age:** 9 Prehistoric 9 Protohistoric 9 1542-1769 9 1769-1848 9 1848-1880 9 1880-1914 9 1914-1945 9 Post 1945 X 9 Undetermined **Describe position in regional prehistoric chronology or factual historic dates if known:**
The levee was constructed between 1956-1958 by the Army Corps of Engineers, as documented in Design Memorandum No. 3, 1957.

d

~~P-57-000143/CA-YOL-186H~~
~~P-06-000203/CA-COL-219H~~

A13. Interpretations: (Discuss data potential, function[s], ethnic affiliation, and other interpretations)

P-06-000703/P-57-000705
CA-COL-302H/CA-YOL-240H

A14. Remarks: This information was sent to SHPO for a concurrence with a determination of "No Effect" on 6-16-98. OHP ref.-COE970827C

A15. References: (Documents, informants, maps, and other references)
Design Memorandum No. 3 1957 US Army Corps of Engineers, Sacramento District.

A16. Photographs (List subjects, direction of view, and accession numbers or attach a Photograph Record.): As noted on photos

Original Media/Negatives Kept at: US Army Corps of Engineers, 1325 J St. Sacramento, CA

***A17. Form Prepared by:** Frank Deitz **Date:** 6-29-98

Affiliation and Address: US Army Corps of Engineers, 1325 J St. Sacramento, CA

d

Figure 1. RD 108
View to north-LM 0.14-waterside

Figure 2. RD 108
View north along canal

Figure 3. RD 787
View to ~~south~~ north LM 4.10-waterside

Figure 4. RD 787
View ~~north~~ South along canal

~~P-57-000143/CA-YOL-186H~~
~~P-06-000203/CA-COL-219H~~

File
SAC 1

TATE OF CALIFORNIA — THE RESOURCES AGENCY

PETE WILSON, *Governor*

)FFICE OF HISTORIC PRESERVATION
)EPARTMENT OF PARKS AND RECREATION
.O. BOX 942896
ACRAMENTO 94296-0001
)16) 653-6624
AX: (916) 653-9824

P-06-000703/P-57-000705
CA-COL-302H/CA-YOL-240H

June 25, 1998

REPLY TO: COE970827C

Mr. Brian Doyle, Chief, Engineering Division
U.S. Army Corps of Engineers
Sacramento District
1325 J Street
Sacramento, CA 95814-2922

Project: Levee Rehabilitation, RD 108, 787, & Maintenance Area 12, Yolo and Colusa Counties, California

Dear Mr. Doyle:

In accordance with Section 106 of the National Historic Preservation Act of 1966, as amended and its implementing regulations at 36 CFR 800, the U.S. Army Corps of Engineers (Corps), Sacramento District, is continuing consultation with me concerning repairs to approximately 19 miles of the levee along the Colusa Basin Drainage Canal (CA-YOL-186H/CA-COL-219H).

The Corps has undertaken extensive archival research of the canal in an effort to evaluate its eligibility for inclusion in the National Register of Historic Places (NRHP). Based on its discovery that the Colusa Basin Drainage Canal and the levee on the east side (left bank) are resources constructed in separate eras for different purposes, the Corps has determined that the levee does not meet the age criterion of 50 years which is specified at 36 CFR 60 as a minimum requirement for consideration for the NRHP.

I commend the quality of research conducted by Corps archaeologist Frank Deitz in documenting the several potentially serious errors in the 1992 site record for the canal. I strongly encourage the Corps to submit documentation of these errors to the Northwest Information Center of the California Historical Resources Information System as a supplement to the 1992 site records.

Based on staff review of the documentation provided by the Corps, I have no objection to your determination that this undertaking will not affect historic properties as it is currently designed. I understand from your consultation letter of June 16, 1998 that the canal itself has experienced no damages and is not part of the proposed levee repair and rehabilitation.

c

COE970827C

~~P-57-000143/CA-YOL-186H~~
~~P-06-000203/CA-COL-219H~~

P-06-000703/P-57-000705
CA-COL-302H/CA-YOL-240H

Your consideration of historic properties in the project planning process is appreciated. If you have any questions regarding this review, please contact Chuck Whatford of my staff at (916) 653-2716 or calshpo.chuck@quiknet.com.

Sincerely,

Cherilyn Widell
State Historic Preservation Officer

c

~~P-57-000143/CA-YOL-186H-~~
~~P-06-000203/Ca-COL-219H-~~

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

P-06-000703/P-57-000705
CA-COL-302H/CA-YOL-240H

REPLY TO
ATTENTION OF

June 16, 1998

Phase III Final Restoration Branch

Ms. Cherilyn Widell
State Historic Preservation Officer
California State Department of Parks and Recreation
Post Office Box 942896
Sacramento, California 94296-0001

Dear Ms. Widell:

The U.S. Army Corps of Engineers (Corps), Sacramento District, is in the process of repairing and rehabilitating the levee systems on the Feather, Bear, Sacramento, and San Joaquin Rivers. In accordance with Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations at 36 CFR 800, the Corps is consulting with you regarding proposed repairs to a previously recorded resource of historic age. The Corps also consulted in 1997 (OHP reference: COE970827C) for the Colusa Basin Drainage Canal (CA-YOL-186H/CA-COL-219H), at which time you concurred with our determination that the undertaking would not affect any historic property. The California Department of Water Resources has requested our assistance in repairing approximately 19 miles of the levee.

The Corps has undertaken extensive archival research of the canal to make a determination of eligibility for the National Register of Historic Places. The discovery that the Colusa Basin Drainage Canal and the levee on the east side or left bank are resources constructed in separate eras for different purposes, has enabled the Corps to determine that the levee does not meet the age criterion of 50 years. When it does become 50 years of age, it will not meet the integrity criteria because of the continual modifications, maintenance and repairs over the fifty-year period. The upper 11.9 miles of the levee was constructed in 1958 and the lower portion to Knight's Landing was completed in 1956, as shown on Plate I and page 2, paragraph 4.a. of the 1957 Design Memorandum.

The site record for the canal, as recorded by PAR Environmental Services, Inc. in 1992 and subsequently receiving trinomial designations, is in error on several points. The 1992 site record states in Sections 9 and 30 that the canal is constructed of concrete. 1998 photos (Figures 1-4) show that is not the case. The record also states in Section 9 that the site consists of the canal, possibly constructed in 1919-1920, "... associated levees, side irrigation ditches, and features (pump houses, iron orchard valves, head gates, culverts)." As also discussed on page 3 of the Design Memorandum, the pump houses, valves, head gates and culverts were integral aspects of the levee construction, leading to the conclusion that only the canal is the requisite age.

The canal has experienced no damages and will not have any repairs or modifications under a federal project. It must be recognized, however, that the canal is dredged as needed by ranchers or the District with the spoils being deposited on the banks, thereby affecting the integrity. The project will have "No Effect" on an historic property because the levee is not the necessary age for consideration.

Your concurrence with our determination of "No Effect" for the proposed project is requested. Please contact Frank Deitz at (916) 557-6864 if you have any questions or need additional information.

c

~~P-57-000143/CA-YOL-186H~~
~~P-06-000203/CA-COL-219H~~

Sincerely,

P-06-000703/P-57-000705
CA-COL-302H/CA-YOL-240H

Brian Doyle
Chief, Engineering Division

Enclosures

cc:
CESPK-PD-R (Johnson)
CESPK-ED-L
CESPK-ED

DEITZ
CESPK-ED-L

~~WELSH~~
~~CESPK-ED-L~~

WILLIAMS
CESPK-ED-L

for DOYLE
CESPK-ED

c

P-06-000703/P-57-000705
CA-COL-302H/CA-YOL-240H

~~CA-COL-219H~~

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

~~CA-YOL-186H~~

Permanent Trinomial:

ARCHAEOLOGICAL SITE RECORD

Supplement:

Other Designations: AC-S-5

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1. **Counties:** Colusa and Yolo

2. **USGS Quads:** Colusa, California 7.5 minute series 1952 (photorevised 1973); Arbuckle, California 7.5 minute series 1952 (photorevised 1973); Grimes, California 7.5 minute series 1954 (photorevised 1973); Dunnigan, California 7.5 minute series 1953 (photorevised 1973); Zamora, California 7.5 minute series 1953 (photorevised 1980); El Dorado Bend, California 7.5 minute series 1953 (photorevised 1980); Knights Landing, California 7.5 minute series 1953 (photorevised 1980).

3. **UTM Coordinates:** Zone 10 The following UTM coordinates depict the linear alignment of the site. The UTMs are located one mile apart or at the site's deviation of 100 meters or more from a straight line (see attached site location map).

m Easting	m Northing	m Easting	m Northing	m Easting	m Northing	
1. 584520	4332260	15. 587710	4319040	29. 596780	4300040	
2. 584560	4330540	16. 589010	4317750	30. 599190	4299690	
3. 584960	4329860	17. 590840	4315750	31. 600660	4299070	(600760)
4. 585160	4328200	18. 592110	4314560	32. 602350	4298480	
5. 585230	4326770	19. 593590	4313260	33. 603780	4297870	(603850)
6. 585140	4325960	20. 594810	4311500	34. 605360	4297160	(4297240)
7. 585320	4324980	21. 594810	4310460	35. 606520	4296440	
8. 586040	4324180	22. 594160	4308840	36. 607240	4295940	
9. 586280	4323340	23. 594180	4307160	37. 609000	4295120	
10. 586340	4322380	24. 594200	4305460	38. 609380	4294820	
11. 586780	4321720	25. 594200	4303790	39. 610180	4294630	
12. 586840	4321070	26. 594210	4303220	40. 610450	4294750	
13. 587220	4320800	27. 595100	4301800			
14. 587460	4205600	28. 595960	4300460			

4. **Townships** 11, 12, 13, 14, and 15 N **Ranges** 1W, 2 W, 1E and 2 E; Sections 6, 7, and unsectioned land (T15N, R1W); Section 25 (T15N, R2W); Sections 6, 7, 18, 29, 32, and unsectioned land (T14N, R1W); Sections 4, 10, 14, and 24 (T13N, R1W); Sections 19, 30, and 31 (T13N, R1E); Sections 1, 12, 13, and 24 (T12N, R1W); Sections 19, 30, 31, 32, 33, and 34 (T12N, R1E); Sections 2, 3, and 12 (T11N, R1E); Sections 15, 16, and unsectioned lands (T11N, R2E). Base M.D.M.

5. **Map Coordinates:** The following map coordinates depict the linear alignment of the site and correspond with the UTM coordinates described above. All are taken from the NW corner of the respective map.

mmE	mmS	mmE	mmS	mmE	mmS
Colusa Quad.					
1. 369	517	14. 37	430	28. 381	117
Arbuckle Quad.					
2. 368	14	15. 46	494	29. 411	135
3. 385	43	16. 111	547	30. 65	150
		Dunnigan Quad.		El Dorado Bend Quad.	
4. 392	112	17. 176	56	31. 130	177
5. 395	171	18. 228	106	32. 194	202
6. 390	205	19. 288	160	33. 257	228
7. 398	245	20. 337	233	34. 320	259
8. 427	278	21. 337	276	35. 367	289
9. 438	313	22. 310	343	36. 396	310
				Knights Landing Quad.	
10. 441	353	23. 310	412	37. 29	346
Grimes Quad.					
11. 10	382	24. 310	483	38. 34	359
12. 11	409	25. 309	552	39. 68	367
		Zamora Quad.			
13. 27	420	26. 311	2	40. 79	363
14. 37	430	27. 347	60		

6. **Elevation:** 25 to 35 feet above mean sea level.

7. **Location:** U.S. Army Corps of Engineers./ The site is situated along a canal that passes through flat agricultural fields./ From the intersection of Highway 45 and County Road 102 in the city of Knights Landing, proceed northwest on Highway 45 for approximately 0.2 miles to the site (i.e., the Colusa Basin Drainage Canal). The site extends in a northeast direction for approximately 33 miles from this point.

8. **Prehistoric** **Historic** XX **Protohistoric**

9. **Site Description:** The site consists of the Colusa Basin Drainage Canal (Canal) and its associated levees, side irrigation ditches, and features (pumphouses, iron orchard valves, headgates, culverts). The Canal is constructed from concrete, averages 175 feet wide, and was built between 1919 and 1920 (Fuentes 1992).

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10. **Area:** ca. 53,108 m (length) x ca. 90 m (width) ca. 3,752,080 m^2

    Method of Determination: Scaled topographic maps, surface distribution of cultural features, and project boundaries.

11. **Depth:** Unknown **Method of Determination:** Surface examination only.

12. **Features:** Six types of features are associated with the Canal: levees, side irrigation ditches, pumphouses, culverts, concrete remnants, and iron orchard valves. The levees parallel the entire length of the Canal, averaging 20 feet wide and sloping about 45 degrees. Dirt roads provide access along the levee crown. Nearly 90 percent of the Canal is characterized by earthen side irrigation ditches that parallel the land-side of the levees. The ditches average 40 feet wide and six feet deep. Pumphouses are constructed in the side ditches to transport water through various types of culverts (i.e., concrete or iron) from the Canal into the side ditches. The pumphouses are wood frame constructions with corrugated sheet metal roofs and siding. Iron orchard valves (12-inch diameter, 24-inch diameter, and 36-inch diameter) situated in the ditches release water into the agricultural fields. Various types of manufacturing labels on the valves read "Fresno Irrigation Appliances," "Armco," and "Waterman." Unidentified concrete remnants (i.e., storage containers) occur along the toe of the levees.

    Feature A refers to the concrete headgates located on the west side of County Road 98A at its junction with County Road 108 (the levee crown access road). The headgates are manufactured from concrete reinforced with iron rebar. Six concrete pillars measuring 4.7 feet wide by 13 inches thick support five crank-shaft iron valves. A manufacturing stamp on the valves reads "H721." The total length of the headgates on the north side of County Road 108 measure about 50 feet long by 20 feet tall. The matching set of gates located on the opposite side of the road are positioned on the water-side of the levee.

13. **Artifacts:** None noted.

14. **Non-Artifactual Constituents and Faunal Remains:** None noted.

15. **Date Recorded:** April 10, 1992

16. **Recorded By:** Lisa Shapiro, Will Shapiro, Deanna Kiser and James Gary Maniery.

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17. **Affiliation and Address:** PAR ENVIRONMENTAL SERVICES, INC., P.O. Box 160756, Sacramento, CA 95816-0756. The record is on file at the U. S. Army Corps of Engineers, Sacramento District, 1325 J Street, Sacramento, CA. 95814.

18. **Human Remains:** None noted.

19. **Site Disturbances:** Numerous levee stabilization projects have obliterated the original levees constructed between 1919 and 1920 (Fuentes 1992; McCollam 1957). On-going maintenance programs have probably affected the associated features. Levee stabilization work is proposed during 1992.

20. **Nearest Water (type, distance and direction):** The Canal meets the Sacramento River (the closest permanent source of fresh water) in the city of Knights Landing.

21. **Vegetation Community (site vicinity):** Valley Foothill Riparian (Grenfell 1988:86-87); Cropland (Zeiner 1988:138-139).

22. **Vegetation (on site):** A continuous ground cover of annual grasses dominates the sides of the levees. Various types of riparian vegetation (e.g., willows) grow along the water-side of the Canal.

23. **Site Soil:** Light-brown and medium-brown silty loam.

24. **Surrounding Soil:** Same.

25. **Geology:** Cenozoic alluvium, lake, playa, and terrace deposits, consisting of marine and non-marine sedimentary rocks (Jennings 1977).

26. **Landform:** Agricultural fields.

27. **Slope:** 0 degrees 28. **Exposure:** Open

29. **Landowner(s) (and/or tenants) and Address:** U. S. Army Corps of Engineers, Sacramento District, 1325 J Street, Sacramento, CA. 95814.

30. **Remarks:** This record documents approximately 33 miles of the Colusa Basin Drainage Canal, from the city of Colusa in Colusa County and extending in a southeast direction toward the city of Knights Landing in Yolo County. The north and south endpoints of the site are based on project boundaries; the Canal extends further northwest than the endpoint depicted in this record, and also continues an estimated

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30. **Remarks (Cont.):** half-mile beyond the south endpoint (near Knights Landing). Features associated with the Canal as documented in this site record are those noted inside the project boundaries. The study area involves discontinuous segments of 10-foot-wide and 100-foot-wide corridors on the north and east sides of the Canal leeves. Features of the site occurring outside the project (e.g., on the south and west sides of the Canal) are not included.

Initial construction of the Canal was begun in 1903 as a result of linear borrow trenches created by the building of levees in the area (Fuentes 1992). Between 1919 and 1920 the borrow trench was widened and improved to construct the concrete Canal. The earliest depiction of the Canal on historic Colusa and Yolo County maps is 1915 (Kearth and Beckwith 1915). County maps from 1928 and 1939 identify the Canal as the "Main Canal" (Felknor 1928; Metsker 1939).

31. **References:**

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31. References (Cont.):

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1939 Metsker's Map of Colusa County, California. Compiled by Metsker the Map Man, San Francisco. Map on file, California Room, California State Library, Sacramento.

Zeiner, David C.
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32. Name of Project: Cultural Resources Inventory for the Colusa Basin/Knights Landing Ridge Cut Levees Project, Colusa and Yolo Counties, California.

33. Type of Investigation: Surface survey.

34. Site Accession Number: No collections. **Curated at:** N/A

35. Photos: PAR 91-53 B/W Roll No. 1, Frame 6; PAR 91-53 B/W Roll No. 2, Frames 13-20 (see attached photographic record).

P-06-000703/P-57-000705
CA-COL-302H/CA-YOL-240H

~~-CA-COL-219H-~~

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

~~CA-YOL-186H-~~

Permanent Trinomial: _____

ARCHAEOLOGICAL PHOTOGRAPHIC RECORD

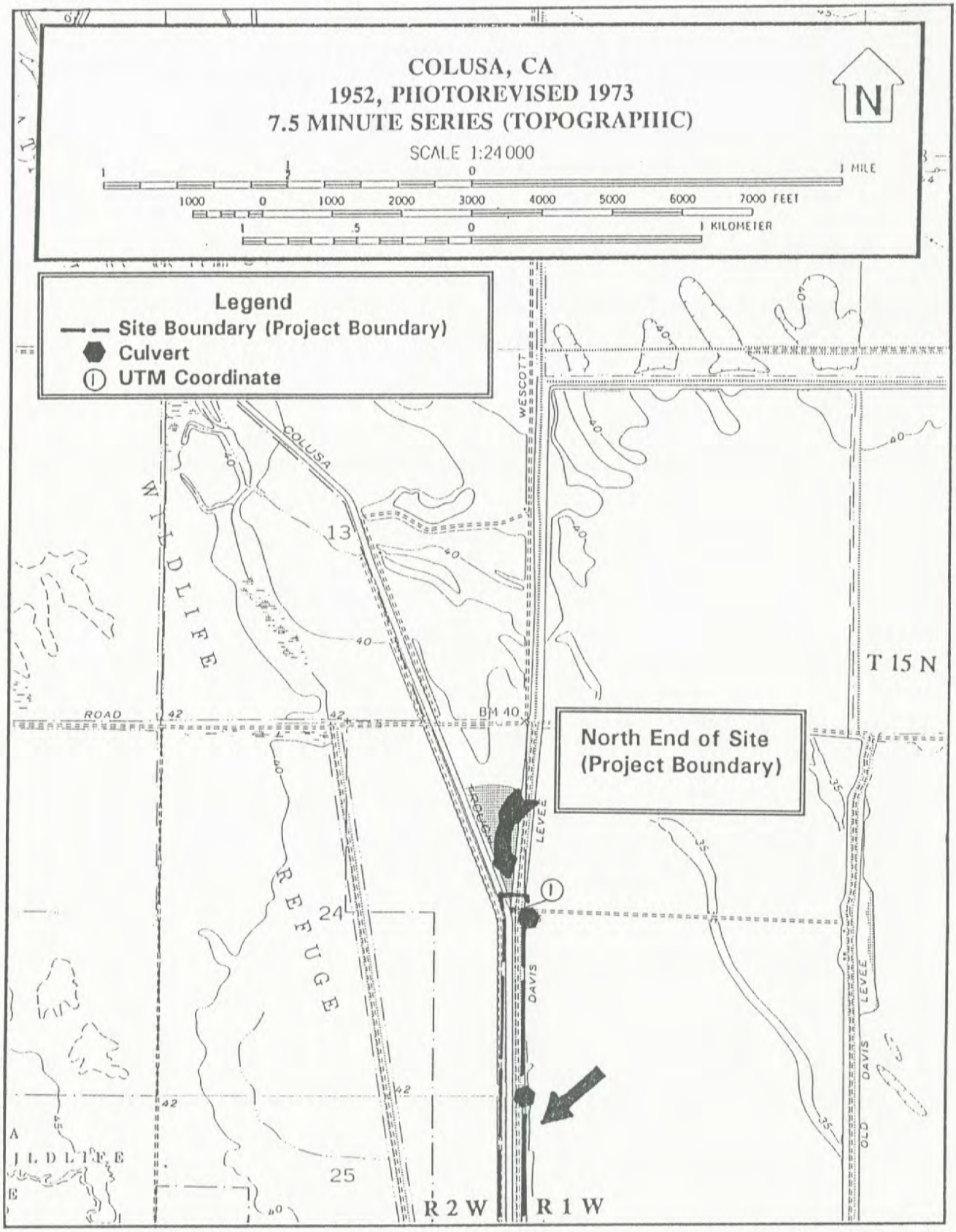
Temporary Number: AC-S-5

Agency Designation: _____

Page 7 of 19.

Camera and Lens Type	Film Type and Speed	Year
Olympus OM-1/28mm Lens	Plus X ASA 125	1992

Mo/ Day	Time	Exp/ Frame	Subject Description	View	Access. Number
4 1	11:30	1 6	View of concrete storage container in the north project study area.	NW	PAR B/W Roll 1
4 2	11:30	1 13	View of headgates in project study area at intersection of County Road 108 and Road 98A.	E	PAR B/W Roll 2
4 2	11:30	2 14	Close-up view of the headgates on the Colusa Basin Drainage Canal.	S	PAR B/W Roll 2
4 2	11:30	3 15	View of pumphouse and side irrigation ditch in project study area on the Colusa Basin Drainage Canal.	W	PAR B/W Roll 2
4 2	11:30	4 16	View of project study area in right frame and the Colusa Basin Drainage Canal in left frame.	W	PAR B/W Roll 2
4 2	11:40	5 17	View of typical iron orchard valve on an irrigation ditch in the north project area.	N	PAR B/W Roll 2
4 2	11:40	6 18	View of project study area with orchard valve in center frame.	N	PAR B/W Roll 2
4 2	11:40	7 19	View showing project study corridor on left side of levee road and the Colusa Basin Drainage Canal in right frame.	E	PAR B/W Roll 2
4 2	11:50	8 20	View showing the headgates and levee road near the intersection of County Road 102 and Road 98A.	E	PAR B/W Roll 2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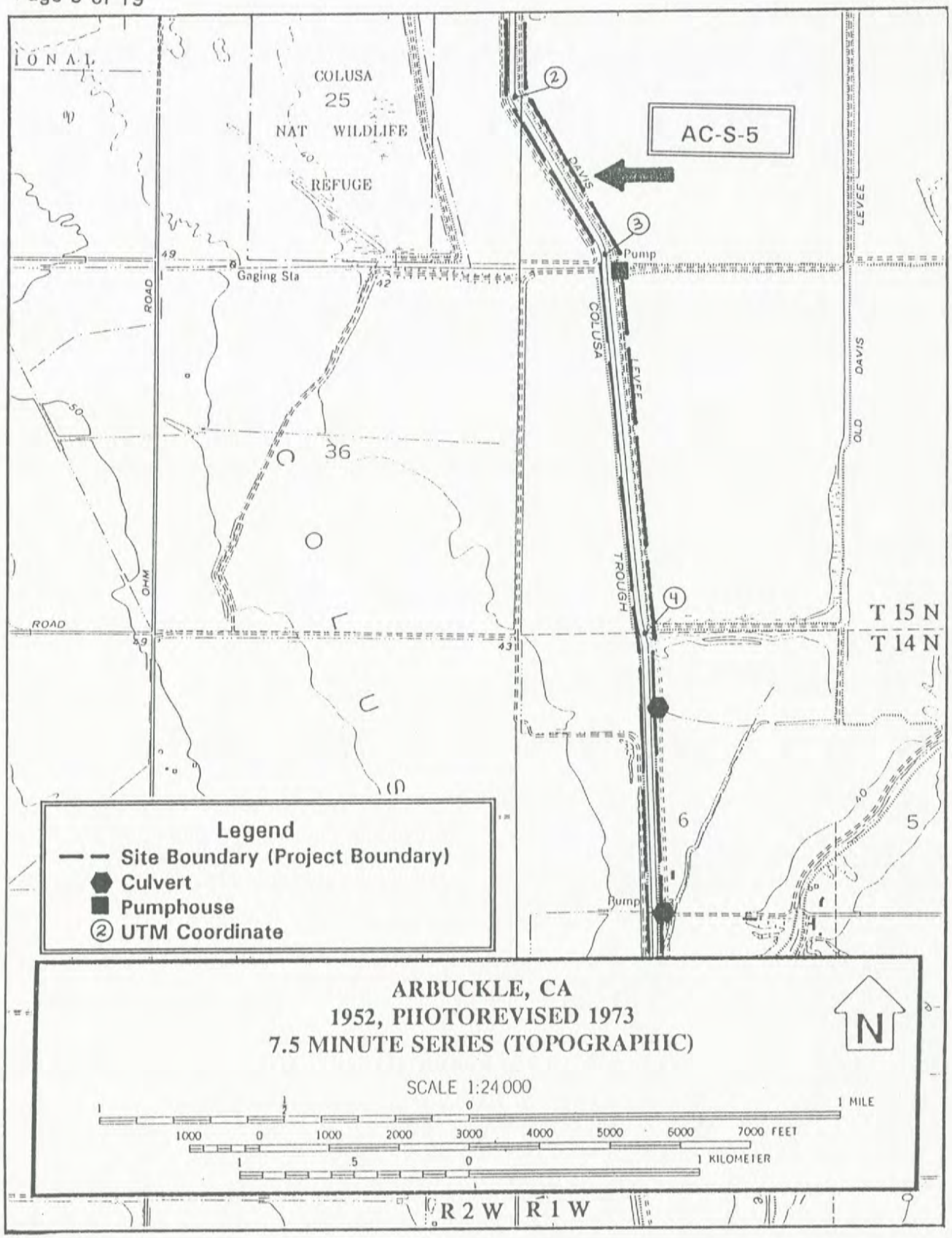
1 KILOMETER
Legend
Site Boundary (Project Boundary)
Culvert
UTM Coordinate
North End of Site
(Project Boundary)
WESCOTT
COLUSA
WILDLIFE
REFUGE
ROAD
BM 40
TROUGH
LEVEE
DAVIS
OLD DAVIS LEVEE
13
24
25
T 15 N
R 2 W
R 1 W


AC-S-5
COLUSA
25
NAT WILDLIFE
REFUGE
Gaging Sta
Pump
COLUSA
LEVEE
TROUGH
DAVIS
OLD
LEVEE
ROAD
OHM
ROAD
36
T 15 N
T 14 N
6
5
Pump
Legend
Site Boundary (Project Boundary)
Culvert
Pumphouse
UTM Coordinate
ARBUCKLE, CA
1952, PHOTOREVISED 1973
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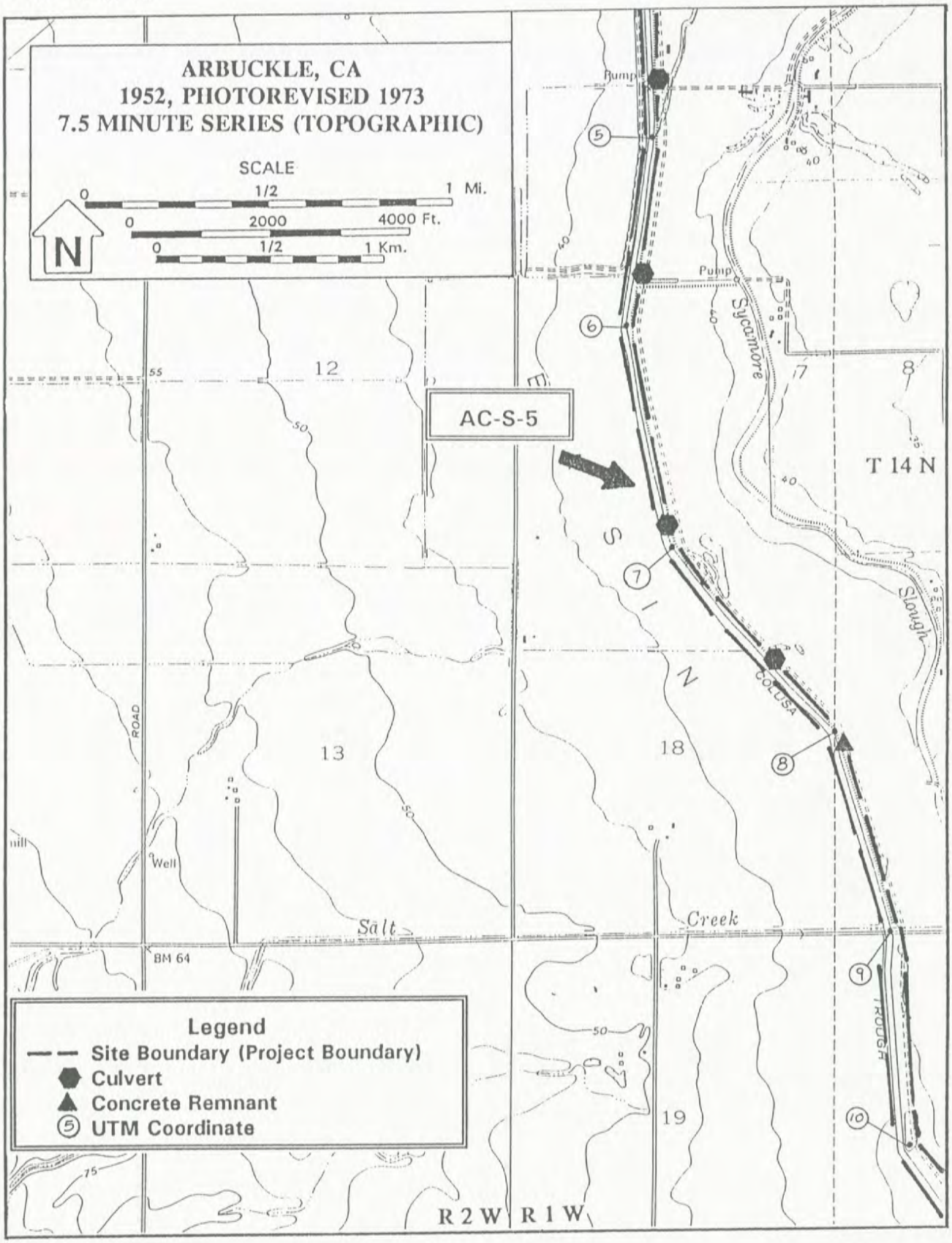
7000 FEET
1 KILOMETER
R 2 W
R 1 W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SCALE
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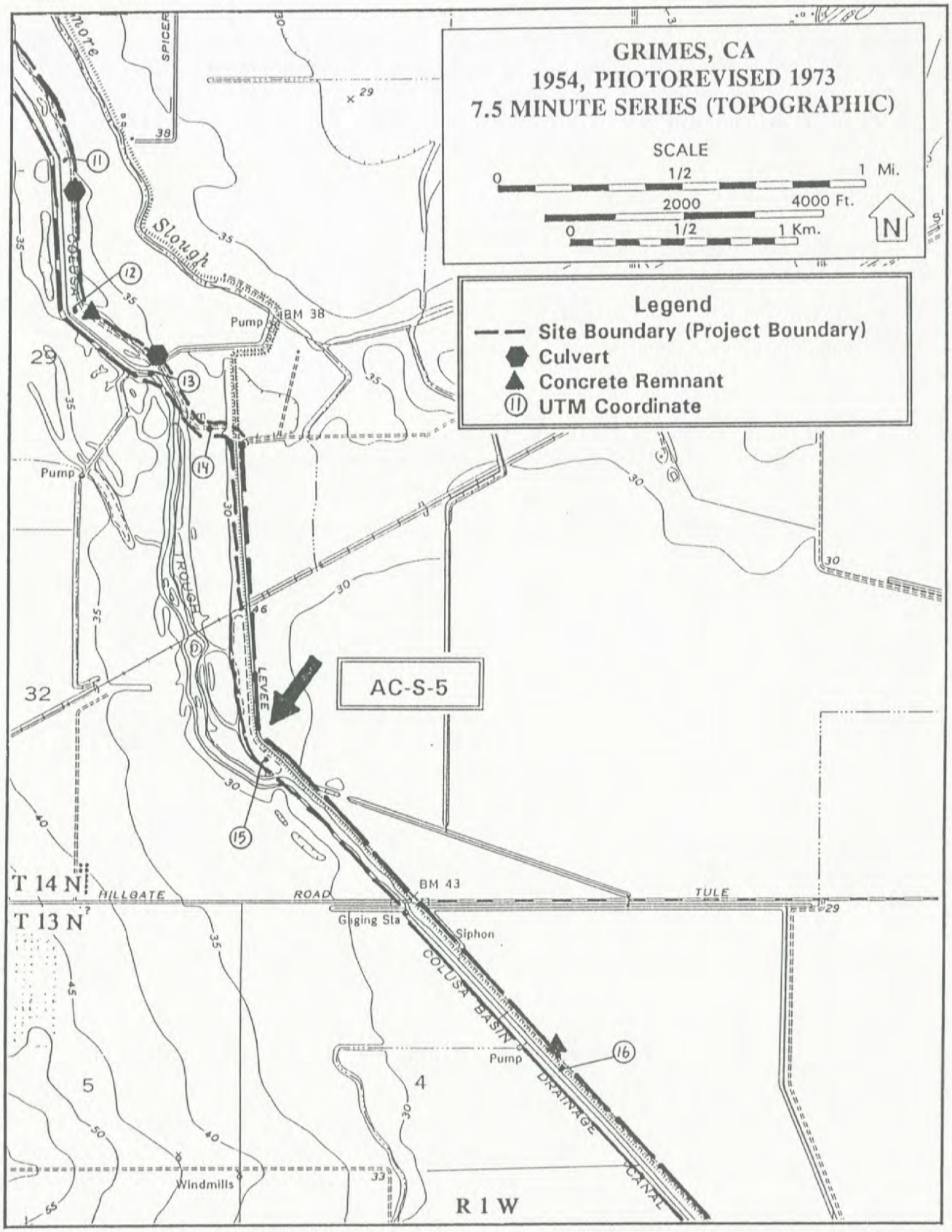
N
AC-S-5
T 14 N
R 2 W
R 1 W
Sycamore
Slough
COLUSA
TROUGH
Salt
Creek
Pump
Well
BM 64
ROAD
12
13
18
19
7
8
Legend
Site Boundary (Project Boundary)
Culvert
Concrete Remnant
UTM Coordinate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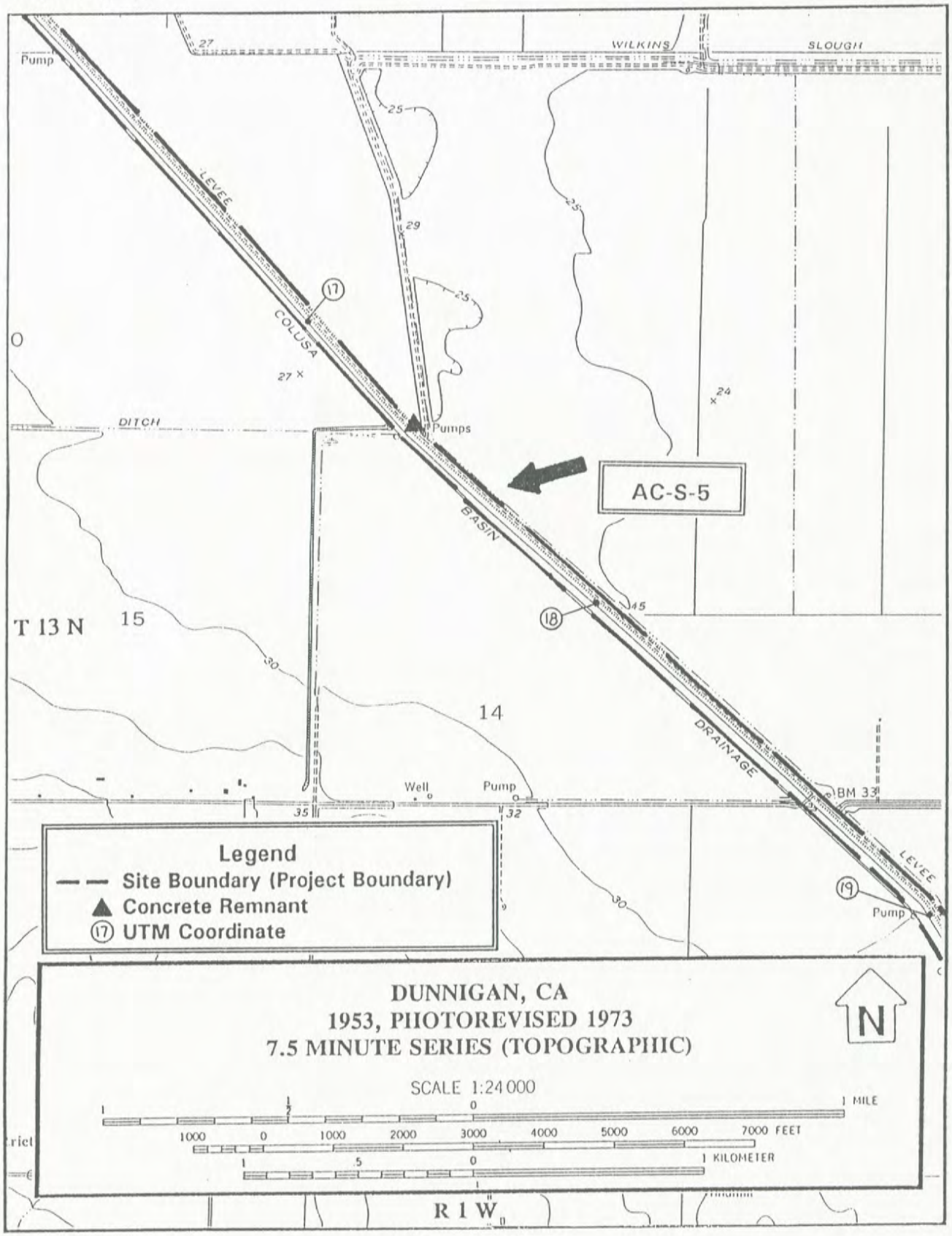
Legend
Site Boundary (Project Boundary)
Culvert
Concrete Remnant
UTM Coordinate
AC-S-5
Slough
SPICER
Pump
BM 38
TROUGH
LEVEE
T 14 N
T 13 N
HILLGATE
ROAD
BM 43
TULE
Gaging Sta
Siphon
COLUSA BASIN
DRAINAGE
CANAL
Windmills
R 1 W


WILKINS
SLOUGH
Pump
LEVEE
COLUSA
DITCH
Pumps
BASIN
DRAINAGE
AC-S-5
T 13 N
15
14
Well
Pump
BM 33
LEVEE
Pump
Legend
Site Boundary (Project Boundary)
Concrete Remnant
UTM Coordinate
DUNNIGAN, CA
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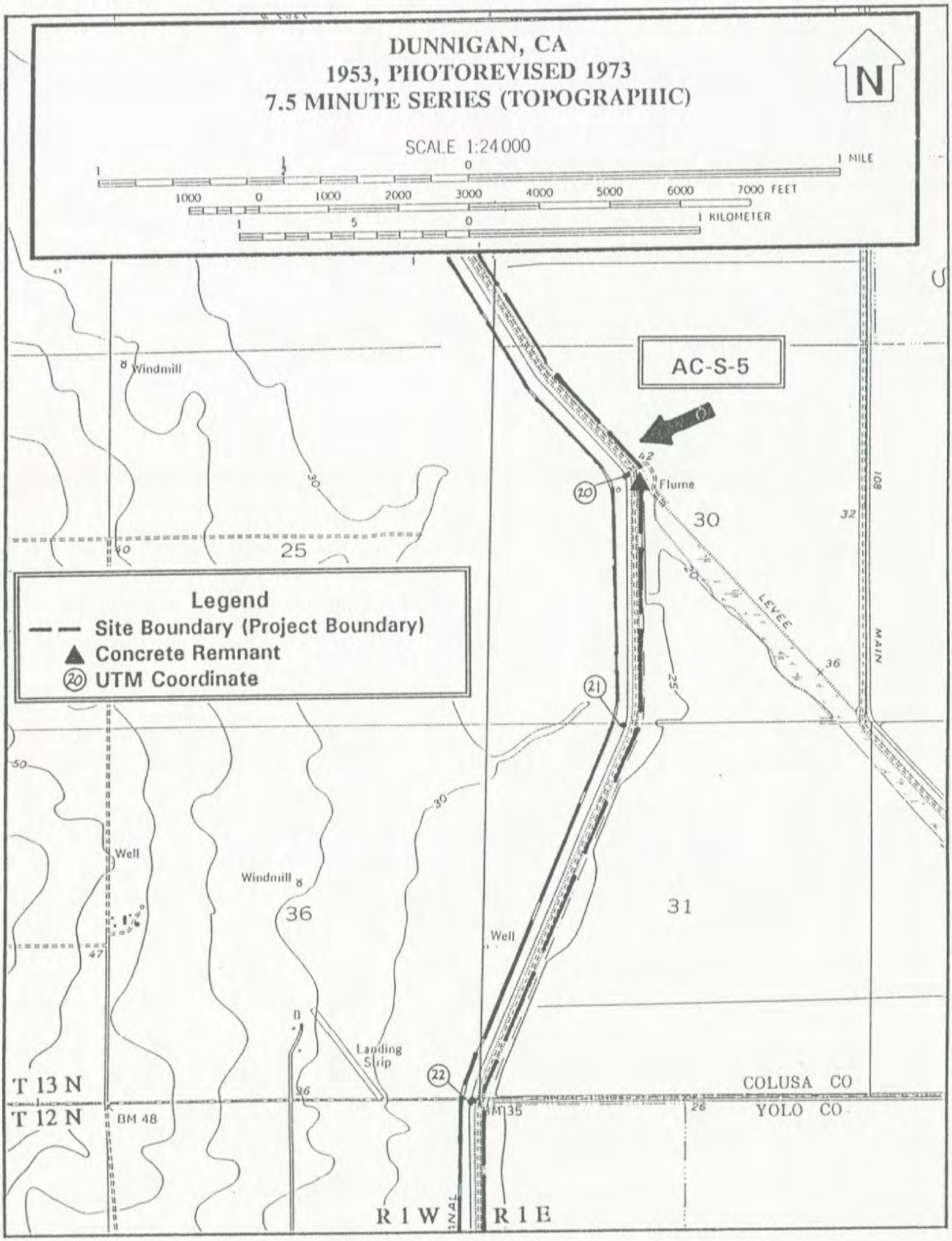
1 KILOMETER
R 1 W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1953, PHOTOREVISED 1973
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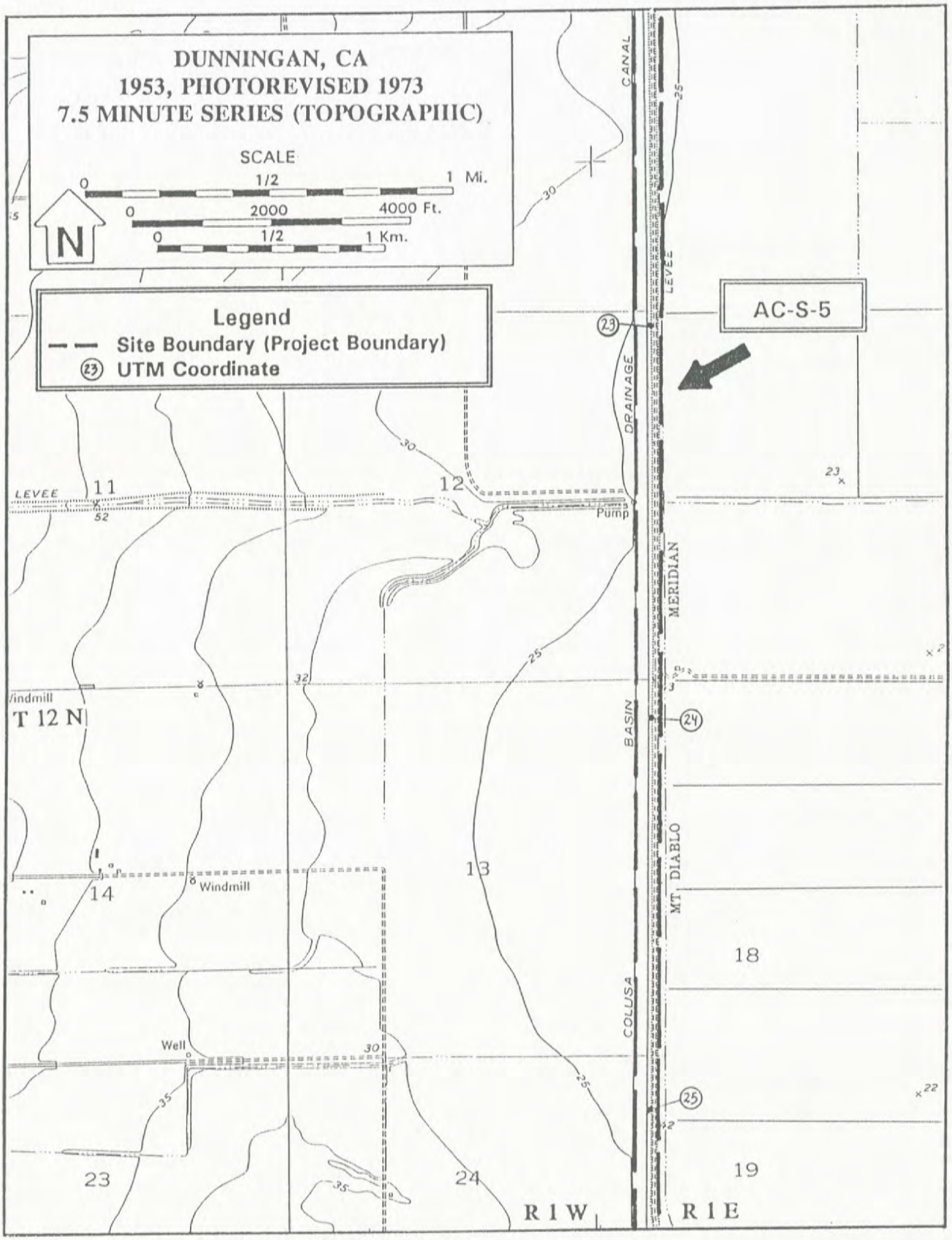
N
SCALE 1:24 000
1 MILE
7000 FEET
1 KILOMETER
AC-S-5
Windmill
Flume
LEVEE
MAIN
Legend
Site Boundary (Project Boundary)
Concrete Remnant
UTM Coordinate
Well
Windmill
Landing Strip
Well
BM 48
BM 35
COLUSA CO
YOLO CO
T 13 N
T 12 N
R 1 W
R 1 E
25
30
31
36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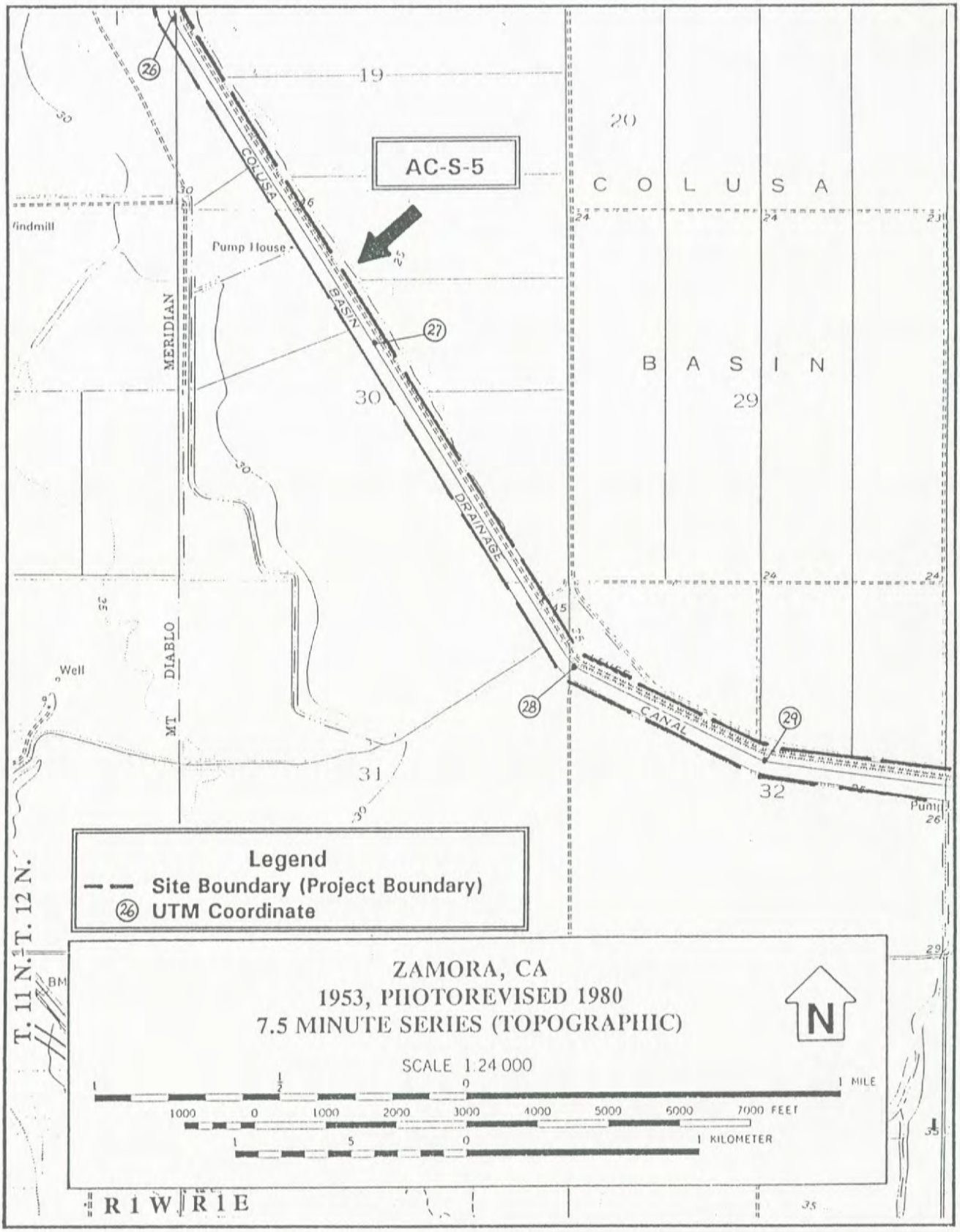
0 1/2 1 Km.
N
Legend
Site Boundary (Project Boundary)
UTM Coordinate
AC-S-5
CANAL
LEVEE
DRAINAGE
BASIN
COLUSA
MERIDIAN
MT DIABLO
LEVEE
Pump
Windmill
T 12 N
Windmill
Well
11
12
13
14
18
19
23
24
R 1 W
R 1 E


AC-S-5
COLUSA BASIN DRAINAGE CANAL
COLUSA BASIN
Windmill
Pump House
Well
MT DIABLO MERIDIAN
19
20
29
30
31
32
26
27
28
29
Legend
Site Boundary (Project Boundary)
UTM Coordinate
ZAMORA, CA
1953, PHOTOREVISED 1980
7.5 MINUTE SERIES (TOPOGRAPHIC)
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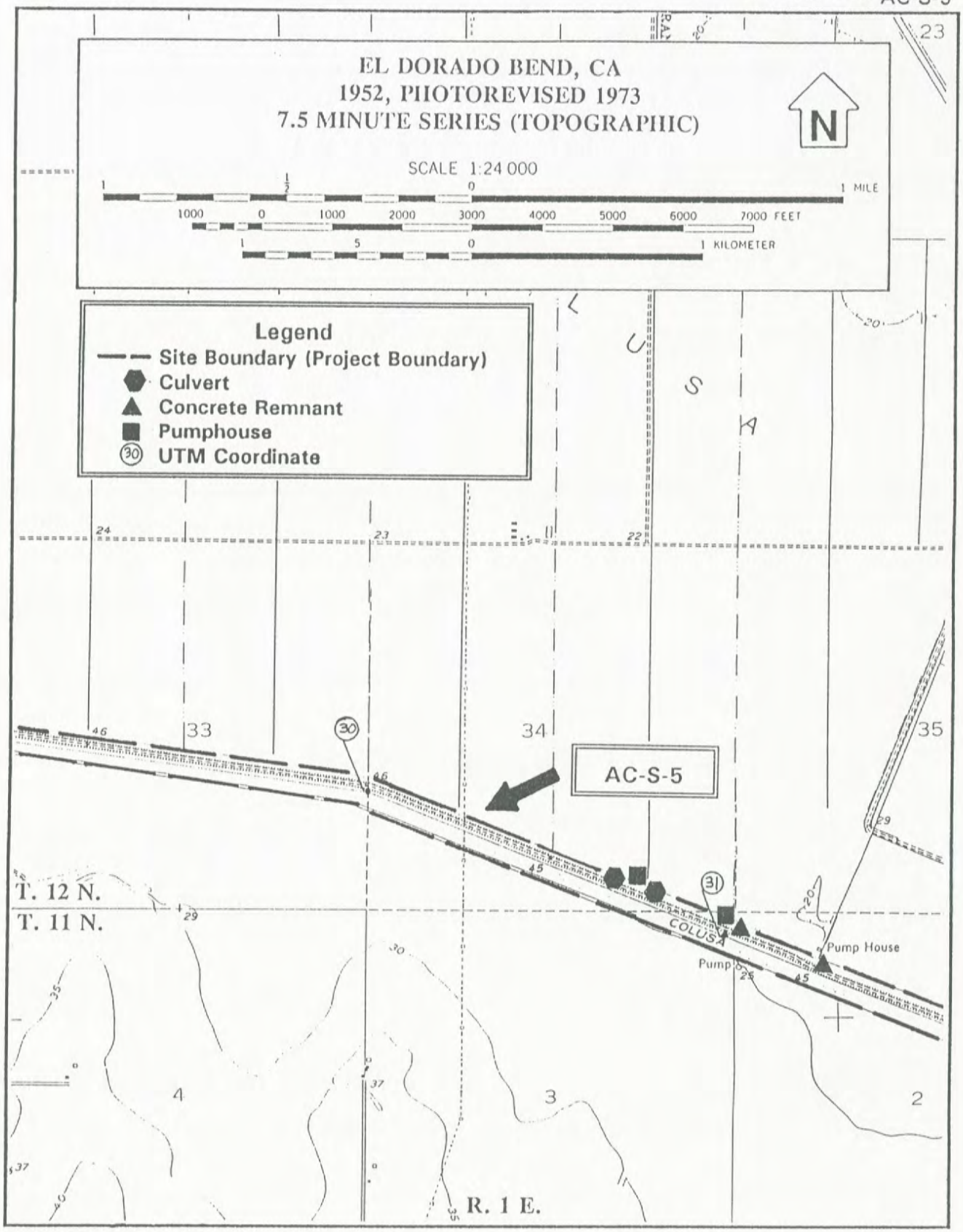
N
T. 11 N.
T. 12 N.
R 1 W
R 1 E


EL DORADO BEND, CA
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N
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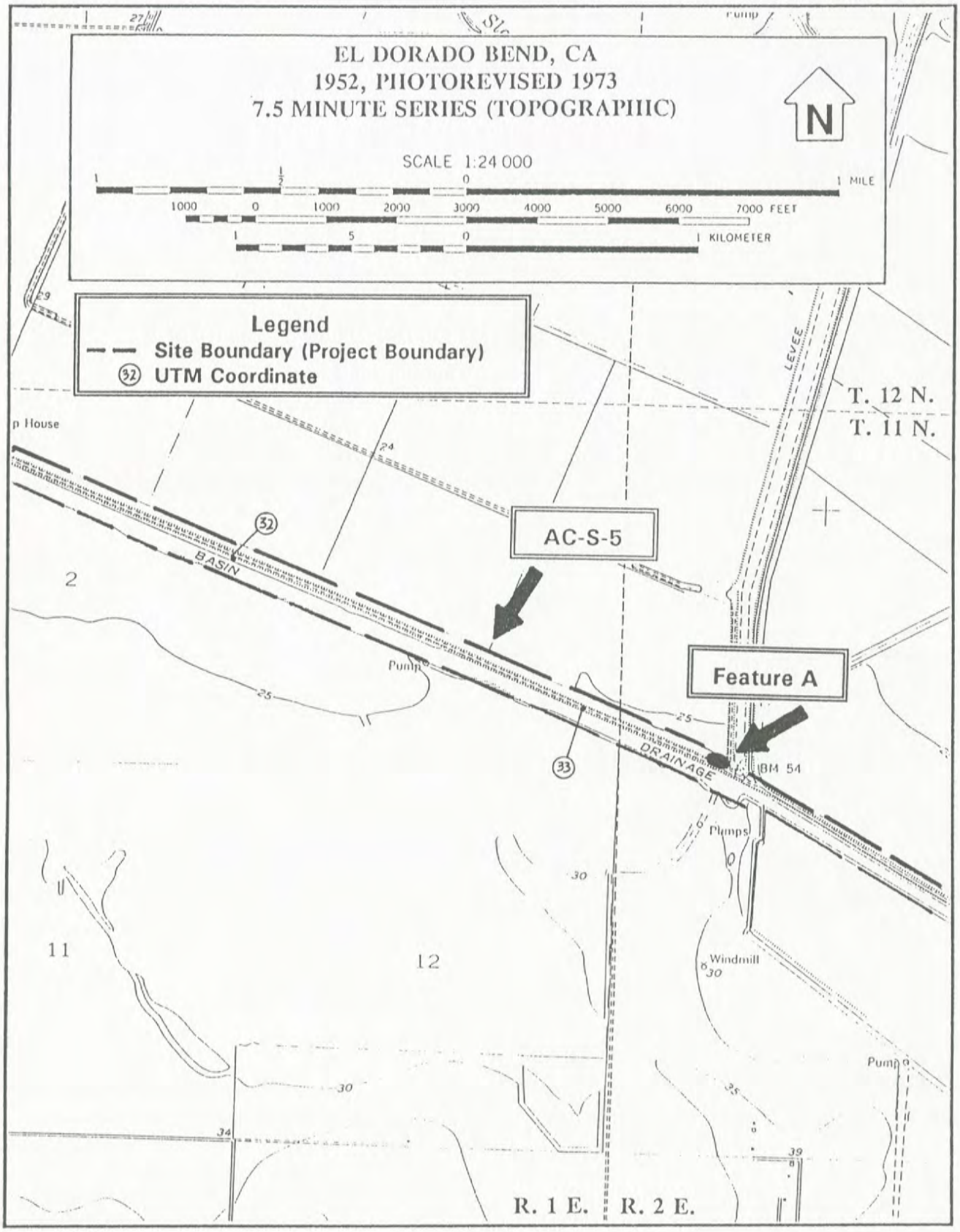
7000 FEET
1 KILOMETER
Legend
Site Boundary (Project Boundary)
Culvert
Concrete Remnant
Pumphouse
UTM Coordinate
AC-S-5
T. 12 N.
T. 11 N.
R. 1 E.
COLUSA
Pump
Pump House
33
34
35
4
3
2
23
24
22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1952, PHOTOREVISED 1973
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SCALE 1:24 000
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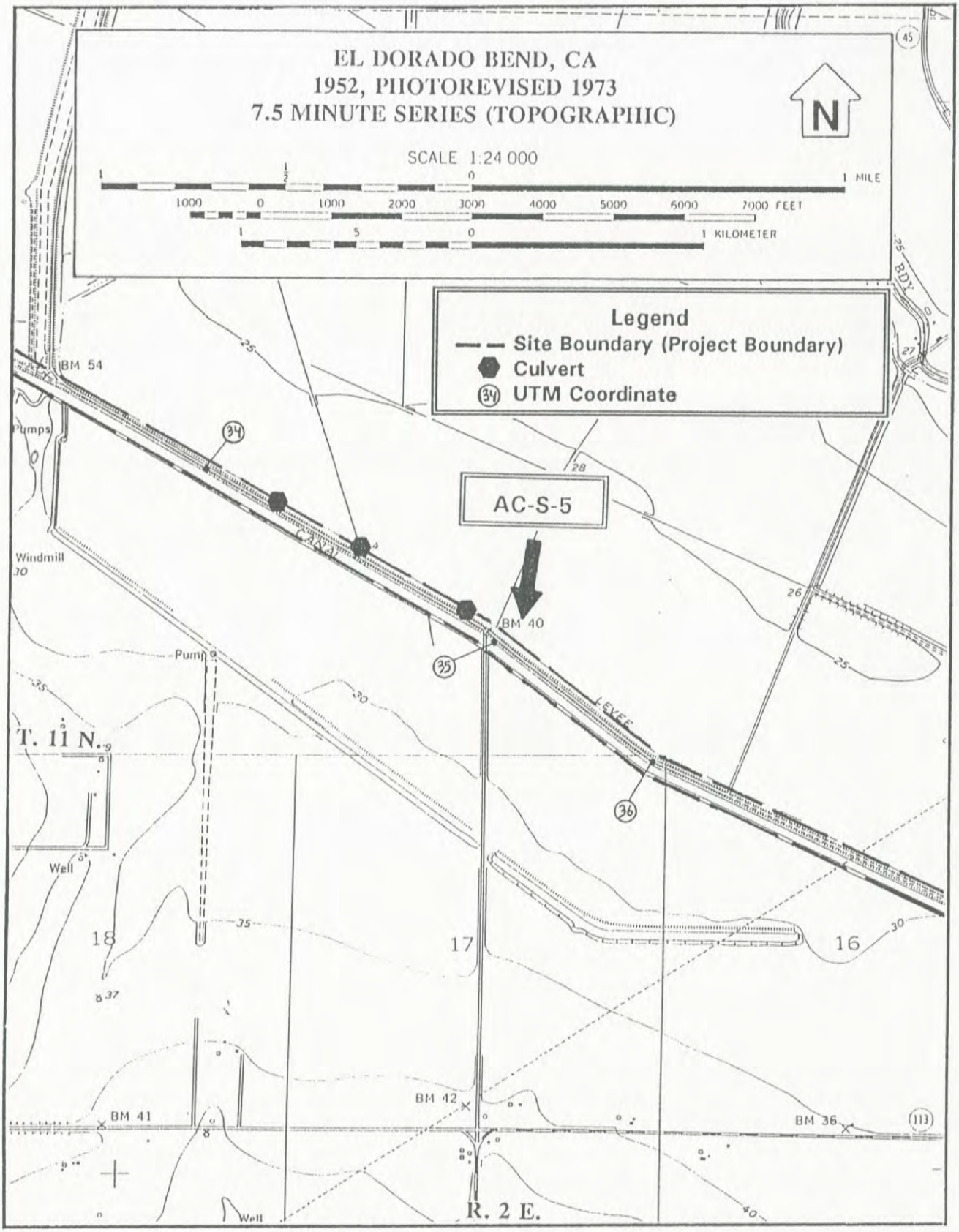
1 KILOMETER
Legend
Site Boundary (Project Boundary)
32 UTM Coordinate
LEVEE
T. 12 N.
T. 11 N.
AC-S-5
Feature A
BASIN
DRAINAGE
BM 54
Pumps
Windmill
Pump
R. 1 E.
R. 2 E.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SCALE 1:24 000
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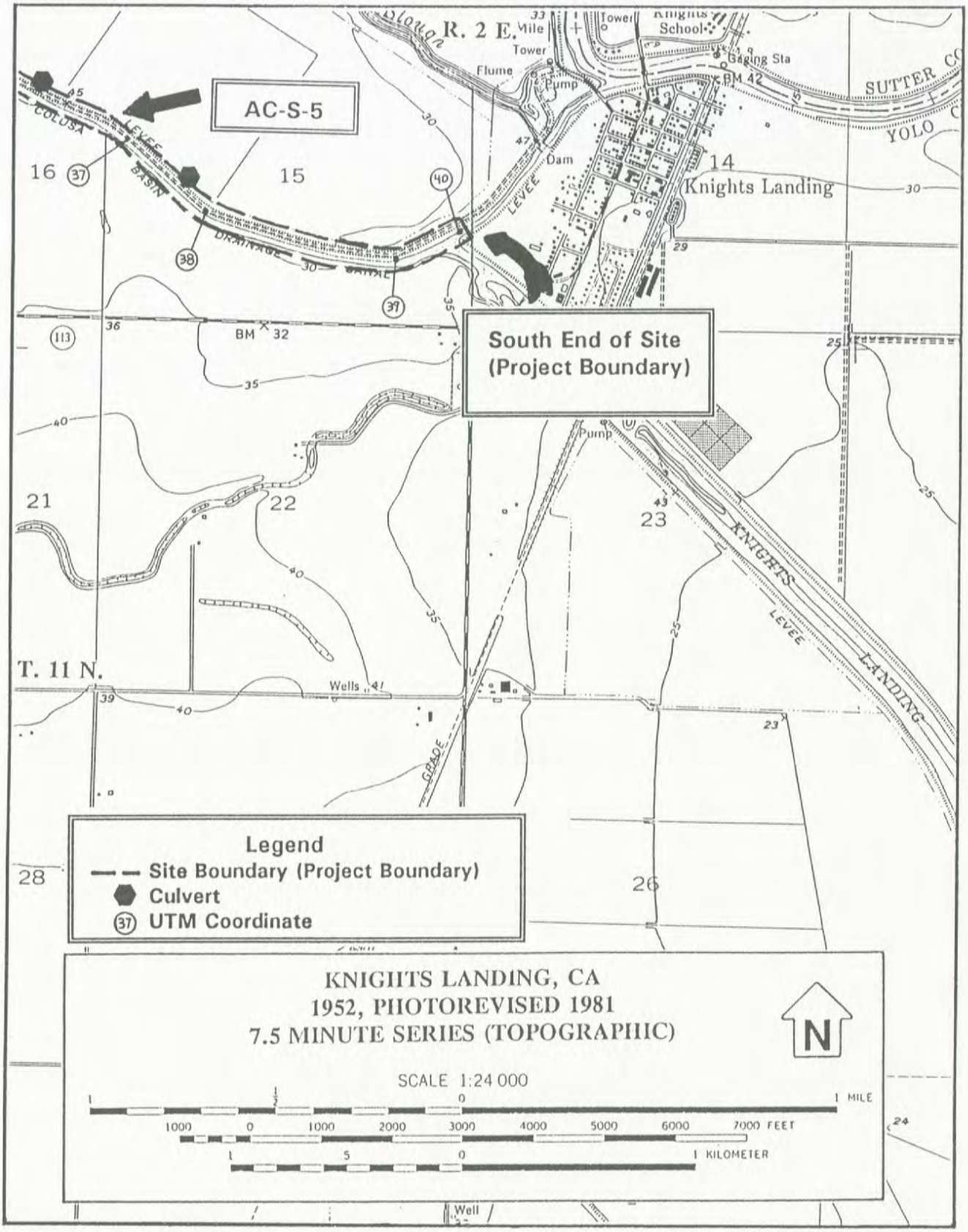
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 KILOMETER
Legend
Site Boundary (Project Boundary)
Culvert
UTM Coordinate
AC-S-5
BM 54
Pumps
Windmill
BM 40
Pump
LEVEE
T. 11 N.
Well
18
17
16
BM 41
BM 42
BM 36
R. 2 E.
34
35
36


AC-S-5
R. 2 E.
Tower
Knights School
Gaging Sta
Flume
Pump
BM 42
SUTTER CO
YOLO
Dam
14
Knights Landing
COLUSA
LEVEE
BASIN
DRAINAGE
DITCH
16
15
37
38
39
40
113
BM 32
South End of Site
(Project Boundary)
Pump
21
22
23
KNIGHTS
LANDING
LEVEE
T. 11 N.
Wells
GRADE
28
26
Legend
Site Boundary (Project Boundary)
Culvert
UTM Coordinate
KNIGHTS LANDING, CA
1952, PHOTOREVISED 1981
7.5 MINUTE SERIES (TOPOGRAPHIC)
N
SCALE 1:24 000
1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 KILOMETER
Well

~~P-57-000145/CA-COL-180H~~
~~P-06-000203/CA-COL-219H~~

YOL-HRI-7216 MAP # 513B, 530D, 529C

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

HISTORIC RESOURCES INVENTORY

Ser. No. 5645 - 2 -

HABS ____ HAER ____ Loc ____ SHL No. ____ NR Status ____

UTM: A 10/610818/4295075 C ____
B ____ (5293) D ____

P-06-000703/P-57-000705
CA-COL-302H/CA-YOL-240H

IDENTIFICATION

1. Common name: Colusa Drainage Canal and Knights Landing Ridge Cut
2. Historic name: same
3. Street or rural address: CR 108 W of SH 45 (canal structure) (Knights Landing-Area

City Knights Landing Zip 95645 County Yolo (/ Colusa)

4. Parcel number: 56-150-16
5. Present Owner: Knights Landing, Colusa Drainage Dist. Address: -

City ____ Zip ____ Ownership is: Public X Private ____

6. Present Use: drainage canal Original use: drainage canal

DESCRIPTION

7a. Architectural style: NA

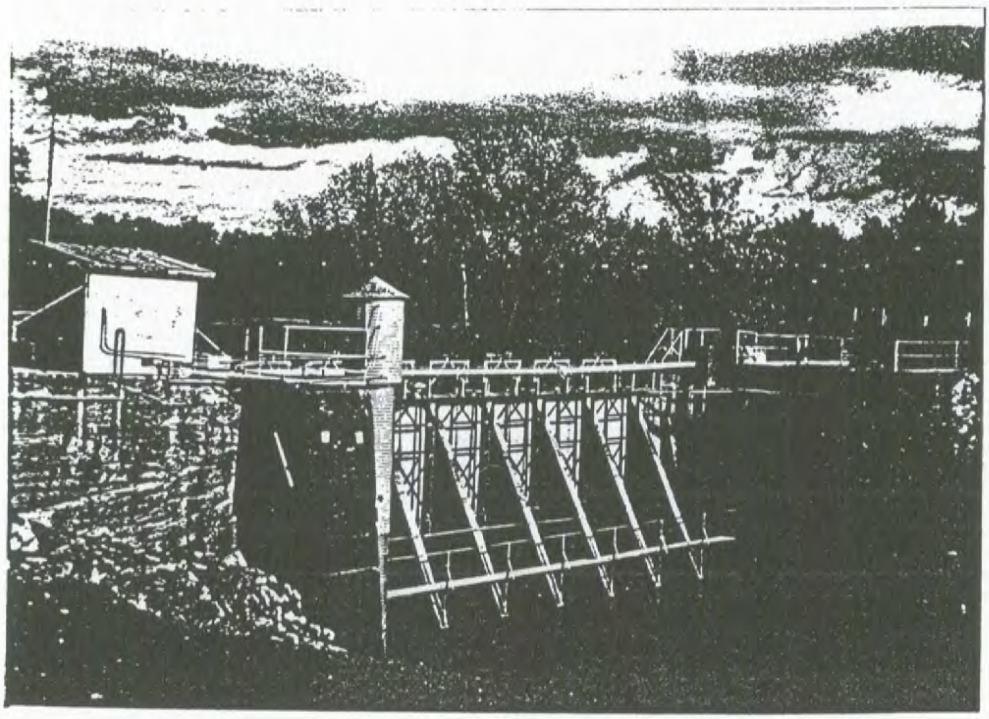
7b. Briefly describe the present *physical appearance* of the site or structure and describe any major alterations from its original condition:

The Colusa Drainage Canal is a ten-mile canal whose construction began in 1903. The canal roughly parallels CR 95B and then cuts in to meet CR 108 where it travels until it meets the Sacramento River. This is a open drainage canal assisted by a set of concrete flood gates at CR 108.

The Knights Landing Ridge Cut begins near the intersection of CR 13 and CR 116 and continues due south until it intersects the Tule Canal.

Grays Bend to Knights Landing to Eldorado Bend

THIS CANAL/RIDGE CUT EXTENDS FROM GRAYS BEND QUAD THROUGH KNIGHTS LANDING AND INTO ELDORADO BEND



8. Construction date: Estimated ____ Factual 1914-
9. Architect unknown
10. Builder unknown
11. Approx. property size (in feet) Frontage ____ Depth ____ or approx. acreage NA
12. Date(s) of enclosed photograph(s) Winter 1985-86

a.

13. Condition: Excellent X Good ____ Fair ____ Deteriorated ____ No longer in existence ____

14. Alterations: –

15. Surroundings: (Check more than one if necessary) Open land X Scattered buildings ____ Densely built-up ____
Residential X Industrial ____ Commercial ____ Other: Ag

16. Threats to site: None known X Private development ____ Zoning ____ Vandalism ____
Public Works project ____ Other: ____

17. Is the structure: On its original site? X Moved? ____ Unknown? ____

18. Related features: –

SIGNIFICANCE

19. Briefly state historical and/or architectural importance (include dates, events, and persons associated with the site.)

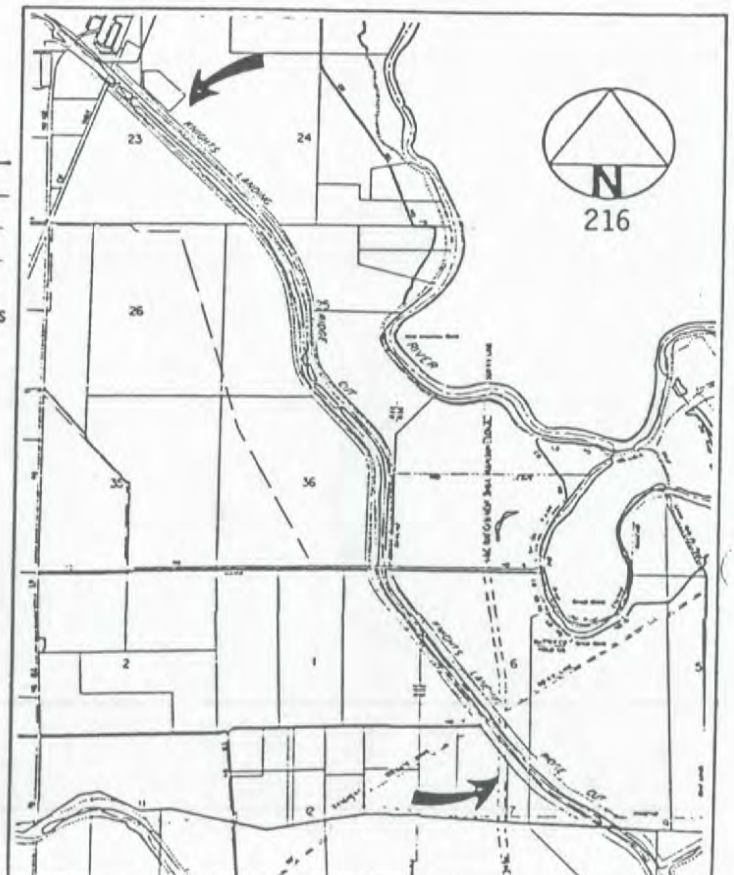
The construction of the Colusa Drainage Canal was completed in 1911 and later incorporated into Reclamation District #2047 in 1919. The canal was developed to alleviate flooding in the upper Colusa Basin by draining the water into the Yolo Basin. Drainage flow rights were acquired which allowed water to pass into the Knights Landing Ridge Cut (1915) and then into the Yolo By-Pass. Together the two projects greatly reduced the flooding hazard to prime agricultural land and greatly enhanced farming opportunities in the effected area. The dredging activities that resulted in the two canal systems produced over 35 miles of levees along this portion of the Sacramento River. This was a significant engineering accomplishment which had a major impact on the farm economy in the county.

20. Main theme of the historic resource: (If more than one is checked, number in order of importance.)
Architecture ____ Arts & Leisure ____
Economic/Industrial 1 Exploration/Settlement ____
Government ____ Military ____
Religion ____ Social/Education ____

21. Sources (List books, documents, surveys, personal interviews and their dates).

ACWA's 75-Year History, 1985
Peter Faye, local farmer/landowner

22. Date form prepared June 1986
By (name) Kathleen Les
Organization Les-Thomas Assoc.
Address: 2773 25th Street
City Sacramento Zip 95818
Phone: (916) 443-7083



Page 2 of 2 (Knights Landing Area)

Colusa Drainage Canal and Knights Landing Ridge Cut
UTM: A10/610818/4295075

P-06-000703
P-57-000705

STATE HISTORIC RESOURCES INVENTORY
PROPERTIES IN UNINCORPORATED YOLO COUNTY AND WEST SACRAMENTO
4/18/88

(see next page)

Serial No.		APN/Area	Map No.	Name	City	N	R*
5606	1	0 48-230-04	A1M014	CANON SCHOOL	BROOKS	1	2
5606	2	0 60-011-01	A1M011	ALEX KELLY HOUSE	BROOKS	4	2
5606	3	0 48-230-02	A1M015	JOHN WINTER RANCH	BROOKS	4	2
5606	4	0 48-010-12	A1M013	CONRAD ECKHARDT FAMILY FARM	BROOKS	3	2
5606	5	0 47-010-05	A1M012	CACHE CREEK CANYON ROAD	BROOKS	3	2
5606	6	0 60-020-21	A1M010	CHARLES CURTIS HOUSE	BROOKS	5	2
5607	1	0 SR 16 MP 25.34		CAPAY CANAL BRIDGE	CAPAY	6	3
5607	2	0 49-437-08	A1M021	JOHN T. LEWIS HOUSE	CAPAY	3	2
5607	3	0 49-437-02	A1M019	ANDY SUMM'S SMOKE HOUSE	CAPAY	3	2
5607	4	0 49-431-01	A1M018	JOHN LANE RENTAL	CAPAY	3	2
5607	5	0 49-420-03	A1M023	HENRY MEFFORD HOUSE	CAPAY	3	2
5607	6	0 49-410-11	A1M024	JAMES N.B. WYATT HOUSE	CAPAY	4	2
5607	7	0 49-410-02	A1M022	JESSE ALDRICH RENTAL	CAPAY	3	2
5607	8	0 49-400-02	A1M026	CAPAY DEPOT	CAPAY	5	2
5607	9	0 49-370-06	A1M027	LUCRETIA SMITH-LUCY COBURN HOUSE	CAPAY	5	2
5607	10	0 49-433-02	A1M020	GEORGE TANDY STORE	CAPAY	3	2
5607	11	0 48-030-03	A1M016	FREEMAN BROS. HOUSE	CAPAY	3	2
5607	12	0 49-190-24	A1M028	ODDFELLOWS CEMETERY	CAPAY	5	2
5607	13	0 48-140-07	A1M025	DOC & BILL DUNCAN HOUSE	CAPAY	3	2
5607	14	0 A1M029		MOUNTAIN SCHOOL	CAPAY	5	2
5607	15	0 A1M017		CAPAY DAM	CAPAY	3	2
5607	16	0		HUNGRY HOLLOW BRIDGE	CAPAY	5	2
5612	1	0 43-090-13	A9M278	EDWARD BUNNELL HOUSE	CLARKSBURG	3	2
5612	2	0 43-070-09	A9M277	GEORGE CORNISH HOUSE	CLARKSBURG	3	2
5612	3	0 43-070-08	A9M281	AMOS PYLMAN HOUSE	CLARKSBURG	3	2
5612	4	0 43-070-13	A9M279	RECLAMATION DISTRICT #150 HOUSE	CLARKSBURG	4	2
5612	5	1 44-070-03	A9M274	ST JOSEPH'S CHURCH	CLARKSBURG	3	1
5612	5	2 44-070-03	A9M274	ST. JOSEPH'S RECTORY	CLARKSBURG	3	1
5612	59999	44-070-03	A9M274	ST JOSEPH'S CHURCH & RECTORY	CLARKSBURG	3	1
5612	6	0 44-120-06	A9M275	LISBON PUMPHOUSE	CLARKSBURG	5	2
5612	7	0 43-040-11	A9M280	NELSON BUMP HOUSE	CLARKSBURG	3	2
5612	8	0 43-285-12	A9M271	HUSICK HARDWARE	CLARKSBURG	3	2
5612	9	0 43-291-09	A9M272	HUGABOOM HOUSE	CLARKSBURG	3	2
5612	10	0 43-285-01	A9M270	LAWLOR & COSBY GENERAL MERCHANDISE	CLARKSBURG	3	2

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*National Register Status.

1 2 = Listed individually
2 2 = Determinined eligible individually
3 1 = Appears eligible as part of district
3 2 = Appears eligible individually
3 3 = Appears eligible both individually and as part of district
4 1 = May become eligible as part of district
4 2 = May become eligible individually
5 1 = Okay for local list individually
5 2 = Okay for local list as part of district
6 3 = Not appropriate for any list
7 3 = Undetermined

[illegible]	[illegible]	0		ANIMAL SCIENCE BLDG.	DAVIS	1	2
[illegible]	1	0	49-293-05 A2M032	ESPARTO COMMUNITY CHURCH	ESPARTO	5	2
5627	2	0	49-303-1 A2M030	ESPARTO HIGH SCHOOL	ESPARTO	4	1
5627	3	1		DIAMOND NATIONAL	ESPARTO	3	1
5627	3	2		JOHNSON'S BARBER SHOP	ESPARTO	3	1
5627	3	3		ODD FELLOWS BLDG IOOF 230	ESPARTO	3	1
5627	3	4		LEITHOLD DRUG STORE	ESPARTO	3	1
5627	3	5		C.F. DERBY BLDG	ESPARTO	3	1
5627	3	6		ADAMS BLOCK	ESPARTO	3	1
5627	3	7		BANK OF ESPARTO	ESPARTO	3	3
5627	3	8		CENTRAL GARAGE	ESPARTO	3	1
5627	3	9		LEVY & SCHWAB BLDG.	ESPARTO	3	3
5627	3	10		VACA VALLEY & CLEAR LAKE RAILROAD DEPOT	ESPARTO	3	3
5627	3	11		W.F. SMITH WAREHOUSE	ESPARTO	3	1
5627	3	12		TABER STORE	ESPARTO	3	1
5627	3	13		CAPAY VALLEY ALMOND GROWERS WAREHOUSE	ESPARTO	3	3
5627	39999		COMMERCIAL DIST.	ESPARTO	ESPARTO	3	1
5627	4	0	49-296-02 A2M031	FRED WYATT HOUSE	ESPARTO	3	2
5627	5	0	49-296-01 A2M031	ROY WYATT HOUSE	ESPARTO	3	2
5637	1	0	SR 16 MP 13.69	DIGGER PINE CREEK BRIDGE	GUINDA	6	3
5637	2	0	SR 16 MP 10.00	POPPY CREEK BRIDGE	GUINDA	6	3
5637	3	0	SR 16 MP 16.38	WINTER CREEK BRIDGE	GUINDA	6	3
5637	4	0	59-150-03	OWL ROCK	GUINDA	7	3
5637	5	0	60-100-02 A1M009	JAMES CLARK HOUSE	GUINDA	5	2
5637	6	0	60-131-04 A1M008	GUINDA HOTEL	GUINDA	3	2
5637	7	0	60-141-01 A1M006	THE CORNER STORE/STEELE HALL	GUINDA	3	2
5637	8	0	60-171-02 A1M007	MATTHEW HAYEDEN STITT HOUSE	GUINDA	3	2
5637	9	0		GUINDA BRIDGE	GUINDA	5	2
5645	1	0	A7M218	RECLAMATION DISTRICT #1600 PUMPHOUSE	KNIGHTS LANDING	5	2
5645	2	0	56-150-16 A7M216	COLUSA DRAINAGE CANAL	KNIGHTS LANDING	4	2
5645	3	0	A7M210	2047 PUMP HOUSE	KNIGHTS LANDING	3	2
5645	4	0	56-010-03 A7M209	ROUGH AND READY PUMPING PLANT	KNIGHTS LANDING	3	2
5645	5	0	56-010-09 A7M211	EL DORADO RANCH	KNIGHTS LANDING	3	2
5645	6	0	56-050-03 A7M217	FAIR RANCH	KNIGHTS LANDING	5	2
5645	7	0	56-160-15 A7M201	JOHN SNOWBALL RESIDENCE	KNIGHTS LANDING	3	2
5645	8	0	56-180-01 A7M214	KNIGHTS LANDING CEMETERY	KNIGHTS LANDING	5	2
5645	9	0	56-190-08 A7M212	BACCHINI'S CORNER	KNIGHTS LANDING	5	2
5645	10	0	56-190-10 A7M213	SIDNEY LEATHERS HOUSE	KNIGHTS LANDING	5	2
5645	11	0	56-210-05 A7M215	BARKLEY G. PEART HOUSE	KNIGHTS LANDING	5	2
5645	12	0	56-284-01 A7M202	HOLY ROSARY PARISH CATHOLIC CHURCH	KNIGHTS LANDING	5	2
5645	13	0	56-284-06 A7M199	CHARLES HOOPER HOUSE	KNIGHTS LANDING	5	2
5645	14	0	56-295-09 A7M200	(604 FRONT STREET)	KNIGHTS LANDING	5	2
5645	15	0	56-294-04 A7M196	SILAS-EDSON HOUSE	KNIGHTS LANDING	3	2
5645	16	0	56-298-02 A7M203	HOOPER'S HARDWARE	KNIGHTS LANDING	3	2
5645	17	0	A7M204	POOL HALL/BARBER SHOP	KNIGHTS LANDING	4	2
5645	18	0	56-298-04 A7M205	LEITHOLD DRUG STORE	KNIGHTS LANDING	4	2
5645	19	0	56-298-05 A7M206	FIRST NATIONAL BANK OF WOODLAND	KNIGHTS LANDING	3	2
5645	20	0	56-298-06 A7M194	KNIGHTS LANDING POST OFFICE	KNIGHTS LANDING	4	2
5645	21	0	56-303-08 A7M195	MASONIC LODGE	KNIGHTS LANDING	3	2
5645	22	0	56-303-04 A7M197	CHRISTIAN CHURCH OF KNIGHTS LANDING	KNIGHTS LANDING	4	2
5645	23	0	56-305-05 A7M207	JOHN F. ANDERSON HOUSE	KNIGHTS LANDING	3	2
5645	24	0	56-315-01 A7M208	MARY LADUE HOUSE	KNIGHTS LANDING	5	2
5645	25	0	56-305-04 A7M198	FRANK HOOPER HOUSE	KNIGHTS LANDING	5	2
5645	26	0	SR 113 MP 21.54	KNIGHTS LANDING RIDGE CUT BRIDGE	KNIGHTS LANDING	4	2

Attachment B

Correspondence: Local government, local historical societies/ historic preservation group.

Communication Log

2850 Spafford Street, Davis, CA 95618
Phone (530) 757-2521 / Fax (530) 757-2566

Project County Road 66B Bridge over Colusa Drain Canal Replacement

Subject Contacting interested parties re: historic resources

Client Glenn County, Public Works Department

Notes Prepared By Cheryl Brookshear, Staff Historian, JRP Historical Consulting, LLC

Participants	Notes
Orland Historical and Cultural Society PO Box 183 Orland, CA 95963	May 13, 2020 letter sent to historical society. May 28, 2020 sent message via Facebook. Society responded that they did not have concerns about the significance of the bridge, but thought it would be nice to recreate the wood texture of the deck on the new bridge.
Jody Meza Willows Free Library 201 N. Lassen St. Willows, CA 95988	May 13, 2020 letter sent to library. May 28, 2020 follow up e-mail sent.
Glenn County Planning Commission 225 N. Tehama St. Willows, CA 95988	May 13, 2020 letter sent to commission. May 28, 2020 follow up e-mail sent. Planning Department responded that they had no comment. Further correspondence may be sent to the Planning and Development Agency as a whole.
Glenn Genealogy Group 1121 Marin Street Orland, CA 95963	May 13, 2020 letter sent to organization. No additional means of contact available
Bayliss Branch Library 7830 Road 39 Glenn, CA 95943	May 13, 2020 letter sent to library. Additional contact information is same as Willows Free Library

Cheryl

Orland Historical & Cultural Society

8:56 AM

Hello, your organization should have recieved information about a proposed bridge replacement on County Road 66B over the Colusa Drain. I'm checking to see if you had any questions or concerns about the project. Thank you.

11:59 AM

Cheryl-- I do have the letter in front of me from Cole Grube of Glenn County Public Works. This "unique" bridge is far-afield from the Orland Historical & Cultural Society's area of "influence." I was able to find it on Google Maps and I was not aware that there were still any wooden bridges in Glenn County. I don't expect the wooden planking would be retained on the replacement. While the OHCS is concerned with the preservation of local history, I don

(Sorry) I don't think our say in this matter would carry much weight. For safety reasons, it undoubtedly needs to be improved. Retaining the appearance of the wooden planking would be a bonus. Thanks for contacting us. --Gene Russell, VP OHCS.

Thank you for your response. I will let the Glenn County Public Works know

Type a message...

Orland Historical & Cultural Society

OPTIONS

Search in Conversation

MESSENGER LINK

m.me/566441600156280

PRIVACY & SUPPORT

12:04 PM
5/28/2020

CR 66B Bridge over Colusa Drain

Cheryl Brookshear

Thu 5/28/2020 9:54 AM

To:willowslibrary@yahoo.com <willowslibrary@yahoo.com>; planning@countyofglenn.net <planning@countyofglenn.net>;

Hello,

You should have recently received a letter about the replacement of the bridge over Colusa Drain on County Road 66B in the southern portion of the county. Please contact me if you have any concerns or questions about historic resources in the vicinity of the project.

Thank you,
Cheryl

Cheryl Brookshear | Architectural Historian
(530) 757-2521x113 office | jrphistorical.com

I am currently working remotely. The best way to reach me is via e-mail or leave a message at the extension listed above.

FW: CR 66B Bridge over Colusa Drain

Andy Popper <APopper@countyofglenn.net>

Thu 5/28/2020 11:03 AM

To:Cheryl Brookshear <CBrookshear@jrphistorical.com>;

Cc:willowslibrary@yahoo.com <willowslibrary@yahoo.com>; PPWA Planning Email Group <Planning@countyofglenn.net>;

Cheryl Brookshear | Architectural Historian,

It has come to my attention that the below noted letter was
addressed to the Glenn County Planning Commission, from Glenn County Public Works.

The April 13, 2020 letter is soliciting comments regarding historical resources and was received by the PDCSA on May 19.

Staff has no comments in response to the letter
and the next Planning Commission meeting is scheduled beyond the reply period (which ended May 13).

Unless the review comments are intended be to replied to by the Planning Commission itself,
future requests may be directed to:

Glenn County Planning &
Community Development Services Agency
225 North Tehama Street
Willows, CA 95988

Sincerely,
Andy Popper, Senior Planner
http://www.countyofglenn.net
Glenn County Planning &
Community Development Services Agency
225 North Tehama Street
Willows, CA 95988
530-934-6540

From: Andy Popper <APopper@countyofglenn.net>
Sent: Thursday, May 28, 2020 10:19 AM
To: Cheryl Brookshear <CBrookshear@jrphistorical.com>
Cc: willowslibrary@yahoo.com; PPWA Planning Email Group <Planning@countyofglenn.net>
Subject: RE: CR 66B Bridge over Colusa Drain

Cheryl Brookshear | Architectural Historian,

The below noted letter (which PCDSA did not receive) is likely intended to be directed to the below email.

Please forward to:
publicworks@countyofglenn.net

Thank you.
Sincerely,
Andy Popper, Senior Planner
http://www.countyofglenn.net
Glenn County Planning &
Community Development Services Agency
225 North Tehama Street
Willows, CA 95988
530-934-6540

From: Cheryl Brookshear <CBrookshear@jrphistorical.com>
Sent: Thursday, May 28, 2020 9:54 AM
To: willowslibrary@yahoo.com; PPWA Planning Email Group <Planning@countyofglenn.net>
Subject: CR 66B Bridge over Colusa Drain

Hello,

You should have recently received a letter about the replacement of the bridge over Colusa Drain on County Road 66B in the southern portion of the county. Please contact me if you have any concerns or questions about historic resources in the vicinity of the project.

Thank you,
Cheryl

https://mail.jrphistorical.com/owa/service.svc/s/GetFileAttachment?id=AAMkADU1MjhhZjA1LWZiNDctNDEzOS04M2E2LWM0ZTUwMWY3YzFiZABGAAAAAABboiZ5frYEQL9WS7GRjonxBwD5p7FhF7uxTbA7eyKOpFhkAAKrO8vDAAD5p7FhF7uxTbA7eyKOpFhkAAKrO%2BfgAAABEgAQALlXFdVPmTpFj9bVaaxHFrA%3D&X-OWA-CANARY=wMP7Khqsd0qa4iyHRQytCAxZzCK769cIPVIvCF4Vqjpeq UDrBpQi4nGY-DuflQReDMXs_NZOq1Y.

Cheryl Brookshear | Architectural Historian
(530) 757-2521x113 office | jrphistorical.com

I am currently working remotely. The best way to reach me is via e-mail or leave a message at the extension listed above.

Attachment C

Caltrans Historic Bridge Inventory Sheet – Bridge 11C0068

Structure Maintenance & Investigations

SM&I

Historical Significance - Local Agency Bridges

March 2019

District 05

Glenn County

Bridge Number	Bridge Name	Location	Historical Significance	Year Built	Year Wid/Ext
11C0001	GLENN-COLUSA CANAL	0.2 MI W RD D	5. Bridge not eligible for NRHP	1964	
11C0002	GLENN-COLUSA CANAL	0.6 MI N/O ROAD 68	5. Bridge not eligible for NRHP	1962	
11C0003	GLENN-COLUSA CANAL	0.5 MI S/O ROAD 62	5. Bridge not eligible for NRHP	1948	
11C0004	GLENN-COLUSA CANAL	0.3 MI E/O ROAD 'F'	5. Bridge not eligible for NRHP	1946	
11C0006	GLENN-COLUSA CANAL	1.2 MI W/O SH 99	5. Bridge not eligible for NRHP	1948	1980
11C0009	GLENN-COLUSA CANAL	2.1 MI N OF S.H. 162	5. Bridge not eligible for NRHP	1940	1961
11C0010	GLENN-COLUSA CANAL	4.82 MI EAST OF I-5	5. Bridge not eligible for NRHP	1948	1975
11C0011	GLENN-COLUSA CANAL	0.3 MI N CO RD #39	5. Bridge not eligible for NRHP	1950	2002
11C0012	CENTRAL IRRIGATION CANAL	0.6 MI N RD 34	5. Bridge not eligible for NRHP	1950	
11C0013	CENTRAL IRRIGATION CANAL	0.5 MI W ROAD XX	5. Bridge not eligible for NRHP	1948	
11C0014	PACKARD DRAW	0.5 MI WEST OF ROAD Z	5. Bridge not eligible for NRHP	1930	
11C0015	BRANCH HOWARD SLOUGH	1.3 MI EAST OF ROAD Z	5. Bridge not eligible for NRHP	1937	
11C0016	HOWARD SLOUGH	1.7 MI EAST OF CR Z	5. Bridge not eligible for NRHP	1950	
11C0017	HOWARD SLOUGH	1.8 MI EAST OF CR Z	5. Bridge not eligible for NRHP	1920	
11C0018	STONY CREEK	0.2 MI E OF RD 306	5. Bridge not eligible for NRHP	1900	
11C0019	BUTTE CREEK	2.0 MI EAST OF CR Z	5. Bridge not eligible for NRHP	1930	1942
11C0020	BUTTE CREEK	2.7 MI E RD Z	5. Bridge not eligible for NRHP	1940	
11C0025	PROVIDENT CANAL	6.04 MI EAST OF RD 99W	5. Bridge not eligible for NRHP	1948	
11C0026	COLUSA DRAIN	0.6 MI W RD WW	5. Bridge not eligible for NRHP	1941	
11C0031	DRY CREEK	1.58 MI N COLUSA CO LINE	5. Bridge not eligible for NRHP	1951	1983
11C0033	ELK CREEK	17.2 MI N COLUSA CO LINE	5. Bridge not eligible for NRHP	1951	
11C0035	GRINDSTONE CREEK	23 MI N COLUSA CO LINE	5. Bridge not eligible for NRHP	1950	
11C0037	CENTRAL IRRIGATION CANAL	WEST OF S.H. 45	5. Bridge not eligible for NRHP	1936	
11C0038	CENTRAL IRRIGATION CANAL	0.3 MI WEST OF SH 45	5. Bridge not eligible for NRHP	1948	
11C0040	S FORK WILLOW CREEK	2.2 MI N S.H. 162	5. Bridge not eligible for NRHP	1967	
11C0041	NORTH FORK WILLOW CREEK	3.6 MI N OF S.H. 162	5. Bridge not eligible for NRHP	1966	
11C0042	WHITE CABIN CREEK	5.8 MI N OF S.H. 162	5. Bridge not eligible for NRHP	1919	1950
11C0043	WILSON CREEK	0.5 MI SOUTH OF RD #33	5. Bridge not eligible for NRHP	1982	
11C0046	HAMBRIGHT CREEK	5.25 MI W OF I-5	5. Bridge not eligible for NRHP	1967	
11C0048	WILLOW CREEK	0.4 MI S OF S.H. 162	5. Bridge not eligible for NRHP	1940	
11C0053	WILLOW CREEK	0.2 MI S/O SH 162	5. Bridge not eligible for NRHP	1965	
11C0055	GLENN-COLUSA CANAL	WEST OF NEWMARK AVE	5. Bridge not eligible for NRHP	1948	
11C0056	SALT CREEK	2.5 MI E OF CO RD 306	5. Bridge not eligible for NRHP	1997	
11C0057	SALT CREEK	0.3 MI S OF RD #200	5. Bridge not eligible for NRHP	1948	
11C0058	BRANCH SALT CREEK	0.6 MI W OF RD #306	5. Bridge not eligible for NRHP	1997	
11C0059	WILLOW CREEK	0.65 MI E HWY 99W	5. Bridge not eligible for NRHP	1945	1960
11C0060	WALKER CREEK	0.9 MI E HWY 99W	5. Bridge not eligible for NRHP	1974	
11C0063	WILLOW CREEK	6 MI E OF 99W	5. Bridge not eligible for NRHP	1949	1950
11C0064	COLUSA DRAIN	0.1 MI E OF RD W	5. Bridge not eligible for NRHP	1977	
11C0065	PRINCETON CODORA CANAL	0.05 MI W OF S.H. 45	5. Bridge not eligible for NRHP	1930	1983
11C0066	COLUSA DRAIN	0.1 MI E RD W	5. Bridge not eligible for NRHP	1960	
11C0068	COLUSA DRAIN	2 MI W OF SH 45	5. Bridge not eligible for NRHP	1940	1974
11C0070	MCKEE OVERFLOW	1.1 MI N HWY 162	5. Bridge not eligible for NRHP	1935	

Attachment D

CSO Approval of Assumption of Eligibility – Colusa Drain Canal

Attachment E

Finding of No Adverse Effect Without Standard Conditions
JRP Historical Consulting, LLC, 2021. **Attachment E**.

FINDING OF NO ADVERSE EFFECT WITHOUT STANDARD CONDITIONS

for

COUNTY ROAD 66B BRIDGE OVER THE COLUSA DRAIN REPLACEMENT PROJECT

Glenn County, California

Federal Aid Project No. BRLO 5911 (063)

Prepared for:

Glenn County, Public Works Department
777 N Colusa St.
Willows, CA 95988

Reviewed by:

_____

Gail St. John, PQS Principal Architectural Historian
Caltrans District 3
703 B Street, Marysville, CA 95901

Approved by:

_____

Laura Loeffler, Environmental Branch Chief (EBC)
Caltrans District 3
703 B Street, Marysville, CA 95901

Prepared by:

Cheryl Brookshear

Christopher McMorris, Principal / Architectural Historian
Cheryl Brookshear, Staff Architectural Historian
JRP Historical Consulting, LLC
2850 Spafford Street
Davis, CA 95618

April 2021

TABLE OF CONTENTS

APPENDICES

1. INTRODUCTION

The County of Glenn (County), with assistance from the California Department of Transportation (Caltrans), is proposing to replace the County Road (CR) 66B Bridge at the Colusa Drain Canal, Bridge 11C0068, in southern Glenn County northwest of Princeton utilizing funds from the Federal Highway Administration through the Caltrans Local Assistance Program. The CR 66B bridge was constructed in 1940 and is a single lane, three- span, bridge with a wooden deck. The project includes demolishing and removing the existing bridge and replacing it with a cast-in place, post-tensioned, concrete slab bridge. Maps depicting the project vicinity, project location, and Area of Potential Effect (APE) are **Figures 1**, **2**, and **3** in **Appendix A**.

JRP Historical Consulting, LLC (JRP) prepared this Finding of Effect (FOE) to assist with project compliance under Section 106 of the National Historic Preservation Act (NHPA) by applying the Criteria of Adverse Effect set forth in Title 36 Code of Federal Regulations (CFR) Part 800.5 (36 CFR 800), and the 2014 *First Amended Programmatic Agreement Among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act* (Section 106 PA).

The project Section 106 compliance activities to date include the preparation of a Historic Property Survey Report (HPSR), Archaeological Survey Report (ASR) by Genesis Society, and communication with parties interested in local historic resources. The APE contains two historic resources: the CR 66B bridge (Bridge 11C0068), which was previously determined ineligible for listing in the National Register of Historic Places (NRHP), and the Colusa Drain Canal. Per stipulation VIII.C.4 of the Section 106 PA, Caltrans District 3 received approval from the Caltrans Cultural Studies Office (CSO) to assume the Colusa Drain Canal eligible for listing in the NRHP for the purposes of this undertaking only. See **Appendix B** for Caltrans correspondence on assumed eligibility. The Colusa Drain Canal is assumed eligible as a contributor to the Sacramento River Flood Control Project and the six irrigation districts that it serves. Assumed eligibility is under NRHP Criterion A for contributions to regional history of northern California flood control and the development of agriculture in the region. The Colusa Drain Canal may also have regional significance under Criterion C as a contributor to the design and engineering of the Sacramento River Flood Control Project. The assumed period of significance for the Colusa Drain Canal, for purposes of this undertaking, is 1921 to 1950. It is assumed eligible at the local level of significance. The assumed character-defining features of the canal are those materials and design features that either date to the original construction or have been replaced in kind. An examination of the Colusa Drain Canal for the present study indicates that the canal alignment, shape/width, earth lining, and rural setting are consistent with the original characteristics of the Colusa Drain Canal. Control structures and irrigation gates, not found within the APE, are also assumed to be character defining of the broader canal system. In addition, JRP corresponded with local interested parties regarding this project. **Appendix C** includes correspondence and records of communications from interested parties.

This study concludes that the project will have no adverse effect on the Colusa Drain Canal. Thus, Caltrans, in applying the Criteria of Adverse Effects, proposes that a **Finding of No Adverse Effect without Standard Conditions** is appropriate for this undertaking and is seeking State Historic Preservation Officer (SHPO) concurrence with this finding pursuant to Stipulation X.B.2.a of the Section 106 PA.

2. PROJECT DESCRIPTION

2.1 Summary[1]

The County with assistance from Caltrans proposes to replace the existing 1-lane, wooden-decked bridge on County Road 66 over Colusa Drain Canal with cast-in-place post-tensioned concrete slab bridge. The existing bridge is approximately 54 feet in length and 20 feet in width and consists of a three-span timber structure supported by reinforced concrete abutments and piers founded on driven cast-in-steel shell piles. The outside spans are 16 feet long and the middle span is 18 feet long. The bridge was originally constructed in 1940, and the wooden deck was replaced in 1974.

The project would involve replacement of the existing structure with a cast-in-place, post-tensioned, concrete slab bridge founded on driven piles situated at the abutment supports, thus eliminating structural supports within the stream channel. The existing bridge and intermediate support foundations would be removed from the project site. Additionally, the project would include road widening, road cut/fill, detours, grinding, establishment of clear recovery zones, utility relocation, ground disturbance, vegetation removal, and pile driving.

The roadway width would include two 12-foot wide lanes with two four-foot wide paved shoulders for a total width of 32 feet.

The general project vicinity is depicted on Figure 1, the project location is shown on map labeled Figure 2, and the specific APE is on Figure 3 in **Appendix A**.

2.2 Area of Potential Effects

The APE encompasses all project-related impacts including bridge construction, road widening, and easements (**Appendix A**, **Figure 3**). The APE generally consists of a linear corridor extending approximately 1,600 feet in length (east-west) and ranging from between 100 feet and 260 feet in width, and generally centered on the Colusa Drain. The APE is located approximately 2 miles west of State Route 45, and approximately 3 miles northwest of the community of Princeton, in Glenn County, California.

[1] This project description is excerpted from the *Historic Property Survey Report*, prepared by Genesis Society for Caltrans District 3, May 2019.

3. PUBLIC PARTICIPATION

JRP identified potential local interested parties and drafted notification letters for this project, which were sent by the County on May 13, 2020. The recipients of the letters were the Orland Historical and Cultural Society, Glenn County Planning Commission, Willows Free Library, Bayliss Branch Library, and Glenn Genealogy Group. No responses were received.

JRP attempted to follow up through alternate means of contact. E-mails were sent to the Glenn County Planning Commission and Willows Free Library on May 28, 2020. The Planning Commission replied that they had no comment. The Orland Historical and Cultural Society was contacted via their Facebook page on May 28, 2020. They responded that they did not have any concerns about the bridge, but thought it would be nice to recreate the wood texture of the deck on the new bridge. The Bayliss Branch Library uses the same contact information as the Willows Free Library; therefore, additional contact was not possible. Similarly, the Glenn Genealogy Group does not have any additional contact information.

See **Appendix C** for a copy of the letter to interested parties, subsequent communications, and a summary communications log.

4. HISTORIC PROPERTY DESCRIPTION

4.1 Identification Efforts

On June 5, 2018, the Northeast Information Center (NEIC) at California State University, Chico conducted a search of the California Historical Records Information System (CHRIS) records for the quarter mile area around the APE. Results of the NEIC search indicate that no built-environment cultural resources have been previously recorded in the APE.

Of note, however, is the Colusa Basin Drainage Canal (P-11-604) (a.k.a., Colusa Drain Canal), portions of which were originally recorded in 1986 as part of the Yolo County Historic Resources Inventory, and other portions recorded in 1992, 1998, 2002, 2007, and 2015. The recorded segments have been consolidated under a single Primary Number. In 1998, the Army Corps of Engineers found the Colusa Basin Drainage Canal to have several construction periods and some features of the canal had not reached 50 years of age when the Corps proposed a project at that time. In its planning, the Corps noted possible integrity issues, tacitly accepting historic significance for the Colusa Basin Drainage Canal. During consultation for that project the Corps and SHPO concurred that the project posed no effect on the canal. No formal determination of eligibility of the Colusa Basin Canal was made at that time. The Office of Historic Preservation's Built Environment Resource Directory (BERD) for Glenn County lists the "RD 2047 Colusa Basin Drainage Canal" at Sidds Road with a status code of 6Y (Determined ineligible for NR by consensus through Section 106 process) as of 9/30/2015 (Ref. # FHWA_2015_0813_001).[2]

Evaluating the full extent of the Colusa Drain Canal, the Sacramento River Flood Control Project, and the irrigation systems extending from the Colusa Basin Drainage Canal is beyond the scope of this small bridge replacement project. Previous recordations of the canal have noted the 35-mile length of the canal, identified it as a component of the Sacramento River Flood Control Project, and identified six irrigation systems originating from the canal. Based on its possible historic significance and because the whole of the resources is not fully inventoried and evaluated, Caltrans

[2] Kathleen Les and Yolo County Community Development Agency, "Yolo County Historic Resources Survey," Yolo County Community Development Agency, 1986; PAR Environmental Services. "Cultural Resources Inventory for the Colusa Basin/Knights Landing Ridge Cut Levees Project, Colusa and Yolo Counties, California." April 1992; Frank Deitz, Department of Parks and Recreation (DPR) 523 form for the Colusa Basin Drainage Canal, June 1998; California Office of Historic Preservation, "Directory of Properties in the Historic Properties Data File for Yolo County," April 5, 2012; Leach-Palm et al, "Cultural Resources Inventory of Caltrans District 3 Rural Conventional Highways in Butte, Colusa, Glenn, Nevada, Placer Sacramento, Sierra, Sutter, Yolo and Yuba counties," 2008; Cherilyn Widell, State Historic Preservation Officer, to Brain Doyle, Army Corps of Engineers, Project Levee Rehabilitation, RD 108, 787, & Maintenance Area 12, Yolo and Colusa Counties, California, Reply to COE970827 C., June 25, 1998, Records for P-06-000703/ CA-COL-302H and P-57-000705/CA-Yol0241H, Northeast Information Center, CSU Chico. The OHP BERD is available at ohp.parks.ca.gov/?page_id=30338. This 2015 listing appears to be the result of the report: JRP Historical Consulting, LLC, "Historical Resources Evaluation Report, County Road 44 Hazard Elimination and Safety Project over the Colusa Drain Canal, Glenn County, California," prepared for Glenn County and Caltrans District 3, June 2015.

is assuming the canal eligible for the NRHP for the purposes of this project in accordance with Section 106 PA Stipulation VIII.C.4. (See **Appendix B**.)

4.2 Physical Description of Historic Property

The Colusa Drain Canal, constructed in 1921 and 1922 by Reclamation District 2047, is a 35-mile long water conveyance structure. The canal begins approximately eight miles north of the proposed project in Glenn County near the end of the Colusa Basin. The canal then continues southeast draining the Colusa Basin into the Yolo Basin, traversing portions of Colusa and Yolo counties. The canal has variable widths, while it consists of an unlined ditch below grade in the APE, in other areas it is at grade and contained by levees. The canal also includes ancillary features including levees, side irrigation ditches, pump houses, culverts, orchard gates, and concrete rip rap.

The Colusa Drain Canal also serves as a part of the much larger Sacramento River Flood Control Project, which involves a complex array of levees, drainage channels, and basins for holding flood waters. The Colusa Drain Canal connects two of the retaining basins, the Colusa Basin and the Yolo Basin, allowing controlled flooding and subsequent drainage following flood events. It also serves as a supply canal for six irrigation districts in three counties. These systems are the Glenn-Colusa, Provident, Princeton-Codora-Glenn, Jacinto, Maxwell, and Compton-Delevan irrigation districts.

Within the APE, the Colusa Drain Canal is an unlined, trapezoidal earthen trench without any surrounding levees. The canal is 54 feet wide at this location, and its depth was not determined because it was filled with water when recorded for this report (**Photograph 1**). The side walls have been packed hard and support a dirt road on either side (**Photograph 2**). Directly north of the bridge on the west side is a small irrigation ditch that runs along the road and enters the Colusa Drain Canal via a corrugated culvert (**Photograph 3)**. Approximately 50 feet north of the bridge is a second, perpendicular canal heading east. The juncture is controlled via a structure on the second canal.

Photograph 1. Colusa Drain Canal, camera facing north, photograph by Galloway Enterprises, June 30, 2020.

Photograph 2. Bank of the Colusa Drain Canal, camera facing east, photograph by Galloway Enterprises, June 30, 2020.

Photograph 3. Colusa Drain at the culvert on the northwest side of the bridge, camera facing east, photograph by Galloway Enterprises, June 30, 2020.

4.3 National Register of Historic Places Significance

The CR 66B over the Colusa Drain Canal Bridge (11C0068) was constructed in 1940 and its wooden deck was replaced in 1974. It is listed in the Caltrans Historic Bridge Inventory as a Category 5 structure (i.e., not eligible for the NRHP).

The Colusa Drain Canal is the only other identified cultural resource within the APE. Per stipulation VIII.C.4 of the Section 106 PA, Caltrans District 3 received approval to assume the Colusa Drain Canal as a whole eligible for listing in the NRHP for the purposes of this undertaking (**Appendix B**). The Colusa Drain Canal is also assumed eligible as a contributor to the Sacramento River Flood Control Project and six irrigation districts that it serves. The Colusa Drain Canal is assumed eligible under NRHP Criterion A for contributions to regional history of flood control in northern California and the development of agriculture in the region. The Colusa Drain may also have regional significance under Criterion C as a contributor to the design and engineering of the Sacramento River Flood Control Project. The assumed period of significance for the Colusa Drain Canal, for purposes of this undertaking, is 1921 to 1950. It is assumed eligible at the local level of significance.

The assumed character-defining features of the Colusa Drain Canal within the APE are those materials and design features that either date to the original construction or have been replaced in kind. An examination of the Colusa Drain Canal for the present study indicates that the canal alignment, shape/width, earth lining, and rural setting are consistent with the original characteristics of the Colusa Drain Canal. Control structures and irrigation gates, not found within the APE, are also assumed character-defining features of the broader canal system.

5. APPLICATION OF CRITERIA OF ADVERSE EFFECT

5.1 Criteria of Adverse Effect

The NHPA Section 106 regulations state that if there are historic properties in the APE which may be affected by a federal undertaking, the agency official shall assess adverse effects, if any, in accordance with the Criteria of Adverse Effect defined in 36 CFR 800.5. These regulations state an "adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association." Application of the criteria of adverse effect assesses how an undertaking will affect those features of a historic property that contribute to its eligibility for listing in the NRHP, specifically examining an undertaking's impacts on a historic property's historic integrity, i.e., location, design, setting, materials, workmanship, feeling, and association. Effects can be direct, indirect, and cumulative.

5.2 Application of Criteria of Adverse Effect

The project has potential to damage part of the Colusa Drain Canal, possibly altering it in a manner that may not be consistent with the Secretary of Interior's Standards for the Treatment of Historic Properties. It also may introduce visual elements that could diminish the canal's integrity. This project will not result in the removal of the canal from its location, nor change the use of the canal or the physical features within the canal's setting that contribute to its historic significance. The project will also not cause the neglect of the canal or its deterioration; and the canal is not transferring out of federal ownership or control as it is not owned by the federal government.

The physical effect of the bridge replacement project upon the Colusa Drain Canal is minimal. The CR 66B project encompasses a very small portion of the overall 35-mile long, linear canal. The existing bridge occupies only 20-linear feet of the canal, and the proposed bridge replacement only adds 12-linear feet to the area the structure will occupy. Following completion of the project, the Colusa Drain Canal will retain its historic integrity, including integrity of location, setting, design, materials, workmanship, feeling, and association.

Within that negligible linear space, replacement of the CR 66B over the Colusa Drain Bridge will not destroy or damage the canal. The existing bridge is not a part of the canal system and is not a character-defining feature of that system. Removal and construction of the new bridge will not alter the characteristic canal profile or change the materials that compose the canal walls. The piers supporting the new bridge will be placed at the top outer edge of the canal walls, and the bridge will span the canal with no additional supports within the canal profile. The existing piers between spans are not a part of the canal design and their removal will not damage the canal or alter it in a manner inconsistent with the Secretary of the Interior's Standards. Any disturbance of the canal walls or profile will be repaired in kind with materials matching the original earthen construction.

The bridge replacement will not introduce new visual, atmospheric, or audible elements that would diminish the integrity of the Colusa Drain Canal. This bridge is one of many that crosses the canal along its length, many of which have been constructed or replaced and widened since the initial construction of the canal. The roads themselves are not considered a part of the Colusa Drain Canal or the larger systems to which the canal contributes. These county roads are a part of the rural landscape that the canal traverses.

6. CONCLUSION

During identification efforts, the Colusa Drain Canal was identified as a long linear feature with possible historical significance. The scale of the bridge replacement project did not accommodate a full evaluation of the canal, so Caltrans has made an assumption of eligibility for the Colusa Drain Canal for the purposes of this project in accordance with Section 106 PA Stipulation VIII.C.4 (Attachment B). Potential interested parties have been contacted about the project. Previous recordations of the canal were reviewed to determine assumed character-defining features and period of significance. Caltrans has applied the Criteria of Adverse Effects and determined that a finding of **No Adverse Effect (without Standard Conditions)** appears appropriate for this project. Caltrans requests SHPO's concurrence with this finding pursuant to Stipulation X.B.2 of the Section 106 PA.

ATTACHMENTS

ATTACHMENT A

Figures

Figure 1. Project Vicinity Map

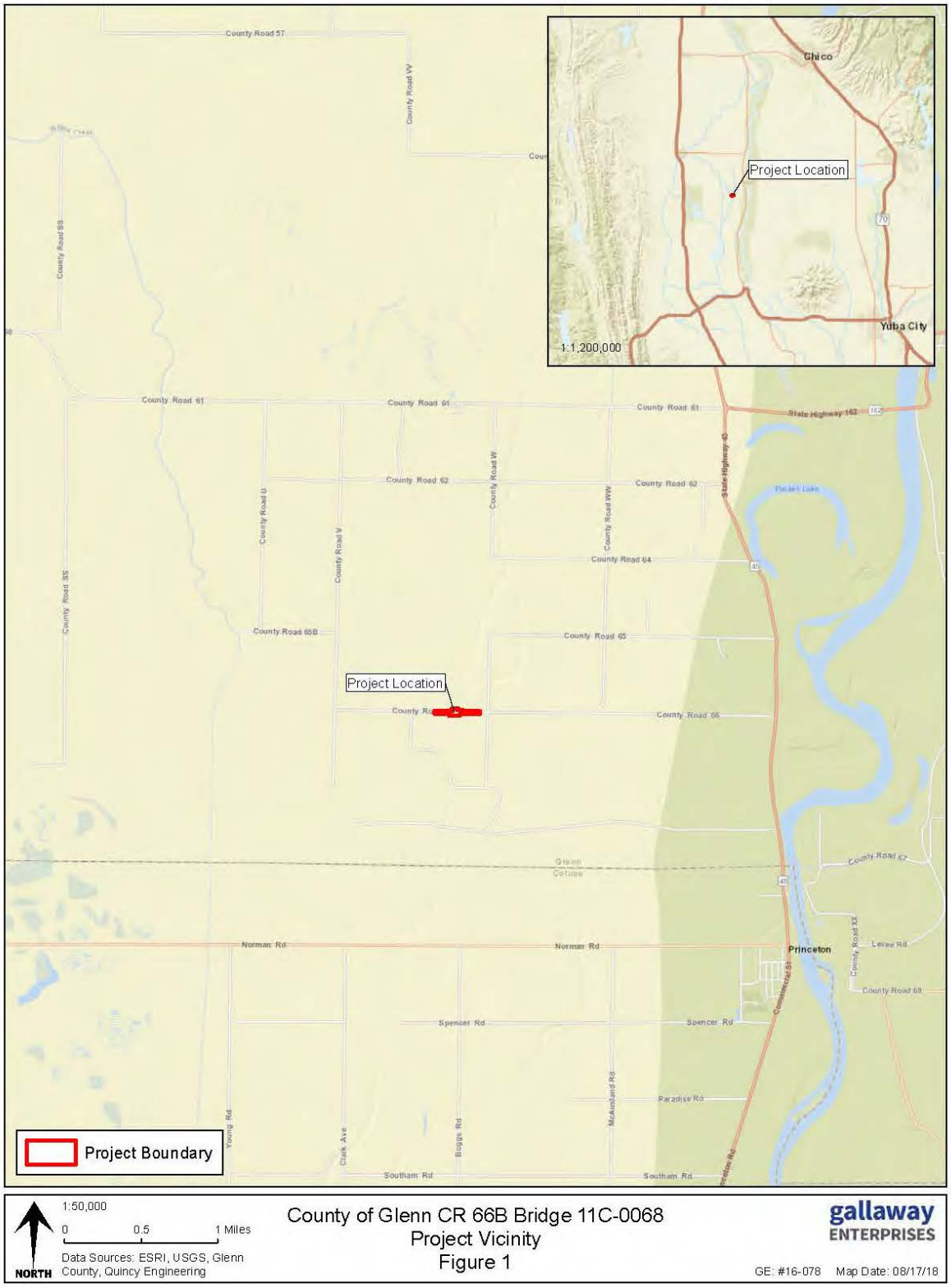


Figure 2. Project Location Map

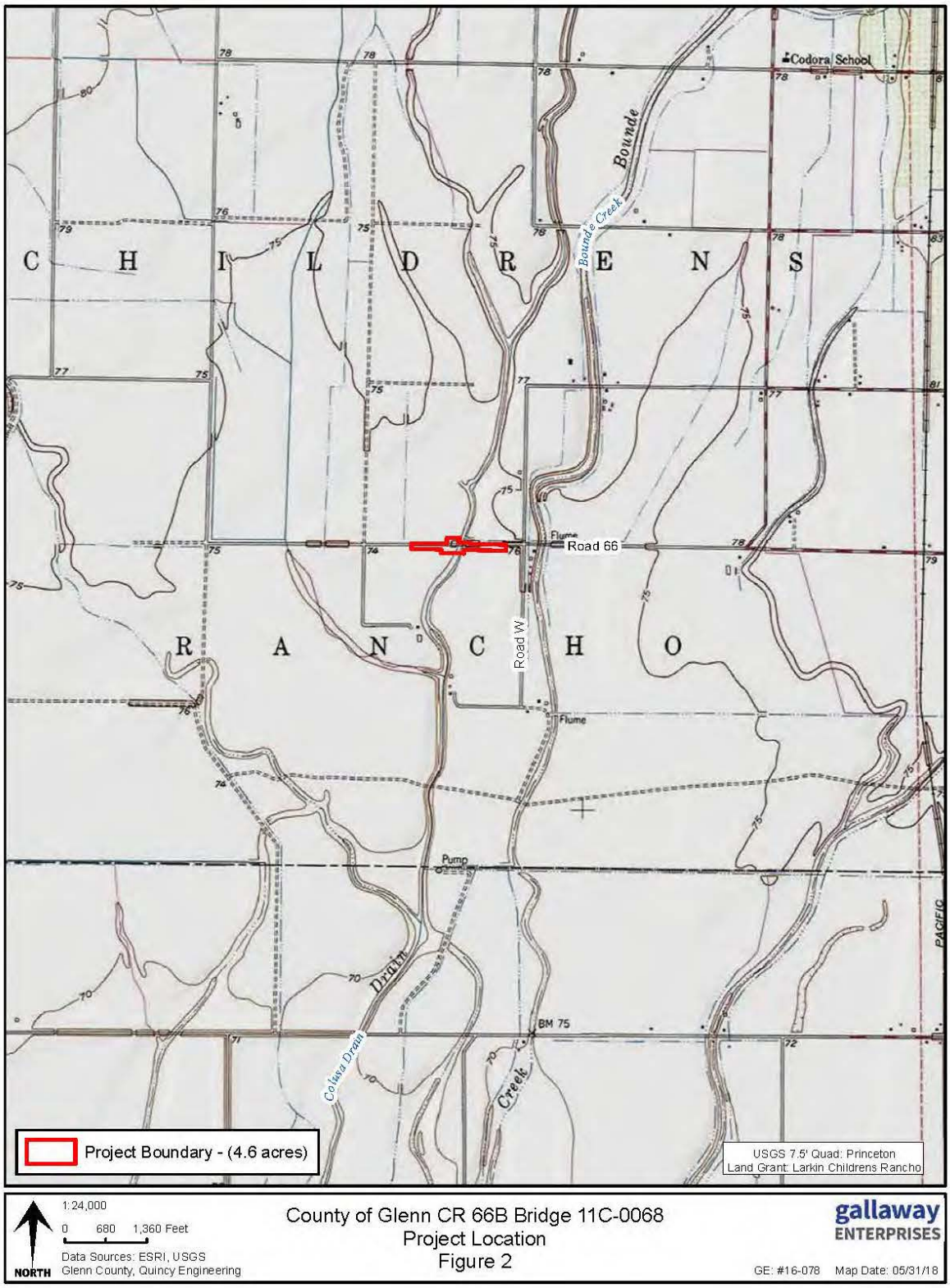
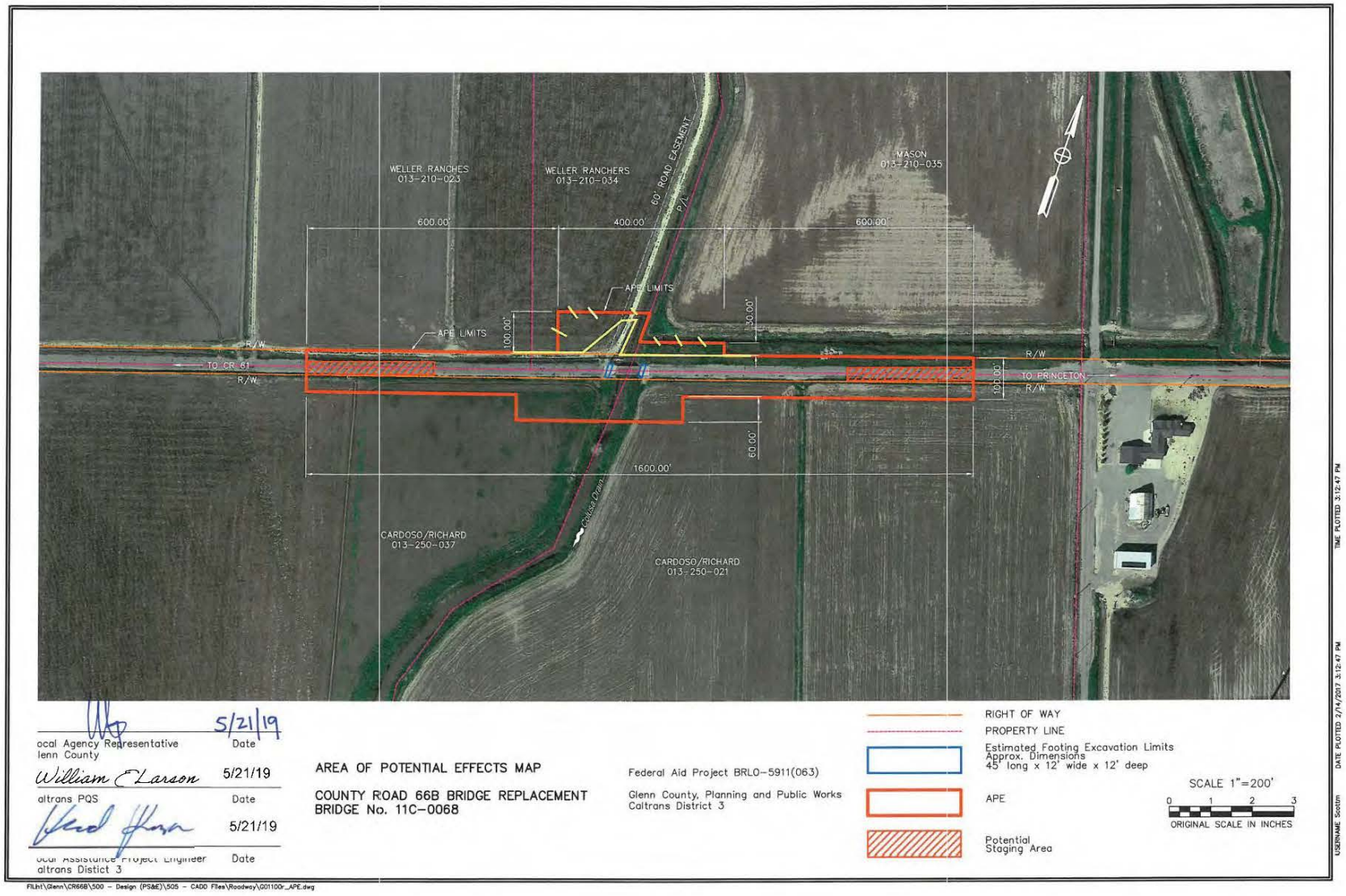


Figure 3. APE Map



ATTACHMENT B

Caltrans CSO Permission to Assume Eligibility of Colusa Drain Canal

ATTACHMENT C

Public Participation

Communication Log

2850 Spafford Street, Davis, CA 95618
Phone (530) 757-2521 / Fax (530) 757-2566

Project County Road 66B Bridge over Colusa Drain Canal Replacement

Subject Contacting interested parties re: historic resources

Client Glenn County, Public Works Department

Notes Prepared By Cheryl Brookshear, Staff Historian, JRP Historical Consulting, LLC

Participants	Notes
Orland Historical and Cultural Society PO Box 183 Orland, CA 95963	May 13, 2020 letter sent to historical society. May 28, 2020 sent message via Facebook. Society responded that they did not have concerns about the significance of the bridge, but thought it would be nice to recreate the wood texture of the deck on the new bridge.
Jody Meza Willows Free Library 201 N. Lassen St. Willows, CA 95988	May 13, 2020 letter sent to library. May 28, 2020 follow up e-mail sent.
Glenn County Planning Commission 225 N. Tehama St. Willows, CA 95988	May 13, 2020 letter sent to commission. May 28, 2020 follow up e-mail sent. Planning Department responded that they had no comment. Further correspondence may be sent to the Planning and Development Agency as a whole.
Glenn Genealogy Group 1121 Marin Street Orland, CA 95963	May 13, 2020 letter sent to organization. No additional means of contact available
Bayliss Branch Library 7830 Road 39 Glenn, CA 95943	May 13, 2020 letter sent to library. Additional contact information is same as Willows Free Library

Cheryl

Orland Historical & Cultural Society

8:56 AM

Hello, your organization should have recieved information about a proposed bridge replacement on County Road 66B over the Colusa Drain. I'm checking to see if you had any questions or concerns about the project. Thank you.

11:59 AM

Cheryl-- I do have the letter in front of me from Cole Grube of Glenn County Public Works. This "unique" bridge is far-afield from the Orland Historical & Cultural Society's area of "influence." I was able to find it on Google Maps and I was not aware that there were still any wooden bridges in Glenn County. I don't expect the wooden planking would be retained on the replacement. While the OHCS is concerned with the preservation of local history, I don

(Sorry) I don't think our say in this matter would carry much weight. For safety reasons, it undoubtedly needs to be improved. Retaining the appearance of the wooden planking would be a bonus. Thanks for contacting us. --Gene Russell, VP OHCS.

Thank you for your response. I will let the Glenn County Public Works know

Type a message...

Orland Historical & Cultural Society

OPTIONS

Search in Conversation

MESSENGER LINK

m.me/566441600156280

PRIVACY & SUPPORT

12:04 PM
5/28/2020

CR 66B Bridge over Colusa Drain

Cheryl Brookshear

Thu 5/28/2020 9:54 AM

To:willowslibrary@yahoo.com <willowslibrary@yahoo.com>; planning@countyofglenn.net <planning@countyofglenn.net>;

Hello,

You should have recently received a letter about the replacement of the bridge over Colusa Drain on County Road 66B in the southern portion of the county. Please contact me if you have any concerns or questions about historic resources in the vicinity of the project.

Thank you,
Cheryl

Cheryl Brookshear | Architectural Historian
(530) 757-2521x113 office | jrphistorical.com

I am currently working remotely. The best way to reach me is via e-mail or leave a message at the extension listed above.

FW: CR 66B Bridge over Colusa Drain

Andy Popper <APopper@countyofglenn.net>

Thu 5/28/2020 11:03 AM

To:Cheryl Brookshear <CBrookshear@jrphistorical.com>;

Cc:willowslibrary@yahoo.com <willowslibrary@yahoo.com>; PPWA Planning Email Group <Planning@countyofglenn.net>;

Cheryl Brookshear | Architectural Historian,

It has come to my attention that the below noted letter was
addressed to the Glenn County Planning Commission, from Glenn County Public Works.

The April 13, 2020 letter is soliciting comments regarding historical resources and was received by the PDCSA on May 19.

Staff has no comments in response to the letter
and the next Planning Commission meeting is scheduled beyond the reply period (which ended May 13).

Unless the review comments are intended be to replied to by the Planning Commission itself,
future requests may be directed to:

Glenn County Planning &
Community Development Services Agency
225 North Tehama Street
Willows, CA 95988

Sincerely,
Andy Popper, Senior Planner
http://www.countyofglenn.net
Glenn County Planning &
Community Development Services Agency
225 North Tehama Street
Willows, CA 95988
530-934-6540

From: Andy Popper <APopper@countyofglenn.net>
Sent: Thursday, May 28, 2020 10:19 AM
To: Cheryl Brookshear <CBrookshear@jrphistorical.com>
Cc: willowslibrary@yahoo.com; PPWA Planning Email Group <Planning@countyofglenn.net>
Subject: RE: CR 66B Bridge over Colusa Drain

Cheryl Brookshear | Architectural Historian,

The below noted letter (which PCDSA did not receive) is likely intended to be directed to the below email.

Please forward to:
publicworks@countyofglenn.net

Thank you.
Sincerely,
Andy Popper, Senior Planner
http://www.countyofglenn.net
Glenn County Planning &
Community Development Services Agency
225 North Tehama Street
Willows, CA 95988
530-934-6540

From: Cheryl Brookshear <CBrookshear@jrphistorical.com>
Sent: Thursday, May 28, 2020 9:54 AM
To: willowslibrary@yahoo.com; PPWA Planning Email Group <Planning@countyofglenn.net>
Subject: CR 66B Bridge over Colusa Drain

Hello,

You should have recently received a letter about the replacement of the bridge over Colusa Drain on County Road 66B in the southern portion of the county. Please contact me if you have any concerns or questions about historic resources in the vicinity of the project.

Thank you,
Cheryl

https://mail.jrphistorical.com/owa/service.svc/s/GetFileAttachment?id=AAMkADU1MjhhZjA1LWZiNDctNDEzOS04M2E2LWM0ZTUwMWY3YzFiZABGAAAAAABboiZ5frYEQL9WS7GRjonxBwD5p7FhF7uxTbA7eyKOpFhkAAKrO8vDAAD5p7FhF7uxTbA7eyKOpFhkAAKrO%2BfgAAABEgAQALlXFdVPmTpFj9bVaaxHFrA%3D&X-OWA-CANARY=wMP7Khqsd0qa4iyHRQytCAxZzCK769cIPVIvCF4Vqjpeq UDrBpQi4nGY-DuflQReDMXs_NZOq1Y.

Cheryl Brookshear | Architectural Historian
(530) 757-2521x113 office | jrphistorical.com

I am currently working remotely. The best way to reach me is via e-mail or leave a message at the extension listed above.

Appendix E:
Final Initial Site Assessment Road 66B over Colusa Drain Bridge Replacement Glenn County, California

FINAL INITIAL SITE ASSESSMENT

Road 66B over Colusa Drain Bridge Replacement

Glenn County, California

Existing Bridge 11C-0068

Federal ID BRLO-5911(063)

Prepared By:

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

1100 Corporate Way, Suite 230
Sacramento, CA 95831

13 June 2019

Job No. 16-322.1

Prepared For:

QUINCY ENGINEERING

11017 Cobblerock Drive, Suite 100
Rancho Cordova, CA 95670

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services
Sacramento | Modesto | Pleasanton | Rocklin | Ukiah

Corporate Office: 1100 Corporate Drive, Suite 230 | Sacramento, CA 95831 | (916) 455-4225
Modesto: 1165 Scenic Drive, Suite A | Modesto, CA 95350 | (209) 312-7668
Pleasanton: 6200 Stoneridge Mall Road, Suite 330 | Pleasanton, CA 94588 | (925) 401-3515
Rocklin: 4220 Rocklin Road, Suite 1 | Rocklin, CA 95677 | (916) 455-4225
Ukiah: 100 North Pine Street | Ukiah, CA 95482| (707) 240-4400

16-322.1
13 June 2019

Mr. Scott McCauley, P.E.
Quincy Engineering
11017 Cobblerock Drive, Suite 100
Rancho Cordova, CA 95670

Subject: **FINAL INITIAL SITE ASSESSMENT**
Road 66B over Colusa Drain Bridge Replacement
Glenn County, California
Existing Bridge No. 11C-0068
Federal ID # BRLO-5911(063)

Dear Mr. McCauley:

Crawford & Associates, Inc. has prepared this Final Initial Site Assessment for the Road 66B over Colusa Drain bridge replacement project in the Glenn County, California. The purpose of this assessment is to identify and provide a preliminary assessment of the potential impacts of known or potential Recognized Environmental Conditions within the study area that may influence design and construction of the project. A Draft ISA published 25 June 2018 was reviewed by Caltrans District 3 without comment.

We include an executive summary, property information, records review, reconnaissance, findings and recommendations, and limitations in this report.

We appreciate the opportunity to be on your team for the Road 66B over Colusa Drain bridge replacement project. Please call us if you have questions or comments.

Sincerely,

CRAWFORD & ASSOCIATES, INC.

Stephen J. Carter
P.G. #5577
Senior Geologist

PROFESSIONAL GEOLOGIST
Stephen J. Carter
No. 5577
STATE OF CALIFORNIA

Reviewed by:

W. Eric Nichols
C.E.G. #2229
Senior Project Manager

Draft Approved for Client/Caltrans District 3 Review: 25 June 2018
Final Approved for Release: 13 June 2019

Taber
Since 1954

TABLE OF CONTENTS

LIST OF TABLES

APPENDIX

APPENDIX A – Site Maps
APPENDIX B – Project Site Photographs
APPENDIX C – Historical Aerial Photos
APPENDIX D – Historical Topographic Maps
APPENDIX E – GeoSearch Radius Report
APPENDIX F – National Analytical Laboratories, Inc. Report

1 EXECUTIVE SUMMARY

Crawford & Associates, Inc. (CAInc) performed an Initial Site Assessment (ISA) for the County Road (CR) 66B at Colusa Drain Bridge Replacement in Glenn County, California. The proposed project consists of replacing the existing bridge within the existing alignment.

The project site is located 2± miles west of State Route (SR) 45, and includes County Road (CR) 66B at Colusa Drain bridge and adjacent area as shown on Figure 1 in Appendix A. The existing bridge, built in 1940, is a three-span structure comprising a timber deck with timber girders on framed reinforced concrete bents founded on cast-in-steel-shell piles with reinforced concrete sill abutments. The bridge is approximately 54 feet long, 20 feet wide, and skewed about 10 degrees to the channel. The steel shell piles are severely corroded and the bridge is deemed Structurally Deficient by Caltrans. The bridge does not meet current design standards for travel width and shoulders, and currently has no barrier rails. The proposed replacement structure will be on the same alignment and will consist of a clear span bridge 4± feet wider and 5-10± feet longer at each end. The replacement bridge superstructure will likely be a cast-in-place, pre-stressed concrete slab or a pre-cast, pre-stressed slab. The new profile grade may be slightly higher to meet hydraulic requirements.

The purpose of this ISA is to identify recognized soil or groundwater contamination and hazardous material issues that may affect the planned project improvements. Based on the records reviewed and the site reconnaissance, CAInc makes the following observations:

- The project site was not identified in the database records reviewed.
- The database records search did not identify any facilities in the vicinity that have potentially impacted the project site.
- Site reconnaissance, historical topographic maps, and historical aerial photographs indicate historical land use adjacent to the project site has the potential to have impacted the project site with agricultural chemicals.

Based on the public records, historical aerial photographs and historical topographic maps reviewed for this assessment, the site reconnaissance performed on 24 May 2018, and a telephone conversation with UC Agricultural Extension, CAInc makes the following recommendation:

- A recognized environmental condition (REC) was identified with respect to agricultural chemical use in the rice fields surrounding the project site. CAInc recommends that soil and surface water within the proposed construction limits be screened for the presence of agricultural chemicals at concentrations that present an exposure risk. If bridge demolition or construction activities are expected to encounter groundwater, the groundwater should also be screened.

The proposed project will impact an existing roadway, bridge structure, canal, and adjacent properties. The following general hazardous materials or environmental concerns are typical of similar projects and have been evaluated in this assessment. A detailed discussion is provided in Section 6.2.

- Asbestos Containing Material (ACCM)
- Lead-Containing Materials
- Chemically Treated Wood
- Thermoplastic Traffic Striping

- Naturally Occurring Asbestos (NOA)
- Transformers
- Agricultural Chemicals (Pesticides/Herbicides/fungicides)
- Aerially Deposited Lead (ADL)
- Petroleum Hydrocarbons

This report identifies recognized environmental conditions and general hazardous materials issues that may be present at the site and provides recommendations for further investigation. Additional research and assessment may provide more certainty on conditions to be encountered during demolition and construction.

2 INTRODUCTION

2.1 PURPOSE

The following report summarizes an ISA performed by CAInc for the CR 66B over Colusa Drain bridge replacement project in Glenn County, California. This ISA was prepared for use by Glenn County for this specific project in accordance with the agreement between Quincy Engineering Inc. (QEI) and CAInc. The purpose of this ISA is to help identify potential or known hazardous materials, hazardous waste, and/or contamination (recognized environmental conditions) at the project site. Site maps are included in Appendix A. Site photographs are included in Appendix B.

We use the term Recognized Environmental Condition (REC) consistent with ASTM E1527-13. ASTM E1527-13 defines REC as:

> *"the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. De minimis conditions are not recognized environmental conditions."*

2.2 SCOPE OF SERVICES

CAInc completed the following tasks to prepare this Initial Site Assessment:

- Initiated a search request with GeoSearch to search federal, state, and local regulatory agency databases to determine whether areas of environmental concern exist on or near the project site. Search distances ranged between ⅛ and one mile from the project site, depending on the database.
- Reviewed geologic and groundwater conditions at the site.
- Reviewed historical aerial photographic coverage and topographic map coverage of the project area and vicinity for indications of potential sources of contamination.
- Reviewed of federal, state, and county records for indications of the use, misuse, or storage of hazardous and/or potentially hazardous substances on or near the site.
- Conducted limited site reconnaissance of the property and vicinity.
- Performed a limited review of the State of California's GeoTracker, Envirostor and Division of Oil, Gas and Geothermal Resources websites.
- Discussed agricultural chemical use in rice fields with University of California Cooperative Extension.

2.3 PROJECT DESCRIPTION

The existing bridge, built in 1940, is a three-span structure comprising a timber deck with timber girders on framed reinforced concrete bents founded on cast-in-steel-shell piles with reinforced concrete sill abutments. The bridge is approximately 54 feet long, 20 feet wide, and skewed about 10 degrees to the channel. The steel shell piles are severely corroded and the bridge is deemed Structurally Deficient by Caltrans.

The unlined Colusa Drain flows southerly at the bridge site and transports water for agricultural use. The flow is seasonal depending on agricultural use – generally the flows are highest between October through April for floodwater bypass and rice irrigation. No rock slope protection is in the channel and some scour appears to have occurred around the pier foundations. A drain empties into the canal near the northwest corner of the bridge and discharge from the outlet has eroded the embankment at this location.

The proposed project will replace the existing bridge on the same alignment with a clear span bridge 4± feet wider and 5-10± feet longer at each end. The bridge superstructure will likely be a cast-in-place, pre-stressed concrete slab or a pre-cast, pre-stressed slab. The new profile grade may be slightly higher to meet hydraulic requirements. The channel banks (including drain outfall) will be protected from scour/erosion with slope grading and rock slope protection.

2.4 PROJECT LOCATION

The project site is located in southeastern unincorporated Glenn County, California. The bridge site is 2± miles west of SR 45 on CR 66B, between CR W and CR VV. The project site lies within the Larkins Childrens Rancho Land Grant, T18N R2W. The project site coordinates are 39.428525°N, 122.050086°W, and the road elevation is about 78 feet (per Google Earth). A Site Vicinity Map (Figure 1) is included in Appendix A.

2.5 GEOLOGIC CONDITIONS

The project is located in the northern Sacramento Valley, within the Great Valley Geomorphic province of California. Surficial geology is characterized by flat-lying Quaternary age deposits comprising unconsolidated to semi-consolidated, non-marine sediments of fluvial, lacustrine and alluvial terrace origin.[1,2] These deposits are generally layers of sand, silt, and clay with some gravel, typically increasing in strength and consolidation with depth. A Geologic Map (Figure 2) is included in Appendix A.

No faults have been mapped in the project site vicinity. Based on mapping from the US Geological Survey[3] the nearest faults are the Great Valley Thrust Fault system 12.8± miles to the west and the Corning Fault 10.8 to the north-northwest, both of undifferentiated Quaternary age. The site is not included within an Alquist-Priolo Special Studies Zone.[4] A Fault Map (Figure 3) is included in Appendix A.

---

[1] Jennings, Charles W. and Strand, Rudolph G., 1960, Geologic Map of California: Ukiah Sheet; State of California: Department of Natural Resources, 1:250,000.
[2] Jennings, C.W. 1997, Geologic Map of California; California Geological Survey, 1:750,000, (updated by C. Gutierrez, W. Bryant, G. Saucedo and C. Wills, 2010).
[3] U.S. Geological Survey and California Geological Survey, 2006, Quaternary fault and fold database for the United States, accessed 25 June 2018, from USGS web site: https://earthquake.usgs.gov/hazards/qfaults/.
[4] https://maps.conservation.ca.gov/cgs/EQZApp/app/

The USDA-NRCS Web Soil Survey[5] shows the western bridge approach, abutment, and Colusa Drain as underlain by Marvin silty clay loam, described as slightly saline-alkali soil forming 0 to 1% slopes with a typical profile of silty clay to 13 inches below ground surface (bgs) underlain by clay to at least 60 inches bgs. The eastern bridge approach and abutment are underlain by Marvin silty clay loam, forming 0 to 2% slopes, with a typical profile of silty clay loam to 13 inches bgs, underlain by clay to at least 60 inches bgs.

2.6 GROUNDWATER CONDITIONS

Colusa Drain is unlined in the vicinity of the project site. Hydraulic communication between groundwater and surface water was not assessed during this investigation.

The project site is located in the Colusa Subbasin (5-021.52). Based on information from DWR's Water Data Library[6] there are two wells in the project site vicinity from which historical groundwater elevations are available. These wells are located 6,500± feet east-northeast and 4,800± feet east-southeast. Groundwater level data from these wells is only available for 2014 and 2015. Groundwater highs were measured in March 2015 at depths of 8.6 and 9.7 feet bgs, or 69.3 and 70.4 feet above mean sea level (msl). Groundwater lows were measured in July 2015 at 24.0 to 24.2 feet bgs, or 54.8 to 55.0 feet above msl]. Based on data available on DWR's Groundwater Information Center Interactive Map Application[7] groundwater flow in the site vicinity during Spring 2017 was generally toward the south-southeast. Groundwater flow during Fall 2017 groundwater was radial toward the southwest, south, and southeast.

The site is identified on the Federal Emergency Management Agency's flood insurance rate map 06021C0850D[8] (dated 5 August 2010) as being in Zone A (special flood hazard area subject to inundation by the 1% annual chance flood, no base flood elevation determined).

2.7 CURRENT LAND USE

Current land use adjacent to the project site consists of a rural local road serving predominantly agricultural properties and some rural residences and agricultural operations. The project site is surrounded by four privately-owned parcels: Assessor Parcel Number (APN) 013-210-034 and APN 013-210-023 are situated at the northwest corner of the bridge; APN 013-250-037 is at the southwest corner of the bridge; APN 013-210-035 is at the northeast corner of the bridge; and APN 013-250-021 is at the southeast corner of the bridge. All four of these parcels are zoned for intensive agriculture, and all four appear to be actively used for rice cultivation. A drainage ditch and narrow strip of land are located between Road 66B and the rice field on APN 013-210-035. Location of the parcels identified above relative to the project site are shown on Figure 1 in Appendix A.

2.8 HISTORICAL LAND USE

2.8.1 SUMMARY

Properties in the project vicinity have historically been used for agriculture, with rural residential and agriculture-related structures located 1,150± feet to the east, 1,560± feet to the northeast,

[5] Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture, Web Soil Survey, http://websoilsurvey.nrcs.usda.gov/
[6] http://wdl.water.ca.gov/waterdatalibrary/
[7] https://gis.water.ca.gov/app/gicima/
[8] https://msc.fema.gov/portal/search#searchresultsanchor

and 1,450± to the south-southwest (distances from Google Earth Pro). These conditions have remained largely unchanged over the historical period examined.

2.8.2 HISTORICAL AERIAL PHOTOGRAPHS

Aerial photographs were provided by GeoSearch for the years shown in Table 1. The photographs were reviewed for information about historic conditions and land uses within the study area. The photos are described in chronological order below. Aerial photographs are included in Appendix C.

Table 1: Historical Aerial Photographs

Year	Source	Scale
1937	ASCS	1″=500′
1947	USGS	1″=500′
1958	ASCS	1″=1,320′
1964	ASCS	1″=1,320′
1973	USGS	1″=500′
1983	USGS	1″=700′
1993	USGS	1″=700′
1998	USGS	1″=500′
2003	USDA	1″=500′
2004	USDA	1″=500′
2005	USDA	1″=500′
2006	USDA	1″=500′
2009	USDA	1″=500′
2010	USDA	1″=500′
2012	USDA	1″=500′
2014	USDA	1″=500′
2016	USDA	1″=500′

1937 All properties in the immediate vicinity of the project site are developed for agriculture (appears to be rice). Riparian vegetation (trees) is present in the Colusa Drain channel. Configurations of CRs 66B, W and VV, Colusa Drain, Bounde Creek, and other drainage structures appear similar to present. What appears to be agriculture-related and/or rural residential structures are visible 1,350± feet to the east, 1,900± feet to the northeast, and 1,700± to the south-southwest (distances scaled from photograph).

1947 No substantive changes are evident from the 1937 photograph.

1958 This photograph is of poor quality. Riparian vegetation is not visible in the Colusa Drain. No other substantive changes are evident from the 1947 photograph.

1964 This photograph is of poor quality. No substantive changes are evident from the 1958 photograph.

1973 No substantive changes are evident from the 1964 photograph.

1983 No substantive changes are evident from the 1973 photograph.

1984 No substantive changes are evident from the 1983 photograph.

1993 No substantive changes are evident from the 1984 photograph.

1998 No substantive changes are evident from the 1993 photograph.

2003 No substantive changes are evident from the 1998 photograph.

2004 No substantive changes are evident from the 2003 photograph.

2005 No substantive changes are evident from the 2004 photograph.

2006 No substantive changes are evident from the 2005 photograph.

2009 No substantive changes are evident from the 2006 photograph.

2010 No substantive changes are evident from the 2009 photograph.

2012 No substantive changes are evident from the 2010 photograph.

2014 No substantive changes are evident from the 2012 photograph.

2016 No substantive changes are evident from the 2014 photograph.

2.8.3 HISTORICAL TOPOGRAPHIC MAPS

Historical topographic maps were provided by GeoSearch for the years shown in Table 2 and are discussed in chronological order below. Maps were reviewed for significant changes in topography or property improvements. Topographic maps are included in Appendix D.

Table 2: Historical Topographic Maps

Year	Quad	Series	Scale
1906	Maxwell	15	1:62,496
1918	Princeton	7.5	1:31,680
1952	Maxwell	15	1:62,496
1952	Princeton	7.5	1:24,000
1973	Princeton	7.5	1:24,000
2012	Princeton	7.5	1:24,000

1906 Map depicts the topography in the project vicinity as flat (5-foot contour intervals). Bounde Creek is depicted, but Colusa Drain and CRs 66B, W and VV are not. No structures are depicted in the site vicinity.

1918 No substantive changes in the vicinity of the project site are evident from the 1906 map.

1952 In addition to Bounde Creek, the map depicts Colusa Drain and CRs 66, W and VV. Structures are depicted 1,150± feet to the east on the southeast corner of the CR 66B/CR W intersection, 1,560± feet to the northeast of the site on CR W, and 1,450± feet of the southwest

at the end of CR VV (distances scaled from topographic map). No other substantive changes in the vicinity of the project site are evident from the 1918 map.

1973 Photorevision Additional structures are depicted at the southeast corner of the CR 66/CR W intersection, and at the end of CR VV. The number and location of structures northeast of the project site on CR W have also changes slightly. No other substantive changes in the vicinity of the project site are evident from the 1952 map.

2012 The map depicts roadways, creeks, canals, and drains, but does not depict other cultural features or topography. No substantive changes in the vicinity of the project site are evident from the 1973 map.

3 DATABASE SEARCH AND RECORDS REVIEW

3.1 DATABASE SEARCH

Databases and site lists maintained by environmental regulatory agencies were searched for properties within the study area to identify sites with known releases of hazardous materials or petroleum products, and sites with the potential for such releases. Each database and site list were searched for sites within the ASTM standard search radius relative to the project site. The Geosearch database search records are provided in Appendix E. The following databases and site lists were searched:

FEDERAL LISTING

Standard Environmental Records

- ERNSCA – Emergency Response Notification System
- EC – Federal Engineering Institutional Control Sites
- LUCIS – Land Use Control Information System
- RCRASC – RCRA Sites with Controls
- RCRAGR09 – Resource Conservation & Recovery Act – Generator
- RCRANGR09 – Resource Conservation & Recovery Act – Non-Generator
- FEMALUST – FEMA Owned Storage Tanks
- BF – Brownfields Management System
- DNPL – Delisted National Priorities List
- NLRRCRAT – No Longer Regulated RCRA Non-CORRACTS TSD Facility
- RCRAT – Resource Conservation & Recovery Act – Non-CORRACTS Treatment, Storage & Disposal Facilities
- SEMS – Superfund Enterprise Management System
- SEMSARCH – Superfund Enterprise Management System Archived Site Inventory
- NPL – National Priorities List
- NLRRCRAC – No Longer Regulated RCRA Corrective Action Facilities
- PNPL – Proposed National Priorities List
- RCRAC – Resource Conservation & Recovery Act – Corrective Action Facilities
- RCRASUBC - Resource Conservation & Recovery Act – Subject to Corrective Action Facilities

Additional Environmental Records

- AIRSAFS – Aerometric Information Retrieval System / Air Facility Subsystem

- BRS - Biennial reporting system
- SFLIENS – CIRCLIS Liens
- CDL – Clandestine Drug Laboratory Locations
- DOCKETS – EPA Docket Data
- ECHOR09 – Enforcement and Compliance History Information
- FRSCA – Facility Registry System
- HMIRSR09 – Hazardous Materials Incident Reporting System
- ICIS – Integrated Compliance Information System (formerly DOCKETS)
- ICISNPDES – Integrated Compliance Information System National Pollutant Discharge Elimination System
- MLTS – Material Licensing Tracking System
- NPDESR09 – National Pollutant Discharge Elimination System
- PADS – PCB Activity Database System
- PCSR09 – Permit Compliance System
- SEMSLIENS – SEMS Liens on Property
- SSTS – Section Seven Tracking System
- TSCA – Toxic Substance Control Act Inventory
- TRI – Toxic Release Inventory
- ALTFUELS – Alternative Fueling Stations
- HISTPST – Historical Gas Stations
- ICISCLEANERS – Integrated Compliance Information System Drycleaners
- MSHA – Mine Safety and Health Administration Master Index File
- MRDS – Mineral Resource Data System
- ODI – Open Dump Inventory
- SMCRA – Surface Mining Control and Reclamation Act Sites
- USUMTRCA – Uranium Mill Tailings Radiation Control Act Sites
- DOD – Department of Defense Sites
- NMS – Former Military Nike Missile Sites
- FUDS – Formerly Used Defense Sites
- FUSRAP – Formerly Utilized Sites Remedial Action Program
- RODS – Record of Decision System

STATE (CA) LISTING

Standard Environmental Records

- DTSCDR – DTSC Deed Restrictions
- ABST – Above Ground Storage Tanks
- AST2007 – Aboveground Storage Tanks Prior to January 2008
- HISTUST – Historical Underground Storage Tanks
- SWEEPS – Statewide Environmental Evaluation and Planning System
- USTCUPA – Underground Storage Tanks
- BF – Brownfield Sites
- CALSITES – CALSITES database
- CLEANUPSITES – GeoTracker Cleanup Sites
- LUST – Leaking Underground Storage Tanks
- SWIS – Solid Waste Information System Sites
- VCP – Voluntary Cleanup Sites
- ENVIROSTOR – ENVIROSTOR Cleanup Sites

- ENVIROSTORPCA – ENVIROSTOR Permitted and Corrective Action Sites

Additional Environmental Records

- CHMIRS – California Hazardous Material Incident Report System
- CDL – Clandestine Drug Labs
- EMI – Emissions Inventory Data
- HWTS – Hazardous Waste Tanner System
- LDS – Land Disposal Sites
- MCS – Military cleanup Sites
- NPDES – National Pollutant Discharge Elimination System Facilities
- LIENS – Recorded Environmental Cleanup Liens
- MWMP – California Medical Waste Management Program Facility List
- DTSCHWT – DTSC Registered Hazardous Waste Transporters
- CLEANER – Dry Cleaner Facilities
- MINES – Mines Listing
- SLIC – Spills, Leaks, Investigation & Cleanup Recovery Listing
- CORTESE – Cortese List
- ERAP – Expedited Removal Action Program Sites
- HISTCORTESE – Historical Cortese List
- DROP – Listing of Certified Dropoff, Collection, and Community Service Programs
- PROC – Listing of Certified Processors
- NFA – No Further Action Determination
- SWRCY – Recycling centers
- REF – Referred to Another Local or State Agency
- NFE – Sites Needing Further Evaluation
- WMUDS – Waste Management Unit Database
- TOXPITS – Toxic Pits Cleanup Act Sites

TRIBAL LISTING

Standard Environmental Records

- USTR09 – Underground Storage Tanks on Tribal Lands
- TORRESDUMPSITES – Illegal Dump Sites on the Torres Martinez Reservation
- LUSTR09 – Leaking Underground Storage Tanks on Tribal Lands
- ODINDIAN – Open Dump Inventory on Tribal Lands

Additional Environmental Records

- INDIANRES – Indian Reservations

3.2 SUMMARY OF RECORDS SEARCH

The subject site was not identified in any of the databases searched. No suspect facilities were positively identified within the search radii.

3.2.1 UNLOCATED FACILITIES

One suspect facility (Torres Rice Ranch) was identified within the search radii that could not be mapped due to limited or incomplete address information (address given as Road 66B, Princeton). This site was identified in the SWEEPS database (historical listing of active and

inactive underground storage tanks storing petroleum products, industrial solvents, and other materials). The site was not identified in other databases identifying sites with leaking tanks or unauthorized discharges. Property ownership information supplied by QEI suggests that this facility was not located adjacent to the APE.

3.3 GEOTRACKER AND ENVIROSTOR DATABASES

CAInc reviewed the State of California's GeoTracker website to identify facilities in the project site vicinity. No facilities were identified within 1 mile of the project site.

CAInc reviewed the State of California's Envirostor website[9] to identify facilities in the project site vicinity. No facilities were identified within 1 mile of the project site.

3.4 DIVISION OF OIL, GAS AND GEOTHERMAL RESOURCES DATABASE

CAInc reviewed the State of California's Oil, Gas and Geothermal Resources website[10] to identify facilities in the project site vicinity. The project site is located on the western boundary of the Bounde Creek gas field. As of 27 April 2018, there were 8 dry wells, 4 producing wells, and 7 plugged wells within a 1-mile radius of the project site. The nearest wells to the project site are 1,600± feet to the southeast; two dry wells are identified at this location (distances estimated using Google Earth Pro).

4 RECONNAISSANCE

Reconnaissance of the project site was performed on 24 May 2018 by Steve Carter, PG. The reconnaissance consisted of a walking and driving traverse along CR 66B. The reconnaissance included visual observations of bridge construction, of the canal and bank, of the roadway and bridge approaches, and of properties bordering the project site. These observations were intended to identify the land uses and activities on adjacent land, and the presence, or likely presence, of hazardous substances or petroleum products at the project site or on adjacent properties. Photographs are included in Appendix B.

Mr. Carter observed that the bridge comprises a three-span timber structure supported by concrete abutments and piers on concrete piles (photos 1 through 5 and 8). Water in the canal was flowing toward the south. Steel jackets are visible at the base of the piles above the water line (photo 5). The bridge deck is constructed of wooden structural members, wooden decking, and a wooden curb. This wood appears new and lacks the color and dimpling typical of pressure-treated wood (photos 8 and 9). No guard rails are present on the bridge or bridge approaches. Concrete approach aprons are present on both sides of the bridge. CR 66B is asphalt-paved on both sides of the bridge. There is no centerline or fog line striping present.

Vegetation observed in Colusa Drain (weeds and vines) and adjacent to CR 66B (weeds) appeared seasonally healthy. Several tires were observed near the southwest corner of the bridge on APN 013-250-037 adjacent to Colusa Drain (photo 6). No utility boxes, wires, pipes, subgrade vaults, or manhole covers were observed in the project site vicinity. Wells, mining activities, oil and gas drilling and production equipment, pits, lagoons, hazardous materials containers, wells, rock outcrops, or indications of NOA were not observed within or in the vicinity of the APE. Evidence of vehicle repair operations or storage of petroleum motor fuels or agricultural chemicals

[9] envirostor.dtsc.ca.gov
[10] www.conservation.ca.gov/dog/Pages/Wellfinder.aspx

were not observed at the project site or vicinity. Ditches adjacent to the north side of CR 66B and east side of CR W contained flowing water. Standing water was present in the rice fields.

A new sign indicating the presence of pesticides in the rice field was observed at the southwest corner of the bridge (APN 013-250-021; photo 7).

Observations made during the site reconnaissance generally support the research and background data. Photographs from the site reconnaissance are provided in Appendix B.

4.1 INTERVIEW WITH UC AGRICULTURAL EXTENSION

CAInc spoke with Ms. Whitney Brim-DeForest of the University of California Cooperative Extension, Sutter-Yuba Counties, on 25 June 2018, regarding likely pesticides referred to by the sign observed in APN 013-250-021.

Ms. Brim-DeForest indicated that based on the time of year, the likely agricultural chemicals referred to by the sign were herbicides, likely applied in granular form via aircraft. Ms. Brim-DeForest indicated although less likely, pesticides and fungicides might also have been applied to the rice fields.

5 MATERIAL SAMPLING

5.1 ASBESTOS AND PAINT INSPECTION

CAInc contracted with National Analytical Laboratory, Inc. (NAL) to inspect the bridge for the presence of asbestos containing construction material (ACCM) and lead-containing material (LCM). This inspection was performed 15 May 2018. A copy of the NAL report is included as Appendix F.

5.1.1 ASBESTOS INSPECTION

According to the NAL report, the asbestos inspection was performed by a Certified Asbestos Consultant (CAC) in conformance with the Environmental Protection Agency's (EPA) Asbestos Containing Building Materials In-School Rule; CFR 763.85. During the inspection, four bulk samples were collected for later analysis by EMSL Analytical, Inc. (NVLAP #101048-10 and CAELAP #2339). Samples were analyzed by EPA Method 600/R93/116 using polarized light microscopy. NAL reported that asbestos was not detected in any of the four samples analyzed.

5.1.2 LEAD INSPECTION

According to the NAL report, the lead inspection was performed by a Certified Lead Inspector/Assessor (CLA) in conformance with the Department of Housing and Urban Development, EPA, and California Public Health Department guidelines, who regulate and require the abatement or in-place management of LCM, including lead-based paint (LBP). NAL collected paint samples from the east pier-column system metal support beam and the west pier-column system, round column system for later analysis by EMSL Analytical, Inc. Paint samples were analyzed by Flame AAS (SW 846 3050B/7000B). NAL reported that both samples had lead concentrations <0.010% by weight.

6 FINDINGS

The purpose of this report is to identify recognized soil or groundwater contamination or hazardous material issues that could impact the project. The assessment identified the following potential hazardous materials issues that should be considered in the planning of project improvements.

6.1 POTENTIAL HAZARDOUS MATERIALS SITES

The purpose of this ISA is to identify recognized soil or groundwater contamination and hazardous material issues that may affect the planned project improvements. Based on the records reviewed and the site reconnaissance, CAInc makes the following observations:

- The project site was not identified in the database records reviewed.
- The database records search did not identify any facilities in the vicinity that have potentially impacted the project site.
- Historical topographic maps and aerial photographs indicate historical land uses adjacent to the project site have the potential to have impacted the project site with agricultural chemicals.

6.2 GENERAL HAZARDOUS MATERIALS ISSUES

6.2.1 ASBESTOS CONTAINING CONSTRUCTION MATERIAL (ACCM)

Existing structures that will be impacted by project demolition are constructed of materials having the potential to contain asbestos. Concrete bridge components (piers, footings, abutments, deck) could potentially contain asbestos. ACCM, as defined in the California Code of Regulations, Title 8, Section 1529 of the Construction Safety Orders, can also be present in construction materials such as bridge joint seals, bearing pads, shims, deck drains or other less obvious materials such as pipe conduits for utilities. Under the federal asbestos National Emissions Standards for Hazardous Air Pollutants regulations (NESHAP, 40 CFR Part 61, Subpart M), a CAC must make definitive conclusions regarding the presence of ACCM. Prior to demolition or reconstruction, existing structures are required to have an asbestos survey completed to determine the appropriate method of handling and disposal of demolition debris. Written notification to the Air Quality Management District (AQMD) of demolition or renovation operations on structures is required at least 10 business days prior to conducting the work, regardless of the presence or absence of asbestos in the bridge materials.

NAL did not identify asbestos or ACCM in the bridge components inspected. Written notification to the AQMD of demolition operations is none the less required at least 10 business days prior to conducting the work.

6.2.2 LEAD-CONTAINING MATERIALS

Painted surfaces must be sampled to evaluate for the presence of lead when the likelihood of flaking, peeling, or paint dust exists. If lead is identified at concentrations above threshold limits, the painted surfaces must be dismantled and disposed of in accordance with the Caltrans 2015 Standard Specification (SS) 14-11.13 and SSP 14-11.13, Disturbance Of Existing Paint Systems On Bridges. Lead concentrations ≥1.0 milligrams/centimeter^2 by XRF analysis, or ≥0.05% by weight by flame atomic adsorption require abatement or in-place management of the lead-containing material. Lead-containing material with concentrations ≥1,000 milligrams/kilogram requires the material be handled and disposed of as hazardous waste.

NAL reported that the paint samples collected from the bridge contained <0.010% by weight of lead, below threshold levels. The pained materials on the bridge do not require special handling, abatement, or disposal.

6.2.3 CHEMICALLY TREATED WOOD

Chemically treated wood must be handled as treated wood waste (TWW) and disposed of as hazardous waste. Should treated wood be encountered during bridge demolition it would need to be properly handled and disposed of as TWW. Section 66261.9.5 of Department of Toxic Substances Control (DTSC) regulations provide alternative management standards (AMS) for treated wood waste. SS 14-11.14 and SSP 14-11.14 for TWW are based on AMS regulations. This special standard provision directs the contractor to follow the AMS, including providing training to all personnel that may come in contact with TWW. Training must include, at a minimum, safe handling; sorting and segregating; storage; labeling (including date); and proper disposal methods. Chemically treated wood removed from the project site must adhere to SPP 14-11.09.

Chemically treated wood was not observed at the project site. Wood used for the bridge decking and support beans appeared new and does not have the dimpling and green color typical of pressure-treated wood. Special handling and disposal of this wood is not required. If chemically treated wood is encountered in parts of the bridge that could not be observed during site reconnaissance (e.g. sole plates on the piers or abutments), this would will need to be handled and disposed of as TWW.

6.2.4 THERMOPLASTIC TRAFFIC STRIPING

Thermoplastic traffic striping may contain heavy metals, including lead and chromium, at concentrations in excess of the hazardous waste thresholds established by the California Code of Regulations, and may produce toxic fumes when heated. Consequently, white and yellow traffic striping should be tested to determine whether hazardous concentrations are present. If the volume of striping material is low, it could be assumed to be hazardous waste and disposed of accordingly, at a Class 1 disposal facility. Grinding or planing of traffic striping containing heavy metals must be done in accordance with SS 14-11.12.

Paint striping was not observed during site reconnaissance.

6.2.5 NATURALLY OCCURRING ASBESTOS (NOA)

CAInc reviewed the potential for NOA at the project site by performing field reconnaissance and reviewing published geologic mapping.[11] The geologic mapping reviewed as part of this study does not indicate ultramafic rocks or rocks suspected to contain NOA are present within the project site vicinity. CAInc did not observe rock outcrops or rock fragments that are likely to contain NOA at the project. Although NOA can be associated with faults, no mapped faults have been identified in the project site vicinity. Figure 3 shows the locations of faults in the project vicinity. The potential for NOA in the study area is considered low and further study is not warranted.

[11]Churchill, R.K. and Hill, R.L., 2000, A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos: California Division of Mines and Geology, Open-File Report 2000-019, scale 1:1000,000.

6.2.6 TRANSFORMERS

Historically, electrical transformers have contained polychlorinated biphenyls. Identification and remediation of old transformers is the responsibility of the utility owner. Site reconnaissance did not identify any electrical transformers in the immediate project site vicinity.

6.2.7 AGRICULTURAL CHEMICALS

Properties surrounding the project site are currently utilized for rice cultivation and have been throughout the historical period examined for this assessment. Agricultural chemicals are typically applied to rice fields; a sign indicating the presence of pesticides was observed within the APE. Discussion with the University of California Agricultural Extension indicated applied agricultural chemicals were likely herbicides, although may also have included pesticides and/or fungicides. The likely herbicide application method of the herbicide would have been granules applied by aircraft; this application method may have resulted in impact to the project site. The potential for agricultural chemicals in the soil and surface water within the APE constitutes a REC.

CAInc recommends that soil within the proposed construction limits be screened for the presence of agricultural chemicals at concentrations sufficient to be an exposure hazard. Water from the rice fields is carried by the adjacent drainage canals and Colusa Drain. Surface water within the APE should also be screened for agricultural chemicals as workers within Colusa Drain are likely to come in contact with Colusa Drain water during demolition and construction activities. Percolation of impacted surface water may also have impacted shallow groundwater; if excavation for the new bridge abutments encounters groundwater, this should also be screened for agricultural chemicals. If soil generated by excavation activities will be hauled for off-site disposal, the receiving facility may also require analysis of the spoils for agricultural chemicals as part of the disposal characterization process.

6.2.8 AERIALLY DEPOSITED LEAD (ADL)

Generally, ADL may be an issue on roads which have historically experienced significant traffic, particularly where vehicles would be stopping and idling, i.e., at a stop sign or a high congestion area. LBP has historically been used on transportation structures; ADL could also a concern in soil adjacent to structures where LBP was used.

Historical photographs and topographic maps indicate CR 66B was a low-traffic rural road during the period when leaded gasoline was in use (1920s through 1970s); lead impact from motor vehicle exhaust appears unlikely. Likewise, lead was not identified in the paint of the existing bridge structure, and other painted transportation structures were not identified at the project site; impact to soil from flaking and peeling LBP appears unlikely. Screening for ADL in soil at the project site is not warranted.

6.2.9 PETROLEUM HYDROCARBONS

Site reconnaissance did not identify the presence or likely presence of underground or aboveground storage or dispensing of petroleum-based fuels. Staining was not observed on the ground surface at the project site indicative of an unauthorized release of motor vehicle fuel, lubricant or hydraulic fluid. Screening for petroleum hydrocarbons is not warranted.

7 RECOMMENDATIONS

Based on the public records, historical aerial photographs, historical aerial photographs reviewed for this assessment, the site reconnaissance performed on 24 May 2018, and telephone conversation with UC Agricultural Extension, CAInc makes the following recommendation:

- A REC was identified with respect to agricultural chemical use in the rice fields surrounding the project site. CAInc recommends that soil and surface water within the proposed construction limits be screened for the presence of agricultural chemicals at concentrations that present an exposure risk. If bridge demolition or construction activities are expected to encounter groundwater, the groundwater should also be screened.

8 LIMITATIONS

This report summarizes the findings and opinions of CAInc with regard to the potential for the presence of contamination/hazardous materials within the project area at concentrations likely to warrant mitigation under current statutes and guidelines. Findings and opinions within this report are based on information obtained on given dates, or provided by specified individuals, through record reviews, site review, and related activities. CAInc's information is only as good as the information provided by these sources. Site conditions may change after documented observations have been made. A warrant or guarantee cannot be made that hazardous materials do not exist at the site. To further reduce risk, an extensive invasive exploration may be necessary prior to project implementation.

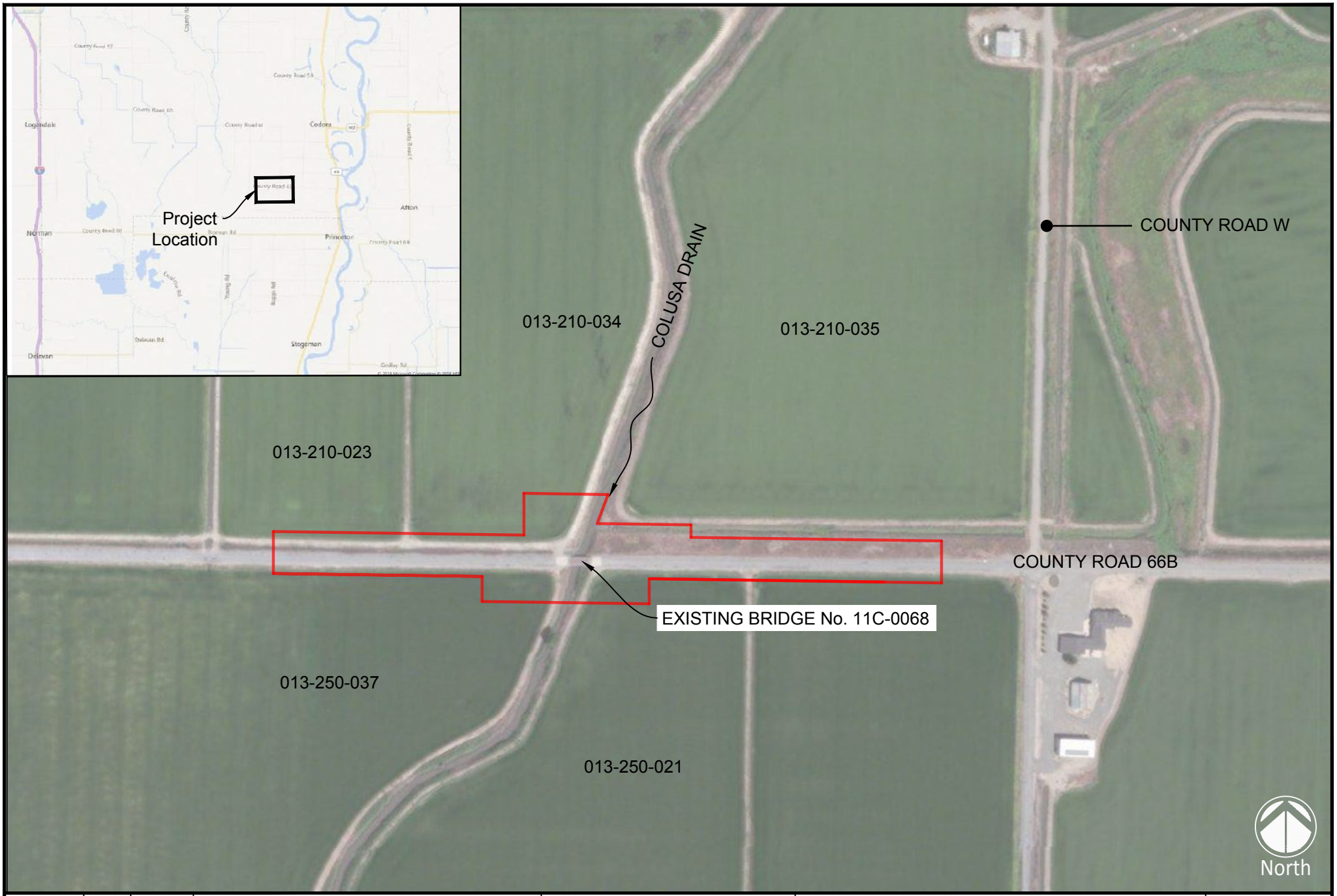
This report was prepared for the specific use of QEI and their agents for this project and applies only to the area identified as the project area. CAInc is not responsible for interpretations by others of data presented in this report. This report does not represent a legal opinion. No warranty is expressed or implied. Conclusions in this report are based on professional judgment and experience. Work for this assessment was performed in accordance with generally accepted standards of practice in northern California at the time of the assessment.

The scope of this investigation did not include determining the presence of radon. GeoSearch noted the project site is in Radon Zone 3, with a predicted indoor radon screening level <2 picocuries/liter. Identifying endangered species, geologic hazards, archeological sites, or ecologically sensitive areas are also beyond the scope of this report.

The governmental records summary within this report is derived from public records, which are updated on a continual basis. For this reason, it is not advisable to use this information to base a decision after 180 days of the issue date of this report. Conditions at the site can and will change over time. Please contact CAInc to revise this report to reflect new information.

APPENDIX A

Site Maps



Project Mgr.		
Project Eng.	SJC	06/04/18
Designer		
Checked By		
Drawn By	SRW	06/04/18
	By	Date

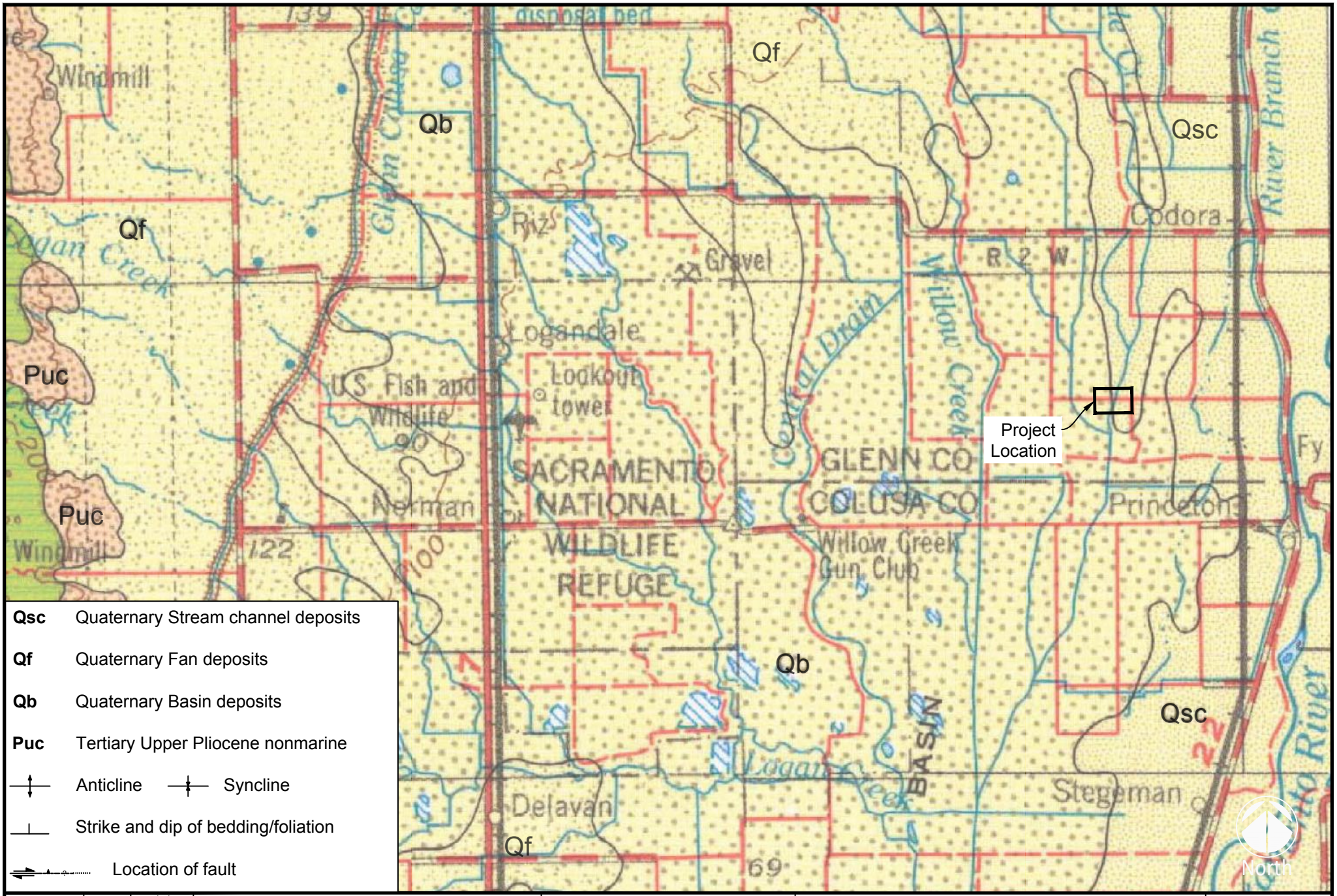
AREA OF POTENTIAL EFFECTS

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services
Taber Since 1954
1100 Corporate Way
Suite 230
Sacramento, CA 95831
(916) 455-4225

County Road 66B Bridge Replacement
Existing Bridge No. 11C-0068
Glenn County, California

Figure 1
Site Vicinity and Location Map

Project No.	16-322.1
Scale	1"=300'
Date	10/3/16



Qsc	Quaternary Stream channel deposits
Qf	Quaternary Fan deposits
Qb	Quaternary Basin deposits
Puc	Tertiary Upper Pliocene nonmarine
	Anticline
	Syncline
	Strike and dip of bedding/foliation
	Location of fault

Project Mgr.	RDS	10/3/16
Project Eng.	NRA	10/3/16
Designer		
Checked By		
Drawn By	NRA	10/3/16
	By	Date

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Suite 230
Sacramento, CA 95831
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County Road 66B Bridge Replacement
Existing Bridge No. 11C-0068
Glenn County, California

Figure 2
Geology Map

Project No.	16-322.1
Scale	NTS
Date	10/3/16

LEGEND

Quaternary Fault (Age)	Quaternary Fault (Age)	Location
<150 years	<750,000 years	Well Constrained
<15,000 years	<1.6 million years	Moderately Constrained
<130,000 years		Inferred

Project Mgr.	RDS	10/3/16
Project Eng.	NRA	10/3/16
Designer		
Checked By		
Drawn By	NRA	10/3/16
	By	Date

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Sacramento, CA 95831
(916) 455-4225

County Road 66B Bridge Replacement
Existing Bridge No. 11C-0068
Glenn County, California

Figure 3
Fault Activity Map

Project No.	16-322.1
Scale	1"=10miles
Date	10/3/16

APPENDIX B

Site Photographs

Photo 1 – CR 66B bridge over Colusa Drain. Viewed west.

Photo 2 – CR 66B looking east from Colusa Drain bridge.

Photo 3 – View of bridge from the north side. Viewed southeast.

Photo 4 – View of bridge from the south side. Viewed north-northeast.

Photo 5 – Corroded steel jacketing on pile (western pier).

Photo 6 – Tires at southwest corner of bridge (APN 013-250-037).

Photo 7 – Sign at southeastern corner of bridge (APN 013-250-021).

Photo 8 – Abutment, northwest corner of bridge.

Photo 9 – Wooden decking and curb rail.

APPENDIX C

Historical Aerial Photographs

GeoSearch

On time. On target. In touch.™

Historical Aerial Photographs

Target Property:

CR 66B @ Colusa Drain Bridge
Rd 66B
Princeton, Glenn, California 95970

Prepared For:

Crawford & Associates

Order #: 107993
Job #: 236699
Project #: 16-322
Date: 5/11/2018

Target Property Summary

CR 66B @ Colusa Drain Bridge
Rd 66B
Princeton, Glenn, California 95970

USGS Quadrangle: ***Princeton***
Target Property Geometry: ***Point***

Target Property Longitude(s)/Latitude(s):
(-122.050080175, 39.428544391)

Aerial Research Summary

Date	Source	Scale	Frame
2016	USDA	1" = 500'	N/A
2014	USDA	1" = 500'	N/A
2012	USDA	1" = 500'	N/A
2010	USDA	1" = 500'	N/A
2009	USDA	1" = 500'	N/A
2006	USDA	1" = 500'	N/A
2005	USDA	1" = 500'	N/A
2004	USDA	1" = 500'	N/A
2003	USDA	1" = 500'	N/A
08/25/1998	USGS	1" = 500'	N/A
06/16/1993	USGS	1" = 700'	6358-68
07/04/1983	USGS	1" = 700'	397-14
07/01/1973	USGS	1" = 500'	1-116
1964	ASCS	1" = 1320'	PI-3
1958	ASCS	1" = 1320'	PI-2
06/13/1947	USGS	1" = 500'	2-128
10/10/1937	ASCS	1" = 500'	115-8

N
W E
S

CR 66B @ Colusa Drain Bridge
ASCS
10/10/1937

GeoSearch

JOB #: 236699 - 05/11/2018

N
W E
S

CR 66B @ Colusa Drain Bridge
USGS
06/13/1947

GeoSearch

JOB #: 236699 - 05/11/2018

N
W E
S

CR 66B @ Colusa Drain Bridge
ASCS
1958

GeoSearch

JOB #: 236699 - 05/11/2018

N
W E
S

CR 66B @ Colusa Drain Bridge
ASCS
1964

GeoSearch

JOB #: 236699 - 05/11/2018

N
W E
S

CR 66B @ Colusa Drain Bridge
USGS
07/01/1973

GeoSearch

JOB #: 236699 - 05/11/2018

N
W E
S

CR 66B @ Colusa Drain Bridge
USGS
07/04/1983

GeoSearch

JOB #: 236699 - 05/11/2018

N
W E
S

CR 66B @ Colusa Drain Bridge
USGS
06/16/1993

GeoSearch

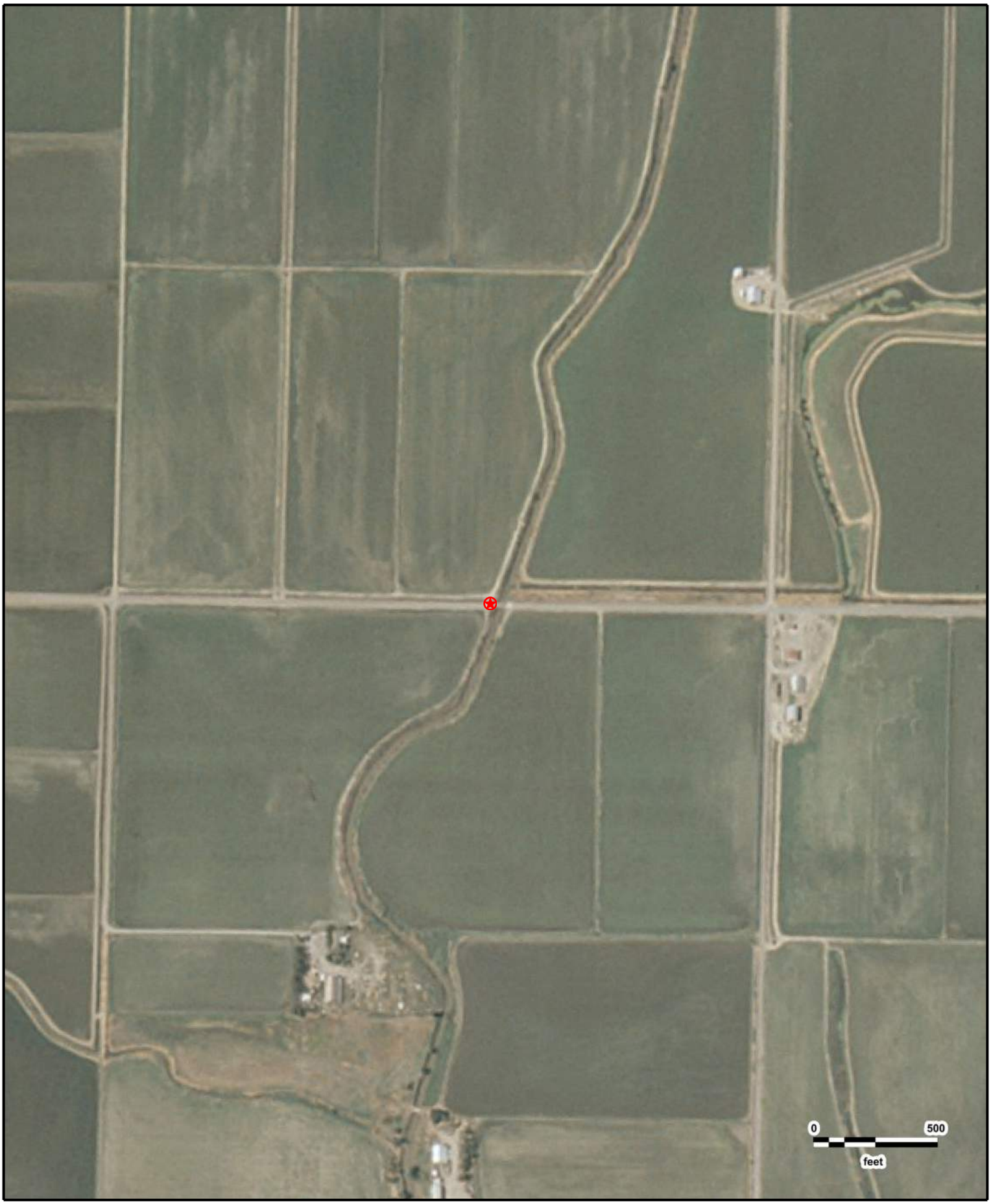
JOB #: 236699 - 05/11/2018

N
W E
S

CR 66B @ Colusa Drain Bridge
USGS
08/25/1998

GeoSearch

JOB #: 236699 - 05/11/2018

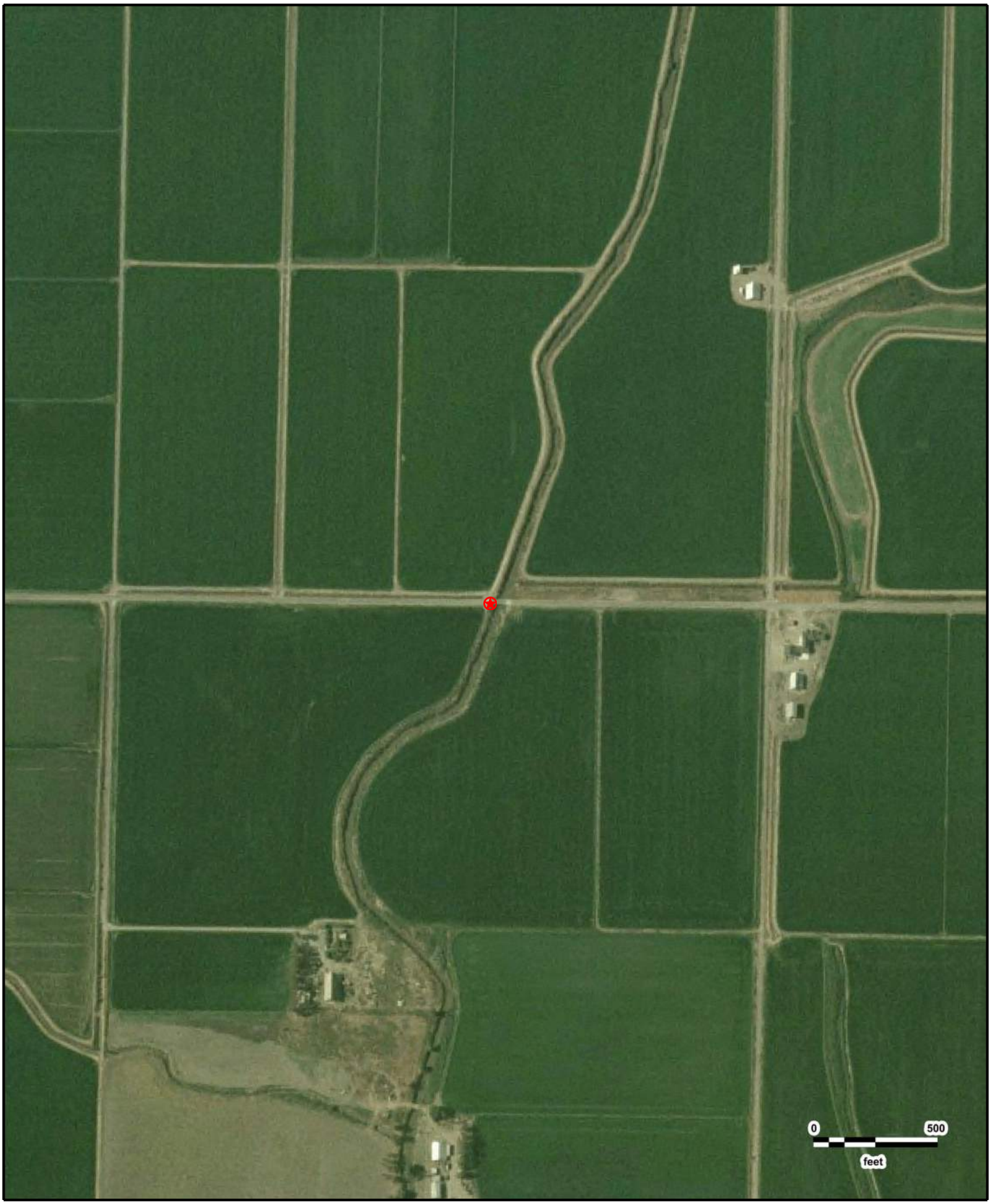


N
W E
S

CR 66B @ Colusa Drain Bridge
USDA
2003

GeoSearch

JOB #: 236699 - 05/11/2018

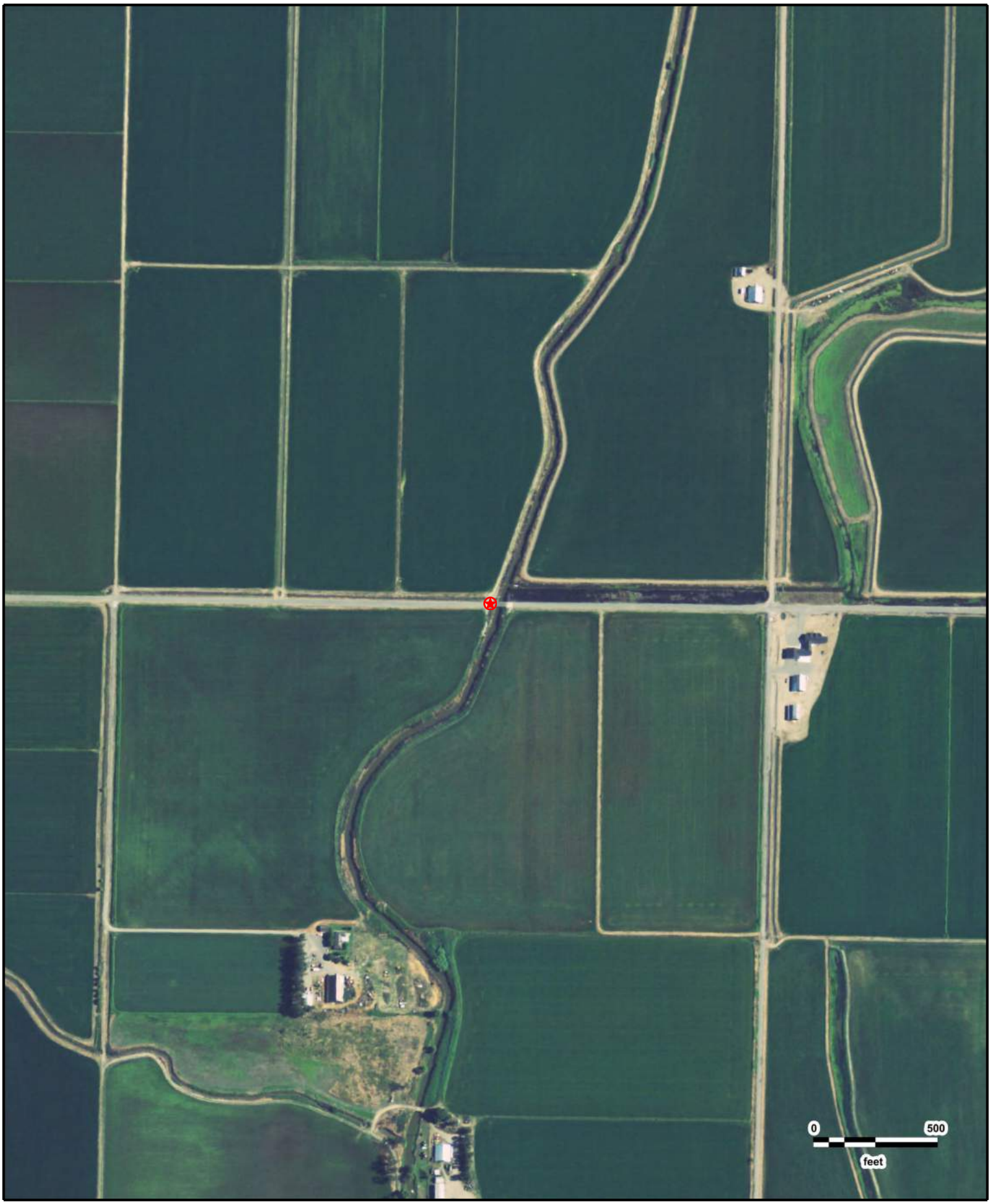


N
W E
S

CR 66B @ Colusa Drain Bridge
USDA
2004

GeoSearch

JOB #: 236699 - 05/11/2018

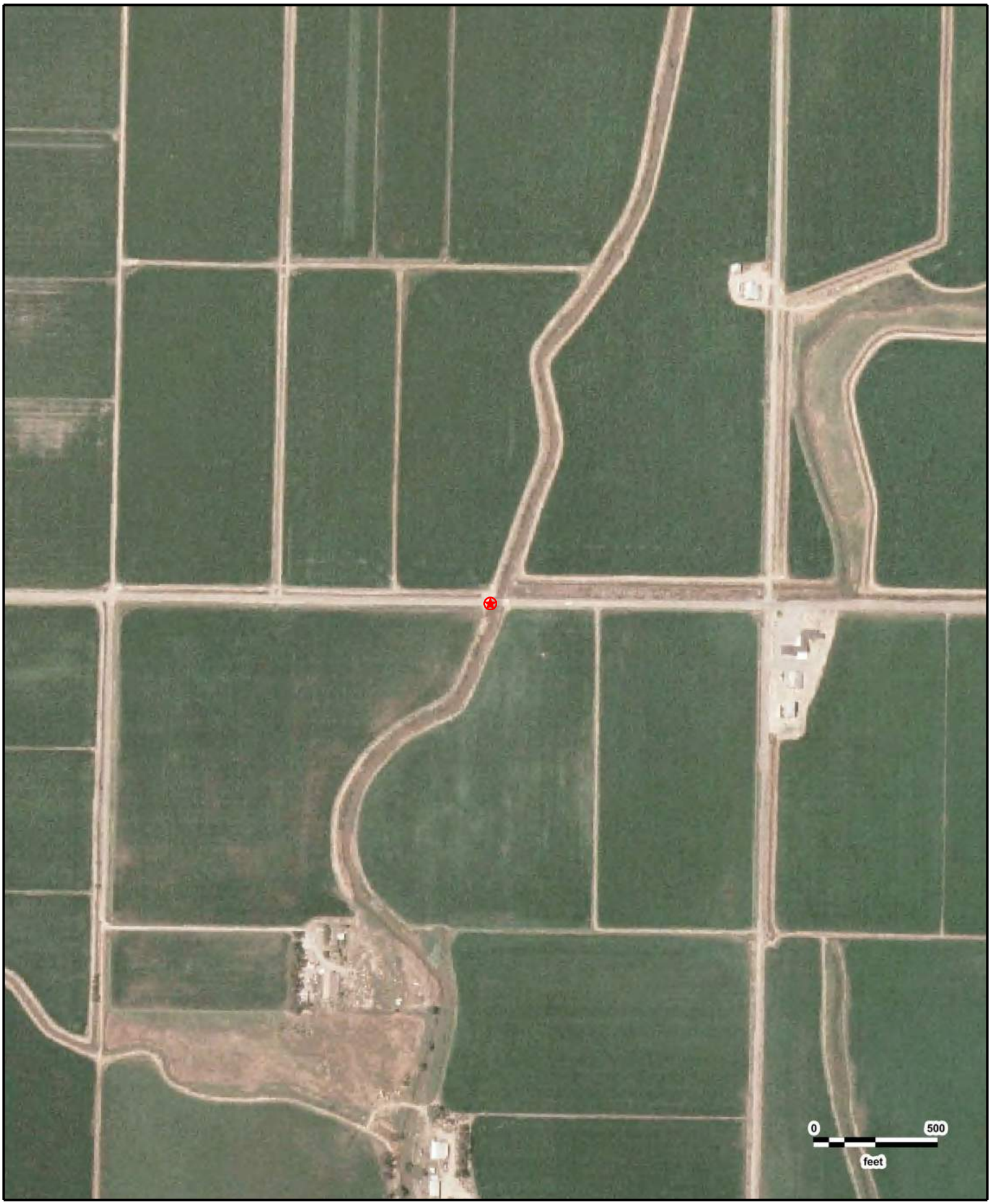


N
W E
S

CR 66B @ Colusa Drain Bridge
USDA
2005

GeoSearch

JOB #: 236699 - 05/11/2018

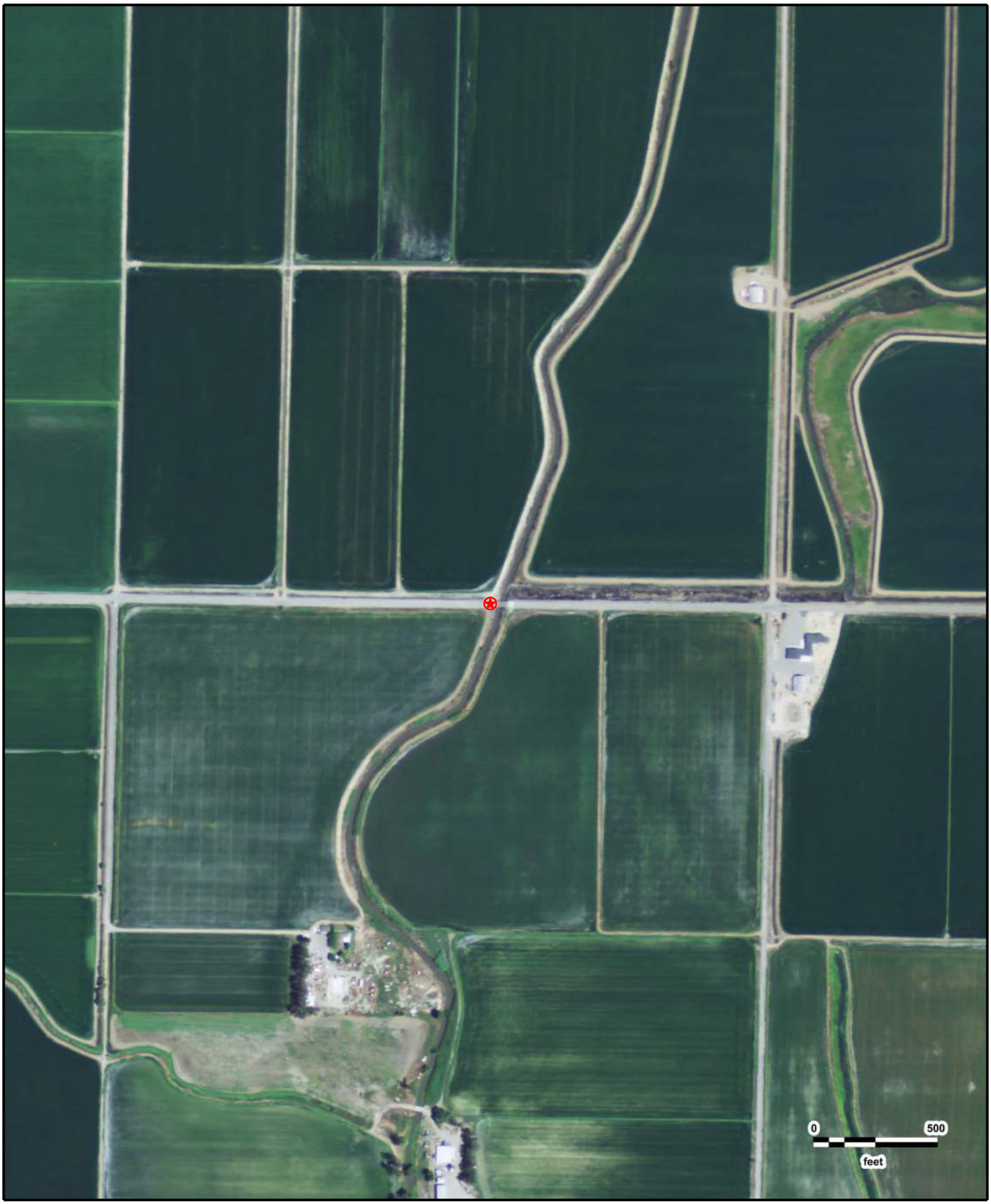


N
W E
S

CR 66B @ Colusa Drain Bridge
USDA
2006

GeoSearch

JOB #: 236699 - 05/11/2018

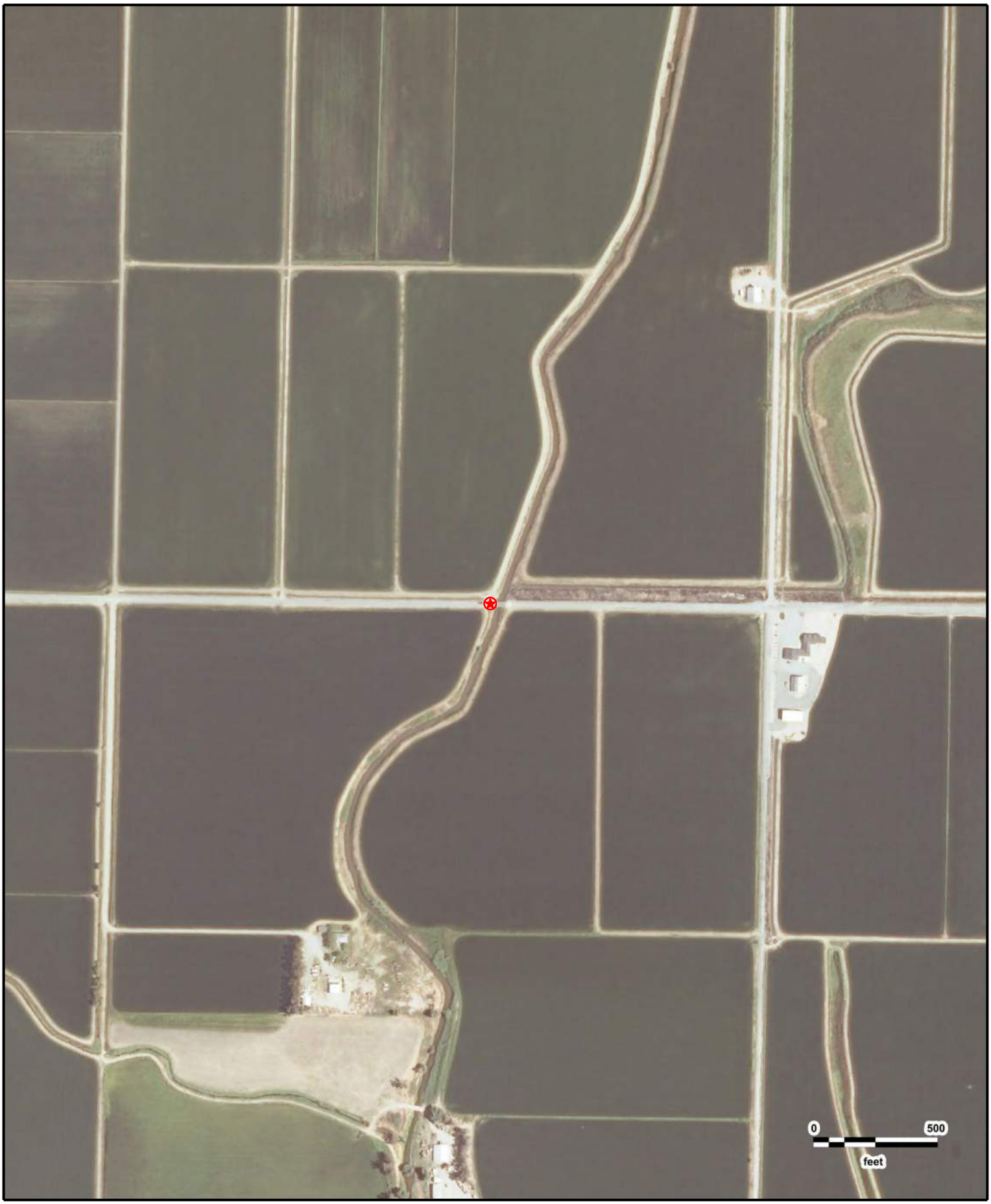


N
W E
S

CR 66B @ Colusa Drain Bridge
USDA
2009

GeoSearch

JOB #: 236699 - 05/11/2018

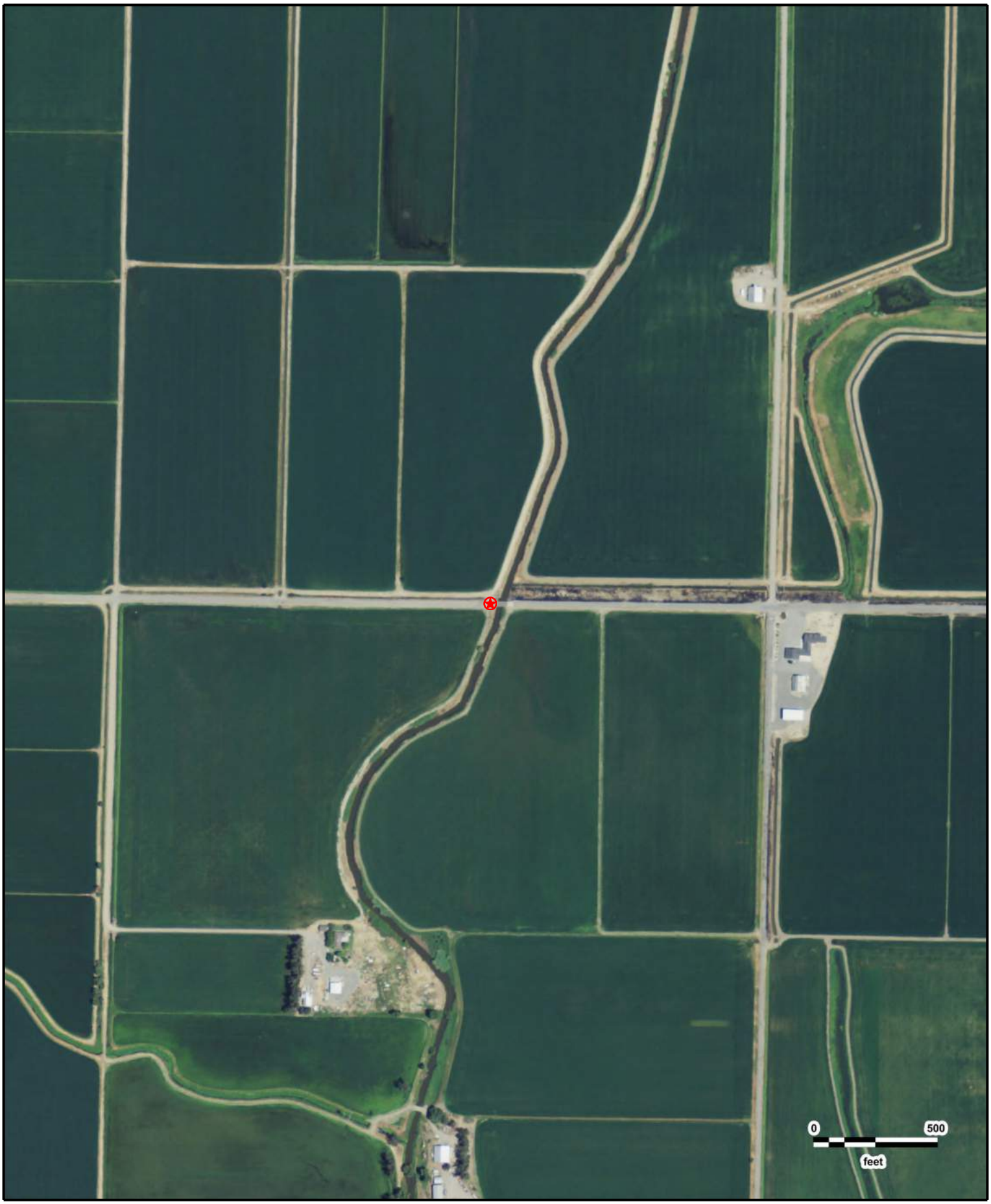


N
W E
S

CR 66B @ Colusa Drain Bridge
USDA
2010

GeoSearch

JOB #: 236699 - 05/11/2018

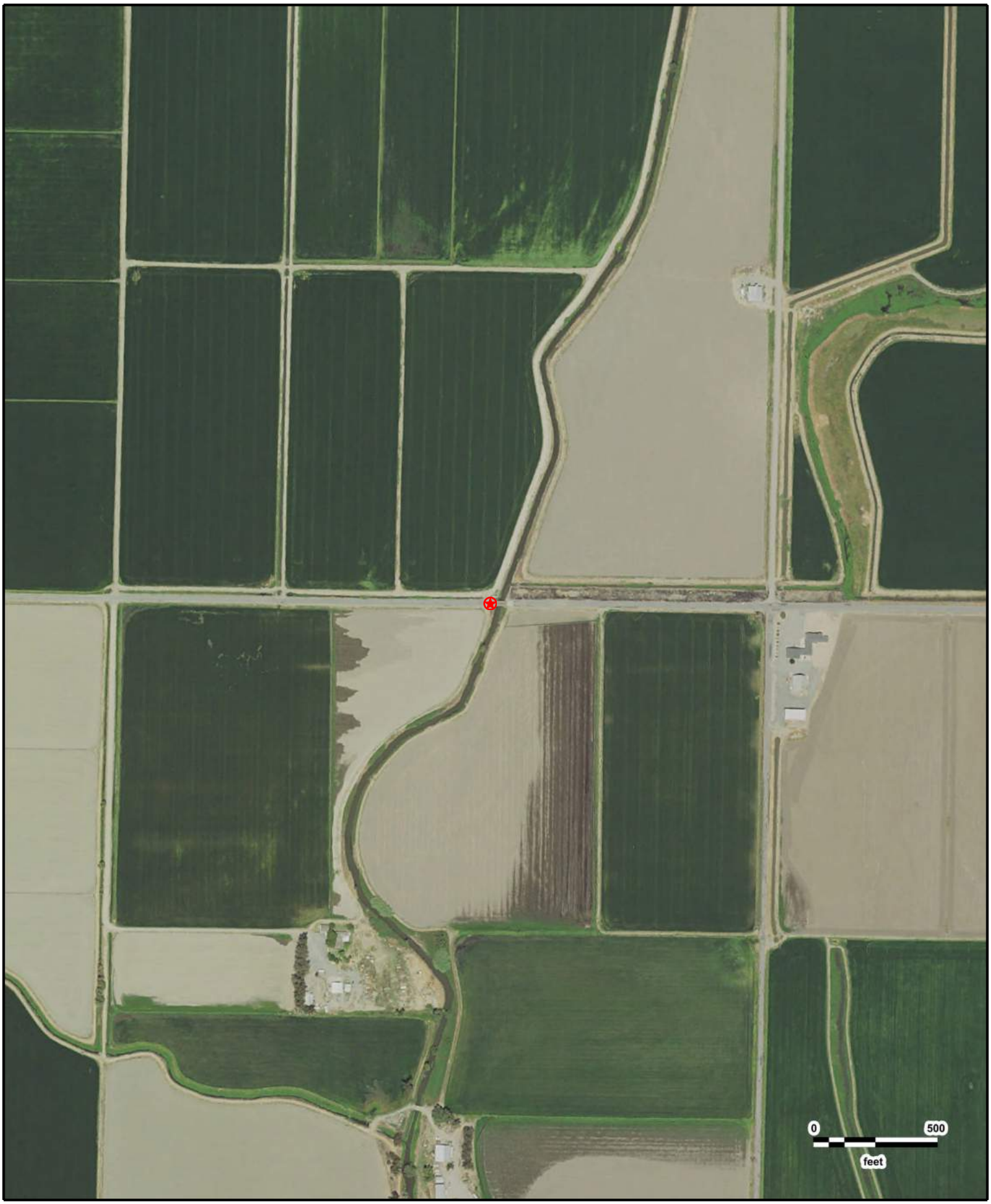


N
W E
S

CR 66B @ Colusa Drain Bridge
USDA
2012

GeoSearch

JOB #: 236699 - 05/11/2018

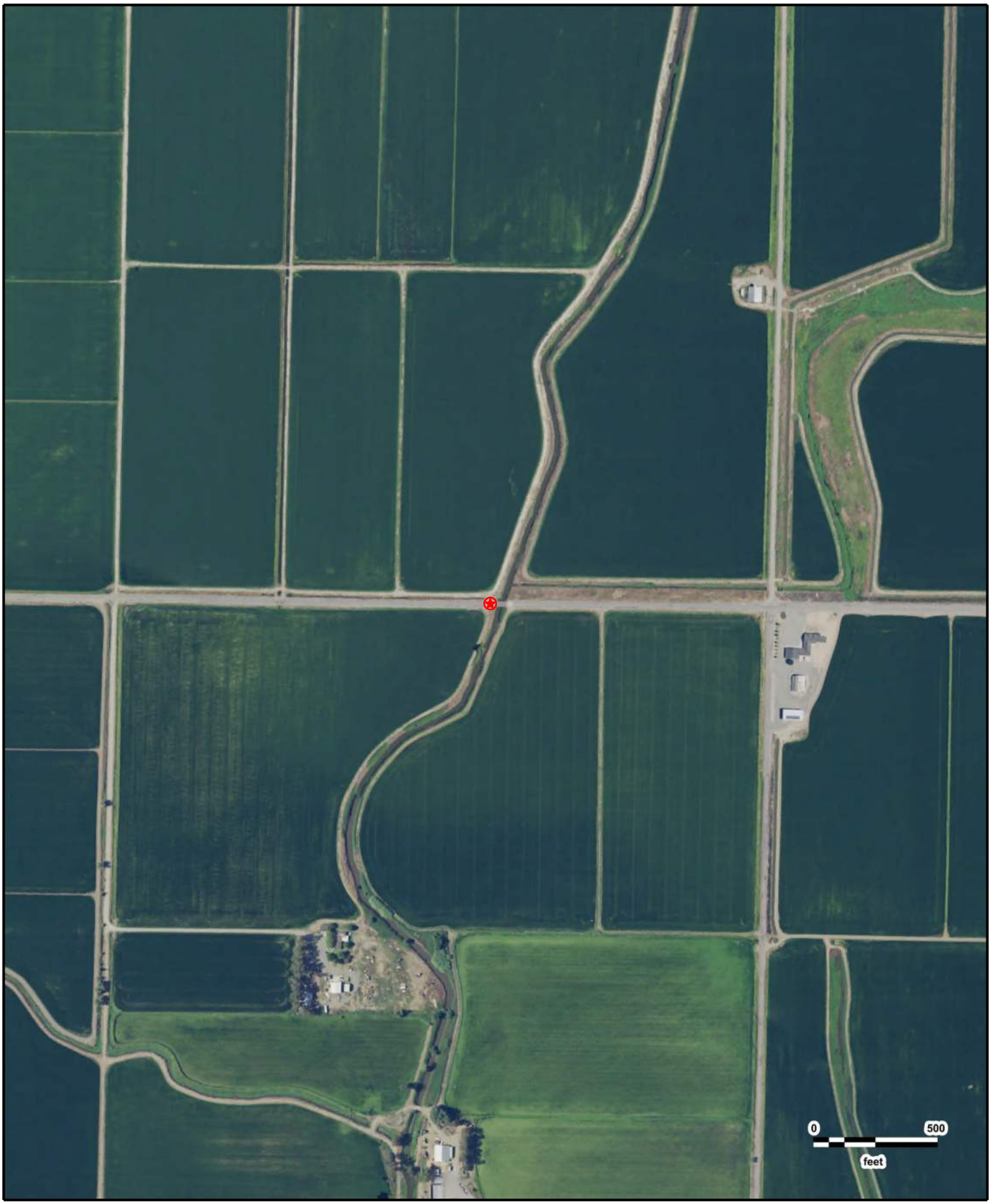


N
W E
S

CR 66B @ Colusa Drain Bridge
USDA
2014

GeoSearch

JOB #: 236699 - 05/11/2018



N
W E
S

CR 66B @ Colusa Drain Bridge
USDA
2016

GeoSearch

JOB #: 236699 - 05/11/2018

APPENDIX D

Historical Topographic Maps

GeoSearch

On time. On target. In touch.™

Historical Topographic Maps

Target Property:

CR 66B @ Colusa Drain Bridge
Rd 66B
Princeton, Glenn, California 95970

Prepared For:

Crawford & Associates

Order #: 107993
Job #: 236698
Project #: 16-322
Date: 5/8/2018

Target Property Summary

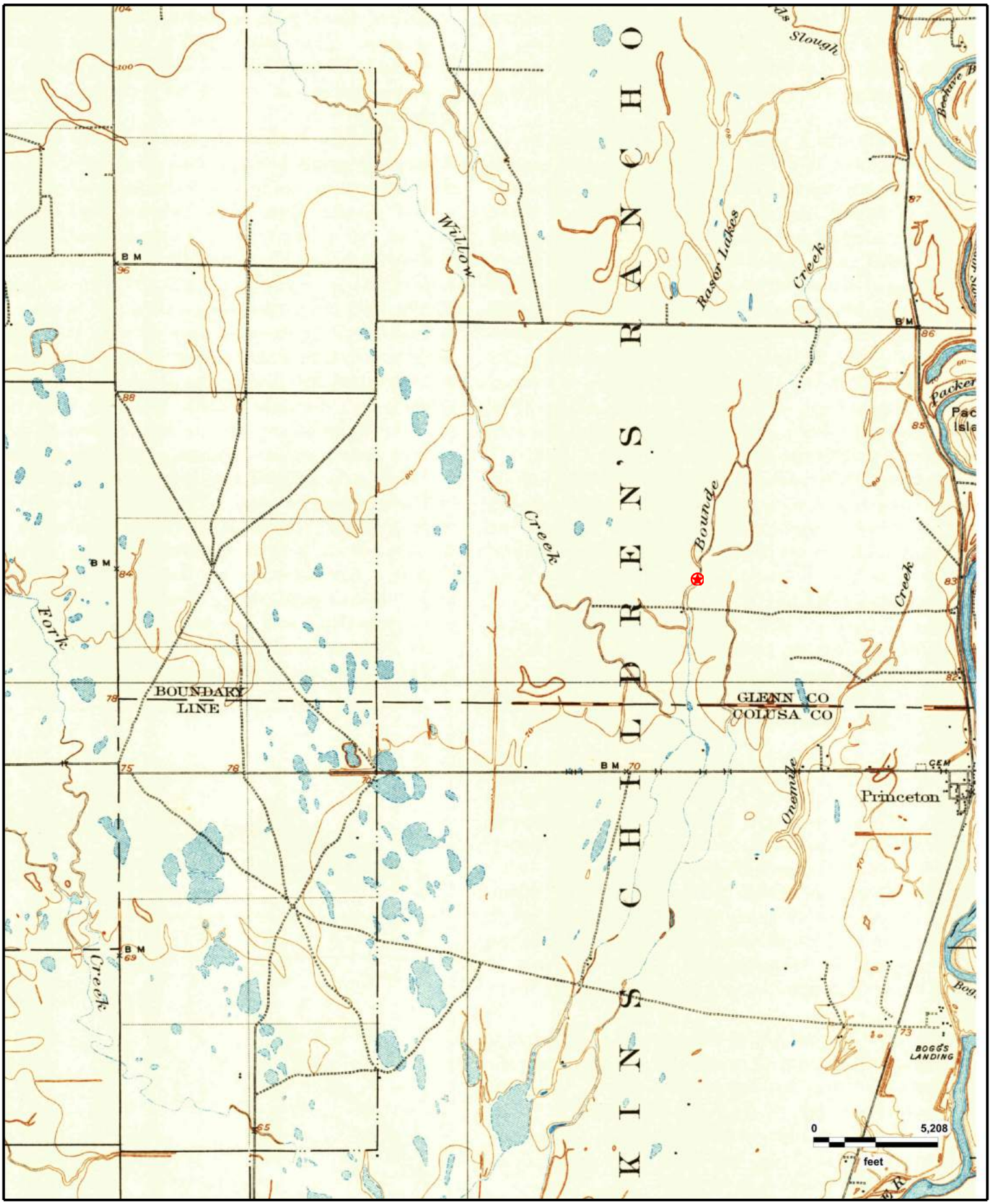
CR 66B @ Colusa Drain Bridge
Rd 66B
Princeton, Glenn, California 95970

USGS Quadrangle: ***Princeton***
Target Property Geometry: ***Point***

Target Property Longitude(s)/Latitude(s):
(-122.050080175, 39.428544391)

Topographic Map Summary

Date	Quadrangle	Scale
2012	Princeton, CA	1" = 2000'
1952 PHOTOREVISED 1973	Princeton, CA	1" = 2000'
1952	Princeton, CA	1" = 2000'
1952	Maxwell, CA	1" = 5208'
1918	Princeton, CA	1" = 2640'
1906	Maxwell, CA	1" = 5208'

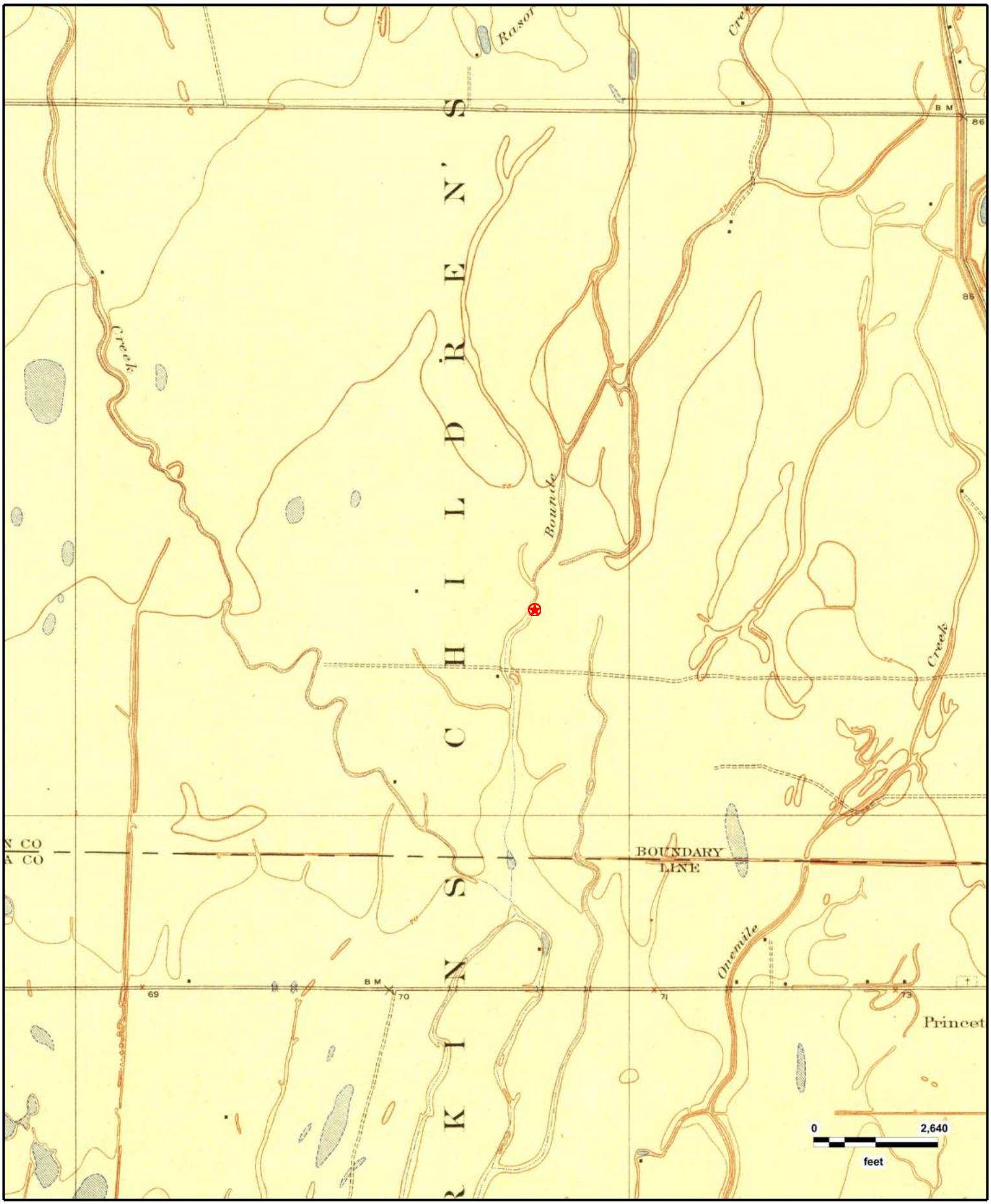


N
W E
S

CR 66B @ Colusa Drain Bridge
Maxwell, CA (1906)

GeoSearch

JOB #: 236698 - 05/08/2018

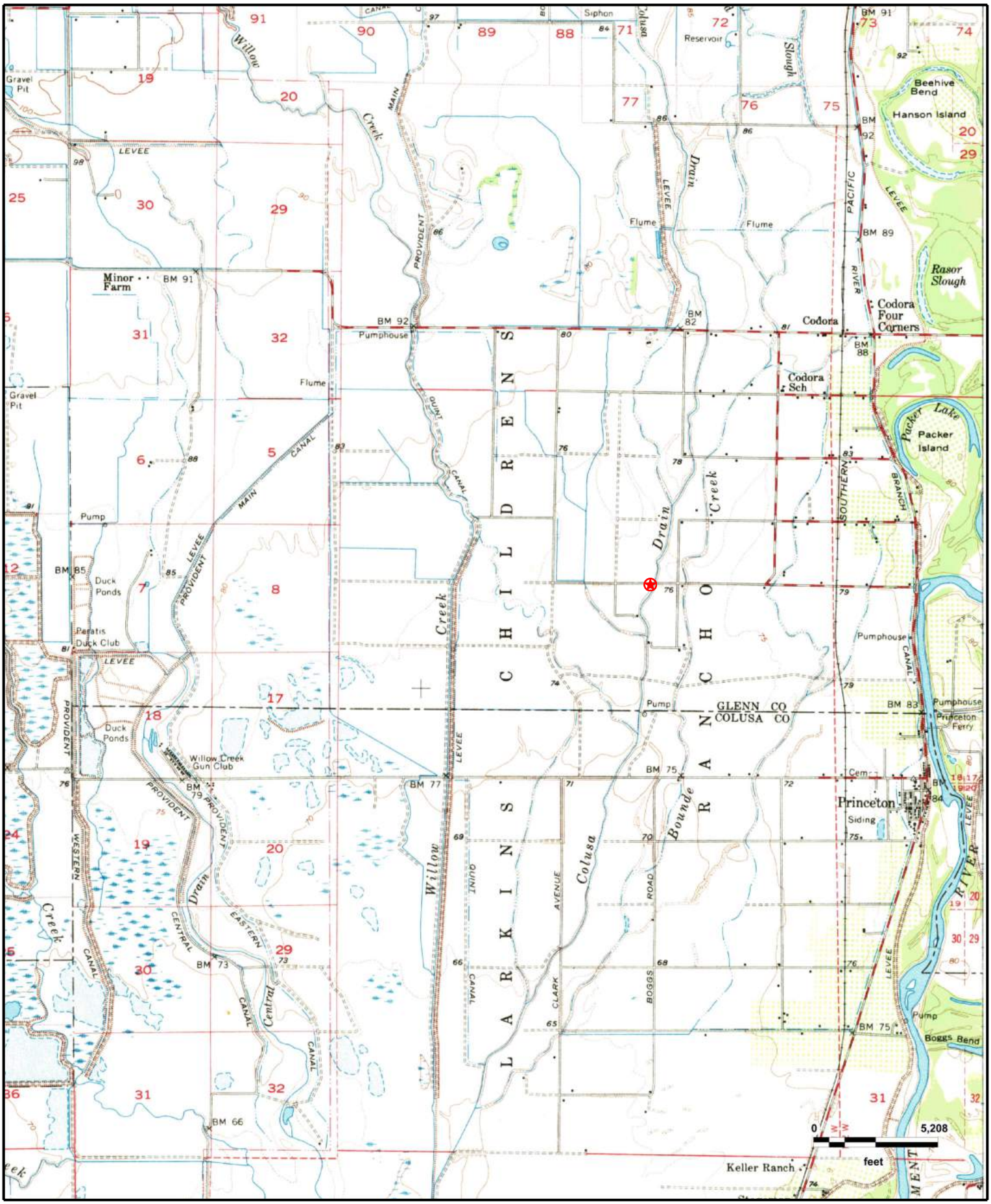


N
W E
S

CR 66B @ Colusa Drain Bridge
Princeton, CA (1918)

GeoSearch

JOB #: 236698 - 05/08/2018

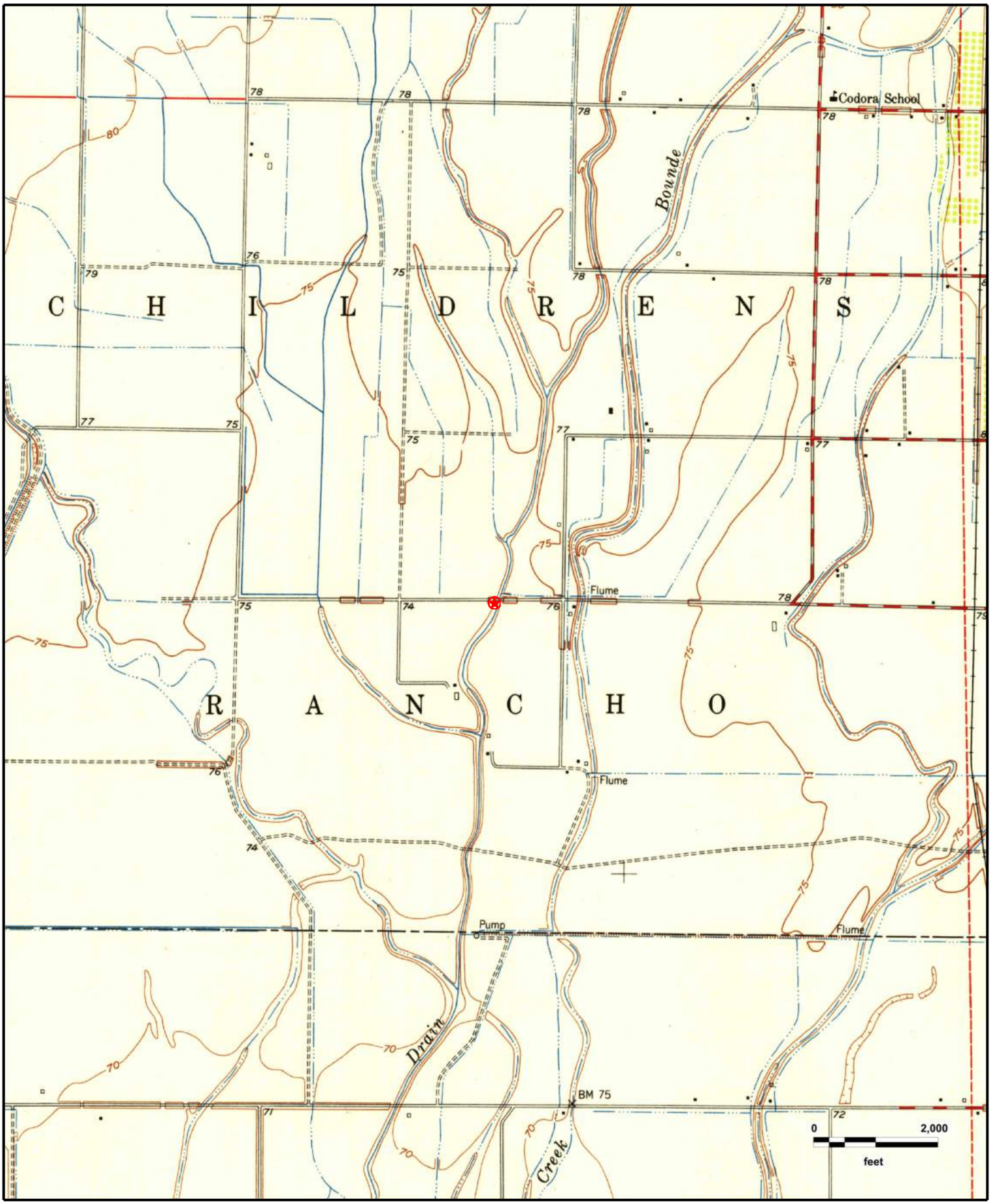


N
W E
S

CR 66B @ Colusa Drain Bridge
Maxwell, CA (1952)

GeoSearch

JOB #: 236698 - 05/08/2018

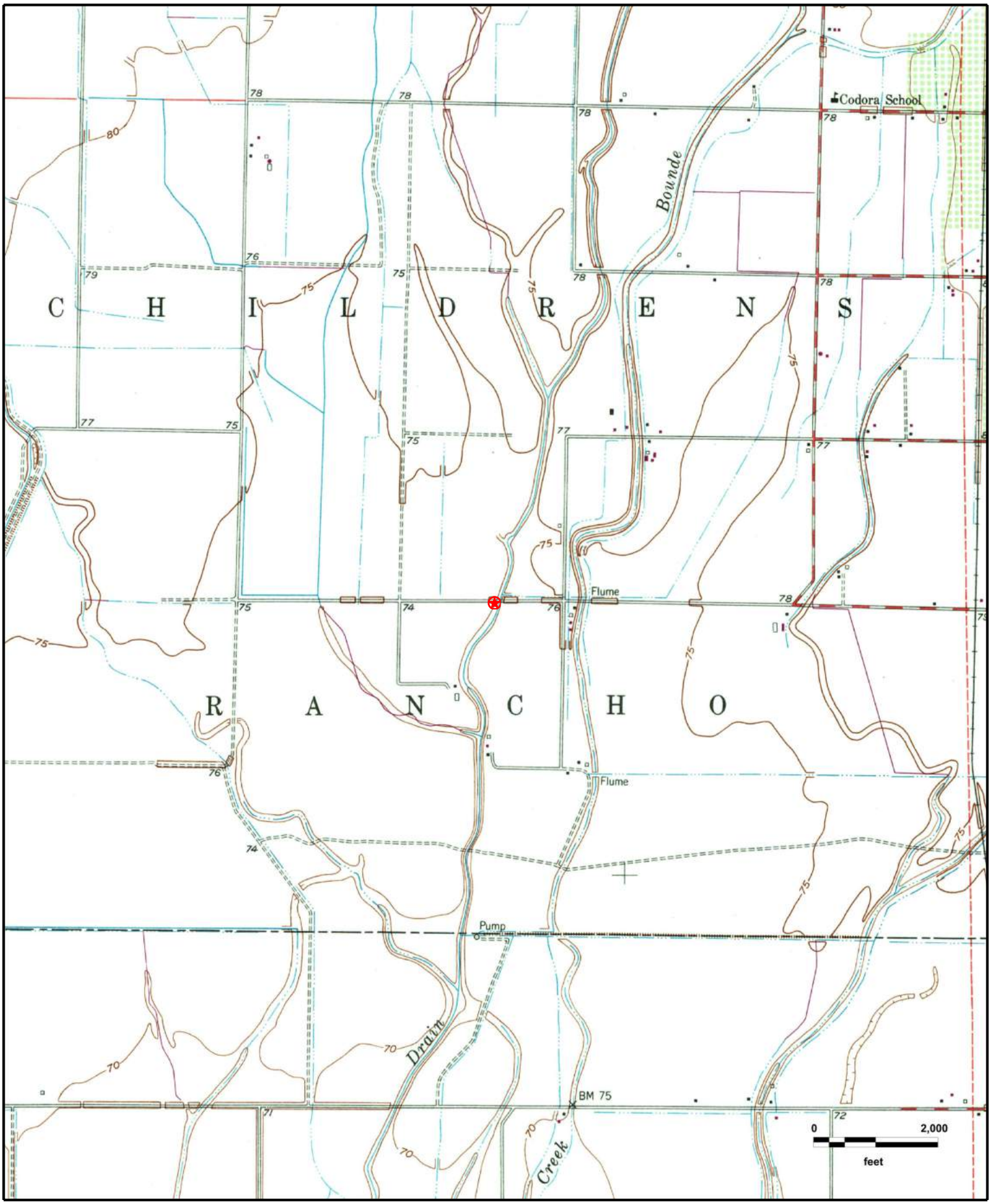


N
W E
S

CR 66B @ Colusa Drain Bridge
Princeton, CA (1952)

GeoSearch

JOB #: 236698 - 05/08/2018

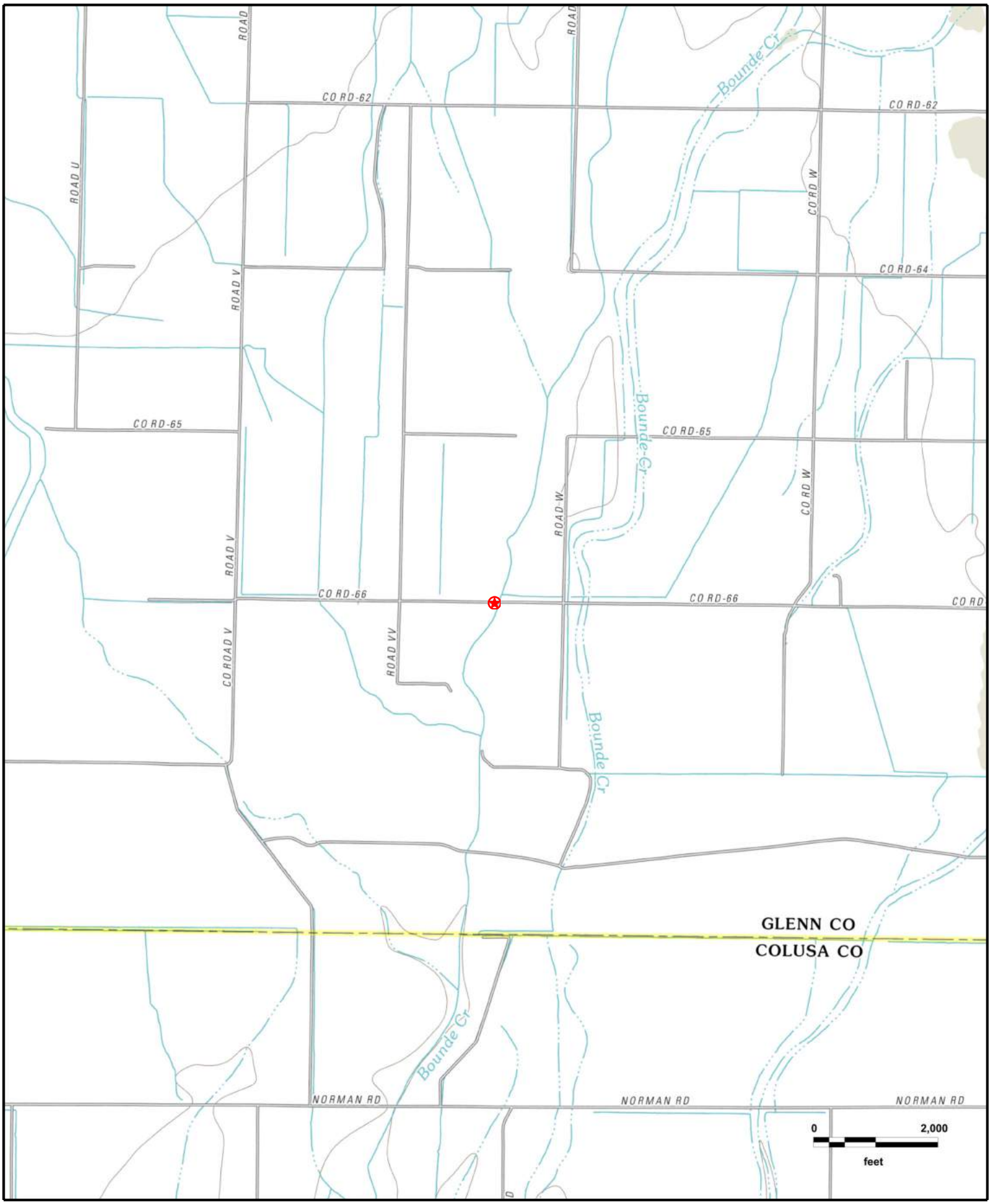


N
W E
S

CR 66B @ Colusa Drain Bridge
Princeton, CA (1973)

GeoSearch

JOB #: 236698 - 05/08/2018



N
W E
S

CR 66B @ Colusa Drain Bridge
Princeton, CA (2012)

GeoSearch

JOB #: 236698 - 05/08/2018

APPENDIX E

GeoSearch Radius Report
Order Number: 107993

Radius Report

Satellite view

Target Property:

CR 66B @ Colusa Drain Bridge
Rd 66B
Princeton, Glenn County, California 95970

Prepared For:

Crawford & Associates

Order #: 107993
Job #: 236697
Project #: 16-322
Date: 05/09/2018

Table of Contents

Disclaimer

This report was designed by GeoSearch to meet or exceed the records search requirements of the All Appropriate Inquiries Rule (40 CFR §312.26) and the current version of the ASTM International E1527, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process or, if applicable, the custom requirements requested by the entity that ordered this report. The records and databases of records used to compile this report were collected from various federal,state and local governmental entities. It is the goal of GeoSearch to meet or exceed the 40 CFR §312.26 and E1527 requirements for updating records by using the best available technology. GeoSearch contacts the appropriate governmental entities on a recurring basis. Depending on the frequency with which a record source or database of records is updated by the governmental entity, the data used to prepare this report may be updated monthly, quarterly, semi-annually, or annually.

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Target Property Summary

Target Property Information

CR 66B @ Colusa Drain Bridge
Rd 66B
Princeton, California 95970

Coordinates
Point (-122.05008, 39.428544)
72 feet above sea level

USGS Quadrangle
Princeton, CA

Geographic Coverage Information

County/Parish: Glenn (CA)
ZipCode(s):
Princeton CA: 95970

Radon
* Target property is located in Radon Zone 3.
Zone 3 areas have a predicted average indoor radon screening level less than 2 pCi/L (picocuries per liter).

Database Summary

FEDERAL LISTING

Standard Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
EMERGENCY RESPONSE NOTIFICATION SYSTEM	ERNSCA	0	0	TP/AP
FEDERAL ENGINEERING INSTITUTIONAL CONTROL SITES	EC	0	0	TP/AP
LAND USE CONTROL INFORMATION SYSTEM	LUCIS	0	0	TP/AP
RCRA SITES WITH CONTROLS	RCRASC	0	0	TP/AP
RESOURCE CONSERVATION & RECOVERY ACT - GENERATOR	RCRAGR09	0	0	0.1250
RESOURCE CONSERVATION & RECOVERY ACT - NON-GENERATOR	RCRANGR09	0	0	0.1250
FEMA OWNED STORAGE TANKS	FEMAUST	0	0	0.2500
BROWNFIELDS MANAGEMENT SYSTEM	BF	0	0	0.5000
DELISTED NATIONAL PRIORITIES LIST	DNPL	0	0	0.5000
NO LONGER REGULATED RCRA NON-CORRACTS TSD FACILITIES	NLRRCRAT	0	0	0.5000
RESOURCE CONSERVATION & RECOVERY ACT - NON-CORRACTS TREATMENT, STORAGE & DISPOSAL FACILITIES	RCRAT	0	0	0.5000
SUPERFUND ENTERPRISE MANAGEMENT SYSTEM	SEMS	0	0	0.5000
SUPERFUND ENTERPRISE MANAGEMENT SYSTEM ARCHIVED SITE INVENTORY	SEMSARCH	0	0	0.5000
NATIONAL PRIORITIES LIST	NPL	0	0	1.0000
NO LONGER REGULATED RCRA CORRECTIVE ACTION FACILITIES	NLRRCRAC	0	0	1.0000
PROPOSED NATIONAL PRIORITIES LIST	PNPL	0	0	1.0000
RESOURCE CONSERVATION & RECOVERY ACT - CORRECTIVE ACTION FACILITIES	RCRAC	0	0	1.0000
RESOURCE CONSERVATION & RECOVERY ACT - SUBJECT TO CORRECTIVE ACTION FACILITIES	RCRASUBC	0	0	1.0000

SUB-TOTAL		0	0	

Additional Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
AEROMETRIC INFORMATION RETRIEVAL SYSTEM / AIR FACILITY SUBSYSTEM	AIRSAFS	0	0	TP/AP
BIENNIAL REPORTING SYSTEM	BRS	0	0	TP/AP
CERCLIS LIENS	SFLIENS	0	0	TP/AP
CLANDESTINE DRUG LABORATORY LOCATIONS	CDL	0	0	TP/AP
EPA DOCKET DATA	DOCKETS	0	0	TP/AP
ENFORCEMENT AND COMPLIANCE HISTORY INFORMATION	ECHOR09	0	0	TP/AP

Database Summary

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
FACILITY REGISTRY SYSTEM	FRSCA	0	0	TP/AP
HAZARDOUS MATERIALS INCIDENT REPORTING SYSTEM	HMIRSR09	0	0	TP/AP
INTEGRATED COMPLIANCE INFORMATION SYSTEM (FORMERLY DOCKETS)	ICIS	0	0	TP/AP
INTEGRATED COMPLIANCE INFORMATION SYSTEM NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM	ICISNPDES	0	0	TP/AP
MATERIAL LICENSING TRACKING SYSTEM	MLTS	0	0	TP/AP
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM	NPDESR09	0	0	TP/AP
PCB ACTIVITY DATABASE SYSTEM	PADS	0	0	TP/AP
PERMIT COMPLIANCE SYSTEM	PCSR09	0	0	TP/AP
SEMS LIEN ON PROPERTY	SEMSLIENS	0	0	TP/AP
SECTION SEVEN TRACKING SYSTEM	SSTS	0	0	TP/AP
TOXIC SUBSTANCE CONTROL ACT INVENTORY	TSCA	0	0	TP/AP
TOXICS RELEASE INVENTORY	TRI	0	0	TP/AP
ALTERNATIVE FUELING STATIONS	ALTFUELS	0	0	0.2500
HISTORICAL GAS STATIONS	HISTPST	0	0	0.2500
INTEGRATED COMPLIANCE INFORMATION SYSTEM DRYCLEANERS	ICISCLEANERS	0	0	0.2500
MINE SAFETY AND HEALTH ADMINISTRATION MASTER INDEX FILE	MSHA	0	0	0.2500
MINERAL RESOURCE DATA SYSTEM	MRDS	0	0	0.2500
OPEN DUMP INVENTORY	ODI	0	0	0.5000
SURFACE MINING CONTROL AND RECLAMATION ACT SITES	SMCRA	0	0	0.5000
URANIUM MILL TAILINGS RADIATION CONTROL ACT SITES	USUMTRCA	0	0	0.5000
DEPARTMENT OF DEFENSE SITES	DOD	0	0	1.0000
FORMER MILITARY NIKE MISSILE SITES	NMS	0	0	1.0000
FORMERLY USED DEFENSE SITES	FUDS	0	0	1.0000
FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM	FUSRAP	0	0	1.0000
RECORD OF DECISION SYSTEM	RODS	0	0	1.0000

SUB-TOTAL		0	0	

Database Summary

STATE (CA) LISTING

Standard Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
DTSC DEED RESTRICTIONS	DTSCDR	0	0	TP/AP
ABOVE GROUND STORAGE TANKS	ABST	0	0	0.2500
ABOVEGROUND STORAGE TANKS PRIOR TO JANUARY 2008	AST2007	0	0	0.2500
HISTORICAL UNDERGROUND STORAGE TANKS	HISTUST	0	0	0.2500
STATEWIDE ENVIRONMENTAL EVALUATION AND PLANNING SYSTEM	SWEEPS	0	1	0.2500
UNDERGROUND STORAGE TANKS	USTCUPA	0	0	0.2500
BROWNFIELD SITES	BF	0	0	0.5000
CALSITES DATABASE	CALSITES	0	0	0.5000
GEOTRACKER CLEANUP SITES	CLEANUPSITES	0	0	0.5000
LEAKING UNDERGROUND STORAGE TANKS	LUST	0	0	0.5000
SOLID WASTE INFORMATION SYSTEM SITES	SWIS	0	0	0.5000
VOLUNTARY CLEANUP PROGRAM	VCP	0	0	0.5000
ENVIROSTOR CLEANUP SITES	ENVIROSTOR	0	0	1.0000
ENVIROSTOR PERMITTED AND CORRECTIVE ACTION SITES	ENVIROSTORPCA	0	0	1.0000

SUB-TOTAL		0	1	

Additional Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
CALIFORNIA HAZARDOUS MATERIAL INCIDENT REPORT SYSTEM	CHMIRS	0	0	TP/AP
CLANDESTINE DRUG LABS	CDL	0	0	TP/AP
EMISSIONS INVENTORY DATA	EMI	0	0	TP/AP
HAZARDOUS WASTE TANNER SUMMARY	HWTS	0	0	TP/AP
LAND DISPOSAL SITES	LDS	0	0	TP/AP
MILITARY CLEANUP SITES	MCS	0	0	TP/AP
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM FACILITIES	NPDES	0	0	TP/AP
RECORDED ENVIRONMENTAL CLEANUP LIENS	LIENS	0	0	TP/AP
CALIFORNIA MEDICAL WASTE MANAGEMENT PROGRAM FACILITY LIST	MWMP	0	0	0.2500
DTSC REGISTERED HAZARDOUS WASTE TRANSPORTERS	DTSCHWT	0	0	0.2500
DRY CLEANER FACILITIES	CLEANER	0	0	0.2500
MINES LISTING	MINES	0	0	0.2500

Database Summary

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
SPILLS, LEAKS, INVESTIGATION & CLEANUP RECOVERY LISTING	SLIC	0	0	0.2500
CORTESE LIST	CORTESE	0	0	0.5000
EXPEDITED REMOVAL ACTION PROGRAM SITES	ERAP	0	0	0.5000
HISTORICAL CORTESE LIST	HISTCORTESE	0	0	0.5000
LISTING OF CERTIFIED DROPOFF, COLLECTION, AND COMMUNITY SERVICE PROGRAMS	DROP	0	0	0.5000
LISTING OF CERTIFIED PROCESSORS	PROC	0	0	0.5000
NO FURTHER ACTION DETERMINATION	NFA	0	0	0.5000
RECYCLING CENTERS	SWRCY	0	0	0.5000
REFERRED TO ANOTHER LOCAL OR STATE AGENCY	REF	0	0	0.5000
SITES NEEDING FURTHER EVALUATION	NFE	0	0	0.5000
WASTE MANAGEMENT UNIT DATABASE	WMUDS	0	0	0.5000
TOXIC PITS CLEANUP ACT SITES	TOXPITS	0	0	1.0000

SUB-TOTAL		0	0	

Database Summary

TRIBAL LISTING

Standard Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
UNDERGROUND STORAGE TANKS ON TRIBAL LANDS	USTR09	0	0	0.2500
ILLEGAL DUMP SITES ON THE TORRES MARTINEZ RESERVATION	TORRESDUMPSITES	0	0	0.5000
LEAKING UNDERGROUND STORAGE TANKS ON TRIBAL LANDS	LUSTR09	0	0	0.5000
OPEN DUMP INVENTORY ON TRIBAL LANDS	ODINDIAN	0	0	0.5000
SUB-TOTAL		0	0	

Additional Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
INDIAN RESERVATIONS	INDIANRES	0	0	1.0000
SUB-TOTAL		0	0	
TOTAL		0	1	

Database Radius Summary

FEDERAL LISTING

*Standard environmental records are displayed in **bold**.*

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
AIRSAFS	0.0200	0	NS	NS	NS	NS	NS	0
BRS	0.0200	0	NS	NS	NS	NS	NS	0
CDL	0.0200	0	NS	NS	NS	NS	NS	0
DOCKETS	0.0200	0	NS	NS	NS	NS	NS	0
EC	**0.0200**	**0**	**NS**	**NS**	**NS**	**NS**	**NS**	**0**
ECHOR09	0.0200	0	NS	NS	NS	NS	NS	0
ERNSCA	**0.0200**	**0**	**NS**	**NS**	**NS**	**NS**	**NS**	**0**
FRSCA	0.0200	0	NS	NS	NS	NS	NS	0
HMIRSR09	0.0200	0	NS	NS	NS	NS	NS	0
ICIS	0.0200	0	NS	NS	NS	NS	NS	0
ICISNPDES	0.0200	0	NS	NS	NS	NS	NS	0
LUCIS	**0.0200**	**0**	**NS**	**NS**	**NS**	**NS**	**NS**	**0**
MLTS	0.0200	0	NS	NS	NS	NS	NS	0
NPDESR09	0.0200	0	NS	NS	NS	NS	NS	0
PADS	0.0200	0	NS	NS	NS	NS	NS	0
PCSR09	0.0200	0	NS	NS	NS	NS	NS	0
RCRASC	**0.0200**	**0**	**NS**	**NS**	**NS**	**NS**	**NS**	**0**
SEMSLIENS	0.0200	0	NS	NS	NS	NS	NS	0
SFLIENS	0.0200	0	NS	NS	NS	NS	NS	0
SSTS	0.0200	0	NS	NS	NS	NS	NS	0
TRI	0.0200	0	NS	NS	NS	NS	NS	0
TSCA	0.0200	0	NS	NS	NS	NS	NS	0
RCRAGR09	**0.1250**	**0**	**0**	**NS**	**NS**	**NS**	**NS**	**0**
RCRANGR09	**0.1250**	**0**	**0**	**NS**	**NS**	**NS**	**NS**	**0**
ALTFUELS	0.2500	0	0	0	NS	NS	NS	0
FEMAUST	**0.2500**	**0**	**0**	**0**	**NS**	**NS**	**NS**	**0**
HISTPST	0.2500	0	0	0	NS	NS	NS	0
ICISCLEANERS	0.2500	0	0	0	NS	NS	NS	0
MRDS	0.2500	0	0	0	NS	NS	NS	0
MSHA	0.2500	0	0	0	NS	NS	NS	0
BF	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
DNPL	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
NLRRCRAT	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
ODI	0.5000	0	0	0	0	NS	NS	0
RCRAT	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**

Database Radius Summary

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
SEMS	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
SEMSARCH	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
SMCRA	0.5000	0	0	0	0	NS	NS	0
USUMTRCA	0.5000	0	0	0	0	NS	NS	0
DOD	1.0000	0	0	0	0	0	NS	0
FUDS	1.0000	0	0	0	0	0	NS	0
FUSRAP	1.0000	0	0	0	0	0	NS	0
NLRRCRAC	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
NMS	1.0000	0	0	0	0	0	NS	0
NPL	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
PNPL	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
RCRAC	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
RCRASUBC	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
RODS	1.0000	0	0	0	0	0	NS	0

SUB-TOTAL		0	0	0	0	0	0	0

STATE (CA) LISTING

*Standard environmental records are displayed in **bold**.*

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
CDL	0.0200	0	NS	NS	NS	NS	NS	0
CHMIRS	0.0200	0	NS	NS	NS	NS	NS	0
DTSCDR	**0.0200**	**0**	**NS**	**NS**	**NS**	**NS**	**NS**	**0**
EMI	0.0200	0	NS	NS	NS	NS	NS	0
HWTS	0.0200	0	NS	NS	NS	NS	NS	0
LDS	0.0200	0	NS	NS	NS	NS	NS	0
LIENS	0.0200	0	NS	NS	NS	NS	NS	0
MCS	0.0200	0	NS	NS	NS	NS	NS	0
NPDES	0.0200	0	NS	NS	NS	NS	NS	0
ABST	**0.2500**	**0**	**0**	**0**	**NS**	**NS**	**NS**	**0**
AST2007	**0.2500**	**0**	**0**	**0**	**NS**	**NS**	**NS**	**0**
CLEANER	0.2500	0	0	0	NS	NS	NS	0
DTSCHWT	0.2500	0	0	0	NS	NS	NS	0
HISTUST	**0.2500**	**0**	**0**	**0**	**NS**	**NS**	**NS**	**0**
MINES	0.2500	0	0	0	NS	NS	NS	0
MWMP	0.2500	0	0	0	NS	NS	NS	0
SLIC	0.2500	0	0	0	NS	NS	NS	0
SWEEPS	**0.2500**	**0**	**0**	**0**	**NS**	**NS**	**NS**	**0**
USTCUPA	**0.2500**	**0**	**0**	**0**	**NS**	**NS**	**NS**	**0**
BF	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
CALSITES	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
CLEANUPSITES	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
CORTESE	0.5000	0	0	0	0	NS	NS	0
DROP	0.5000	0	0	0	0	NS	NS	0
ERAP	0.5000	0	0	0	0	NS	NS	0
HISTCORTESE	0.5000	0	0	0	0	NS	NS	0
LUST	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
NFA	0.5000	0	0	0	0	NS	NS	0
NFE	0.5000	0	0	0	0	NS	NS	0
PROC	0.5000	0	0	0	0	NS	NS	0
REF	0.5000	0	0	0	0	NS	NS	0
SWIS	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
SWRCY	0.5000	0	0	0	0	NS	NS	0
VCP	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
WMUDS	0.5000	0	0	0	0	NS	NS	0

Database Radius Summary

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
ENVIROSTOR	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
ENVIROSTORPCA	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
TOXPITS	1.0000	0	0	0	0	0	NS	0
SUB-TOTAL		0	0	0	0	0	0	0

Database Radius Summary

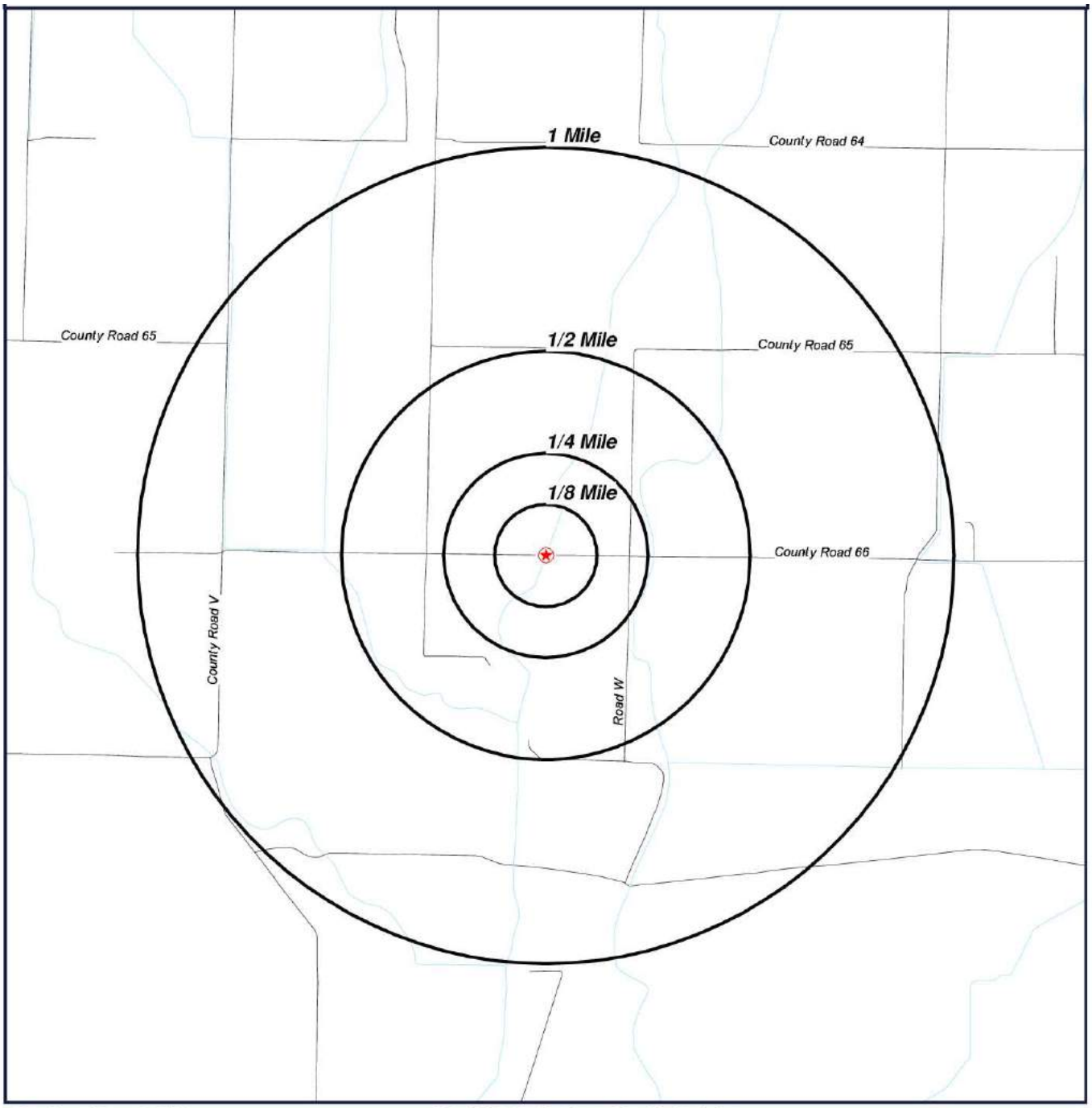
TRIBAL LISTING

*Standard environmental records are displayed in **bold**.*

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
USTR09	**0.2500**	**0**	**0**	**0**	**NS**	**NS**	**NS**	**0**
LUSTR09	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
ODINDIAN	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
TORRESDUMPSITES	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
INDIANRES	1.0000	0	0	0	0	0	NS	0
SUB-TOTAL		0	0	0	0	0	0	0
TOTAL		0	0	0	0	0	0	0

NOTES:
NS = NOT SEARCHED
TP/AP = TARGET PROPERTY/ADJACENT PROPERTY

Radius Map 1



Target Property (TP)

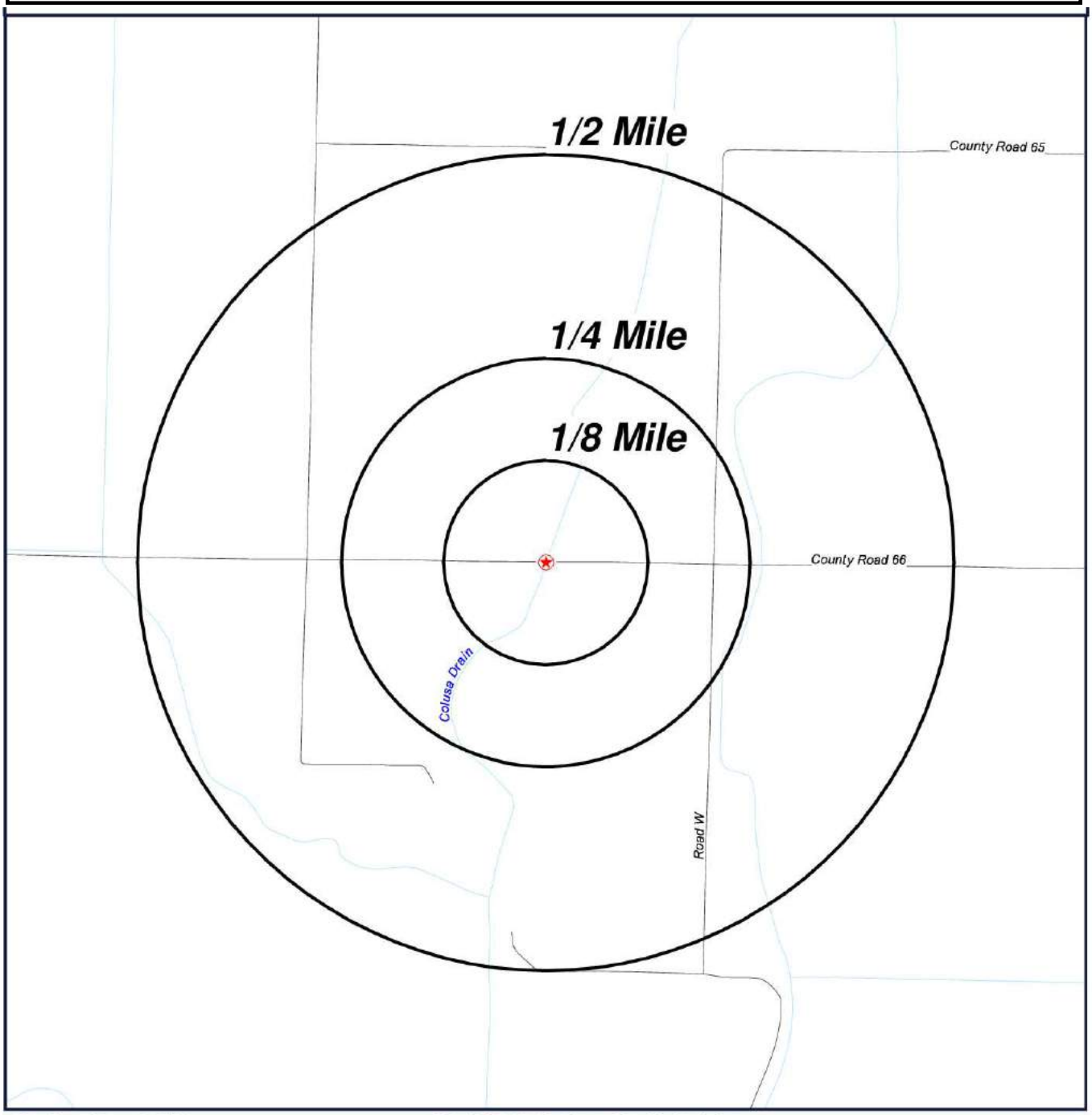
CR 66B @ Colusa Drain Bridge
Rd 66B
Princeton, California
95970

N
W E
S

0' 1000' 2000' 3000'
SCALE: 1" = 2000'

Click here to access Satellite view

Radius Map 2



Target Property (TP)

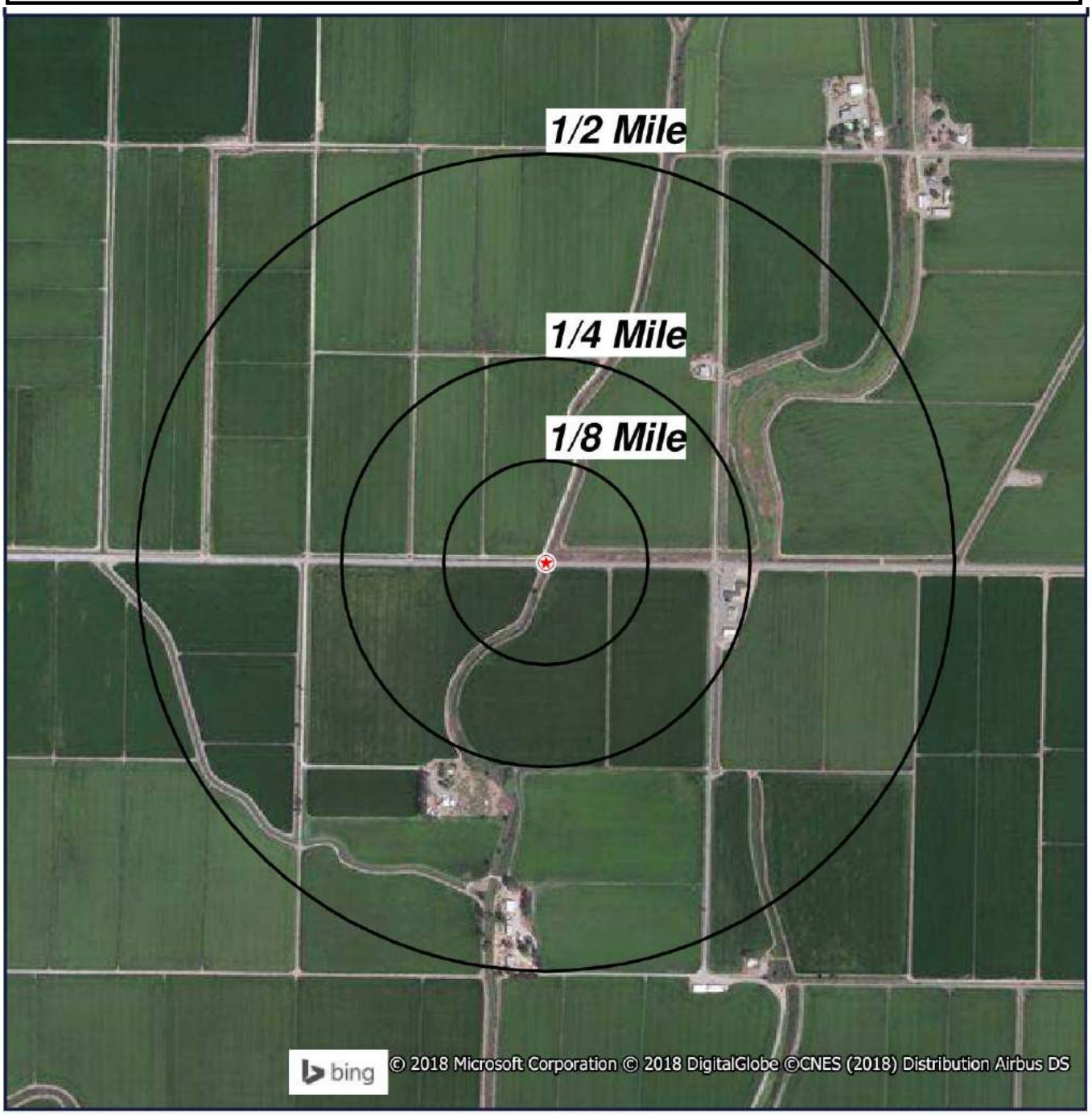
CR 66B @ Colusa Drain Bridge
Rd 66B
Princeton, California
95970

N
W E
S

0' 500' 1000' 1500'
SCALE: 1" = 1000'

Click here to access Satellite view

Ortho Map



Target Property (TP)

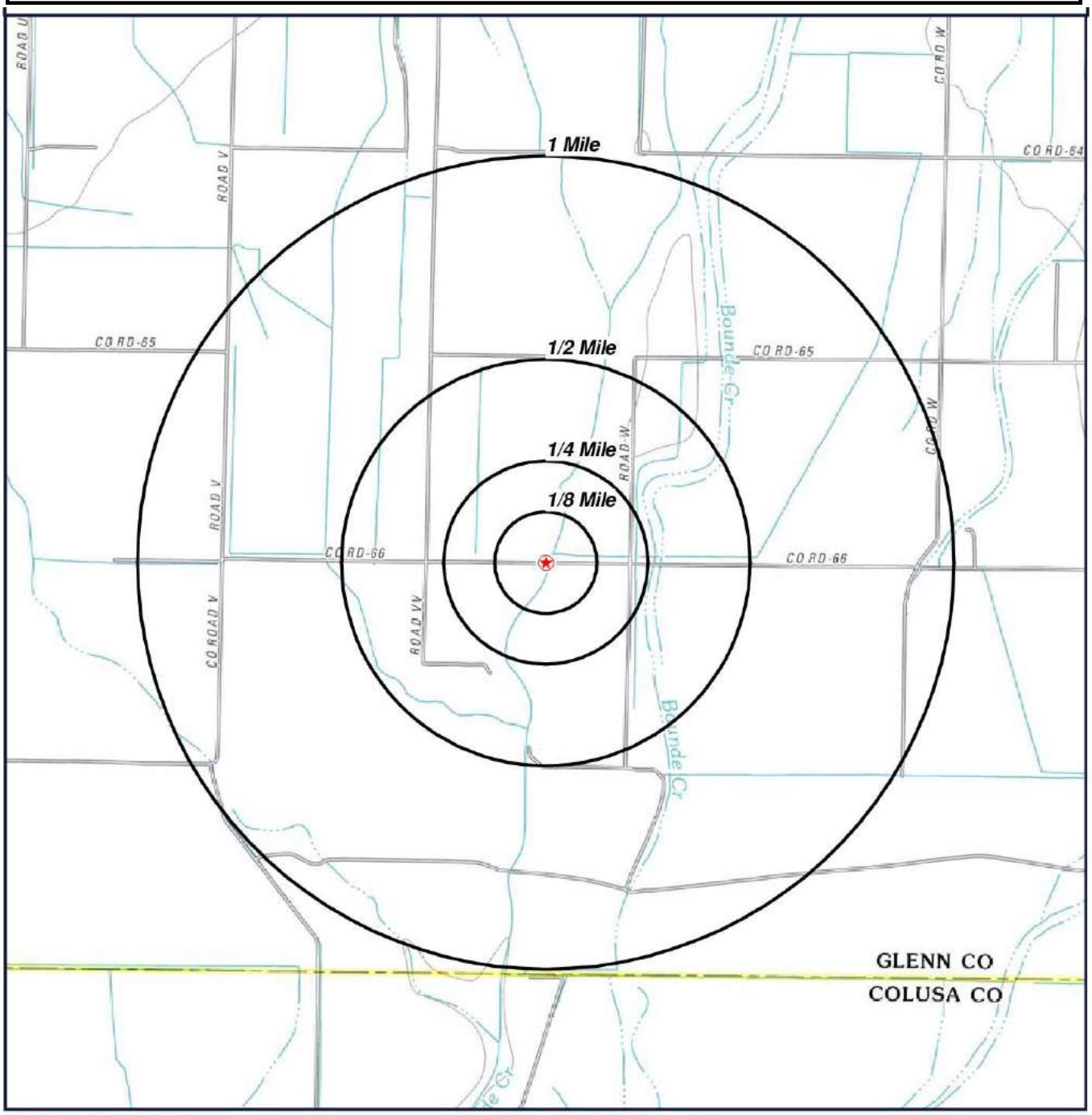
Quadrangle(s): Princeton
CR 66B @ Colusa Drain Bridge
Rd 66B
Princeton, California
95970

N
W E
S

0' 500' 1000' 1500'
SCALE: 1" = 1000'

Click here to access Satellite view

Topographic Map



Target Property (TP)

Quadrangle(s): Princeton
Source: USGS, 03/12/2012
CR 66B @ Colusa Drain Bridge
Rd 66B
Princeton, California
95970

N
W E
S

0' 1000' 2000' 3000'
SCALE: 1" = 2000'

Click here to access Satellite view

Located Sites Summary

No Records Found.

Elevation Summary

Elevations are collected from the USGS 3D Elevation Program 1/3 arc-second (approximately 10 meters) layer hosted at the NGTOC. .

Target Property Elevation: 72 ft.

*NOTE: Standard environmental records are displayed in **bold**.*

No Records Found.

Unlocated Sites Summary

This list contains sites that could not be mapped due to limited or incomplete address information.

Database Name	Site ID#	Site Name	Address	City/State/Zip/County
SWEEPS	I11-000-999990	TORRES RICE RANCH	ROAD 66B	PRINCETON 95970 Colusa

AIRSAFS Aerometric Information Retrieval System / Air Facility Subsystem

VERSION DATE: 10/20/14

The United States Environmental Protection Agency (EPA) modified the Aerometric Information Retrieval System (AIRS) to a database that exclusively tracks the compliance of stationary sources of air pollution with EPA regulations: the Air Facility Subsystem (AFS). Since this change in 2001, the management of the AIRS/AFS database was assigned to EPA's Office of Enforcement and Compliance Assurance.

BRS Biennial Reporting System

VERSION DATE: 12/31/11

The United States Environmental Protection Agency (EPA), in cooperation with the States, biennially collects information regarding the generation, management, and final disposition of hazardous wastes regulated under the Resource Conservation and Recovery Act of 1976 (RCRA), as amended. The Biennial Report captures detailed data on the generation of hazardous waste from large quantity generators and data on waste management practices from treatment, storage and disposal facilities. Currently, the EPA states that data collected between 1991 and 1997 was originally a part of the defunct Biennial Reporting System and is now incorporated into the RCRAInfo data system.

CDL Clandestine Drug Laboratory Locations

VERSION DATE: 07/01/16

The U.S. Department of Justice ("the Department") provides this information as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments. The Department does not establish, implement, enforce, or certify compliance with clean-up or remediation standards for contaminated sites; the public should contact a state or local health department or environmental protection agency for that information.

DOCKETS EPA Docket Data

VERSION DATE: 12/22/05

The United States Environmental Protection Agency Docket data lists Civil Case Defendants, filing dates as far back as 1971, laws broken including section, violations that occurred, pollutants involved, penalties assessed and superfund awards by facility and location. Please refer to ICIS database as source of current data.

EC Federal Engineering Institutional Control Sites

VERSION DATE: 08/03/15

This database includes site locations where Engineering and/or Institutional Controls have been identified as part

of a selected remedy for the site as defined by United States Environmental Protection Agency official remedy decision documents. A site listing does not indicate that the institutional and engineering controls are currently in place nor will be in place once the remedy is complete; it only indicates that the decision to include either of them in the remedy is documented as of the completed date of the document. Institutional controls are actions, such as legal controls, that help minimize the potential for human exposure to contamination by ensuring appropriate land or resource use. Engineering controls include caps, barriers, or other device engineering to prevent access, exposure, or continued migration of contamination.

ECHOR09 Enforcement and Compliance History Information

VERSION DATE: 08/26/17

The EPA's Enforcement and Compliance History Online (ECHO) database, provides compliance and enforcement information for facilities nationwide. This database includes facilities regulated as Clean Air Act stationary sources, Clean Water Act direct dischargers, Resource Conservation and Recovery Act hazardous waste handlers, Safe Drinking Water Act public water systems along with other data, such as Toxics Release Inventory releases.

ERNSCA Emergency Response Notification System

VERSION DATE: 10/15/17

This National Response Center database contains data on reported releases of oil, chemical, radiological, biological, and/or etiological discharges into the environment anywhere in the United States and its territories. The data comes from spill reports made to the U.S. Environmental Protection Agency, U.S. Coast Guard, the National Response Center and/or the U.S. Department of Transportation.

FRSCA Facility Registry System

VERSION DATE: 09/06/17

The United States Environmental Protection Agency's Office of Environmental Information (OEI) developed the Facility Registry System (FRS) as the centrally managed database that identifies facilities, sites or places subject to environmental regulations or of environmental interest. The Facility Registry System replaced the Facility Index System or FINDS database.

HMIRSR09 Hazardous Materials Incident Reporting System

VERSION DATE: 03/27/18

The HMIRS database contains unintentional hazardous materials release information reported to the U.S. Department of Transportation located in EPA Region 9. This region includes the following states: Arizona, California, Hawaii, Nevada, and the territories of Guam and American Samoa.

ICIS Integrated Compliance Information System (formerly DOCKETS)

VERSION DATE: 09/23/17

ICIS is a case activity tracking and management system for civil, judicial, and administrative federal Environmental Protection Agency enforcement cases. ICIS contains information on federal administrative and federal judicial cases under the following environmental statutes: the Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act, the Emergency Planning and Community Right-to-Know Act - Section 313, the Toxic Substances Control Act, the Federal Insecticide, Fungicide, and Rodenticide Act, the Comprehensive Environmental Response, Compensation, and Liability Act, the Safe Drinking Water Act, and the Marine Protection, Research, and Sanctuaries Act.

ICISNPDES Integrated Compliance Information System National Pollutant Discharge Elimination System

VERSION DATE: 07/09/17

Authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States.

LUCIS Land Use Control Information System

VERSION DATE: 09/01/06

The LUCIS database is maintained by the U.S. Department of the Navy and contains information for former Base Realignment and Closure (BRAC) properties across the United States.

MLTS Material Licensing Tracking System

VERSION DATE: 06/29/17

MLTS is a list of approximately 8,100 sites which have or use radioactive materials subject to the United States Nuclear Regulatory Commission (NRC) licensing requirements.

NPDESR09 National Pollutant Discharge Elimination System

VERSION DATE: 04/01/07

Authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. The NPDES database was collected from December 2002 until April 2007. Refer to the PCS and/or ICIS-NPDES database as source of current data.This database includes permitted facilities located in EPA Region 9. This region includes the following states: Arizona, California, Hawaii, Nevada, and the territories of Guam and American Samoa.

PADS PCB Activity Database System

VERSION DATE: 07/18/17

PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are

required to notify the EPA of such activities.

PCSR09 Permit Compliance System

VERSION DATE: 08/01/12

The Permit Compliance System is used in tracking enforcement status and permit compliance of facilities controlled by the National Pollutant Discharge Elimination System (NPDES) under the Clean Water Act and is maintained by the United States Environmental Protection Agency's Office of Compliance. PCS is designed to support the NPDES program at the state, regional, and national levels. This database includes permitted facilities located in EPA Region 9. This region includes the following states: Arizona, California, Hawaii, Nevada, and the territories of Guam and American Samoa. PCS has been modernized, and no longer exists. National Pollutant Discharge Elimination System (ICIS-NPDES) data can now be found in Integrated Compliance Information System (ICIS).

RCRASC RCRA Sites with Controls

VERSION DATE: 03/21/18

The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities with institutional controls in place.

SEMSLIENS SEMS Lien on Property

VERSION DATE: 12/11/17

The U.S. Environmental Protections Agency's (EPA) Office of Solid Waste and Emergency Response, Office of Superfund Remediation and Technology Innovation (OSRTI), has implemented The Superfund Enterprise Management System (SEMS), formerly known as CERCLIS (Comprehensive Environmental Response, Compensation and Liability Information System) to track and report on clean-up and enforcement activities taking place at Superfund sites. SEMS represents a joint development and ongoing collaboration between Superfund's Remedial, Removal, Federal Facilities, Enforcement and Emergency Response programs. This is a listing of SEMS sites with a lien on the property.

SFLIENS CERCLIS Liens

VERSION DATE: 06/08/12

A Federal CERCLA ("Superfund") lien can exist by operation of law at any site or property at which United States Environmental Protection Agency has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties. This database contains those CERCLIS sites where the Lien on Property action is complete.

SSTS Section Seven Tracking System

VERSION DATE: 02/01/17

The United States Environmental Protection Agency tracks information on pesticide establishments through the Section Seven Tracking System (SSTS). SSTS records the registration of new establishments and records pesticide production at each establishment. The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) requires that production of pesticides or devices be conducted in a registered pesticide-producing or device-producing establishment. ("Production" includes formulation, packaging, repackaging, and relabeling.)

TRI Toxics Release Inventory

VERSION DATE: 12/31/16

The Toxics Release Inventory, provided by the United States Environmental Protection Agency, includes data on toxic chemical releases and waste management activities from certain industries as well as federal and tribal facilities. This inventory contains information about the types and amounts of toxic chemicals that are released each year to the air, water, and land as well as information on the quantities of toxic chemicals sent to other facilities for further waste management.

TSCA Toxic Substance Control Act Inventory

VERSION DATE: 12/31/12

The Toxic Substances Control Act (TSCA) was enacted in 1976 to ensure that chemicals manufactured, imported, processed, or distributed in commerce, or used or disposed of in the United States do not pose any unreasonable risks to human health or the environment. TSCA section 8(b) provides the United States Environmental Protection Agency authority to "compile, keep current, and publish a list of each chemical substance that is manufactured or processed in the United States." This TSCA Chemical Substance Inventory contains non-confidential information on the production amount of toxic chemicals from each manufacturer and importer site.

RCRAGR09 Resource Conservation & Recovery Act - Generator

VERSION DATE: 03/01/18

The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities currently generating hazardous waste. EPA Region 9 includes the following states: Arizona, California, Hawaii, Nevada, and the territories of Guam and American Samoa.

RCRANGR09 Resource Conservation & Recovery Act - Non-Generator

VERSION DATE: 03/01/18

The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities classified as non-generators. Non-Generators do not presently generate hazardous waste. EPA Region 9 includes the following states: Arizona, California, Hawaii, Nevada, and the territories of Guam and American Samoa.

ALTFUELS Alternative Fueling Stations

VERSION DATE: 01/22/18

Nationwide list of alternative fueling stations made available by the US Department of Energy's Office of Energy Efficiency & Renewable Energy. Includes Biodiesel stations, Ethanol (E85) stations, Liquefied Petroleum Gas (Propane) stations, Ethanol (E85) stations, Natural Gas stations, Hydrogen stations, and Electric Vehicle Supply Equipment (EVSE).

FEMAUST FEMA Owned Storage Tanks

VERSION DATE: 12/01/16

This is a listing of FEMA owned underground and aboveground storage tank sites. For security reasons, address information is not released to the public according to the U.S. Department of Homeland Security.

HISTPST Historical Gas Stations

VERSION DATE: NR

This historic directory of service stations is provided by the Cities Service Company. The directory includes Cities Service filling stations that were located throughout the United States in 1930.

ICISCLEANERS Integrated Compliance Information System Drycleaners

VERSION DATE: 09/23/17

This is a listing of drycleaner facilities from the Integrated Compliance Information System (ICIS). The Environmental Protection Agency (EPA) tracks facilities that possess NAIC and SIC codes that classify businesses as drycleaner establishments.

MRDS Mineral Resource Data System

VERSION DATE: 03/15/16

MRDS (Mineral Resource Data System) is a collection of reports describing metallic and nonmetallic mineral resources throughout the world. Included are deposit name, location, commodity, deposit description, geologic characteristics, production, reserves, resources, and references. This database contains the records previously provided in the Mineral Resource Data System (MRDS) of USGS and the Mineral Availability System/Mineral Industry Locator System (MAS/MILS) originated in the U.S. Bureau of Mines, which is now part of USGS.

MSHA Mine Safety and Health Administration Master Index File

VERSION DATE: 09/01/17

The Mine dataset lists all Coal and Metal/Non-Metal mines under MSHA's jurisdiction since 1/1/1970. It includes such information as the current status of each mine (Active, Abandoned, NonProducing, etc.), the current owner and operating company, commodity codes and physical attributes of the mine. Mine ID is the unique key for this data. This information is provided by the United States Department of Labor - Mine Safety and Health Administration (MSHA).

BF Brownfields Management System

VERSION DATE: 03/26/18

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. The United States Environmental Protection Agency maintains this database to track activities in the various brown field grant programs including grantee assessment, site cleanup and site redevelopment. This database included tribal brownfield sites.

DNPL Delisted National Priorities List

VERSION DATE: 04/11/18

This database includes sites from the United States Environmental Protection Agency's Final National Priorities List (NPL) where remedies have proven to be satisfactory or sites where the original analyses were inaccurate, and the site is no longer appropriate for inclusion on the NPL, and final publication in the Federal Register has occurred.

NLRRCRAT No Longer Regulated RCRA Non-CORRACTS TSD Facilities

VERSION DATE: 03/01/18

This database includes RCRA Non-Corrective Action TSD facilities that are no longer regulated by the United States Environmental Protection Agency or do not meet other RCRA reporting requirements. This listing includes facilities that formerly treated, stored or disposed of hazardous waste.

ODI Open Dump Inventory

VERSION DATE: 06/01/85

The open dump inventory was published by the United States Environmental Protection Agency. An “open dump” is defined as a facility or site where solid waste is disposed of which is not a sanitary landfill which meets the criteria promulgated under section 4004 of the Solid Waste Disposal Act (42 U.S.C. 6944) and which is not a facility for disposal of hazardous waste. This inventory has not been updated since June 1985.

RCRAT Resource Conservation & Recovery Act - Non-CORRACTS Treatment, Storage & Disposal Facilities

VERSION DATE: 03/01/18

The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities recognized as hazardous waste treatment, storage, and disposal sites (TSD).

SEMS Superfund Enterprise Management System

VERSION DATE: 04/11/18

The U.S. Environmental Protections Agency's (EPA) Office of Solid Waste and Emergency Response, Office of Superfund Remediation and Technology Innovation (OSRTI), has implemented The Superfund Enterprise Management System (SEMS), formerly known as CERCLIS (Comprehensive Environmental Response, Compensation and Liability Information System) to track and report on clean-up and enforcement activities taking place at Superfund sites. SEMS represents a joint development and ongoing collaboration between Superfund's Remedial, Removal, Federal Facilities, Enforcement and Emergency Response programs.

SEMSARCH Superfund Enterprise Management System Archived Site Inventory

VERSION DATE: 04/11/18

The Superfund Enterprise Management System Archive listing (SEMS-ARCHIVE) has replaced the CERCLIS NFRAP reporting system in 2015. This listing reflect sites that have been assessed and no further remediation is planned and is of no further interest under the Superfund program.

SMCRA Surface Mining Control and Reclamation Act Sites

VERSION DATE: 08/25/17

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

USUMTRCA Uranium Mill Tailings Radiation Control Act Sites

VERSION DATE: 03/04/17

The Legacy Management Office of the Department of Energy (DOE) manages radioactive and chemical waste, environmental contamination, and hazardous material at over 100 sites across the U.S. The L.M. Office manages this database of sites registered under the Uranium Mill Tailings Control Act (UMTRCA).

DOD Department of Defense Sites

VERSION DATE: 12/01/14

This information originates from the National Atlas of the United States Federal Lands data, which includes lands owned or administered by the Federal government. Army DOD, Army Corps of Engineers DOD, Air Force DOD, Navy DOD and Marine DOD areas of 640 acres or more are included.

FUDS Formerly Used Defense Sites

VERSION DATE: 06/01/15

The Formerly Used Defense Sites (FUDS) inventory includes properties previously owned by or leased to the United States and under Secretary of Defense Jurisdiction, as well as Munitions Response Areas (MRAs). The remediation of these properties is the responsibility of the Department of Defense. This data is provided by the U.S. Army Corps of Engineers (USACE), the boundaries/polygon data are based on preliminary findings and not all properties currently have polygon data available. DISCLAIMER: This data represents the results of data collection/processing for a specific USACE activity and is in no way to be considered comprehensive or to be used in any legal or official capacity as presented on this site. While the USACE has made a reasonable effort to insure the accuracy of the maps and associated data, it should be explicitly noted that USACE makes no warranty, representation or guaranty, either expressed or implied, as to the content, sequence, accuracy, timeliness or completeness of any of the data provided herein. For additional information on Formerly Used Defense Sites please contact the USACE Public Affairs Office at (202) 528-4285.

FUSRAP Formerly Utilized Sites Remedial Action Program

VERSION DATE: 03/04/17

The U.S. DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from the Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations. The DOE Office of Legacy Management (LM) established long-term surveillance and maintenance (LTS&M) requirements for remediated FUSRAP sites. DOE evaluates the final site conditions of a remediated site on the basis of risk for different future uses. DOE then confirms that LTS&M requirements will maintain protectiveness.

NLRRCRAC No Longer Regulated RCRA Corrective Action Facilities

VERSION DATE: 03/01/18

This database includes RCRA Corrective Action facilities that are no longer regulated by the United States Environmental Protection Agency or do not meet other RCRA reporting requirements.

NMS Former Military Nike Missile Sites

VERSION DATE: 12/01/84

This information was taken from report DRXTH-AS-IA-83A016 (Historical Overview of the Nike Missile System, 12/1984) which was performed by Environmental Science and Engineering, Inc. for the U.S. Army Toxic and Hazardous Materials Agency Assessment Division. The Nike system was deployed between 1954 and the mid-1970's. Among the substances used or stored on Nike sites were liquid missile fuel (JP-4); starter fluids (UDKH, aniline, and furfuryl alcohol); oxidizer (IRFNA); hydrocarbons (motor oil, hydraulic fluid, diesel fuel, gasoline, heating oil); solvents (carbon tetrachloride, trichloroethylene, trichloroethane, stoddard solvent); and battery electrolyte. The quantities of material a disposed of and procedures for disposal are not documented in published reports. Virtually all information concerning the potential for contamination at Nike sites is confined to personnel who were assigned to Nike sites.
During deactivation most hardware was shipped to depot-level supply points. There were reportedly instances where excess materials were disposed of on or near the site itself at closure. There was reportedly no routine site decontamination.

NPL National Priorities List

VERSION DATE: 04/11/18

This database includes United States Environmental Protection Agency (EPA) National Priorities List sites that fall under the EPA's Superfund program, established to fund the cleanup of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action.

PNPL Proposed National Priorities List

VERSION DATE: 04/11/18

This database contains sites proposed to be included on the National Priorities List (NPL) in the Federal Register. The United States Environmental Protection Agency investigates these sites to determine if they may present long-term threats to public health or the environment.

RCRAC Resource Conservation & Recovery Act - Corrective Action Facilities

VERSION DATE: 03/01/18

The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities with corrective action activity.

RCRASUBC Resource Conservation & Recovery Act - Subject to Corrective Action Facilities

VERSION DATE: 03/01/18

The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities subject to corrective actions.

RODS Record of Decision System

VERSION DATE: 12/11/17

These decision documents maintained by the United States Environmental Protection Agency describe the chosen remedy for NPL (Superfund) site remediation. They also include site history, site description, site characteristics, community participation, enforcement activities, past and present activities, contaminated media, the contaminants present, and scope and role of response action.

CDL Clandestine Drug Labs

VERSION DATE: 06/30/17

The California Department of Toxic Substance Control (DTSC) provides this listing of illegal drug laboratories. Pursuant to Section 25354.5 of the California Health and Safety Code, DTSC conducts emergency removal actions at clandestine drug labs at the request of State and local law enforcement agencies. DTSC's contractors typically remove hazardous substances that may pose an immediate threat to public health and the environment while the enforcement officials are on scene. During the emergency removal actions, contractors remove and properly dispose of contaminated lab equipment, chemicals used to make the illegal drugs (usually methamphetamine), lab chemical wastes, and other grossly contaminated materials. DTSC does not perform additional assessment work beyond standard emergency removal actions and makes no further determination regarding the need for future cleanup work at the emergency removal location. The reported location information may or may not include the actual location of the illegal drug lab. The DTSC does not guarantee the accuracy of the address or location information or the condition of the location listed.

CHMIRS California Hazardous Material Incident Report System

VERSION DATE: 05/09/17

The California Hazardous Material Incident Report System database is provided by the California Emergency Management Agency. This database contains accidental or spill release information from reported hazardous material incidents since 1993.

DTSCDR DTSC Deed Restrictions

VERSION DATE: 01/21/18

The California Department of Toxic Substances Control (DTSC) maintains this listing of sites with deed restrictions. According to the DTSC, restricted land use indicates whether the site or area within the site has an environmental restriction recorded and/or other institutional control preventing certain types of land use or activities. The land use restrictions listed under the site management requirements are only an abbreviated summary of the land use restrictions, and may not encompass all restrictions and notification requirements placed on a property. For complete land use restriction information please contact the DTSC to review associated Land Use Restriction documents.

EMI Emissions Inventory Data

VERSION DATE: 12/31/15

The Air Resources Board's Emissions Inventory Database contains criteria pollutant data and toxic data on facilities throughout the state of California for the 2012-2000 inventory years.

HWTS Hazardous Waste Tanner Summary

VERSION DATE: 12/31/16

This data is prepared from information extracted from copies of hazardous waste manifests received each year by the Department of Toxic Substances Control. The Hazardous Waste Summary Report (Tanner Report) currently includes manifest data from the 1993 through the 2016 reporting years.

LDS Land Disposal Sites

VERSION DATE: 01/21/18

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

LIENS Recorded Environmental Cleanup Liens

VERSION DATE: 02/20/18

The California Department of Toxic Substance Control (DTSC) maintains this listing of liens placed upon real properties. A lien is utilized by the DTSC to obtain reimbursement from responsible parties for costs associated with the remediation of contaminated properties.

MCS Military Cleanup Sites

VERSION DATE: 01/21/18

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater

NPDES National Pollutant Discharge Elimination System Facilities

VERSION DATE: 03/12/18

Authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States.

ABST Above Ground Storage Tanks

VERSION DATE: 03/22/18

This database, provided by the California Environmental Protection Agency's (CalEPA) Regulated Site Portal, contains aboveground petroleum storage tank facilities originating from the California Environmental Reporting System (CERS). These facilities store petroleum in aboveground storage tanks with oversight by local agencies. As of January 1, 2008, Assembly Bill No. 1130 of the Aboveground Petroleum Storage Act (APSA) authorized the Certified Unified Program Agencies to implement and administer the requirements of the APSA. CalEPA Data Disclaimer: Information displayed in the portal is collected from separate agency databases and displayed unaltered. Information that is considered confidential, trade secret, or is otherwise protected by the agency that

manages the database is not loaded into the portal. For more detail about information displayed in the portal, please visit the data source sites. Please refer to AST2007 database for aboveground storage tank information obtained from the California State Water Resources Control Board prior to 2008 APSA requirements.

AST2007 Aboveground Storage Tanks Prior to January 2008

VERSION DATE: 12/01/07

This database contains aboveground storage tank facilities registered with the California State Water Resources Control Board (SWRCB) between 2007 and 2003. Since 2006, tanks were required to contain a minimum (even as cumulative) of 1320 gallons to be in the program. As of January 1, 2008, the SWRCB no longer maintains a list of registered aboveground storage tanks, due to effective Assembly Bill No. 1130 (Laird) of the Aboveground Petroleum Storage Act (APSA). This Bill authorized the Certified Unified Program Agencies to implement and administer the requirements of the APSA. Please refer to ABST database as a current source for aboveground petroleum storage tank data.

CLEANER Dry Cleaner Facilities

VERSION DATE: 03/13/18

This database, created by accessing the California Department of Toxic Substances Control's (DTSC) Hazardous Waste Tracking System, includes dry cleaner facilities that have registered EPA identification numbers. These facilities are categorized with one of the following NAICS Codes: 81231 or 81232. This database may also include facilities other than dry cleaners who also register with these same NAICS Codes. Not all companies report their NAICS/SIC Codes to the DTSC and therefore this database may exclude registered dry cleaner facilities with incomplete classification information.

DTSCHWT DTSC Registered Hazardous Waste Transporters

VERSION DATE: 02/06/18

The Department of Toxic Substances Control provides this list of Registered Hazardous Waste Transporters.

HISTUST Historical Underground Storage Tanks

VERSION DATE: 12/31/87

The Hazardous Substance Storage Container Database is a historical list of Underground Storage Tank sites, compiled from tank survey and registration information collected at one time between 1984 and 1987 by the State Water Resources Control Board. The hazardous substances stored within these tanks includes, but not restricted to, petroleum products, industrial solvents, and other materials.

MINES Mines Listing

VERSION DATE: 02/11/18

This database includes mine site locations from the California Office of Mine Reclamation.

MWMP California Medical Waste Management Program Facility List

VERSION DATE: 02/07/18

To protect the public and the environment from potential infectious exposure to disease causing agents, the Medical Waste Management Program (MWMP), in the Environmental Management Branch of the California Department of Public Health, regulates the generation, handling, storage, treatment, and disposal of medical waste by providing oversight for the implementation of the Medical Waste Management Act (MWMA). The MWMP permits and inspects all medical waste off-site treatment facilities, medical waste transporters, and medical waste transfer stations.

SLIC Spills, Leaks, Investigation & Cleanup Recovery Listing

VERSION DATE: 06/16/08

These records are maintained by the California Regional Water Quality Control Board (RWQCB). This list includes contaminated sites that impact groundwater or have the potential to impact ground water. Please refer to CLEANUPSITES database as source of current data.

SWEEPS Statewide Environmental Evaluation and Planning System

VERSION DATE: 10/01/94

The Statewide Environmental Evaluation and Planning System (SWEEPS) contains a historical listing of active and inactive underground storage tank locations from the State Water Resources Control Board. The hazardous substances stored within these tanks includes, but not restricted to, petroleum products, industrial solvents, and other materials. Refer to CUPA listing for source of current data.

USTCUPA Underground Storage Tanks

VERSION DATE: 02/11/18

An underground storage tank is an individual tank or group of tanks that store hazardous substances. Underground storage tanks are completely or considerably below the ground surface. This database contains UST permit data submitted from the Certified Unified Program Agencies (CUPA) directly to the State Water Resources Control Board. CUPA's are local agencies that have been certified by the California EPA to implement state environmental programs within the local agency's jurisdiction.

BF Brownfield Sites

VERSION DATE: 03/06/18

This database includes Brownfield sites from the State Water Resources Control Board. These are sites that have gone through the Moratorium of Agreement (MOA) process.

CALSITES CALSITES Database

VERSION DATE: 05/01/04

This historical database was maintained by the Department of Toxic Substance Control for more than a decade. CALSITES contains information on Brownfield properties with confirmed or potential hazardous contamination. In 2006, DTSC introduced EnviroStor as the latest Brownfields site database.

CLEANUPSITES GeoTracker Cleanup Sites

VERSION DATE: 04/16/18

This GeoTracker Cleanup Sites database is maintained by the California Regional Water Quality Control Board (RWQCB). The database contains contaminated sites that impact groundwater or have the potential to impact ground water, including spills, investigations, cleanup recoveries and reported leaking underground storage tank incidents.

CORTESE Cortese List

VERSION DATE: 02/11/18

This active listing includes hazardous waste and substances sites designated by the State Water Resources Control Board , the Integrated Waste Board, and the Department of Toxic Substance Control. The Cortese List is utilized by the State, local agencies and developers to comply with the California Environmental Quality Act requirements in providing information about the location of hazardous materials release sites.

DROP Listing of Certified Dropoff, Collection, and Community Service Programs

VERSION DATE: 02/06/18

Listing of Certified Dropoff, Collection, and Community Service Programs (non-buyback) operating under the state of California's Beverage Container Recycling Program. This list is maintained by the Department of Conservation.

ERAP Expedited Removal Action Program Sites

VERSION DATE: 01/29/18

The Expedited Remedial Action Program is a pilot project administered by the Department of Toxic Substances Control's Site Mitigation and Brownfields Reuse Program to promote the cleanup of up to 30 hazardous substance release sites. ERAP provides significant incentives for redevelopment of contaminated properties by promoting cleanups based on the planned land use, by providing a covenant not to sue, and by outlining a fair and equitable liability scheme.

HISTCORTESE Historical Cortese List

VERSION DATE: 11/02/02

Environmental Records Definitions - STATE (CA)

This historical listing includes hazardous waste and substances sites designated by the State Water Resources Control Board, the Integrated Waste Board, and the Department of Toxic Substance Control. The Cortese List was utilized by the State, local agencies and developers to comply with the California Environmental Quality Act requirements in providing information about the location of hazardous materials release sites. See CACORTESE for an updated version of this database.

LUST Leaking Underground Storage Tanks

VERSION DATE: 04/16/18

This database is maintained by the State Water Resources Control Board. LUST records contain an inventory of reported leaking underground storage tank incidents. Please refer to the CLEANUPSITES database as source of current data.

NFA No Further Action Determination

VERSION DATE: 07/01/05

The NFA listing contains properties at which the Department of Toxic Substance Control has made a clear determination that the property does not pose a problem to the environment or to public health.

NFE Sites Needing Further Evaluation

VERSION DATE: 07/01/05

The NFE listing contains properties that the Department of Toxic Substance Control suspects with possible contamination. These are unconfirmed contaminated properties that need further assessment.

PROC Listing of Certified Processors

VERSION DATE: 02/19/18

Listing of Certified Processors that are operating under the state of California's Beverage Container Recycling Program. This list is maintained by the Department of Conservation.

REF Referred to Another Local or State Agency

VERSION DATE: 07/01/05

The REF listing contains properties where contamination has not been confirmed and which were determined as not requiring direct Department of Toxic Substance Control Site Mitigation Program action or oversight. Accordingly, these sites have been referred to another state or local regulatory agency.

SWIS Solid Waste Information System Sites

VERSION DATE: 04/18/18

The Solid Waste Information System (SWIS) database includes information on solid waste facilities, operations, and disposal sites located in California. This database is maintained by the California Department of Resources Recycling and Recovery.

SWRCY Recycling Centers

VERSION DATE: 02/20/18

Listing of Certified Recycling Centers that are operating under the state of California's Beverage Container Recycling Program. This list is maintained by the Department of Conservation.

VCP Voluntary Cleanup Program

VERSION DATE: 04/23/18

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

WMUDS Waste Management Unit Database

VERSION DATE: 01/01/00

The Waste Management Unit Database System tracks and inventories waste management units. CCR Title 27 contains criteria stating that Waste Management Units are classified according to their ability to contain wastes. Containment shall be determined by geology, hydrology, topography, climatology, and other factors relating to the ability of the Unit to protect water quality. Water Code Section 13273.1 requires that operators submit a water quality solid waste assessment test (SWAT) report to address leak status. The WMUDS was last updated by the State Water Resources control board in 2000.

ENVIROSTOR EnviroStor Cleanup Sites

VERSION DATE: 04/23/18

The Department of Toxic Substances Control (DTSC) has developed the EnviroStor database system to evaluate and track sites with confirmed or potential contamination and sites where further investigation may be necessary. This EnviroStor database of cleanup sites contains the following: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. Sites where DTSC has made a "No Action Required" determination are not included in this database, as these sites had assessments that revealed no evidence of recognized environmental conditions in connection with the property.

ENVIROSTORPCA EnviroStor Permitted and Corrective Action Sites

VERSION DATE: 02/05/18

The Department of Toxic Substances Control (DTSC) has developed the EnviroStor database system to evaluate and track sites with confirmed or potential contamination and sites where further investigation may be necessary. This EnviroStor database contains detailed information on hazardous waste permitted and corrective action facilities. Investigation and cleanup activities at hazardous waste facilities (either Resource Conservation and Recovery Act (RCRA) or State-only) that either were eligible for a permit or received a permit are called "corrective action." These facilities treated stored, disposed and/or transferred hazardous waste.

TOXPITS Toxic Pits Cleanup Act Sites

VERSION DATE: 07/01/95

Toxic Pits are sites with possible contamination of hazardous substances where cleanup is necessary. This listing is no longer updated by the State Water Resources Control Board.

USTR09 Underground Storage Tanks On Tribal Lands

VERSION DATE: 10/13/17

This database, provided by the United States Environmental Protection Agency (EPA), contains underground storage tanks on Tribal lands located in EPA Region 9. This region includes the following states: Arizona, California, Hawaii, Nevada, and the territories of Guam and American Samoa.

LUSTR09 Leaking Underground Storage Tanks On Tribal Lands

VERSION DATE: 10/13/17

This database, provided by the United States Environmental Protection Agency (EPA), contains leaking underground storage tanks on Tribal lands located in EPA Region 9. This region includes the following states: Arizona, California, Hawaii, Nevada, and the territories of Guam and American Samoa.

ODINDIAN Open Dump Inventory on Tribal Lands

VERSION DATE: 11/08/06

This Indian Health Service database contains information about facilities and sites on tribal lands where solid waste is disposed of, which are not sanitary landfills or hazardous waste disposal facilities, and which meet the criteria promulgated under section 4004 of the Solid Waste Disposal Act (42 U.S.C. 6944).

TORRESDUMPSITES Illegal Dump Sites on the Torres Martinez Reservation

VERSION DATE: 10/29/07

This listing of illegal dump site locations on the Torres Martinez Reservation is maintained by the United States Environmental Protection Agency, Region IX. These dump sites contain unlawfully discarded household waste such as landscaping and wood wastes with no known soil or groundwater contamination. A majority of the sites have already been cleaned up through the collaborative efforts of the EPA, The California Integrated Waste Management Board and the Torres Martinez Tribe.

INDIANRES Indian Reservations

VERSION DATE: 01/01/00

The Department of Interior and Bureau of Indian Affairs maintains this database that includes American Indian Reservations, off-reservation trust lands, public domain allotments, Alaska Native Regional Corporations and Recognized State Reservations.

APPENDIX F

National Analytical Laboratories, Inc. Report

Asbestos and Lead Bridge Inspection/Survey

Road 66 Bridge

39.428525, -122.050086
Princeton, CA 95970

Presented to:

Stephen J. Carter, PG
Senior Geologist

Crawford & Associates
1165 Scenic Drive, Suite B
Modesto, CA 95350

Inspection Date:

May 15, 2018

Conducted by:

Michael J. Lee
Certified Asbestos Consultant
Certified Lead Inspector/ Assessor
Registered Environmental Property Assessor

National Analytical Laboratories, Inc.
2201 Francisco Dr., Ste.140-261
El Dorado Hills, CA 95762
Office: (916) 361-0555 | Fax: (916) 361-0540
E-Mail: NAL1@NAL1.com | Web Page: www.NAL1.com

May 16, 2018

Stephen J. Carter, PG
Senior Geologist
Crawford & Associates
1165 Scenic Drive, Suite B
Modesto, CA 95350

RE: Asbestos and Lead Bridge Inspection/Survey
Road 66 Bridge
39.428525, -122.050086
Princeton, CA 95970

Dear Mr. Carter,

This report is in regards to the asbestos and lead bridge inspection conducted at 39.428525, -122.050086, in Princeton, CA. Of the four (4) suspected asbestos containing samples collected, none (0) were found to contain asbestos containing construction materials (ACCM). Of the two (2) suspected lead containing areas tested, none (0) were found to contain Lead Containing Material (LCM), Lead Based Paint (LBP), or Lead Based Material (LBM). Michael J. Lee, Certified Asbestos Consultant, Certified Lead Inspector/Assessor, and Registered Environmental Property Assessor, for National Analytical Laboratories, Inc. (N.A.L.), conducted the inspection on May 15, 2018.

SUMMARY OF FINDINGS -

The bridge inspection and analytical results indicate that no ACCM is present in the limited area that is being renovated. The contractor, his employees and/or his sub-contractors, can complete their work, in the specific area tested, without any health or safety concerns in regards to the exposure of airborne asbestos fibers.

Based on the inspection and lead sample results, all materials tested were found to be below OSHA's Lead Limit of Detection at the site. Therefore, the general contractor may conduct the renovation/demolition work on the work areas, this work can be completed without any health or safety concerns, to his workers or sub-contractors, regarding the exposure to lead hazardous dust.

SECTION I: ASBESTOS INSPECTION -

The inspection was completed according to the EPA's Asbestos Containing Building Materials (ACBM) In-Schools Rule; 40 CFR 763.85 (Inspection and Re-Inspection). Currently, EPA regulations classify ACBM as materials containing more that 1-percent (1%) of asbestos. Cal-OSHA currently regulates asbestos to 1/10th of 1% (0.1%) and requires that a certified asbestos

worker conduct this work.

There were no as-built drawings to review so only a site visit was conducted. Once at the physical bridge site, Mr. Lee performed an entire bridge walk around and under, to visually assess the bridge structure. The bridge system is a wood deck with no rails, set on concrete columns, with a concrete abutment and approach.

Upon completion of the visual inspection, the suspect asbestos bulk sample materials were collected in accordance with EPA and OSHA protocol. They were placed into new, air tight, plastic bags, sealed, and identified with unique identification numbers. The bulk samples were transported to the laboratory under chain of custody protocol for analysis.

No destructive sampling was conducted during the site visit, in the event that demolition work reveals any unforeseen suspect materials or if any future renovation work is to be conducted in other areas at the site; the contractor shall cease all work and contact the building owner for further testing.

EMSL Analytical, Inc. (EMSL) in Carle Place, New York, analyzed the bulk suspect asbestos containing samples utilizing Polarized Light Microscopy (PLM) Method. National Voluntary Laboratory Accreditation Program (NVLAP) certification #101048-10 and California Environmental Laboratory Accreditation Program (CAELAP) certification #2339, certifies EMSL Analytical, Inc.

The location and results from this sampling are as follows:

Sample ID#	Material Description	Sample Location	Results
66-1	Concrete	Pier-Column System, Various Area 6 Hit Composite	None Detected
66-2	Concrete	Abutment System, Various Area 6 Hit Composite	None Detected
66-3	Concrete	Approach System, Various Areas 6 Hit Composite	None Detected
66-4	Black Sealant	Pier-Column System, East Pier (-20 sf)	None Detected

sf = Square Feet

SECTION II: LEAD INSPECTION -

The lead suspect samples were collected according to the Housing Urban Development (HUD) Guidelines, the Environmental Protection Agency (EPA) and California Public Health Department (formally DHS), who regulate and require the abatement or in-place management of LCM/LBP/LBM hazards equal to or greater than 1.0 milligram per square centimeter (1.0 mg/cm2) of lead by XRF Analysis or more than 0.5% lead by weight by laboratory flame atomic absorption. The following regulation shall be adhered to because OSHA considers all surfaces to contain lead: OSHA's 29 CFR 1926.62, California Occupational Safety and Health Standard, Title 8 (Cal/OSHA 8 CCR 1532.1).

Upon completion of the visual inspection, suspect materials were sampled for potential lead content, in accordance with EPA and OSHA protocol. They were labeled with a unique identification number and analyzed.

EMSL Analytical, Inc. (EMSL) in Cinnaminson, New Jersey, utilizing the SW-846-3050B*/7000B method, analyzed the suspect LCM samples. National Voluntary Laboratory Accreditation Program (NJLAP) Certification #102344 and Environmental Laboratory Accreditation Program (NYSELAP) certification #11469, certifies EMSL.

The following samples were found to be less than (<) the OSHA's Limit of Detection:

Sample ID #	Material Description	Sample Location/Component	Concentration % By Weight
66-1L	Scraping	East Pier-Column System, Metal Support Beam, Various Areas	<0.01%
66-2L	Metal Sleeve	West Pier-Column System, Round Column System, Sleeve	<0.01%

LEAD RECOMMENDATION -

The above listed samples/materials were found to be below OSHA's Lead Limit of Detection, therefore, the general contractor may conduct the renovation/demolition work, without any health or safety concerns to his workers or sub-contractors, regarding the exposure to lead hazardous dust or lead contamination.

Included at the end of this report are site photographs, laboratory analytical results, chain of custody forms, and site map. If you have any questions regarding this report or if we can be of further assistance, please contact our office.

Reviewed and submitted by:

Michael J. Lee
Certified Asbestos Consultant,
DOSH# 06-4047
Certified Lead Inspector/Assessor,
CDPH# 10531
Registered Environmental Property Assessor,
REPA# 716352750

SITE PHOTOGRAPHS

Photograph # 1	Road 66 Bridge
Date of Inspection:	May 15, 2018
Subject:	

Photograph # 2	Road 66 Bridge
Date of Inspection:	May 15, 2018
Subject:	

Photograph # 3	Road 66 Bridge	N·A·L
Date of Inspection:	May 15, 2018	
Subject:		

Photograph # 4	Road 66 Bridge	N·A·L
Date of Inspection:	May 15, 2018	
Subject:		

Photograph # 5	Road 66 Bridge	N·A·L
Date of Inspection:	May 15, 2018	
Subject:		

Photograph # 6	Road 66 Bridge	N·A·L
Date of Inspection:	May 15, 2018	
Subject:		

Photograph # 7	Road 66 Bridge	N·A·L
Date of Inspection:	May 15, 2018	
Subject:		

Photograph # 8	Road 66 Bridge	N·A·L
Date of Inspection:	May 15, 2018	
Subject:		

EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514

Tel/Fax: (516) 997-7251 / (516) 997-7528

http://www.EMSL.com / carleplacelab@emsl.com

EMSL Order: 061808893
Customer ID: NAL51
Customer PO:
Project ID:

Attention: Paula Lee
National Analytical Laboratories (NAL)
2201 Francisco Dr.
Ste. 140-261
El Dorado Hills, CA 95762

Phone: (916) 361-0555
Fax: (916) 361-0540
Received Date: 05/16/2018 9:42 AM
Analysis Date: 05/16/2018
Collected Date: 05/15/2018

Project: Road 66 Bridge: 39.428525-122.050086, Princeton, CA 95970

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
66-1 *061808893-0001*	Pier-Column System, Various Area 6 Hit Composite/Concrete	Gray Non-Fibrous Homogeneous		55% Quartz 25% Ca Carbonate 20% Non-fibrous (Other)	None Detected
66-2 *061808893-0002*	Abutment System, Various Area 6 Hit Composite/Concrete	Gray Non-Fibrous Homogeneous		55% Quartz 30% Ca Carbonate 15% Non-fibrous (Other)	None Detected
66-3 *061808893-0003*	Approach System, Various Areas 6 Hit Composite/Concrete	Gray Non-Fibrous Homogeneous		50% Quartz 28% Ca Carbonate 22% Non-fibrous (Other)	None Detected
66-4 *061808893-0004*	Pier-Column System, East Pier/Black Sealant	Black Non-Fibrous Homogeneous		50% Matrix 50% Non-fibrous (Other)	None Detected

Analyst(s)
Melvin Ramirez (4)

Michelle McGowan, Laboratory Manager
or Other Approved Signatory

Initial report from: 05/16/2018 15:29:34

N·A·L ENVIRONMENTAL TESTING & CONSULTING

NAL LOG-IN RECORD

Login # 39478

Ph: 916.361.0555 Fx: 916.361.0540

National Analytical Laboratories, Inc.

Job Site/Job #:

Road 66 Birdge:
39.428525, -122.050086
Princeton, CA 95970

Client#-Lot#	4734 / 29
Crawford & Associates	
Phone Number	
FAX Number	
Contact	
E-Mail Address	

Date	5/15/2018
Sampling Date:	5/15/2018
Sampling Time	10:30:00 AM
Type Of Work:	PLM-FB
No. of Samples	4
Turnaround:	6 hours

CP

Num.	Sample ID#	Location/Description
1	66-1	Pier-Column System, Various Area 6 Hit Composite / Concrete
2	66-2	Abutment Sytem, Various Area 6 Hit Composite / Concrete
3	66-3	Approach System, Various Areas 6 Hit Composite / Concrete
4	66-4	Pier-Column System, East Pier (-20 sf) / Black Sealant

*IF RESULTS ARE LESS THAN 1%, PLEASE 400 POINT COUNT

061808893

RECEIVED
EMSL ANALYTICAL, INC.
CARLE PLACE, NY
2018 MAY 16 A 9:42

Chain of Custody Information

Released By Signature	Date/ Time	Received By Signature	Date/ Time	
Michael Lee	5/15/18 1630		5/16/18 9:42a	Due:
Released By Signature	**Date/ Time**	**Received By Signature**	**Date/ Time**	**At:**

Melissa Ramos 5/16/18

EMSL Analytical, Inc.
528 Mineola Avenue, Carle Place, NY 11514
Phone/Fax: (516) 997-7251 / (516) 997-7528
http://www.EMSL.com carleplacelab@emsl.com

EMSL Order:	061808892
CustomerID:	NAL51
CustomerPO:	
ProjectID:	

Attn: **Paula Lee**
National Analytical Laboratories (NAL)
2201 Francisco Dr.
Ste. 140-261
El Dorado Hills, CA 95762

Phone:	(916) 361-0555
Fax:	(916) 361-0540
Received:	05/16/18 9:42 AM
Collected:	5/15/2018

Project: **Road 66 Bridge: 39.428525-122.050086, Princeton, CA 95970**

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)*

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
66-1L	*061808892-0001*	5/15/2018	5/16/2018	<0.010 % wt
	Site: East Pier-Column System, Metal Support Beam, Various Areas Scraping			
66-2L	*061808892-0002*	5/15/2018	5/16/2018	<0.010 % wt
	Site: West Pier-Column System, Round Column System, Sleeve/Metal Sleeve			

Michelle McGowan, Laboratory Manager
or other approved signatory

*Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.010 % wt based on the minimum sample weight per our SOP. Unless noted, results in this report are not blank corrected. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities. Samples received in good condition unless otherwise noted. "<" (less than) result signifies that the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. The QC data associated with the sample results included in this report meet the recovery and precision requirements unless specifically indicated otherwise. Definitions of modifications are available upon request.

Samples analyzed by EMSL Analytical, Inc. Carle Place, NY Lab ID 102344 is accredited by the AIHA-LAP, LLC in the Environmental Lead accreditation program for Lead in Paint, CT PH-0249, NYS ELAP 11469

Initial report from 05/16/2018 14:48:01

N·A·L ENVIRONMENTAL TESTING & CONSULTING

NAL LOG-IN RECORD

Login # 39477

Ph: 916.361.0555 Fx: 916.361.0540

National Analytical Laboratories, Inc.

Job Site/Job #:

Road 66 Bridge:
39.428525, -122.050086
Princeton, CA 95970

Client#-Lot# 4734 / 28
Crawford & Associates
Phone Number
FAX Number
Contact
E-Mail Address

Date 5/15/2018
Sampling Date: 5/15/2018
Sampling Time 10:30:00 AM
Type Of Work: Lead Bl
No. of Samples 2
Turnaround: 6 hours

Num.	Sample ID#	Location/Description
1	66-1L	East Pier-Column System, Metal Support Beam, Various AreasScraping
2	66-2L	West Pier-Column System, Round Column System, Sleeve \ Metal Sleeve

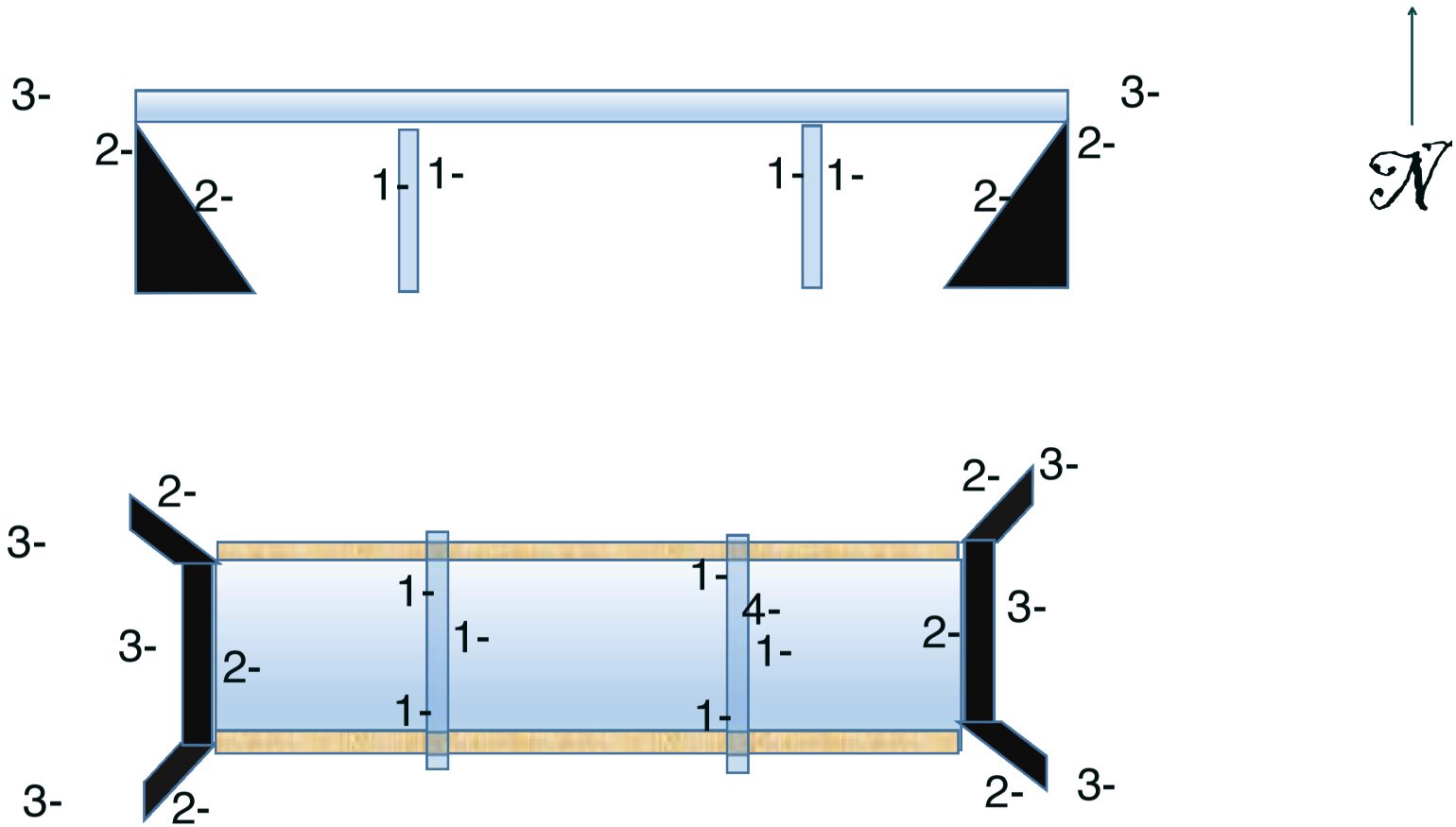
061808892

RECEIVED
EMSL ANALYTICAL, INC.
CARLE PLACE, NY
2018 MAY 16 A 9 42

5/16/18

Chain of Custody Information

Released By Signature	Date/ Time	Received By Signature	Date/ Time	Due:
Michael Lee	5/15/18 1630		5/16/18 9:42a	
Released By Signature	**Date/ Time**	**Received By Signature**	**Date/ Time**	**At:**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Appendix F:
Bridge Design Hydraulic Study Report County Road 66B Bridge Replacement Project Glenn County, California

County Road 66B Bridge Replacement Project
Glenn County, California
Federal-Aid Project No. BRLO-5911(063)
Existing Bridge No. 11C0068

Bridge Design Hydraulic Study Report

Prepared for:

Prepared by:

February 2019

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County Road 66B Bridge Replacement Project
Glenn County, California
Federal-Aid Project No. BRLO-5911(063)
Existing Bridge No. 11C0068

Bridge Design Hydraulic Study Report

Submitted to:
County of Glenn ~~Planning and~~ Public Works

This report has been prepared by or under the supervision of the following Registered Engineer. The Registered Civil Engineer attests to the technical information contained herein and has judged the qualifications of any technical specialists providing engineering data upon which recommendations, conclusions, and decisions are based.

Han-Bin Liang, Ph.D., P.E.
Registered Civil Engineer

2/22/2019
Date

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Table of Contents

Figures

Tables

Photos

Appendices

Executive Summary

The Glenn County (County) ~~Planning and~~ Public Works Agency is proposing to replace the existing Colusa Drain bridge on County Road 66B (Bridge No. 11C0068). The County Road 66B Bridge Replacement at Colusa Drain (Project) is located at the southeastern part of Glenn County and approximately 2 miles (mi) west of California State Route 45. Colusa Drain is owned, operated, and maintained by the Provident Irrigation District (PID), Glenn-Codora-Princeton Irrigation District, and Glenn County Irrigation District.

The County Road 66B Bridge over Colusa Drain was built in 1940. It is approximately 54 feet (ft) long and 20 ft wide and has a 10-degree skew from the Colusa Drain. The structure consist of a three-span timber structure supported on concrete piles and concrete abutments. It currently has one lane for travelling in both directions. The Project proposes to replace the existing bridge with a new structure with two lanes with a width of 32 ft and length of 60 ft. The proposed bridge would meet the design guidelines specified by the American Association of State Highway and Transportation Officials.

The purpose of this report is to document the design flow characteristics of the Colusa Drain at the Project location for the existing and the proposed conditions. The report also documents the scour potential and recommends scour countermeasures for the proposed condition.

The Colusa Drain is owned, operated, and maintained by the Provident Irrigation District (PID), Glenn-Codora-Princeton Irrigation District, and Glenn County Irrigation District. The maximum irrigation design flow (MIDF) for Colusa Drain is 100 cubic feet per second (cfs), and was provided by PID. In addition to MIDF rate, an overtopping flow of 1,520 cfs was also evaluated based on the capacity of the channel. The overtopping flow of 1,520 cfs was used to perform the scour analysis.

The hydraulic analysis was performed using the U.S. Army Corps of Engineers' Hydrologic Engineering Center's River Analysis System and a survey provided by Quincy Engineering, Inc. in 2016. The existing and proposed water surface elevations (WSEs) at the County Road 66B bridge with the MIDF and overtopping flow are summarized in the following tables. Based on the hydraulic models, the proposed bridge would have an insignificant impact on the WSEs at the Project site.

Summary of MIDF Water Surface Elevations at the County Road 66B Bridge

River Station	Location/Distance from Existing Bridge Centerline	Water Surface Elevation (ft NAVD 88)	
		Existing	Proposed
1350.3	16 feet upstream of existing bridge	66.8	66.7
1338.3	4 feet upstream of existing bridge	66.8	--
1321 BR U	Upstream face of existing/proposed bridge	66.7	66.7
1321 BR D	Downstream face of existing/proposed bridge	66.7	66.6
1304.8	8 feet downstream of existing bridge	66.7	--
1293.3	19 feet downstream of existing bridge	66.7	66.6

Notes: Elevations are rounded to the nearest 0.1 ft.
NAVD 88 = North American Vertical Datum of 1988

Summary of Overtopping Water Surface Elevations at the County Road 66B Bridge

River Station	Location/Distance from Existing Bridge Centerline	Water Surface Elevation (ft NAVD 88)	
		Existing	Proposed
1350.3	16 feet upstream of existing bridge	75.6	75.5
1338.3	4 feet upstream of existing bridge	75.7	--
1321 BR U	Upstream face of existing/proposed bridge	75.7	75.5
1321 BR D	Downstream face of existing/proposed bridge	75.5	75.5
1304.8	8 feet downstream of existing bridge	75.5	--
1293.3	19 feet downstream of existing bridge	75.4	75.5

Notes: Elevations are rounded to the nearest 0.1 ft.
NAVD 88 = North American Vertical Datum of 1988

According to PID's standards, the proposed bridge soffit elevation must be equal to or higher than the existing bridge soffit elevation. The available freeboard heights are summarized in the following table.

Summary of the Existing and Proposed Bridge Freeboard at Upstream Face

Flow Scenario	Available Freeboard (ft)	
	Existing Bridge	Proposed Bridge
MIDF	9.7	9.8
Overtopping	0.7	1.0

Note: Elevations are rounded to the nearest 0.1 ft.

A scour analysis was performed for the proposed bridge using the overtopping flow. Long-term, contraction, and local scour were evaluated using the methods outlined in the FHWA's Hydraulic Engineering Circular No. 18, *Evaluating Scour at Bridges* (FHWA 2012). The following table summarizes the estimated scour depths and elevations for the proposed bridge. Because scour countermeasures will be provided at the abutments, the scour elevations reference the finished grade (FG) elevations at each respective abutment.

Summary of Scour Depths and Elevations

Location	Scour Depth (feet)				Elevation (ft NAVD 88)	
	Local	Contraction	Long-Term	Total	Reference FG Elevation	Scour Elevation
Abutment 1 (West)	2.5	3.1	0	5.6	74.6	69.0
Abutment 2 (East)	1.3	3.1	0	4.4	75.2	70.8

Rock slope protection (RSP) is proposed at the bridge abutments to reduce the erosion potential and thalweg migration. A minimum of Class IV RSP is recommended for this Project. Class IV RSP has a median particle weight of 300 pounds and a median particle diameter of 15 inches. The minimum layer thickness for Class IV RSP is 2.5 feet, which should be placed using Method B. Class 8 RSP geotextile filter fabric should be placed on the bank as the initial filter separator material between the layer of RSP and the channel bank.

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Acronyms

AASHTO	American Association of State Highway and Transportation Officials
BIR	Bridge Inspection Report
CABS	California Bank and Shores
Caltrans	California Department of Transportation
cfs	cubic feet per second
County	County of Glenn
D_{50}	median grain size diameter
ESRI	Environmental Systems Research Institute
FEMA	Federal Emergency Management Agency
FG	finished grade
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
ft	feet
HBP	Highway Bridge Program
HEC-18	Hydraulic Engineering Circular No. 18
HEC-23	Hydraulic Engineering Circular No. 23
HEC-RAS	Hydraulic Engineering Centers River Analysis System
LRFD	Load and Resistance Factor Desgin
mi	miles
MIDF	maximum irrigation design flow
NAD 83	North American Datum of 1983
NAVD 88	North American Vertical Datum of 1988
PID	Provident Irrigation Distrcit
Project	County Road 66B over Colusa Drain Bridge Replacement Project
RS	river station
RSP	rock slope protection
WSE	water surface elevation

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1 GENERAL DESCRIPTION

The Glenn County (County) ~~Planning and~~ Public Works Agency is proposing to replace the existing Colusa Drain bridge on County Road 66B (Bridge No. 11C0068). The County Road 66B Bridge Replacement at Colusa Drain (Project) is located at the southeastern part of Glenn County and approximately 2 miles (mi) west of California State Route 45. See Figure 1 for the Project location map, Figure 2 for the Project vicinity map, and Figure 3 for the Project aerial map.

1.1 Project Purpose

The purpose of this Project is to remove the existing structure and replace it with a new bridge designed to meet the current structural and geometric standards, while minimizing adverse impacts to Colusa Drain and its surrounding area. The replacement bridge will meet current applicable County, American Association of State Highway and Transportation Officials (AASHTO), and California Department of Transportation (Caltrans) design criteria and standards.

1.2 Existing Bridge

The County Road 66B Bridge over Colusa Drain was built in 1940. It is approximately 54 feet (ft) long and 20 ft wide and has a 10-degree skew from the Colusa Drain. The structure consists of a three-span timber structure supported on concrete piles and concrete abutments. It currently has one lane for travelling in both directions.

1.3 Proposed Bridge

The Project proposes to replace the existing bridge with a new structure (see Figure 4 for the bridge general plan). Bridge replacement work includes lengthening of the bridge deck to improve channel hydraulics and reconstruction of the adjacent storm drain headwalls. The new bridge will have two lanes with each lane going in opposite directions. The proposed bridge has a minimum bridge width (inside rail to inside rail) of 32 ft and a bridge length of 60 feet. The design includes two 12-ft-wide travel lanes and a 4-ft-wide shoulder on both sides. The roadway will be crowned at the center with a 2% cross slope on both sides of the road. The precast prestressed concrete voided slab deck has a thickness of 2.25 feet.

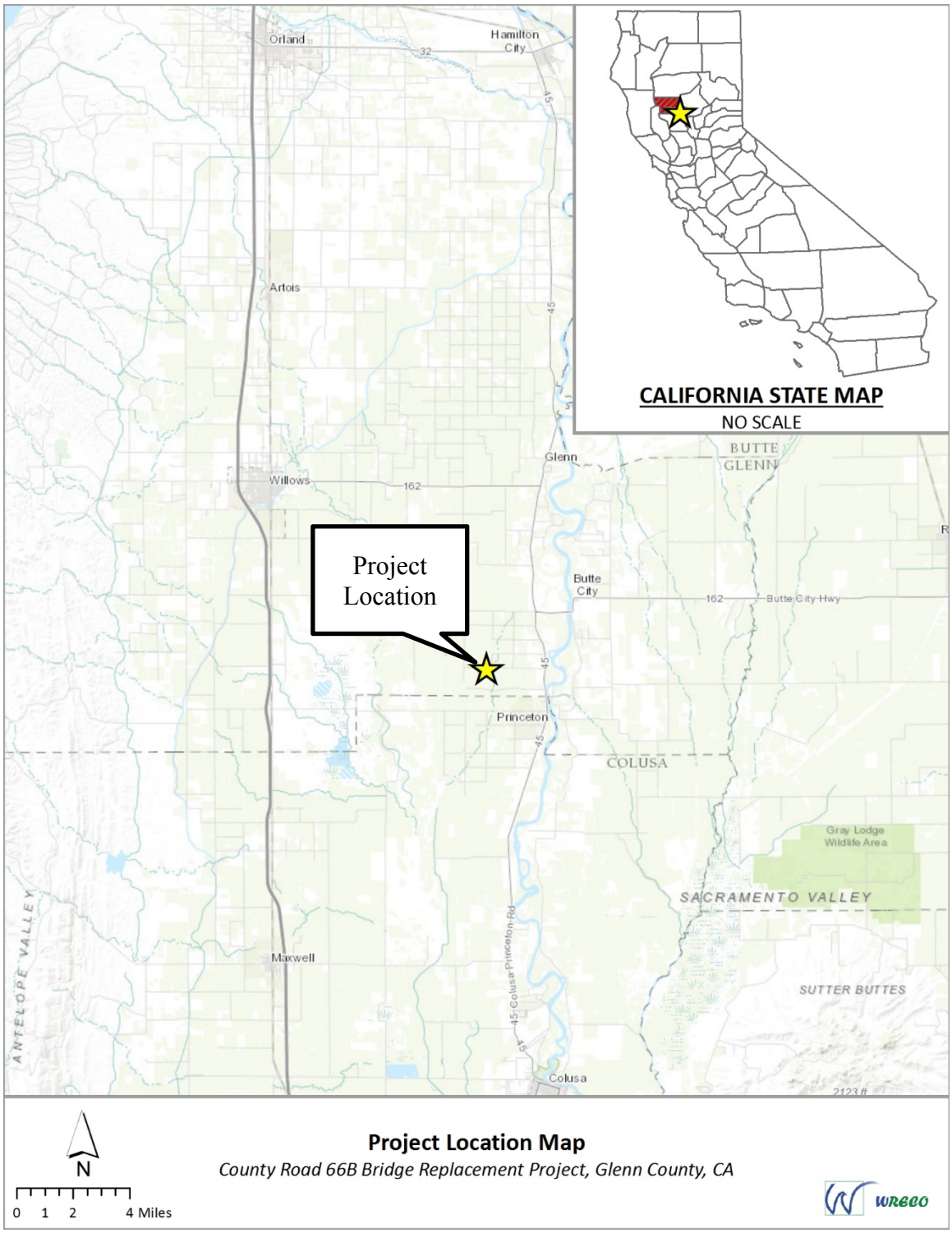

Figure 1. Project Location Map

Source: Environmental Systems Research Institute (ESRI)

Figure 2. Project Vicinity Map

Source: ESRI

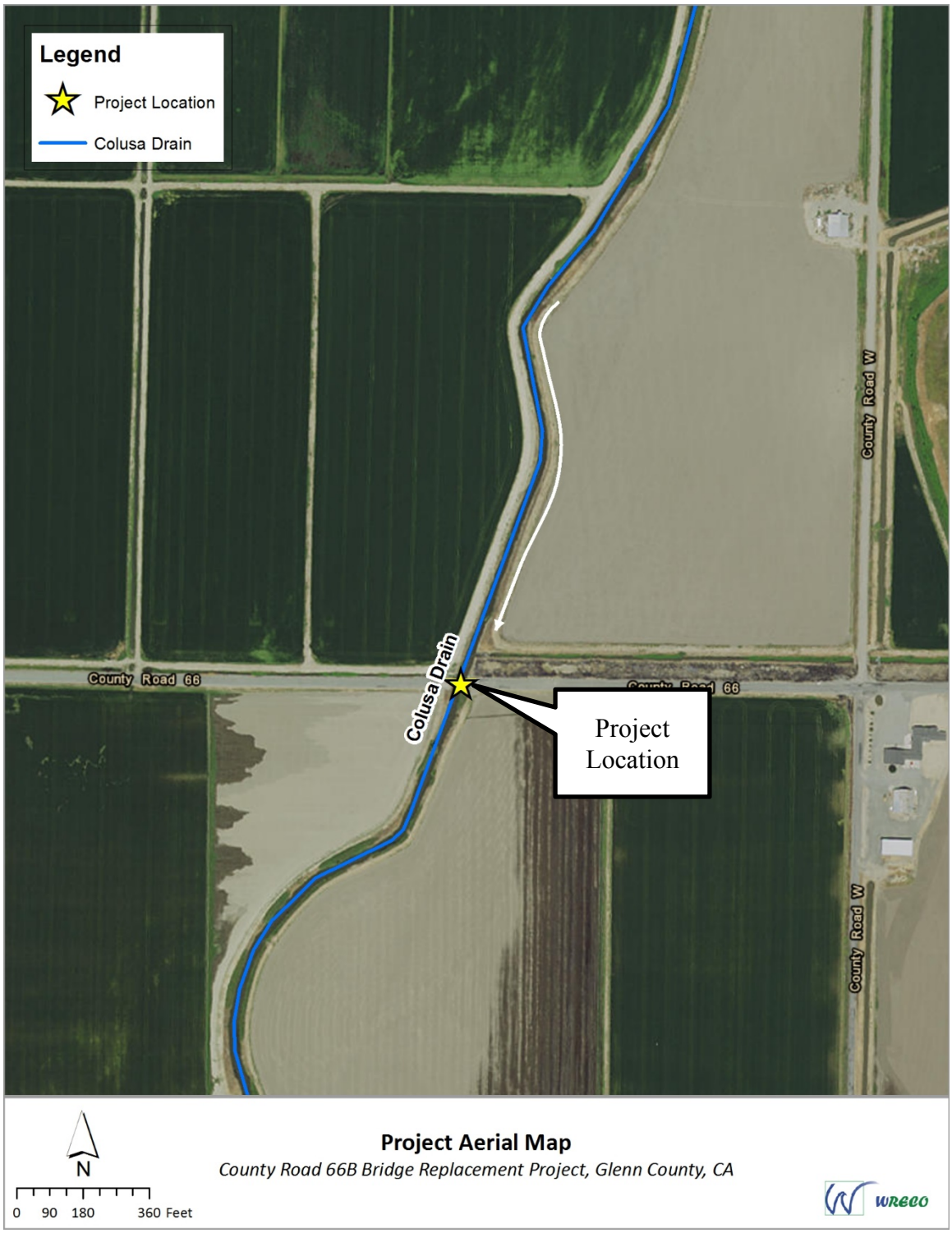

Figure 3. Project Aerial Map

Source: ESRI

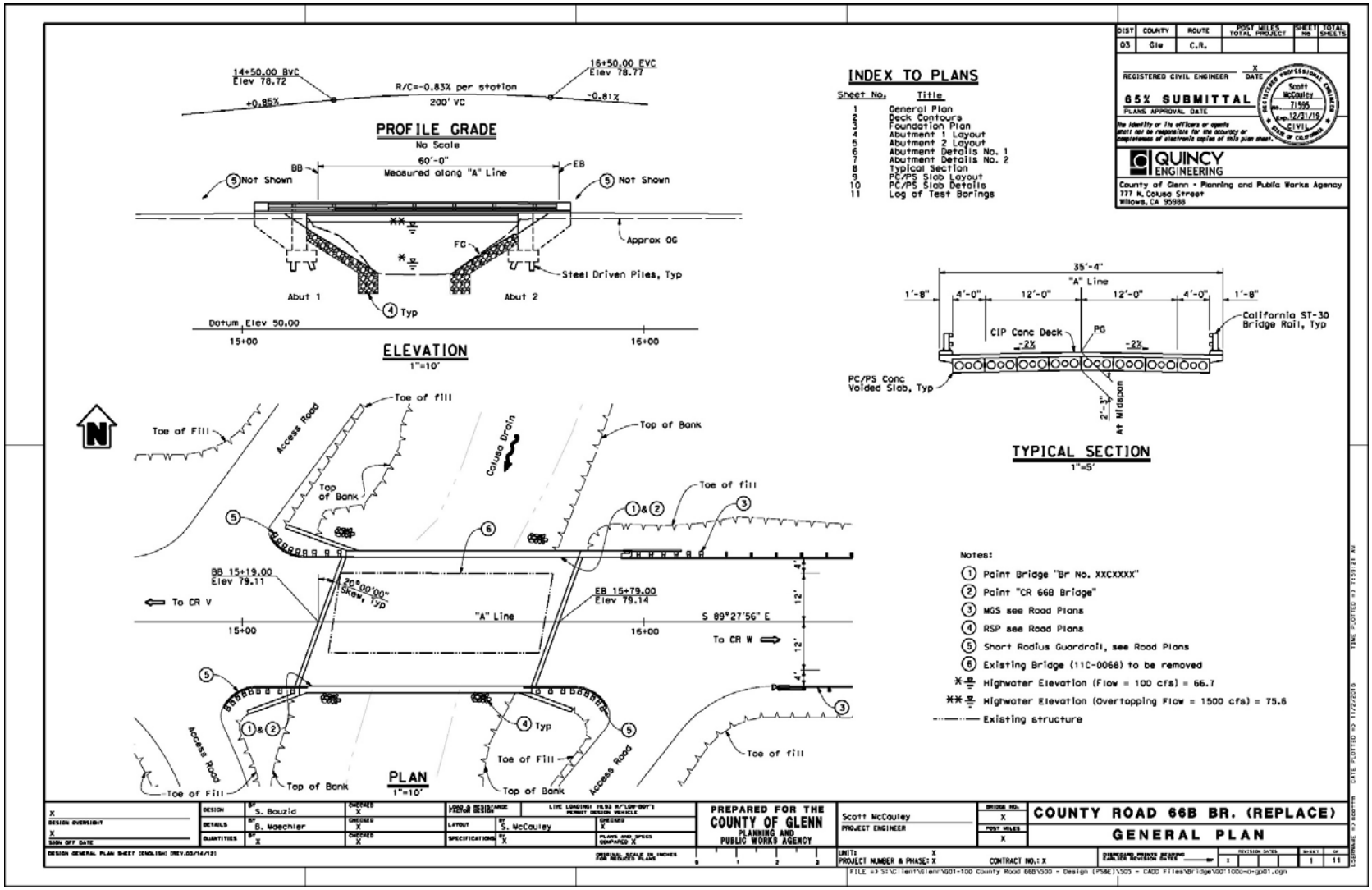

Figure 4. General Plan

Source: Quincy Engineering, Inc.

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1.4 Purpose

The purpose of this Bridge Design Hydraulic Study is to document the flow characteristics for existing and proposed conditions. This report also provides the calculated scour potential, recommendations on the need for scour countermeasures for the proposed bridge, and all of the detailed hydraulic model outputs.

1.5 Key Tasks

Key tasks performed in this study included: 1) coordinate with the Glenn County Irrigation District, Provident Irrigation District, and Princeton-Codora-Glenn Irrigation District to confirm the most recent design flows, 2) a hydraulic analysis to determine design water surface elevations (WSEs) and flow velocities for the existing and proposed bridges over Colusa Drain, 3) bridge scour analyses to estimate potential scour depths for the proposed condition, and 4) scour countermeasure analyses and recommendations for the proposed condition.

1.6 Design Standards

1.6.1 Freeboard Design Standards

The Colusa Drain is owned, operated, and maintained by three irrigation districts: the Provident Irrigation District (PID), Glenn-Codora-Princeton Irrigation District, and Glenn County Irrigation District. According to PID's standards, the proposed bridge soffit elevation must be equal to or higher than the existing bridge soffit elevation.

1.6.2 Scour Design Criteria

The evaluation of potential scour at the proposed bridge followed the criteria described in the FHWA's *Hydraulic Engineering Circular No. 18 (HEC-18)*, "Evaluating Scour at Bridges" (Fifth Edition). The evaluation of potential scour is typically based on hydraulic characteristics of the 100-year design discharge. For this Project, the scour analysis was based on the hydraulic characteristics of an estimated overtopping flow. The total scour was estimated based upon the cumulative effects of the long-term bed elevation change, general (contraction) scour, and local scour. The life expectancy of the bridge was considered in determining the long-term bed elevation change of the waterway; it was based on an assumed 75-year design life for a new replacement bridge.

1.6.3 Foundation Criteria

Per the *California Amendments to the* AASHTO LRFD *Bridge Design Specifications* (Caltrans 2014), foundations should be designed to withstand the conditions of scour. Caltrans' *Memo to Designers 16-1* (2017) provides additional guidance on foundation placement:

> The top of a spread footing must be placed at or below the anticipated total scour (Degradation + Contraction + Local) elevation (*LRFD 2.6.4.4.2 and LRFD-BDS-CA Figure C2.6.4.4.2-1*) unless founded on competent, scour-resistant bedrock.

The top of a pile cap footing must be placed at or below the estimated degradation plus contraction scour depth (*LRFD 2.6.4.4.2 and LRFD-BDS-CA Figure C2.6.4.4.2-2*). The bottom of a pile cap footing should be placed at or below the anticipated Total Scour elevation.

1.6.4 Rock Slope Protection Design Criteria

Two procedures for determining rock slope protection (RSP) design were considered for the proposed structure: the FHWA's *Hydraulic Engineering Circular No. 23* (HEC-23), "Bridge Scour and Stream Instability Countermeasures: Experience, Selection, and Design Guidance" (Third Edition) (2009), and Caltrans HDM (2018). The final selection considers both of these procedures and is based on engineering judgment. The FHWA "Hydraulic Considerations for Shallow Abutment Footings" Technical Brief (2018) describes the extents and dimensions for the placement of the RSP, and supersedes the related information in HEC-23.

1.7 Vertical Datum

The Project references the North American Vertical Datum of 1988 (NAVD 88).

2 GEOGRAPHIC SETTING

2.1 Geographic Location

The Project is located 2 mi west of California State Route 45 at coordinates 39˚25’42.7” North and 122˚03’00” West between County Roads W and Vv.

2.2 Watershed Description

Colusa Drain is between the Sacramento River in the east and Willow Creek in the west, and receives water upstream from the Glenn Colusa Canal. It is a controlled flow irrigation canal that fluctuates more with farming demands than with weather demands. It joins Willow Creek downstream inside Colusa County. The general flow direction in the vicinity of the Project site is from north to south.

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3 HYDROLOGIC ANALYSIS

3.1 Design Flow for Hydraulic Analysis

The Project is located within the the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) number 06021C0850D panel 850 of 900 (see Appendix A). The Project site is within the Flood Hazard Zone A, which is subject to inundation of the 1% annual chance flood.

The maximum irrigation design flow (MIDF) rate, provided by the PID, for Colusa Drain is 100 cfs (Mike Niehus, Provident Irrigation District, Personal communication, October 27, 2016; see Appendix B). In addition to the MIDF rate, an overtopping flow of 1,520 cfs was also evaluated based on the capacity of the channel. The overtopping flow was estimated based on observations from PID, which indicated that flow overtops the banks upstream of the bridge.

3.2 Hydrologic Stability

The changes to the land use within the three irrigation districts at the Project location in Glenn County are not anticipated within the lifespan of the proposed bridge. The MIDF used for the design of the proposed bridge is consistent with the future design flow for the Colusa Drain at the Project location.

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4 HYDRAULIC ANALYSIS

The following sections discuss the development of the hydraulic models and summarize the results for the existing and proposed conditions. The water surface profile plots, hydraulic summary tables, and channel cross sections are included in Appendix C for the existing bridge and Appendix D for the proposed bridge.

4.1 Design Tools

The hydraulic analyses were performed for the existing and proposed conditions using the USACE Hydrologic Engineering Center's River Analysis System (HEC-RAS) modeling software, Version 5.0.1.

4.2 Cross Section Data

The cross-section channel geometry for the hydraulic model was developed using survey data provided by Quincy Engineering, Inc. The survey references the North American Datum of 1983 (NAD83) horizontal datum and the NAVD 88 vertical datum. The six cross-sections extend approximately 190 ft upstream and 310 ft downstream of the Project site along the Colusa Drain (see Figure 5, which shows the locations of the cross-sections). The cross-section naming convention is by river station (RS) with the cross-section number increasing in RS going upstream.

4.3 Model Boundary Condition

According to survey data, the downstream longitudinal slope is 0.00083 ft/ft, which was used as the downstream control for the hydraulic model.

4.4 Manning's Roughness Coefficients

Manning's roughness coefficients were used in the hydraulic model to estimate energy losses in the flow due to friction. A roughness coefficient of 0.035 was used to describe the channel, and a roughness coefficient of 0.045 was used to describe the overbank areas. The channel in the vicinity of County Road 66B is shown in Photo 1, which was taken on September 22, 2016 when the Project Team visited the Project site.

4.5 Expansion and Contraction Coefficients

Expansion and contraction coefficients were used in the hydraulic model to represent energy losses in the channel. An expansion coefficient of 0.3 and a contraction coefficient of 0.1 were used to represent the channel. These values represent a channel with gradual transitions between cross-sections. The expansion and contraction coefficients used in the vicinity of the bridge were 0.5 and 0.3, respectively. These values represent the flow interference caused by the bridge structure.

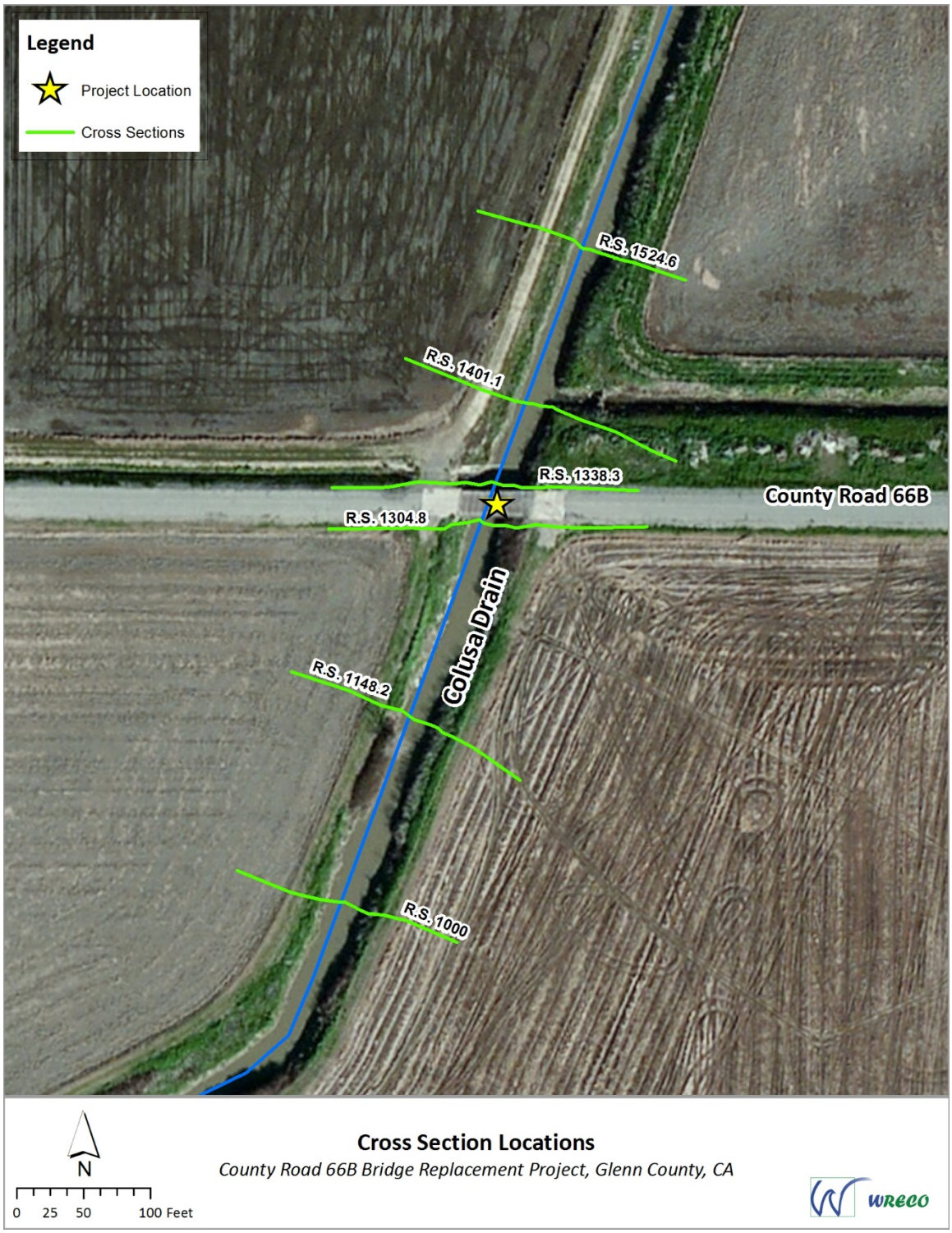

Figure 5: Cross Section Locations

Source: ESRI

Photo 1. Colusa Drain in the Vicinity of County Road 66B

4.6 Modeled Hydraulic Structures

The geometry of the existing bridge in the hydraulic model was based on information from the Caltrans BIR and survey data provided by Quincy Engineering, Inc. The existing bridge has an opening of 24 ft (abutment face to abutment face). The deck and soffit elevations are 77.8 and 76.4 ft, respectively.

The geometry of the proposed bridge in the hydraulic model was based on the general plan provided by Quincy Engineering in 2018. The replacement bridge will have an opening of 52.6 ft (abutment face to abutment face). The minimum bridge soffit elevation will be 76.5 feet.

4.7 Water Surface Elevations

The WSEs for the Colusa Drain at the Project location with the MIDF and overtopping flow for both the existing and proposed conditions are summarized in Table 1 and Table 2, respectively. The water surface profiles along the studied stream reach are presented in Figure 6 for the MIDF and Figure 7 for the overtopping flow. The cross-sections at the upstream sides of the bridges are shown in Figure 8 for the existing condition and Figure 9 for the proposed condition. The HEC-RAS calculations for the existing bridge can be found in Appendix C, and the calculations for the proposed bridge can be found in Appendix D.

Based on the HEC-RAS modeling, the proposed bridge would result in decreases in WSEs. The 100-year design flow at the Project site is governed by the spill flows from the Sacramento River and other streams that flow adjacent to Colusa Drain, and the actual WSEs are likely to be higher than the WSEs estimated in the hydraulic analysis. However, considering the flow is shallow in the flat valley floor area, the WSEs are unlikely to be significantly higher. In addition, the volume of flow carried by Colusa Drain is very small compared to the flow carried by the 100-year floodplain.

Table 1. Summary of MIDF Water Surface Elevations

River Station	Location/Distance from Existing Bridge Centerline	Water Surface Elevation (ft NAVD 88)	
		Existing	Proposed
1524.6	190 feet upstream of existing bridge	66.9	66.9
1401.1	67 feet upstream of existing bridge	66.8	66.7
1350.3	16 feet upstream of existing bridge	66.8	66.7
1338.3	4 feet upstream of existing bridge	66.8	--
1321 BR U	Upstream face of existing/proposed bridge	66.7	66.7
1321 BR D	Downstream face of existing/proposed bridge	66.7	66.6
1304.8	8 feet downstream of existing bridge	66.7	--
1293.3	19 feet downstream of existing bridge	66.7	66.6
1148.2	160 feet downstream of existing bridge	66.5	66.4
1000	310 feet downstream of existing bridge	66.3	66.2

Note: Elevations are rounded to the nearest 0.1 ft.

Table 2. Summary of Overtopping Flow Water Surface Elevations

River Station	Location/Distance from Existing Bridge Centerline	Water Surface Elevation (ft NAVD 88)	
		Existing	Proposed
1524.6	190 feet upstream of existing bridge	75.9	75.7
1401.1	67 feet upstream of existing bridge	75.8	75.6
1350.3	16 feet upstream of existing bridge	75.6	75.5
1338.3	4 feet upstream of existing bridge	75.7	--
1321 BR U	Upstream face of existing/proposed bridge	75.7	75.5
1321 BR D	Downstream face of existing/proposed bridge	75.5	75.5
1304.8	8 feet downstream of existing bridge	75.5	--
1293.3	19 feet downstream of existing bridge	75.4	75.5
1148.2	160 feet downstream of existing bridge	75.2	75.2
1000	310 feet downstream of existing bridge	75.1	75.1

Note: Elevations are rounded to the nearest 0.1 ft.

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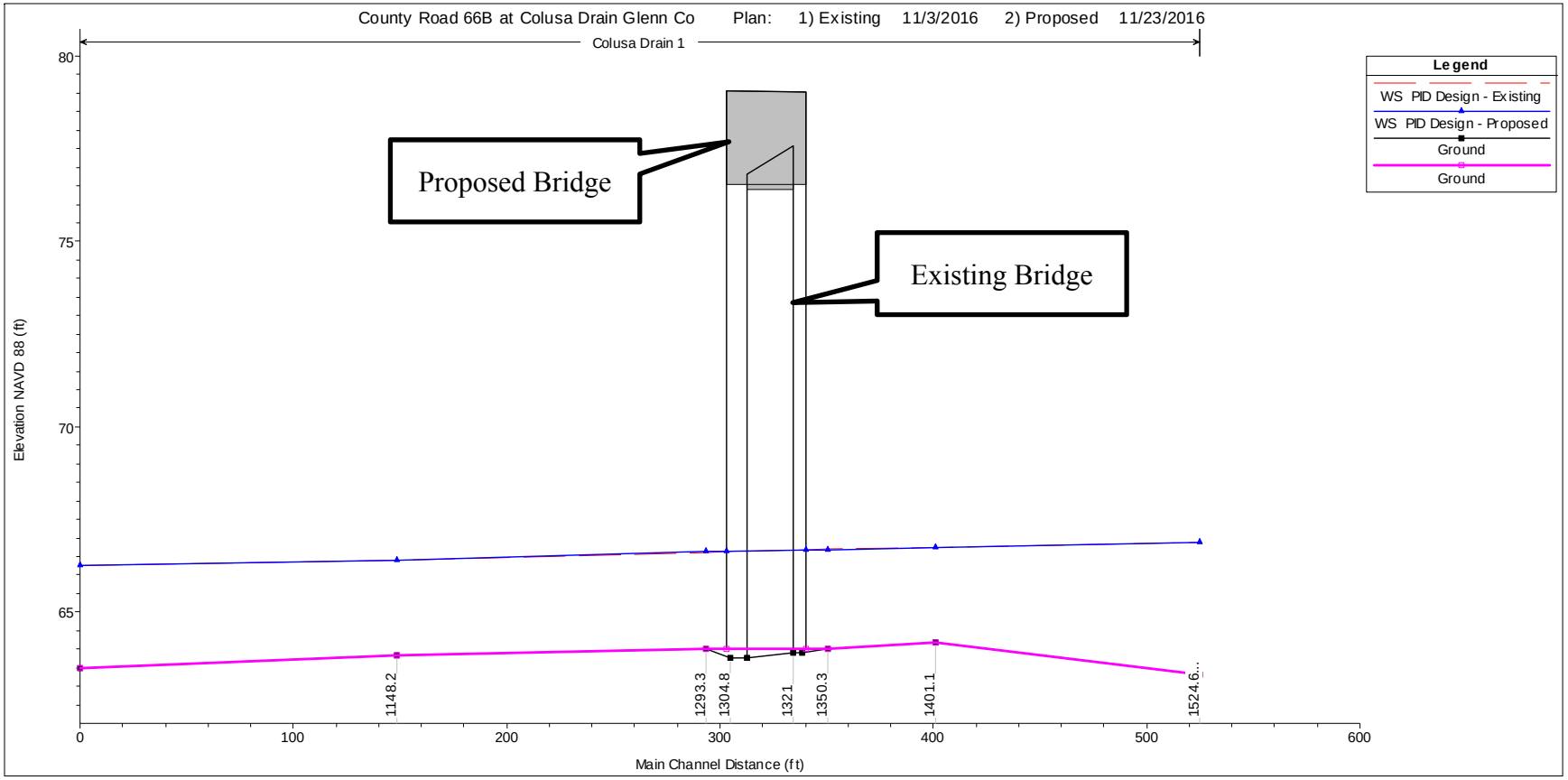

Figure 6. Water Surface Profile Comparison with MIDF

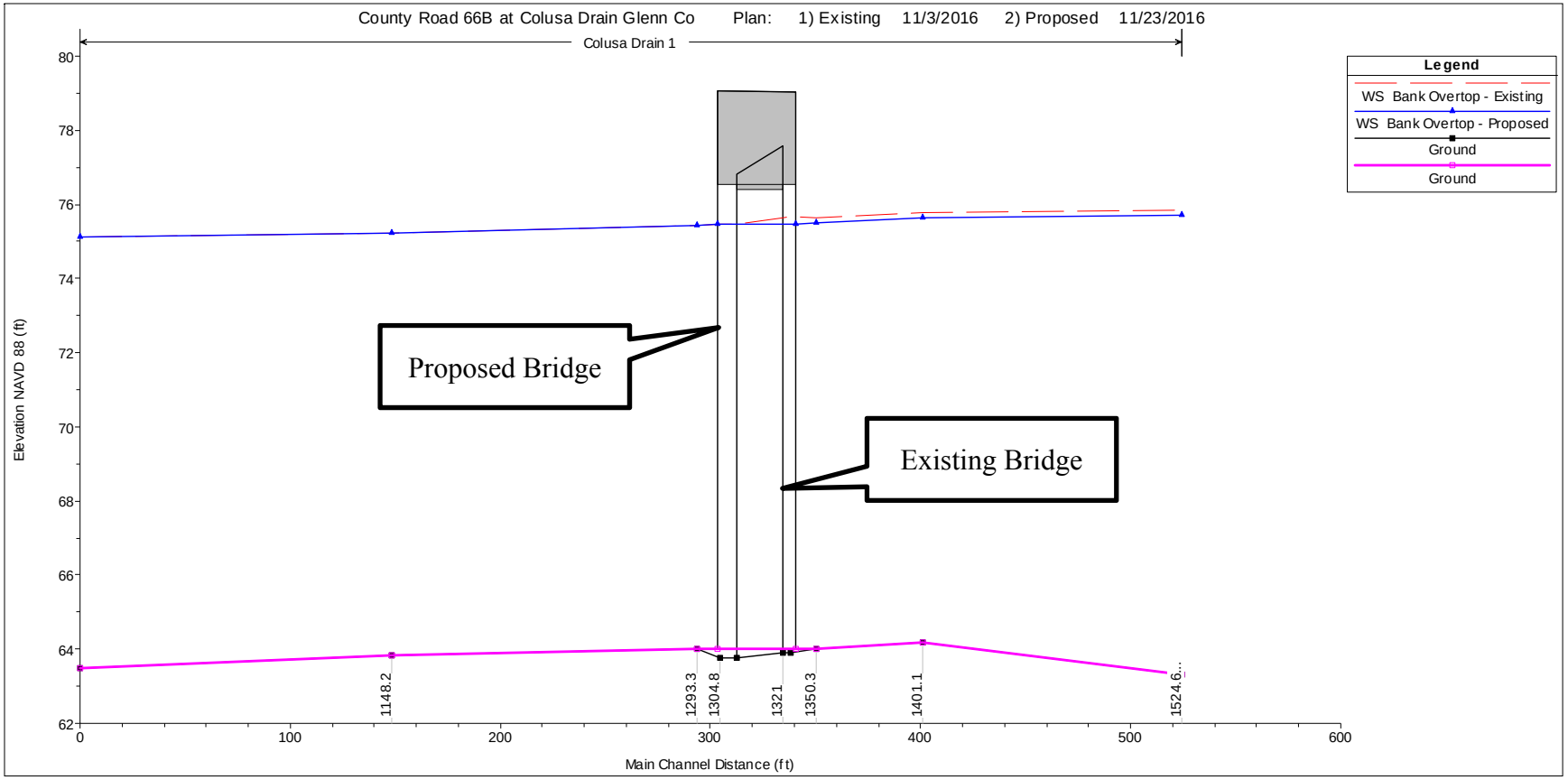

Figure 7. Water Surface Profile Comparison with Overtopping Flow

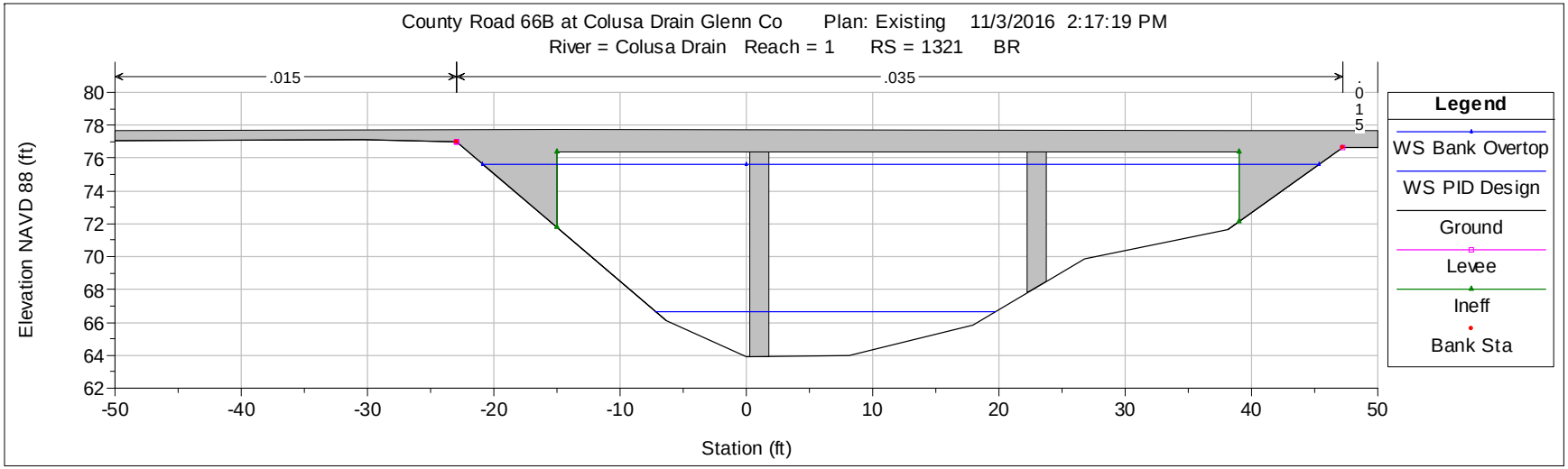

Figure 8. Water Surface Elevation at the Upstream Face of the Existing Bridge (Looking Downstream)

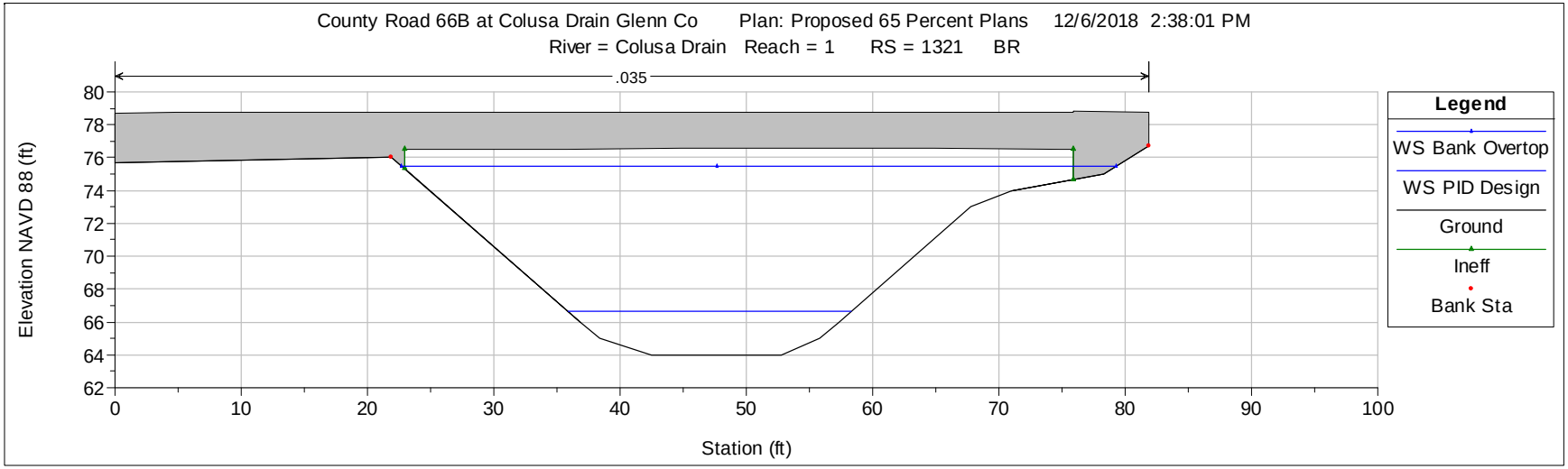

Figure 9. Water Surface Elevation at the Upstream Face of the Proposed Bridge (Looking Downstream)

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4.8 Freeboard

The freeboard requirements applicable to the Project are discussed in Section 1.6.1. Because flows inside the Colusa Drain are not governed by the duration and intensity of storm events, typical design standards from FHWA and Caltrans were not used to evaluate the freeboard criteria of the proposed bridge with the proposed conditions; only the criteria from the PID was used. The minimum soffit elevations and available freeboard for the bridges are presented in Table 3 for the MIDF, and Table 4 for the overtopping flow. The proposed bridge would have sufficient freeboard to meet the PID's design criterion.

Table 3. Available Freeboard at the Project Bridges for the MIDF

Project Condition	Soffit Elevation (ft NAVD 88)	Water Surface Elevation (ft NAVD 88)	Available Freeboard (ft)
Existing	76.4	66.8	9.7
Proposed	76.5	66.7	9.8

Note: Elevations are rounded to the nearest 0.1 ft.

Table 4. Available Freeboard at the Project Bridges for the Overtopping Flow

Project Condition	Soffit Elevation (ft NAVD 88)	Water Surface Elevation (ft NAVD 88)	Available Freeboard (ft)
Existing	76.4	75.7	0.7
Proposed	76.5	75.5	1.0

Note: Elevations are rounded to the nearest 0.1 ft.

4.9 Flow Velocities

The average channel velocities in the Project vicinity for the existing and proposed conditions are summarized in Table 5 for the MIDF, and Table 6 for the overtopping flow. The proposed bridge would result in slight increases in average channel velocities at the location upstream of the bridge. RSP is proposed at the abutments to decrease the potential for erosion due to the increase in channel velocity at the bridge.

Table 5. Comparison of the Average Channel Velocities with MIDF

River Station	Location/Distance from Existing Bridge Centerline	Average Channel Velocity (ft/s)	
		Existing Bridge	Proposed Bridge
1524.6	190 feet upstream of existing bridge	1.6	1.6
1401.1	67 feet upstream of existing bridge	2.2	2.2
1350.3	16 feet upstream of existing bridge	2.0	2.1
1338.3	4 feet upstream of existing bridge	1.9	--
1321 BR U	Upstream face of existing/proposed bridge	2.1	2.1
1321 BR D	Downstream face of existing/proposed bridge	2.1	2.1
1304.8	8 feet downstream of existing bridge	2.0	--
1293.3	19 feet downstream of existing bridge	2.1	2.1
1148.2	160 feet downstream of existing bridge	2.5	2.5
1000	310 feet downstream of existing bridge	1.9	1.9

Note: Average channel velocities are rounded to the nearest 0.1 ft.

Table 6. Comparison of the Average Channel Velocities with Overtopping Flow

River Station	Location/Distance from Existing Bridge Centerline	Average Channel Velocity (ft/s)	
		Existing Bridge	Proposed Bridge
1524.6	190 feet upstream of existing bridge	3.6	3.7
1401.1	67 feet upstream of existing bridge	3.2	3.4
1350.3	16 feet upstream of existing bridge	4.0	4.1
1338.3	4 feet upstream of existing bridge	3.3	--
1321 BR U	Upstream face of existing/proposed bridge	3.6	4.1
1321 BR D	Downstream face of existing/proposed bridge	4.5	4.1
1304.8	8 feet downstream of existing bridge	4.1	--
1293.3	19 feet downstream of existing bridge	4.3	4.1
1148.2	160 feet downstream of existing bridge	4.4	4.4
1000	310 feet downstream of existing bridge	3.8	3.8

Note: Average channel velocities are rounded to the nearest 0.1 ft.

5 SCOUR ANALYSIS

WRECO evaluated bridge scour per the criteria described in "Evaluating Scour at Bridges" (FHWA 2012). Usually, the minimum design criterion for bridge scour is the 100-year design storm. However, the Project site is located within Colusa Drain, and the channel flows are not governed by the duration and intensity of storm events. Therefore, the overtopping flow is used as the design criterion for bridge scour. WRECO evaluated the scour potential and scour countermeasure analysis using the results of HEC-RAS model for the proposed bridge. The following sub-sections summarize the results of the analysis.

5.1 Caltrans Bridge Inspection Reports

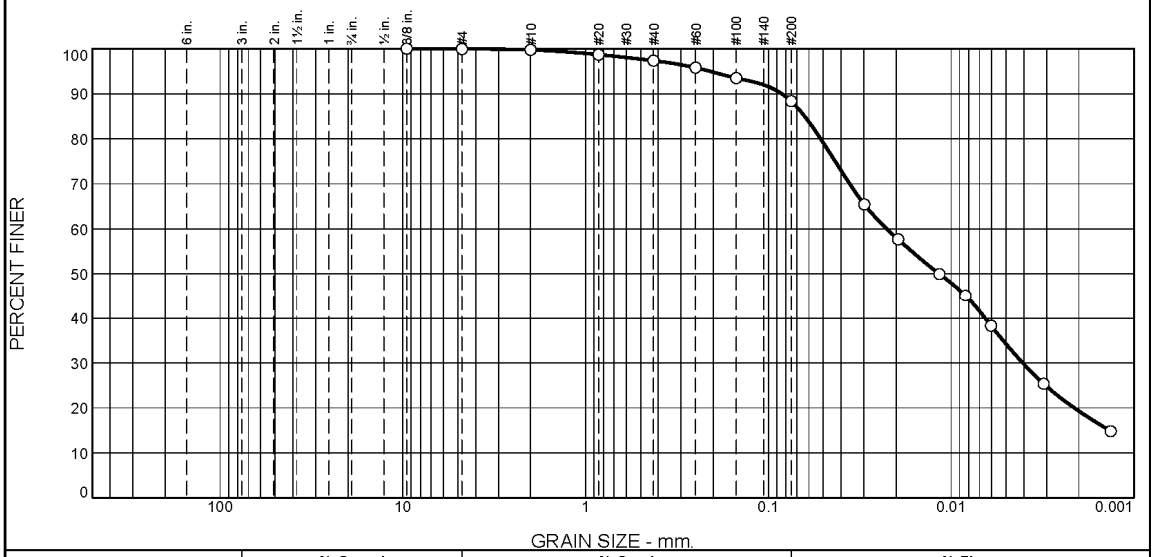
The Caltrans BIRs for the existing bridge were reviewed in support of the scour analysis. Based on the February 4, 2009 BIR, the bridge is determined not to be scour critical. Other details from the bridge inspection can be found in the BIR.

5.2 Existing Channel Bed

The contraction and local scour calculations were based on the flow characteristics from the hydraulic model for the overtopping flow and the grain size distribution from the sieve analysis. Based on the sieve analysis performed by Crawford and Associates Inc. (2016), the median grain size diameter (D_{50}) of 0.0116 mm was used for the scour analysis. The grain size distribution plot is shown in Figure 10.

Soils with fine grains that pass the #200 sieve are generally considered to be cohesive soils. While there is no clear division between cohesive and cohesionless soils, soils are divided into these two groups for the purpose of analyzing scour. In general, the threshold for cohesive bed materials is a D_{50} grain size that is 0.2 mm or less. Based on the median grain size, the potential scour for the Project was analyzed using the cohesive equations.

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.2	2.4	9.0	54.1	34.2

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
.375	100.0		
#4	99.9		
#10	99.7		
#20	98.7		
#40	97.3		
#60	95.8		
#100	93.5		
#200	88.3		
0.0299 mm.	65.4		
0.0195 mm.	57.7		
0.0116 mm.	50.0		
0.0083 mm.	45.1		
0.0060 mm.	38.3		
0.0031 mm.	25.4		
0.0013 mm.	14.8		

* (no specification provided)

Material Description

Olive Elastic SILT

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= AASHTO (M 145)=

Coefficients

D_{90}= 0.0844 D_{85}= 0.0632 D_{60}= 0.0225
D_{50}= 0.0116 D_{30}= 0.0041 D_{15}= 0.0014
D_{10}= C_u= C_c=

Remarks

Date Received: **Date Tested:** 10/3-5/16
Tested By: MR
Checked By: MR
Title: Lab Manager

Sample Number: Channel Bed **Date Sampled:**

GEOCON CONSULTANTS, INC.

Client: Crawford and Associates
Project: Crawford 16-322.1
Project No: S9763-05-80

Figure 10. Grain Size Distribution

Source: Crawford and Associates Inc.

5.3 Long-Term Bed Elevation Change

Aggradation at the bridge site is a result of the deposition of material eroded from the channel. Degradation at the bridge site is a result of scouring of the channel due to sediment deficit. Only degradation is accounted for in scour calculations. The long-term bed elevation changes (long-term bed degradation) are typically based on historical channel data at the bridge site.

The historical channel data at the bridge site was reviewed, and the stream measurements that were recorded in the Caltrans BIRs were compares to assess the long-term bed elevation changes. Historical stream measurements were taken at the bridge in previous BIRs from 1993 to 2013 (see Figure 11). Based on the stream measurements included in the BIRs, the thalweg elevation at the main channel exhibits an overall trend of degradation from 1993 to 2013. However, if the 2016 survey data provided by Quincy Engineer were incorporated, the thalweg channel elevation exhibits an overall trend of aggradation from 2009 to 2016. Based on the dynamic nature of the channel bed fluctuation, the long-term bed elevation change is considered to be insignificant.

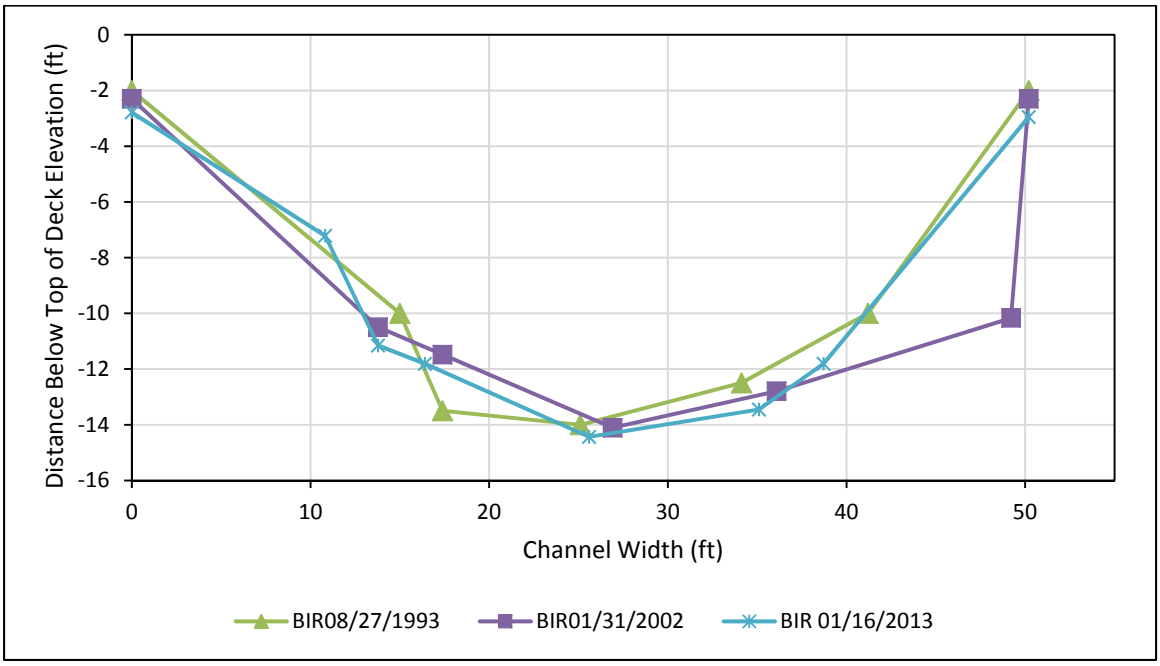


Figure 11. Cross Section Comparison

Source: Caltrans BIR

5.4 Contraction Scour

Contraction scour occurs when the flow area of a stream is reduced by: 1) the natural contraction of the stream channel; 2) a bridge structure; or 3) the overbank flow forced back to the channel by roadway embankments at the roadway approach to a bridge. From the continuity equation, a decrease in flow area results in an increase in average velocity and bed shear stress through the contraction. Hence, there is an increase in erosive forces in the contraction section, and more bed material is removed from the contracted reach

than is transported into the reach. This increase in transport of bed material from the reach lowers the natural bed elevation. As the bed elevation is lowered, the flow area increases. Thus, the velocity and shear stress decrease until relative equilibrium is reached; i.e., the quantity of bed material that is transported into the reach is equal to that removed from the reach, or the bed shear stress is decreased to a value such that no sediment is transported out of the reach. Contraction scour, in a natural channel or at a bridge crossing, involves removal of material from the bed across most of or all of the channel width (FHWA 2012).

Ultimate (contraction) scour depth is estimated for channel bed materials that are considered cohesive. In general, the threshold for cohesive bed materials is a D_{50} grain size that is 0.2 mm or less.

The equation for estimating ultimate scour, as presented in HEC-18, is as follows:

$$y_{s-ult} = 0.94y_1 * \left(\frac{1.83V_2}{\sqrt{gy_1}} - \frac{K_u\sqrt{\frac{\tau_c}{\rho}}}{gny_1^{\frac{1}{3}}} \right)$$

Where:

y_{s-ult} = scour depth for cohesive soils, ft

y_1 = average depth in the upstream main channel, ft

V_2 = average flow velocity in the contracted section, ft/s

g = gravitational acceleration, 32.2 ft/s^2

K_u = 1.486 for U.S. Customary units, and 1.0 for S.I. units

τ_c = critical shear stress, lbs/ft^2

ρ = density of sediment, slugs/ft^3

n = Manning's roughness coefficient, unitless

The contraction scour at the proposed bridge site was estimated to be 3.1 ft.

5.5 Abutment Scour

Abutment scour occurs when the bridge abutments block approaching flow. Abutment scour is commonly evaluated using either the Froehlich or HIRE live-bed scour equations. The HIRE equation is applicable when the ratio of the projected abutment length (the L parameter) to the flow depth (the y1 parameter) is greater than 25.

Abutment 1 uses the Froehlich equation, while Abutment 2 uses the HIRE equation.

The Froehlich equation is given below:

$$y_s = y_a\left[2.27K_1K_2\left(\frac{L'}{y_a}\right)^{0.43} Fr^{0.61} + 1\right]$$

Where:

$y_s =$ scour depth, ft

$K_1 =$ abutment shape coefficient (from Table 7.1 of HEC-18)

$K_2 =$ coefficient for skew angle of abutment to flow

$L' =$ length of active flow obstructed by the embankment, ft

$Fr =$ Froude number, based on the velocity and depth adjacent to and upstream of the abutment

$y_a =$ average depth of flow at the abutment = A_e/L , ft

$L =$ length of embankment projected normal to the flow, ft

$A_e =$ flow area of the approach cross section obstructed by the embankment, sq ft

The HIRE live-bed equation is given below:

$$y_s = 4y_1F_r^{0.33}k_1k_2/0.55$$

Where:

$y_s =$ scour depth, ft

$y_1 =$ flow depth at the abutment on the overbank or in the main channel, ft

$Fr =$ Froude Number directly upstream of the pier

$K_1 =$ abutment shape coefficient; 1 for vertical wall abutments

$K_2 =$ coefficient for angle of embankment shape

The calculated local abutment scour depths are presented in Table 7.

Table 7. Local Abutment Scour Depths

Location	Local Abutment Scour Depth (feet)
Abutment 1 (West)	2.5
Abutment 2 (East)	1.3

5.6 Total Scour and Scour Countermeasures

Per the *California Amendments to the AASHTO LRFD Bridge Design Specifications* (Caltrans 2014), foundations should be designed to withstand the conditions of scour. The total estimated scour depths reflect the sum of the long-term bed elevation change, contraction scour, and local scour, assuming the bridge is supported on soil or degradable rock.

The total scour depth will depend on the local scour, contraction scour, and the long-term bed scour depth. Because the long-term scour depth is zero, only the local and contraction scours will be considered. The scour depths are summarized in Table 8. The scour depths were based on the cohesive soil equation. The detailed calculations are included in Appendix E. Because scour countermeasures will be provided at the abutments, the scour elevations reference the finished grade (FG) elevations at each respective abutment.

Table 8. Scour Depth and Elevation Summary Table

Location	Scour Depth (feet)				Elevation (ft NAVD 88)	
	Local	Contraction	Long-Term	Total	Reference FG Elevation	Scour Elevation
Abutment 1 (West)	2.5	3.1	0	5.6	74.6	69.0
Abutment 2 (East)	1.3	3.1	0	4.4	75.2	70.8

According to a Caltrans memorandum dated October 23, 2015, *Scour Data Table on Foundation Plan*, a scour data table on the Foundation Plan for all contract plans should also present a long-term scour elevation based upon the long-term bed degradation and contraction scour depths, and a short-term depth based upon the local scour depth. The scour data table (see Table 9) is the format that Caltrans requires on the foundation plans.

Table 9. Scour Data Table

Support No.	Long-Term (Degradation and Contraction) Scour Elevation (ft NAVD 88)	Short-Term (Local) Scour Depth (ft)
Abutment 1	71.5	2.5
Abutment 2	72.1	1.3

As stated in Section 1.6.3, the top of a spread footing must be placed at or below the total scour elevation. The top of a pile cap must be placed at or below the sum of the long-term scour elevation, and the bottom of a pile cap should be placed at or below the total scour elevation. The total scour elevations are presented in Table 8.

6 SCOUR COUNTERMEASURES

In consideration of the erosion and scour potential for the proposed bridge, placing RSP at the proposed bridge abutments along the embankment fill slopes will be recommended. RSP generally consists of rocks on channel and structure boundaries to limit the effects of erosion. It is the most common type of scour countermeasure due to its general availability, ease of installation, and relatively low cost. The RSP calculations are included in Appendix F.

6.1 RSP Median Particle Size Determination

The following sections present the calculations to evaluate the size of RSP that would be required along the channel bank slopes at the Project location to protect the channel banks from potential erosion. The primary design concern for RSP is to determine the median particle size such that the material will not be displaced during the peak design flows. Two design guidelines/methodologies were used to determine the minimum size of material required: FHWA HEC-23 and Caltrans' HDM.

6.1.1 FHWA HEC-23

The median stone diameter (D_{50}) of the RSP for the bridge abutments was calculated using the equations from HEC-23, Design Guideline 14. The following equations were used to determine the median stone diameter required for the proposed riprap erosion-control system to protect the channel slope under the bridge:

For Froude Numbers ≤ 0.80 (HEC-23, equation 14.1):

$$\frac{D_{50}}{y} = \frac{K}{S_s - 1}\left[\frac{V^2}{gy}\right]$$

For Froude Numbers > 0.80 (HEC-23, equation 14.2):

$$\frac{D_{50}}{y} = \frac{K}{S_s - 1}\left[\frac{V^2}{gy}\right]^{0.14}$$

Where:

D_{50} = median stone diameter (ft)
V = characteristic average velocity in the contracted section (ft/s)
S_s = specific gravity of rock riprap
g = gravitational acceleration (32.2 ft/s^2)
y = depth of flow in the contracted bridge opening (ft)
K = 0.89 for a spill-through abutment and 1.02 for a vertical wall abutment

The median stone diameter is a function of velocity and depth. The average channel flow velocities and flow depths from the hydraulic analysis were selected to calculate the median stone diameter of the RSP to protect the bridge abutments. The median stone

diameter for the RSP was calculated immediately upstream, at the upstream face, at the downstream face, and immediately downstream of the proposed bridge. The largest of the four locations was selected as the minimum RSP class. The results from the RSP calculations and the scour countermeasure recommendations for the Project are presented in Section 6.2.

6.1.2 Caltrans Highway Design Manual

The following equations included in Caltrans' HDM Chapter 870, *Bank Protection – Erosion Control* were used to estimate the weight of the RSP required to protect the proposed bridge abutments:

$$D_{30} = y\left(S_f C_S C_V C_T\right)\left[\frac{V_{des}}{\sqrt{K_1\left(S_g - 1\right)gy}}\right]^{2.5}$$

$$D_{50} = 1.2 D_{30}$$

$$K_1 = \sqrt{1 - \left[\frac{\sin\left(\theta - 14^0\right)}{32^0}\right]^{1.6}}$$

Where:

D_{30} = particle size for which 30% is finer by weight (ft)
D_{50} = median particle size (ft)
y = local flow depth (ft)
S_f = safety factor (typically 1.1)
C_s = stability coefficient (0.3 for angular rock)
C_v = velocity distribution coefficient (1.0 for straight channel)
C_T = blanket thickness coefficient (1.0)
g = acceleration due to gravity (32.2 ft/sec^2)
V_{des} = characteristic velocity for design (ft/sec)
K_1 = side slope correction factor
θ = bank angle in degrees

The RSP diameter was calculated immediately upstream, at the upstream face, at the downstream face, and immediately downstream of the proposed bridge. The largest of the four locations was selected as the minimum RSP class. The results from the RSP calculations and the scour countermeasure recommendations for the Project are presented in Section 6.2.

6.2 RSP Results and Recommendations

The RSP class calculated using the equations provided in FHWA's HEC-23 and Caltrans' HDM is Class I. Detailed calculations are included in Appendix F. Class I RSP has an approximate median diameter of 0.5 ft, and an approximate median weight of 20 lbs., which is relatively light and has a high potential to be displaced over the lifespan of the proposed bridge.

Therefore, WRECO recommends Class IV RSP, which has an approximate median diameter of 15 inches and a median weight of 300 pounds. The larger RSP class would minimize the risk of RSP displacement. According to the HDM, the minimum thickness of the RSP layer needs to be 1.5 times the median particle diameter or the maximum diameter, whichever is greater. The minimum layer thickness for Class IV RSP is 2.5 ft. The placement method for Class IV RSP is Method B, which involves dumping the rock near its planned location, and working the rock to its final position with machinery. Class 8 RSP geotextile filter fabric should be placed on the bank as a separator material between the RSP and the channel bank.

The footprint of application of RSP is based on guidance from "Hydraulic Considerations for Shallow Abutment Footings" Technical Brief (FHWA 2018). The slope protection should be embedded a depth equal to the sum of the long-term degradation and contraction scour (3.1 ft). The slope protection should extend from the face of the abutment to the toe of slope, and wrap around the bridge abutments from the face of the abutment and behind it a distance of 25 ft. From the toe of slope, the RSP apron should extend horizontally towards the channel a distance equal to the depth of flow, or 7.1 ft. The extent, upstream and downstream of the bridge, is twice the flow depth, or 14.2 ft. The side slope of the RSP is 2:1 (horizontal to vertical), or flatter.

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7 REFERENCES

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Appendix A FEMA Flood Insurance Rate Map

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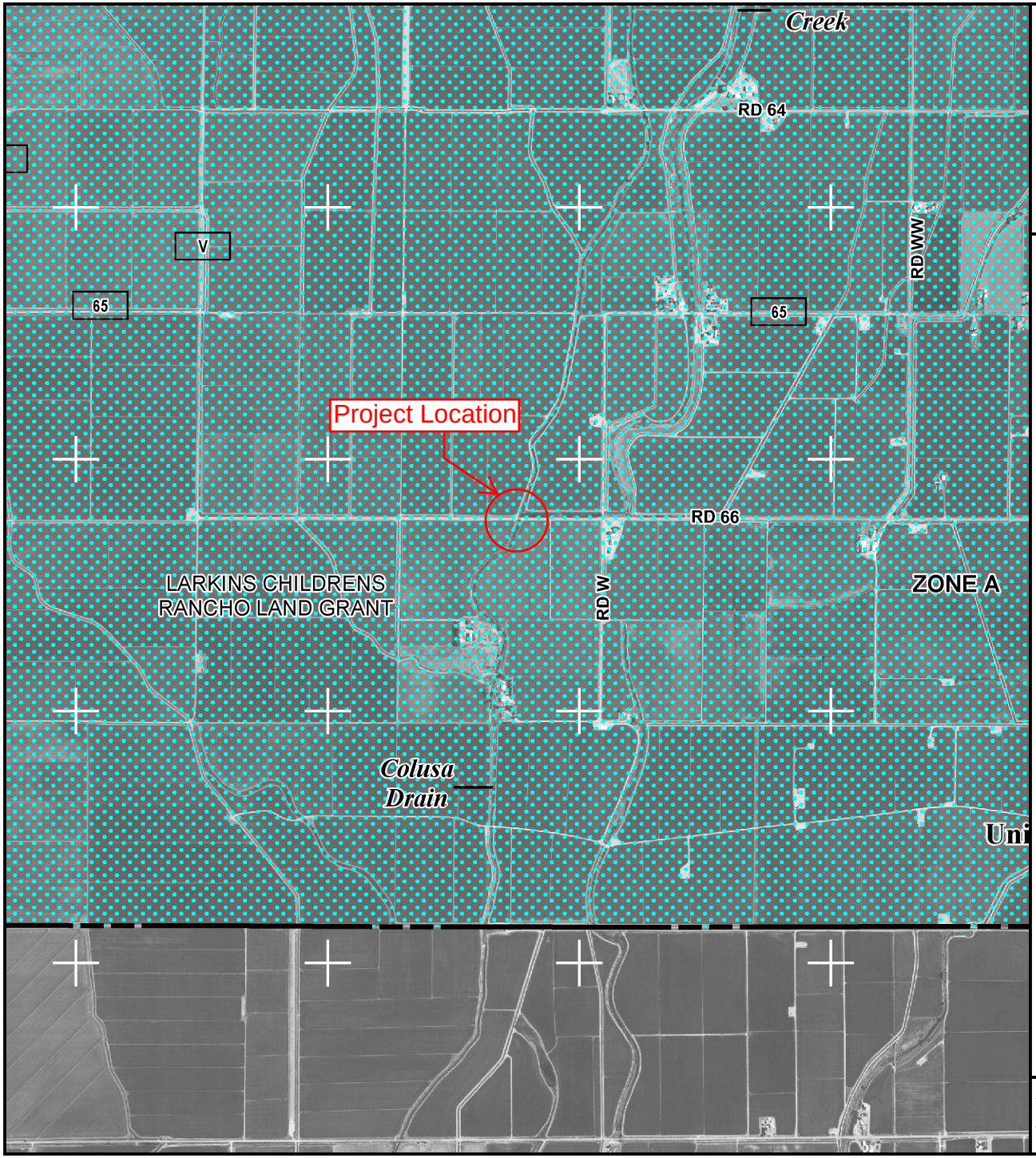

MAP SCALE 1" = 2000'

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0850D

FIRM

FLOOD INSURANCE RATE MAP

GLENN COUNTY, CALIFORNIA

AND INCORPORATED AREAS

PANEL 850 OF 900

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
GLENN COUNTY	060057	0850	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06021C0850D

EFFECTIVE DATE
AUGUST 5, 2010

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

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Appendix B Provident Irrigation District Coordination

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County Road 66B Bridge 11C-0068 Replacement
Record of Telephone Conversation

Date: October 27, 2016, 3:30pm **Job#:** G01-100

Where Held:

☒ By Telephone ☒ QEI Office ☐ Other Party's Office ☐ Other:

Initiated By:

☒ Quincy Engineering ☐ Other Party ☐ Other:

Participants:

Name	Company	Telephone #
Jim Foster	Quincy Engineering	916-368-9181
Scott McCauley	Quincy Engineering	916-368-9181
Mike Niehus	Provident Irrigation District	530-518-2320

SUBJECT: Coordination with Provident Irrigation District

Discussion Summary:

Jim and Scott initiated conversation with Mike to discuss his knowledge of the Colusa Drain, specifically as it relates to the bridge project. Mike shared the following information:

- To his knowledge, the bridge has never overtopped. The highest he has seen the flow is about half way up (the embankment) at the bridge location. The flow overtops the banks upstream of the bridge and floods the nearby fields. He has been with the District for 6 years.
- Jim then asked Mike to confirm that we wouldn't be affecting the flow of the canal if we match the soffit of the existing bridge with the new structure. Mike confirmed.
- Mike mentioned this bridge is on the border of the Provident Irrigation District and the Princeton Irrigation District, who pulls water downstream of the bridge. Mike said that new bridge will not affect them either.
- Mike is okay with placing rock slope protection (RSP) on the channel banks
- Mike mentioned that the lowest flow is in March-April, then it picks up
- Jim asked Mike if the irrigation district had any stream gauges and flow data available. Mike said they do not. He did mention that the flow 15 miles upstream is 100cfs and they pull 50cfs from the canal upstream of the bridge, and 100cfs is a reasonable estimate at our bridge site.

Next Steps / Action Items

No.	Who	What	Status
1	Quincy	Forward info to WRECO	
2	Quincy	Set profile to match existing soffit & RSP ok	

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Appendix C Hydraulic Analysis, Existing Condition

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Appendix C.1 HEC-RAS Existing Bridge with Design Flow of 100 cfs

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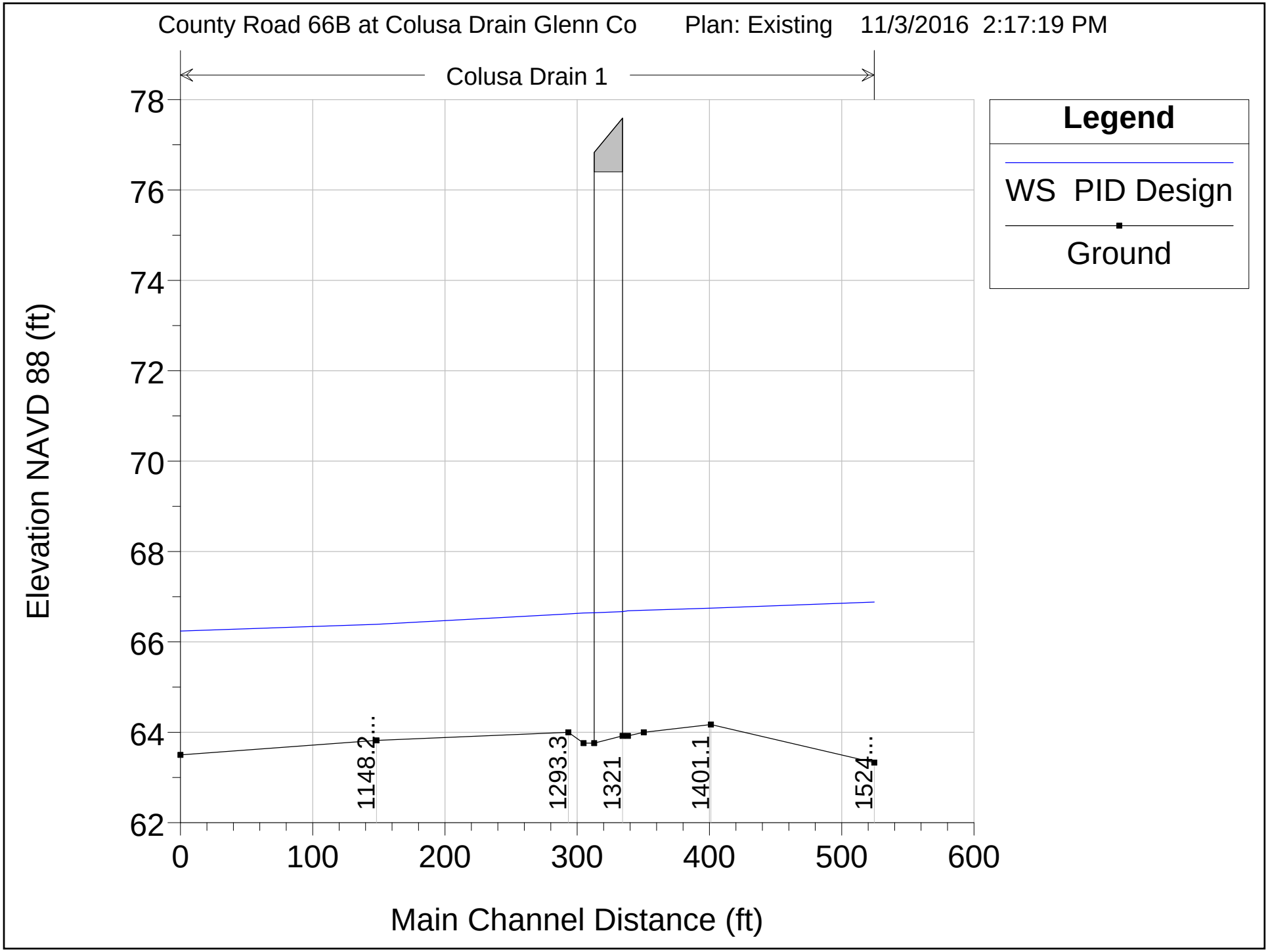
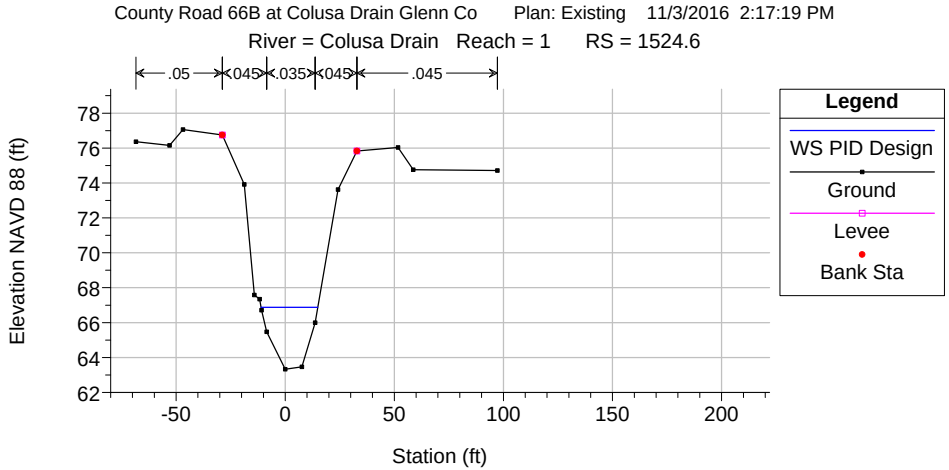
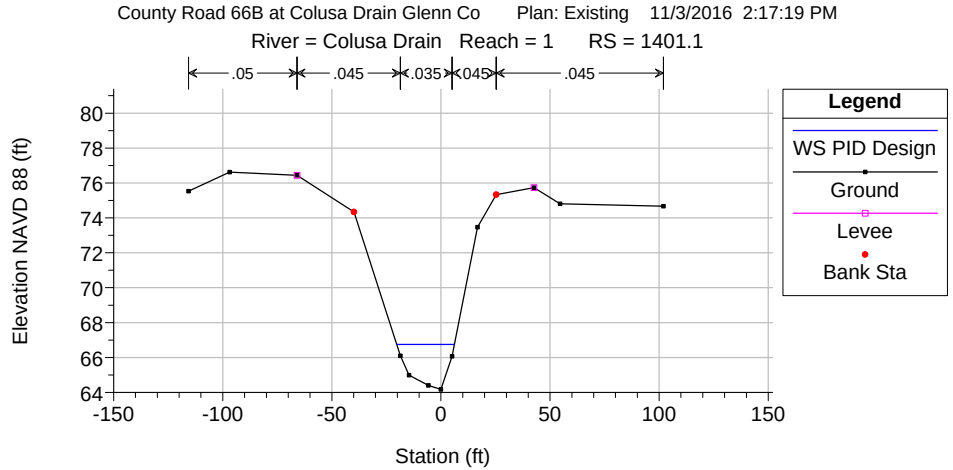
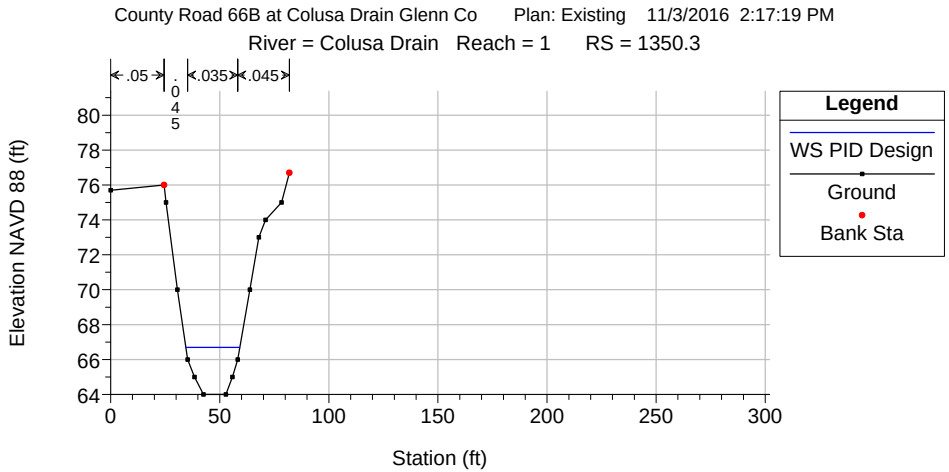

County Road 66B at Colusa Drain Glenn Co
Plan: Existing
11/3/2016 2:17:19 PM
Colusa Drain 1
Legend
WS PID Design
Ground
Elevation NAVD 88 (ft)
78
76
74
72
70
68
66
64
62
0
100
200
300
400
500
600
1148.2...
1293.3
1321
1401.1
1524...
Main Channel Distance (ft)

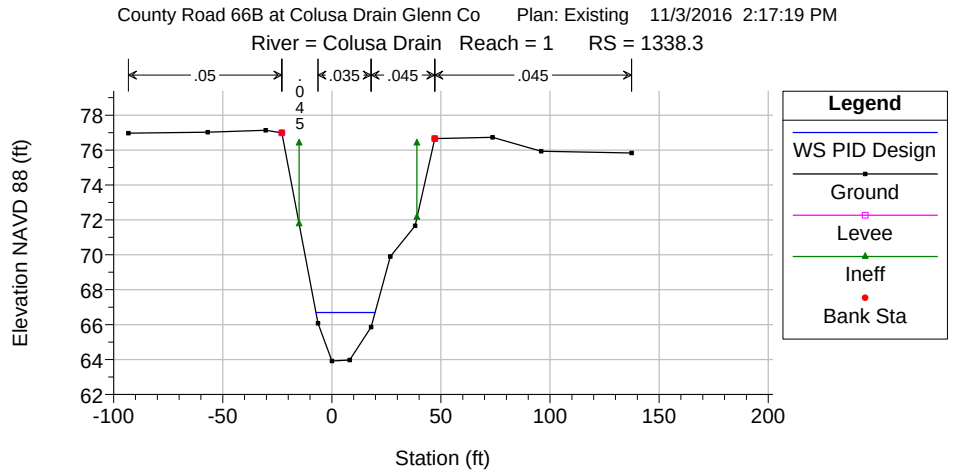
HEC-RAS Plan: Existing River: Colusa Drain Reach: 1 Profile: PID Design

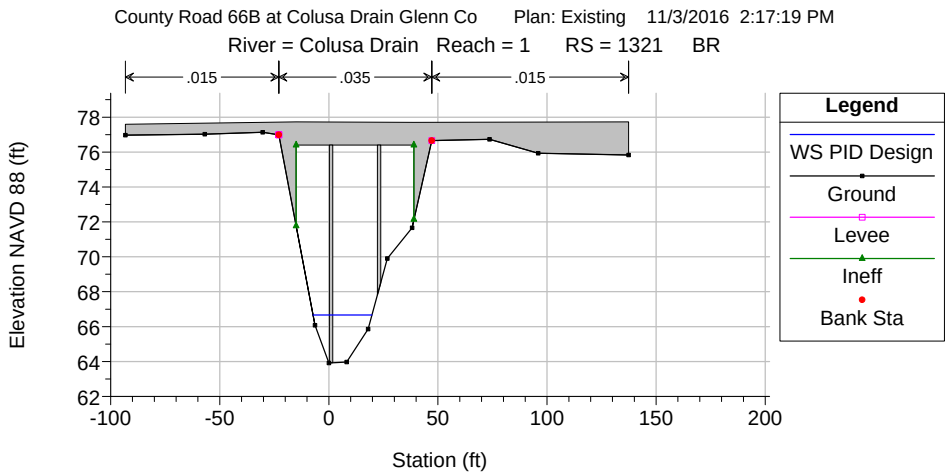
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Hydr Depth	Hydr Depth C	Length Chnl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)	(ft)	(ft)
1	1524.6	PID Design	100.00	63.33	66.88	64.82	66.92	0.000507	1.59	63.00	25.99	0.18	2.42	2.42	123.49
1	1401.1	PID Design	100.00	64.17	66.75	65.58	66.82	0.001364	2.16	46.29	26.38	0.29	1.75	1.75	50.81
1	1350.3	PID Design	100.00	64.00	66.70		66.76	0.000929	1.97	50.65	24.70	0.24	2.05	2.05	12.00
1	1338.3	PID Design	100.00	63.92	66.69	65.28	66.75	0.000986	1.94	51.56	27.06	0.25	1.91	1.91	4.00
1	1321 BR U	PID Design	100.00	63.92	66.67	65.38	66.74	0.001506	2.13	46.90	25.48	0.28	1.84	1.84	21.50
1	1321 BR D	PID Design	100.00	63.76	66.65	65.13	66.71	0.001011	2.05	48.68	21.80	0.24	2.23	2.23	7.99
1	1304.8	PID Design	100.00	63.76	66.64	65.14	66.70	0.000906	1.97	50.86	23.97	0.24	2.12	2.12	11.50
1	1293.3	PID Design	100.00	64.00	66.62		66.69	0.001083	2.09	47.89	23.38	0.26	2.05	2.05	145.10
1	1148.2	PID Design	100.00	63.82	66.39	65.36	66.48	0.001813	2.49	40.19	23.45	0.34	1.71	1.71	148.21
1	1000	PID Design	100.00	63.50	66.24	64.67	66.30	0.000830	1.91	52.42	25.65	0.24	2.04	2.04	

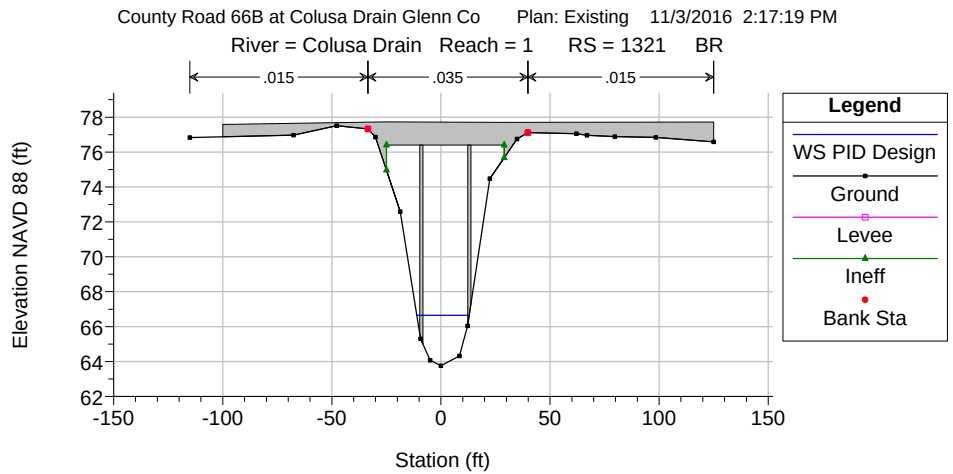




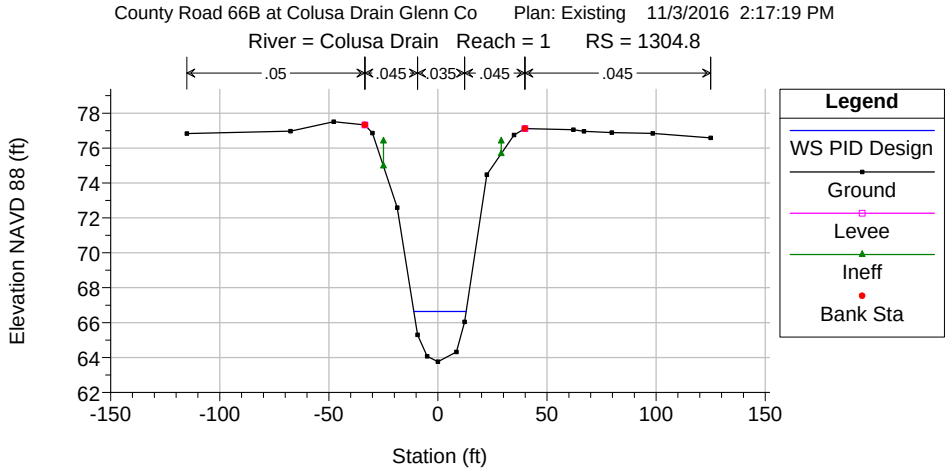


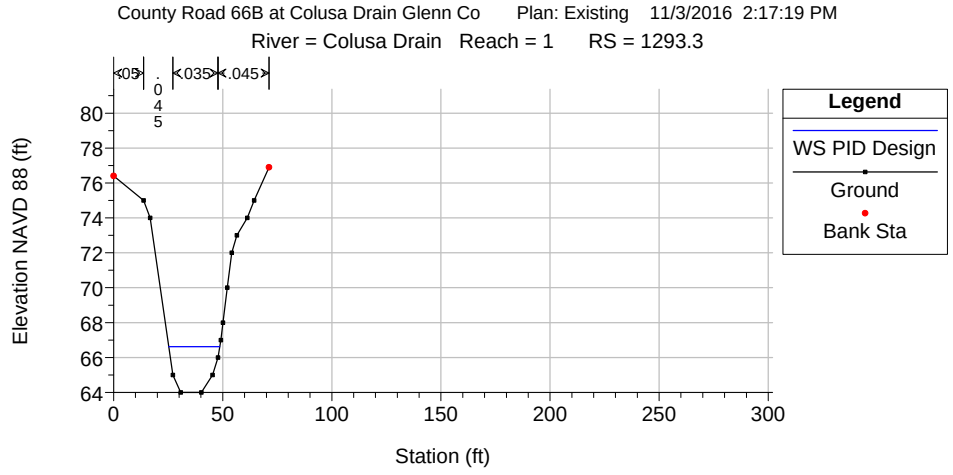


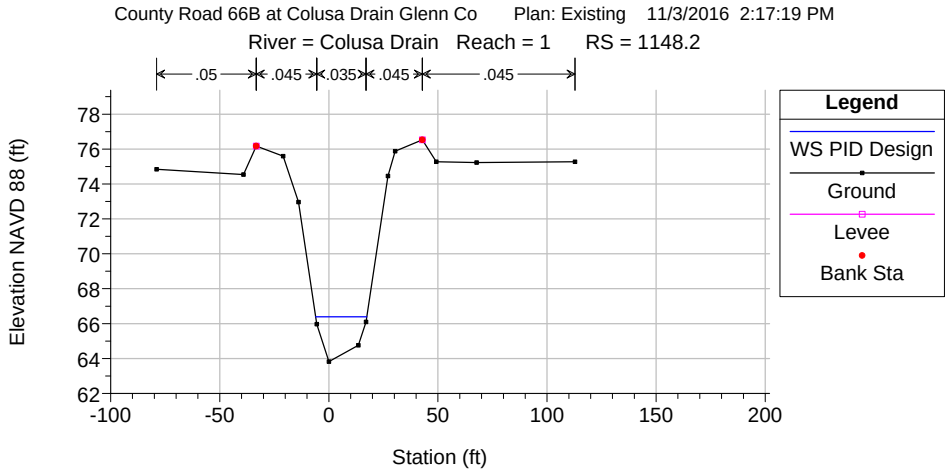


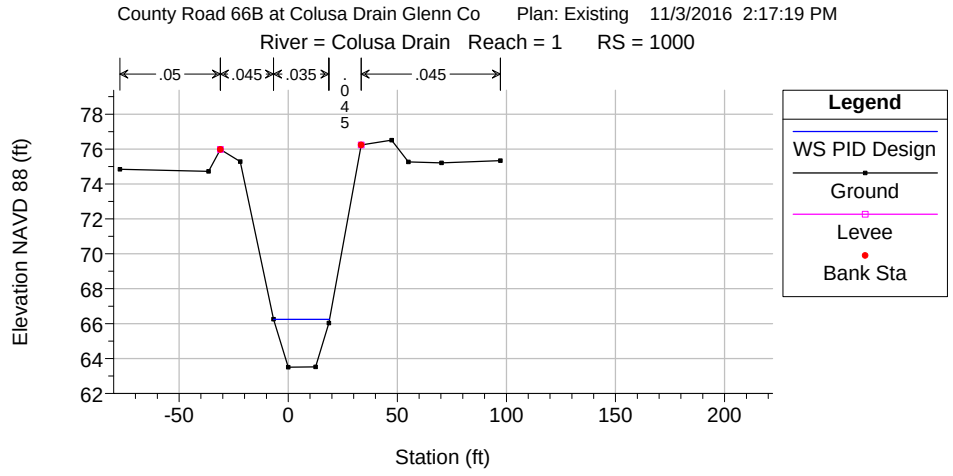


1 in Horiz. = 88 ft 1 in Vert. = 11 ft









1 in Horiz. = 88 ft 1 in Vert. = 11 ft

Appendix C.2 HEC-RAS Existing Bridge with West Bank Overtopping Flow of 1,520 cfs

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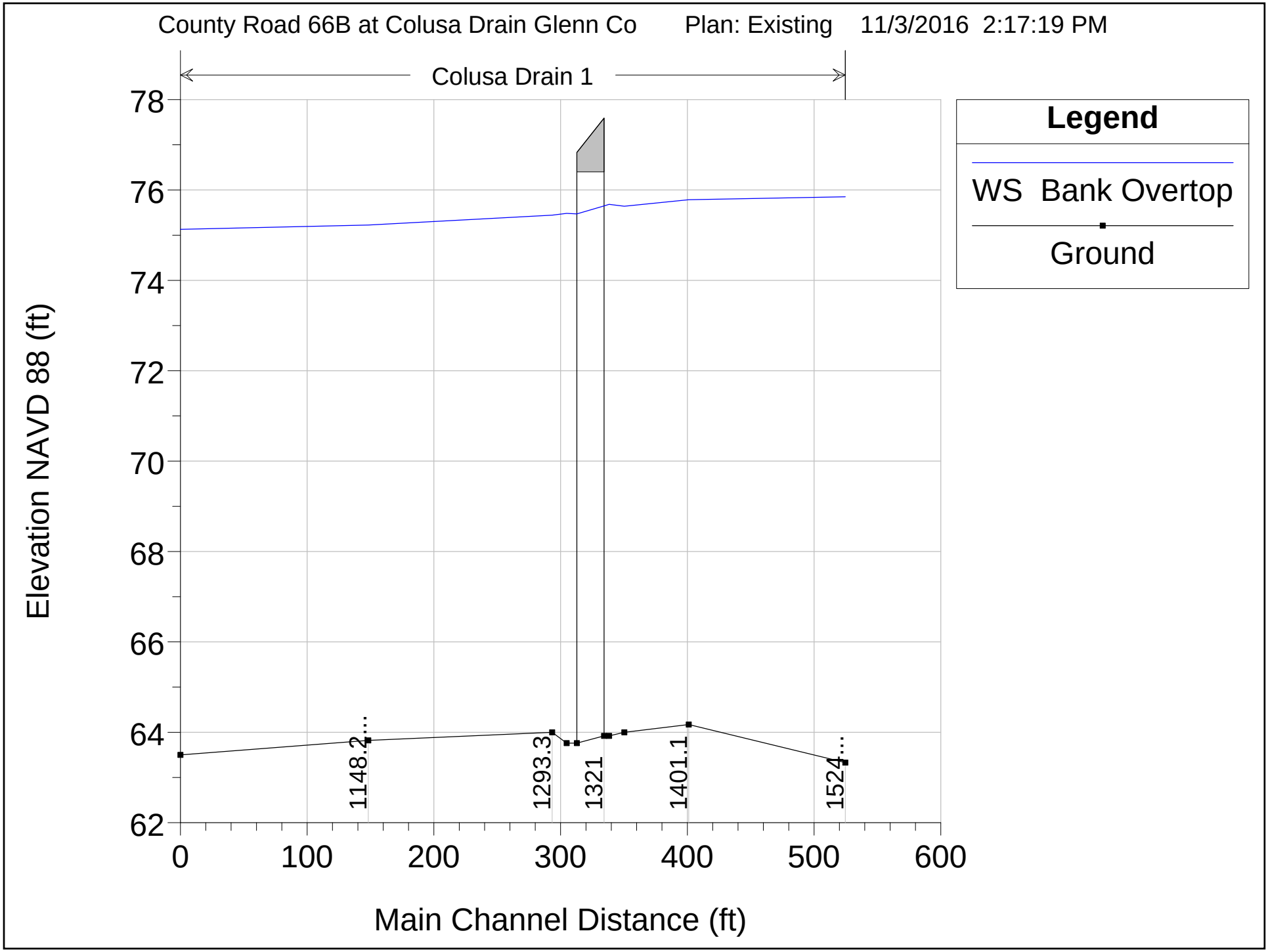
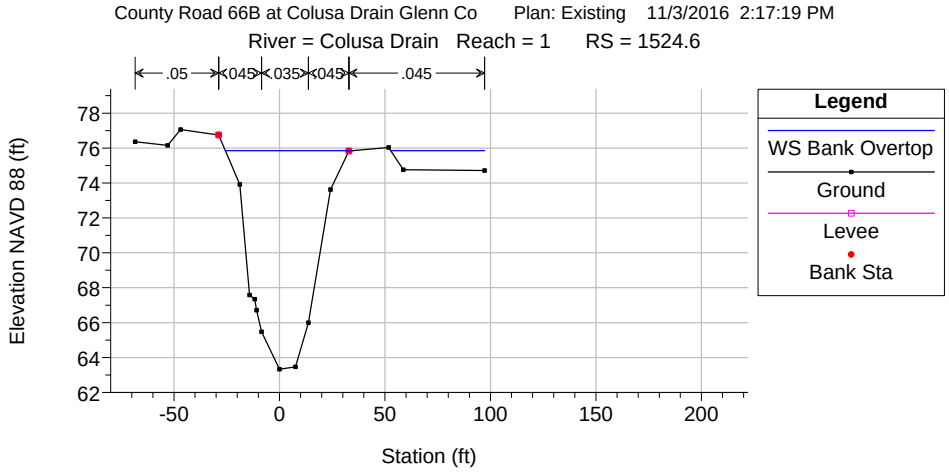
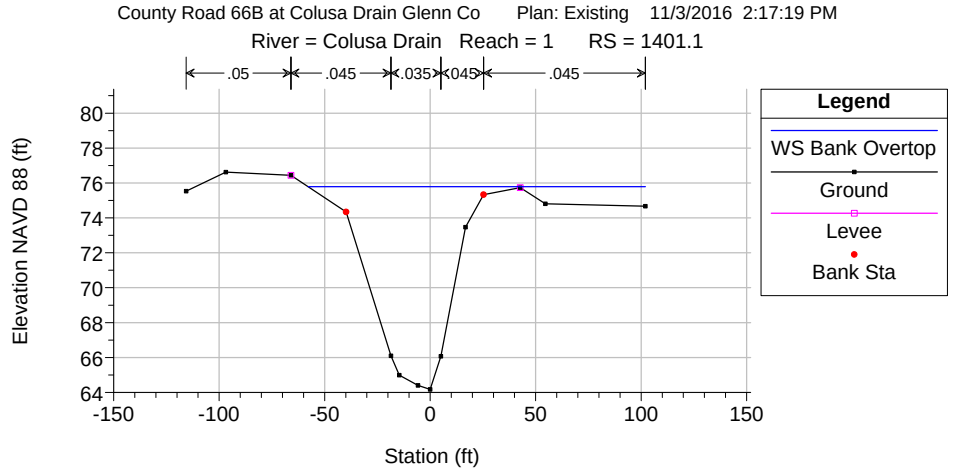
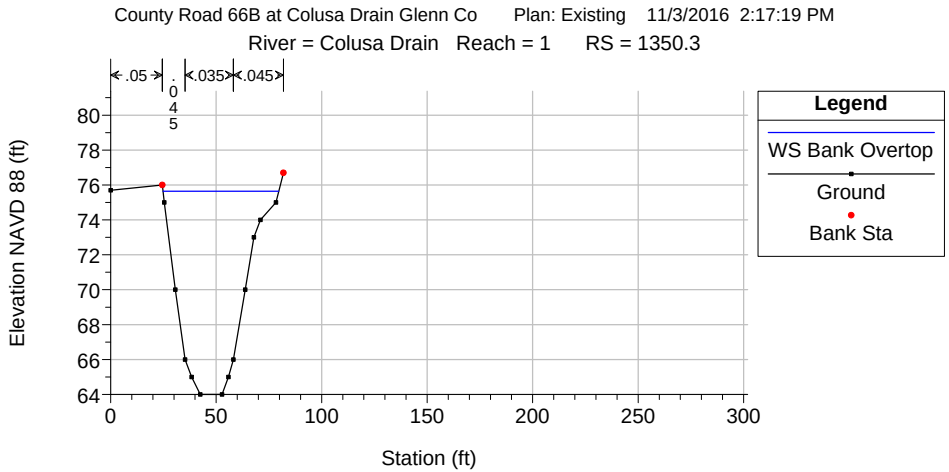

County Road 66B at Colusa Drain Glenn Co
Plan: Existing
11/3/2016 2:17:19 PM
Colusa Drain 1
Legend
WS
Bank Overtop
Ground
Elevation NAVD 88 (ft)
78
76
74
72
70
68
66
64
62
0
100
200
300
400
500
600
Main Channel Distance (ft)
1148.2...
1293.3
1321
1401.1
1524...

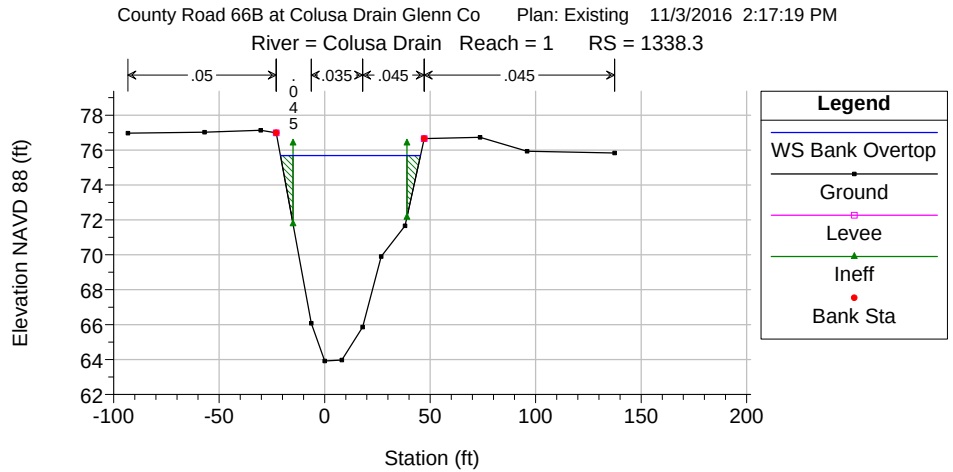
HEC-RAS Plan: Existing River: Colusa Drain Reach: 1 Profile: Bank Overtop

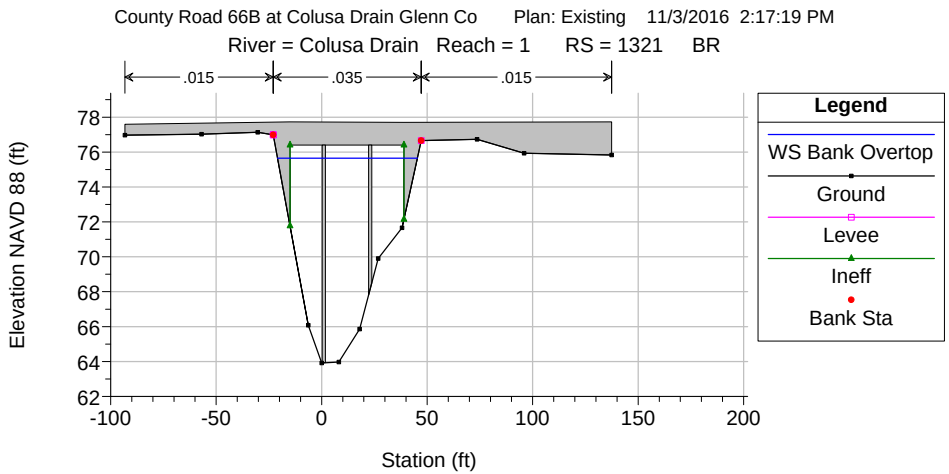
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Hydr Depth	Hydr Depth C	Length Chnl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)	(ft)	(ft)
1	1524.6	Bank Overtop	1520.00	63.33	75.85	69.21	76.04	0.000862	3.56	460.50	104.98	0.24	4.39	7.08	123.49
1	1401.1	Bank Overtop	1520.00	64.17	75.79	69.65	75.94	0.000648	3.20	532.62	159.78	0.21	3.33	7.05	50.81
1	1350.3	Bank Overtop	1520.00	64.00	75.64		75.89	0.001078	3.97	382.41	54.84	0.27	6.97	6.97	12.00
1	1338.3	Bank Overtop	1520.00	63.92	75.68	69.40	75.86	0.000531	3.34	455.46	66.35	0.20	8.44	8.44	4.00
1	1321 BR U	Bank Overtop	1520.00	63.92	75.65	69.60	75.85	0.000933	3.58	424.70	50.99	0.22	8.33	8.33	21.50
1	1321 BR D	Bank Overtop	1520.00	63.76	75.47	69.80	75.78	0.002016	4.49	338.67	49.84	0.30	6.79	6.79	7.99
1	1304.8	Bank Overtop	1520.00	63.76	75.48	69.54	75.75	0.001172	4.13	367.77	54.26	0.28	6.95	6.95	11.50
1	1293.3	Bank Overtop	1520.00	64.00	75.44		75.73	0.001485	4.28	355.31	56.63	0.30	6.27	6.27	145.10
1	1148.2	Bank Overtop	1520.00	63.82	75.22	69.70	75.53	0.001294	4.41	345.02	48.81	0.29	7.07	7.07	148.21
1	1000	Bank Overtop	1520.00	63.50	75.13	69.00	75.35	0.000831	3.76	404.67	53.60	0.24	7.55	7.55	

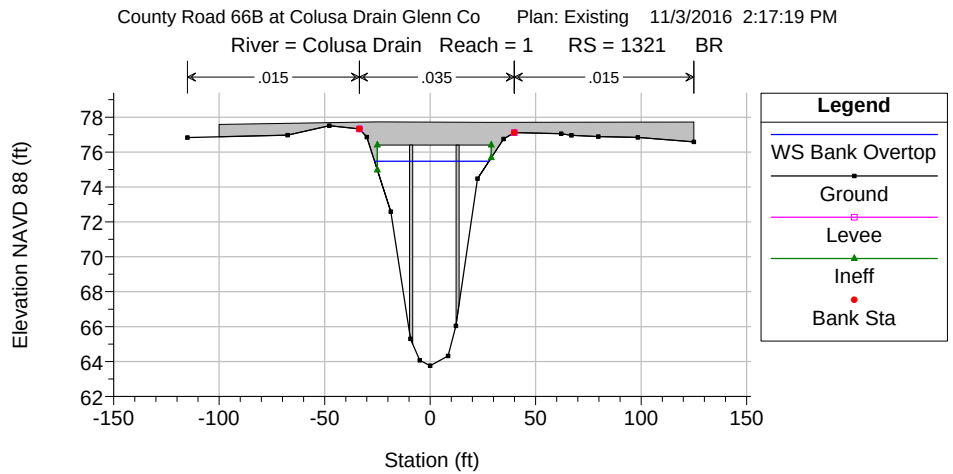




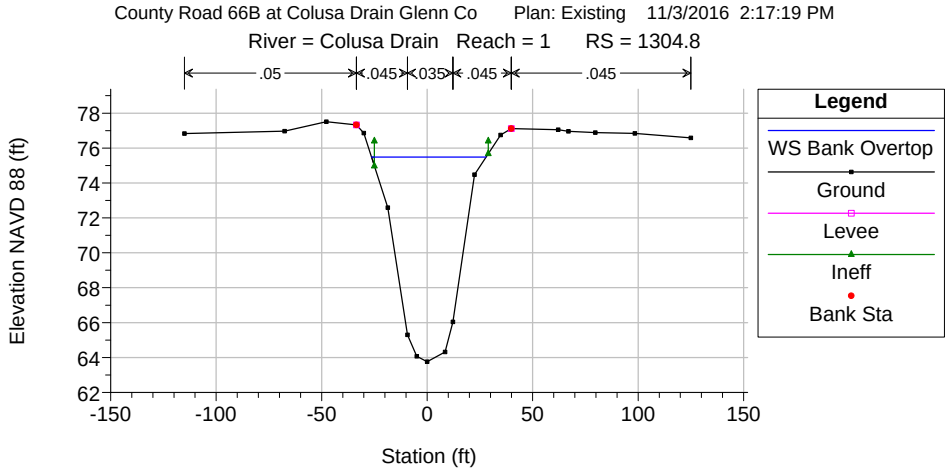


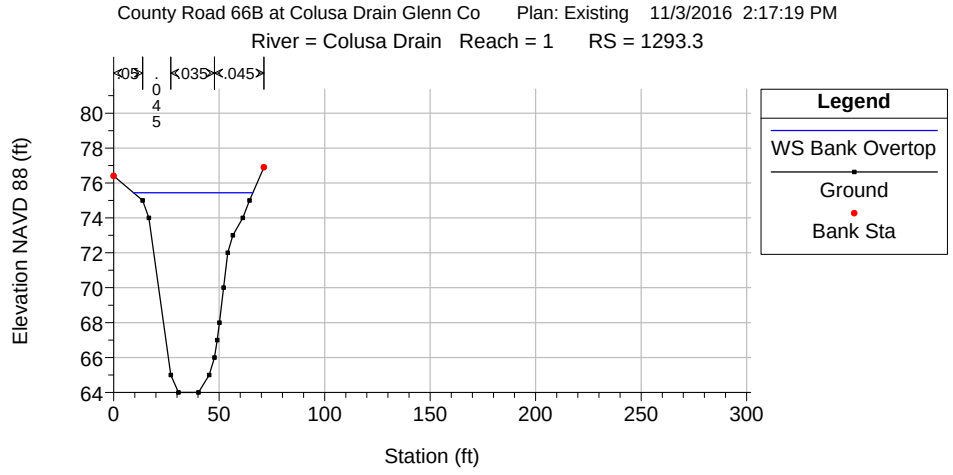


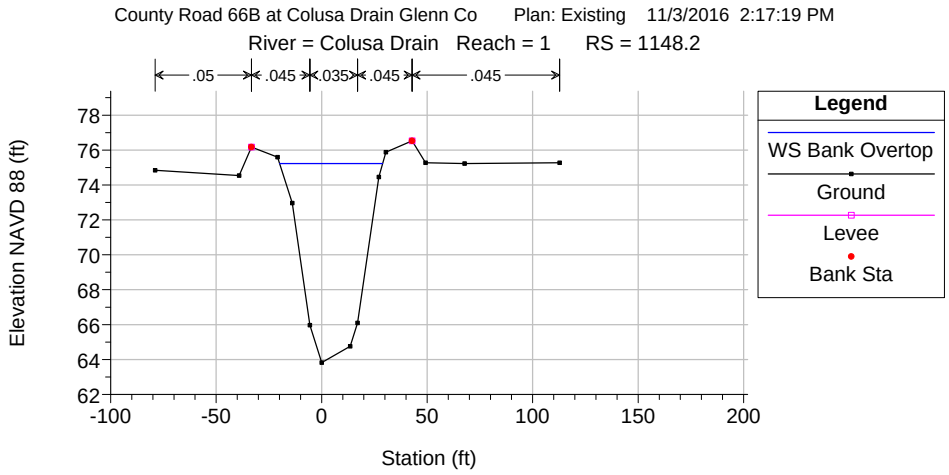


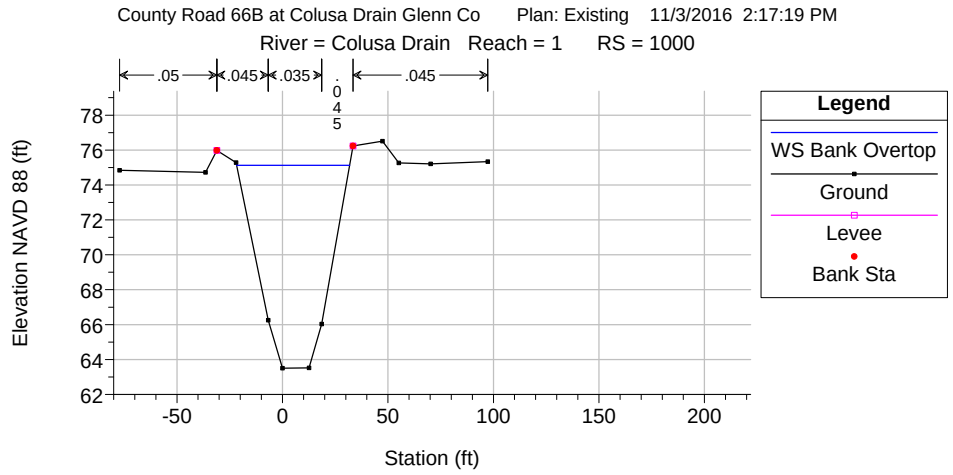


1 in Horiz. = 91 ft 1 in Vert. = 11 ft









1 in Horiz. = 91 ft 1 in Vert. = 11 ft

Appendix D Hydraulic Analysis, Proposed Condition

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Appendix D.1 HEC-RAS Proposed Bridge with Design Flow of 100 cfs

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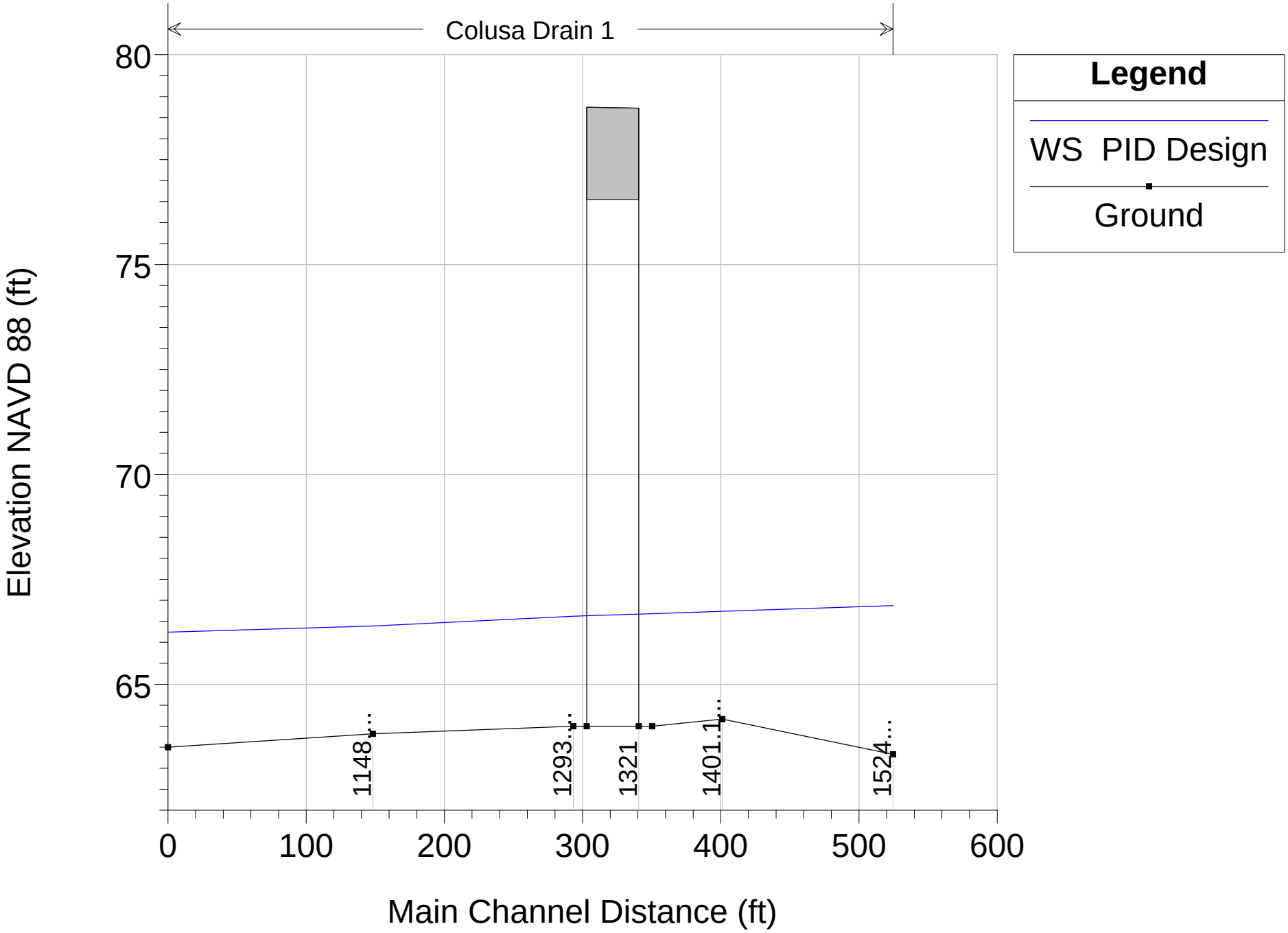
County Road 66B at Colusa Drain Glenn Co Plan: Proposed 65 Percent Plans 12/6/2018 2:38:01 PM

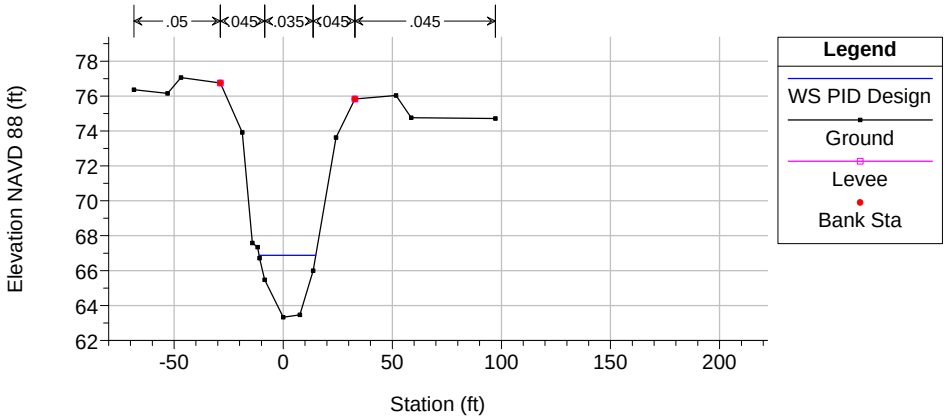


HEC-RAS Plan: Proposed 65 Percent Plans River: Colusa Drain Reach: 1 Profile: PID Design

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Hydr Depth	Hydr Depth C	Length Chnl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)	(ft)	(ft)
1	1524.6	PID Design	100.00	63.33	66.87	64.82	66.91	0.000512	1.59	62.80	25.97	0.18	2.42	2.42	123.49
1	1401.1	PID Design	100.00	64.17	66.74	65.58	66.81	0.001384	2.17	46.05	26.34	0.29	1.75	1.75	50.81
1	1350.3	PID Design	100.00	64.00	66.68	65.22	66.75	0.001050	2.11	47.33	22.44	0.26	2.11	2.11	9.70
1	1321 BR U	PID Design	100.00	64.00	66.67	65.22	66.74	0.001002	2.12	47.09	22.41	0.26	2.10	2.10	37.60
1	1321 BR D	PID Design	100.00	64.00	66.63	65.23	66.70	0.001002	2.10	47.57	23.10	0.26	2.06	2.06	9.69
1	1293.3	PID Design	100.00	64.00	66.62	65.23	66.69	0.001123	2.11	47.31	23.07	0.26	2.05	2.05	145.10
1	1148.2	PID Design	100.00	63.82	66.39	65.36	66.48	0.001813	2.49	40.19	23.45	0.34	1.71	1.71	148.21
1	1000	PID Design	100.00	63.50	66.24	64.67	66.30	0.000830	1.91	52.42	25.65	0.24	2.04	2.04	

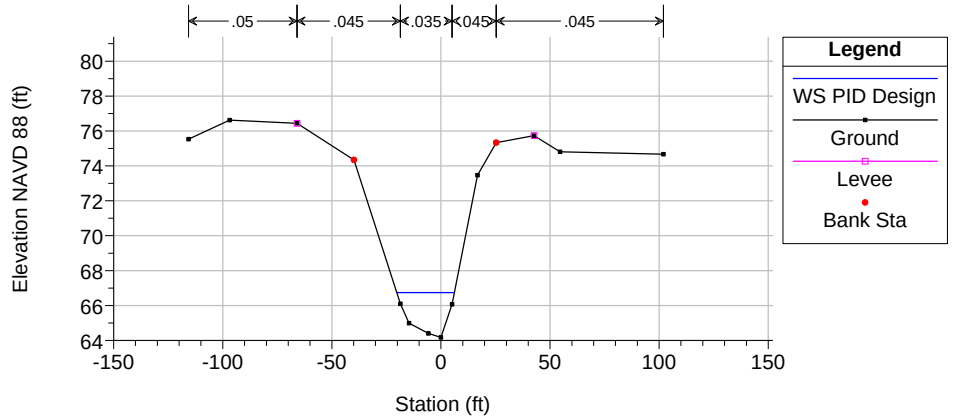
County Road 66B at Colusa Drain Glenn Co Plan: Proposed 65 Percent Plans 12/6/2018 2:38:01 PM

River = Colusa Drain Reach = 1 RS = 1524.6



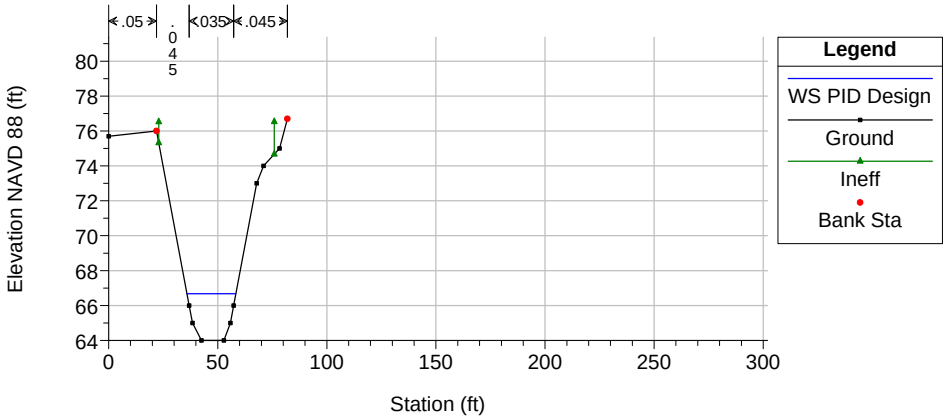
County Road 66B at Colusa Drain Glenn Co Plan: Proposed 65 Percent Plans 12/6/2018 2:38:01 PM

River = Colusa Drain Reach = 1 RS = 1401.1



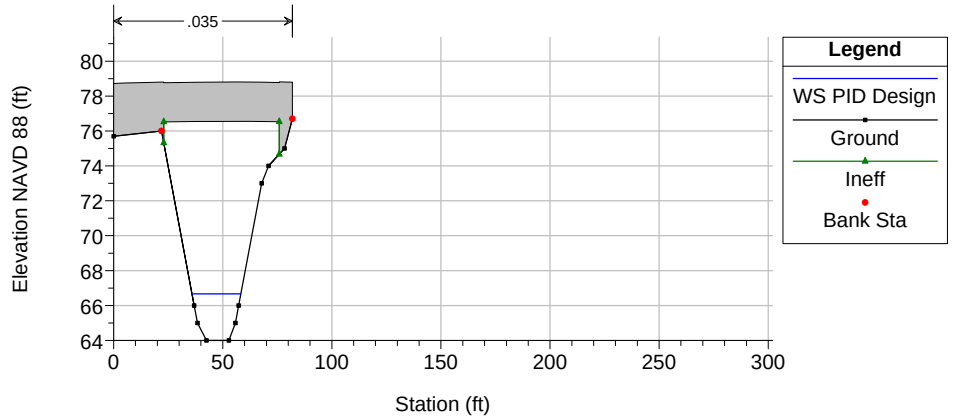
County Road 66B at Colusa Drain Glenn Co Plan: Proposed 65 Percent Plans 12/6/2018 2:38:01 PM

River = Colusa Drain Reach = 1 RS = 1350.3



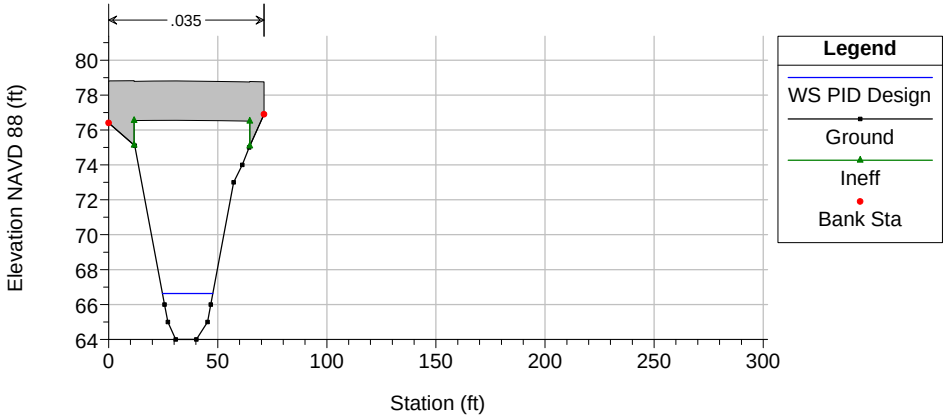
County Road 66B at Colusa Drain Glenn Co Plan: Proposed 65 Percent Plans 12/6/2018 2:38:01 PM

River = Colusa Drain Reach = 1 RS = 1321 BR



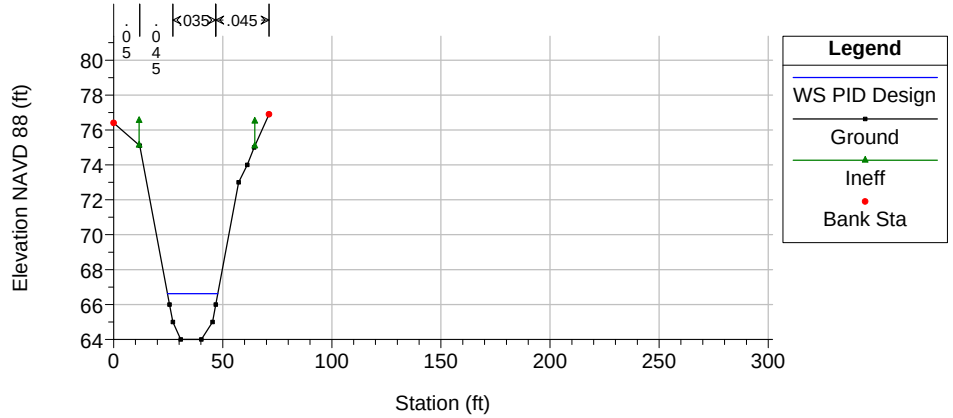
County Road 66B at Colusa Drain Glenn Co Plan: Proposed 65 Percent Plans 12/6/2018 2:38:01 PM

River = Colusa Drain Reach = 1 RS = 1321 BR



County Road 66B at Colusa Drain Glenn Co Plan: Proposed 65 Percent Plans 12/6/2018 2:38:01 PM

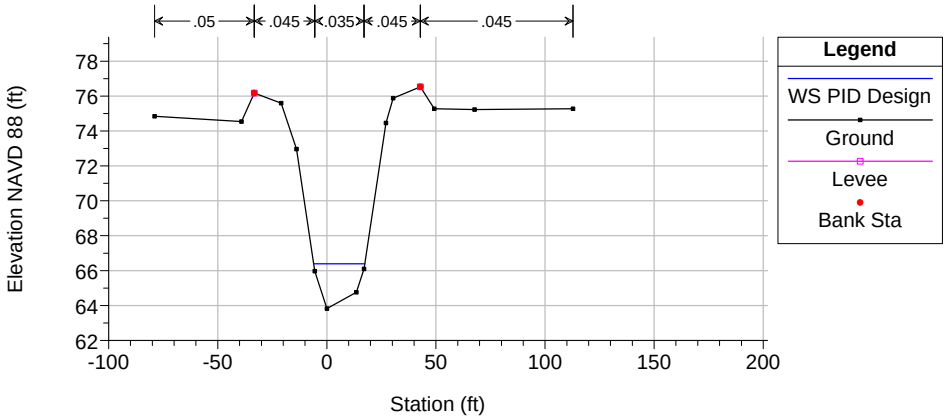
River = Colusa Drain Reach = 1 RS = 1293.3



1 in Horiz. = 88 ft 1 in Vert. = 11 ft

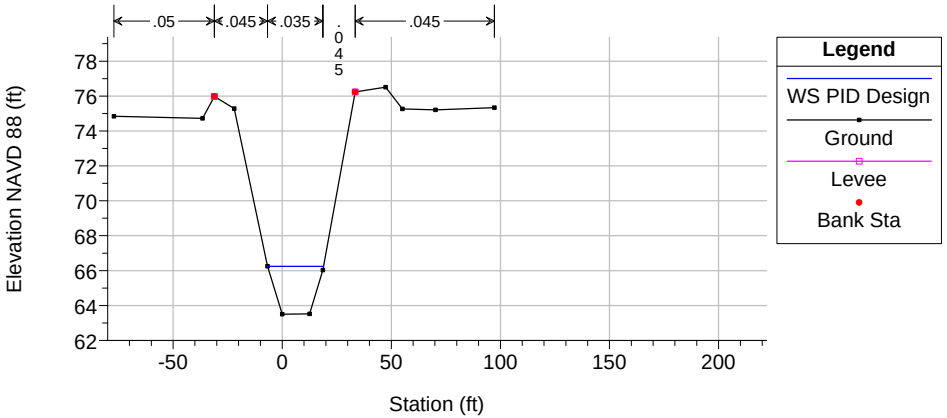
County Road 66B at Colusa Drain Glenn Co Plan: Proposed 65 Percent Plans 12/6/2018 2:38:01 PM

River = Colusa Drain Reach = 1 RS = 1148.2



County Road 66B at Colusa Drain Glenn Co Plan: Proposed 65 Percent Plans 12/6/2018 2:38:01 PM

River = Colusa Drain Reach = 1 RS = 1000



1 in Horiz. = 88 ft 1 in Vert. = 11 ft

Appendix D.2 HEC-RAS Proposed Bridge with West Bank Overtopping Flow of 1,520 cfs

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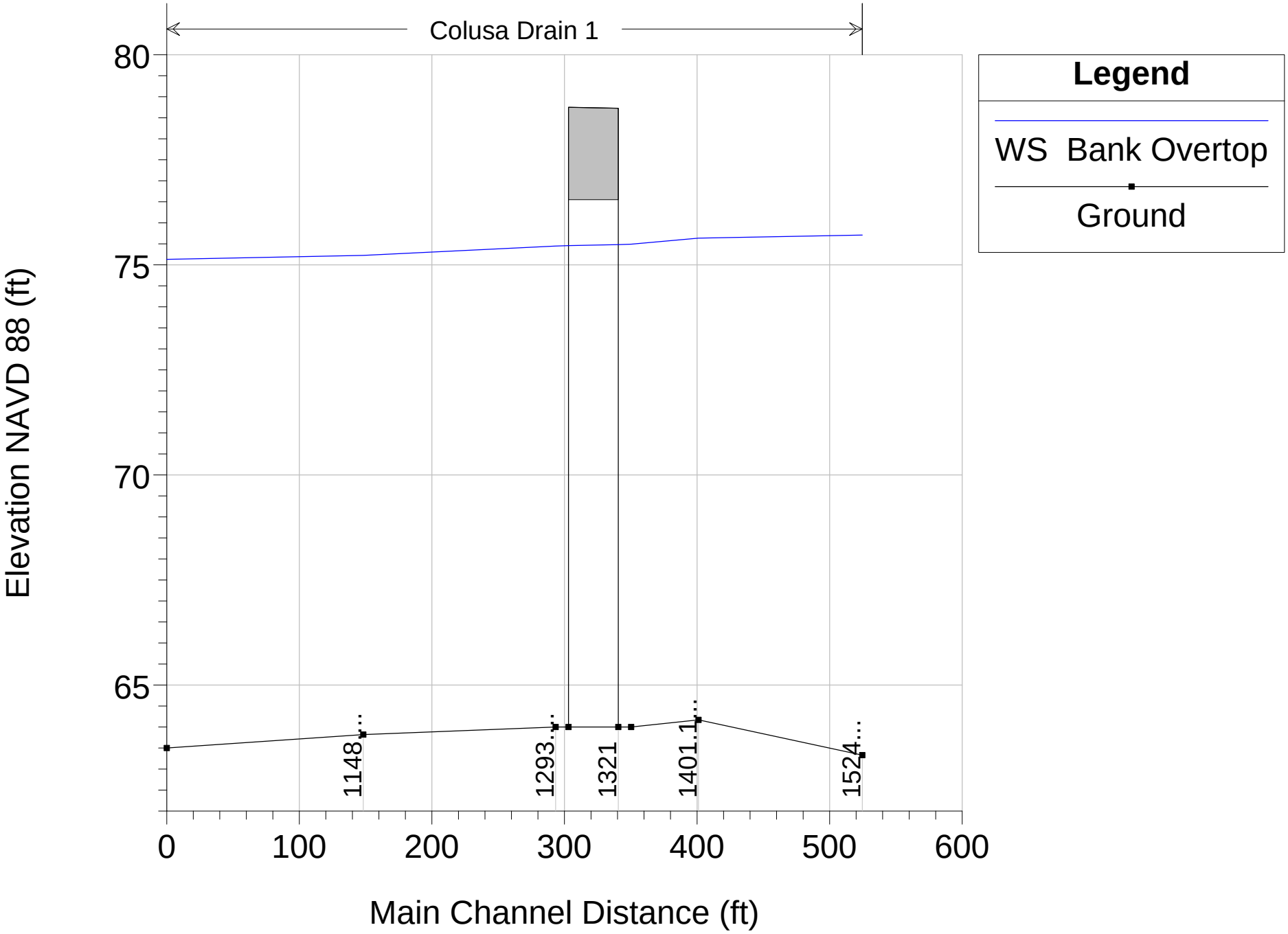
County Road 66B at Colusa Drain Glenn Co Plan: Proposed 65 Percent Plans 12/6/2018 2:38:01 PM

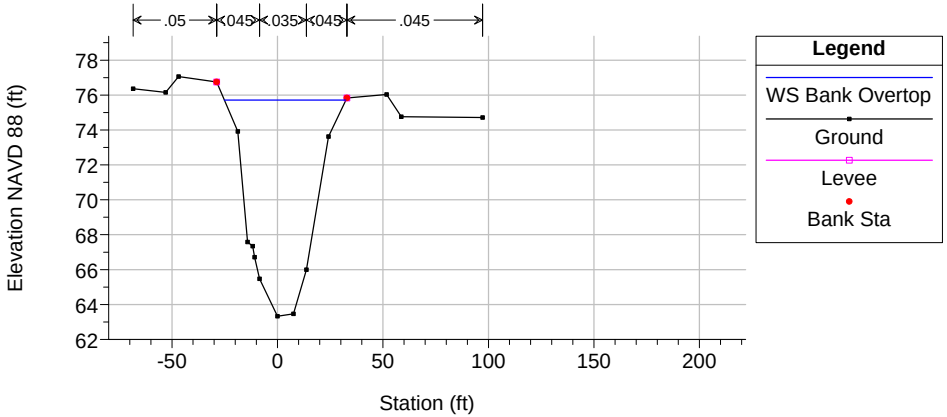


HEC-RAS Plan: Proposed 65 Percent Plans River: Colusa Drain Reach: 1 Profile: Bank Overtop

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl	Hydr Depth	Hydr Depth C	Length Chnl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)		(ft)	(ft)	(ft)
1	1524.6	Bank Overtop	1520.00	63.33	75.71	69.21	75.93	0.000957	3.74	406.00	57.55	0.25	7.05	7.05	123.49
1	1401.1	Bank Overtop	1520.00	64.17	75.64	69.65	75.81	0.000738	3.36	462.28	94.53	0.23	4.89	6.90	50.81
1	1350.3	Bank Overtop	1520.00	64.00	75.49	69.79	75.75	0.001153	4.12	368.86	56.68	0.28	6.96	6.96	9.70
1	1321 BR U	Bank Overtop	1520.00	64.00	75.48	69.79	75.75	0.000823	4.13	368.32	53.00	0.28	6.95	6.95	37.60
1	1321 BR D	Bank Overtop	1520.00	64.00	75.46	69.69	75.71	0.000778	4.06	374.46	53.00	0.27	7.07	7.07	9.69
1	1293.3	Bank Overtop	1520.00	64.00	75.45	69.70	75.70	0.001111	4.06	373.93	57.24	0.27	7.06	7.06	145.10
1	1148.2	Bank Overtop	1520.00	63.82	75.22	69.70	75.53	0.001294	4.41	345.02	48.81	0.29	7.07	7.07	148.21
1	1000	Bank Overtop	1520.00	63.50	75.13	69.00	75.35	0.000831	3.76	404.67	53.60	0.24	7.55	7.55	

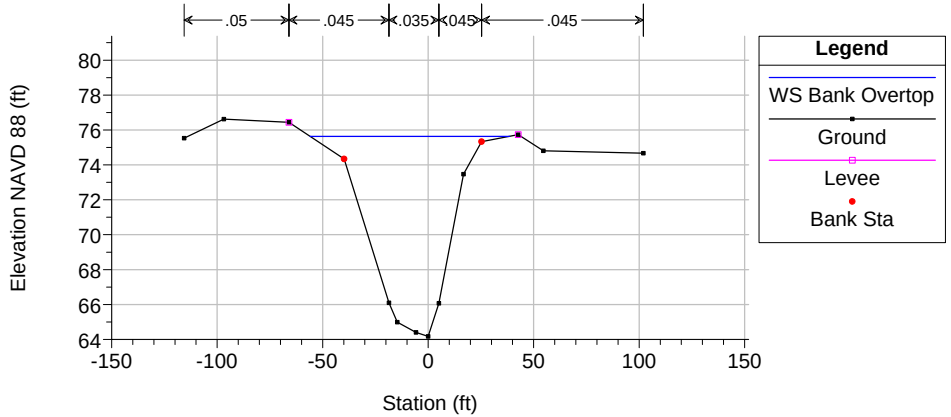
County Road 66B at Colusa Drain Glenn Co Plan: Proposed 65 Percent Plans 12/6/2018 2:38:01 PM

River = Colusa Drain Reach = 1 RS = 1524.6



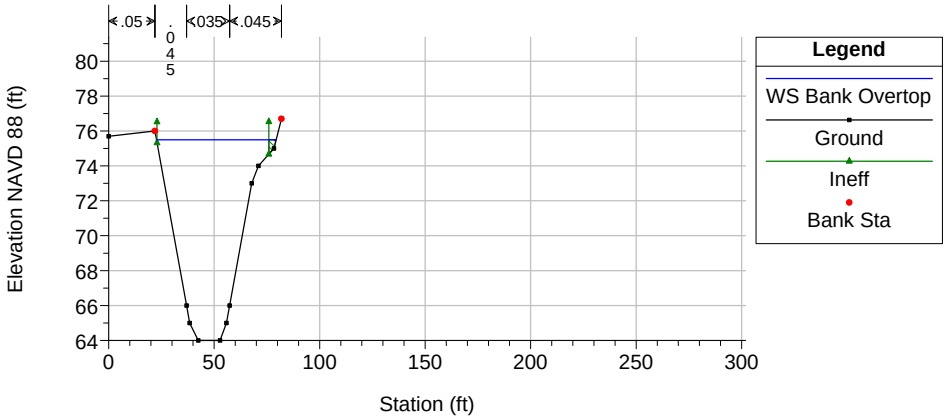
County Road 66B at Colusa Drain Glenn Co Plan: Proposed 65 Percent Plans 12/6/2018 2:38:01 PM

River = Colusa Drain Reach = 1 RS = 1401.1



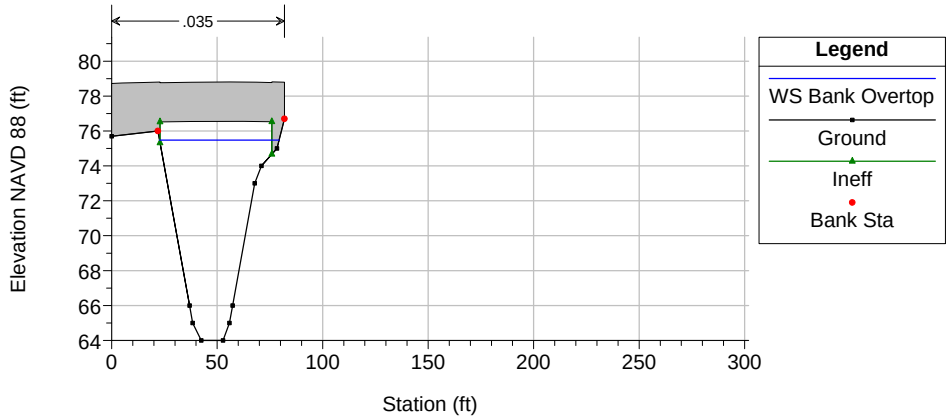
County Road 66B at Colusa Drain Glenn Co Plan: Proposed 65 Percent Plans 12/6/2018 2:38:01 PM

River = Colusa Drain Reach = 1 RS = 1350.3



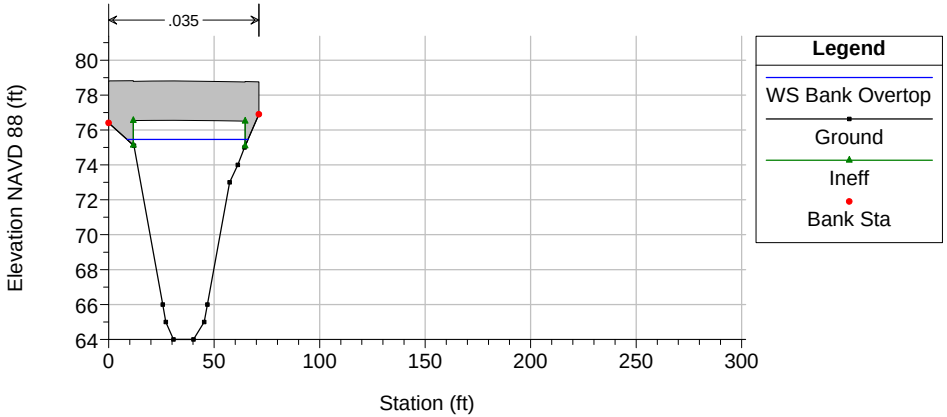
County Road 66B at Colusa Drain Glenn Co Plan: Proposed 65 Percent Plans 12/6/2018 2:38:01 PM

River = Colusa Drain Reach = 1 RS = 1321 BR



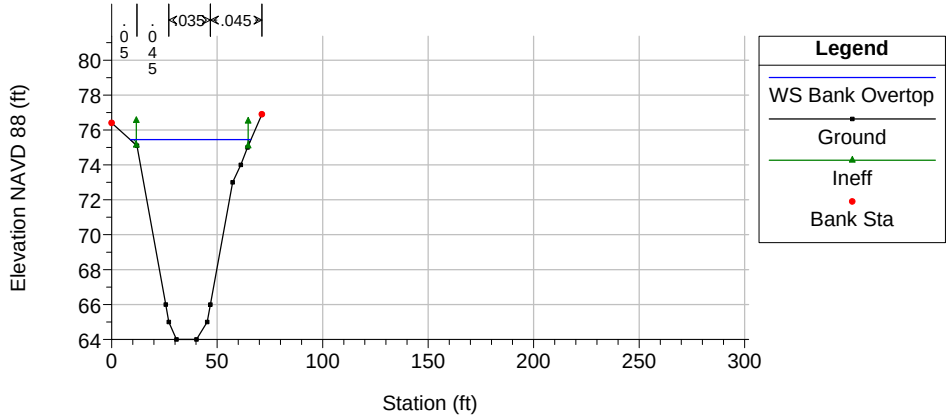
County Road 66B at Colusa Drain Glenn Co Plan: Proposed 65 Percent Plans 12/6/2018 2:38:01 PM

River = Colusa Drain Reach = 1 RS = 1321 BR



County Road 66B at Colusa Drain Glenn Co Plan: Proposed 65 Percent Plans 12/6/2018 2:38:01 PM

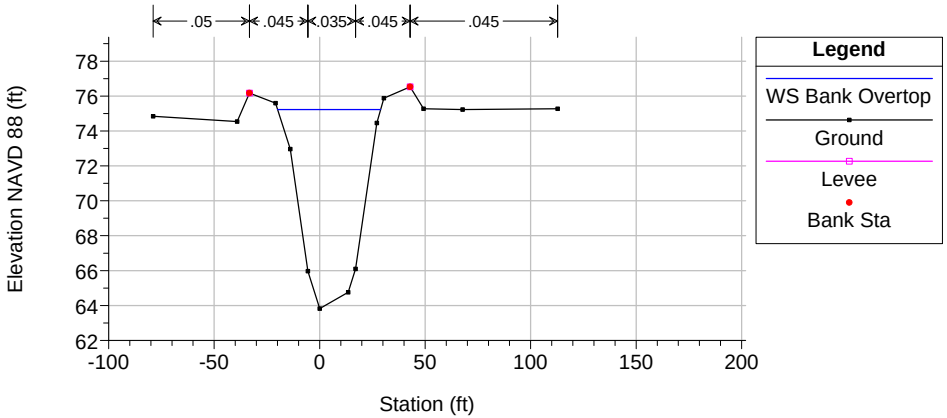
River = Colusa Drain Reach = 1 RS = 1293.3



1 in Horiz. = 91 ft 1 in Vert. = 11 ft

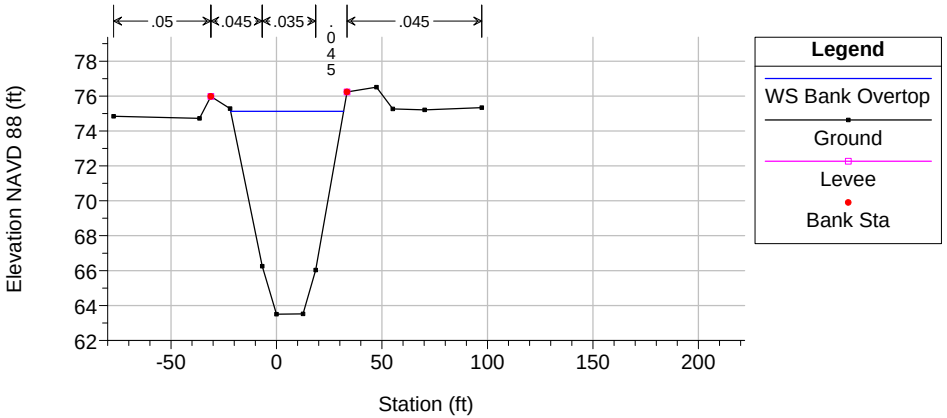
County Road 66B at Colusa Drain Glenn Co Plan: Proposed 65 Percent Plans 12/6/2018 2:38:01 PM

River = Colusa Drain Reach = 1 RS = 1148.2



County Road 66B at Colusa Drain Glenn Co Plan: Proposed 65 Percent Plans 12/6/2018 2:38:01 PM

River = Colusa Drain Reach = 1 RS = 1000



1 in Horiz. = 91 ft 1 in Vert. = 11 ft

Appendix E Scour Analysis

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1243 Alpine Road, Suite 108
Walnut Creek, CA 94596
Phone: 925.941.0017
FAX: 925.941.0018
www.wreco.com

CR 66B Bridge Replacement Project
Glenn County, California
Ultimate (Contraction) Scour

Overtopping Flow
Calculation guideline from HEC-18 5th Edition
Input from HEC-RAS for Proposed Alternative 1

Equation 6.6:

$$y_{s-ult} = 0.94 y_1 \left(\frac{1.83 V_2}{\sqrt{g y_1}} - \frac{K_u \sqrt{\frac{\tau_c}{\rho}}}{g n y_1^{1/3}} \right)$$

Input

Variable	English Units		Metric Units		Description
y1	6.9	ft	2.1	m	Upstream depth
V2	4.1	ft/s	1.3	m/s	Average velocity in contracted section
n	0.035		0.035		Manning's roughness coefficient
Ku	1.486		1		1.486 for U.S. Customary, and 1.0 for S.I.
r		slugs/ft^3			Density 1,000 kg/m^3 = 1.94 slugs/ft^3
g	32.2	ft/s^2	9.81	m/s^2	acceleration due to gravity
D50			0.0116	mm	grain size for which 50% of bed material is finer

Density, rho

Material	Density		
	Metric Units		English Units
min	1,400	kg/m^3	2.72 slugs/ft^3
max	1,550	kg/m^3	3.01 slugs/ft^3
Water, sea	1,026	kg/m^3	1.99 slugs/ft^3
Water, pure	1,000	kg/m^3	1.94 slugs/ft^3

Critical Shear Stress Tc	Tc (N/m^2)
Tc=0.05(D50)^-0.4	0.3
Tc=0.006(D50)^-2	44.6

Scour Depths, ys

With Density for min and Critical Shear Stress Equation Tc=0.05(D50)^-0.4	With Density for max and Critical Shear Stress Equation Tc=0.05(D50)^-0.4
ys = 0.94 m	ys = 0.94 m
ys = 3.1 ft	ys = 3.1 ft
With Density for min and Critical Shear Stress Equation Tc=0.006(D50)^-2	**With Density for max and Critical Shear Stress Equation Tc=0.006(D50)^-2**
ys = 0.20 m	ys = 0.24 m
ys = 0.7 ft	ys = 0.8 ft

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CR 66B Bridge Replacement Project
Glenn County, California
Local Scour at Abutments - Froehlich or HIRE

Overtopping Flow
Calculation guideline from HEC-18 5th Edition
Input from HEC-RAS for Proposed Alternative 1

Units = (SI or English)	English	
g = acceleration due to gravity =	32.2	ft/s^2

Left Overbank = Abutment 2 (East)

y1 = depth of flow at abutment on the overbank or in the main channel =	0.3	ft
L = length of embankment projected normal to flow =	26.1	ft
Ratio of projected embankment length to flow depth = L/y1 =	8.703E+01	
Abutment scour equation to be used =	HIRE	

HIRE Live Bed Abutment Scour Equation

V = velocity of flow at upstream face of abutment =	0.7	ft/s
Fr = Froude Number = V/((g*y1)^.5) =	0.2	
Θ = abutment skew =	90	degrees
K1 = coefficient for abutment shape =	1	
K2 = coefficient for angle of embankment shape = (Θ/90)^0.13 =	1	
Ys = abutment scour = y1*(4*(Fr^0.33)*(K1/0.55)*K2) =	**1.3**	**ft**

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Units = (SI or English)	English	
g = acceleration due to gravity =	32.2	ft/s^2

Right Overbank = Abutment 1 (West)

y1 = depth of flow at abutment on the overbank or in the main channel =	0.9	ft
L = length of embankment projected normal to flow =	7.6	ft
Ratio of projected embankment length to flow depth =	8.422E+00	
Abutment scour equation to be used =	Froehlich	

Froehlich's Live Bed Abutment Scour Equation

L' = length of active flow obstructed by the embankment =	4.6	ft
Ae = flow area of the approach cross section obstructed by the embankment =	8.5	ft^2
ya = average depth of flow on the flood plain = Ae/L	1.13	ft
Qe = flow obstructed by the abutment and approach embankment =	7	ft^3/s
Ve = flow velocity = Qe/Ae =	0.8	ft/s
Fr = Froude Number of approach flow upstream of the abutment =	0.13	
Θ = abutment skew =	90	degrees
K1 = coefficient for abutment shape =	1	
K2 = coefficient for angle of embankment shape = (Θ/90)^0.13 =	1	
Ys = abutment scour = ya*(2.27*k1*k2*((L'/ya)^0.43)*(Fr^0.61)+1) =	**2.5**	**ft**

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Appendix F Scour Countermeasures

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CR 66B Bridge Replacement Project

Glenn County, California

Streambank Rock Slope Protection

Calculation guideline from Caltrans Highway Design Manual

Input from HEC-RAS for Proposed Bridge Replacement

Overtopping Flow

Input

Location along stream:	Upstream	Upstream Face	Downstream Face	Downstream	
V_{avg}	4.1	4.1	4.1	4.1	ft/s
g	32.2	32.2	32.2	32.2	ft/s^2
Depth based on	Average	Average	Average	Average	
y	7.0	7.0	7.1	7.1	ft
S_f	1.1	1.1	1.1	1.1	
C_s	0.3	0.3	0.3	0.3	
Cross section location:	Straight channel	Straight channel	Straight channel	Straight channel	
C_v	1.00	1.00	1.00	1.00	

For outside of bends, need R_c and W:

Note: these parameters also affect the V_{des}; for natural channels, $V_{des}=V_{avg}$ for $R_c/W>26$

Note: these parameters also affect the V_{des}; for trapezoidal channels, $V_{des}=V_{avg}$ for $R_c/W>8$

R_c	26	26	26	26	ft
W	1.0	1.0	1.0	1.0	ft
C_t	1.0	1.0	1.0	1.0	
S_g	2.65	2.65	2.65	2.65	
Type of channel:	Natural	Natural	Natural	Natural	
V_{des}	4.1	4.1	4.1	4.1	ft/s
K_1	0.72	0.72	0.72	0.72	
θ	33.7	33.7	33.7	33.7	degrees
SS	1.5	1.5	1.5	1.5	
D_{30}	0.1	0.1	0.1	0.1	ft
D_{50}	0.1	0.1	0.1	0.1	ft
D_{50}	1.1	1.1	1.0	1.0	inches
	I	I	I	I	RSP Class
	20 lb	**20 lb**	**20 lb**	**20 lb**	Median particle weight
	6	**6**	**6**	**6**	Median particle diameter (inches)

CR 66B Bridge Replacement Project
Glenn County, California
Rock Slope Protection Calculations for Abutments
Calculation guideline from HEC-23 3rd Edition

Input from HEC-RAS for Proposed Bridge Replacement

Overtopping Flow

Location	Upstream	Upstream Face	Downstream Face	Downstream	
V	4.1	4.1	4.1	4.1	ft/s
g	32.2	32.2	32.2	32.2	ft/s^2
y	7.0	7.0	7.1	7.1	ft
Fr	0.28	0.28	0.27	0.27	
Equation	**Isbash**	**Isbash**	**Isbash**	**Isbash**	

For Froude Numbers $(V/(gy)^{1/2})$<=0.80, Isbash relationship (Equation 14.1)

$$D_{50} = \frac{yK}{(S_s - 1)}\left[\frac{V^2}{gy}\right]$$

y	7.0	7.0	7.1	7.1	depth of flow in the contracted bridge opening, ft
K	1.02	1.02	1.02	1.02	1.02 for vertical wall abutment, 0.89 or for spill-through abutment
S_s	2.65	2.65	2.65	2.65	specific gravity of rock
V	4.1	4.1	4.1	4.1	average velocity in contracted section, ft/s
g	32.2	32.2	32.2	32.2	gravitational acceleration, ft/s^2
D_{50}	0.3	0.3	0.3	0.3	median stone diameter, ft
D_{50}	3.9	3.9	3.8	3.8	median stone diameter, inches
	I	I	I	I	RSP Class
	20 lb	20 lb	20 lb	20 lb	Median particle weight
	6	6	6	6	Median particle diameter (inches)