

**Appendix A. Lower Elkhorn Basin
Levee Setback Project
Scoping Report**



Consulting
Engineers and
Scientists

APPENDIX A

JANUARY 2017

Lower Elkhorn Basin Levee Setback Project

Environmental Impact Statement/
Environmental Impact Report
Appendix A: Scoping Report

Prepared for:



**U.S. Army Corps
of Engineers**
Sacramento District



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1. Introduction

The California Department of Water Resources (DWR) is proposing the Lower Elkhorn Basin Levee Setback Project (LEBLS project or project). The National Environmental Policy Act (NEPA) requires a Federal agency to prepare an Environmental Impact Statement (EIS) and the California Environmental Quality Act (CEQA) requires a State or Local agency to prepare an Environmental Impact Report (EIR) for any project it proposes to carry out or approve with the potential for significant environmental impacts. The EIS/EIR will analyze the potentially significant and significant impacts of DWR's request for permission from the U.S. Army Corps of Engineers (USACE), Sacramento District, to alter a Federal levee. The project includes flood management system improvements that would be implemented as part of an ongoing Federal-State-Local effort to improve the flood management system in the Lower Sacramento River Basin.

The project-level EIS/EIR will be prepared by both USACE, Sacramento District, as Federal lead agency under NEPA, and DWR, as State lead agency under CEQA. The EIS/EIR is a joint document intended to comply with both NEPA and CEQA. See Code of Federal Regulations (CFR), Title 40, Sections 1502.25, 1506.2, and 1506.4 (authority for combining Federal and State environmental documents); 33 CFR Part 230 (USACE NEPA regulations); and 33 CFR Part 325, Appendix B ("NEPA Implementation Procedures for the [USACE] Regulatory Program"). See also California Code of Regulations (CCR), Title 14, Division 6, Chapter 3 (State CEQA Guidelines), Section 15222 ("Preparation of Joint Documents").

The U.S. Fish and Wildlife Service and National Marine Fisheries Service are NEPA Cooperating Agencies for this EIS/EIR.

This scoping report presents scoping activities that occurred for the LEBLS project Draft EIS/EIR (DEIR/DEIS) and is organized as outlined below.

- **Chapter 1, "Introduction,"** briefly presents the Proposed Action and NEPA and CEQA scoping requirements.
- **Chapter 2, "Public Involvement Process,"** presents the public involvement process used for the EIS/EIR.
- **Chapter 3, "Public Comments,"** identifies parties submitting comments during scoping.
- **Attachment A, "Public Notification Materials,"** includes Cooperating Agency invitation and acceptance letters, NEPA Notice of Intent (NOI), CEQA Notice of Preparation (NOP) and Notice of Completion, mailing lists, newspaper notification, and Tribal consultation project notification letters.
- **Attachment B, "Scoping Meeting Materials,"** includes the scoping meeting sign-in sheets, comment card, welcome packet, and scoping posters.

- **Attachment C: “Comments Received during Scoping,”** presents the written letters and emails received during scoping.

1.1 Proposed Action

The LEBLS project would include new levee setbacks to widen portions of the Yolo and Sacramento Bypasses to increase conveyance capacity and reduce flood risk. The project would be part of a series of proposed flood risk management improvements contemplated under DWR’s Central Valley Flood Protection Plan (CVFPP) and its related Sacramento Basin-Wide Feasibility Report. The project would include the following components: (1) widening the Yolo Bypass by constructing a new setback levee east of the Tule Canal in the Lower Elkhorn Basin, (2) widening the Sacramento Bypass by constructing a new setback levee north of the existing levee, and (3) implementing ecosystem improvements in the Lower Elkhorn Basin and Sacramento Bypass to mitigate LEBLS project impacts. Widening of the Sacramento Bypass is also a recommended feature of USACE’s American River Common Features General Reevaluation Report completed in 2016, and Congressionally authorized. The LEBLS project is not intended to duplicate this recommended feature, rather it offers DWR a potential alternative means to construct this key feature should the project not be funded prior to USACE’s decision on DWR’s request under Section 408 of the Clean Water Act. The EIS/EIR will analyze the environmental effects of construction, operations, and maintenance of the project.

1.2 National Environmental Policy Act Scoping Requirements

NEPA (40 CFR Section 1501.7) provides the following description of the scoping process.

“There shall be an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action. This process shall be termed scoping. As soon as practicable after its decision to prepare an EIS and before the scoping process, the Federal lead agency shall publish a notice of intent (Sec. 1508.22) in the Federal Register except as provided in Sec. 1507.3(e).”

As part of the NEPA scoping process, the Federal lead agency may hold an early scoping meeting(s), especially when the potential impacts of a particular action are confined to specific sites. In addition, as part of the scoping process, the Federal lead agency shall do the following, as listed below.

- Invite the participation of affected Federal, State, regional, and local agencies; any affected or Culturally Affiliated Native American Tribe; the proponent of the action (DWR or the “Requestor” for this project), and other interested persons.
- Determine the scope of the EIS, including significant issues to be analyzed in depth.
- Identify and eliminate from detailed study, the issues which are not significant or which have been covered by prior environmental review, narrowing the discussion of these issues in the statement to a brief presentation of why they will not have a significant effect on the human environment or providing a reference to their coverage elsewhere.

The NOI, which is published in the Federal Register, begins the NEPA scoping process. The NOI notifies the affected Federal agencies, stakeholders, and interested parties that an EIS will be prepared,

and that a scoping meeting will be held. The NOI solicits input from these entities as to the scope and content of the information to be included in the EIS.

1.3 California Environmental Quality Act Scoping Requirements

The process of determining the scope, focus, and content of a CEQA environmental document is known as “scoping.” CEQA promotes early consultation through a scoping process. The CEQA Guidelines (Section 15083) state the following:

“Scoping has been helpful to agencies in identifying the range of actions, alternatives, mitigation measures, and significant impacts to be analyzed in depth in an Environmental Impact Report and in eliminating from detailed study issues found not to be important. Scoping has been found to be an effective way to bring together and resolve the concerns of affected federal, state and local agencies, the proponent of the action, and other interested persons including those who might not be in accord with the action on environmental grounds.”

The NOP begins the CEQA scoping process. The NOP notifies the Governor’s Office of Planning and Research/State Clearinghouse (SCH), responsible and trustee agencies under CEQA, and stakeholders and interested parties that an EIR will be prepared. The NOP solicits input from these entities as to the scope and content of the information to be included in the document, including input on alternatives that may avoid, reduce, or minimize potentially significant environmental effects.

In accordance with the State CEQA Guidelines (Section 15082[b]), each responsible and trustee agency and the Office of Planning and Research is to provide the CEQA lead agency with specific details about the scope and content of the environmental information related to the responsible or trustee agency’s area of statutory responsibility that must be included in the document within 30 days of receiving the NOP.

Scoping meetings are an opportunity for the CEQA lead agency to solicit from the responsible and trustee agencies, affected stakeholders, and the public, verbal or written comments on the scope and content of the CEQA document, including alternatives. For projects of Statewide, regional, or areawide significance, at least one scoping meeting must be held, with notice of that meeting provided to any city or county that borders on a county or city within which the project is located (State CEQA Guidelines Section 15082).

2. Public Involvement Process

2.1 Public Notices

2.1.1 Notice of Intent (NEPA)

In Compliance with requirements set forth in NEPA, USACE prepared a, NOI describing the intent to prepare a joint EIS/EIR under the authority of Section 14 of the Rivers and Harbors Act of 1899 (RHA) (Title 33 of the United States Code [USC], Section 408 [33 USC 408]) (referred to hereafter as Section 408), for the alteration of Federal flood management facilities; Section 10 of the RHA; and Section 404 of the Clean Water Act. The NOI described the Proposed Action (the LEBLS project) and included information about the scoping meeting time and location, the information regarding the Applicant (Requester), and contact information for submitting public comments. The NOI was posted in the *Federal Register*, the United States Government's official noticing and reporting publication, on September 9, 2016. Although there is no mandated time limit to submit comments in response to an NOI, USACE set a 30-day period for comments to align the NEPA and CEQA scoping processes. The 30-day comment period for the NOI was September 9, 2016 to October 7, 2016. The NOI is provided in Attachment A of this document.

2.1.2 Notice of Preparation (CEQA)

The NOP for the joint EIS/EIR was publically released on September 7, 2016, by the SCH and is provided in Attachment A. The NOP contained information on the location, date, and time of the scoping meeting. A notice that the NOP had been released and that a scoping meeting had been scheduled was also posted in the *Sacramento Bee* (see Section 3.4, "Legal Notices," below).

As mandated under CEQA, the NOP was circulated for a 30-day public review period, beginning on September 7, 2016, and ending on October 7, 2016. Agencies, affected stakeholders, and interested parties were given the opportunity to provide DWR with written comments on the proposed scope and content of the EIS/EIR, including the proposed alternatives, until 5 p.m. on October 7, 2016.

2.1.3 Mailings

The list of electronic mail recipients of the NOI notification is provided in the administrative record but not in this report, due to personally identifiable information. Attachment A includes letters sent by USACE and DWR to Native American Tribes and the State Historic Preservation Officer notifying them of the LEBLS project and allowing them the opportunity to provide information or other input, as required under Section 106 of the National Historic Preservation Act and Assembly Bill 52 (CEQA).

2.1.4 Website Postings

The NOI was published on the USACE website at:

<http://www.spk.usace.army.mil/Media/Regulatory-Public-Notices/Article/939929/spk-2016-00457-notice-of-intent-noi-to-prepare-a-joint-environmental-impact-sta/>.

The NOP was published on the DWR project website at:
<http://water.ca.gov/floodmgmt/reduce/1-elkhorn.cfm>.

2.1.5 Legal Notices

A notice in the *Sacramento Bee* was published on September 7, 2016 announcing the NOP and public scoping meeting. The notice stated the date, time, and location of the scoping meeting, and where the public could submit comments, and is provided in Attachment A.

2.2 Joint Scoping Meeting for EIS/EIR

USACE, Sacramento District and DWR held a joint public scoping meeting on September 15, 2016. The public scoping meeting was held from 4 p.m. until 7 p.m., at the West Sacramento Civic Center, 1110 West Capitol Avenue, West Sacramento, CA 95691. Meeting attendees were greeted at the door and asked if they would like to sign in and be added to the DWR mailing list. Meeting materials handed out to each attendee included an agenda for the meeting and the NOP. In addition, a comment card was made available to each attendee.

The scoping meeting was arranged in a workshop format, where there were various exhibits and staff experts at stations to address questions or comments related to the LEBLS project, schedule, or EIS/EIR process. DWR staff gave a presentation that provided an overview of the LEBLS project, EIS/EIR planning process, and the scoping process. After the presentation, agencies and interested parties were given the opportunity to provide oral and written comments on the proposed scope and content of, and alternatives contained in, the EIS/EIR. A court reporter was present at the meeting. Meeting attendees were directed to the court reporter to provide their comments for the record, or to fill out the comment cards provided at the time of meeting sign-in.

Six interested members of the public attended the scoping meeting (Table 1). Seventeen individuals from the LEBLS project team attended the scoping meeting (Table 2). No comments, verbal or written, were received at the public scoping meeting.

Attachment B, “Public Scoping Materials,” includes the sign-in sheets, comment card, welcome packet, and scoping poster boards describing the LEBLS project EIS/EIR and associated NEPA/CEQA process.

2.3 Next Steps and Recommendations

Significant environmental written comments received during the scoping period on the LEBLS project, project alternatives, and the scope of the EIS/EIR assisted in determining the issues and project alternatives that were evaluated in detail in the EIS/EIR.

Upon the release of the DEIS/DEIR, agencies, stakeholders, and the public will have 45 days to comment on the document. Additionally, at least one public meeting will be held so the public, stakeholders, and agencies can learn more about the DEIS/DEIR; ask questions regarding the EIR/EIS and the NEPA/CEQA processes; and provide comments on significant environmental issues. The alternatives and significant findings regarding environmental impacts will be presented.

When the public comment period on the DEIS/DEIR has concluded, USACE and DWR will consider and respond to all significant environmental comments and prepare a Final EIS/EIR (FEIS/FEIR). USACE and DWR will consider all written comments in deciding which alternative(s) to approve for

implementation. USACE will document its decision in a Record of Decision (for NEPA), no sooner than 30 days following publication of the FEIS/FEIR. DWR will document its selection in its Findings of feasibility of reducing or voiding significant environmental impacts, Statement of Overriding Consideration (if necessary), and Notice of Determination (for CEQA).

Table 1. Public Attendees at Lower Elkhorn Basin Levee Setback Project Scoping Meeting, September 15, 2016.

Attendee	Affiliation
Doug Brown	Douglas Environmental
Ruth Darling	Central Valley Flood Protection Board
Charline Hamilton	City of West Sacramento
Sergio Jimenez	HDR
Individual	None
Eric Nagy	Larsen Wurzel & Associates, Inc.

Table 2. Lead Agency and Lower Elkhorn Levee Setback Project Team Members at Scoping Meeting, September 15, 2016.

Staff	Affiliation	Staff	Affiliation
Jonathon Bray	USACE	Monica Nolte	DWR
Geneva Kraus	USACE	David Pesavento	DWR
Kevin Lee	USACE	Sara Schaltz	DWR
Tanis Toland	USACE	Kris Tjernell	DWR
Zachary Simmons	USACE	Jackie Wait	DWR
Shelly Amrhein	DWR	Drew Sutton	GEI
Todd Bernardy	DWR	Erica Bishop	GEI
Kelly Briggs	DWR	Leo Winternitz	GEI
Corey Lasso	DWR		

Notes: USACE = U.S. Army Corps of Engineers; DWR = California Department of Water Resources; GEI = GEI Consultants, Inc.

3. Public Comments

Written comments in response to the NOP, NOI, and public scoping meeting for the proposed LEBLS project were received by USACE and DWR. Written comments were received from the following Federal, State, and regional and local agencies, and nongovernmental organizations:

- U.S. Environmental Protection Agency
- California Department of Fish and Wildlife
- Central Valley Regional Water Quality Control Board
- Delta Stewardship Council
- Native American Heritage Commission
- Lower Sacramento/Delta North Region
- County of Yolo
- California Farm Bureau Federation
- Pacific Gas and Electric Company
- Yolo Basin Foundation

Each comment letter received by either USACE or DWR in response to scoping is provided in Attachment C, “Comments Received during Scoping,” of this document.

All public comments were reviewed and carefully considered in the preparation of this EIS/EIR, especially when applicable to the scope of the project, and where comments raise significant environmental issues. NOP/NOI comments considered in the EIS/EIR are indicated in the “Methodology” subsections in each resource section of Chapter 4, “Affected Environment, Environmental Consequences, and Mitigation Measures,” of the EIS/EIR. Comments on the merits of the project, or comments beyond the scope of the EIS/EIR, were not addressed.

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Attachment A: Public Notification Materials

Attachment A contains the following:

- NEPA Cooperating Agency Invitation Letter to National Marine Fisheries Service, Central Valley Office
- NEPA Cooperating Agency Invitation Letter to U.S. Fish and Wildlife Service
- NEPA Cooperating Agency Invitation Letter to U.S. Fish and Wildlife Service, Sacramento Field Office
- NEPA Cooperating Agency Acceptance Letter from National Marine Fisheries Service
- NEPA Cooperating Agency Acceptance Letter from U.S. Fish and Wildlife Service
- CEQA Trustee Agency Acceptance Email from California Department of Fish and Wildlife
- Notice of Intent (NEPA notice)
- Notice of Completion for Notice of Preparation (CEQA notice)
- Notice of Preparation (CEQA notice)
- Newspaper Notification in *Sacramento Bee* of NOP and Scoping Meeting
- Notification Letters of Project to State Historic Preservation Officer and Native American Tribes from U.S. Army Corps of Engineers
- Notification Letters of Project to Native American Tribes from California Department of Water Resources

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

Planning Division

OCT 06 2016

Ms. Maria Rea
Assistant Regional Administrator
California Central Valley Office
National Marine Fisheries Service
650 Capitol Mall, Suite 5-100
Sacramento, CA 95814

Dear Ms. Rea:

The U.S. Army Corps of Engineers (Corps), Sacramento District is initiating the preparation of an Environmental Impact Statement (EIS) pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended, for the proposed Lower Elkhorn Basin Levee Setback Project, located in Yolo County, California. The document is being developed as a joint NEPA and California Environmental Quality Act (CEQA) document. The California Department of Water Resources (DWR) is the CEQA lead for the Environmental Impact Report (EIR). Based on information provided by DWR ("requestor" and "applicant"), the proposed activities will require Corps' authorization under Section 14 of the Rivers and Harbors Act (Section 408) and Section 404 of the Clean Water Act.

Your agency has been identified as an agency that may have an interest in the requestor's/applicant's proposed project based on your jurisdiction by law and/or special expertise. As the lead Federal agency under NEPA, we invite you to be a cooperating agency with the Corps in the development of the EIS/EIR. Your designation as a cooperating agency does not imply that you support the requestor's/applicant's proposed project; neither does it diminish or otherwise modify your agency's independent statutory obligations and responsibilities under applicable Federal laws, regulations, and Executive Orders.

The proposed project includes levee setbacks that would widen portions of the Yolo and Sacramento Bypasses to increase conveyance capacity and reduce flood risk. The project would be part of a series of proposed flood risk management improvements contemplated under DWR's Central Valley Flood Protection Plan and its related Sacramento Basin-Wide Feasibility Report. The project is located in Yolo County and is bounded by the Sacramento River on the east, the Tule Canal and Yolo Bypass on the west, the Sacramento Bypass on the south, and Interstate 5 on the north.

The project would entail construction of the following elements: (1) widening the Yolo Bypass by constructing a setback levee east of the Tule Canal in the Lower Elkhorn Basin, (2) widening the Sacramento Bypass by constructing a setback levee north of the existing levee, and (3) implementing ecosystem improvements in the Lower Elkhorn Basin and Sacramento Bypass to mitigate project impacts. Widening of the Sacramento Bypass, per (2) of the Proposed Action, is also a recommended feature of the American River Common Features GRR, for which a general reevaluation was completed in 2016 and is now awaiting congressional authorization. The proposed Lower Elkhorn Basin Setback Project is not intended to duplicate this recommended feature, rather it offers DWR a potential alternative means to construct this key feature should the project not be authorized prior to the Corps' decision on DWR's request under Section 408.

A number of project alternatives, including the No Action Alternative and the Requestor's/Applicant's Preferred Alternative, will be evaluated in the EIS in accordance with 33 Code of Federal Regulations [CFR] Part 230 (USACE NEPA Regulations) and 33 CFR Part 325, Appendix B (NEPA Implementation Procedures for USACE Regulatory Projects).

DWR's stated project purpose is to widen portions of the Yolo and Sacramento Bypasses to increase conveyance capacity and reduce flood risk. However, the Corps has not yet determined the basic project purpose, NEPA project purpose, or overall project purpose.

In accordance with the Council on Environmental Quality's (CEQ) final implementing regulations for NEPA (40 C.F.R. §1501.6 and §1508.5), the Corps requests your assistance and participation in the NEPA process in the following ways:

- a. Attendance at, and input during, agency coordination meetings including pre-scoping and scoping;
- b. Comment and feedback on the EIS schedule, overall scope of the document, significant issues to be evaluated in the EIS, environmental impacts, study and assessment methodologies, range of alternatives, and proposed compensatory mitigation, if applicable;
- c. Guidance on relevant technical studies required as part of the EIS;
- d. Identification of issues related to your agency's jurisdiction by law and special expertise;

- e. Participation, as appropriate, at public meetings and hearings;
- f. Review of the administrative and public drafts of the Draft EIS and Final EIS; and
- g. Adoption of the Corps' Final EIS, when needed to fulfill your independent NEPA obligations related to your Federal action and to reduce duplication with other Federal, State, Tribal and local procedures.

Please provide your written acceptance or declination of this invitation on or before October 31, 2016. Should you decline to accept our invitation to be a cooperating agency, we advise that you provide a copy of your response to CEQ as specified at 40 C.F.R. § 1501.6(c). We look forward to working with your agency on the preparation of the EIS.

A copy of this letter will be furnished to Mr. Howard Brown, California Central Valley Office, 650 Capitol Mall, Suite 5-100, Sacramento, CA 95814.

If you have any questions or would like to discuss our respective roles and responsibilities during the NEPA process, please contact Ms. Tanis Toland, Ecosystem Restoration Regional Technical Specialist/Section 408 NEPA Lead, at (916) 557-6717, or Mr. Zachary Simmons, Regulatory Project Manager, at (916) 557-6746.

Sincerely,



Alicia E. Kirchner
for Chief, Planning Division



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

Planning Division

OCT 06 2016

Ms. Jana Affonso
Assistant Field Supervisor (Acting)
U.S. Fish and Wildlife Service
650 Capitol Mall, Room 8-300
Sacramento, CA 95814

Dear Ms. Affonso:

The U.S. Army Corps of Engineers (Corps), Sacramento District is initiating the preparation of an Environmental Impact Statement (EIS) pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended, for the proposed Lower Elkhorn Basin Levee Setback Project, located in Yolo County, California. The document is being developed as a joint NEPA and California Environmental Quality Act (CEQA) document. The California Department of Water Resources (DWR) is the CEQA lead for the Environmental Impact Report (EIR). Based on information provided by DWR ("requestor" and "applicant"), the proposed activities will require Corps' authorization under Section 14 of the Rivers and Harbors Act (Section 408) and Section 404 of the Clean Water Act.

Your agency has been identified as an agency that may have an interest in the requestor's/applicant's proposed project based on your jurisdiction by law and/or special expertise. As the lead Federal agency under NEPA, we invite you to be a cooperating agency with the Corps in the development of the EIS/EIR. Your designation as a cooperating agency does not imply that you support the requestor's/applicant's proposed project; neither does it diminish or otherwise modify your agency's independent statutory obligations and responsibilities under applicable Federal laws, regulations, and Executive Orders.

The proposed project includes levee setbacks that would widen portions of the Yolo and Sacramento Bypasses to increase conveyance capacity and reduce flood risk. The project would be part of a series of proposed flood risk management improvements contemplated under DWR's Central Valley Flood Protection Plan and its related Sacramento Basin-Wide Feasibility Report. The project is located in Yolo County and is bounded by the Sacramento River on the east, the Tule Canal and Yolo Bypass on the west, the Sacramento Bypass on the south, and Interstate 5 on the north.

The project would entail construction of the following elements: (1) widening the Yolo Bypass by constructing a setback levee east of the Tule Canal in the Lower Elkhorn Basin, (2) widening the Sacramento Bypass by constructing a setback levee north of the existing levee, and (3) implementing ecosystem improvements in the Lower Elkhorn Basin and Sacramento Bypass to mitigate project impacts. Widening of the Sacramento Bypass, per (2) of the Proposed Action, is also a recommended feature of the American River Common Features GRR, for which a general reevaluation was completed in 2016 and is now awaiting congressional authorization. The proposed Lower Elkhorn Basin Setback Project is not intended to duplicate this recommended feature, rather it offers DWR a potential alternative means to construct this key feature should the project not be authorized prior to the Corps' decision on DWR's request under Section 408.

A number of project alternatives, including the No Action Alternative and the Requestor's/Applicant's Preferred Alternative, will be evaluated in the EIS in accordance with 33 Code of Federal Regulations [CFR] Part 230 (USACE NEPA Regulations) and 33 CFR Part 325, Appendix B (NEPA Implementation Procedures for USACE Regulatory Projects).

DWR's stated project purpose is to widen portions of the Yolo and Sacramento Bypasses to increase conveyance capacity and reduce flood risk. However, the Corps has not yet determined the basic project purpose, NEPA project purpose, or overall project purpose.

In accordance with the Council on Environmental Quality's (CEQ) final implementing regulations for NEPA (40 C.F.R. §1501.6 and §1508.5), the Corps requests your assistance and participation in the NEPA process in the following ways:

- a. Attendance at, and input during, agency coordination meetings including pre-scoping and scoping;
- b. Comment and feedback on the EIS schedule, overall scope of the document, significant issues to be evaluated in the EIS, environmental impacts, study and assessment methodologies, range of alternatives, and proposed compensatory mitigation, if applicable;
- c. Guidance on relevant technical studies required as part of the EIS;
- d. Identification of issues related to your agency's jurisdiction by law and special expertise;

- e. Participation, as appropriate, at public meetings and hearings;
- f. Review of the administrative and public drafts of the Draft EIS and Final EIS; and
- g. Adoption of the Corps' Final EIS, when needed to fulfill your independent NEPA obligations related to your Federal action and to reduce duplication with other Federal, State, Tribal and local procedures.

Please provide your written acceptance or declination of this invitation on or before October 31, 2016. Should you decline to accept our invitation to be a cooperating agency, we advise that you provide a copy of your response to CEQ as specified at 40 C.F.R. § 1501.6(c). We look forward to working with your agency on the preparation of the EIS.

If you have any questions or would like to discuss our respective roles and responsibilities during the NEPA process, please contact Ms. Tanis Toland, Ecosystem Restoration Regional Technical Specialist/Section 408 NEPA Lead, at (916) 557-6717, or Mr. Zachary Simmons, Regulatory Project Manager, at (916) 557-6746.

Sincerely,



Alicia E. Kirchner
Chief, Planning Division



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

Planning Division

Ms. Jennifer Norris
Field Supervisor
Sacramento Field Office
U.S. Fish and Wildlife Service
2800 Cottage Way, Rm W-2605
Sacramento, CA 95825

OCT 06 2016

Dear Ms. Norris:

The U.S. Army Corps of Engineers (Corps), Sacramento District is initiating the preparation of an Environmental Impact Statement (EIS) pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended, for the proposed Lower Elkhorn Basin Levee Setback Project, located in Yolo County, California. The document is being developed as a joint NEPA and California Environmental Quality Act (CEQA) document. The California Department of Water Resources (DWR) is the CEQA lead for the Environmental Impact Report (EIR). Based on information provided by DWR ("requestor" and "applicant"), the proposed activities will require Corps' authorization under Section 14 of the Rivers and Harbors Act (Section 408) and Section 404 of the Clean Water Act.

Your agency has been identified as an agency that may have an interest in the requestor's/applicant's proposed project based on your jurisdiction by law and/or special expertise. As the lead Federal agency under NEPA, we invite you to be a cooperating agency with the Corps in the development of the EIS/EIR. Your designation as a cooperating agency does not imply that you support the requestor's/applicant's proposed project; neither does it diminish or otherwise modify your agency's independent statutory obligations and responsibilities under applicable Federal laws, regulations, and Executive Orders.

The proposed project includes levee setbacks that would widen portions of the Yolo and Sacramento Bypasses to increase conveyance capacity and reduce flood risk. The project would be part of a series of proposed flood risk management improvements contemplated under DWR's Central Valley Flood Protection Plan and its related Sacramento Basin-Wide Feasibility Report. The project is located in Yolo County and is bounded by the Sacramento River on the east, the Tule Canal and Yolo Bypass on the west, the Sacramento Bypass on the south, and Interstate 5 on the north.

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A number of project alternatives, including the No Action Alternative and the Requestor's/Applicant's Preferred Alternative, will be evaluated in the EIS in accordance with 33 Code of Federal Regulations [CFR] Part 230 (USACE NEPA Regulations) and 33 CFR Part 325, Appendix B (NEPA Implementation Procedures for USACE Regulatory Projects).

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- a. Attendance at, and input during, agency coordination meetings including pre-scoping and scoping;
- b. Comment and feedback on the EIS schedule, overall scope of the document, significant issues to be evaluated in the EIS, environmental impacts, study and assessment methodologies, range of alternatives, and proposed compensatory mitigation, if applicable;
- c. Guidance on relevant technical studies required as part of the EIS;
- d. Identification of issues related to your agency's jurisdiction by law and special expertise;

- e. Participation, as appropriate, at public meetings and hearings;
- f. Review of the administrative and public drafts of the Draft EIS and Final EIS; and
- g. Adoption of the Corps' Final EIS, when needed to fulfill your independent NEPA obligations related to your Federal action and to reduce duplication with other Federal, State, Tribal and local procedures.

Please provide your written acceptance or declination of this invitation on or before October 31, 2016. Should you decline to accept our invitation to be a cooperating agency, we advise that you provide a copy of your response to CEQ as specified at 40 C.F.R. § 1501.6(c). We look forward to working with your agency on the preparation of the EIS.

A copy of this letter will be furnished to Mr. Doug Weinrich, Sacramento Field Office, 2800 Cottage Way, Rm W-2605, Sacramento, CA 95825.

If you have any questions or would like to discuss our respective roles and responsibilities during the NEPA process, please contact Ms. Tanis Toland, Ecosystem Restoration Regional Technical Specialist/Section 408 NEPA Lead, at (916) 557-6717, or Mr. Zachary Simmons, Regulatory Project Manager, at (916) 557-6746.

Sincerely,



Alicia E. Kirchner
Chief, Planning Division



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
650 Capitol Mall, Suite 5-100
Sacramento, California 95814-4700

DEC 13 2016

Ms. Alicia Kirchner
Chief, Planning Division
Department of the Army
United States Army Corps of Engineers
Sacramento District
1325 J Street
Sacramento, California 95814-2922

Dear Ms. Kirchner:

Thank you for inviting NOAA's National Marine Fisheries Service (NMFS) to participate as a cooperating agency in development of the Environmental Impact Statement (EIS), pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended, for the proposed Lower Elkhorn Basin Levee Setback Project. We accept your invitation and offer, and would like to provide some initial comments on the project.

According to your letter, dated October 6, 2016, the Department of Water Resources (DWR) has stated that the purpose of the Lower Elkhorn project is to widen portions of the Yolo and Sacramento Bypass in order to increase conveyance capacity and reduce flood risk. Although this will likely result in some ecological benefits, we feel that ecosystem uplift should also be officially adopted as an objective of the project. Setback levees provide immense benefits to the local threatened and endangered species managed by NMFS, which includes Central Valley (CV) spring-run Chinook salmon evolutionarily significant unit (ESU) (*Oncorhynchus tshawytscha*), endangered Sacramento River winter-run Chinook salmon ESU (*O. tshawytscha*), threatened California CV steelhead distinct population segment (DPS) (*O. mykiss*), and the threatened Southern DPS of North American green sturgeon (*Acipenser medirostris*). The Lower Elkhorn project has the potential to restore and benefit a multitude of species that rely on floodplain and riparian habitat, including ESA-listed fish species. Thus, as project details develop further, we strongly encourage planning to allow for multi-species benefits, and for DWR to clearly articulate the extent of multi-species benefits realized from the project. Further, as project details are later developed, we encourage DWR to clearly reference the Draft Conservation Strategy and its importance for achieving healthy riparian habitats. In particular, DWR should describe how the Lower Elkhorn project will achieve goals established in the Draft Conservation Strategy, as appropriate.

The materials provided by DWR at the November 16, 2016 Coordinating Committee meeting indicate that the majority of land in the Lower Elkhorn Basin will remain in agriculture after the new setback levees are complete. We feel that this represents a missed opportunity to restore a healthy riparian ecosystem. If landowners are willing to sell property in the basin, NMFS recommends converting the area to a natural riparian landscape with native vegetation. If this



cannot be accomplished, NMFS recommends that DWR take steps to ensure that leaving these areas in agriculture will not set a rigid hydraulic baseline, precluding the potential for planting riparian vegetation (and increasing the roughness) at a later date.

As the cooperating agency we offer to assist with the following NEPA development tasks:

- Attendance at, and input during, agency coordination meetings including pre-scoping and scoping
- Comments and feedback on the EIS schedule, overall scope of the document, significant issues to be evaluated in the EIS, environmental impacts, study and assessment methodologies, range of alternatives, and proposed compensatory mitigation, as applicable
- Guidance on relevant technical studies required as part of the EIS
- Identification of issues related to NMFS's jurisdiction by law and special expertise
- Review of the administrative and public drafts of the Draft EIS and Final EIS

The lead contact for this process will be Tancy Moore in the NMFS California Central Valley Area Office. She can be reached (916)930-3605, or at tancy.moore@noaa.gov. Please provide background materials and a schedule for development milestones when available, and prior to public scoping. We look forward to working with the USACE on this important project.

Sincerely,



for

Maria Rea
Assistant Regional Administrator

Enclosure

CC: CHRON File: ARN 151422-WCR2016-SA00290
Division- File copy

Ms. Tanis Toland, Ecosystem Restoration Regional Specialist/Section 408 NEPA Lead,
U.S. Army Corps of Engineers, Sacramento District, 1325 J Street, Sacramento,
California 95814

Mr. Zachary Simmons, Regulatory Project Manager, U.S. Army Corps of Engineers,
Sacramento District, 1325 J Street, Sacramento, California 95814

Ms. Elif Fehm-Sullivan, West Coast Region NEPA Coordinator, National Marine
Fisheries Service, 650 Capital Mall, Suite 5-100, Sacramento, California 95814



United States Department of the Interior



In Reply Refer to:
08ESMF00-
2017-CPA-0001

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825-1846

Ms. Alicia Kirchner
Chief, Planning Division
U.S. Army Corps of Engineers, Sacramento District
1325 J Street
Sacramento, California 95814

OCT 20 2016

Subject: Request to Become Cooperating Agency under National Environmental Policy Act
for the Lower Elkhorn Basin Levee Setback Project

Dear Ms. Kirchner:

This letter is in response to the October 6, 2016 letter from the U.S. Army Corps of Engineers, Sacramento District (Corps) which requested the U.S. Fish and Wildlife Service (Service) participate in the development of the Environmental Impact Statement/Environmental Impact Report for the Lower Elkhorn Basin Levee Setback Project as a cooperating agency. The Service accepts the role of cooperating agency in this National Environmental Policy Act process.

We look forward to a cooperative partnership with the Corps in the development of this Environmental Impact Statement. If you have any questions or for further coordination please contact Jennifer Hobbs, Sacramento Fish and Wildlife Office at (916)414-6541.

Sincerely,

Jennifer M. Norris
Field Supervisor

cc:
Kaylee Allen, BDFWO, Sacramento, CA
Kim Squires, BDFWO, Sacramento, CA
Tanis Toland, US Army Corps of Engineers, Sacramento, CA
Zachary Simmons, US Army Corps of Engineers, Sacramento, CA



Order (E.O.) 7183 in 1935 and the Flood Control Acts of 1936 and 1938 for the purposes of flood control, low flow augmentation, and hydroelectric power development. The purposes were later expanded to include recreational activities under the Flood Control Act of 1944 and fish and wildlife enhancement under the Fish and Wildlife Coordination Act (FWCA) of 1958.

2. *Background:* a. Guidance for this study is provided in USACE Engineer Regulation (ER) 1110-2-1156 (October 2011). This guidance details agency policy and procedures for the study and implementation process addressing dam safety issues.

b. Bluestone Lake is a multipurpose component of the Kanawha River basin system which provides for flood control, recreation, power development, low flow augmentation, and fish and wildlife enhancement. The project began operation in 1949 and helps control a 4,565 square mile drainage area.

c. The ROD, signed in 1999, completed the NEPA process for the DSA project permitting the Huntington District to begin detailed design and subsequent construction of the recommended alternative which included a 13 foot cantilever wall on top of the dam, an additional concrete monolith on the east abutment, a floodgate closure across WV Rt. 20, removable closures at each end of the spillway, high strength anchors placed into the dam itself, massive concrete blocks placed against the downstream face of the dam, and a pavement for scour protection downstream of the hydropower penstocks. The majority of the ongoing construction on these measures will continue through the year 2019. The ROD for this work anticipated construction would be completed 2005.

d. Physical modeling and expert analysis conducted during project construction has shown the downstream bedrock is vulnerable to erosion during high flow events as a result of deficiencies with the current stilling basin configuration. This potential erosion creates an unacceptable level of risk according to guidelines established in ER 1110-2-1156, under which this study is being conducted.

e. The SDEIS and Dam Safety Modification report (DSMR) will consider the structural integrity of the dam, its ability to accommodate flood waters as well as transportation, noise, terrestrial, aquatic, economic, environmental justice and cultural resource issues associated with the performance of the dam. The SDEIS and DSMR will recommend any modifications necessary to ensure the

long-term safe performance of the structure as originally intended.

f. Modifications to meet current acceptable risk guidelines per ER 1110-2-1156 may include, modification of the existing stilling basin, modification of other dam components, construction of an alternative/auxiliary stilling basin, construction of an alternative/auxiliary spillway and non-structural measures or other actions to prevent overtopping. The No Action alternative will also be considered. As required by NEPA and Corps planning guidance, the No Action alternative will form a benchmark from which alternatives are evaluated and compared.

3. *Public Participation:* a. The SDEIS will be made available to the public in the affected area for forty-five (45) days for review and comment. A Notice of Availability will be advertised in affected area newspapers informing the general public about the SDEIS public review period. The SDEIS and draft ROD can be viewed at: <http://www.lrh.usace.army.mil/Missions/PublicReview.aspx>. Copies of the SDEIS and draft ROD may be obtained by contacting the Huntington District Office of the Corps of Engineers at (304) 399-5924 (See ADDRESSES). All persons and organizations that have an interest in the Bluestone Dam Project are urged to participate in this SDEIS review and comment period. Upon the close of the comment period, USACE will consider all comments and if necessary conduct further analysis.

Additionally, the Corps will conduct public meetings to gain input from interested agencies, organizations, and the general public concerning the content, issues, and impacts of the SDEIS, a separate Notice of Intent will be published in the **Federal Register** for this action. Prior to the meeting, a public notice will be distributed to agencies, organizations, and the general public, informing interested parties of the date and location for the public meeting. The Corps invites full public participation to promote open communication and better decision-making.

4. *Schedule:* The Draft Supplemental Environmental Impact Statement is scheduled to be released for public review and comment on or about September 1, 2016. The Final Report and Final Supplemental EIS are tentatively scheduled to be completed in May 2017.

Rebecca A. Rutherford,
Chief, Environmental Analysis Section,
Planning Branch.

[FR Doc. 2016-21570 Filed 9-7-16; 8:45 am]

BILLING CODE 3720-58-P

DEPARTMENT OF DEFENSE

Department of the Army, Corps of Engineers

Notice of Intent To Prepare a Joint Environmental Impact Statement/ Environmental Impact Report for the Proposed Lower Elkhorn Basin Levee Setback Project, Yolo County, CA

AGENCY: Department of the Army, U.S. Army Corps of Engineers, DoD.

ACTION: Notice of intent.

SUMMARY: The U.S. Army Corps of Engineers (USACE), Sacramento District, as the lead agency under the National Environmental Policy Act (NEPA), and the California Department of Water Resources (DWR), as the lead agency under the California Environmental Quality Act (CEQA), will prepare a joint Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the Lower Elkhorn Setback Levee Project. DWR is the project proponent and may be referred to as the Applicant or Requester.

The EIS/EIR will analyze DWR's proposed action to implement a flood risk management project in the Lower Elkhorn Basin in Yolo County, California. Because the proposed action would alter Federal levees, permission from USACE is required under Section 14 of the Rivers and Harbors Act (Section 408) (33 U.S.C. 408). The proposed action would also affect waters of the United States and require a permit from USACE under Section 404 of the Clean Water Act (33 U.S.C. 1344).

DATES: Submit written comments by October 7, 2016.

ADDRESSES: Written comments and suggestions concerning the scope and content of the environmental information may be submitted to Mr. Tyler Stalker, email at spk-pao@usace.army.mil; or surface mail at U.S. Army Corps of Engineers, Sacramento District, Attn: Public Affairs Office (CESPK-PAO), 1325 J Street, Sacramento, CA 95814-2922. Requests to be placed on the electronic or surface mail notification lists should also be sent to this address.

FOR FURTHER INFORMATION CONTACT: Ms. Tanis Toland at (916) 557-6717, or by email at tanis.j.toland@usace.army.mil.

SUPPLEMENTARY INFORMATION:

1. *Proposed Action.* The proposed Lower Elkhorn Basin Levee Setback Project would include levee setbacks to widen portions of the Yolo and Sacramento Bypasses to increase conveyance capacity and reduce flood risk. The project would be part of a series of proposed flood risk

management improvements contemplated under DWR's Central Valley Flood Protection Plan and its related Sacramento Basin-Wide Feasibility Report. The project is located in Yolo County and is bounded by the Sacramento River on the east, the Tule Canal and Yolo Bypass on the west, the Sacramento Bypass on the south, and Interstate 5 on the north. The project would include the following elements: (1) Widening the Yolo Bypass by constructing a setback levee east of the Tule Canal in the Lower Elkhorn Basin, (2) widening the Sacramento Bypass by constructing a setback levee north of the existing levee, and (3) implementing improvements in the Lower Elkhorn Basin and Sacramento Bypass to mitigate project impacts. Widening of the Sacramento Bypass, per number (2) of the Proposed Action, is also a recommended feature of the American River Common Features GRR, for which a general reevaluation was completed in 2016, although it is not yet congressionally authorized. The proposed Lower Elkhorn Basin Levee Setback Project is not intended to duplicate this recommended feature, rather it offers DWR a potential alternative means to construct this key feature should the project not be authorized prior to USACE's decision on DWR's request under Section 408.

2. Alternatives. A number of project alternatives, including the no action alternative and the Requester's/ Applicant's preferred alternative will be evaluated in the EIS/EIR in accordance with NEPA (33 CFR part 230 (USACE NEPA Regulations) and 33 CFR part 325, Appendix B (NEPA Implementation Procedures for USACE Regulatory Projects).

3. Scoping Process.
a. A public scoping meeting will be held on Thursday, September 15, 2016, from 4:00 p.m. to 7:00 p.m., West Sacramento Civic Center, 1110 West Capitol Avenue, West Sacramento, CA 95691 to present information to the public and to receive comments from the public on the project and the scope of the environmental analysis. Affected Federal, State, regional, and local agencies; Native American Tribes; other interested private organizations; and the general public are invited to participate.

b. The EIS/EIR will analyze the environmental effects of construction, operations, and maintenance of the project. Potentially significant issues to be analyzed in depth include loss of waters of the United States (including wetlands), cultural resources, biological resources, special status species, air quality, hydrology and water quality, land use, Prime and Unique Farmlands,

noise, traffic, aesthetics, utilities and service systems, and socioeconomic effects.

c. USACE will consult with the State Historic Preservation Officer and with Native American Tribes to comply with the National Historic Preservation Act, and with the U.S. Fish and Wildlife Service and National Marine Fisheries Service to comply with the Endangered Species Act. USACE will also coordinate with the U.S. Fish and Wildlife Service to comply with the Fish and Wildlife Coordination Act.

d. A 45-day NEPA public review period will be provided for all interested parties, individuals, and agencies to review and comment on the draft EIS/EIR. All interested parties are encouraged to respond to this notice and provide a current address if they wish to be notified of the draft EIS/EIR circulation.

4. Availability. The draft EIS/EIR is scheduled to be available for public review and comment in November 2017.

Dated: August 28, 2016.

David G. Ray,

Colonel, U.S. Army, District Commander.

[FR Doc. 2016-21578 Filed 9-7-16; 8:45 am]

BILLING CODE 3720-58-P

DEPARTMENT OF DEFENSE

Department of the Army, Corps of Engineers

Inland Waterways Users Board Meeting Notice

AGENCY: Department of the Army, U.S. Army Corps of Engineers, DoD.

ACTION: Notice of open Federal advisory committee meeting.

SUMMARY: The Department of the Army is publishing this notice to announce the following Federal advisory committee meeting of the U.S. Army Corps of Engineers, Inland Waterways Users Board (Board). This meeting is open to the public. For additional information about the Board, please visit the committee's Web site at <http://www.iwr.usace.army.mil/Missions/Navigation/InlandWaterwaysUsersBoard.aspx>.

DATES: The Army Corps of Engineers, Inland Waterways Users Board will meet from 9:00 a.m. to 1:00 p.m. on October 5, 2016. Public registration will begin at 8:15 a.m.

ADDRESSES: The Board meeting will be conducted at the Holiday Inn Hotel Chicago—Tinley Park—Convention Center, 18501 Convention Center Drive, Tinley Park, IL 60477, 708-444-1100.

FOR FURTHER INFORMATION CONTACT: Mr. Mark R. Pointon, the Designated Federal Officer (DFO) for the committee, in writing at the Institute for Water Resources, U.S. Army Corps of Engineers, ATTN: CEIWR-GM, 7701 Telegraph Road, Casey Building, Alexandria, VA 22315-3868; by telephone at 703-428-6438; and by email at Mark.Pointon@usace.army.mil. Alternatively, contact Mr. Kenneth E. Lichtman, the Alternate Designated Federal Officer (ADFO), in writing at the Institute for Water Resources, U.S. Army Corps of Engineers, ATTN: CEIWR-GW, 7701 Telegraph Road, Casey Building, Alexandria, VA 22315-3868; by telephone at 703-428-8083; and by email at Kenneth.E.Lichtman@usace.army.mil.

SUPPLEMENTARY INFORMATION: The committee meeting is being held under the provisions of the Federal Advisory Committee Act of 1972 (5 U.S.C., Appendix, as amended), the Government in the Sunshine Act of 1976 (5 U.S.C. 552b, as amended), and 41 CFR 102-3.150.

Purpose of the Meeting: The Board is chartered to provide independent advice and recommendations to the Secretary of the Army on construction and rehabilitation project investments on the commercial navigation features of the inland waterways system of the United States. At this meeting, the Board will receive briefings and presentations regarding the investments, projects and status of the inland waterways system of the United States and conduct discussions and deliberations on those matters. The Board is interested in written and verbal comments from the public relevant to these purposes.

Proposed Agenda: At this meeting the agenda will include the status of funding for inland navigation projects and studies budgeted in FY 2017; the status of the Inland Waterways Trust Fund and comparison of revenues; the status of the Olmsted Locks and Dam Project, and the Locks and Dams 2, 3, and 4 on the Monongahela River Project; update of Kentucky Lock and Chickamauga Lock economics information; basic Economic Analysis by the Corps; and status of the Inner Harbor Navigation Canal (IHNC) Lock General Re-evaluation Report.

Availability of Materials for the Meeting. A copy of the agenda or any updates to the agenda for the October 5, 2016 meeting. The final version will be provided at the meeting. All materials will be posted to the Web site after the meeting.

2016092015

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH #

Project Title: Lower Elkhorn Basin Levee Setback

Lead Agency: California Department of Water Resources Contact Person: Shelly Amrhein
Mailing Address: 3464 El Camino Avenue, Suite 150 Phone: 916-574-1415
City: Sacramento Zip: 95821 County: Sacramento

Project Location: County: Yolo City/Nearest Community: West Sacramento
Cross Streets: I-5, Old River Road, Yolo County Roads 124 and 126 Zip Code: 95691
Longitude/Latitude (degrees, minutes and seconds): 38 0 37 34.8 N / 121 0 36 24.8 W Total Acres:
Assessor's Parcel No.: Multiple Section: Twp.: Range: Base:
Within 2 Miles: State Hwy #: I-5, 84 Waterways: Sac. River, Yolo Byp., Sac. Byp., Tule Canal
Airports: SMF, CHP Academy Railways: Sierra Northern Schools: Two Rivers, L. Greene

Document Type:

CEQA: [X] NOP [] Draft EIR NEPA: [] NOI Other: [] Joint Document
[] Early Cons [] Supplement/Subsequent EIR [] EA [] Final Document
[] Neg Dec (Prior SCH No.) [] FONSI [] Other:
[] Mit Neg Dec Other:

SEP 07 2016

Local Action Type:

[] General Plan Update [] Specific Plan [] Annexation
[] General Plan Amendment [] Master Plan [] Redevelopment
[] General Plan Element [] Planned Unit Development [] Coastal Permit
[] Community Plan [] Site Plan [] Land Division (Subdivision, etc.) [X] Other: Levee construct

Development Type:

[] Residential: Units Acres
[] Office: Sq.ft. Acres Employees
[] Commercial: Sq.ft. Acres Employees
[] Industrial: Sq.ft. Acres Employees
[] Educational:
[] Recreational:
[] Water Facilities: Type MGD
[] Transportation: Type
[] Mining: Mineral
[] Power: Type MW
[] Waste Treatment: Type MGD
[] Hazardous Waste: Type
[X] Other: setback levee

Project Issues Discussed in Document:

[X] Aesthetic/Visual [] Fiscal [X] Recreation/Parks [X] Vegetation
[X] Agricultural Land [X] Flood Plain/Flooding [X] Schools/Universities [X] Water Quality
[X] Air Quality [X] Forest Land/Fire Hazard [X] Septic Systems [X] Water Supply/Groundwater
[X] Archeological/Historical [X] Geologic/Seismic [] Sewer Capacity [X] Wetland/Riparian
[X] Biological Resources [X] Minerals [X] Soil Erosion/Compaction/Grading [X] Growth Inducement
[] Coastal Zone [X] Noise [X] Solid Waste [X] Land Use
[X] Drainage/Absorption [X] Population/Housing Balance [X] Toxic/Hazardous [X] Cumulative Effects
[X] Economic/Jobs [X] Public Services/Facilities [X] Traffic/Circulation [] Other:

Present Land Use/Zoning/General Plan Designation:

General Plan: Agriculture (AG). Zoning: Agricultural-Intensive (A-N)

Project Description: (please use a separate page if necessary)

The Lower Elkhorn Basin Levee Setback Project ("proposed project") would entail the following flood-risk reduction elements contemplated under DWR's Central Valley Flood Protection Plan and its related Sacramento Basin-Wide Feasibility Study. The proposed project would entail the following flood-risk reduction elements: (1) widening the Yolo Bypass by constructing a setback levee approximately 1,500 feet east of the Tule Canal in the Lower Elkhorn Basin (between I-5 and the Sacramento Bypass), (2) widening the Sacramento Bypass by constructing a setback levee approximately 1,500 feet north of the existing levee, (3) potential degrading of all or portions of existing levees; and (4) implementing ecosystem improvements in the Lower Elkhorn Basin to mitigate project impacts.

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.

Revised 2010

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with an "X".
If you have already sent your document to the agency please denote that with an "S".

- | | |
|---|--|
| <input checked="" type="checkbox"/> Air Resources Board | <input checked="" type="checkbox"/> Office of Historic Preservation |
| <input type="checkbox"/> Boating & Waterways, Department of | <input type="checkbox"/> Office of Public School Construction |
| <input type="checkbox"/> California Emergency Management Agency | <input type="checkbox"/> Parks & Recreation, Department of |
| <input checked="" type="checkbox"/> California Highway Patrol | <input type="checkbox"/> Pesticide Regulation, Department of |
| <input checked="" type="checkbox"/> Caltrans District #3 | <input type="checkbox"/> Public Utilities Commission |
| <input checked="" type="checkbox"/> Caltrans Division of Aeronautics | <input checked="" type="checkbox"/> Regional WQCB #5S |
| <input type="checkbox"/> Caltrans Planning | <input type="checkbox"/> Resources Agency |
| <input checked="" type="checkbox"/> Central Valley Flood Protection Board | <input type="checkbox"/> Resources Recycling and Recovery, Department of |
| <input type="checkbox"/> Coachella Valley Mtns. Conservancy | <input type="checkbox"/> S.F. Bay Conservation & Development Comm. |
| <input type="checkbox"/> Coastal Commission | <input type="checkbox"/> San Gabriel & Lower L.A. Rivers & Mtns. Conservancy |
| <input type="checkbox"/> Colorado River Board | <input type="checkbox"/> San Joaquin River Conservancy |
| <input type="checkbox"/> Conservation, Department of | <input type="checkbox"/> Santa Monica Mtns. Conservancy |
| <input type="checkbox"/> Corrections, Department of | <input type="checkbox"/> State Lands Commission |
| <input checked="" type="checkbox"/> Delta Protection Commission | <input type="checkbox"/> SWRCB: Clean Water Grants |
| <input type="checkbox"/> Education, Department of | <input checked="" type="checkbox"/> SWRCB: Water Quality |
| <input type="checkbox"/> Energy Commission | <input type="checkbox"/> SWRCB: Water Rights |
| <input checked="" type="checkbox"/> Fish & Game Region #2 | <input type="checkbox"/> Tahoe Regional Planning Agency |
| <input type="checkbox"/> Food & Agriculture, Department of | <input checked="" type="checkbox"/> Toxic Substances Control, Department of |
| <input type="checkbox"/> Forestry and Fire Protection, Department of | <input type="checkbox"/> Water Resources, Department of |
| <input type="checkbox"/> General Services, Department of | |
| <input type="checkbox"/> Health Services, Department of | Other: _____ |
| <input type="checkbox"/> Housing & Community Development | Other: _____ |
| <input checked="" type="checkbox"/> Native American Heritage Commission | |

Local Public Review Period (to be filled in by lead agency)

Starting Date September 7, 2016 Ending Date October 7, 2016

Lead Agency (Complete if applicable):

Consulting Firm: <u>GEI Consultants</u>	Applicant: <u>California Department of Water Resources</u>
Address: <u>2868 Prospect Park Dr, Suite 400</u>	Address: <u>3464 El Camino Avenue, Suite 150</u>
City/State/Zip: <u>Rancho Cordova, CA 95670</u>	City/State/Zip: <u>Sacramento, CA 95821</u>
Contact: <u>Francine Dunn</u>	Phone: <u>916-912-4931</u>
Phone: <u>916-912-4931</u>	

Signature of Lead Agency Representative:  Date: 9-6-16

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

Revised 2010

DEPARTMENT OF WATER RESOURCESDIVISION OF FLOOD MANAGEMENT
P.O. BOX 219000
SACRAMENTO, CA 95821-9000**NOTICE OF PREPARATION**

To: Agencies and Interested Parties

From: California Department of Water Resources

Date: September 7, 2016

Subject: **Notice of Preparation and Scoping Meeting for the Lower Elkhorn Basin Levee Setback Project Environmental Impact Report**

Notice is hereby given that the California Department of Water Resources (DWR), as the Lead Agency under the California Environmental Quality Act (CEQA), will prepare an Environmental Impact Report (EIR) for the Lower Elkhorn Basin Levee Setback Project ("proposed project"). The document will be prepared as a joint Environmental Impact Report (EIR) / Environmental Impact Statement (EIS). The U.S. Army Corps of Engineers (USACE), Sacramento District is the lead Federal agency under the National Environmental Policy Act (NEPA) because the project would alter Federal levees, necessitating permission under Section 14 of the Rivers and Harbors Act (Section 408) and would also affect waters of the United States requiring a Department of the Army permit under Section 404 of the Clean Water Act. A joint public scoping meeting will be held on **Thursday, September 15, 2016, from 4 – 7 p.m.** at the West Sacramento Civic Center, 1110 West Capitol Avenue, West Sacramento, CA 95691 to receive comments on the scope and content of the EIR, as described below.

DWR invites each responsible and trustee agency, and each Federal agency, including NEPA cooperating agencies involved in approving or funding the proposed project, to provide input as to the scope and content of the environmental information that is germane to the agency's statutory responsibilities in connection with the proposed project. DWR also is accepting comments from members of the public and Native American tribes on the scope and content of the EIR, as well as suggested alternatives to the proposed project that may be considered in the EIR.

INTRODUCTION

CEQA specifies that a public agency must prepare an EIR on any project that it proposes to carry out or approve that may have a potentially significant or significant direct or indirect effect on the physical environment. DWR is proposing to implement flood system improvements to the Sacramento Bypass and the Yolo Bypass in the Lower Elkhorn Basin to reduce flood risk. DWR has determined that these flood control improvements may result in potentially significant and significant effects on the physical environment. Therefore, DWR will prepare a project-level EIR that evaluates the potential significant environmental effects of these proposed flood-risk reduction improvements.

PROJECT LOCATION

The project site is located in Yolo County and is bounded by the Sacramento River on the east, the Tule Canal and Yolo Bypass on the west, the Sacramento Bypass on the south, and Interstate 5 on the north (see Figure 1).

PROJECT DESCRIPTION

The proposed project would include levee setbacks to widen portions of the Yolo and Sacramento Bypasses to increase conveyance capacity and reduce flood risk. The proposed project would be part of a series of proposed flood-risk reduction improvements contemplated under DWR's Central Valley Flood Protection Plan and its related Sacramento Basin-Wide Feasibility Study. The proposed project would entail the following flood-risk reduction elements: (1) widening the Yolo Bypass by constructing a setback levee approximately 1,500 feet east of the Tule Canal in the Lower Elkhorn Basin (between I-5 and the Sacramento Bypass) , (2) widening the Sacramento Bypass by constructing a setback levee approximately 1,500 feet north of the existing levee, (3) potential degrading of all or portions of existing levees; and (4) implementing ecosystem improvements in the Lower Elkhorn Basin to mitigate project impacts. The EIR will analyze the potential environmental effects of construction, operation, and maintenance associated with the proposed project and up to 4 alternatives. The current proposed project (Alternative 1) and three alternative alignments are illustrated on Figure 2. The proposed project and the alternatives are subject to change; these alignments will be refined and adjusted based on the information gathered during the scoping and environmental review processes, as well as through the continuing refinement of the engineering design.

PROBABLE ENVIRONMENTAL EFFECTS

The environmental analysis will focus on examining the potential environmental impacts associated with the improvements implemented as part of the proposed project and identifying feasible measures and alternatives that can be implemented to avoid, minimize, rectify, reduce, or compensate such impacts. The EIR will also evaluate environmental justice; socioeconomic; population and housing; and growth-inducing impacts, as well as cumulative effects of the proposed flood-risk reduction system improvements when considered in conjunction with other related past, present, and reasonably foreseeable future projects.

On the basis of preliminary evaluations, the proposed flood risk-reduction improvements could have the following probable direct, indirect, and/or cumulative environmental effects:

- **Aesthetics.** Temporary, short-term changes in scenic views or visual character and changes to viewshed from State- and County-designated scenic highways.
- **Agriculture and Forest Resources.** Short- and long-term conversion of farmland for Bypass improvements, use of borrow material, or habitat improvements for proposed project mitigation.
- **Air Quality.** Temporary and short-term increases in pollutant emissions associated with construction activities.
- **Biological Resources – Aquatic.** Short- and long-term effects on special-status fish species or their habitats.
- **Biological Resources – Terrestrial.** Short- and long-term effects to habitats and special-status terrestrial species, including wetlands.
- **Cultural Resources.** Potential disturbance or destruction of known or unknown historic or archaeological resources during construction, including Tribal cultural resources.
- **Climate Change.** Temporary and short-term increases in greenhouse gas emissions associated with construction activities.

- **Energy.** Potential increased energy demand during construction that is wasteful, inefficient, or an unnecessary consumption of energy.
- **Geology, Soils, and Paleontological Resources.** Temporary and short-term increases in erosion during construction; potential disturbance or destruction of known or unknown paleontological resources during construction.
- **Hazards and Hazardous Materials.** Potential introduction of contaminants into water courses and exposure of construction workers to hazardous materials as a result of construction activities, including potential hazards related to remediation of a Cortese-listed site (the former Bryte Landfill).
- **Hydrology and Water Quality.** Potential short- and long-term transport of sediments and other pollutants into water courses, downstream hydraulic effects on the Yolo Bypass and Sacramento River, flood risks, and effects on groundwater movements and availability for irrigation.
- **Land Use and Planning.** Potential conflicts with land use plans and zoning designations.
- **Mineral Resources.** Potential long-term loss of access to regionally or locally important deposits of mineral resources.
- **Noise.** Temporary and short-term increases in noise levels near sensitive receptors during construction.
- **Recreation.** Temporary and short-term disturbance of land- and water-based recreational activities in areas adjacent to construction sites; long-term impacts to downstream recreation from increasing the size of the Sacramento and Yolo Bypasses.
- **Transportation and Circulation.** Temporary and short-term disruption of traffic circulation or emergency access during construction, and traffic effects of haul routes, including haul routes on the Sacramento River via barge.
- **Public Services and Utilities and Service Systems.** Potential disruption of service during construction and need for the permanent relocation of utilities within the proposed project construction footprint.

ALTERNATIVES

A number of project alternatives, including the No-Project Alternative, will be evaluated in the EIR in accordance with CEQA and the State CEQA Guidelines. Because the document will be prepared jointly with USACE, the environmental impacts of the alternatives will be evaluated at an equal level-of-detail with the proposed project.

SCOPING MEETING

A public scoping meeting will be held on **Thursday, September 15, 2016, 4 – 7 p.m.** at the West Sacramento Civic Center, 1110 West Capitol Avenue, West Sacramento, CA 95691. The objective of the meeting is to brief interested parties about the proposed project, and obtain the views of agency representatives, interested parties, Native American Tribes, and the public on the scope and content of the EIR/EIS, including the alternatives to be addressed and potentially significant environmental impacts. The public scoping meeting will be held jointly with USACE.

WRITTEN COMMENTS

This Notice of Preparation (NOP) is being circulated to obtain suggestions and information from interested parties, including responsible and/or trustee agencies, Native American Tribes, and members of the public, on the content and scope of issues that may be addressed in the EIR. Additionally, since the document will be a joint EIS/EIR, input will also be solicited from any NEPA cooperating agencies. Written comments from interested parties are invited to ensure that the full range of issues related to implementation of the proposed project is identified early in the CEQA process. Agencies organizations, Native American Tribes, and interested parties should provide a contact name and information in their letters. All comments received, including names and addresses, will become part of the official administrative record and may be made available to the public. DWR will post NOP comment letters in their entirety on the DWR web page for the project at <http://water.ca.gov/floodmgmt/reduce/l-elkhorn.cfm>.

Written comments on the scope of the EIR must be received by DWR no later than 5 p.m. on October 7, 2016. Written comments must be sent to:

Shelly Amrhein
California Department of Water Resources
Division of Flood Management
3464 El Camino Avenue, Suite 150
Sacramento, CA 95821

or via email to: Rochelle.Amrhein@water.ca.gov

Interested parties may also provide written or oral comments on the proposed content and scope of the EIR at the public scoping meeting listed above. If you submit comments on the document, you will automatically be added to the distribution list for future notices and information about the environmental review process for the proposed project. If you do not wish to submit comments on the scope and content of the EIR, but would like to be added to the mailing list, you can submit your contact information, including email address, with a request to be added to the mailing list at the contact above.

Additional information regarding the proposed project can be found on the DWR web page provided above.

Notice of Preparation of an Environmental Impact Report for the Lower Elkhorn Basin Levee Setback Project and Announcement of Public Scoping Meeting

The California Department of Water Resources (DWR), as the Lead Agency under the California Environmental Quality Act (CEQA), will prepare an Environmental Impact Report (EIR) for the Lower Elkhorn Basin Levee Setback Project (“proposed project”). The document will be prepared as a joint EIR/Environmental Impact Statement (EIS) with the U.S. Army Corps of Engineers (USACE), Sacramento District as lead Federal agency under the National Environmental Policy Act (NEPA) because the project would alter Federal levees, necessitating permission under Section 14 of the Rivers and Harbors Act (Section 408) and would affect waters of the United States requiring a Department of the Army permit under Section 404 of the Clean Water Act. DWR has prepared an NOP pursuant to Section 15082 of the CEQA Guidelines. DWR invites responsible and trustee agencies, and Federal agencies, including NEPA cooperating agencies involved in approving or funding the proposed project, to provide input on the scope and content of environmental information germane to the agency’s statutory responsibilities. DWR also is accepting comments from members of the public and Native American tribes on the scope, content, and suggested alternatives to the proposed project that may be considered in the EIR.

The NOP is available on the DWR web page at <http://water.ca.gov/floodmgmt/reduce/l-elkhorn.cfm>. A joint public scoping meeting will be held on **Thursday, September 15, 2016, from 4 – 7 p.m.** at the West Sacramento Civic Center, 1110 West Capitol Avenue, West Sacramento, CA 95691. Written comments on the scope of the EIR must be received by DWR no later than 5 p.m. on October 7, 2016.

Written comments must be sent to:

Shelly Amrhein
California Department of Water Resources
Division of Flood Management
3464 El Camino Avenue, Suite 150
Sacramento, CA 95821
Rochelle.Amrhein@water.ca.gov

The project site is located in Yolo County and is bounded by the Sacramento River on the east, the Tule Canal and Yolo Bypass on the west, the Sacramento Bypass on the south, and Interstate 5 on the north. The proposed project would include levee setbacks to widen portions of the Yolo and Sacramento Bypasses to increase conveyance capacity and reduce flood risk. The proposed project would be part of a series of proposed flood-risk reduction improvements contemplated under DWR’s Central Valley Flood Protection Plan and its related Sacramento Basin-Wide Feasibility Study. The proposed project would entail the following flood-risk reduction elements: (1) widening the Yolo Bypass by constructing a setback levee approximately 1,500 feet east of the Tule Canal in the Lower Elkhorn Basin (between I-5 and the Sacramento Bypass), (2) widening the Sacramento Bypass by constructing a setback levee approximately 1,500 feet north of the existing levee, (3) potential degrading of all or portions of existing levees; and (4) implementing ecosystem improvements in the Lower Elkhorn Basin to mitigate project impacts. The EIR will analyze the environmental effects of construction, operation, and maintenance associated with the proposed project and up to 4 alternatives in accordance with CEQA and the State CEQA Guidelines. The proposed project

and the alternatives are subject to change; alignments will be refined and adjusted based on information gathered during the scoping and environmental review processes, and through refinement of the engineering design. Because the document will be prepared jointly with USACE, the environmental impacts of the alternatives will be evaluated at an equal level-of-detail with the proposed project.

On the basis of preliminary evaluations, the proposed flood risk-reduction improvements could have direct, indirect, and/or cumulative environmental effects on aesthetics, agriculture and forestry resources, air quality, biological resources, cultural resources, climate change, energy, geology, soils, paleontological resources, hazards and hazardous materials, hydrology, water quality, land use, mineral resources, noise, recreation, transportation, public services, and utilities.



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

Environmental Resources Branch

Ms. Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95896

SEP 02 2016

Dear Ms. Polanco:

The U.S. Army Corps of Engineers, Sacramento District (Corps) is writing you to relay the project description and initiate consultation on the Area of Potential Effects (APE) for the Lower Elkhorn Basin Levee Setback Project, Yolo County, California (Project). The local proponent, the California Department of Water Resources (DWR), has requested permission from the Corps under Section 14 of the Rivers and Harbors Act of 1899 (33 U.S.C. § 408) and Section 404 of the Clean Water Act of 1977 (33 U.S.C. § 1344). Both of these permissions are Federal undertakings which require compliance with Section 106 of the National Historic Preservation Act (54 U.S.C. § 306108). The APEs for both permit actions are the same, so the Corps compliance process will deal with both permit actions simultaneously; any reference to the Project APE should be interpreted as including both elements.

DWR proposes to improve flood management facilities in the Lower Elkhorn Basin and Sacramento Bypass areas of the flood system in Yolo County, just north of the existing Sacramento Bypass and Weir. The Project consists primarily of partial or complete removal of an "L"-shaped section of the existing Lower Elkhorn Basin East Levee from Interstate 5 to the Sacramento Bypass and the Sacramento Bypass North Levee from the Weir to its intersection with the Lower Elkhorn Basin East Levee; and construction of a new "L"-shaped setback levee northeast of the existing levee segments mentioned above. In sum, Project components include the following:

- Existing levee removal; to entail levee breaching, degrading, complete removal, and/or partial removal
- Setback levee construction; to entail site grading, installation of cut-off walls up to 85 feet deep, and/or construction of seepage berms laterally along the landside (east side) of setback levee up to 300 feet in width
- Utility removal and/or relocation
- Vegetation removal and clearing
- Grading existing roads and hauling the debris off-site for disposal
- Grading and use of staging areas (locations to be determined)
- Acquisition of fill material for levee construction
- Grading and use of borrow sites
- Installation of relief wells and associated conduit connections
- Intermittent inundation during Project operation of the area between the existing levees and new setback levees


Widening of the Sacramento Bypass is also a recommended feature of the American River Common Features General Reevaluation Report (GRR), for which a general reevaluation was completed in 2016, although it is not yet congressionally authorized. The proposed Project is not intended to duplicate this recommended feature, rather it offers our partner, DWR, an alternative means to construct this key feature should the American River Common Features GRR not be authorized prior to possible permission under Section 14 of the Rivers and Harbors Act of 1899 (33 U.S.C. § 408).

All construction activities described above will take place within the proposed APE (Enclosure), although the exact levee alignments and other locations of project activities have not been determined within that space. The APE encompasses approximately 2,003 acres (Grays Bend, CA USGS 7.5" Topographic Quadrangle, Unsectioned lands in T 9 N, R 3 E and T 10 N, R 3 E; Taylor Monument, CA USGS 7.5" Topographic Quadrangle, Unsectioned lands in T 9 N, R 3 E; Sacramento West, CA USGS 7.5" Topographic Quadrangle, Unsectioned lands in T 9 N, R 3 E and T 9 N, R 4 E). Should the location of any Project activities change to include areas outside this initial delineation of the APE, the Corps will notify all parties and continue consultation accordingly.

Inventory efforts are expected to include consultation with interested tribes, pedestrian surface survey, subsurface investigations through trenching or other means due to the potential for buried sites within the alluvial sediments of the Sacramento River floodplain. The results of the inventory efforts will be presented in a forthcoming technical report.

At this time, we are seeking your comments on the Project APE designation. Comments and questions may be sent to Attn: Ms. Geneva Kraus, U.S. Army Corps of Engineers, CESP-K-PD-RC, 1325 J Street, Sacramento, CA 95814. Ms. Kraus can also be reached at (916) 557-7447 or by email at Geneva.Kraus@usace.army.mil.

Sincerely,


Mark T. Ziminske
Chief, Environmental Resources Branch

Enclosure



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

Environmental Resources Branch

SEP 02 2016

Charlie Wright
Chairperson
Cortina Band of Indians
P.O. Box 1630
Williams, CA 95987

Dear Mr. Wright:

The U.S. Army Corps of Engineers, Sacramento District (Corps) is writing you to relay the project description and initiate consultation on the Area of Potential Effects (APE) for the Lower Elkhorn Basin Levee Setback Project, Yolo County, California (Project). The local proponent, the California Department of Water Resources (DWR), has requested permission from the Corps under Section 14 of the Rivers and Harbors Act of 1899 (33 U.S.C. § 408) and Section 404 of the Clean Water Act of 1977 (33 U.S.C. § 1344). Both of these permissions are Federal undertakings which require compliance with Section 106 of the National Historic Preservation Act (54 U.S.C. § 306108). The APEs for both permit actions are the same, so the Corps compliance process will deal with both permit actions simultaneously; any reference to the Project APE should be interpreted as including both elements. Additional state requirements, such as those under the California Environmental Quality Act and Assembly Bill 52, are the responsibility of DWR, from whom you will receive further documentation.

DWR proposes to improve flood management facilities in the Lower Elkhorn Basin and Sacramento Bypass areas of the flood system in Yolo County, just north of the existing Sacramento Bypass and Weir. The Project consists primarily of partial or complete removal of an "L"-shaped section of the existing Lower Elkhorn Basin East Levee from Interstate 5 to the Sacramento Bypass and the Sacramento Bypass North Levee from the Weir to its intersection with the Lower Elkhorn Basin East Levee; and construction of a new "L"-shaped setback levee northeast of the existing levees mentioned above. In sum, Project components include the following:

- Existing levee removal; to entail levee breaching, degrading, complete removal, and/or partial removal
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- Grading and use of staging areas (locations to be determined)
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- Grading and use of borrow sites
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- Intermittent inundation during Project operation of the area between the existing levees and new setback levees

Widening of the Sacramento Bypass is also a recommended feature of the American River Common Features General Reevaluation Report (GRR), for which a general reevaluation was completed in 2016, although it is not yet congressionally authorized. The proposed Project is not intended to duplicate this recommended feature, rather it offers our partner, DWR, an alternative means to construct this key feature should the American River Common Features GRR not be authorized prior to possible permission under Section 14 of the Rivers and Harbors Act of 1899 (33 U.S.C. § 408).

All construction activities described above will take place within the proposed APE (Enclosure), although the exact levee alignments and other locations of project activities have not been cemented. The APE encompasses approximately 2,003 acres (Grays Bend, CA USGS 7.5" Series Topographic Quadrangle, Unsectioned lands in T 9 N, R 3 E and T 10 N, R 3 E; Taylor Monument, CA USGS 7.5" Series Topographic Quadrangle, Unsectioned lands in T 9 N, R 3 E; Sacramento West, CA USGS 7.5" Series Topographic Quadrangle, Unsectioned lands in T 9 N, R 3 E and T 9 N, R 4 E). Should the location of any Project activities change to include areas outside this initial delineation of the APE, the Corps will notify all parties and continue consultation accordingly.

Inventory efforts are expected to include pedestrian surface survey as well as subsurface investigations through trenching due to the potential for buried sites within the alluvial sediments of the Sacramento River floodplain. Proposed trenches will be located throughout the APE to best identify the presence or absence of subsurface archaeological deposits. A plan for carrying out this geoarchaeological work will be forthcoming and transmitted to you for review and comment.

At this time, we request that you please notify us if you are aware of any cultural resources or properties in the area that we should take into consideration during this permit action. We would like to work with you to identify any concerns you have about the project. If you know the locations of archaeological sites or traditional cultural properties in or near the APE, we request that you share that information with us within 30 days. In addition, we are seeking your comments on the Project APE designation. Comments and questions may be sent to Attn: Ms. Geneva Kraus, U.S. Army Corps of Engineers, CESP-K-PD-RC, 1325 J Street, Sacramento, CA 95814. Ms. Kraus can also be reached at (916) 557-7447 or by email at Geneva.Kraus@usace.army.mil.

Sincerely,



Mark T. Ziminske
Chief, Environmental Resources Branch

Enclosure



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

Environmental Resources Branch

SEP 02 2016

Gene Whitehouse
Chairperson
United Auburn Indian Community of the Auburn Rancheria
10720 Indian Hill Road
Auburn, CA 95603

Dear Mr. Whitehouse:

The U.S. Army Corps of Engineers, Sacramento District (Corps) is writing you to relay the project description and initiate consultation on the Area of Potential Effects (APE) for the Lower Elkhorn Basin Levee Setback Project, Yolo County, California (Project). The local proponent, the California Department of Water Resources (DWR), has requested permission from the Corps under Section 14 of the Rivers and Harbors Act of 1899 (33 U.S.C. § 408) and Section 404 of the Clean Water Act of 1977 (33 U.S.C. § 1344). Both of these permissions are Federal undertakings which require compliance with Section 106 of the National Historic Preservation Act (54 U.S.C. § 306108). The APEs for both permit actions are the same, so the Corps compliance process will deal with both permit actions simultaneously; any reference to the Project APE should be interpreted as including both elements. Additional state requirements, such as those under the California Environmental Quality Act and Assembly Bill 52, are the responsibility of DWR, from whom you will receive further documentation.

DWR proposes to improve flood management facilities in the Lower Elkhorn Basin and Sacramento Bypass areas of the flood system in Yolo County, just north of the existing Sacramento Bypass and Weir. The Project consists primarily of partial or complete removal of an "L"-shaped section of the existing Lower Elkhorn Basin East Levee from Interstate 5 to the Sacramento Bypass and the Sacramento Bypass North Levee from the Weir to its intersection with the Lower Elkhorn Basin East Levee; and construction of a new "L"-shaped setback levee northeast of the existing levees mentioned above. In sum, Project components include the following:

- Existing levee removal; to entail levee breaching, degrading, complete removal, and/ or partial removal
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- Intermittent inundation during Project operation of the area between the existing levees and new setback levees

Widening of the Sacramento Bypass is also a recommended feature of the American River Common Features General Reevaluation Report (GRR), for which a general reevaluation was completed in 2016, although it is not yet congressionally authorized. The proposed Project is not intended to duplicate this recommended feature, rather it offers our partner, DWR, an alternative means to construct this key feature should the American River Common Features GRR not be authorized prior to possible permission under Section 14 of the Rivers and Harbors Act of 1899 (33 U.S.C. § 408).

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Inventory efforts are expected to include pedestrian surface survey as well as subsurface investigations through trenching due to the potential for buried sites within the alluvial sediments of the Sacramento River floodplain. Proposed trenches will be located throughout the APE to best identify the presence or absence of subsurface archaeological deposits. A plan for carrying out this geoarchaeological work will be forthcoming and transmitted to you for review and comment.

A copy of this letter furnished with enclosures will be sent to Mr. Marcos Guerrero, Tribal Preservation Committee, and Mr. Matthew Moore, Tribal Historic Preservation Officer, both of United Auburn Indian Community of the Auburn Rancheria, 10720 Indian Hill Road, Auburn, CA 95603.

At this time, we request that you please notify us if you are aware of any cultural resources or properties in the area that we should take into consideration during this permit action. We would like to work with you to identify any concerns you have about the project. If you know the locations of archaeological sites or traditional cultural properties in or near the APE, we request that you share that information with us within 30 days. In addition, we are seeking your comments on the Project APE designation. Comments and questions may be sent to Attn: Ms. Geneva Kraus, U.S. Army Corps of Engineers, CESP-K-PD-RC, 1325 J Street, Sacramento, CA 95814. Ms. Kraus can also be reached at (916) 557-7447 or by email at Geneva.Kraus@usace.army.mil.

Sincerely,



Mark T. Ziminske
Chief, Environmental Resources Branch

Enclosure



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

Environmental Resources Branch

Leland Kinter
Chairperson
Yocha Dehe Wintun Nation
P.O. Box 18
Brooks, CA 95606

SEP 02 2016

Dear Mr. Kinter:

The U.S. Army Corps of Engineers, Sacramento District (Corps) is writing you to relay the project description and initiate consultation on the Area of Potential Effects (APE) for the Lower Elkhorn Basin Levee Setback Project, Yolo County, California (Project). The local proponent, the California Department of Water Resources (DWR), has requested permission from the Corps under Section 14 of the Rivers and Harbors Act of 1899 (33 U.S.C. § 408) and Section 404 of the Clean Water Act of 1977 (33 U.S.C. § 1344). Both of these permissions are Federal undertakings which require compliance with Section 106 of the National Historic Preservation Act (54 U.S.C. § 306108). The APEs for both permit actions are the same, so the Corps compliance process will deal with both permit actions simultaneously; any reference to the Project APE should be interpreted as including both elements. Additional state requirements, such as those under the California Environmental Quality Act and Assembly Bill 52, are the responsibility of DWR, from whom you will receive further documentation.

DWR proposes to improve flood management facilities in the Lower Elkhorn Basin and Sacramento Bypass areas of the flood system in Yolo County, just north of the existing Sacramento Bypass and Weir. The Project consists primarily of partial or complete removal of an "L"-shaped section of the existing Lower Elkhorn Basin East Levee from Interstate 5 to the Sacramento Bypass and the Sacramento Bypass North Levee from the Weir to its intersection with the Lower Elkhorn Basin East Levee; and construction of a new "L"-shaped setback levee northeast of the existing levees mentioned above. In sum, Project components include the following:

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Widening of the Sacramento Bypass is also a recommended feature of the American River Common Features General Reevaluation Report (GRR), for which a general reevaluation was completed in 2016, although it is not yet congressionally authorized. The proposed Project is not intended to duplicate this recommended feature, rather it offers our partner, DWR, an alternative means to construct this key feature should the American River Common Features GRR not be authorized prior to possible permission under Section 14 of the Rivers and Harbors Act of 1899 (33 U.S.C. § 408).

All construction activities described above will take place within the proposed APE (Enclosure), although the exact levee alignments and other locations of project activities have not been cemented. The APE encompasses approximately 2,003 acres (Grays Bend, CA USGS 7.5" Series Topographic Quadrangle, Unsectioned lands in T 9 N, R 3 E and T 10 N, R 3 E; Taylor Monument, CA USGS 7.5" Series Topographic Quadrangle, Unsectioned lands in T 9 N, R 3 E; Sacramento West, CA USGS 7.5" Series Topographic Quadrangle, Unsectioned lands in T 9 N, R 3 E and T 9 N, R 4 E). Should the location of any Project activities change to include areas outside this initial delineation of the APE, the Corps will notify all parties and continue consultation accordingly.

Inventory efforts are expected to include pedestrian surface survey as well as subsurface investigations through trenching due to the potential for buried sites within the alluvial sediments of the Sacramento River floodplain. Proposed trenches will be located throughout the APE to best identify the presence or absence of subsurface archaeological deposits. A plan for carrying out this geoarchaeological work will be forthcoming and transmitted to you for review and comment.

A copy of this letter furnished with enclosures will be sent to Mr. James Sarmento, Tribal Historic Preservation Officer, Yocha Dehe Wintun Nation, P.O. Box 18, Brooks, CA 95606.

At this time, we request that you please notify us if you are aware of any cultural resources or properties in the area that we should take into consideration during this permit action. We would like to work with you to identify any concerns you have about the project. If you know the locations of archaeological sites or traditional cultural properties in or near the APE, we request that you share that information with us within 30 days. In addition, we are seeking your comments on the Project APE designation. Comments and questions may be sent to Attn: Ms. Geneva Kraus, U.S. Army Corps of Engineers, CESP/PCD-RC, 1325 J Street, Sacramento, CA 95814. Ms. Kraus can also be reached at (916) 557-7447 or by email at Geneva.Kraus@usace.army.mil.

Sincerely,



Mark T. Ziminske
Chief, Environmental Resources Branch

Enclosure

DEPARTMENT OF WATER RESOURCESDIVISION OF FLOOD MANAGEMENT
P.O. BOX 219000
SACRAMENTO, CA 95821-9000

September 23, 2016

Honorable Gene Whitehouse, Chairman
United Auburn Indian Community of the Auburn Rancheria
10720 Indian Hill Road
Auburn, CA 95603Subject: Division of Flood Management – Lower Elkhorn Basin Levee Setback;
Geoarchaeology Investigation Plan

Dear Honorable Gene Whitehouse,

The California Department of Water Resources (DWR) is planning to improve flood facilities in the Lower Elkhorn Basin and Sacramento Bypass areas of the flood system. DWR proposes to construct a levee setback as part of this improvement effort as well as remove all or portions of the existing Yolo Bypass East Levee south of Interstate 5 and the Sacramento Bypass North Levee. Portions of the local reclamation district cross levees, which bisect the basin, would also be removed. DWR is proposing to use borrow for the planned setback levee from segments of the existing levee that would be removed, and from the agricultural lands between the existing levees and proposed future levee. The project area is within Yolo County and is shown on Attachment 1.

DWR first notified you of this project by letter dated May 20, 2016, and provided your tribe with the opportunity to provide information. On August 31, 2016, DWR sent you a second letter describing cultural resources investigations (records search and surveys to support geotechnical investigations) that had been conducted up to that date. The letter also indicated that a geoarchaeology sensitivity assessment and proposed work plan was being prepared. The purpose of this letter is to provide you with the *Geoarchaeology Sensitivity Assessment and Work Plan for the Lower Elkhorn Basin Levee Setback Project, Yolo County, California* prepared by GEI Consultants.

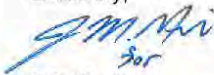
The purpose of the sensitivity assessment is to determine the likelihood of the presence of buried archaeological resources in the various parts of the project area using existing information. This assessment is a "desktop" analysis of known soil types and ages, depositional context, and known archaeological site locations and was used to formulate the proposed geoarchaeological work plan. The work plan consists of a proposed geoarchaeological testing program and identifies proposed methods and locations for testing. The proposed geoarchaeological testing includes excavation of 34 – 42 trenches in an effort to locate buried archaeological sites and buried soils that may be sensitive for the presence of archaeological sites. This testing is part of the resource identification process, and will not include data recovery or mitigation.

The sensitivity assessment and the geoarchaeological testing will be conducted by a qualified professional geoarchaeologist (an individual who meets the Secretary of the Interior's Professional Qualifications Standards for archaeology and who also has education and experience in soils and geology). The geoarchaeological program is just one element of DWR's efforts to identify important cultural resources and will be integrated into the overall effort to inventory all types of cultural resources in the proposed project area. The exact schedule for geoarchaeological investigations has not been determined, but based on consideration of agricultural constraints and potential weather conditions, investigations would likely begin in middle October 2016.

Lower Elkhorn Basin Levee Setback Letter
September 23, 2016
Page 2 of 2

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Sincerely,



Eric Koch
Acting Chief
Division of Flood Management

cc: Shelly Amrhein, DWR
Anecita Agustinez, DWR
Geneva Kraus, U.S. Army Corps of Engineers
Tribal Administrator

Enclosures: Map

Geoarchaeological Sensitivity Assessment and Work Plan for the Lower Elkhorn Basin Levee Setback Project, Yolo County, California

DEPARTMENT OF WATER RESOURCESDIVISION OF FLOOD MANAGEMENT
P.O. BOX 219000
SACRAMENTO, CA 95821-9000

September 23, 2016

Honorable Leland Kinter, Chairman
Yocha Dehe Wintun Nation
P.O. Box 18
Brooks, CA 95606-0018Subject: Division of Flood Management – Lower Elkhorn Basin Levee Setback;
Geoarchaeology Investigation Plan

Dear Honorable Leland Kinter,

The California Department of Water Resources (DWR) is planning to improve flood facilities in the Lower Elkhorn Basin and Sacramento Bypass areas of the flood system. DWR proposes to construct a levee setback as part of this improvement effort as well as remove all or portions of the existing Yolo Bypass East Levee south of Interstate 5 and the Sacramento Bypass North Levee. Portions of the local reclamation district cross levees, which bisect the basin, would also be removed. DWR is proposing to use borrow for the planned setback levee from segments of the existing levee that would be removed, and from the agricultural lands between the existing levees and proposed future levee. The project area is within Yolo County and is shown on Attachment 1.

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Lower Elkhorn Basin Levee Setback Letter
September 23, 2016
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Eric Koch
Acting Chief
Division of Flood Management

cc: Shelly Amrhein, DWR
Anecita Agustinez, DWR
Geneva Kraus, U.S. Army Corps of Engineers
Tribal Administrator

Enclosures: Map

Geoarchaeological Sensitivity Assessment and Work Plan for the Lower Elkhorn Basin Levee Setback Project, Yolo County, California

DEPARTMENT OF WATER RESOURCESDIVISION OF FLOOD MANAGEMENT
P.O. BOX 219000
SACRAMENTO, CA 95821-9000

September 23, 2016

Honorable Rhonda Morningstar Pope, Chairperson
Buena Vista Rancheria of Me-Wuk Indians
1418 20th Street, Suite 200
Sacramento, CA 95811Subject: Division of Flood Management – Lower Elkhorn Basin Levee Setback;
Geoarchaeology Investigation Plan

Dear Honorable Rhonda Morningstar Pope,

The California Department of Water Resources (DWR) is planning to improve flood facilities in the Lower Elkhorn Basin and Sacramento Bypass areas of the flood system. DWR proposes to construct a levee setback as part of this improvement effort as well as remove all or portions of the existing Yolo Bypass East Levee south of Interstate 5 and the Sacramento Bypass North Levee. Portions of the local reclamation district cross levees, which bisect the basin, would also be removed. DWR is proposing to use borrow for the planned setback levee from segments of the existing levee that would be removed, and from the agricultural lands between the existing levees and proposed future levee. The project area is within Yolo County and is shown on Attachment 1.

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Sincerely,



Eric Koch
Acting Chief
Division of Flood Management

cc: Shelly Amrhein, DWR
Anecita Agustinez, DWR
Geneva Kraus, U.S. Army Corps of Engineers
Ms. Denean Swenson, Tribal Administrator

Enclosures: Map

Geoarchaeological Sensitivity Assessment and Work Plan for the Lower Elkhorn Basin Levee Setback Project, Yolo County, California

DEPARTMENT OF WATER RESOURCESDIVISION OF FLOOD MANAGEMENT
P.O. BOX 219000
SACRAMENTO, CA 95821-9000

September 23, 2016

Honorable Dr. Crystal Martinez, Chairperson
Ione Band of Miwok Indians
P.O. Box 699
Plymouth, CA 95669Subject: Division of Flood Management – Lower Elkhorn Basin Levee Setback;
Geoarchaeology Investigation Plan

Dear Honorable Dr. Crystal Martinez,

The California Department of Water Resources (DWR) is planning to improve flood facilities in the Lower Elkhorn Basin and Sacramento Bypass areas of the flood system. DWR proposes to construct a levee setback as part of this improvement effort as well as remove all or portions of the existing Yolo Bypass East Levee south of Interstate 5 and the Sacramento Bypass North Levee. Portions of the local reclamation district cross levees, which bisect the basin, would also be removed. DWR is proposing to use borrow for the planned setback levee from segments of the existing levee that would be removed, and from the agricultural lands between the existing levees and proposed future levee. The project area is within Yolo County and is shown on Attachment 1.

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Lower Elkhorn Basin Levee Setback Letter
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Sincerely,



Eric Koch
Acting Chief
Division of Flood Management

cc: Shelly Amrhein, DWR
Anecita Agustinez, DWR
Geneva Kraus, U.S. Army Corps of Engineers
Tribal Administrator

Enclosures: Map
Geoarchaeological Sensitivity Assessment and Work Plan for the Lower Elkhorn Basin Levee Setback Project, Yolo County, California

DEPARTMENT OF WATER RESOURCESDIVISION OF FLOOD MANAGEMENT
P.O. BOX 219000
SACRAMENTO, CA 95821-9000

September 23, 2016

Honorable Nicholas Fonseca, Chairman
Shingle Springs Band of Miwok Indians
P.O. Box 1340
Shingle Springs, CA 95682-1340Subject: Division of Flood Management – Lower Elkhorn Basin Levee Setback;
Geoarchaeology Investigation Plan

Dear Honorable Nicholas Fonseca,

The California Department of Water Resources (DWR) is planning to improve flood facilities in the Lower Elkhorn Basin and Sacramento Bypass areas of the flood system. DWR proposes to construct a levee setback as part of this improvement effort as well as remove all or portions of the existing Yolo Bypass East Levee south of Interstate 5 and the Sacramento Bypass North Levee. Portions of the local reclamation district cross levees, which bisect the basin, would also be removed. DWR is proposing to use borrow for the planned setback levee from segments of the existing levee that would be removed, and from the agricultural lands between the existing levees and proposed future levee. The project area is within Yolo County and is shown on Attachment 1.

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Sincerely,



Eric Koch
Acting Chief
Division of Flood Management

cc: Shelly Amrhein, DWR
Anecita Agustinez, DWR
Geneva Kraus, U.S. Army Corps of Engineers
Ernest Vargas, Tribal Administrator

Enclosures: Map

Geoarchaeological Sensitivity Assessment and Work Plan for the Lower Elkhorn Basin Levee Setback Project, Yolo County, California

DEPARTMENT OF WATER RESOURCESDIVISION OF FLOOD MANAGEMENT
P.O. BOX 219000
SACRAMENTO, CA 95821-9000

September 23, 2016

Honorable Raymond Hitchcock, Chairman
Wilton Rancheria
9728 Kent Street
Elk Grove, CA 95624Subject: Division of Flood Management – Lower Elkhorn Basin Levee Setback;
Geoarchaeology Investigation Plan

Dear Honorable Raymond Hitchcock,

The California Department of Water Resources (DWR) is planning to improve flood facilities in the Lower Elkhorn Basin and Sacramento Bypass areas of the flood system. DWR proposes to construct a levee setback as part of this improvement effort as well as remove all or portions of the existing Yolo Bypass East Levee south of Interstate 5 and the Sacramento Bypass North Levee. Portions of the local reclamation district cross levees, which bisect the basin, would also be removed. DWR is proposing to use borrow for the planned setback levee from segments of the existing levee that would be removed, and from the agricultural lands between the existing levees and proposed future levee. The project area is within Yolo County and is shown on Attachment 1.

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Anecita Agustinez, DWR
Geneva Kraus, U.S. Army Corps of Engineers
Tribal Administrator

Enclosures: Map

Geoarchaeological Sensitivity Assessment and Work Plan for the Lower Elkhorn Basin Levee Setback Project, Yolo County, California

DEPARTMENT OF WATER RESOURCESDIVISION OF FLOOD MANAGEMENT
P.O. BOX 219000
SACRAMENTO, CA 95821-9000

September 23, 2016

Honorable Don Ryberg, Chairman
Tsi-Akim Maidu
P.O. Box 510
Browns Valley, CA 95918-0510Subject: Division of Flood Management – Lower Elkhorn Basin Levee Setback;
Geoarchaeology Investigation Plan

Dear Honorable Don Ryberg,

The California Department of Water Resources (DWR) is planning to improve flood facilities in the Lower Elkhorn Basin and Sacramento Bypass areas of the flood system. DWR proposes to construct a levee setback as part of this improvement effort as well as remove all or portions of the existing Yolo Bypass East Levee south of Interstate 5 and the Sacramento Bypass North Levee. Portions of the local reclamation district cross levees, which bisect the basin, would also be removed. DWR is proposing to use borrow for the planned setback levee from segments of the existing levee that would be removed, and from the agricultural lands between the existing levees and proposed future levee. The project area is within Yolo County and is shown on Attachment 1.

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Eric Koch
Acting Chief
Division of Flood Management

cc: Shelly Amrhein, DWR
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Geneva Kraus, U.S. Army Corps of Engineers
Tribal Administrator

Enclosures: Map

Geoarchaeological Sensitivity Assessment and Work Plan for the Lower Elkhorn Basin Levee Setback Project, Yolo County, California

DEPARTMENT OF WATER RESOURCESDIVISION OF FLOOD MANAGEMENT
P.O. BOX 219000
SACRAMENTO, CA 95821-9000

September 23, 2016

Honorable Cosme Valdez, Chairman
Nashville Eldorado Miwok
P.O. Box 580986
Elk Grove, CA 95758Subject: Division of Flood Management – Lower Elkhorn Basin Levee Setback;
Geoarchaeology Investigation Plan

Dear Honorable Cosme Valdez,

The California Department of Water Resources (DWR) is planning to improve flood facilities in the Lower Elkhorn Basin and Sacramento Bypass areas of the flood system. DWR proposes to construct a levee setback as part of this improvement effort as well as remove all or portions of the existing Yolo Bypass East Levee south of Interstate 5 and the Sacramento Bypass North Levee. Portions of the local reclamation district cross levees, which bisect the basin, would also be removed. DWR is proposing to use borrow for the planned setback levee from segments of the existing levee that would be removed, and from the agricultural lands between the existing levees and proposed future levee. The project area is within Yolo County and is shown on Attachment 1.

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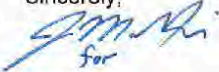
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Lower Elkhorn Basin Levee Setback Letter
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Eric Koch
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Anecita Agustinez, DWR
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Tribal Administrator

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Geoarchaeological Sensitivity Assessment and Work Plan for the Lower Elkhorn Basin Levee Setback Project, Yolo County, California

DEPARTMENT OF WATER RESOURCESDIVISION OF FLOOD MANAGEMENT
P.O. BOX 219000
SACRAMENTO, CA 95821-9000

September 23, 2016

Honorable Charlie Wright, Chairman
Cortina Band of Indians
P.O. Box 1630
Williams, CA 95987Subject: Division of Flood Management – Lower Elkhorn Basin Levee Setback:
Geoarchaeology Investigation Plan

Dear Honorable Charlie Wright,

The California Department of Water Resources (DWR) is planning to improve flood facilities in the Lower Elkhorn Basin and Sacramento Bypass areas of the flood system. DWR proposes to construct a levee setback as part of this improvement effort as well as remove all or portions of the existing Yolo Bypass East Levee south of Interstate 5 and the Sacramento Bypass North Levee. Portions of the local reclamation district cross levees, which bisect the basin, would also be removed. DWR is proposing to use borrow for the planned setback levee from segments of the existing levee that would be removed, and from the agricultural lands between the existing levees and proposed future levee. The project area is within Yolo County and is shown on Attachment 1.

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DWR is sending this letter to solicit your comments, questions or interest in the proposed geoarchaeological trenching at the project site. We respectfully request that you provide your comments, questions or other interest in the proposed investigation within 14 days of the date of this letter. Correspondence may be sent to Shelly Amrhein at Rochelle.Amrhein@water.ca.gov or you may call Ms. Amrhein directly at 916-574-1415. Please also feel free to contact Anecita Agustinez at 916-653-8726 or by email at Anecita.Agustinez@water.ca.gov. DWR is committed to working together with your tribe consistent with its Tribal Engagement Policy, the California Natural Resources Agency's Tribal Engagement Policy, Governor Brown's Executive Order B-10-11 and California Environmental Quality Act requirements.

Sincerely,

A handwritten signature in blue ink, appearing to read "Eric Koch", with the word "for" written below it.

Eric Koch
Acting Chief
Division of Flood Management

cc: Shelly Amrhein, DWR
Anecita Agustinez, DWR
Geneva Kraus, U.S. Army Corps of Engineers
Tribal Administrator

Enclosures: Map

Geoarchaeological Sensitivity Assessment and Work Plan for the Lower Elkhorn Basin Levee Setback Project, Yolo County, California

DEPARTMENT OF WATER RESOURCES

DIVISION OF FLOOD MANAGEMENT
P.O. BOX 219000
SACRAMENTO, CA 95821-9000



September 23, 2016

Mr. Matthew Moore, Tribal Historic Preservation Officer
United Auburn Indian Community of the Auburn Rancheria
10720 Indian Hill Road
Auburn, CA 95603

Subject: Division of Flood Management – Lower Elkhorn Basin Levee Setback;
Geoarchaeology Investigation Plan

Dear Mr. Matthew Moore,

The California Department of Water Resources (DWR) is planning to improve flood facilities in the Lower Elkhorn Basin and Sacramento Bypass areas of the flood system. DWR proposes to construct a levee setback as part of this improvement effort as well as remove all or portions of the existing Yolo Bypass East Levee south of Interstate 5 and the Sacramento Bypass North Levee. Portions of the local reclamation district cross levees, which bisect the basin, would also be removed. DWR is proposing to use borrow for the planned setback levee from segments of the existing levee that would be removed, and from the agricultural lands between the existing levees and proposed future levee. The project area is within Yolo County and is shown on Attachment 1.

DWR first notified you of this project by letter dated May 20, 2016, and provided your tribe with the opportunity to provide information. On August 31, 2016, DWR sent you a second letter describing cultural resources investigations (records search and surveys to support geotechnical investigations) that had been conducted up to that date. The letter also indicated that a geoarchaeology sensitivity assessment and proposed work plan was being prepared. The purpose of this letter is to provide you with the *Geoarchaeology Sensitivity Assessment and Work Plan for the Lower Elkhorn Basin Levee Setback Project, Yolo County, California* prepared by GEI Consultants.

The purpose of the sensitivity assessment is to determine the likelihood of the presence of buried archaeological resources in the various parts of the project area using existing information. This assessment is a "desktop" analysis of known soil types and ages, depositional context, and known archaeological site locations and was used to formulate the proposed geoarchaeological work plan. The work plan consists of a proposed geoarchaeological testing program and identifies proposed methods and locations for testing. The proposed geoarchaeological testing includes excavation of 34 – 42 trenches in an effort to locate buried archaeological sites and buried soils that may be sensitive for the presence of archaeological sites. This testing is part of the resource identification process, and will not include data recovery or mitigation.

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Lower Elkhorn Basin Levee Setback Letter
September 23, 2016
Page 2 of 2

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Sincerely,



for

Eric Koch
Acting Chief
Division of Flood Management

cc: Shelly Amrhein, DWR
Anecita Agustinez, DWR
Geneva Kraus, U.S. Army Corps of Engineers

Enclosures: Map
Geoarchaeological Sensitivity Assessment and Work Plan for the Lower Elkhorn Basin Levee Setback Project, Yolo County, California

DEPARTMENT OF WATER RESOURCESDIVISION OF FLOOD MANAGEMENT
P.O. BOX 279000
SACRAMENTO, CA 95821-9000

September 23, 2016

Mr. Marcos Guerrero, Cultural Resources Manager
United Auburn Indian Community of the Auburn Rancheria
10721 Indian Hill Road
Auburn, CA 95604Subject: Division of Flood Management – Lower Elkhorn Basin Levee Setback;
Geoarchaeology Investigation Plan

Dear Mr. Marcos Guerrero,

The California Department of Water Resources (DWR) is planning to improve flood facilities in the Lower Elkhorn Basin and Sacramento Bypass areas of the flood system. DWR proposes to construct a levee setback as part of this improvement effort as well as remove all or portions of the existing Yolo Bypass East Levee south of Interstate 5 and the Sacramento Bypass North Levee. Portions of the local reclamation district cross levees, which bisect the basin, would also be removed. DWR is proposing to use borrow for the planned setback levee from segments of the existing levee that would be removed, and from the agricultural lands between the existing levees and proposed future levee. The project area is within Yolo County and is shown on Attachment 1.

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Sincerely,



Eric Koch
Acting Chief
Division of Flood Management

cc: Shelly Amrhein, DWR
Anecita Agustinez, DWR
Geneva Kraus, U.S. Army Corps of Engineers

Enclosures: Map
Geoarchaeological Sensitivity Assessment and Work Plan for the Lower Elkhorn Basin Levee Setback Project, Yolo County, California

DEPARTMENT OF WATER RESOURCES

DIVISION OF FLOOD MANAGEMENT
P.O. BOX 219000
SACRAMENTO, CA 95821-9000



September 23, 2016

Mr. Steven Hutchason, Executive Director
Environmental Resources Department
Wilton Rancheria
9728 Kent Street
Elk Grove, CA 95624

Subject: Division of Flood Management – Lower Elkhorn Basin Levee Setback;
Geoarchaeology Investigation Plan

Dear Mr. Steven Hutchason,

The California Department of Water Resources (DWR) is planning to improve flood facilities in the Lower Elkhorn Basin and Sacramento Bypass areas of the flood system. DWR proposes to construct a levee setback as part of this improvement effort as well as remove all or portions of the existing Yolo Bypass East Levee south of Interstate 5 and the Sacramento Bypass North Levee. Portions of the local reclamation district cross levees, which bisect the basin, would also be removed. DWR is proposing to use borrow for the planned setback levee from segments of the existing levee that would be removed, and from the agricultural lands between the existing levees and proposed future levee. The project area is within Yolo County and is shown on Attachment 1.

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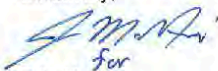
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Lower Elkhorn Basin Levee Setback Letter
September 23, 2016
Page 2 of 2

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Sincerely,



for
Eric Koch
Acting Chief
Division of Flood Management

cc: Shelly Amrhein, DWR
Anecita Agustinez, DWR
Geneva Kraus, U.S. Army Corps of Engineers

Enclosures: Map

Geoarchaeological Sensitivity Assessment and Work Plan for the Lower Elkhorn Basin Levee Setback Project, Yolo County, California

Attachment B: Scoping Meeting Materials

Attachment B contains the following materials:

- Sign-in Sheets
- Comment Card
- Welcome Packet
- Scoping Posters

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Thursday, September 15, 2016, 4 p.m.
 West Sacramento Civic Center
 1110 West Capitol Avenue
 West Sacramento, CA 95691



US Army Corps
 of Engineers.

SIGN-IN SHEET

Name	Address	Organization	Email address
ERIC NAGY	2450 VENTURE OAKS WAY SUITE 240 SACRAMENTO	LWA	ERIC@LARSENWURZEL.COM
SERGIO JIMENEZ		MOR	Sergio.Jimenez@wdrmc.com
CHARLINE HAMILTON	1110 WEST CAPITOL AVE WEST SACRAMENTO	CITY OF WEST SAC	charlineh@cityofwestsacramento.org
Geneva Krows	1325 J Street Sacramento CA 95814	USACE	Geneva.Krows@usace.army.mil
Monica Nolte	3500 Industrial Blvd West Sac-	DWR	monica.nolte@water.ca.gov
Jackie Wait	3500 Industrial Blvd West Sa 95691	DWR	jwait@water.ca.gov
Kevin Lee	_____	USACE	_____

Thursday, September 15, 2016, 4 p.m.
 West Sacramento Civic Center
 1110 West Capitol Avenue
 West Sacramento, CA 95691



US Army Corps
 of Engineers

SIGN-IN SHEET

Name	Address	Organization	Email address
Jonathan Bray	1925 J St	USACE	Jonathan.P.Bray@usace.army.mil
Kelly Briggs	3310 El Camino Ave, Sacto	DWR	Kbriggs@water.ca.gov
Sara Schultz	1325 J St. SAC. 95814	USACE	Sara.M.Schultz@ USACE.army.mil
Drew Sutton	2868 Prospect Pl Dr #400 Rancho Cordova CA 95670	GEI	dsutton@geiconsultants.com
Erica Bishop	2868 Prospect Park Dr #400 Rancho Cordova, CA 95816	GEI	ebishop@geiconsultants.com
Shelly Amrhein	3464 56 CAMINOAVE #150 SACRAMENTO, CA 95821	DWR	Rochelle.Amrhein@water. CA.GOV
DAVID PESAVENTO	"	"	DAVID.PESAVENTO@WATER. CA.GOV

Thursday, September 15, 2016, 4 p.m.
 West Sacramento Civic Center
 1110 West Capitol Avenue
 West Sacramento, CA 95691



US Army Corps
 of Engineers.

SIGN-IN SHEET

Name	Address	Organization	Email address
Doug Brown	1517 28th St. Sac	Douglas Environmental	browndoug@att.net
Leo Winternitz	_____	GEI	lwinternitz@geiconsultants.com
Todd Bernandy	_____	DWR	todd.bernandy@water.ca.gov
Zach	_____	USACE	
David Pasavento	_____	DWR	david.pasavento@water.ca.gov
Corey Lasso	_____	DWR	corey.lasso@water.ca.gov
Tanis Toland	_____	USACE	

Thursday, September 15, 2016, 4 p.m.
West Sacramento Civic Center
1110 West Capitol Avenue
West Sacramento, CA 95691



US Army Corps
of Engineers

SIGN-IN SHEET

Name	Address	Organization	Email address
Kris Tjernell	_____	DWR	_____
Ruth Darling		CVFPB	ruth.darling@water.ca.gov

Name: _____
Address: _____
City: _____ State: _____ Zip: _____
Email: _____

Place
Stamp
Here

**Re: Lower Elkhorn Basin Levee Setback Project
Environmental Impact Statement/Report**

California Department of Water Resources and
U.S. Army Corps of Engineers
C/O: Drew Sutton
GEI Consultants, Inc.
2868 Prospect Park Drive, Suite 400
Rancho Cordova, CA 95670

Fold here



**US Army Corps
of Engineers®**

Written comments on the scope of the EIS/EIR must be received **no later than 5 p.m.** on **October 7, 2016**. Comments may be submitted at this meeting, sent via email to **L-ELKHORN@water.ca.gov**, or sent via U.S. Mail (address included on front of comment card).

Name: _____

Organization: _____

Mailing Address: _____

E-mail: _____

Comment: _____



LOWER ELKHORN BASIN LEVEE SETBACK PROJECT

SCOPING MEETING

September 15, 2016

4:00 p.m. to 7:00 p.m.

West Sacramento Civic Center
1110 West Capitol Avenue
West Sacramento, Ca 95691

PROPOSED LOWER ELKHORN BASIN LEVEE SETBACK PROJECT

The California Department of Water Resources (DWR) is proposing to implement flood system improvements to the Sacramento Bypass and the Yolo Bypass in the Lower Elkhorn Basin to increase capacity and reduce flood risk.

The proposed Lower Elkhorn Basin Levee Setback Project (proposed project) would include levee setbacks to widen portions of the Yolo and Sacramento Bypasses to increase conveyance capacity and reduce flood risk. The proposed project would be part of a series of flood-risk reduction improvements contemplated under DWR's Central Valley Flood Protection Plan and its related Sacramento Basin-Wide Feasibility Study. It would include the following elements: (1) widening the Yolo Bypass by constructing a setback levee east of the Tule Canal in the Lower Elkhorn Basin (between I-5 and the Sacramento Bypass); (2) widening the Sacramento Bypass by constructing a setback levee north of the existing levee; (3) potentially degrading of all or portions of existing levees; and (4) implementing ecosystem improvements in the Lower Elkhorn Basin to mitigate project impacts.

PROJECT LOCATION

The project site is located in Yolo County and is bounded by the Sacramento River on the east, the Tule Canal and Yolo Bypass on the west, the Sacramento Bypass on the south, and Interstate 5 on the north (see Figure 1).

THE ENVIRONMENTAL PROCESS

DWR, is the project proponent and the Lead Agency under CEQA. The U.S. Army Corps of Engineers (USACE), Sacramento District is the lead Federal agency under NEPA. Because the proposed project would alter Federal levees, permission from USACE is required under Section 14 of the Rivers and Harbors Act (Section 408). The proposed project action would also affect waters of the United States and require a permit from USACE under Section 404 of the Clean Water Act.

To comply with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), a joint environmental impact statement (EIS)/environmental impact report (EIR) is being developed. This document will explain the proposed alternatives, environmental effects of implementing the alternatives, and mitigation measures for any adverse effects. Potential impacts on resources (see "Environmental Resources to Be Analyzed") will be evaluated in the EIS/EIR. The EIS/EIR will analyze the potential environmental effects of construction, operation, and maintenance associated with up to four action alternatives (see Figure 2). The proposed alternatives are subject to change; these alignments will be refined and adjusted based on the information gathered during the scoping and environmental review processes, as well as through engineering design.

ENVIRONMENTAL RESOURCES TO BE ANALYZED

The environmental analysis will focus on examining the potential environmental impacts associated with the alternatives, including the no action alternative, and identifying feasible measures and alternatives that could be implemented to avoid, minimize, rectify, reduce, or compensate such impacts. Environmental resources to be evaluated include aesthetics, agriculture, air quality and greenhouse gas emissions, biological resources, cultural resources, flood risk, hazards and hazardous materials, hydrology, mineral resources, land use/planning, noise, population and housing, public services, recreation, soils, special status species, traffic, utilities/service systems, vegetation, water quality, and wildlife. The EIS/EIR will also evaluate environmental justice; socioeconomic; and growth-inducing impacts, as well as cumulative effects of the proposed flood risk management system improvements when considered in conjunction with other related past, present, and reasonably foreseeable future projects. On the basis of preliminary evaluations, the proposed flood risk management improvements could have direct, indirect, and/or cumulative environmental effects (see attachment).



Figure 1. Project Location

ALTERNATIVES

Four action alternatives are being proposed. Each focuses on flood risk reduction. These alternatives and the no action alternative, will be evaluated in the EIS/EIR in accordance with NEPA and CEQA. Because the document will be prepared jointly with USACE, the environmental impacts of a reasonable range of the alternatives, including the proposed project, will be evaluated at an equivalent level-of-detail, as required by NEPA.

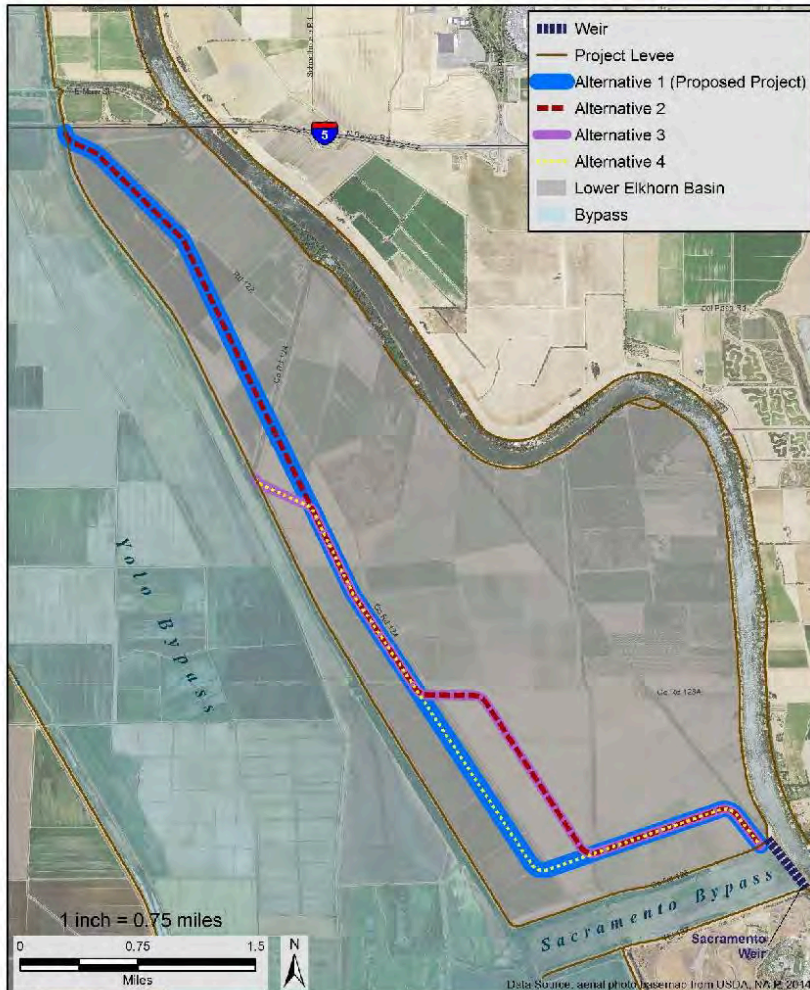


Figure 2. Lower Elkhorn Basin Levee Setback Action Alternatives

FOR MORE INFORMATION

For more information about the proposed project, public input opportunities, and the environmental process, visit <http://water.ca.gov/floodmgmt/reduce/l-elkhorn.cfm>. If you submit comments on the document, you will automatically be added to the distribution list for future notices and information about the environmental review process for the proposed project. If you do not wish to submit comments on the scope and content of the EIS/EIR, but would like to be added to the mailing list, you can submit your contact information, including email address, with a request to be added to the mailing list at the contact above.

CEQA questions may be directed to:

Ms. Shelly Amrhein
California Department of Water Resources
Division of Flood Management
3464 El Camino Avenue, Suite 150
Sacramento, CA 95821
Rochelle.Amrhein@water.ca.gov

NEPA questions may be directed to:

Ms. Tanis Toland
Sacramento District
U.S. Army Corps of Engineers
Environmental Resources Branch
1325 J Street
Sacramento, CA 95814-2922
Tanis.J.Toland@usace.army.mil

WE WANT YOUR INPUT

If you would like to comment on the content of the EIS/EIR being developed for the Lower Elkhorn Basin Levee Setback Project, four options are available:

- During the Scoping Meeting you may:
 - Provide spoken comments to the Court Reporter.
 - Provide written comments on the comment cards provided.
- Following the Scoping Meeting you may:
 - Submit written comments by surface mail.
 - Submit written comments by email.

All comments must be received by 5 p.m. on October 7, 2016.

All comments received, including names and agency addresses, will become part of the official administrative record and may be made available to the public. Any information that must be kept confidential by law will be redacted from the record. DWR will post NOI/NOP comment letters in their entirety on the DWR web page for the project at <http://water.ca.gov/floodmgmt/reduce/l-elkhorn.cfm>.

ATTACHMENT

Lower Elkhorn Basin Levee Setback Project Initial Identification of Effects of Implementing the Proposed Project

- **Aesthetics.** Temporary, short-term changes in scenic views or visual character and changes to viewshed from State- and County-designated scenic highways.
- **Agriculture and Forest Resources.** Short- and long-term conversion of farmland for Bypass improvements, use of borrow material, or habitat improvements for proposed project mitigation.
- **Air Quality and Greenhouse Gas Emissions.** Temporary and short-term increases in pollutant emissions and greenhouse gas emissions associated with construction activities.
- **Biological Resources – Aquatic.** Short- and long-term effects on special-status fish species or their habitats.
- **Biological Resources – Terrestrial.** Short- and long-term effects to habitats and special-status terrestrial species, including wetlands.
- **Cultural Resources.** Potential disturbance or destruction of known or unknown historic or archaeological resources during construction, including Tribal cultural resources.
- **Geology, Soils, and Paleontological Resources.** Temporary and short-term increases in erosion during construction; potential disturbance or destruction of known or unknown paleontological resources during construction.
- **Hazards and Hazardous Materials.** Potential introduction of contaminants into water courses and exposure of construction workers to hazardous materials as a result of construction activities, including potential hazards related to remediation of a Cortese-listed site (the former Bryte Landfill).
- **Hydrology and Water Quality.** Potential short- and long-term transport of sediments and other pollutants into water courses, downstream hydraulic effects on the Yolo Bypass and Sacramento River, flood risks, and effects on groundwater movements and availability for irrigation.
- **Land Use and Planning.** Potential conflicts with land use plans and zoning designations.
- **Mineral Resources.** Potential long-term loss of access to regionally or locally important deposits of mineral resources.
- **Noise.** Temporary and short-term increases in noise levels near sensitive receptors during construction.
- **Population and housing.** Short- and long-term impacts to population and housing.
- **Public services** Short- and long-term impacts to public services.
- **Recreation.** Temporary and short-term disturbance of land- and water-based recreational activities in areas adjacent to construction sites; long-term impacts to downstream recreation from increasing the size of the Sacramento and Yolo Bypasses.
- **Transportation and Circulation.** Temporary and short-term disruption of traffic circulation or emergency access during construction, and traffic effects of haul routes, including haul routes on the Sacramento River via barge.
- **Public Services and Utilities and Service Systems.** Potential disruption of service during construction and need for the permanent relocation of utilities within the proposed project construction footprint.

Welcome

to the

Lower Elkhorn Basin Levee Setback Project

Public Scoping Meeting

September 15, 2016



**US Army Corps
of Engineers®**



ENVIRONMENTAL RESOURCES TO BE ANALYZED

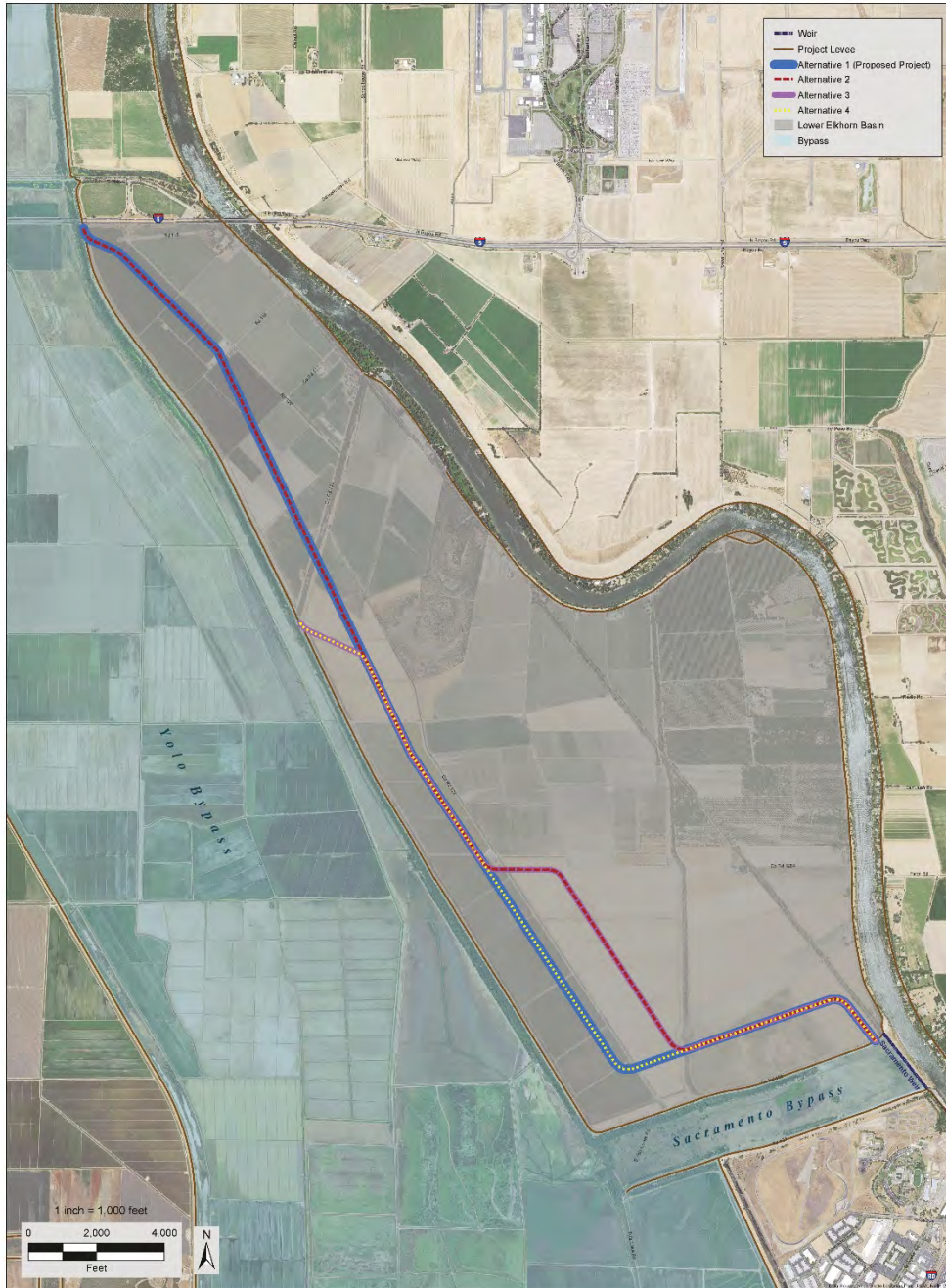
Implementation of the proposed Lower Elkhorn Basin Levee Setback Project would likely affect both the natural and built environment. The effects will be evaluated and disclosed in the EIS/EIR. Resources analyzed in the EIS/EIR will include, but are not limited to:

Resources Analyzed in the EIS/EIR
Aesthetics
Agriculture and forest resources
Air quality and greenhouse gas emissions
Biological resources
Cultural resources
Geology & soils
Hazards and hazardous materials
Hydrology/water quality
Land use/planning
Mineral resources
Noise
Population and housing
Public services
Recreation
Socioeconomics & environmental justice
Transportation/traffic
Utilities/service systems

Draft Subject to Change September 15, 2016



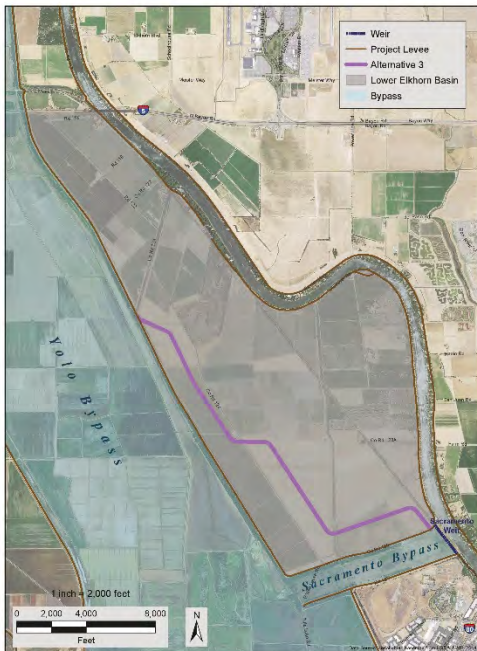
PROPOSED ALTERNATIVES



Draft Subject to Change September 15, 2016



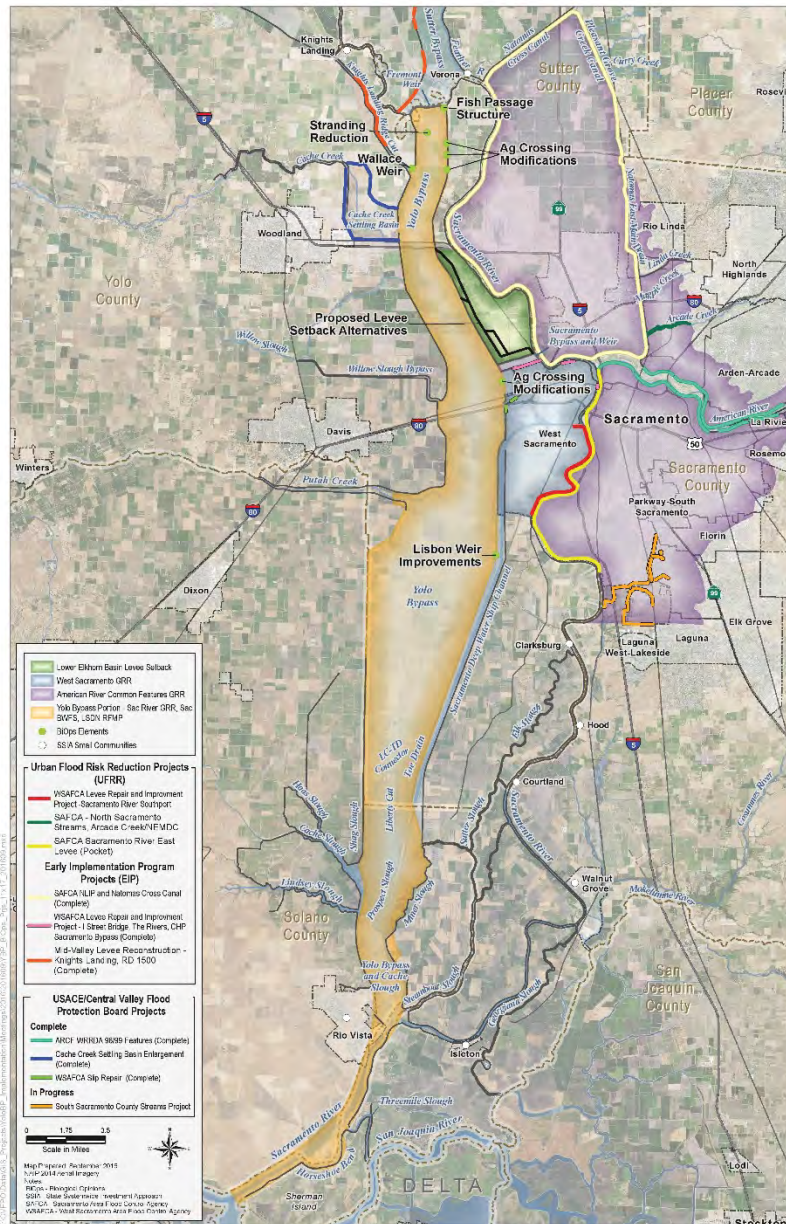
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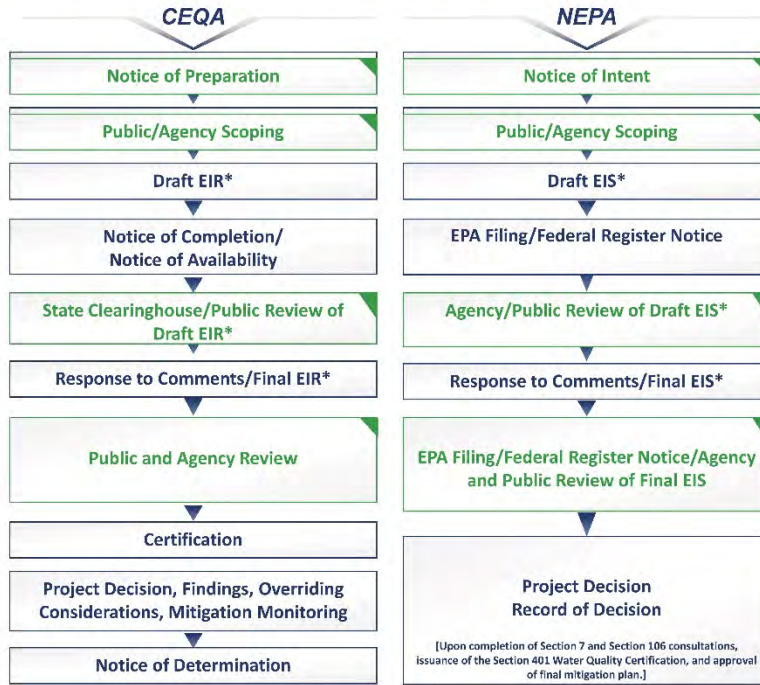
ADJACENT PROJECTS AND FEDERAL STUDIES



Draft Subject to Change September 15, 2016



CEQA AND NEPA PROCESSES



Indicates opportunity for Public Review

**For the Lower Elkhorn project this will be a joint EIS/EIR.*

Draft Subject to Change September 15, 2016

Attachment C: Comments Received during Scoping

Attachment C contains letters received during scoping from the following agencies and organizations:

- U.S. Environmental Protection Agency
- California Department of Fish and Wildlife
- Central Valley Regional Water Quality Control Board
- Delta Stewardship Council
- Native American Heritage Commission
- Lower Sacramento/Delta North Region
- County of Yolo
- California Farm Bureau Federation
- Pacific Gas and Electric Company
- Yolo Basin Foundation

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

October 6, 2016

Mr. Tyler Stalker
U.S. Army Corps of Engineers, Sacramento District
Attn: Public Affairs Office
1325 J Street
Sacramento, California 95814-2922

Subject: Notice of Intent to Prepare a Draft Environmental Impact Statement for the Proposed Lower Elkhorn Basin Levee Setback Project, Yolo County, CA

Dear Mr. Stalker:

The U.S. Environmental Protection Agency has reviewed the U.S. Army Corps of Engineers' Notice of Intent to prepare a draft environmental impact statement (DEIS) for the Proposed Lower Elkhorn Basin Levee Setback Project. Our review and comments are pursuant to the National Environmental Policy Act, Council on Environmental Quality regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act.

The DEIS will evaluate the California Department of Water Resources' (DWR) proposal to widen portions of the Yolo and Sacramento Bypasses to increase flood conveyance capacity and reduce flood risk. As stated in the Notice of Intent, the project is proposed as part of DWR's Central Valley Flood Protection Plan and would consist of altering federal levees by constructing two setback levees and mitigating project impacts with improvements to the Lower Elkhorn Basin and Sacramento Bypass. The project will also require a Clean Water Act Section 404 permit from the Corps. To assist in the scoping process for the project, EPA has identified several issues for consideration in the development of the DEIS. Please see the attached detailed comments.

We appreciate the opportunity to review this scoping notice and are available to discuss our comments. When the DEIS prepared for this proposed action is released for public review, please send one hard copy and one CD to the address above (mail code: ENF-4-2). If you have questions, please contact me at (415) 947-4167 or prijatel.jean@epa.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Jean Prijatel".

Jean Prijatel
Environmental Review Section

Enclosure: EPA's Detailed Comments

U.S. EPA DETAILED COMMENTS ON THE NOTICE OF INTENT TO PREPARE A DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED LOWER ELKHORN BASIN LEVEE SETBACK PROJECT, YOLO COUNTY, CA – OCTOBER 6, 2016

Purpose and Need

The Draft Environmental Impact Statement (DEIS) for the proposed project should clearly identify the underlying purpose and need that is the basis for proposing the range of alternatives (40 CFR 1502.13). The *purpose* of the proposed action is typically the specific objectives of the activity, while the *need* for the proposed action may be to eliminate a broader underlying problem or take advantage of an opportunity.

Alternatives Analysis

All reasonable alternatives that fulfill the proposed action's purpose and need should be evaluated in detail, including alternatives outside the legal jurisdiction of the U.S. Army Corps of Engineers (Corps) (40 CFR Section 1502.14(c)). The DEIS should provide a clear discussion of the reasons for the elimination of alternatives which are not evaluated in detail.

A robust range of alternatives will include options for avoiding significant environmental impacts. The DEIS should clearly describe the rationale used to determine whether impacts of an alternative are significant or not. Thresholds of significance should be determined by considering the context and intensity of an action and its effects (40 CFR 1508.27).

The environmental impacts of the proposed action and alternatives should be presented in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public (40 CFR 1502.14). The potential environmental impacts of each alternative should be quantified to the greatest extent possible (e.g. acres of wetlands impacted; quantity of air emissions).

The EPA encourages the Corps to integrate Clean Water Act (CWA) Section 404 regulatory requirements into the NEPA process – for both regulatory and planning programs – to streamline environmental review by using NEPA documents for multiple permitting processes. Pursuant to the Federal Guidelines promulgated at 40 CFR 230 under Section 404(b)(1) of the CWA, the Corps is required to clearly and independently demonstrate that the preferred alternative for a proposed action is the Least Environmentally Damaging Practicable Alternative (LEDPA) that achieves the overall project purpose. An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes. The LEDPA is the alternative with the fewest direct, secondary, and cumulative impacts to aquatic resources, so long as it does not have other significant adverse environmental consequences.

Biological Resources, Habitat, and Wildlife

The DEIS should identify all petitioned and listed threatened and endangered species and critical habitat that might occur within the project area. The document should identify and quantify which species or critical habitat might be directly, indirectly, or cumulatively affected by each alternative and mitigate impacts to these species; emphasis should be placed on the protection and recovery of species due to their status or potential status under the federal or state Endangered Species Act. The proposed setback levees may allow operational changes to the Sacramento River Flood Control Project that could have beneficial impacts to aquatic species in the project area; these operational changes and their impacts should be discussed in the DEIS.

Air Quality

The DEIS should provide a detailed discussion of ambient air conditions (baseline or existing conditions), National Ambient Air Quality Standards (NAAQS), criteria pollutant nonattainment areas, and potential air quality impacts of the proposed action (including cumulative and indirect impacts). Such an evaluation is necessary to assure compliance with state and federal air quality regulations, and to disclose the potential impacts from temporary or cumulative degradation of air quality.

The EPA's General Conformity Rule, established under Section 176(c)(4) of the Clean Air Act, provides a specific process for ensuring federal actions will conform with State Implementation Plans to achieve NAAQS. The DEIS should include a discussion of the applicability of the General Conformity Rule to the project.

The DEIS should describe and estimate air emissions from potential construction, operation and maintenance activities, as well as proposed mitigation measures to minimize those emissions. The document should specify the emission sources by pollutant from mobile sources, stationary sources, and ground disturbance. This source specific information should be used to identify appropriate mitigation measures and areas in need of the greatest attention.

Include, in the DEIS, a list of all mitigation measures to be implemented as part of a construction emissions mitigation plan. In addition to measures necessary to meet all applicable local, state, and federal requirements, we recommend that the following measures be included:

Fugitive Dust Source Controls:

- Stabilize open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative where appropriate. This applies to both inactive and active sites, during workdays, weekends, holidays, and windy conditions.
- Install wind fencing and phase grading operations where appropriate, and operate water trucks for stabilization of surfaces under windy conditions.
- When hauling material and operating non-earthmoving equipment, prevent spillage and limit speeds to 15 miles per hour. Limit speed of earth-moving equipment to 10 mph.

Mobile and Stationary Source Controls:

- Minimize use, trips, and unnecessary idling of heavy equipment.
- Maintain and tune engines per manufacturer's specifications to perform at EPA certification levels, where applicable, and to perform at verified standards applicable to retrofit technologies.
- Limit unnecessary idling and ensure that construction equipment is properly maintained, tuned, and modified consistent with established specifications. The California Air Resources Board has a number of mobile source anti-idling requirements which should be employed (<http://www.arb.ca.gov/msprog/truck-idling/truck-idling.htm>).
- Prohibit any tampering with engines and require continuing adherence to manufacturer's recommendations.

Administrative controls:

- Specify the means by which impacts to sensitive receptors, such as children, the elderly, and the infirm, would be avoided. For example, locate construction equipment and staging zones away from sensitive receptors and fresh air intakes to buildings and air conditioners.

- Prepare an inventory of all equipment prior to construction.
- Develop a construction traffic and parking management plan that minimizes traffic interference and maintains traffic flow.
- Identify where implementation of mitigation measures is rejected based on economic infeasibility.

Hazardous Materials

The Old Bryte Landfill is located immediately adjacent to the land side of the northern levee of the Sacramento Bypass and the eastern levee of the Yolo Bypass Flood Channel. This landfill area would become part of the expanded Sacramento Bypass floodway if the existing northern Sacramento Bypass levee is relocated.

The Old Bryte Landfill is the subject of a Preliminary Assessment Report prepared for the EPA in February 2012. According to the Preliminary Assessment Report (p. 8), sampling results showed the presence of elevated levels of lead, zinc, dioxins, and polychlorinated biphenyls (PCB). Lead was detected in all samples at concentrations ranging from 13 milligrams per kilogram (mg/kg) to 22,000 mg/kg. The average lead concentration of 4,285 mg/kg exceeded the Total Threshold Limit Concentration (TTLC) of 1,000 mg/kg. The average Waste Extraction Test (WET) concentration for lead of 64 milligrams per liter (mg/L) exceeded the Soluble Threshold Limit Concentration (STLC) of 5.0 mg/L. Zinc was detected in one soil sample at 17,000 mg/kg, exceeding the TTLC of 5,000 mg/kg. PCBs were detected in five soil samples ranging from 0.50 to 0.98 mg/kg. Dioxins were detected in one soil sample at 0.14 mg/kg. TTLC and STLC are used for hazardous waste characterization under California State regulations. Trench logs indicate an overall waste depth from ground surface to 13 feet with an average waste depth ranging from 5.9 to 7.2 feet, and the estimated volume of the waste is approximately 127,107 cubic yards. In 2001, the California Integrated Waste Management Board concluded that the burn ash material would likely be classified as a California hazardous waste if it were to be excavated for disposal.

The DEIS should describe how the Old Bryte Landfill will be remediated and the materials disposed. The document should identify applicable cleanup standards, confirmation testing, and agencies responsible for overseeing the remediation before the setback levees would be constructed.

Climate Change

On August 1, 2016, the Council on Environmental Quality issued final guidance on considering greenhouse gas (GHG) emissions and climate change in NEPA reviews. Fundamental to this guidance are the recommendations that when addressing climate change, agencies should consider: (1) The potential effects of a proposed action on climate change as indicated by assessing GHG emissions (e.g., to include, where applicable, carbon sequestration); and, (2) The effects of climate change on a proposed action and its environmental impacts.

Changing climate conditions can exacerbate the environmental impacts of a project as well as affect the proposed project's ability to meet the flood protection objectives. For example, potential changes in precipitation and frequency of drought would alter the historic flood frequency while also altering sediment transport and water quality, among other potential impacts. The Bureau of Reclamation's SECURE Water Act Report to Congress in 2011 states that "moisture falling as rain instead of snow at lower elevations will increase wintertime runoff by 22% (December through March) and decrease

springtime runoff by 27% (April through July)” for the Sacramento and San Joaquin River basins.¹ The report also anticipates the need for reservoir releases earlier in the flood control period to provide more flood storage during earlier rain or snowmelt events (Chapter 8, page 7).

The DEIS should include an estimate of the GHG emissions associated with the proposed action, qualitatively describe relevant climate change impacts, and analyze reasonable alternatives and/or practicable mitigation measures to reduce project-related GHG emissions.

The NEPA analysis should address the appropriateness of considering changes to the design of the proposal to incorporate GHG reduction measures and resilience to foreseeable climate change. The DEIS should make clear whether commitments have been made to ensure implementation of design or other measures to reduce GHG emissions or to adapt to climate change impacts, including whether climate change may necessitate changes to the operations of the Sacramento River Flood Control Project and the Yolo Bypass.

Reuse of Dredged Material

The DEIS should identify the source and quantity of material required to construct the proposed setback levees. Reusing dredged material is a shared goal of the Corps and the EPA,² and this project may be an opportunity to access and reuse stockpiled dredged material. Early coordination with dredging projects in the area – like the Deep Water Shipping Channel – could further provide easily accessible dredged material for the project, thereby reducing environmental impacts. The DEIS should discuss and consider using already stockpiled dredged material for project construction.

CALFED Ecosystem Restoration Program

The CALFED Bay-Delta Program, signed in 2000, included a comprehensive Ecosystem Restoration Program (ERP) throughout the Bay-Delta’s watershed with the goal of improving aquatic and terrestrial habitats and natural processes.³ The ERP identified over 600 programmatic actions to achieve these goals, including:

“Restore habitat in the Delta, San Pablo Bay, Suisun Bay and Suisun Marsh, and Yolo Bypass including tidal wetlands and riparian habitat. In addition, 8,000 to 12,000 acres of wildlife-friendly agricultural lands will be established during Stage 1, in cooperation with local participants.”

The DEIS should include a discussion of whether and how the project’s flood protection objectives can support the ecosystem restoration objectives of the CALFED program in the Yolo Bypass.

Coordination with Land Use Planning Activities

The DEIS should discuss how the proposed action would support or conflict with the objectives of federal, state, tribal or local land use plans, policies and controls in the project area. The term “land use plans” includes all types of formally adopted documents for land use planning, conservation, zoning and related regulatory requirements. Proposed plans not yet developed should also be addressed if they have been formally proposed by the appropriate government body in a written form (CEQ’s Forty Questions, #23b).

¹ <http://www.usbr.gov/climate/sccure/docs/2016secure/2016SECUREReport-chapter2.pdf>, page 7

² National Dredging Team Charter:

water.epa.gov/type/oceb/oceandumping/dredgedmaterial/upload/2003_12_05_oceans_ndt_publications_2003_charter.pdf

³ CALFED Bay-Delta Program, Record of Decision, August 28, 2000

Invasive Species

Executive Order 13112, "Invasive Species" (February 3, 1999), mandates that federal agencies take actions to prevent the introduction of invasive species, provide for their control, and minimize the economic, ecological, and human health impacts that invasive species cause. Executive Order 13112 also calls for the restoration of native plants and tree species. The DEIS should describe how the project will meet the requirements of Executive Order 13112 while revegetating the project area and should include an invasive plant management plan to monitor and control noxious weeds.

Coordination with Tribal Governments

Executive Order 13175, "Consultation and Coordination with Indian Tribal Governments" (November 6, 2000), was issued in order to establish regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications, and to strengthen the United States government-to-government relationships with Indian tribes.

The DEIS should describe the process and outcome of government-to-government consultation between the Corps and each of the tribal governments within the project area, issues that were raised (if any), and how those issues were addressed in the selection of the proposed alternative.

National Historic Preservation Act and Executive Order 13007

Consultation for tribal cultural resources is required under Section 106 of the National Historic Preservation Act (NHPA). Historic properties under the NHPA are properties that are included in the National Register of Historic Places (NRHP) or that meet the criteria for the National Register. Section 106 of the NHPA requires a federal agency, upon determining that activities under its control could affect historic properties, consult with the appropriate State Historic Preservation Officer/Tribal Historic Preservation Officer (SHPO/THPO). Under NEPA, any impacts to tribal, cultural, or other treaty resources must be discussed and mitigated. Section 106 of the NHPA requires that Federal agencies consider the effects of their actions on cultural resources, following regulation in 36 CFR 800.

The DEIS should address the existence of Indian sacred sites in the project areas. It should address Executive Order 13007, distinguish it from Section 106 of the NHPA, and discuss how the Corps will avoid adversely affecting the physical integrity, accessibility, or use of sacred sites, if they exist. The DEIS should provide a summary of all coordination with tribes and with the SHPO/THPO, including identification of NRHP eligible sites, and development of a Cultural Resource Management Plan.

Environmental Justice

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" (February 11, 1994), and the "Memorandum of Understanding on Environmental Justice and Executive Order 12898," released on August 4, 2011, direct federal agencies to identify and address disproportionately high and adverse human health or environmental effects on minority and low-income populations, allowing those populations a meaningful opportunity to participate in the decision-making process. Guidance⁴ by CEQ clarifies the terms low-income and minority population (which includes American Indians) and describes the factors to consider when evaluating disproportionately high and adverse human health effects.

⁴Environmental Justice Guidance under the National Environmental Policy Act, Appendix A (Guidance for Federal Agencies on Key Terms in Executive Order 12898), CEQ, December 10, 1997.

The DEIS should include an evaluation of environmental justice populations within the geographic scope of the project. If such populations exist, the DEIS should address the potential for disproportionate adverse impacts to minority and low-income populations, and the approaches used to foster public participation by these populations. Assessment of the project's impact on minority and low-income populations should reflect coordination with those affected populations.

Dunn, Hannah

From: Sutton, Drew
Sent: Wednesday, January 04, 2017 8:45 AM
To: Dunn, Hannah
Subject: FW: LEBLS Multi-Benefit Management Actions Technical Input

Last one.

Drew Sutton, AICP
Senior Environmental Planner



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From: Ford, Gina R.@Wildlife [mailto:Gina.Ford@wildlife.ca.gov]
Sent: Monday, December 19, 2016 2:46 PM
To: Amrhein, Rochelle@DWR <Rochelle.Amrhein@water.ca.gov>; Buss, Stephanie@Wildlife <Stephanie.Buss@wildlife.ca.gov>; Purdy, Colin@Wildlife <Colin.Purdy@wildlife.ca.gov>; Bush, Joshua@Wildlife <Joshua.Bush@wildlife.ca.gov>; Barker, Kelley@Wildlife <Kelley.Barker@wildlife.ca.gov>; Serup, Bjarni@Wildlife <Bjarni.Serup@wildlife.ca.gov>; Briggs, Kelly@DWR <Kelly.Briggs@water.ca.gov>; Lasso, Corey@DWR <Corey.Lasso@water.ca.gov>; Swart, Brycen@noaa.gov <brycen.swart@noaa.gov>; JAlsrael@usbr.gov; Bernardy, Todd@DWR <Todd.Bernardy@water.ca.gov>; Roberts, Michael@DWR <Michael.Roberts@water.ca.gov>; Hermansen, Lynn <lhermansen@geiconsultants.com>; Howard, Vance <vhoward@geiconsultants.com>; Dunn, Francine <fdunn@geiconsultants.com>; Sutton, Drew <dsutton@geiconsultants.com>; Bahia, Maninder@DWR <Maninder.Bahia@water.ca.gov>; Newcomb, James@DWR <James.Newcomb@water.ca.gov>
Cc: Kerckhoff, Laurence@DWR <Laurence.Kerckhoff@water.ca.gov>
Subject: RE: LEBLS Multi-Benefit Management Actions Technical Input

Good Afternoon,

First off, thanks for meeting with us on the 14th to discuss the LEBLS project, and we want to encourage regular communication on this project. I wanted to take the opportunity, while it was still fairly fresh in my mind, to capture a few of the key comments from my CDFW colleagues or from myself regarding the project.

- For us to properly understand the impacts and what kind of mitigation needs there will be from this project it will be very important for DWR to include in the project description and EIR adequate information about the way the "new floodplain" created by this project will be managed and maintained. Including the following information:
- The flood flow timing and duration, as well as the depths of water that can be anticipated.
- The types of agricultural uses expected within the footprint.
- The hydrology of the area now, as well as information from models about the anticipated hydrology after the project is complete.

- There is a large amount of fishing that takes place off of CR 126. Moving the levee would make access more difficult and should be mitigated somehow.
- SBWA is open to hunting Sept 1 through Jan 31. There is no spring turkey season or big game hunting allowed. Restrictions for construction would be limited to Sept 1 - Jan. 31 where no weekend work and work for a week after major hunting openers will be allowed.
- It will be important to take into consideration in the design where access roads for locals or recreational users will be, and include parking facilities to prevent people from parking in areas they should not.
- Specifically, CDFW would need a parking lot created as part of either this project or American River Commons (ARC) project. The lot would need to be large enough for 25 cars and have signage stating CDFW rules and hopefully something interpretive. Most user access is from CR 126 which is not well suited for parking. This project would disrupt existing access and needs to be mitigated.
- We encourage the plantings of woody vegetation, where environmentally appropriate and feasible.
- It would be helpful to know how DWR anticipates mitigating their impacts, and by what mechanism? Banks? RCIS (via AB 2087)? Purchasing lands? On-site?
- We encourage DWR to coordinate heavily with all the other planning efforts and projects that are occurring within the Yolo Bypass area. Such as the W. Sac GRR, Sac GRR, Yolo BiOp RPA's, EcoRestore, Fremont Weir, Common Features, etc...
- We will expect to see any impacts (positive or negative) related to interaction with these other projects to be discussed in the EIR's cumulative impacts analysis.
- We encourage DWR incorporating into the project design as many features as possible that would mimic a natural riverine and watershed in function. Such as creating sinuosity within the Tule Canal, or grading the floodplain to mimic natural watershed flows into the appropriate channels and ditches.
- Consider adding features into the Conservation or Flood Easements on private property to include management actions from the farmers such as planting and maintaining hedgerows, following their fields (timing and duration may be variable on this depending on crop type, etc...), no use of chemicals, etc...
- Highly encourage making it a requirement in a CE that all agriculture in the footprint of this project is required to have wildlife friendly practices (not just encouraged).
- If private property (agriculture) is placed in the new Sac Bypass footprint it will absolutely need a CE placed on it. There a large list of conflicts that will happen no matter what and several conflicts that would take place depending on the type of crop planted. For example: No fences and/or no signage maintained by the owners. Habitat buffers and game retrieval allowed. Rice being planted and leased out for hunting would be a nightmare scenario due to public private conflict. It might be a good idea to consider having a public access buffer/trail through the public lands.
- We highly recommend regular coordination with our department, and request that you share as much of the environmental documentation as you can so that we can comment on it during the development process.
- There are species-specific concerns for CESA/ESA species that should be discussed at another meeting, and we would encourage DWR to setup a meeting soon to discuss impacts to species with all resources agencies present to allow for a productive conversation about how best to deal with species needs.

Please let me know if you have any questions or concerns (regarding these comments, or otherwise).

Thanks,
Gina

Gina Ford

Dunn, Hannah

From: Sutton, Drew
Sent: Wednesday, January 04, 2017 8:44 AM
To: Dunn, Hannah
Subject: FW: Future coordination on the Lower Elkhorn Basin Levee Setback (LEBLS) Project

Drew Sutton, AICP
Senior Environmental Planner



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From: Briggs, Kelly@DWR [mailto:Kelly.Briggs@water.ca.gov]
Sent: Wednesday, November 30, 2016 4:47 PM
To: Dunn, Francine <fdunn@geiconsultants.com>; Sutton, Drew <dsutton@geiconsultants.com>
Cc: Arrich, Jeremy@DWR <Jeremy.Arrich@water.ca.gov>; Bernardy, Todd@DWR <Todd.Bernardy@water.ca.gov>; Amrhein, Rochelle@DWR <Rochelle.Amrhein@water.ca.gov>; Kerckhoff, Laurence@DWR <Laurence.Kerckhoff@water.ca.gov>
Subject: FW: Future coordination on the Lower Elkhorn Basin Levee Setback (LEBLS) Project

I am on point with some other items right now – I will be drafting a response tomorrow morning. One item I spoke with Shelly about a couple of weeks ago was distribution of the admin draft and participating agencies. It sounded like Tanis was taking a conservation approach re: admin draft distribution when we discussed sharing the cultural section with the tribes – she said no. And I believe the current stance expressed by Tanis is that the admin drafts (1, 2, 3) will be shared just with those that have officially signed on as participating agencies with the Corps. Is that correct? Hearing that, I had said we need to look at setting up whatever we need to so DFW can be engaged during the admin draft stage.

Currently, my understanding is that FWS and NMFS have signed on as participating agencies. Any others? What is the process and is it limited to federal agencies? If so, is there another mechanism for DFW to sign on so it can also receive the admin drafts. DFW should be in the mix early with the other fish and wildlife agencies. Thank you.

Kelly

From: Barker, Kelley@Wildlife [mailto:Kelley.Barker@wildlife.ca.gov]
Sent: Wednesday, November 30, 2016 4:02 PM
To: Briggs, Kelly@DWR; Amrhein, Rochelle@DWR
Cc: Deal, Scott@DWR; Cepello, Stacy@DWR; Drongesen, Jeff@Wildlife; Ford, Gina R.@Wildlife; Bartlett, Tina@Wildlife; Purdy, Colin@Wildlife; Buss, Stephanie@Wildlife; Nguyen, Jennifer@Wildlife; Serup, Bjarni@Wildlife; Bush, Joshua@Wildlife; Bernardy, Todd@DWR; Holley, Jason@Wildlife
Subject: Future coordination on the Lower Elkhorn Basin Levee Setback (LEBLS) Project

Hello Kelly and Shelly-

It is my understanding that your program is working on the Lower Elkhorn Basin Levee Setback (LEBLS) Project and recently released an NOP, an NOI and had a scoping meeting in September. This came to our attention at the November CVFPB coordinating committee meeting. When we looked into it more, we see that CDFW did receive the NOP to review from the State Clearinghouse, but because we were not aware of its impending release it was not distributed to appropriate staff. Had we known it was coming, we would have made sure that we provided input.

In an effort to improve communication and coordination between our two agencies, I would like to request we discuss this project, it's timeline and how we can best work together to provide you meaningful feedback during your EIR development.

This project overlays with or may impact various projects or programs in our Region and in other Divisions of CDFW. These include our North Central Region (R2) DWR contract staff, Habcon staff working on the Yolo NCCP, Fisheries staff, Wildlife Land Management staff, Yolo Bypass coordinator and our staff working on EcoRestore and other projects in Yolo Bypass. Our understanding is that DWR considers the LEBLS to be in the first phase of implementation of recommendations from the 2012 Central Valley Flood Protection Plan (CVFPP) and associated studies. Although this project is not specifically named in our new reimbursable contract, it is related to other projects that are (Sac GRR) and the tasks for implementation of the CVFPP CS and our contract staff should be involved in the discussions during its development.

We request that you coordinate with CDFW throughout your EIR preparation, so we may provide feedback on concepts and admin draft documents to ensure that this project does not conflict with existing or other planned projects in the area.

For future project coordination, we request that you include:

Gina Ford (DWR Contract staff)
Stephanie Buss (Yolo NCCP staff)
Colin Purdy (Fisheries)
Josh Bush (Wildlife Land Management)
Bjarni Serup (Yolo Bypass coordinator)
Kelley Barker (DWR Contract supervisor)

If you have any questions about any of this, please contact myself or Gina Ford.
Thank you and we look forward to future coordination on this project.
Kelley

Kelley Barker
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Central Valley Regional Water Quality Control Board

29 September 2016

Shelly Amrhein
California Department of Water Resources
3464 El Camino Avenue, Suite 150
Sacramento, CA 95821

CERTIFIED MAIL
91 7199 9991 7035 8362 8530

COMMENTS TO REQUEST FOR REVIEW FOR THE NOTICE OF PREPARATION FOR THE DRAFT ENVIRONMENTAL IMPACT REPORT, LOWER ELKHORN BASIN LEVEE SETBACK PROJECT, SCH# 2016092015, YOLO COUNTY

Pursuant to the State Clearinghouse's 29 September 2016 request, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has reviewed the *Request for Review for the Notice of Preparation for the Draft Environmental Impact Report* for the Lower Elkhorn Basin Levee Setback Project, located in Yolo County.

Our agency is delegated with the responsibility of protecting the quality of surface and groundwaters of the state; therefore our comments will address concerns surrounding those issues.

I. Regulatory Setting

Basin Plan

The Central Valley Water Board is required to formulate and adopt Basin Plans for all areas within the Central Valley region under Section 13240 of the Porter-Cologne Water Quality Control Act. Each Basin Plan must contain water quality objectives to ensure the reasonable protection of beneficial uses, as well as a program of implementation for achieving water quality objectives with the Basin Plans. Federal regulations require each state to adopt water quality standards to protect the public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act. In California, the beneficial uses, water quality objectives, and the Antidegradation Policy are the State's water quality standards. Water quality standards are also contained in the National Toxics Rule, 40 CFR Section 131.36, and the California Toxics Rule, 40 CFR Section 131.38.

The Basin Plan is subject to modification as necessary, considering applicable laws, policies, technologies, water quality conditions and priorities. The original Basin Plans were adopted in 1975, and have been updated and revised periodically as required, using Basin Plan amendments. Once the Central Valley Water Board has adopted a Basin Plan amendment in noticed public hearings, it must be approved by the State Water Resources Control Board (State Water Board), Office of Administrative Law (OAL) and in some cases,

KARL E. LONGLEY ScD, P.E., CHAIR | PAMELA C. GREEDON P.E., BCEE, EXECUTIVE OFFICER

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the United States Environmental Protection Agency (USEPA). Basin Plan amendments only become effective after they have been approved by the OAL and in some cases, the USEPA. Every three (3) years, a review of the Basin Plan is completed that assesses the appropriateness of existing standards and evaluates and prioritizes Basin Planning issues.

For more information on the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins*, please visit our website:
http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/.

Antidegradation Considerations

All wastewater discharges must comply with the Antidegradation Policy (State Water Board Resolution 68-16) and the Antidegradation Implementation Policy contained in the Basin Plan. The Antidegradation Policy is available on page IV-15.01 at:
http://www.waterboards.ca.gov/centralvalleywater_issues/basin_plans/sacsjr.pdf

In part it states:

Any discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State.

This information must be presented as an analysis of the impacts and potential impacts of the discharge on water quality, as measured by background concentrations and applicable water quality objectives.

The antidegradation analysis is a mandatory element in the National Pollutant Discharge Elimination System and land discharge Waste Discharge Requirements (WDRs) permitting processes. The environmental review document should evaluate potential impacts to both surface and groundwater quality.

II. Permitting Requirements

Construction Storm Water General Permit

Dischargers whose project disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction Activities (Construction General Permit), Construction General Permit Order No. 2009-009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan

(SWPPP).

For more information on the Construction General Permit, visit the State Water Resources Control Board website at:

http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml.

Phase I and II Municipal Separate Storm Sewer System (MS4) Permits¹

The Phase I and II MS4 permits require the Permittees reduce pollutants and runoff flows from new development and redevelopment using Best Management Practices (BMPs) to the maximum extent practicable (MEP). MS4 Permittees have their own development standards, also known as Low Impact Development (LID)/post-construction standards that include a hydromodification component. The MS4 permits also require specific design concepts for LID/post-construction BMPs in the early stages of a project during the entitlement and CEQA process and the development plan review process.

For more information on which Phase I MS4 Permit this project applies to, visit the Central Valley Water Board website at:

http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/municipal_permits/.

For more information on the Phase II MS4 permit and who it applies to, visit the State Water Resources Control Board at:

http://www.waterboards.ca.gov/water_issues/programs/stormwater/phase_ii_municipal.shtml

Industrial Storm Water General Permit

Storm water discharges associated with industrial sites must comply with the regulations contained in the Industrial Storm Water General Permit Order No. 2014-0057-DWQ.

For more information on the Industrial Storm Water General Permit, visit the Central Valley Water Board website at:

http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/industrial_general_permits/index.shtml.

Clean Water Act Section 404 Permit

If the project will involve the discharge of dredged or fill material in navigable waters or wetlands, a permit pursuant to Section 404 of the Clean Water Act may be needed from the United States Army Corps of Engineers (USACOE). If a Section 404 permit is required by the USACOE, the Central Valley Water Board will review the permit application to ensure that discharge will not violate water quality standards. If the project requires surface water

¹ Municipal Permits = The Phase I Municipal Separate Storm Water System (MS4) Permit covers medium sized Municipalities (serving between 100,000 and 250,000 people) and large sized municipalities (serving over 250,000 people). The Phase II MS4 provides coverage for small municipalities, including non-traditional Small MS4s, which include military bases, public campuses, prisons and hospitals.

drainage realignment, the applicant is advised to contact the Department of Fish and Game for information on Streambed Alteration Permit requirements.

If you have any questions regarding the Clean Water Act Section 404 permits, please contact the Regulatory Division of the Sacramento District of USACOE at (916) 557-5250.

Clean Water Act Section 401 Permit – Water Quality Certification

If an USACOE permit (e.g., Non-Reporting Nationwide Permit, Nationwide Permit, Letter of Permission, Individual Permit, Regional General Permit, Programmatic General Permit), or any other federal permit (e.g., Section 10 of the Rivers and Harbors Act or Section 9 from the United States Coast Guard), is required for this project due to the disturbance of waters of the United States (such as streams and wetlands), then a Water Quality Certification must be obtained from the Central Valley Water Board prior to initiation of project activities. There are no waivers for 401 Water Quality Certifications.

Waste Discharge Requirements – Discharges to Waters of the State

If USACOE determines that only non-jurisdictional waters of the State (i.e., "non-federal" waters of the State) are present in the proposed project area, the proposed project may require a Waste Discharge Requirement (WDR) permit to be issued by Central Valley Water Board. Under the California Porter-Cologne Water Quality Control Act, discharges to all waters of the State, including all wetlands and other waters of the State including, but not limited to, isolated wetlands, are subject to State regulation.

For more information on the Water Quality Certification and WDR processes, visit the Central Valley Water Board website at:

http://www.waterboards.ca.gov/centralvalley/help/business_help/permit2.shtml.

Dewatering Permit

If the proposed project includes construction or groundwater dewatering to be discharged to land, the proponent may apply for coverage under State Water Board General Water Quality Order (Low Risk General Order) 2003-0003 or the Central Valley Water Board's Waiver of Report of Waste Discharge and Waste Discharge Requirements (Low Risk Waiver) R5-2013-0145. Small temporary construction dewatering projects are projects that discharge groundwater to land from excavation activities or dewatering of underground utility vaults. Dischargers seeking coverage under the General Order or Waiver must file a Notice of Intent with the Central Valley Water Board prior to beginning discharge.

For more information regarding the Low Risk General Order and the application process, visit the Central Valley Water Board website at:

http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0003.pdf

For more information regarding the Low Risk Waiver and the application process, visit the Central Valley Water Board website at:

http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/waivers/r5-2013-0145_res.pdf

Regulatory Compliance for Commercially Irrigated Agriculture

If the property will be used for commercial irrigated agricultural, the discharger will be required to obtain regulatory coverage under the Irrigated Lands Regulatory Program. There are two options to comply:

1. **Obtain Coverage Under a Coalition Group.** Join the local Coalition Group that supports land owners with the implementation of the Irrigated Lands Regulatory Program. The Coalition Group conducts water quality monitoring and reporting to the Central Valley Water Board on behalf of its growers. The Coalition Groups charge an annual membership fee, which varies by Coalition Group. To find the Coalition Group in your area, visit the Central Valley Water Board's website at: http://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/app_approval/index.shtml; or contact water board staff at (916) 464-4611 or via email at IrrLands@waterboards.ca.gov.
2. **Obtain Coverage Under the General Waste Discharge Requirements for Individual Growers, General Order R5-2013-0100.** Dischargers not participating in a third-party group (Coalition) are regulated individually. Depending on the specific site conditions, growers may be required to monitor runoff from their property, install monitoring wells, and submit a notice of intent, farm plan, and other action plans regarding their actions to comply with their General Order. Yearly costs would include State administrative fees (for example, annual fees for farm sizes from 10-100 acres are currently \$1,084 + \$6.70/Acre); the cost to prepare annual monitoring reports; and water quality monitoring costs. To enroll as an Individual Discharger under the Irrigated Lands Regulatory Program, call the Central Valley Water Board phone line at (916) 464-4611 or e-mail board staff at IrrLands@waterboards.ca.gov.

Low or Limited Threat General NPDES Permit

If the proposed project includes construction dewatering and it is necessary to discharge the groundwater to waters of the United States, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. Dewatering discharges are typically considered a low or limited threat to water quality and may be covered under the General Order for *Dewatering and Other Low Threat Discharges to Surface Waters* (Low Threat General Order) or the General Order for *Limited Threat Discharges of Treated/Untreated Groundwater from Cleanup Sites, Wastewater from Superchlorination Projects, and Other Limited Threat Wastewaters to Surface Water* (Limited Threat General Order). A complete application must be submitted to the Central Valley Water Board to obtain coverage under these General NPDES permits.

29 September 2016

For more information regarding the Low Threat General Order and the application process, visit the Central Valley Water Board website at:

http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2013-0074.pdf

For more information regarding the Limited Threat General Order and the application process, visit the Central Valley Water Board website at:

http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2013-0073.pdf

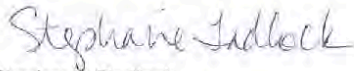
NPDES Permit

If the proposed project discharges waste that could affect the quality of the waters of the State, other than into a community sewer system, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. A complete Report of Waste Discharge must be submitted with the Central Valley Water Board to obtain a NPDES Permit.

For more information regarding the NPDES Permit and the application process, visit the Central Valley Water Board website at:

http://www.waterboards.ca.gov/centralvalley/help/business_help/permit3.shtml

If you have questions regarding these comments, please contact me at (916) 464-4644 or Stephanie.Tadlock@waterboards.ca.gov.



Stephanie Tadlock
Environmental Scientist

cc: State Clearinghouse unit, Governor's Office of Planning and Research, Sacramento



DELTA STEWARDSHIP COUNCIL
A California State Agency

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October 5, 2016

Shelly Amrhein
Department of Water Resources
3464 El Camino Ave., Suite 150
Sacramento, CA 95821

Chair
Randy Fiorini

Members
Aja Brown
Frank C. Damrell, Jr.
Patrick Johnston
Mary Piepho
Susan Tatayon
Ken Weinberg

Executive Officer
Jessica R. Pearson

Re: Notice of Preparation for the Lower Elkhorn Basin Levee Setback SCH# 2016092015

Dear Ms. Amrhein:

Thank you for the opportunity to provide comments regarding the Notice of Preparation (NOP) for the Lower Elkhorn Basin Levee Setback Project. The Department of Water Resources (DWR) is working jointly with the US Army Corps of Engineers (USACE) to develop a joint Environmental Impact Report (EIR) / Environmental Impact Statement (EIS) for this project. The purpose of the project is to provide regional flood risk reduction for the North Delta/Sacramento metropolitan area primarily by expanding the Yolo and Sacramento Bypasses through use of setback levees.

The Delta Stewardship Council (Council) is an independent state agency and the Council's primary mission is to further the achievement of the coequal goals of water supply reliability for California and protecting and restoring the Delta ecosystem while protecting and enhancing the Delta as an evolving place (Water Code section 85054). The Council has a legally enforceable management framework for the Delta and Suisun Marsh called the Delta Plan. The Delta Plan applies a common sense approach based on the best available science to restore habitat, increase the diversity and efficiency of California's water supplies, enhance floodplains, improve the Delta's levee system, and preserve the Delta's agricultural values.

Generally, the CEQA lead agency determines if a project is a "covered action" subject to Delta Plan regulations, and if so, files a certification of consistency with the Delta Plan. There are multiple conditions that must be met for an activity to be a covered action, one of which is that the activity must occur in whole or in part within the legal Delta or Suisun Marsh. DWR staff should make the final determination of whether or not the project is a covered action based on the scope of the final project description, which could possibly change over the course of the California Environmental Quality Act (CEQA) analysis process (e.g., the footprint of the currently proposed project may not occur at all within the legal Delta, but that could change in the future as a result of evolving circumstances and mitigation requirements).

"Coequal goals" means the two goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The coequal goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place."

- CA Water Code §85054

General Comments

We appreciate that this project will work towards achieving the Delta Plan goals of flood risk reduction and ecosystem restoration. In addition to our role in developing and administering the Delta Plan, the Council also works to foster coordination and collaboration amongst agencies and stakeholders. Within the framework of that latter role, Council staff provides the following suggestions.

Coordinate with Ongoing Yolo Bypass Planning Efforts.

As you know, the US Bureau of Reclamation, in coordination with DWR and the California Natural Resources Agency, is currently developing a suite of projects within the Yolo Bypass. These projects will create seasonal floodplain habitat and improve adult fish passage consistent with the requirements of the 2009 National Marine Fisheries Service (NMFS) Biological Opinion (BiOp). Preliminary proposals under this planning effort include notching the Fremont Weir to facilitate more frequent inundation of the Yolo Bypass at a wider range of Sacramento River flow stages.

In addition to increasing conveyance capacity and reducing flood risk, we hope your efforts with the Lower Elkhorn Basin Levee Setback Project can help bolster the benefits to aquatic species being pursued through the NMFS BiOp-related projects as well as have a net benefit to terrestrial species through creation of riparian habitat within portions of the Lower Elkhorn Basin. We suggest that the hydraulic analysis for the project also take into consideration the effects of increased inundation of the Yolo Bypass from the planned Fremont Weir notching, and how this project would diminish the increase in flood stage in the Yolo Bypass from the aforementioned NMFS BiOp-related projects.

Improve Recreational Opportunities

The Delta Plan contains several non-regulatory recommendations promoting recreational opportunities for the public. These opportunities include constructing visitor facilities on and providing improved access to public lands and habitat restoration sites. In addition, we encourage promotion of opportunities on public lands, where feasible, for bank fishing, hunting, levee-top trails, and environmental education.

California State Parks developed proposals for increasing public access to areas within the upper Yolo Bypass and the Delta that we hope DWR considers for the Lower Elkhorn Basin Levee Setback Project (this document is available at http://www.parks.ca.gov/pages/795/files/delta%20rec%20proposal_08_02_11.pdf). One of these State Parks proposals includes establishing a several mile long contiguous recreational corridor along the top of the Sacramento River levee in Elkhorn Basin, so as to promote access for anglers to fish the mainstem Sacramento River and to provide easily accessible trails for bicyclists and hikers.

Improving Habitat Along Levees

As described in DWR's Conservation Strategy for the Central Valley Flood Protection Plan, there are considerable net benefits that can be achieved when integrating habitat restoration with regional flood risk management. In January 2016, the Council endorsed the issue paper *Improving Habitats along Delta Levees: A Review of Past Projects and Recommended Next Steps*, which assessed the effectiveness of different habitat improvement options associated with levee projects in the Delta and nearby upstream areas in benefitting native species (available at <http://deltacouncil.ca.gov/docs/improving-habitats-along-delta-levees-issue-paper>). For example, one of the findings of the report is that constructed vegetated benches along levees can provide similar habitat benefits for rearing salmon as naturally vegetated nearshore habitat. We hope that DWR finds this document useful as it plans implementation of ecosystem improvements in the Lower Elkhorn Basin.

Good Neighbor Policies

Conversion of farmlands for flood protection projects and habitat enhancement efforts can in part contribute to a diminishment of regional agricultural economic sustainability and may generate potential conflicts with neighboring landowners and stakeholders. As you are probably aware, DWR - in collaboration with several other agencies - developed a toolbox of Agricultural and Land Stewardship (ALS) strategies which provide guidance for managers of projects located within agricultural areas. These strategies include good neighbor practices, options for landowner participation, and strategies to support an agricultural economy (all these strategies are available online at <https://agriculturalandstewardship.water.ca.gov/>). To the extent feasible, we recommend DWR utilize these ALS strategies as it works with local landowners and stakeholders throughout the CEQA analysis process.

Adaptive Management and Best Available Science

Council staff encourages DWR to consider applying the principles of adaptive management and best available science to project planning and design. Adaptive management is a strategy that allows for making management decisions under uncertain conditions using the best available science; it also increases the likelihood of success in obtaining project goals in a manner that is both economical and effective. We recommend the principles of adaptive management be incorporated into the Lower Elkhorn Basin Levee Setback Project, especially with regards to the ecosystem enhancement component of the project (for more details about adaptive management, please refer to Appendix 1B of the Delta Plan available at <http://deltacouncil.ca.gov/docs/appendix-1b>). Delta Stewardship Council staff, including staff from the Delta Science Program, can provide assistance in the use of best available science and adaptive management in your preparation of the EIR and the long-term management plan for the project area.

Shelly Amrhein
Department of Water Resources
October 5, 2016
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Final Remarks

If you have questions or would like to discuss the comments presented here, please feel free to contact my staff Daniel Huang at Daniel.Huang@deltacouncil.ca.gov.

Sincerely,



Cassandra Enos-Nobriga
Deputy Executive Officer
Delta Stewardship Council

NATIVE AMERICAN HERITAGE COMMISSION

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September 12, 2016

Shelly Amrhein
California Department of Water Resources
3464 El Camino Ave, Suite 150
Sacramento, CA 95821

RE: SCH#2016092015, Lower Elkhorn Basin Levee Setback, Yolo County

Dear Ms. Amrhein:

The Native American Heritage Commission has received the Notice of Preparation (NOP) for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code § 21000 et seq.), specifically Public Resources Code section 21084.1, states that a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit. 14, § 15064.5 (b) (CEQA Guidelines Section 15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an environmental impact report (EIR) shall be prepared. (Pub. Resources Code § 21080 (d); Cal. Code Regs., tit. 14, § 15064 subd.(a)(1) (CEQA Guidelines § 15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources with the area of project effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code § 21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code § 21084.3 (a)). **AB 52 applies to any project for which a notice of preparation or a notice of negative declaration or mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 300101, 36 C.F.R. § 800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments. **Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.**

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:
 - a. A brief description of the project.
 - b. The lead agency contact information.
 - c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code § 21080.3.1 (d)).
 - d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code § 21073).
2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code § 21080.3.1, subs. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or environmental impact report. (Pub. Resources Code § 21080.3.1(b)).
 - a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code § 65352.4 (SB 18). (Pub. Resources Code § 21080.3.1 (b)).
3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:
 - a. Alternatives to the project.
 - b. Recommended mitigation measures.
 - c. Significant effects. (Pub. Resources Code § 21080.3.2 (a)).
4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:
 - a. Type of environmental review necessary.
 - b. Significance of the tribal cultural resources.
 - c. Significance of the project's impacts on tribal cultural resources.
 - d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code § 21080.3.2 (a)).
5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code sections 6254 (r) and 6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code § 21082.3 (c)(1)).
6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:
 - a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
 - b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code section 21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code § 21082.3 (b)).
7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:
 - a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or

- b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code § 21080.3.2 (b)).
8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code section 21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code section 21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code § 21082.3 (a)).
 9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code section 21084.3 (b). (Pub. Resources Code § 21082.3 (e)).
 10. Examples of Mitigation Measures That, if Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:
 - a. Avoidance and preservation of the resources in place, including, but not limited to:
 - i. Planning and construction to avoid the resources and protect the cultural and natural context.
 - ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
 - b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
 - i. Protecting the cultural character and integrity of the resource.
 - ii. Protecting the traditional use of the resource.
 - iii. Protecting the confidentiality of the resource.
 - c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
 - d. Protecting the resource. (Pub. Resource Code § 21084.3 (b)).
 - e. Please note that a federally recognized California Native American tribe or a nonfederally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code § 815.3 (c)).
 - f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code § 5097.991).
 11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An environmental impact report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:
 - a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code sections 21080.3.1 and 21080.3.2 and concluded pursuant to Public Resources Code section 21080.3.2.
 - b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
 - c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code section 21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code § 21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of

open space. (Gov. Code § 65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf

Some of SB 18's provisions include:

1. **Tribal Consultation:** If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code § 65352.3 (a)(2)).
2. **No Statutory Time Limit on SB 18 Tribal Consultation.** There is no statutory time limit on SB 18 tribal consultation.
3. **Confidentiality:** Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code section 65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code sections 5097.9 and 5097.993 that are within the city's or county's jurisdiction. (Gov. Code § 65352.3 (b)).
4. **Conclusion of SB 18 Tribal Consultation:** Consultation should be concluded at the point in which:
 - a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
 - b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: <http://nahc.ca.gov/resources/forms/>

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
 - a. If part or all of the APE has been previously surveyed for cultural resources.
 - b. If any known cultural resources have been already been recorded on or adjacent to the APE.
 - c. If the probability is low, moderate, or high that cultural resources are located in the APE.
 - d. If a survey is required to determine whether previously unrecorded cultural resources are present.
2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
 - a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
 - b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.
3. Contact the NAHC for:

- a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
 - b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.
4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
 - a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, section 15064.5(f) (CEQA Guidelines section 15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
 - b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
 - c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code section 7050.5, Public Resources Code section 5097.98, and Cal. Code Regs., tit. 14, section 15064.5, subdivisions (d) and (e) (CEQA Guidelines section 15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions, please contact me at my email address: sharaya.souza@nahc.ca.gov.

Sincerely,



Sharaya Souza
Staff Services Analyst
cc: State Clearinghouse

October 7, 2016

Shelly Amrhein
California Department of Water Resources
Division of Flood Management
3464 El Camino Avenue, Suite 150
Sacramento, CA 95821

Tyler Stalker
U.S. Army Corps of Engineers
Sacramento District
Attn: Public Affairs Office (CESPK-PAO)
1325 J Street
Sacramento, CA 95814-2922

RE: Comments on the Notice of Preparation and Notice of Intent to Prepare a Joint Environmental Impact Report/Environmental Impact Statement for the Proposed Lower Elkhorn Basin Levee Setback Project

Dear Ms. Amrhein and Mr. Stalker:

The Lower Sacramento/Delta North Region (Region) appreciates the opportunity to present comments on the Notice of Preparation (NOP) and Notice of Intent (NOI) to Prepare a Joint Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) for the Proposed Lower Elkhorn Basin Levee Setback Project (Lower Elkhorn Project).

The six regional partners that make up the Region appreciate the California Department of Water Resources (DWR) ongoing support for our Regional Flood Management Planning efforts. Through these efforts, the six regional partners are able to identify potential issues of concern early in flood project planning and to work with DWR and the U.S. Army Corps of Engineers (USACE) to identify locally-supportable solutions. We particularly appreciate the willingness of DWR and USACE to collaborate closely with the Region in identifying the regional alignment as the "proposed project" for the Lower Elkhorn Project.

This letter was prepared by the six regional partners to represent our joint comments on the NOP and NOI. By their nature, these comments represent the broad interests of the Region. However, the project is located in Yolo County and the County appropriately has comments that are specific to their jurisdiction. For this reason, the County will be submitting their own comment letter. The Region fully supports the need for Yolo County to submit a separate letter.

The following are the Region's comments on the NOP and NOI:

Implement Flood Projects in Parallel – The NOP and NOI state that the project would be part of a series of proposed flood risk management improvements contemplated under DWR's Central Valley Flood Protection Plan and its related Sacramento Basin-Wide Feasibility Study (BWFS). This acknowledgement that the project cannot be viewed in isolation is important to the Region. The Region developed a Corridor Management Framework in February 2015 to specifically address the integration of multiple

projects in the Region. Any improvements in the conveyance capacity of the Upper Yolo Bypass directly affect flood flows in the Lower Yolo Bypass. Therefore, it is imperative that improvements in the Upper Yolo Bypass be implemented in parallel with flood improvements in the Lower Yolo Bypass including flood protection for the City of Rio Vista and strengthening in place State Plan of Flood Control (SPFC) levees in the Lower Yolo Bypass and Cache Slough complex.

Setback Levee Alignment – Subject to the appropriate resolution of issues set forth in this letter, the Region supports the Lower Elkhorn Basin regional alignment, as described in the Lower Sacramento/Delta North Regional Flood Management Plan and modified by the Woods Rogers Study. We understand this is the alignment of the "proposed project" for purposes of evaluation in the joint EIR/EIS. The Region is supportive of a Yolo Bypass expansion that achieves quantifiable flood risk reduction benefits when it is implemented with an appropriate agricultural impact mitigation program. However, the Region does not support Yolo Bypass expansion solely for the purpose of ecosystem restoration. The joint EIR/EIS should describe how impacts on agricultural land will be avoided and/or minimized, and where avoidance is not possible, how DWR and USACE will mitigate for the short-term and long-term impacts on agricultural resources and the agricultural economy.

Clarify the Project Description – The NOP and the NOI differ in their description of the proposed project. The NOP specifies the project's levee setback distance as 1,500 feet, whereas no setback distance is identified in the NOI. The NOP identifies the potential degrading of all or portions of the existing levees, whereas the NOI does not mention how existing levees will be treated. Also, the NOP states that "ecosystem improvements" will be implemented in the Lower Elkhorn Basin to mitigate project impacts, whereas the NOI states that "improvements" will be implemented without identifying them as ecosystem improvements. Because a joint EIR/EIS is being prepared, more clarity is necessary in the project description to ensure consistency between the proposed action to be evaluated in the EIS and the proposed project to be evaluated in the EIR.

Define Ecosystem Improvements – The NOP states that the proposed project includes implementing ecosystem improvements in the Lower Elkhorn Basin to mitigate project impacts but no detail is included regarding the location or extent of these improvements. The Region requests that DWR and USACE representatives continue to work closely with local government and affected Reclamation District representatives to collaboratively define the proposed project's ecosystem mitigation measures with a focus on minimizing the conversion of productive farmland. We further request that the long-term approach to managing these mitigation lands and the funding for such management be described in the joint EIR/EIS.

Disclose Mitigation Versus Restoration – The NOP states that "ecosystem improvements" will be implemented in the Lower Elkhorn Basin to mitigate project impacts. It is also widely understood that the Yolo Bypass has been targeted by state and federal agencies for multiple other habitat restoration initiatives. A clear articulation of required compensatory mitigation versus ecosystem restoration features needs to be established and disclosed for this project throughout its development and analysis. The current NOP and NOI are unclear regarding the project proponent's intent for the inclusion of ecosystem restoration in the proposed project.

Design Levees to 200-Year Standard – The Region supports designing the new levees to meet a 200-year water surface elevation standard. Constructing to this standard will help ensure these levees are sufficiently robust to withstand changing climate conditions over the long term. These levees would not

be expected to induce growth in the Lower Elkhorn Basin because the Sacramento River levees to the east do not meet 100-year standards and the Yolo County General Plan designates the lands behind the levees as predominantly agricultural and open space.

Coordinate with Reclamation Districts Regarding Drainage Systems – The Region understands that DWR is working with the affected Reclamation Districts to redesign the internal drainage system within the Lower Elkhorn Basin to accommodate the proposed levee setbacks. The Region encourages DWR to continue working with the Reclamation Districts to ensure any internal drainage system impacts are appropriately mitigated.

Identify Recreational Components – The 2017 Update to the Central Valley Flood Protection Plan is anticipated to include the provision of “Enriching Experiences” as an intended outcome of flood system improvements. The Plan also identifies the goal of implementing multi-objective projects. Recreation is identified as a key enriching experience yet the project does not currently include any recreational components. A portion of the existing Lower Elkhorn Yolo Bypass levee includes a public access easement. Providing access to the Fremont Weir State Wildlife Area is a priority for the Region. The Region encourages DWR and USACE to work closely with the affected Reclamation Districts and the Regional Flood Management Plan Project Delivery Team to identify locally-supportable recreational components that can be integrated into the project design. Specifically, the Region requests that the provision of a public access easement be considered on the waterside toe road for the newly constructed levee as part of a long-term plan to improve access to the public properties in the Yolo Bypass. The Region also encourages DWR and USACE to consult directly with the Yolo Basin Foundation and the California Department of Fish and Wildlife regarding the project’s potential impacts on the ongoing environmental education and outdoor recreation activities within the Yolo Bypass Wildlife Area and to identify appropriate mitigation measures for any impacts on these activities.

Identify Land Ownership Approach – The project description included in the NOP and NOI does not define how the lands that are brought into the floodplain of the Yolo Bypass with the proposed levee setback will be owned and managed. Whether these lands are to be publicly owned or privately owned should be defined before initiating the joint EIR/EIS impact analysis. The potential that these lands would be publicly owned and managed raises concerns for local agencies within the Bypass regarding the loss of property tax revenue, impacts on the agricultural economy, conflicts with adjacent land uses, and the willingness of the state to commit the resources necessary to manage these lands over the long term. A much more detailed discussion of land management strategies and ownership options needs to be included in the project description for the joint EIR/EIS.

Work with Reclamation Districts to Define CAMU – The Region understands that DWR is working with the Sacramento Area Flood Control Agency on options to relocate the Bryte Landfill to accommodate a widening of the Sacramento Bypass. The Region supports the approach of using a Corrective Action Management Unit (CAMU) to consolidate the landfill waste material with the construction of a corporation yard for the Reclamation Districts on top of the CAMU. The Region encourages DWR and USACE representatives to continue to work with the Reclamation Districts to better define the design and location of the CAMU and the corporation yard. The Region also encourages DWR and USACE to provide these design details to the public before initiating the joint EIR/EIS impact analysis.

Coordinate with Native American Tribes – The Region encourages the lead agencies to coordinate closely with affected Native American Tribes regarding the project’s effects on Tribal cultural resources,

consistent with the requirements of the National Historic Preservation Act and AB 52.

Evaluate Cumulative Habitat Restoration Impacts on Agriculture - The Yolo Bypass has been targeted by state and federal agencies for multiple restoration initiatives including EcoRestore, the 2008 and 2009 Biological Opinions, the Central Valley Flood Protection Plan Conservation Strategy, and the Delta Conservation Framework . The Region is very concerned about the cumulative effect these habitat initiatives can have on the agricultural resources in the Yolo Bypass when combined with the potential habitat components of the proposed project. The joint EIR/EIS needs to include a detailed evaluation of the cumulative impacts of these habitat initiatives on agricultural resources and the agricultural economy within the Region and needs to identify appropriate mitigation measures to offset these impacts.

Evaluate Cumulative Habitat Restoration Impacts on Water Quality and Water Supply – As discussed above, the Yolo Bypass is the target of multiple ecosystem restoration initiatives. The Region is very concerned about the cumulative effect these habitat improvements can have on the operation and maintenance of existing agricultural and municipal water diversions in the Lower Yolo Bypass and Cache Slough complex. The joint EIR/EIS needs to include a detailed evaluation of the cumulative impacts of these habitat improvements on both water quality and the ability to divert water downstream of the project.

The Region is committed to working with DWR and USACE in further defining the description of the proposed project that will be evaluated in the joint EIR/EIS. We appreciate this opportunity to provide these initial comments on the NOP/NOI.

Sincerely,



Richard M. Johnson
Executive Director
Sacramento Area Flood Control Agency



Paul Dirksen
Flood Protection Planner
West Sacramento Area Flood Control
Agency



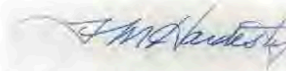
Bill Emlen
Director, Department of Resource Management
Solano County



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Reclamation District 2068



County of Yolo

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PHILIP J. POGLEDICH
COUNTY COUNSEL

October 7, 2016

VIA E-MAIL ONLY

Shelly Amrhein
California Department of Water Resources
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Sacramento, CA 95821

Tyler Stalker
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Sacramento District
Attn: Public Affairs Office (CESPK-PAO)
1325 J Street
Sacramento, CA 95814-2922

Re: Comments on the Notice of Preparation and Notice of Intent to Prepare a Joint Environmental Impact Report/Environmental Impact Statement for the Proposed Lower Elkhorn Basin Levee Setback Project

Dear Ms. Amrhein and Mr. Stalker:

Yolo County (County) appreciates the opportunity to provide the following comments on the Notice of Preparation (NOP) and Notice of Intent (NOI) to Prepare a Joint Environmental Impact Report /Environmental Impact Statement (EIR/EIS) for the Proposed Lower Elkhorn Basin Levee Setback Project (Lower Elkhorn Project). This letter was developed in coordination with the other five regional partners in the Lower Sacramento/Delta North Region (Region), and it is similar in most respects to the letter submitted separately on behalf of the Region.

While this letter focuses on the EIR/EIS for the Lower Elkhorn Project, most of the County's comments also have general application to all future phases of the Yolo Bypass expansion. Both now and over time, as described below, the County expects your agencies to ensure that the County's land use, environmental, economic, and local flood protection needs are addressed in conjunction with any expansion of the Yolo Bypass. Fundamentally, the County does not intend to support projects to expand the Yolo Bypass unless local needs and priorities are addressed concurrently. Within this context, however, the County is very interested in maintaining an active collaboration with your agencies on the Lower Elkhorn Project and future phases of the Yolo Bypass Expansion.

The County's comments are organized into several topical categories, as follows:

Stakeholder and Public Agency Coordination

The County acknowledges and appreciates efforts by the California Department of Water Resources (DWR) to coordinate closely on all initial elements of project development in the Lower Elkhorn region. In addition to continuing this work, the County also supports the inclusion of other groups and stakeholders as set forth below.

Coordinate with Native American Tribes. The County encourages the lead agencies to coordinate closely with affected Native American Tribes regarding the project's potential effects on Tribal cultural resources, consistent with the requirements of the National Historic Preservation Act and California Assembly Bill 52 (Public Resources Code Section 21083.09). To the extent feasible, such coordination should begin early in the process of project planning to ensure Tribal concerns are addressed at all phases of the planning and environmental review process, including but not limited to construction methods/protocol and the development of alternative locations for setback levees.

Continue Work with Reclamation Districts, Including to Define CAMU. The County strongly supports continued coordination with local reclamation districts on all aspects of project design and related matters. In addition to extensive outreach and discussion relating to alternative alignments for the Lower Elkhorn Project, the County understands that DWR is working with the Sacramento Area Flood Control Agency on options to relocate the Bryte Landfill to accommodate a widening of the Sacramento Bypass. Based on presently available information, the County supports the approach of using a Corrective Action Management Unit (CAMU) to consolidate the landfill waste material with the construction of a corporation yard for the Reclamation Districts on top of the CAMU. The County encourages DWR and United States Army Corps of Engineers (USACE) representatives to continue to work with the Reclamation Districts to better define the design and location of the CAMU and the corporation yard. The County also encourages DWR and USACE to provide these design details to the public before initiating the joint EIR/EIS impact analysis.

Flood Protection and Risk Reduction Generally

Implement Flood Projects in Parallel. The NOI and NOP state that the Lower Elkhorn Project is part of a series of proposed flood risk management improvements contemplated under the Central Valley Flood Protection Plan and its related Sacramento Basin-Wide Feasibility Study (BWFS). This acknowledgement that the project cannot be viewed in isolation is important to the County. The Lower Sacramento/Delta North Region, of which the County is a member, developed a Corridor Management Framework in February 2015 to specifically address the integration of multiple projects in the Region. Any improvements in the conveyance capacity of the Upper Yolo Bypass directly affect flood flows in the Lower Yolo Bypass. Therefore, it is imperative that improvements in the Upper Yolo Bypass be implemented in parallel with flood improvements in the Lower Yolo Bypass including flood protection for the City of Rio Vista and strengthening in place the Lower Yolo Bypass west side levees.

Design Flood Projects to Achieve the Primary Objective of Reducing Flood Stage in the Sacramento River. The County supports a careful evaluation of the Lower Elkhorn Basin regional alignment, as described in the Lower Sacramento/Delta North Regional Flood Management Plan and modified by the Woods Rogers

Study. We understand this is the alignment of the "proposed project" for purposes of evaluation in the EIS/EIR. The County is supportive of a Yolo Bypass expansion that achieves quantifiable flood risk reduction benefits. The County is not, however, supportive of alignments that bring more land into the Yolo Bypass than necessary, such as alignments that reduce flood stage in the Yolo Bypass without any corresponding benefit to stage reduction in the Sacramento River. Similarly, the County does not support setback configurations that bring substantial acreage into the Yolo Bypass solely or primarily for the purpose of ecosystem restoration.

Design Levees to 200-Year Standard. The County supports designing new levees to meet a 200-year water surface elevation standard. Constructing to this standard will help ensure these levees are sufficiently robust to withstand changing climate conditions over the long term. These levees would not be expected to induce growth in the Lower Elkhorn Basin because the Sacramento River levees to the east do not meet 100-year standards and the Yolo County General Plan designates the lands behind the levees as predominantly agricultural and open space.

Avoid Expansion on the West Side of the Bypass. Absent a compelling engineering or public safety rationale, the County does not intend to support an expansion of the Yolo Bypass to the west. The design of Lower Elkhorn Project should not rely on assumptions about future expansions to the west.

Project Details, Including Construction

Clarify the Project Description. The NOP and the NOI differ in their description of the proposed project. The NOP specifies the project's levee setback distance as 1,500 feet, whereas no setback distance is identified in the NOI. The NOP identifies the potential degrading of all or portions of the existing levees, whereas the NOI does not mention how existing levees will be treated. Also, the NOP states that "ecosystem improvements" will be implemented in the Lower Elkhorn Basin to mitigate project impacts, whereas the NOI states that "improvements" will be implemented without identifying them as ecosystem improvements. Because a joint EIR/EIS is being prepared, more clarity is necessary in the project description to ensure consistency between the proposed action to be evaluated in the EIS and the proposed project to be evaluated in the EIR.

Address Impacts to County Roads. The EIR/EIS should analyze truck haul routes and incorporate mitigation (developed in coordination with the County) if significant impacts may occur as a consequence of project construction. The potential damage to County roads arising from a high volume of project-related truck traffic deserves careful attention and full mitigation, not merely mitigation in the form of "fair share" payments or other incremental strategies that address only project effects.

Farmland Losses and Economic Impacts

Minimize Farmland Loss and Mitigate All Permanent Losses. The joint EIR/EIS should describe how impacts on agricultural land will be avoided and/or minimized, and where avoidance is not possible, how DWR and USACE will mitigate for the short-term and long-term impacts on agricultural resources and the agricultural economy. The project description included in the NOP and NOI does not define how the lands that are brought into the floodplain of the Yolo Bypass with the proposed levee setback will be owned and

managed. Whether these lands are to be publicly owned or privately owned should be defined before initiating the joint EIR/EIS impact analysis.

The potential that these lands would be publicly owned and managed raises concerns for the County regarding the loss of property tax revenue, impacts on the agricultural economy, conflicts with adjacent land uses, and the willingness of the state to commit the resources necessary to manage these lands over the long term. A much more detailed discussion of land management strategies and ownership options needs to be included in the project description for the joint EIR/EIS. In short, DWR and the Corps should plan for sustainable agriculture on lands affected by any expansion of the Yolo Bypass.

Evaluate Cumulative Habitat Restoration and Project-Related Impacts on Agriculture. The Yolo Bypass has been targeted by state and federal agencies for multiple restoration initiatives including EcoRestore, the 2008 and 2009 Biological Opinions, the Central Valley Flood Protection Plan Conservation Strategy, and the Delta Conservation Framework. The County is extremely concerned about the cumulative effect these habitat initiatives can have on the agricultural resources in the Yolo Bypass when combined with the impacts of the proposed project.

On this basis, the joint EIR/EIS needs to include a detailed evaluation of the cumulative impacts of these habitat initiatives and the Lower Elkhorn Project on agricultural resources and the agricultural economy within the County. As noted above, it should also identify appropriate mitigation measures to offset these impacts. The County also strongly encourages the evaluation of agricultural economic impacts with a model developed by UC Davis economists working with the County in April 2013. The County is available to provide a briefing regarding the model and its potential application to the Lower Elkhorn Project at your convenience.

Integrate Water and Drainage Infrastructure on Affected Farmland. The County understands that DWR is working with the affected Reclamation Districts to redesign the internal drainage system within the Lower Elkhorn Basin to accommodate the proposed levee setbacks. The County encourages DWR to continue working with the Reclamation Districts to ensure any internal drainage system impacts are appropriately mitigated. Drainage issues should receive careful attention in the EIR/EIS, as drainage directly affects the viability of farmland.

Address the Williamson Act. The EIR/EIS should consider the project's conformance with Williamson Act requirements, recognizing that the Williamson Act contains specific restrictions on the conversion of contracted land to public agency projects, open space, or habitat. Existing contracts are unlikely to include provisions contemplating non-agricultural uses. It may thus be necessary to amend or cancel Williamson Act contracts on certain affected properties to allow the project to move forward. The County encourages DWR and USACE to consider these issues—in the EIR/EIS and otherwise—and coordinate with the County and the California Department of Conservation to identify potential solutions.

Habitat Restoration

Integrate Project Design with Future Floodplain Habitat Restoration. As your agencies are aware, in response to a 2009 biological opinion, DWR and the Bureau of Reclamation are currently working on the design and environmental review of a series of habitat restoration and fish passage projects in the Yolo Bypass. The biological objectives of these projects including restoring fish rearing habitat within the Yolo

Bypass floodplain and improving fish passage, specifically with a focus on winter-run Chinook salmon, spring-run Chinook salmon, steelhead, and green sturgeon. Proposals under consideration include modifying the Fremont Weir to increase the duration and frequency of flooding in the Yolo Bypass.

The County understands the need to improve floodplain habitat for endangered salmonids and has worked cooperatively with the state and federal government for years on such efforts. Nonetheless, the County remains highly concerned with the impacts of such projects on agriculture, terrestrial species habitat, infrastructure, and flood conveyance. The County has also asserted the need for integration of these projects with the Lower Elkhorn Project and other elements of the Yolo Bypass expansion. This remains a significant priority for the County and, as such, your agencies should continue to proactively evaluate opportunities for integration and coordination of these projects while also considering all related cumulative impacts pursuant to CEQA and NEPA. On its part, the County is willing to continue participating in such efforts collaboratively to ensure significant habitat and flood protection projects are implemented in a coordinated manner that minimizes related adverse effects.

Define Ecosystem Improvements in Coordination with the Yolo Habitat Conservancy. The NOP states that the proposed project includes implementing ecosystem improvements in the Lower Elkhorn Basin to mitigate project impacts but no detail is included regarding the location or extent of these improvements. The County requests that DWR and USACE representatives work closely with local government on habitat proposals, including the County and the Yolo Habitat Conservancy, a joint powers agency that is completing a countywide habitat conservation plan and natural communities conservation plan under federal and state endangered species laws. Affected Reclamation District representatives are also an important partner in the process of collaboratively defining the proposed project's ecosystem mitigation measures with a focus on minimizing the conversion of productive farmland. We further request that the EIR/EIS describe the long-term approach to managing these mitigation lands and the source(s) and expected amount of funding for such management.

Recreation

Identify Recreational Components. The 2017 Update to the Central Valley Flood Protection Plan is anticipated to include the provision of "Enriching Experiences" as an intended outcome of flood system improvements. The Plan also identifies the goal of implementing multi-objective projects. Recreation is identified as a key enriching experience yet the Lower Elkhorn Project does not currently include any recreational components. A portion of the existing Lower Elkhorn Yolo Bypass levee includes a public access easement. Providing access to the Fremont Weir State Wildlife Area is a priority for the County. The County encourages DWR and USACE to work closely with the affected Reclamation Districts and the RFMP Project Delivery Team to identify locally-supportable recreational components that can be integrated into the project design. Specifically, the County requests consideration of a public access easement on the waterside toe road for the newly constructed levee as part of a long-term plan to improve access to the public properties in the Yolo Bypass. The County also encourages DWR and USACE to consult directly with the Yolo Basin Foundation and the California Department of Fish and Wildlife regarding the project's potential impacts on the ongoing environmental education and outdoor recreation activities within the Yolo Bypass Wildlife Area and to identify appropriate mitigation measures for any impacts on these activities.

DWR/USACE
October 7, 2016
Page 6 of 6

Altogether, the County is committed to working with DWR and USACE in further defining the range of environmental issues to be evaluated in the joint EIR/EIS. We appreciate this opportunity to provide these initial comments on the NOP/NOI and look forward to future coordination with your agencies on the Lower Elkhorn Project.

Very truly yours,



Philip J. Pogledich
County Counsel

cc: Chair Jim Provenza and Members, Yolo County Board of Supervisors
Pat Blacklock, County Administrator
Elisa Sabatini, Natural Resources Manager
Lower Sacramento/Delta North Region (c/o Eric Nagy)



CALIFORNIA FARM BUREAU FEDERATION

OFFICE OF THE GENERAL COUNSEL

2300 RIVER PLAZA DRIVE, SACRAMENTO, CA 95833-3293 • PHONE (916) 561-5665 • FAX (916) 561-5691

Sent via E-Mail

tanis.j.toland@usace.army.mil

October 7, 2016

California Water Commission
P.O. Box 924836
Sacramento, CA 94236

RE: Public Comments on Notice of Intent to Prepare a Joint Environmental Impact Statement/Environmental Impact Report for the Proposed Lower Elkhorn Basin Levee Setback Project, Yolo County, CA

Dear Mr. Toland:

The California Farm Bureau Federation (“Farm Bureau”) is a non-governmental, non-profit, voluntary membership California corporation whose purpose is to protect and promote agricultural interests throughout the state of California and to find solutions to the problems of the farm, the farm home and the rural community. Farm Bureau is California's largest farm organization, comprised of 53 county Farm Bureaus currently representing more than 53,000 agricultural, associate and collegiate members in 56 counties. Farm Bureau strives to protect and improve the ability of farmers and ranchers engaged in production agriculture to provide a reliable supply of food and fiber through responsible stewardship of California's resources.

Farm Bureau has participated extensively in the Central Valley Flood Protection Plan (“CVFPP”), has participated in agricultural briefings from the Department of Water Resources and the Army Corps of Engineers on the Joint Corps-DWR Sacramento River Basin-wide Feasibility Study (“Sacramento River BWFS”) and the Corps’ General Reevaluation Report, and has provided input to the Department and formally commented on the Sacramento River BWFS. The Lower Sacramento River portion of the BWFS and the proposed Elkhorn Basin project are part of the larger BWFS and CVFPP—and, thus, many of the general comments previously offered on the BWFS and CVFPP would apply equally to the proposed Elkhorn Basin project.

Farm Bureau’s primary concerns with respect to the proposed Elkhorn Basin project have to do with land use impacts and avoidance, minimization, and mitigation of potential significant impacts on agricultural resources and the local agricultural economy, including farmland conversion and potential drainage and access impacts and the timing of proposed inundation, as well as potential hydraulic impacts from restored habitat areas and potential downstream flood impacts, including the potential flood and levee impacts and financial burdens on local reclamation districts, local communities, and the Counties of Yolo and Solano. We would also like to emphasize the importance of working with local stakeholders, affected counties and

NANCY N. McDONOUGH, GENERAL COUNSEL

ASSOCIATE COUNSEL:

CARL G. BORDEN • KAREN NORENE MILLS • CHRISTIAN C. SCHEURING • KARI E. FISHER • JACK L. RICE

communities, and the local agencies in the area to achieve the greatest level of local buy-in and acceptance possible.

Farm Bureau does not intend that these comments should be interpreted as opposition to the proposed project at this time. On the contrary, while there are many trade-offs, if the mentioned concerns can be adequately and forthrightly addressed, it appears that the proposed Elkhorn Basin project could have several potential benefits—including improved performance of our statewide flood system and potential positive contributions to threatened and endangered fish species and statewide water supply reliability. For this to be as successful as possible, however, it will be necessary for the Department and the Corps to carefully assess, avoid, minimize, and mitigate potential impacts in all of these areas of potential concern—not only on the Elkhorn project, but also on other similar projects in the region.

At risk of duplication—but also for greater ease of reference—Farm Bureau is submitting with these public comments a variety of background comments and materials that may assist the Corps in its task. Specifically, Farm Bureau submits prior comments to the Department of Water Resources on the Sacramento Valley BWFS and potential agricultural impacts of the proposed Elkhorn Basin project. Along with this are Farm Bureau’s comments on the Department of Water Resources’ Scoping Notice for its Supplemental PEIR for the 2017 CVFPP Update (relating to avoidance, minimization, and mitigation of agricultural impacts), a Yolo Bypass Flood Date and Flow Volume Agricultural Impact Analysis, and Yolo Bypass Drainage and Water Infrastructure Improvement Study.

Among the approaches to agricultural avoidance, minimization, and mitigation is the concept of a regional Agricultural Lands Stewardship Plan (“ALSP”). Farm Bureau believes that this idea holds considerable promise and encourages the Corps and the Department to explore such an approach in close collaboration with the local stakeholders, local agencies, affected communities and the affected county governments. To the extent possible, we would also like to serve as active participants in this and any other related efforts in the Yolo Bypass and Sacramento-San Joaquin River Delta.

Thank you for the opportunity to provide these comments. We look forward to the opportunity to review the Corps environmental document when it is complete. In the meantime, please let us know if we can be assistance on this or any related efforts and projects.

Very truly yours,



JUSTIN E. FREDRICKSON
Environmental Policy Analyst



Pacific Gas and Electric Co.
Land & Environmental Management
343 Sacramento Street
Auburn
CA 95603

October 6, 2016

Tyler Stalker
U.S. Army Corps of Engineers
Sacramento District
1325 J Street
Sacramento CA 95814-2922

Re: Lower Elk Horn Basin levee Setback Project

Dear Tanis Toland:

Thank you for the opportunity to review the Notice of Intent for the proposed Lower Elkhorn Basin Levee Setback project. PG&E has the following comments to offer.

1. PG&E owns and operates facilities located within the project area. To promote the safe and reliable maintenance and operation of utility facilities, the California Public Utilities Commission (CPUC) has mandated specific clearance requirements between utility facilities and surrounding objects or construction activities. To ensure compliance with these standards, project proponents should coordinate with PG&E early in the development of their project plans. Any proposed development plans should provide for unrestricted utility access, and prevent easement encroachments that might impair the safe and reliable maintenance and operation of PG&E's facilities.
2. The California Constitution vests in the California Public Utilities Commission (CPUC) exclusive power and sole authority with respect to the regulation of privately owned or investor owned public utilities such as PG&E. This exclusive power extends to all aspects of the location, design, construction, maintenance and operation of public utility facilities. Nevertheless, the CPUC has provisions for regulated utilities to work closely with local, state, and federal governments and give due consideration to their concerns. PG&E must balance our commitment to provide due consideration to agency concerns with our obligation to provide the public with a safe, reliable, cost-effective energy supply in compliance with the rules and tariffs of the CPUC.

3. Project proponents will be responsible for the costs associated with the relocation of existing PG&E facilities to accommodate their proposed development. Because facilities relocations require long lead times and are not always feasible, developers should be encouraged to consult with PG&E as early in their planning stages as possible.
4. We recommend that environmental documents for the proposed project include adequate evaluation of cumulative impacts to utility systems, the utility facilities relocated to accommodate your project, and any potential environmental issues associated with extending utility service to the proposed project. This will assure the project's full compliance with both California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) environmental reviews and reduce potential delays to the project schedule.

PG&E remains committed to working with you to provide timely, reliable and cost effective gas and electric service to Yolo County. Please contact me at 530-889-5150 if you have any questions regarding our comments. We would also appreciate being copied on future correspondence regarding this subject as this project develops.

Sincerely,



Annalesa Morlock
Land Agent



October 16, 2016

Shelly Amrhein
California Department of Water Resources
Division of Flood Management
3464 El Camino Avenue, Suite 150
Sacramento, CA 95821

Tyler Stalker
U.S. Army Corps of Engineers Sacramento
District
Attn: Public Affairs Office (CESPK-PAO)
1325 J Street
Sacramento, CA 95814-292

RE: Comments on the Notice of Preparation and Notice of Intent to Prepare a Joint Environmental Impact Report/Environmental Impact Statement for the Proposed Lower Elkhorn Basin Levee Setback Project

Dear Ms. Amrhein and Mr. Stalker:

The Yolo Basin Foundation Board of Directors appreciates the opportunity to present comments on the Notice of Preparation (NOP) and Notice of Intent (NOI) to Prepare a Joint Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) for the Proposed Lower Elkhorn Basin Levee Setback Project (Lower Elkhorn Project). The Yolo Basin Foundation (Foundation) is widely recognized as the leader in the effort to create the Yolo Bypass Wildlife Area (Wildlife Area) in the early 1990's. The management of the Wildlife Area has consistently shown that a mosaic of managed wetlands and agriculture work is an ideal landscape in the Yolo Bypass where flood protection is the primary objective.

Since the establishment of the Wildlife Area the Foundation has worked in partnership with CA Department of Fish and Wildlife on education and outreach programs. To date over 50,000 K-12 students have participated in our Discover the Flyway program for schools. This program annually serves 4,000 students from 60 different schools in 12 school districts in the five county Sacramento Region. The Foundation promotes many different field trip programs for the public including CA Ducks Days and the very popular Bat Walk and Talks every summer.

The Foundation promotes innovative partnerships in the management of the Yolo Bypass. Since

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1998 we have been the facilitator of the Yolo Bypass Working Group, a widely recognized forum for discussing land use and planning issues among the myriad of stakeholders with an interest in the Bypass. Many partnerships have been encouraged as a result of the communication that takes place through the Working Group.

Yolo Basin Foundation is also the lead organization for the Yolo Bypass Integrated Project, defined in the Yolo County Integrated Water Resources Management Plan. Staff participate in the many flood protection and habitat planning efforts currently underway in and adjacent to the Yolo Bypass.

The Lower Elkhorn Project is an important step in the work needed to improve flood protection along the Sacramento River. During preparation and analysis of the alternatives for this project we request the following:

1. Consider the effects of the change in frequency and duration of flood flows on downstream agriculture and managed wetlands in the Yolo Bypass.
2. Ensure that the Lower Elkhorn Project enhances management of the Yolo Bypass Wildlife Area under the expected changes due to the setback levees. This could include improvements to water delivery and drainage infrastructure for agriculture operations, wetland management and public use to adapt to the anticipated new flow conditions.
3. When designing new habitat associated with the Lower Elkhorn Project for mitigation and other goals, work with Managers of the Yolo Bypass Wildlife Area to create linkages that improve habitat in and adjacent to the Bypass.
4. New habitat will require adequate funding for ongoing operations and maintenance. This additional habitat must not come at the expense of funds available for Wildlife Area O&M.
5. Consider lessons learned through management of the Wildlife Area for developing a mix of agriculture and habitat associated with the setback levees that is compatible with maintaining an open floodplain.
6. Consult directly with the Yolo Basin Foundation and the California Department of Fish and Wildlife regarding the project's potential impacts on the ongoing environmental

education and outdoor recreation activities within the Yolo Bypass Wildlife Area.

7. Include Yolo Basin Foundation in stakeholder discussions as project development moves ahead.

Yolo Basin Foundation applauds the commitment of both CA Department of Water Resources and the US Army Corps of Engineers to communicating with local stakeholders. We look forward to working with project proponents in the future. Please address communications to Robin Kulakow (robin@volobasin.org) and Martha Ozonoff (mozonoff@volobasin.org). Thank you for the opportunity to provide scoping comments for this important project.

Sincerely,



Pete Bontadelli
Board Chair

Cc: Supervisor Jim Provenza
Supervisor Oscar Villegas
Kris Tjernel, CNRA
Jeremy Arrich, DWR Flood Management
Tim Washburn, SAFCA

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Appendix B. Project Background and Context

B.1 Introduction

The U.S. Army Corps of Engineers (USACE) and California Department of Water Resources (DWR) are preparing a joint Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the Lower Elkhorn Basin Levee Setback Project (LEBLS project or project). To understand the need for the LEBLS project, the project's context within the larger Central Valley flood management system is required. This appendix provides the necessary project background and context for the LEBLS project.

Floods have had devastating effects on life, property, and the environment in the Central Valley and on the economic prosperity of the State of California. More than one million Californians live and work in the floodplains of the Sacramento-San Joaquin Valley where flood risks are among the highest in the nation. The most recent significant floods in the Central Valley, which occurred in 1986 and 1997, together caused over \$1 billion in damage (USACE 1997). Despite the protection provided by the current flood management system, residual flood risk in the Central Valley remains among the highest in the country. Currently, even small flood events that occur on average once every 20 years can stress parts of the flood system.

Flood-related issues stem from the history of the development of the flood management system, as summarized below.

- The Central Valley levee system was built over many years, beginning in 1850 and continuing today, using conveniently available sands, silts, clays, and soils. The levees were often built over inadequate foundations and are poorly compacted. Much of the system was not built to modern geotechnical engineering standards (DWR 2011)¹.
- The flood system was designed with limited hydrologic data and, in many cases, the system is undersized for managing large floods. The system was designed to pass the known flood of record, which at the time of Congressional authorization (in the Flood Control Act of 1917), was the 1909 flood. The system has experienced much larger floods than those that guided the original design. As historical hydrologic data have accumulated, the 1 percent and 0.5 percent annual chance of flooding (flood size and frequency) are now known to be larger events than what was previously understood based on historical hydrology and flood events.
- The flood system was originally designed to support land uses throughout the watershed that have, in some places, intensified and changed from agriculture to increasingly urban.
- There are many challenges associated with maintenance of the flood subsystem, including lack of funding, and regulatory jurisdictions and requirements that often overlap and conflict. These challenges have, in many cases, caused operations and maintenance to lag, thereby exacerbating flood risks and issues.

B.2 Historical Flooding and Flood Management System Development

Catastrophic floods in the Central Valley have been documented since the mid-1800s. Hydraulic mining in the Sierra Nevada in the late 1800s sent large amounts of sediment downstream, choking the channels

¹ An update to the *Flood Control System Status Report* is underway to support development of the 2017 CVFPP.

of rivers such as the Yuba, Feather, and American and increasing flooding by raising channel beds above their natural levels and surrounding lands.

In response to frequent flood events and the challenges posed by the huge and recurring sediment loads created by hydraulic mining, the current flood management system has evolved through an incremental learning and construction process. Levee construction and improvement began around 1850 and continues to this day. State Plan of Flood Control (SPFC) facilities have been constructed through the individual and combined efforts of local, State, and Federal agencies. The facilities were constructed with materials at hand over many decades, to evolving design standards and construction techniques. As a result, these facilities provide varying levels of protection. Construction of these facilities has also resulted in loss of floodplain habitats and marshes.

The process was originally driven by the need to defend the developing valley floor against periodic floods while maintaining navigable channels for commerce. Over time, with development of the railroads in the late 1800s and early 1900s, and the highway system since then, river navigation has become less economically important. However, the importance of Central Valley rivers and floodplains as conduits for municipal, industrial, and agricultural water supply, fisheries and wildlife habitat, and recreation has increased as a result of population growth and environmental degradation in the State.

B.3 Recent Flood History

The project is part of an ongoing effort to improve the flood management system in the Sacramento area that was initiated in the aftermath of the record flood of 1986. This effort has been characterized by three relatively distinct periods of flood-risk management activity (discussed below), each triggered by a major flood event and each marked by a heightened post-flood awareness of flood risk and an increasingly aggressive response to this perceived risk.

B.3.1 Post-1986 Period

The first period followed the record flood of 1986. This flood exceeded the magnitude of its known predecessors in duration and magnitude and combined record runoff in the main stem rivers and their tributary streams throughout the Sacramento Valley. This flood served as a major stress test for the flood management system in the valley that had largely been completed in the 1960s. In Sacramento, the levees along the east side of the Sacramento River in the Natomas Basin and Pocket area proved susceptible to severe through-seepage. Folsom Dam nearly ran out of reservoir storage space for incoming flood waters. For about 8 hours, dam operators were forced to raise dam releases to 134,000 cubic feet per second (cfs). These releases exceeded the 115,000 cfs historic design of the downstream levee system by about 20 percent and caused serious erosion in portions of the American River Parkway across from the Fairbairn Water Treatment Facility and just downstream from the River Park area. The levees along the stream channels converging at the eastern edge of the Natomas Basin came close to overtopping.

This experience produced a wave of flood management system improvement activity across the Sacramento Valley. Virtually all of the levees in the Sacramento area were rated inadequate to meet the National Flood Insurance Program's minimum standards. The Sacramento Area Flood Control Agency (SAFCA) was created to work with USACE, Central Valley Flood Protection Board (CVFPB), and DWR to plan and implement appropriate responses to the vulnerabilities exposed by the flood. USACE took the lead in a project to address through-levee seepage issues along the Sacramento River. SAFCA mounted a project to raise and strengthen the levees along the lower portions of the Natomas East Main

Drainage Canal (NEMDC)/Steelhead Creek, Arcade Creek, and Dry/Robla Creek. SAFCA entered into an interim agreement with the U.S. Bureau of Reclamation (Reclamation) to re-operate Folsom Dam and Reservoir to seasonally create more storage space for flood waters. Finally, SAFCA created the Lower American River Task Force and forged a consensus on the need for an environmentally sound program to protect vulnerable areas of the American River Parkway from future erosion. USACE launched the first phase of this erosion control program in fall 1996.

B.3.2 Post-1997 Period

The 1997 flood occurred over several days in late December 1996 and early January 1997 and nearly equaled the intensity of the 1986 flood. However, the flood-risk reduction measures implemented in the years (and weeks) prior to the 1997 flood helped the flood management system in Sacramento through the flood event with fewer problems as compared to the 1986 event. Other segments of the flood management system in the Sacramento Valley were more challenged. For example, persistent high water along the east levee of the Feather River near the Town of Arboga caused the levee to fail, apparently as a result of seepage through porous materials underlying the levee foundation. Such underseepage was a known flood risk in the Sacramento Valley prior to 1997, but it was considered a risk that could be adequately addressed by levee monitoring and flood-fighting on an as-needed basis. In the post-1997 period, as a result of the Feather River levee failure, USACE and DWR determined that flood management system levees should be designed to prevent underseepage at least in urban areas. This was a major shift in engineering philosophy that considerably increased the cost and complexity of urban levee improvement efforts.

The 1997 flood also helped to break the stalemate that prevailed after 1986 on how to increase the reservoir storage space for flood waters along the American River. Having gone for more than a decade without reaching agreement on USACE's proposal to build a new flood detention dam at Auburn, Congress adopted SAFCA's proposal to modify Folsom Dam. This cleared the way for a concerted Federal-State-local effort to build upon the risk-reduction accomplishments in the Sacramento area during the post-1986 period. As a result of this effort, most of the levees that were deemed inadequate to meet National Flood Insurance Program standards after the 1986 flood were recertified by USACE.

B.3.3 Post-Katrina Period

Hurricane Katrina and the resulting 2005 flooding of major portions of New Orleans, Louisiana, initiated a new round of increased flood-risk assessment and management. Perceived deficiencies in the flood management system that failed during the hurricane caused USACE to further revise its levee design and maintenance standards, adopt new stricter guidelines on levee vegetation and encroachments, and substantially increase its regulatory oversight of activities affecting the levees under its jurisdiction. Furthermore, the California State Legislature adopted the Central Valley Flood Protection Act of 2008 to establish a new flood protection standard for urban areas in the Central Valley. This act also directed DWR to update the State Plan of Flood Control (SPFC) that guided the design and evolution of the flood protection systems in the Sacramento and San Joaquin Valleys during the first half of the 20th Century.

B.4 Recent State Flood Legislation and Plans Supporting Project Development

Recent flood events, State flood damage liability, increased scrutiny of the condition and effectiveness of the flood management system, and resulting flood-risk reduction efforts prompted the State to take a stronger leadership role in flood management. The Central Valley Flood Protection Act of 2008

prompted development of the 2012 Central Valley Flood Protection Plan (CVFPP), led by the DWR and several subsequent efforts. Propositions 1E and 84, with a combined bond funding capability of \$4.9 billion, were approved by California voters little more than a year after Hurricane Katrina flooded and destroyed much of New Orleans. The 2012 CVFPP and other related plans resulting from this flood legislation are discussed in this section.

B.4.1 2012 Central Valley Flood Protection Plan

Prepared in 2011, the *Flood Control System Status Report* described the physical condition of the SPFC at a systemwide level (DWR 2011). The overall condition of urban levees, nonurban levees, and channels were summarized as follows and provided the foundation for the 2012 CVFPP.

- **Urban levees** – Approximately half of about 300 miles of SPFC urban levees evaluated do not meet current levee freeboard, stability, or seepage design criteria at the design water surface elevation.
- **Nonurban levees** – Approximately three-fifths of about 1,230 miles of SPFC nonurban levees evaluated have a high potential for failure from underseepage, through-seepage, structural instability, and/or erosion at the assessment water surface elevation.
- **SPFC channels** – Approximately half of the 1,016 miles of channels evaluated in the SPFC.

have a potentially inadequate capacity to convey design flows.

The 2012 CVFPP, a high-level study, was prepared by DWR and adopted by CVFPB in June 2012 (DWR 2012a). It evaluated an array of actions to improve flood protection for urban areas, small communities, and rural-agricultural areas. It included system improvements such as expansion of bypasses to enhance the resiliency of the flood management system, improved flood system operations, groundwater recharge, and ecosystem restoration. The 2012 CVFPP considered challenges posed by climate change and emphasized the need to manage the residual flood risk remaining after CVFPP implementation.

The 2012 CVFPP effort resulted in DWR’s formulation of a State Systemwide Investment Approach (SSIA) as a compromise among many competing needs to achieve a plan that was reasonable, balanced, and cost-effective. The CVFPP determined that the SSIA could effectively improve management of flood-risk for urban, small community, and rural-agricultural areas given differing population, assets at risk, and other State interests. Environmental effects of the 2012 CVFPP were evaluated in the Program EIR (DWR 2012b).

The 2012 CVFPP is guiding California’s participation (and influencing Federal and local participation) in managing flood risk along the Sacramento River and San Joaquin River systems, with planned updates every 5 years.

B.4.2 2017 Central Valley Flood Protection Plan Update

The 2017 CVFPP Update, released at the end of 2016 as a draft, incorporates new information and provides greater specificity to help guide both short- and long-term investments in the Central Valley flood management system (DWR 2016a). This new information is documented in a series of detailed studies, including the Sacramento River Basin-Wide Feasibility Study (BWFS) and the San Joaquin River BWFS, six Regional Flood Management Plans (RFMPs), a draft Central Valley Flood System Conservation Strategy (CVFSCS), a Finance Plan, and other studies. Environmental effects of the 2017 CVFPP Update were evaluated in a Supplemental Program EIR (DWR 2016b).

B.4.3 Central Valley Flood Protection Plan Draft Central Valley Flood System Conservation Strategy

The CVFPP CVFSCS is integral to implementation of the SSIA. In 2015, DWR prepared the draft CVFSCS in support of the goals of the CVFPP. Recognizing that the rivers and bypass channels, levees, and water control structures included in the SPFC do more than just convey floodwaters, the draft CVFSCS presents guidance, data, and tools to facilitate multi-benefit ecosystem planning while improving flood-risk reduction throughout the Central Valley. (DWR 2016c.)

The draft CVFSCS provides:

- a comprehensive, long-term approach for improving riverine and floodplain ecosystems through multi-benefit projects that provide ecological and public safety benefits;
- a regional programmatic framework and platform for increasing the predictability and cost-effectiveness of permitting, while resulting in more effective and less costly conservation outcomes; and
- contextual information and tools for integrating environmental enhancements into flood management planning and permitting processes. (DWR 2016c.)

The draft CVFSCS is also an integral part of the 2017 CVFPP Update. It supports the 2012 CVFPP's goals and focuses on the further integration and improvement of ecosystem functions within SPFC facilities, where feasible. The draft CVFSCS also provides goals and measurable objectives for monitoring and evaluating progress of conservation efforts within the SPFC. DWR is leading implementation of ecosystem elements supported by the concepts of the draft CVFSCS in the Sacramento River Basin bypasses while implementing flood management improvements, considering the need to balance such improvements with agricultural stewardship. (DWR 2016c.)

B.4.4 Sacramento Basin-wide Feasibility Study

The Sacramento River BWFS is consistent with the SSIA and was prepared in support of the 2017 CVFPP Update. The BWFS primarily evaluates options for improving the bypass system, including potential expansion of the Yolo, Sacramento, and Sutter Bypasses, as well as the potential for creating a new Feather River Bypass. It includes detailed feasibility evaluations of various combinations of levee setbacks, weir expansions, new bypass channels, and storage management opportunities, with integrated ecosystem restoration actions to refine the scale and locations of systemwide improvements that were identified in the 2012 CVFPP. (DWR 2016d.)

B.4.5 Regional Flood Management Plans

DWR launched the RFMP effort as directed by the 2012 CVFPP to assist local agencies in developing long-term RFMPs that address local needs, articulate local and regional flood management priorities, and establish the common vision of regional partners. The Lower Sacramento River/Delta North RFMP is the applicable RFMP for this EIS/EIR project area.

In the beginning of the RFMP process, each of the regions formed a working group led by a local agency and consisting of representatives from flood management and land use agencies; permitting agencies; tribes; and agricultural, environmental, and recreational interests. The regional plans present local agencies' perspectives on flood management, including prioritized lists of local agency-identified

project needs. Each plan also presents an assessment of the proposed projects' costs and benefits, considering the projects' potential contributions to flood management.

The regionally led planning processes will continue with additional funding from DWR through June 2017. Further RFMP efforts will include meaningful engagement by the regional partners during preparation of the 2017 CVFPP Update and maintain working relationships to develop a common understanding of regional flood issues that should be prioritized for future implementation. DWR has compiled and reviewed a complete list of RFMP actions to assess their consistency with State interests and compatibility with the systemwide improvements formulated in the Sacramento BWFS. This assessment will be documented in the 2017 CVFPP Update.

The Sacramento BWFS and Lower Sacramento River/Delta North RFMP together provide a substantially more detailed description of proposed flood management system improvements than were available for the 2012 CVFPP, which will support the preparation of the 2017 CVFPP Update and subsequent updates.

B.5 Description of Current Sacramento River Basin Flood Management Facilities and Operations

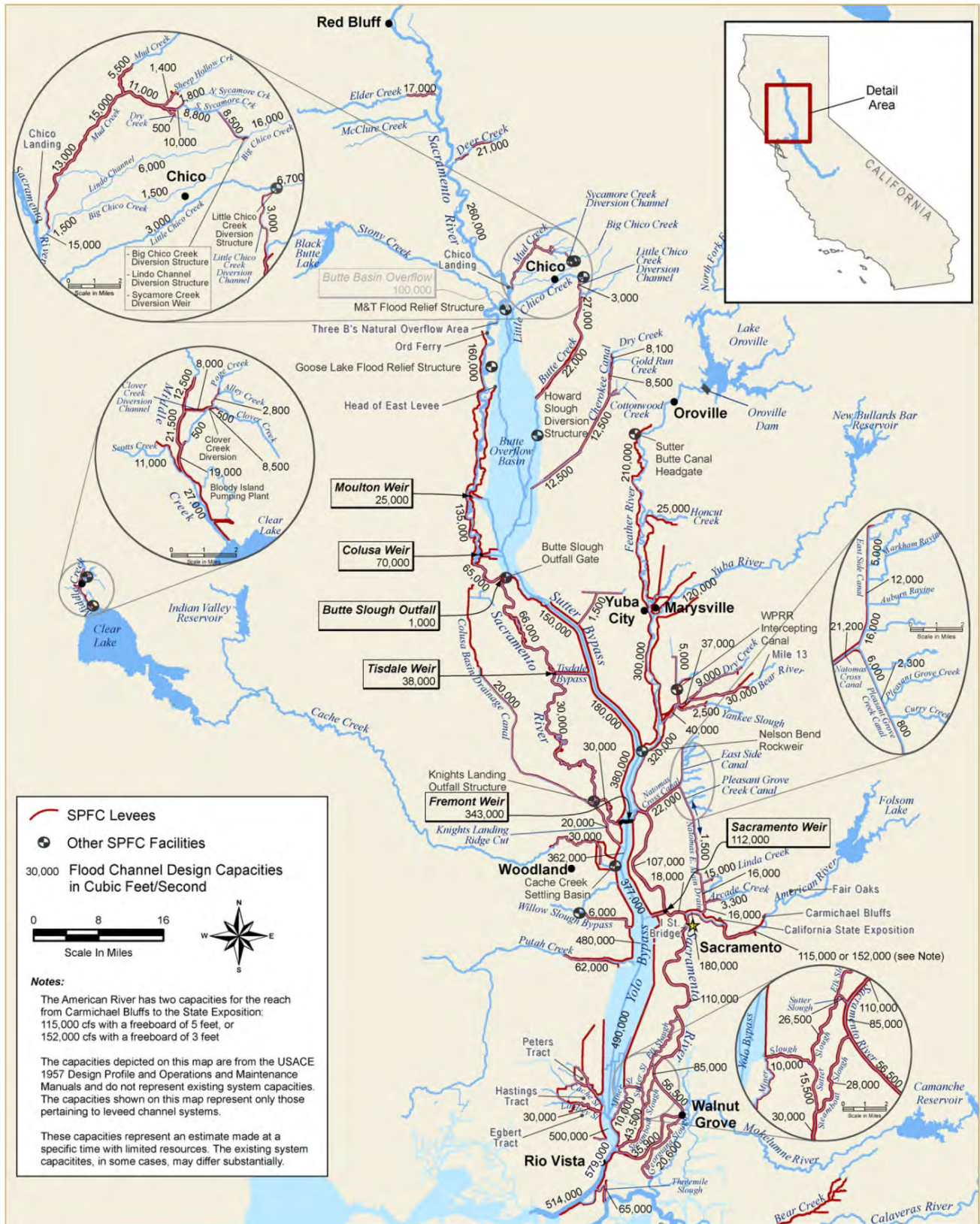
The flood management system that currently provides flood protection for the Sacramento Valley includes a vast system of multipurpose reservoirs, leveed stream channels, weirs, and bypass channels constructed over the past 160 years. The system stores and conveys flood flows originating from an area of approximately 27,000 square miles (Figure B-1). SPFC facilities comprise a major subset of this system, including erosion protection works and levees along the major rivers and streams on the valley floor, the entire flood bypass system, and the Oroville-Thermalito Complex.

Major tributaries to the Sacramento River include the Feather, Yuba, Bear, and American Rivers, which discharge to the Sacramento River from the east. In addition, numerous creeks, mostly lacking flood detention reservoirs, drain the Coastal Range and Sierra Nevada foothills. These include Clear, Battle, Thomes, Stony, Butte, Honcut, Cache, and Putah Creeks. Of these, only Stony, Cache, and Putah Creeks have significant flood-storage facilities upstream of their confluence with the Sacramento River.

The Sacramento River Bypass system is part of the SPFC and was Federally authorized in 1917. It includes a system of flood relief structures and weirs that release Sacramento River flows into the bypass system when flows exceed downstream channel capacity. The bypass system acts as a major parallel conveyance system for the Sacramento River.

The leveed portion of the Sacramento River begins near Ord Ferry. From this point, moving downstream, excess flood flows are allowed to spill into the Bypass system, with corresponding reductions in main stem river flows. This system design feature retains sufficient flows in the main channel to prevent excessive sedimentation, allows most of the Bypass channel bottoms to be productively farmed, yet provides a much greater net flood conveyance capacity than could be provided by the main stem Sacramento River Levee system alone.

Figure B-1. Sacramento River Basin Flood Management Facilities



Key: cfs = cubic feet per second

SPFC = State Plan of Flood Control

USACE = U.S. Army Corps of Engineers

Source: California Department of Water Resources 2016

From the north, the first spill from the Sacramento River occurs just upstream from the start of the levee system at Ord Ferry. Floodwater leaves the river through three designated overflow areas (the Moulton, Colusa, and Tisdale Weirs) and flows into the Butte Basin and then west of the Sutter Buttes via Butte Slough to the Sutter Bypass. Below the Sutter Bypass, system flows are discharged into the Yolo Bypass, from both the Sutter Bypass and Sacramento River, through the Fremont and Sacramento Weirs. The design-flow capacity of the main stem river is progressively reduced below each weir as water is diverted into the bypasses. For example, the design capacity of the Sacramento River upstream from the leveed system near Ord Ferry is about 260,000 cfs. Downstream from the Tisdale Weir, the design capacity of the river is only 30,000 cfs. By the time the Sacramento River nears the City of Sacramento, the Yolo Bypass carries 80 percent or more of Sacramento River flood flows southward to the Delta.

B.5.1 Yolo Bypass Flood Management Facilities

Yolo Bypass Levees

As with the rest of the Sacramento River Flood Control Project (SRFCP), the levees of the Yolo Bypass were constructed and modified over a period of many decades, to varying standards. Levee construction along the Yolo Bypass began in 1917. The levees along the Yolo Bypass were constructed using a clamshell bucket dredger, loosely depositing high-plasticity clays with organics as the main embankment material. The clam shell excavation created the Tule Canal at the waterside toe. The capacity of the levees to contain flood flows without overtopping or failing depends upon their cross-sectional dimensions, especially their height and their stability in the face of hydraulic pressure, currents, and wave action. Yolo Bypass levees are operated and maintained by local levee and reclamation districts and DWR. Maintenance activities are inspected and monitored by DWR, USACE, and CVFPB to ensure compliance with Federal regulations. The west levee of the bypass is absent south of Putah Creek for a stretch of about 7 miles due to high ground. Several areas along the Yolo Bypass levees have experienced breaches, seepage, boils, settlement, erosion, and suffer from slope instability.

Existing Levee Freeboard

The existing Yolo Bypass Levee system was designed to provide 6 feet of freeboard (height of top of levee above the median 100-year water surface elevation above the 1957 project design water surface profile; however, there are inadequacies in the freeboard at several locations. The 6-foot criterion is designed to provide protection and a margin of safety for both flood stage and run-up from wind generated waves. Wind waves can grow to 4 feet or more during storm events due to the long fetch in the Yolo Bypass and the strong, sustained winds that accompany major storms.

Historical flood frequency analysis suggests that freeboard for the 1957 levee design profile, scaled from the 1907 and 1909 floods, falls below the currently assumed 100-year event for the Yolo Bypass. The region was mapped in 2008 using Light Detection and Ranging (LiDAR) technology, providing unprecedented topographic resolution and accuracy. These data were analyzed to develop current levee crown-elevation profiles. These crown-elevation profiles were then analyzed in comparison with the 1997 flood (the most recent major flood in the watershed), and scaled up 120 percent. The difference between the levee-crown elevation and the simulated flood profile is a direct measure of the available freeboard. Freeboard inadequacies are the greatest in Upper and Lower Elkhorn on the east side of the Yolo Bypass, and between the Cities of Woodland and Davis on the west side of the Yolo Bypass.

Levee Geotechnical Conditions

Yolo Bypass Levees geotechnical conditions were evaluated based on the most current information available through DWR's Urban Levee Evaluation (ULE) and Non-Urban Levee Evaluation (NULE) programs, on considerations of geological conditions (local and regional), available data about geomorphic features, limited exploration and testing data, and records of historical levee performance to characterize a levee's condition. ULE and NULE evaluations were completed in 2015. As part of these evaluations, a rating system was developed to facilitate a systemwide perspective on levee integrity. The levels of concern (high, medium, low) generally correspond to the likelihood of failure or the likelihood of a need for flood-fighting to prevent failure at the water surface elevation evaluated. This analysis focused primarily on the failure modes of underseepage, through-seepage, and static steady-state landside slope stability, but an erosion assessment and waterside rapid-drawdown stability was also included where information was available. The levees of the Lower Elkhorn and northern Sacramento Bypass were rated as high and medium concern, respectively (DWR 2015a).

Yolo Bypass Weirs, Channels, and Other Lands and Facilities

Key features of the Yolo Bypass include Fremont Weir at the northern end of the Bypass, Knights Landing Ridge Cut, the Cache Creek Settling Basin, Willow Slough Bypass Channel, Sacramento Weir and Sacramento Bypass, Putah Creek, the Sacramento River Deep Water Ship Channel, Cache Slough and Lindsey Slough, and the east and west bypass levees that connect these features.

Fremont Weir

Fremont Weir was constructed by USACE in 1924. It is located about 15 miles northwest of the City of Sacramento and 8 miles northeast of the City of Woodland. It is the first overflow structure on the Sacramento River's right bank, marking the beginning of the Yolo Bypass. Its primary purpose is to release overflow waters of the Sacramento River, the Sutter Bypass, and the Feather River into the Yolo Bypass. Its crest length is 1.8 miles, with an elevation of 33.50 feet (United States Engineering Datum). The project design capacity of the weir is 343,000 cfs (DWR 2010a). The Yolo Bypass conveys 80 percent of the system's floodwaters southward to its confluence with the Lower Sacramento River near the City of Rio Vista. The weir begins to spill when combined upstream flows exceed approximately 55,000 cfs (DWR 2015b).

Sacramento Weir and Bypass

The Sacramento Weir was constructed from July 1916 to February 1921. The weir is 1,980 feet long, with a weir sill elevation of 23.25 feet (North American Vertical Datum 88) and consists of 48 gates, each about 38 feet wide. It is the only operable weir in the system – all others are fixed weirs that overflow through gravity when river stages rise above their weir sill elevations. The weir is located along the right bank of the Sacramento River approximately 2 miles upstream from the mouth of the American River. It was constructed by the City of Sacramento to protect the City from excessive flood stages in the Sacramento River channel downstream of the American River. A waterside concrete facing on the Sacramento Bypass levees was constructed when the Sacramento Weir and Bypass were constructed. The weir limits flood stages (water surface elevations) in the Sacramento River to project design levels through the Sacramento/West Sacramento area. The project design capacity of the weir is 112,000 cfs. During major floods, all of the Sacramento River flow and a portion of the American River flow are released via Sacramento Weir to the Yolo Bypass. (DWR 2010b.)

DWR operates the Sacramento Weir according to criteria established by USACE. These criteria for opening the gates are designed to prevent sediment accumulation and subsequent loss of conveyance capacity in the lower Sacramento River as well as to limit inundation of farmland in the Yolo Bypass to the extent feasible, while meeting the primary purpose of protecting the Sacramento metropolitan area from flooding. The gates are opened manually, and once opened, cannot be closed until flood stages recede below the weir sill, which is a slow and costly process. Several areas along the Sacramento Bypass levees have experienced breaches, seepage, boils, settlement, erosion, and suffer from slope instability.

Knights Landing Outfall Structure and Ridge Cut

Drainage from the 1,700-square mile Colusa Basin (DWR 1964) ponds in the southern portion of the basin when stages in the Sacramento River are high during flood events. During such events, the Knights Landing outfall gates are closed and drainage flows instead directly into the Yolo Bypass via the Knights Landing Ridge Cut. The Ridge Cut drains into the Yolo Bypass west of Fremont Weir.

Cache Creek Settling Basin

The Cache Creek Settling Basin (CCSB) is located in Yolo County about 2 miles east of the City of Woodland. Its primary purpose is to preserve the floodway capacity of the Yolo Bypass by trapping the heavy sediment load carried by Cache Creek before it enters the Bypass. The basin is bound by levees on all sides and covers approximately 3,600 acres. The roller-compacted concrete weir is about 1,740 feet long along the east levee of the basin. By detaining flood waters in the basin, the weir causes most of the sediment to deposit in the basin before the water flows into the Yolo Bypass. The project design capacity of the weir is 30,000 cfs, which is also the maximum design capacity of the upstream Cache Creek channel system (DWR 2010a).

The CCSB was constructed as part of the SRFCP and SPFC in 1937 and has been modified several times since then, with its last modification taking place in 1992-1993. The 1992-1993 modification was designed to extend the functional life of the CCSB for 25 years. This modification included a planned interim step of raising the outlet weir by 6 feet as early as 2017-2018. The CCSB is presently designed to trap 50 percent of the Cache Creek bedload (0.55 million cubic yards per year (DWR 2010b).

Willow Slough Bypass

The Willow Slough Bypass was constructed to reduce the risk of flooding in the City of Davis by providing an alternative outlet channel with 6,000 cfs channel capacity in the lower reach of Willow Slough. Its levees extend upstream for about 7.5 miles from the Yolo Bypass just north of the Interstate 80 (I-80) causeway to its junction with the original channel about 0.6 mile east of State Route 113. The original channel of Willow Slough reaches the Bypass about 5.5 miles to the north, near the City of Woodland (DWR 2010a).

Cache Slough and Lindsey Slough

Cache Slough and Lindsey Slough enter the Yolo Bypass from the west at the downstream end of the Bypass. SPFC facilities include levees along these sloughs and around adjoining agricultural tracts. The design capacity of Lindsey Slough discharge to the Yolo Bypass is about 43,500 cfs with 3 feet of freeboard (USACE 1953).

Sacramento River Deep Water Ship Channel

While the major features of the SRFCP, including the Yolo Bypass, were authorized by the State in 1911 and Congress in 1917, the Yolo Bypass was subsequently reduced in capacity by the construction of the Sacramento River Deep Water Ship Channel (DWSC). The Rivers and Harbors Act of 1946 authorized the DWSC to provide the Sacramento area with a deep water port. Completed in 1963, it included dredging of a 46-mile-long, 200-foot-wide (across the bottom of the cross section), 30-foot-deep channel from the Sacramento River to the City of West Sacramento (USACE 2011). The DWSC was excavated adjacent to, and west of, the east levee of the Yolo Bypass from West Sacramento southward. The effect of constructing this channel was a reduction in the width of the Yolo Bypass by about 1,700 feet (Google Earth 2014), due to the combined excavation of the channel and construction of a new levee with a waterside berm consisting of dredged materials. Efforts to deepen the ship channel from 30 feet in depth to 35 feet (as measured from Mean Lower Low Water) were stalled in 1990 due to inadequate local funding and utility relocation issues (USACE 2011). While the west levee of the ship channel functions as the east levee of the Yolo Bypass, it is not part of the SPFC and remains the maintenance responsibility of USACE (DWR 2010a). USACE has in the past contracted with DWR to conduct regular maintenance on the west levee of the DWSC; however, this contract has not been funded since 2006 and maintenance has been performed by USACE.

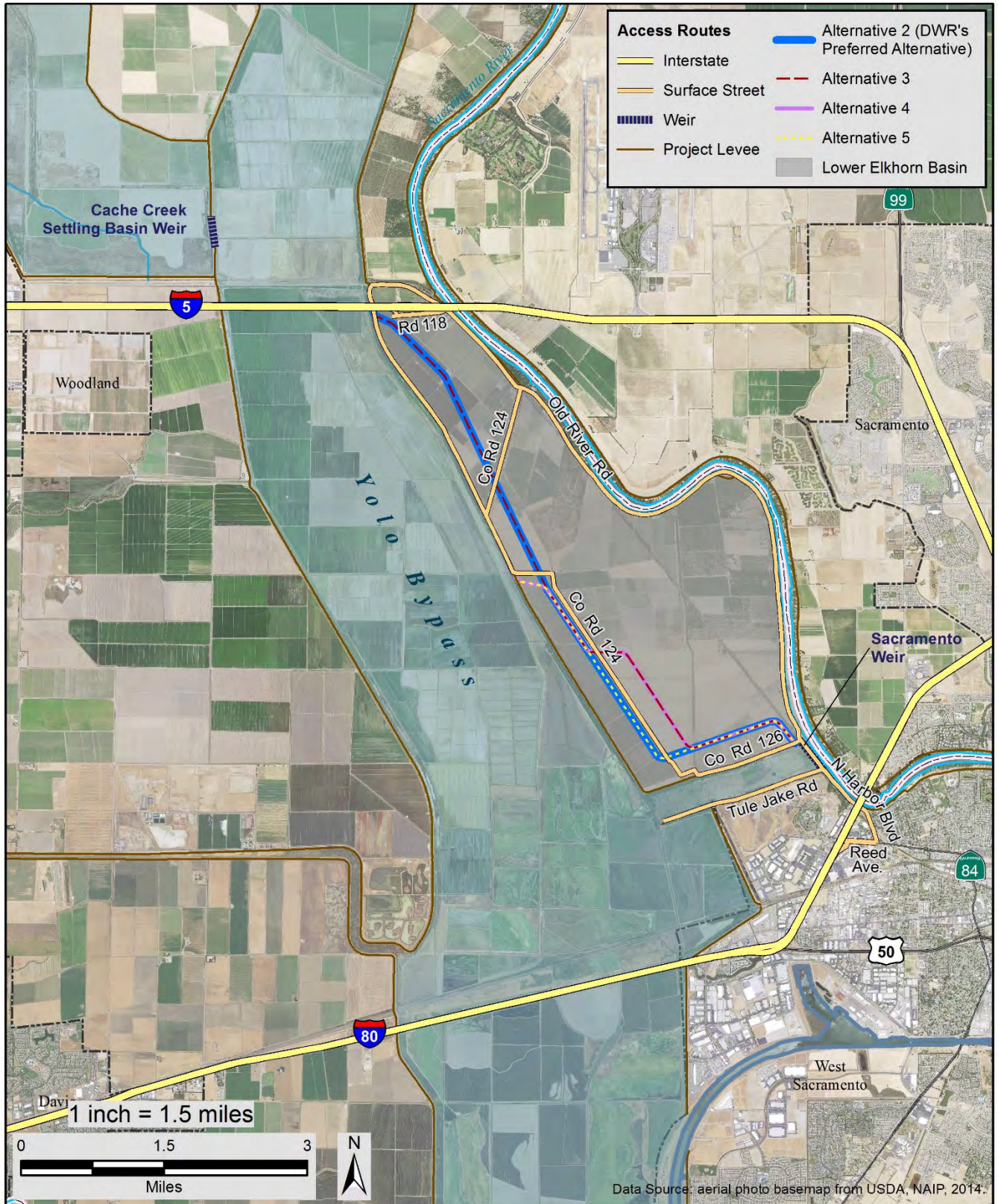
Other Key Infrastructure in the Yolo Bypass

Major interstate and State highways cross the Bypass on causeways – Interstate 5 (I-5) to the north of the project and I-80 south of the project and west of downtown Sacramento (see Figure B-2). The Sacramento Northern Railway short-line rail trestle passes over the Yolo Bypass and then runs along the west levee of the Sacramento River into the City of West Sacramento. The Union Pacific Railroad crosses the Bypass adjacent to I-80. There are also electrical power lines, pipelines, natural gas wells, and farm infrastructure within the Bypass.

B.6 Description of the Project in the Context of Systemwide Improvements

Although the project includes only setbacks to levees in the Lower Elkhorn and Sacramento Bypass, these proposed components are part of a much larger integrated plan for flood management and ecosystem restoration within the SPFC as presented in the 2012 CVFPP (DWR 2012). With an initial focus on the Yolo Bypass, a phased approach to improving the entire SPFC is needed to accommodate financial constraints, physical system limitations, agency priorities and stakeholder interests, and to coordinate with other projects and programs in the region, specifically California EcoRestore and the 2008 U.S. Fish and Wildlife Service (USFWS) and 2009 National Marine Fisheries Service (NMFS) Biological Opinions (BiOps) on the Long-Term Operational Criteria and Plan for operations of the Central Valley Project (CVP) and State Water Project (SWP); several BiOps actions are being addressed under the Fish Restoration Program Agreement, between CDFW and DWR. Later improvements to the SPFC may extend into further upstream sections of the SPFC, including the Feather River and Sutter Bypass areas, for which improvement concepts are more conceptual to date.

Figure B-2. Major Transportation Routes In The Yolo Bypass Area



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12Jan2017 SET

Source: California Department of Water Resources 2016

B.6.1 Need for Systemwide Improvements

The need for systemwide improvements to the existing Sacramento River flood management system are listed below.

- A high risk of flooding threatening life and public safety, property, critical infrastructure, and the environment exists throughout the areas protected by the Sacramento River flood management system, as experienced in 1986 and 1997 floods resulting in more than \$1 billion in damage (USACE 1997).
- The Sacramento River flood management system has inadequate capacity to convey large flood events.
- Long-term operations, maintenance, repair, replacement, and rehabilitation to existing facilities are increasingly difficult, costly, and time-consuming, which can delay the work and further threatens life and public safety, property, critical infrastructure, and the environment throughout the areas protected by the flood management system.
- Climate change may increase hydrologic variability and may put further stress on the flood management system and erode the level of protection provided from previous flood system investments.
- Impaired hydrologic and geomorphic processes; eliminated, fragmented, and degraded habitat; and other stressors have reduced the abundance, distribution, and diversity of native aquatic and terrestrial species in the Sacramento River Basin.
- Native fish and riparian habitats have been greatly reduced in the Sacramento River Basin, and restricted fish passage has reduced access to remaining habitats.

B.6.2 Objectives for Systemwide Improvements

The objectives for systemwide improvements to the existing flood system are listed below.

1. Improve public safety for communities along the Sacramento River and the Yolo Bypass by reducing river stage for a 200-year flood event at the I Street Bridge (Sacramento River) and I-5 (Yolo Bypass) to effectively meet CVFPP goals and objectives.
2. Improve flood system resiliency by increasing Sacramento Bypass and Upper Yolo Bypass capacities for a 100-year flood event to effectively meet CVFPP goals and objectives.
3. Reduce flood facility operations and maintenance requirements, repairs, and costs.
4. Minimize impacts to agricultural production to the extent feasible, consistent with CVFPP objectives.
5. Identify potential locations for improving ecosystem functions and contributing to meeting CVFSCS objectives, consistent with CVFPP goals, while still meeting river stage and bypass conveyance goals.
6. Provide multiple benefits by contributing to broader Yolo Bypass Phase II objectives.

7. Minimize impacts to aviation safety to the extent feasible.
8. Minimize environmental impacts to the extent feasible.

B.6.3 Yolo Bypass Improvements

Beginning with Fremont Weir construction in 1924, the Yolo Bypass was originally intended to serve a single purpose—protecting land, property, and lives by diverting flood waters from the Sacramento River during high-flow events. Today, the Yolo Bypass contributes to a broad suite of public values: 1) minimizing flood risk; 2) supporting a vibrant agricultural industry; 3) providing vital habitat to migrating fish and waterfowl, and many other terrestrial and aquatic species; and 4) providing recreational opportunities. However, the current configuration, existing regulatory structures, and management of the Yolo Bypass has not been optimized to serve these multiple values concurrently and in a maximally effective manner.

For decades, various entities have studied and considered modifications within the Yolo Bypass with various objectives, requirements, implementation schedules, and funding mechanisms. After a rigorous planning and analysis process, DWR’s Division of Flood Management, Flood System Implementation Office, is proposing to improve flood facilities in the Lower Elkhorn Basin and Sacramento Bypass areas of the flood system. The project, which represents strong alignment among Federal, State, regional, and local entities, would provide multiple benefits.

Consistent with the 2012 CVFPP goal to improve flood system resiliency by implementing systemwide, multi-benefit improvements, the LEBLS project would expand the capacities of the Yolo and Sacramento Bypasses, which are both critical flood reduction elements for major urban and agricultural areas in the lower Sacramento River watershed. Located just northwest of the City of Sacramento, the project area extends from east to west on the north side of the Sacramento Bypass and continues north along the east side of the Yolo Bypass terminating just south of I-5. This project includes the design, engineering, permitting, real estate acquisition, construction, and operations and maintenance of approximately 7 miles of setback levees that would improve flood system capacity and provide opportunities for ecosystem enhancement by adding inundated floodplain and as a result of required project mitigation, consistent with the CVFPP.

As part of the overall Yolo Bypass improvements, this project would contribute improved public safety for approximately 780,000 people in the Lower Sacramento River Basin area by increasing system capacity and reducing flood stages in the urban areas of the Cities of Woodland, West Sacramento, and Sacramento. The setback levee would also improve ecosystem function, consistent with the 2012 CVFPP. The setback levee would improve the efficiency of existing weirs, provide the capacity required to expand the existing weirs in the future, and provide more flexibility in locating flood system improvements that would integrate with other projects and programs.

Implementation of the whole of Yolo Bypass system improvements is projected to cost approximately \$2.3 billion and would be implemented in two phases, described below, by DWR and its State, Federal, regional, and local partnering agencies. Phase I actions would be funded initially by existing Proposition 1E funds. The 2017 CVFPP Update will help frame future financing for additional Phase I and Phase II Yolo Bypass System Improvements.

Yolo Bypass Phase I System Improvements

Yolo Bypass actions would be implemented in two phases and are expected to be completed by 2032. Phase I actions correspond to the next CVFPP Update cycle and are expected to be implemented from 2016 through 2022, a period of 7 years. These actions provide multiple benefits and would reduce flood stage in the Sacramento River. A critical component to the overall SPFC improvement strategy is to implement projects that increase conveyance capacity in the Yolo Bypass, such as setback levees (the subject of this EIS/EIR), before working on the elements that introduce significant increased flows into the Bypass (Table B-1).

Implementation of the Phase I actions would set the foundation to create additional capacity in the Yolo Bypass and to divert Sacramento River flood flows that can substantially reduce flood stage in the Lower Sacramento River. To successfully implement these actions, additional funding for construction of Lower Elkhorn and Sacramento Bypass setback levees and some other actions must be identified and secured by 2018. Approximately \$200 million is currently available from Proposition 1E for initial implementation of flood system improvements in the Yolo Bypass.

Phase I actions were selected based on the following considerations:

- actions that provide multiple benefits with minimal adverse hydraulic impacts in the Yolo Bypass;
- the setback levees provide the conveyance capacity required for future expansion of existing weirs and would improve the efficiency of existing weirs;
- actions that have strong alignment and support among State, regional, local, and Federal entities, including the Yolo Bypass Partnership; and
- project-level planning, scoping, and resourcing have been completed and project execution is imminent. It is reasonably assumed these projects can be implemented in the next 7 years.

Prioritizing expenditure of Proposition 1E bond funds to implement Phase I system improvements in the Yolo Bypass is a prudent strategy that takes advantage of State, Federal, regional, and local alignment to provide broad public benefits throughout multiple regions in the Central Valley.

The project described and analyzed in this project-level EIS/EIR is one of the identified Phase I system improvements. However, the project has independent utility from other Phase I and Phase II projects as it reduces flood risks on its own merits.

Yolo Bypass Phase II System Improvements

Phase II implementation would occur from 2023 through 2032, a 10-year period. During this period, design, permitting, and construction of all the remaining actions identified for the Yolo Bypass would be completed. Phase II actions further expand flow capacity in the Yolo Bypass and also allow increased flow into the Yolo Bypass through extension of the Fremont and Sacramento Weirs, to provide additional flood risk reduction to urban areas and small communities. Longer-term improvements potentially include in-place improvements, additional setback levees, and use of the DWSC to convey flows in high-water events. Phase II actions also implement conservation strategies within the Yolo Bypass. Additional funding must be identified to complete Phase II system improvements.

Table B-1. Yolo Bypass System Improvements – Preliminary Phasing

	Phase I System Improvements: 2015 – 2022	Phase II System Improvements: 2023 – 2032
Flood and Ecosystem Restoration	<ul style="list-style-type: none"> ▪ Lower Elkhorn levee setback, Sacramento Bypass levee setback, Lower Elkhorn CVFSCS implementation (LEBLS project evaluated in this EIS/EIR) ▪ Bryte Landfill remediation ▪ In-place improvements in the Bypass ▪ Deep Water Ship Channel design, permitting, and real estate ▪ Sacramento Weir design, permitting, and real estate ▪ Upper Elkhorn design, permitting, and real estate ▪ Small communities protection feasibility, design, and construction ▪ Small actions in Lower Bypass: <ul style="list-style-type: none"> – Degrade Prospect Island Levee – Build Prospect Island Cross Levee – Modify Step Levee – Degrade Lower Egbert Levees – Construct in-place improvements 	<ul style="list-style-type: none"> ▪ Sacramento Weir extension ▪ Sacramento Bypass CVFSCS implementation ▪ Upper Elkhorn levee setback ▪ Upper Elkhorn CVFSCS implementation ▪ Fremont Weir extension ▪ West Side setbacks and levee raises (I-80) ▪ Lower West Side Yolo Bypass levee setback and levee fix-in-place ▪ Lower West Side Yolo Bypass CVFSCS implementation ▪ CVFSCS implementation (by I-80 to Willow Slough and to Putah Creek) ▪ Fix-in-place levee improvements where needed
NMFS 2009 Biological Opinion Requirements	<ul style="list-style-type: none"> ▪ Near-Term Implementation Projects: <ul style="list-style-type: none"> – Wallace Weir Fish Barrier – Fremont Weir adult fish passage and Tule Canal agricultural crossing improvements – Lisbon Weir improvements 	<ul style="list-style-type: none"> ▪ Fish passage floodplain inundation notch

Source: GEI Consultants, Inc., in 2017 based on data compiled by California Department of Water Resources 2016

B.7 Related Projects, Programs, Plans, and Planning Efforts

Implementation of the project would require integration and coordination with several other ongoing efforts to manage water, public safety, and ecosystem goals within the flood management system. These ongoing multi-benefit planning efforts are designed to maximize the benefits from the investment of public and private funds across a wide range of benefit areas. The planning areas for these regional planning efforts adjoin and overlap with the Sacramento BWFS.

B.7.1 Central Valley Integrated Flood Management Study

The Central Valley Integrated Flood Management Study (CVIFMS), ~~an ongoing~~ is a recently completed USACE study that is currently awaiting approval by the Assistant Secretary of the Army (Civil Works). ~~The CVIFMS~~ may serve as a mechanism for facilitating ongoing cooperation between USACE, DWR, and CVFPB as part of the CVFPP Update process ~~and serve as a~~. ~~The CVIFMS is~~ a mechanism for USACE to begin to align its ongoing projects and investigations in the Central Valley with the CVFPP and with other potential partners. It can help USACE determine what additional studies may be required to identify Federal interest, support congressional authorization of further studies, or recommend improvements to complement the State’s CVFPP implementation. It may also identify additional legislative and implementation frameworks, processes, and tools to support effective long-term implementation of the recommended plan to facilitate project permitting, systemwide crediting, and governance.

CVIFMS is a collaborative watershed study focusing on multiple objective solutions to identified problems and opportunities in the areas of flood-risk management, environmental restoration, and water supply in the Central Valley. The current study phase is limited to an evaluation of the Sacramento River Basin watershed. CVIFMS will include a complete list of recommendations for USACE implementation, as well as a reconnaissance-level evaluation of CVFPP initiatives. It may include recommendations for other agencies to implement and propose regional actions. Proposals that have a good chance of being economically feasible may be recommended for more detailed feasibility studies. CVIFMS will provide a forum for coordination and resolution of issues between DWR and USACE as the State's BWFS and CVFPP move forward. Some issue resolution may be accomplished through implementation of the CVFPP.

B.7.2 California Water Action Plan

The California Water Action Plan (CWAP) released by the Governor in 2014 is a roadmap to sustainable water management. It outlines strategies to address the State's many water-related challenges. The proposed Yolo Bypass improvements are consistent with several actions specified as part of the CWAP, most notably Action 7 – Increase Flood Protection, and the project planning process was designed to integrate and incorporate other actions wherever applicable and compatible with it, most notably “Action 4 – protect and restore important ecosystems” and “Action 9 – increase operational efficiency and regulatory efficiency.”

The CWAP describes the challenges of managing California's water resources to meet both human and ecological needs in a time of growing demands and dwindling supplies. The CWAP cites the challenges of uncertain water supplies, drought, declining groundwater supplies, poor water quality, declining native fisheries, loss of wildlife habitat, flood management challenges, water supply disruption, climate change, and population growth. CWAP is a roadmap toward water sustainability and integrated resource management. The plan is intended to provide a high-level guide to State program development and budgeting decisions. It sets three broad objectives as a means for addressing these challenges: more reliable water supplies; restoration of important species and habitat; and more resilient, sustainably managed water resources system, which includes water supply, water quality, flood protection, and environment.

B.7.3 California Water Plan Update

The California Water Plan is prepared and updated by DWR. It provides a collaborative planning framework for elected officials, agencies, tribes, water and resource managers, businesses, academia, stakeholders, and the public to develop findings and recommendations and make informed decisions for California's water future. The plan, updated every 5 years, presents the status and trends of California's water-dependent natural resources; water supplies; and agricultural, urban, and environmental water demands for a range of plausible future scenarios. The California Water Plan also evaluates different combinations of regional and Statewide resource management strategies to reduce water demand, increase water supply, reduce flood risk, improve water quality, and enhance environmental and resource stewardship.

DWR's goal for each update of the California Water Plan is to receive broad input and support from Californians in producing a strategic water plan that meets California Water Code requirements; guides State investments in innovation and infrastructure; and advances integrated water management and sustainable outcomes (DWR 2016e).

B.7.4 Integrated Regional Water Management Plans

An Integrated Regional Water Management Plan (IRWMP) is a comprehensive planning document to encourage regional strategies for management of water resources. An IRWMP should investigate a broad spectrum of management strategies, identify the benefits of integrating water management strategies, and identify priorities for implementing projects and programs. Over the past decade, several regional planning groups have developed IRWMPs, partially funded by grants from DWR.

The Water Resources Association of Yolo County completed the Yolo County IRWMP in April 2007 and has been updating the plan regularly. The Yolo County IRWMP was used as the foundation to pursue grant funding, initially targeting Proposition 50 implementation funds. The IRWMP is closely coordinated with the Yolo County General Plan process that has a planning horizon to 2025 (Water Resources Association of Yolo County 2007).

On a broader scale, the Westside Sacramento IRWMP has been prepared by water management agencies within the Counties of Colusa, Lake, Yolo, Napa, and Solano by the Westside Sacramento Regional Water Management Group (2015). The goal has been to leverage the resources of five water management agencies within this region to pursue State and Federal funding to implement projects identified through the planning process. The planning process includes, but is not limited to: water supply reliability, water conservation, water quality improvement, storm water management, flood management, invasive species abatement, mercury contamination cleanup, wetlands enhancements and protections, and environmental and habitat improvements and protections.

B.7.5 National Marine Fisheries Service and U.S. Fish and Wildlife Service Biological Opinions and California Department of Fish and Wildlife Incidental Take Permit

On December 15, 2008, USFWS issued a BiOp on the Long-Term Operational Criteria and Plan for operations of the CVP and SWP (USFWS 2008). USFWS determined that the continued operations of the CVP and SWP were likely to jeopardize the continued existence of the delta smelt and adversely modify its critical habitat. NMFS also issued a BiOp in 2009 on the effects of long-term CVP and SWP operations on Chinook salmon, steelhead, and green sturgeon. These two BiOps contain Reasonable and Prudent Alternatives designed to alleviate jeopardy to listed species and adverse modification of critical habitat. Some of the identified Reasonable and Prudent Alternatives are designed to be implemented in the Yolo Bypass (NMFS 2009).

Many BiOp RPAs require modifying the Yolo Bypass to allow successful migration of both anadromous (e.g., salmon, steelhead, and sturgeon) and non-anadromous (e.g., delta smelt) species, respectively. These modifications could overlap with components of the project. The implementation of the two BiOps by NMFS, USFWS, Reclamation, and DWR will be coordinated with flood management activities in the Yolo Bypass. The implementation of the Reasonable and Prudent Alternatives, subject to USACE regulatory requirements, will allow the CVP and SWP to continue operating, thus enhancing State water supply reliability. Several BiOp elements are being administered under the Fish Restoration Program Agreement.

Habitat restoration actions for longfin smelt implemented in compliance with the USFWS BiOp Reasonable and Prudent Alternative Component 4 that also meets the habitat restoration requirements of the CDFW Incidental Take Permit will satisfy the habitat acreage requirements of the Incidental Take Permit.

B.7.6 California WaterFix and EcoRestore

These programs are successors to the Bay Delta Conservation Plan formulation process, led by the California Natural Resources Agency, DWR, and Reclamation. The California WaterFix for the Delta consists of three new 3,000 cfs-screened water intakes on the Sacramento River, with two in 40-foot diameter tunnels to convey water to the South Delta for export by the CVP and SWP. California WaterFix will increase water supply reliability and system resiliency, by reducing the dependence on Delta levees to facilitate the flow of export water across the Delta while reducing fisheries impacts associated with water exports. It will enable the CVP and SWP to better withstand the potential impacts of sea level rise, intense storms, and earthquakes.

Based on ongoing review of potential construction and operational impacts, mitigation for California WaterFix construction and operation will include about 2,300 acres of habitat restoration and up to 13,300 acres of habitat protection (e.g., conservation easements). This additional acreage will focus primarily on preserving the habitat and working landscape values in the Delta. DWR and Reclamation anticipate these revised acreage targets for habitat restoration and protection will be the maximum amount required for mitigation. Final determinations will be based on actual project impacts and consultation with fish and wildlife agencies. All habitat restoration and protection costs for California WaterFix will be paid for exclusively by water agencies benefiting from the actions.

Separate from California WaterFix and over the next 5 years, California will pursue more than 30,000 acres of critical Delta restoration under the California EcoRestore program, pursuant to preexisting regulatory requirements such as the 2008 and 2009 BiOps and various enhancements to improve the overall health of the Delta ecosystem.

B.7.7 The Delta Plan

The Delta Plan is a comprehensive, long-term management plan prepared by the Delta Stewardship Council (DSC), which was created by legislation to achieve the State-mandated coequal goals for the Delta: providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The coequal goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place." Required by the 2009 Delta Reform Act, the Delta Plan creates new rules and recommendations to further the State's coequal goals for the Delta (California Water Code Section 85054). It is guided by the best available science and is founded on cooperation and coordination among Federal, State, regional, and local agencies. The Delta Plan is enforceable through regulatory authority in the Delta Reform Act that requires State and local agencies to be consistent with the Delta Plan (DSC 2013).

The Delta Plan was unanimously adopted by DSC on May 16, 2013. Subsequently its 14 regulatory policies were approved by the Office of Administrative Law. The Delta Plan became effective with legally enforceable regulations on September 1, 2013. Although the LEBLS project is outside the Legal Delta, DWR will consider Delta Plan policy during project implementation.

B.8 Lead Agency Considerations

B.8.1 U.S. Army Corps of Engineers

Activities in the Yolo Bypass would require active participation of USACE as the Federal lead agency for this EIS, since DWR is requesting a 408 permission and 404 permit as part of the project. USACE has conducted feasibility studies in the Lower Sacramento Basin that would influence flood risk

reduction in the Yolo Bypass, Lower Sacramento River, and American River. These studies include, but are not limited to, West Sacramento Levee Improvements, American River Common Features General Reevaluation, and the Sacramento Weir Expansion to allow an additional 30,000 cfs diversion to the Yolo Bypass from the American River via the Sacramento River. Although the implementation horizon for USACE projects might be longer than other Yolo Bypass activities, these feasibility studies may have significant influence on other activities in the Bypass. USACE has also initiated the Sacramento River General Reevaluation Report that would include the feasibility of modifying the Yolo Bypass flood-risk management features and associated ecosystem restoration actions.

Sacramento River General Reevaluation Report

The Sacramento River General Reevaluation Report (GRR) was initiated in October, 2015, by USACE, with CVFPB and DWR as partner agencies (USACE 2015). The reevaluation study will include an analysis of the SRFCP. The general reevaluation will assess a combination of one or more ecosystem restoration and flood-risk management measures, including widening existing bypasses, modifying existing weirs, optimizing weir operations, constructing setback levees, developing floodplain management plans, restoring riverine aquatic and riparian habitat, removing barriers to fish passage, and restoring natural geomorphic processes, among others. Changes or modifications to the SRFCP may also include updates or revisions to the operations and maintenance manuals in affected areas. The reevaluation could eventually lead to Congressional authorization and Federal funding for implementation of recommended actions. This GRR, like the CVIFMS, is a potential vehicle for Federal participation in the implementation of the CVFPP over time, and thus ongoing interagency cooperation between USACE, CVFPB, and DWR on this project will be of great importance to the long-term success of CVFPP implementation.

American River Common Features General Reevaluation Report

A comprehensive study, called the American River Common Features (ARCF) GRR, is currently underway to investigate further improvements to the flood risk reduction system throughout the Sacramento region. The ARCF GRR is authorized by the Water Resources Development Acts of 1996 and 1999 and includes strengthening and raising levees, installing stream-flow gages, and improving flood-warning systems. The ARCF work has installed approximately 24 miles of slurry walls at depths up to 80 feet, raised levees to provide adequate freeboard, addressed slope stability issues, and corrected some erosion problems along the Lower American River. This work, as authorized in 1996 and 1999, was completed in January 2016.

The ARCF study area consists of: (1) approximately 12 miles of the north and south banks of the American River immediately upstream from the confluence with the Sacramento River; (2) the east bank NEMDC/Steelhead Creek; Pleasant Grove Creek Canal; Dry, Robla, and Arcade Creeks; and the Magpie Creek Diversion Channel (collectively referred to as the “East Side Tributaries”); (3) the east bank of the Sacramento River downstream from the American River to the town of Freeport where the levee ties into Beach Lake Levee; and (4) the Sacramento Weir and Bypass, located along the north edge of the City of West Sacramento in Yolo County.

USACE, CVFPB, and SAFCA are currently considering two alternatives that could be implemented as part of future ARCF projects. Alternative 1, “Improve Levees,” involves the construction of fix-in-place levee remediation measures to address seepage, slope stability, erosion, and overtopping concerns identified for the American and Sacramento River, NEMDC/Steelhead Creek, Arcade, Dry/Robla, and Magpie Creek Levees. A vegetation variance would be sought to allow for vegetation to remain on the

lower portion of the waterside levee slope. Alternative 2, “Improve Levees and Widen the Sacramento Weir and Bypass,” has been identified as the “Tentatively Selected Plan.” Alternative 2 would include all of the levee improvements discussed in Alternative 1, except levee raises along the Sacramento River would be included to a lesser extent. Instead of the full extent of levee raises, the Sacramento Weir and Bypass would be widened to divert more flows into the Yolo Bypass. The levees along the American River; NEMDC/Steelhead Creek; and Arcade, Dry/Robla, and Magpie Creeks would be improved to address identified seepage, stability, erosion, and height concerns. The levees along the Sacramento River would be improved to address identified seepage, stability, and erosion concerns. A small amount of levee raising would still be required on the Sacramento River.

A final report with a recommended plan for improvements, along with the joint Final EIS/EIR, was released for public review in 2016 (USACE and CVFPB 2016). The project received Congressional authorization in December 2016 as part of the Water Infrastructure Improvements for the Nation Act. The project would take up to 20 years to complete, and there is no construction start date at this time.

B.8.2 California Department of Water Resources

Activities in the Yolo Bypass would require active participation of DWR as the State partner in implementing flood-risk reduction actions for the SFPC and also as the State lead agency for the LEBLS project EIS/EIR. DWR’s flood-related actions in the Yolo Bypass are driven by the 2012 CVFPP, 2017 CVFPP Update, the Sacramento BWFS, the Lower Sacramento River/Delta North RFMP, and the CVFPP Draft CVFSCS. Consistency with these components are reflected in the CVFPP program-level purpose and objectives listed below.

2012 Central Valley Flood Protection Plan Program-Level Purpose and Objectives

The broad purpose of the 2012 CVFPP is to respond to the California Legislature’s direction in the Central Valley Flood Protection Act of 2008 (Senate Bill 5) to develop and implement a sustainable, integrated flood management plan for the Central Valley (DWR 2012a).

The 2012 CVFPP program-level objectives are listed below (DWR 2012a):

1. Primary Objective: Improve Flood Risk Management – Reduce the chance of flooding and damages, once flooding occurs, and improve public safety, preparedness, and emergency response through the following:

- Identifying, recommending, and implementing structural and nonstructural projects and actions that benefit lands currently receiving protection from facilities of the SPFC.
- Formulating standards, criteria, and guidelines to facilitate implementation of structural and nonstructural actions for protecting urban areas and other lands of the Sacramento and San Joaquin river basins and the Delta.

2. Supporting Objectives:

- Improve Operations and Maintenance – Reduce maintenance and repair requirements by modifying the flood management systems in ways that are compatible with natural processes, and adjust, coordinate, and streamline regulatory and institutional standards, funding, and practices for operations and maintenance, including significant repairs.

- Promote Ecosystem Functions – Integrate the recovery and restoration of key physical processes, self-sustaining ecological functions, native habitats, and species into flood management system improvements.
- Improve Institutional Support – Develop stable institutional structures, coordination protocols, and financial frameworks that enable effective and adaptive integrated flood management (designs, operations and maintenance, permitting, preparedness, response, recovery, and land use and development planning).
- Promote Multi-Benefit Projects – Describe flood management projects and actions that also contribute to broader integrated water management objectives identified through other programs.

3. Statutory Objectives:

- Maximize Flood Risk Reduction Benefits within the Practical Constraints of Available Funds – Ensure that technically feasible and cost-effective solutions are implemented to maximize the flood risk reduction benefits given the practical limitations of available funding, and provide a feasible, comprehensive, and long-term financing plan for implementing the plan.
- Adopt the CVFPP by July 1, 2012 – Complete all steps necessary to develop and adopt the CVFPP by July 1, 2012, or such other date as may be provided by the Legislature.
- Meet Multiple Objectives Established in Section 9616 of the California Water Code, as Feasible:
 - Reduce the risk to human life, health, and safety from flooding, including protection of public safety infrastructure.
 - Expand the capacity of the flood management system in the Sacramento-San Joaquin Valley to either reduce flood flows or convey floodwaters away from urban areas.
 - Link the flood protection system with the water supply system.
 - Reduce flood risks in currently nonurbanized areas.
 - Increase the engagement of local agencies willing to participate in improving flood protection, ensuring a better connection between State flood protection decisions and local land use decisions.
 - Improve flood protection for urban areas to the urban level of flood protection.
 - Promote natural dynamic hydrologic and geomorphic processes.
 - Reduce damage from flooding.
 - Increase and improve the quantity, diversity and connectivity of riparian, wetland, floodplain, and shaded riverine aquatic habitats, including the agricultural and ecological values of these lands.
 - Minimize flood management system operations and maintenance requirements.

- Promote the recovery and stability of native species' populations and overall biotic community diversity.
- Identify opportunities and incentives for expanding or increasing use of floodway corridors.
- Provide a feasible, comprehensive, and long-term financing plan for implementing the CVFPP.
- Identify opportunities for reservoir reoperation in conjunction with groundwater flood storage.

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**Appendix C. Summary of Applicable Laws,
Regulations, Policies, and Plans**

C.1 Federal Plans, Policies, Regulations, and Laws

C.1.1 Aesthetics

No Federal plans, policies, regulations, or laws related to aesthetics apply to the project.

C.1.2 Air Quality

Clean Air Act of 1963, as amended, 42 United States Code 7401, et seq.

The Clean Air Act (CAA) requires the adoption of National Ambient Air Quality Standard (NAAQS) to protect the public health and welfare from the effects of air pollution. As discussed in Section 4.3, “Air Quality,” there are six criteria air pollutants of nationwide concern: ozone, carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), lead, and PM (subdivided into PM₁₀ [particles less than 10 microns in diameter] and PM_{2.5} [particles less than 2.5 microns in diameter]). The U.S. Environmental Protection Agency (EPA) established primary and secondary NAAQS (Table C-1) that specify allowable ambient concentrations for the criteria pollutants. Primary NAAQS are established at levels necessary, with an adequate margin of safety, to protect the public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary NAAQS specify the levels of air quality determined appropriate to protect the public welfare from any known or anticipated adverse effects associated with air contaminants.

In addition to the NAAQS shown in Table C-1, California has established standards for sulfates, hydrogen sulfide, visibility, and vinyl chloride. These pollutants are not of concern in the project site and vicinity (this area is in attainment or unclassifiable with no history of issues for the pollutant), and are not pollutants of concern for the action alternatives. Consequently, information on standards for these pollutants is not included in Table C-1. In addition, interim standards applicable in special areas, but not in the project site, are not included in Table C-1.

EPA designates areas of the State as attainment, nonattainment, maintenance, or unclassified for the various pollutant standards. An “attainment” designation for an area signifies that pollutant concentrations did not exceed the established standard. In contrast to attainment, a “nonattainment” designation indicates that a pollutant concentration has exceeded the established standard. Nonattainment may differ in severity. To identify the severity of the problem and the extent of planning and actions required to meet the standard, nonattainment areas are assigned a classification that is commensurate with the severity of their air quality problem (e.g., moderate, serious, severe, extreme).

EPA, under the provisions of the CAA, requires each state with regions that have not attained the NAAQS to prepare a State Implementation Plan (SIP), detailing how these standards are to be met in each local area. The SIP is a legal agreement between each state and the Federal government to commit resources to improving air quality. It serves as the template for conducting regional- and project-level air quality analysis. The SIP is not a single document, but a compilation of new and previously submitted attainment plans, emissions reduction programs, district rules, state regulations, and Federal controls. The California Air Resources Board (ARB) is the lead agency for developing the SIP in California. Local air districts and other agencies prepare Air Quality Attainment Plans (AQAPs), or Air Quality Management Plans (AQMPs), and submit them to the ARB for review, approval, and incorporation into the applicable SIP. The AQMPs and AQAPs that have been prepared by the Yolo-Solano Air Quality Management District (YSAQMD), in coordination with other local air districts, for the Sacramento Valley Air Basin (SVAB), defines the plans, programs, and regulations required to attain and maintain compliance with the NAAQS. These plans, programs, and regulations apply to the evaluation of effects for the project.

Table 1. National and California Ambient Air Quality Standards

Pollutant	Averaging Time	State Standards ^a	National Standards ^b	
			Primary ^c	Secondary ^d
Ozone	1 hour	0.09 ppm	–	
	8 hour	0.070 ppm	0.075 ppm	0.075 ppm
Coarse particulate matter (PM ₁₀)	24 hour	50 µg/m ³	150 µg/m ³	150 µg/m ³
	Annual arithmetic mean	20 µg/m ³	–	
Fine particulate matter (PM _{2.5})	24 hour	–	35 µg/m ³	35 µg/m ³
	Annual arithmetic mean	12.0 µg/m ³	12.0 µg/m ³	15.0 µg/m ³
Carbon monoxide	1 hour	20 ppm	35 ppm	–
	8 hour	9.0 ppm	9 ppm	–
Nitrogen dioxide ^e	1 hour	0.18 ppm	100 ppb	–
	Annual arithmetic mean	0.030 ppm	0.053 ppm	0.053 ppm
Sulfur dioxide ^f	1 hour	0.25 ppm	75 ppb	–
	3 hour	–	–	0.5 ppm
	24 hour	0.04 ppm	–	–
Lead	30 day average	1.5 µg/m ³	–	–
	Rolling 3-month average	–	0.15 µg/m ³	

Notes: PM_{2.5} = fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less; PM₁₀ = coarse (respirable) particulate matter with an aerodynamic diameter of 10 micrometers or less; ppb = parts per billion; ppm = parts per million; µg/m³ = micrograms per cubic meter; CCR = California Code of Regulations; ARB = California Air Resources Board

- ^a California standards for ozone, carbon monoxide, sulfur dioxide (1- and 24-hour), nitrogen dioxide, and particulate matter (PM₁₀, PM_{2.5}), are values that are not to be exceeded. All others are not to be equal or exceeded. California ambient air quality standards are listed in the Table of Standards in CCR Section 70200 of Title 17.
- ^b National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM₁₀, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or less than 1. For PM_{2.5}, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standards.
- ^c National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

- ^d National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
- ^e To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of ppb. California standards are in units of ppm. To directly compare the national 1-hour standard to the California standards, the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm. Note that the 1-hour national standard is in units of ppb. California standards are in units of ppm. To directly compare the 1-hour national standard to the California standard, the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

Source: California Air Resources Board 2016

Clean Air Act Amendments General Conformity Rule

General conformity requirements were adopted by Congress as part of the Clean Air Act Amendments (CAAA) and were first implemented by EPA in regulations promulgated in 1993 (40 Code of Federal Regulations [CFR] 93). The purpose of the General Conformity program is to ensure that actions taken by the Federal government do not undermine state or local efforts to achieve and maintain the NAAQS. Before a Federal action is taken, it must be evaluated for conformity with the SIP. All reasonably foreseeable emissions, both direct and indirect, predicted to result from the action are taken into consideration and must be identified with respect to location and quantity. Direct emissions occur at the same time and place as the action. Indirect emissions are reasonably foreseeable emissions that may

occur later in time and/or farther removed from the action; they are subject to conformity if the Federal agency can practicably control them and maintain control through a continuing program responsibility. If emissions from an action are below *de minimis* thresholds specified in EPA regulations, the action is presumed to conform and a general conformity determination is not required.

C.1.3 Biological Resources – Fish and Aquatic Organisms

Federal Endangered Species Act

Pursuant to the Federal Endangered Species Act (ESA) (Title 16, Section 1531 and following sections of the U.S. Code (USC) [16 USC 1531 et seq.]), the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) have regulatory authority over fish species listed or proposed for listing as Federally endangered or threatened and over projects that may result in take of such species. USFWS has regulatory jurisdiction over freshwater and estuarine fishes (such as delta smelt), and NMFS has jurisdiction over anadromous and marine species (such as Chinook salmon and steelhead). In general, persons subject to the ESA (including private parties) are prohibited from “taking” endangered or threatened fish species on private property. Under Section 9 of the ESA, the definition of “take” is to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” The definition of “harm” has also been interpreted to include significant habitat modification that could result in take.

Section 3(5)A of the ESA defines “critical habitat” as the specific areas within the geographical area occupied by listed species on which are found physical or biological features essential to the conservation of the species and that may require special management considerations or protection. Specific areas outside of the geographical area occupied by the species may also be included in critical habitat designations, upon a determination that such areas are essential for the conservation of the species.

Section 7 of the ESA outlines procedures for Federal interagency cooperation to conserve Federally-listed species and designated critical habitat. Section 7(a)(2) requires Federal agencies to consult with USFWS and NMFS to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species, or destroying or adversely modifying designated critical habitat. For projects where Federal action is not involved and take of a listed species may occur, a project proponent may seek an incidental take permit under Section 10(a) of the ESA. Section 10(a) allows USFWS and NMFS to permit the incidental take of listed species if such take is accompanied by a Habitat Conservation Plan (HCP) that ensures minimization and mitigation of impacts associated with the take.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance essential fish habitat for species regulated under a Federal fisheries management plan. Essential fish habitat is defined as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. The MSA requires Federal agencies to consult with NMFS on all actions, or proposed actions, authorized, funded, or undertaken by the agencies that may adversely affect essential fish habitat (MSA Section 305[b][2]). In instances where MSA and ESA issues overlap, NMFS encourages an integrated approach to consultation.

C.1.4 Biological Resources – Vegetation and Wildlife

Federal Endangered Species Act

Pursuant to the Federal ESA, USFWS has regulatory authority over plant and wildlife species listed or proposed for listing as Federally endangered or threatened and over projects that may result in take of such species. In general, persons subject to the ESA (including private parties) are prohibited from “taking” endangered or threatened wildlife species on private property, and from taking endangered or threatened plants in areas under Federal jurisdiction or in violation of State law. Under Section 9 of the ESA, the definition of “take” is to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” USFWS has also interpreted the definition of “harm” to include significant habitat modification that could result in take. The take prohibition of ESA Section 9 applies only to listed wildlife species. Section 9(a)(2)(B) describes Federal protection for endangered plants. In general, the ESA does not protect listed plants located on non-Federal land (i.e., areas not under Federal jurisdiction), unless such species are already protected by State law.

Section 3(5)A of the ESA defines “critical habitat” as the specific areas within the geographical area occupied by listed species on which are found physical or biological features essential to the conservation of the species and that may require special management considerations or protection. Specific areas outside of the geographical area occupied by the species may also be included in critical habitat designations, upon a determination that such areas are essential for the conservation of the species.

Section 7 of the ESA outlines procedures for Federal interagency cooperation to conserve Federally-listed species and designated critical habitat. Section 7(a)(2) requires Federal agencies to consult with USFWS to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species, or destroying or adversely modifying designated critical habitat. For projects where Federal action is not involved and take of a listed species may occur, a project proponent may seek an incidental take permit under Section 10(a) of the ESA. Section 10(a) allows USFWS to permit the incidental take of listed species if such take is accompanied by an HCP that ensures minimization and mitigation of impacts associated with the take.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 USC 703 et seq.), first enacted in 1918, provides for protection of international migratory birds. The MBTA makes it unlawful, except as permitted by regulations, to pursue, take, or kill any migratory bird, or any part, nest or egg of any such bird. This prohibition includes both direct and indirect acts, although harassment and habitat modification are not included unless they result in direct loss of birds, nests, or eggs. The current list of species protected by the MBTA can be found in 50 CFR 10.13. The list includes nearly all birds native to the United States.

Executive Order 13112, Invasive Species

Executive Order (EO) 13112, "Invasive Species" (February 3, 1999), mandates that Federal agencies take actions to prevent the introduction of invasive species, provide for their control, and minimize the economic, ecological, and human health impacts that invasive species cause. EO 13112 also calls for the restoration of native plants and tree species.

C.1.5 Biological Resources – Wetlands and Other Waters of the United States

Section 404 of the Clean Water Act

Section 404 of the Federal Clean Water Act (CWA) requires a project proponent to obtain a permit from the U.S. Army Corps of Engineers (USACE) before engaging in any activity that involves any discharge of dredged or fill material into Waters of the United States, including wetlands. Fill material, Waters of the United States, and wetlands are defined below.

- *Fill material* – is material placed in Waters of the United States where the material has the effect of replacing any portion of a water of the United States with dry land, or of changing the bottom elevation of any portion of a water of the United States.
- *Waters of the United States* – consist of navigable Waters of the United States; interstate waters; all other waters where the use, degradation, or destruction of the waters could affect interstate or foreign commerce; tributaries to any of these waters; and wetlands adjacent to these waters.
- *Wetlands* – are those areas that are inundated or saturated by surface water 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.

Potentially jurisdictional wetlands must meet three wetland delineation criteria: hydrophytic vegetation, hydric soil types, and wetland hydrology. Wetlands that meet the delineation criteria may be jurisdictional under Section 404 of CWA pending USACE and EPA review.

As part of the review of a project, USACE must ensure compliance with applicable Federal laws, including EPA's Section 404(b)(1) Guidelines. USACE regulations require that impacts on Waters of the United States be avoided and minimized to the maximum extent practicable, and that unavoidable impacts be compensated (33 CFR 320.4[r]).

In 2008, USACE and EPA issued regulations governing compensatory mitigation for activities authorized by permits issued by USACE (33 CFR 332). The rule establishes a preference for using mitigation banks because they provide established wetland habitats that have already met success criteria, thereby reducing some of the risks and uncertainties of compensatory mitigation involving creation of new wetlands that cannot yet demonstrate functionality at the time of project implementation. The rule also establishes a preference for providing compensatory mitigation within the affected watershed. Ideally, compensatory mitigation would take place at a mitigation bank within the same watershed as the waters to be replaced. If mitigation banks are not available within the affected watershed, then compensatory mitigation involving creation or restoration within the affected watershed may be preferable to using a mitigation bank outside the affected watershed.

Section 401 of the Clean Water Act

Under Section 401 of the CWA, an applicant for a Section 404 permit must obtain a certificate from the appropriate State agency stating that the intended dredging or filling activity is consistent with the State's water quality standards and criteria. In California, the State Water Resources Control Board (SWRCB) delegates the authority to grant water quality certification to the nine Regional Water Quality Control Boards (RWQCBs). Activities associated with the proposed project that would require a permit

under Section 404 of the CWA are also anticipated to require Water Quality Certification under Section 401 of the CWA.

Executive Order 11990, Protection of Wetlands

The purpose of EO 11990 is to “minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.” To meet these objectives, EO 11990 requires Federal agencies, in planning their actions, to consider alternatives to wetland sites and limit potential damage if an activity affecting a wetland cannot be avoided. EO 11990 applies to: acquisition, management, and disposition of Federal lands and facilities construction and improvement projects which are undertaken, financed, or assisted by Federal agencies; and Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulation, and licensing activities.

C.1.6 Climate Change

Clean Air Action – Section 202(a)

On December 7, 2009, the EPA Administrator signed two distinct findings regarding greenhouse gases (GHGs) under Section 202(a) of the CAA:

- *Endangerment Finding:* The current and projected concentrations of the six key GHGs—carbon dioxide (CO₂), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride—in the atmosphere threaten the public health and welfare of current and future generations; and
- *Cause or Contribute Finding:* The combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

U.S. Department of Energy pump efficiency regulations (10 CFR Part 429 and 431) become effective in the marketplace in 2020.

C.1.7 Cultural Resources

Federal plans, policies, regulations, and laws related to cultural resources that apply to the project are discussed in Subsection 4.8.2, “Regulatory Setting,” in Section 4.8, “Cultural Resources.”

C.1.8 Energy

No Federal plans, policies, regulations, or laws related to energy apply to the project.

C.1.9 Environmental Justice

Executive Order 12898

In 1994, President Bill Clinton issued Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.” This order requires Federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations in the United States.

Executive Order 12898 also established the Interagency Working Group on Environmental Justice (EJ IWG), which provides a forum for Federal agencies to collectively advance environmental justice principles. The EJ IWG is chaired by the EPA Administrator and includes 17 Federal agencies and White House offices, with standing committees and other committees established as necessary.

The *Charter for Interagency Working Group on Environmental Justice* (EJ IWG 2014) outlines the governance structure and focus areas for the EJ IWG. The charter includes the following focus areas for EJ IWG activities:

- Public Participation
- Regional Engagement
- Title VI of the Civil Rights Act of 1964
- National Environmental Policy Act
- Native Americans/Indigenous Peoples
- Rural Communities Engagement
- Impacts from Climate Change
- Impacts from Commercial Transportation (Goods Movement)
- Strategy and Implementation Progress Reports

C.1.10 Geology, Soils, and Paleontological Resources

U.S. Army Corps of Engineers' Engineering Criteria

There are a several engineering manuals (EMs), engineering technical letters (ETLs), and engineering regulations (ERs) prepared by USACE that contain applicable guidelines for design and construction of embankments, levees, and seepage berms:

- EM 1110-2-1913, Design and Construction of Levees (USACE 2000)
- EM 1110-2-1902, Slope Stability (USACE 2003)
- ETL 1110-2-569, Design Guidance for Levee Underseepage (USACE 2005)
- ETL 1110-2-555, Design Guidance on Levees (USACE 1997)
- ER 1110-2-1806, Earthquake Design and Evaluation for Civil Works Projects (USACE 2016)

Federal Emergency Management Agency

For levees to be certified by the Federal Emergency Management Agency (FEMA) as providing flood protection, evidence also must be provided that adequate design and operation and maintenance systems are in place to provide reasonable assurance that protection exists from a base flood (100-year level of flood risk reduction [0.01 percent annual exceedance probability]). Specific requirements pertaining to amount of freeboard, closure devices, embankment protection from floods, embankment and foundation stability, settlement, interior drainage, operation plans, and maintenance plans are contained in 44 CFR Section 65.10.

Earthquake Hazards Reduction Act

In October 1977, the U.S. Congress passed the Earthquake Hazards Reduction Act to reduce the risks to life and property from future earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards reduction program. To accomplish this goal, the act established the National Earthquake Hazards Reduction Program (NEHRP). This program was

substantially amended in November 1990 by the National Earthquake Hazards Reduction Program Act (NEHRPA), which refined the description of agency responsibilities, program goals, and objectives.

The mission of NEHRP includes improved understanding, characterization, and prediction of hazards and vulnerabilities, improved building codes and land use practices, risk reduction through post-earthquake investigations and education, development and improvement of design and construction techniques, improved mitigation capacity, and accelerated application of research results. The NEHRPA designates FEMA as the lead Federal agency of the program and assigns several planning, coordinating, and reporting responsibilities. Other NEHRPA agencies include the National Institute of Standards and Technology, National Science Foundation, and U.S. Geological Survey.

C.1.11 Groundwater Resources

No Federal plans, policies, regulations, or laws related to groundwater resources apply to the project.

C.1.12 Hazards and Hazardous Materials

Resource Conservation and Recovery Act

At the Federal level, EPA is the principal agency regulating the generation, transport, and disposal of hazardous waste, under the authority of the Resource Conservation and Recovery Act (RCRA). The RCRA established an all-encompassing Federal regulatory program for hazardous waste that is administered by EPA. Under the RCRA, EPA regulates the generation, transportation, treatment, storage, and disposal of hazardous waste. The RCRA was amended in 1984 by the Hazardous and Solid Waste Amendments of 1984, which specifically prohibits the use of certain techniques for the disposal of various hazardous waste. The Federal Emergency Planning and Community Right to Know Act of 1986 imposes hazardous materials planning requirements to help protect local communities in the event of accidental release.

U.S. Department of Labor Occupational Safety & Health Administration

The U.S. Department of Labor Occupational Safety & Health Administration (OSHA) is responsible at the Federal level for ensuring worker safety. OSHA sets Federal standards for implementation of workplace training, exposure limits, and safety procedures for the handling of hazardous substances (as well as other hazards). OSHA also establishes criteria by which each state can implement its own health and safety program.

Asbestos National Emission Standards for Hazardous Air Pollutants

EPA has established air toxics regulations under the Federal Clean Air Act known as National Emission Standards for Hazardous Air Pollutants (NESHAP). The air toxics regulations under the NESHAP specify work practices for asbestos to be followed during demolitions and renovations of all facilities, including but not limited to, structures, installations, and buildings. The regulations require a thorough inspection where the demolition or renovation operation will occur. The owner or the operator of the renovation or demolition must notify the appropriate delegated entity (generally a local agency such as a county environmental health department) before any demolition, or before any renovations of buildings that contain a certain threshold amount of regulated asbestos-containing material. The asbestos NESHAP also requires work practice standards that control asbestos emissions. Work practices often involve removing all asbestos-containing materials, adequately wetting all regulated asbestos-containing materials, sealing the material in leak tight containers and disposing of the asbestos-containing waste

material as expeditiously as practicable. The asbestos NESHAP requires at least one on-site representative trained in the regulatory provisions and the means of compliance. This trained individual must receive refresher training every 2 years including: applicability of the asbestos NESHAP, notifications, material identification, control procedures for removal, adequate wetting, local exhaust ventilation, negative pressure enclosures, glove-bag procedures, High Efficiency Particulate Air filters, waste disposal work practices, reporting and recordkeeping, and asbestos hazards and worker protection.

Federal Aviation Regulations, Title 14 Part 77

Part 77 of the Federal Aviation Regulations, “Objects Affecting Navigable Airspace,” regulates the height and placement of new structures within airport safety zones. Part 77 recognizes that certain safety hazards to aircraft and airport operations may occur where a land use would:

- attract large concentrations of birds within approach/climb out areas,
- produce smoke or flashing lights,
- reflect light or generate electronic interference, or
- use or store large quantities of flammable materials.

Damage to aircraft caused by birds and other wildlife is termed a “strike” or “strike hazard.” The Federal Aviation Administration (FAA) is responsible for enforcing 14 CFR Part 139, which prescribes rules regarding operation of airports used by aircraft with seating capacity of more than 30 passengers. An ecological study must be prepared and submitted to FAA when multiple birds or other wildlife are struck by aircraft or ingested into aircraft engines, or when the number of birds or other wildlife present in an airport flight pattern is sufficient to result in such hazards. FAA determines whether a wildlife hazard management plan is needed. The FAA Advisory Circular *Hazardous Wildlife Attractants on or Near Airports* (2007) provides guidance on where to locate certain land uses that have the potential to attract hazardous wildlife to or near public-use airports. FAA recommends maintaining the following separations when siting water-related land uses that may attract hazardous wildlife (FAA 2007):

- 5,000 feet from airports serving piston-powered aircraft,
- 10,000 feet from airports serving turbine-powered aircraft, and
- 5 statute miles from airports where the wildlife attractant may cause hazardous wildlife movement into or across the approach or departure airspace.

C.1.13 Hydrology, Hydraulics, and Flood Risk Management

Rivers and Harbors Act Section 408

The sole authority to grant permission for temporary or permanent alterations of USACE-constructed public works projects, including the Yolo and Sacramento Bypasses, is contained in Section 14 of the Rivers and Harbors Act of 1899 and codified in 33 USC 408 (Section 408). Approval for any modifications, alterations, or occupation of public works projects is granted through the USACE Section 408 program. For USACE to approve any proposed alterations requests, it must meet USACE standards, and must not be injurious to the public interest or affect the USACE project’s ability to meet its authorized purpose. The District Engineer has the authority to approve most relatively minor, low impact alterations/modifications to the public works facilities; however, some requests which involve significant modifications, raisings, realignments, etc. may need to be approved at USACE Headquarters.

USACE processing of a Section 408 Permit request begins with a written request from an applicant; DWR has initiated this process for the project. Once sufficient information is provided, it is the responsibility of USACE's Levee Safety Program Manager/Dam Safety Officer, supported by the Project Delivery Team technical staff, to evaluate proposed alterations. The proposal will be evaluated for Impacts of the proposed alteration to flood conveyance, structural integrity, operation and maintenance, NEPA requirements, and flood-fighting capabilities, as well as meeting USACE policy and criteria. Upon completion of the review, the Applicant is notified whether the proposal is approved or denied. EC 1165-2-216 provides the policies and procedural guidance that USACE Districts follow in processing requests to alter or modify civil works projects constructed by USACE. Upon receiving permission, the permittee is responsible for the construction oversight to ensure construction is in accordance with the plans and specifications approved by USACE. After construction completion, notification is provided to USACE that all permitted construction is complete and final documentation submitted.

National Flood Insurance Program

The National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 were intended to reduce the need for large, publicly funded flood risk management structures and disaster relief by restricting development on floodplains. FEMA administers the National Flood Insurance Program (NFIP) to subsidize flood insurance to communities that comply with FEMA regulations limiting development in floodplains. FEMA issues Federal Insurance Rate Maps for communities participating in the NFIP. These maps delineate flood hazard zones in the community. These maps are designed for flood insurance purposes only and do not necessarily show all areas subject to flooding. The maps designate lands likely to be inundated during a 100-year event and flooding elevations. They also depict areas between the limits affected by 100- and 500-year events and areas of minimal flooding. These maps often are used to establish building pad elevations to reduce risk to new development from flooding effects.

Requirements for Federal Emergency Management Agency Certification

For guidance on floodplain management and floodplain hazard identification, communities turn to FEMA guidelines, as defined in 44 CFR 59 through 77. For a levee to be recognized by FEMA under the NFIP, the community must provide evidence demonstrating that adequate design and operation and maintenance systems provide a level of performance adequate to address the base flood (1 percent or 100-year flood). These specific requirements are outlined in 44 CFR 65.10, "Mapping of Areas Protected by Levee Systems," and are summarized below.

- *Levee Height* – Riverine levees must provide a minimum freeboard (the height of the top of a levee above a given level of water in a river) of 3 feet above the water-surface level of the base flood. An additional 1 foot above the minimum is required within 100 feet of either side of structures (such as bridges) riverward of the levee or wherever the flow is constricted. An additional 0.5 foot above the minimum at the upstream end of the levee, tapering to not less than the minimum at the downstream end of the levee, also is required.
- *Closures* – All openings must be provided with closure devices that are structural parts of the system during operation and designed according to sound engineering practice.
- *Embankment Protection* – Engineering analyses must be submitted that demonstrate that no appreciable erosion of the levee embankment can be expected during the base flood, as a result of

either currents or waves, and that anticipated erosion will not result in failure of the levee embankment or foundation directly or indirectly through reduction of the seepage path and subsequent instability.

- *Embankment and Foundation Stability* – Engineering analyses that evaluate levee embankment stability must be submitted to FEMA. The analyses provided must evaluate expected seepage during loading conditions associated with the base flood and demonstrate that seepage into or through the levee foundation and embankment will not jeopardize embankment or foundation stability.
- *Settlement* – Engineering analyses must be submitted that assess the potential and magnitude of future losses of levee height as a result of levee settlement and demonstrate that freeboard will be maintained within the minimum standards.
- *Interior Drainage* – An analysis must be submitted that identifies the source(s) of such flooding, the extent of the flooded area, and, if the average depth is greater than 1 foot, the water surface elevation(s) of the base flood.
- *Operation Plans* – For a levee system to be recognized, a formal plan of operation must be provided to FEMA. All closure devices or mechanical systems for internal drainage, whether manual or automatic, must be operated in accordance with an officially adopted operational manual, a copy of which must be provided to FEMA.
- *Maintenance Plans* – For levee systems to be recognized as meeting required levels of performance, they must be maintained in accordance with an officially adopted maintenance plan. All maintenance activities must be under the jurisdiction of a Federal or state agency, an agency created by Federal or state law, or an agency of a community participating in the NFIP that must assume ultimate responsibility for maintenance. The plan must document the formal procedure that ensures that the stability, height, and overall integrity of the levee and its associated structures and systems are maintained. At a minimum, maintenance plans must specify the maintenance activities to be performed, the frequency of their performance, and the person by name or title responsible for their performance.

U.S. Army Corps of Engineers Levee Design Criteria

Levees included in the project vicinity are Federally authorized and fall within USACE's jurisdiction. The levee evaluation for the project area conforms to the engineering criteria established by USACE for assessing and repairing levees. USACE technical criteria in the following list should be used as guidance unless noted otherwise.

- Overtopping of Flood Control Levees and Floodwalls (Publication ETL 1110-2-299, August 22, 1986)
- Structural Design of Closure Structures for Local Flood Protection Projects (Publication EM 1110-2-2705, March 31, 1994)
- Design of Coastal Revetments, Seawalls, and Bulkheads (Publication EM 1110-2-1614, June 30, 1995)
- Conduits, Culverts, and Pipes (Publication EM 1110-2-2902, March 31, 1998)

- Guidelines on Ground Improvement for Structures and Facilities (Publication ETL 1110-1-185, February 1, 1999)
- Engineering and Design for Civil Works Projects (Publication ER 1110-2-1150, August 31, 1999)
- Design and Construction of Levees (Publication EM 1110-2-1913, April 30, 2000)
- Geotechnical Investigations (Publication EM 1110-1-1804, January 1, 2001)
- USACE CESPCK Levee Task Force, Recommendations for Seepage Design Criteria, Evaluation and Design Practices (2003)
- Slope Stability (Publication EM 1110-2-1902, October 31, 2003)
- Design Guidance on Levees (Publication ETL 1110-2-569, May 1, 2005)
- Quality Management (Publication ER 1110-1-12, September 30, 2006)
- Geotechnical Levee Practice (REFP10L0, April 11, 2008)
- ETL 1110-2-583, Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures (April 30, 2014)

Sacramento River Flood Control Project Levee Height Requirements

As specified in the *Design Memorandum, Volume I of II for the Sacramento River Flood Control Project, California, Mid-Valley Area, Phase III* (U.S. Army Corps of Engineers 1996:2–12), the minimum levee height (freeboard) requirement for the Sacramento River is 3 feet, as defined in the USACE Sacramento River Flood Control Project 1957 design profiles for the Sacramento River and many of its tributaries (USACE 1996:2-12).

Sacramento River Bank Protection Project

Originally authorized by Section 203 of the Flood Control Act of 1960, the Sacramento River Bank Protection Project is a long-term flood risk management project designed to enhance public safety and help protect property along the Sacramento River and its tributaries. The goal of the Sacramento River Bank Protection Project is to evaluate the levees bordering the river and reduce stream bank erosion along them to minimize the threat of a flood along the Sacramento River. While the original authorization approved the rehabilitation of 430,000 linear feet of levee, the 1974 Water Resources Development Act added 405,000 linear feet to the authorization and a 2007 bill authorized another 80,000 linear feet for a total of 915,000 linear feet of project. USACE is set to release a Post Authorization Change Report, including an Environmental Impact Statement, to address the effects of the latest authorization. USACE, Sacramento District is responsible for implementing the project in conjunction with its non-Federal partner, the California Central Valley Flood Protection Board (CVFPB).

C.1.14 Land Use and Planning, and Agricultural and Forestry Resources

No Federal plans, policies, regulations, or laws related to land use planning, and agricultural and forestry resources apply to the project.

C.1.15 Mineral Resources

No Federal plans, policies, regulations, or laws related to mineral resources apply to the project.

C.1.16 Noise and Vibration

Federal plans, policies, regulations, and laws related to noise and vibration that apply to the project are discussed in Section 4.17, “Noise,” in Subsection 4.17.3, “Regulatory Setting.”

C.1.17 Recreation

No Federal plans, policies, regulations, or laws related to recreation apply to the project.

C.1.18 Socioeconomics (including Population, Housing, and Employment)

No Federal plans, policies, regulations, or laws related to socioeconomics (including population, housing, and employment) apply to the project.

C.1.19 Traffic and Transportation

No Federal plans, policies, regulations, or laws related to traffic and transportation apply to the project. However, Federal highway standards are implemented in California by Caltrans, which is responsible for planning, designing, constructing, operating, and maintaining all State-owned roadways in the project area, as well as some Federal roadways.

C.1.20 Utilities and Service Systems

No Federal plans, policies, regulations, or laws related to utilities and service systems apply to the project.

C.1.21 Water Quality

Section 404 of the Clean Water Act

See discussion above, under Subsection C.1.5, “Biological Resources – Wetlands and Other Waters of the United States.”

Section 401 of the Clean Water Act

See discussion above, under Subsection C.1.5, “Biological Resources – Wetlands and Other Waters of the United States.”

Section 402 Permits for Discharge to Surface Waters

SWRCB and RWQCBs regulate discharges of waste into Waters of the U.S. through National Pollutant Discharge Elimination System (NPDES) permits, authorized under Section 402 of the CWA, and regulate discharges of waste into waters of the State through waste discharge requirements (WDRs), authorized under the State's Porter-Cologne Water Quality Control Act (Porter-Cologne Act).

Section 303 List of Impaired Waters

In California, SWRCB develops the list of water quality-limited segments; EPA approves each state's list. Waters on the list do not meet water quality standards, even after point sources of pollution have installed the required pollution control technology. Section 303(d) also establishes the total maximum daily load (TMDL) process to improve water quality in listed waterways.

C.2 State Plans, Policies, Regulations, and Laws

C.2.1 Aesthetics

No State plans, policies, regulations, or laws related to aesthetics apply to the project.

C.2.2 Air Quality

California Clean Air Act

YSAQMD is the agency responsible for air quality planning and development of the air quality plan for all of Yolo County, which encompasses the entire project site. The YSAQMD air quality plan establishes the strategies used to achieve compliance with NAAQS and the State Ambient Air Quality Standards in all areas within YSAQMD's jurisdiction. YSAQMD, in coordination with other local air agencies, develops rules and regulations and emission reduction programs to control emissions of criteria air pollutants, ozone precursors, toxic air contaminants, and odors within its jurisdiction, and the Sacramento Federal Nonattainment Areas for ozone and PM_{2.5}.

YSAQMD regulates air quality through its planning and review activities. All projects within YSAQMD's jurisdictional area are subject to adopted rules and regulations in effect at the time of construction and operation. The analysis of the project's air quality effects is consistent with YSAQMD's *Handbook for Assessing and Mitigating Air Quality Impacts* (YSAQMD 2007), with additional guidance regarding current modeling methods from the YSAQMD web page (YSAQMD 2016). The YSAQMD CEQA Guide is an advisory document that provides lead agencies, consultants, and project applicants with uniform procedures for addressing air quality in environmental documents. The guide contains the following applicable components:

- criteria and thresholds for determining whether a project may have a significant adverse air quality effect;
- specific procedures and modeling protocols for quantifying and analyzing air quality effects;
- methods available to mitigate air quality effects; and
- information for use in air quality assessments and environmental documents that will be updated more frequently such as air quality data, regulatory setting, climate, and topography.

The CEQA guidance applies to the determination of project-related air quality thresholds and impacts.

C.2.3 Biological Resources – Fish and Aquatic Organisms

California Endangered Species Act

The California Endangered Species Act (CESA) (California Fish and Game Code Section 2050 et seq.) directs State agencies not to approve projects that would jeopardize the continued existence of an endangered or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of a species. Furthermore, CESA states that California Department of Fish and Wildlife (CDFW), together with the project proponent and any State lead agency, must develop reasonable and prudent alternatives consistent with conserving the species, while maintaining the project purpose to the greatest extent possible. Under CESA, project-related impacts of the authorized take must be minimized and fully mitigated, and adequate funding must be in place to implement those mitigation measures and monitor compliance with the measures and their effectiveness. Standard requirements can include land acquisition, permanent protection and management, and/or funding in perpetuity of compensatory lands.

Under CESA, take is defined as an activity that would directly or indirectly kill an individual of a species. In contrast with the Federal ESA, the CESA definition of take does not include “harm” or “harass.” As a result, the threshold for take may be higher under CESA than under the ESA, because habitat modification is not necessarily considered take under CESA. The take of State-listed species incidental to otherwise lawful activities requires a permit, pursuant to Section 2081(b) of CESA. The State of California has the authority to issue an incidental take permit under California Fish and Game Code Section 2081, or to coordinate with USFWS and/or NMFS during the Section 10(a) process to make the Federal permit consistent with CESA.

C.2.4 Biological Resources – Vegetation and Wildlife

California Endangered Species Act

CESA directs State agencies not to approve projects that would jeopardize the continued existence of an endangered or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of a species. Furthermore, CESA states that CDFW, together with the project proponent and any State lead agency, must develop reasonable and prudent alternatives consistent with conserving the species while maintaining the project purpose to the greatest extent possible.

Under CESA, “take” is defined as an activity that would directly or indirectly kill an individual of a species. In contrast with the Federal ESA, the CESA definition of take does not include “harm” or “harass.” As a result, the threshold for take may be higher under CESA than under the ESA, because habitat modification is not necessarily considered take under CESA. The take of State-listed species incidental to otherwise lawful activities requires a permit, pursuant to Section 2081(b) of CESA. The State of California has the authority to issue an incidental take permit under California Fish and Game Code Section 2081, or to coordinate with USFWS during the Section 10(a) process to make the Federal permit consistent with CESA. Under CESA, project-related impacts of the authorized take must be minimized and fully mitigated, and adequate funding must be in place to implement those mitigation measures and monitor compliance with the measures and their effectiveness. Standard requirements can include land acquisition, permanent protection and management, and/or funding in perpetuity of compensatory lands.

As under Federal law, listed plants have considerably less protection than fish and wildlife under State law. The California Native Plant Protection Act (California Fish and Game Code Section 19000 et seq.) allows landowners to take listed plant species from, among other places, a canal, lateral ditch, building site, or road, or other right-of-way, provided that the owner first notifies CDFW and gives the agency at least 10 days to come and retrieve (and presumably replant) the plants before they are plowed under or otherwise destroyed.

California Fish and Game Code—Protection of Bird Nests and Raptors

Section 3503 of the California Fish and Game Code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.5 states that it is unlawful to take, possess, or destroy any raptors (i.e., species in the orders Falconiformes and Strigiformes), including their nests or eggs. Typical violations of these codes include destruction of active nests as a result of tree removal and human disturbance causing failure of nesting attempts, resulting in loss of eggs and/or young.

California Fish and Game Code—Fully Protected Species

Four sections of the California Fish and Game Code—Sections 3511, 4700, 5050, and 5515—list 37 fully protected species. These statutes prohibit take or possession of fully protected species. CDFW is unable to authorize incidental take of fully-protected species and has informed non-Federal agencies and private parties that take of all fully protected species must be avoided when implementing projects.

California Fish and Game Code—Streambed Alteration

All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California that supports wildlife resources are subject to regulation by CDFW under Section 1602 of the California Fish and Game Code. Under Section 1602, it is unlawful for any person to substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by CDFW, or to use any material from the streambeds, without first notifying CDFW of such activity and obtaining a final agreement authorizing the activity.

“Stream” is defined as a body of water that flows at least periodically or intermittently through a bed or channel having banks and that supports fish or other aquatic life. CDFW’s jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and wildlife. A CDFW streambed alteration agreement must be obtained for any project that would result in an impact on a river, stream, or lake.

C.2.5 Biological Resources – Wetlands and Other Waters of the United States

Porter-Cologne Water Quality Control Act

The Porter-Cologne Act (California Water Code Section 13000 et seq.) requires that each of the State’s nine RWQCBs prepare and periodically update basin plans for water quality control. Each basin plan sets forth water quality standards for surface water and groundwater and actions to control nonpoint and point sources of pollution to achieve and maintain these standards. Basin plans offer an opportunity to protect wetlands through the establishment of water quality objectives. The RWQCB’s jurisdiction includes Federally protected waters as well as areas that meet the definition of “waters of the State.” Waters of the State is defined as any surface water or groundwater, including saline waters, within the State’s boundaries. The RWQCB has the discretion to take jurisdiction over areas not Federally

regulated under Section 401, provided they meet the definition of waters of the State. Mitigation requiring no-net-loss of wetlands functions and values of waters of the State is typically required by the RWQCB. If the project study area supports aquatic features that do not qualify for Federal regulation under Section 401 of the CWA, such features may be subject to protection as waters of the State under the Porter-Cologne Act.

C.2.6 Climate Change

Senate Bill 97

Senate Bill (SB) 97, enacted in August 2007, recognizes climate change as a prominent environmental issue that requires analysis under CEQA. On December 30, 2009, the Resources Agency adopted amendments to the CEQA Guidelines, as required by SB 97. These amendments provide guidance to public agencies regarding the analysis and mitigation of GHG emissions in draft CEQA documents. The amendments became effective March 18, 2010.

California Department of Water Resources Greenhouse Gas Emissions Reduction Plan

DWR's Climate Action Plan, Phase 1: Greenhouse Gas Emissions Reduction Plan, details DWR's progress and future plans for reducing GHG emissions consistent with the GHG emissions reduction targets established in AB 32, EO S-3-05, and DWR-specific policies. The Greenhouse Gas Emissions Reduction Plan also outlines the DWR's plan to monitor its progress and to reduce its emissions by over 80 percent below 1990 levels (DWR 2012).

The Greenhouse Gas Emissions Reduction Plan provides estimates of historical (going back to 1990), current, and future GHG emissions related to operations (e.g., energy use), construction (e.g., bulldozer), maintenance (e.g., flood protection facility upkeep), and business practices (e.g., DWR office building related). The Greenhouse Gas Emissions Reduction Plan specifies aggressive 2020 and 2050 emission reduction goals and identifies a list of GHG emissions reduction measures that the DWR will undertake to achieve these goals.

GHG emissions related to State Water Project operations account for 98 percent of emissions from DWR activities. The overwhelming majority of DWR GHG emissions are emitted by non-hydroelectric-generation facilities which are needed to move water through the State Water Project, causing emissions of between 1.2 million and 4.1 million metric tons of carbon dioxide equivalent (MT CO_{2e}) per year, with an average of 2.4 MT CO_{2e} per year during 2007-2010. The Greenhouse Gas Emissions Reduction Plan does not take credit for the hydropower that DWR facilities generate. Emissions related to construction represent the second largest source of GHG emissions from DWR activities, but are less than 2 percent of DWR's total GHG emissions.

DWR adopted Extraordinary Construction Project thresholds to differentiate construction projects addressed within normal operations, and the Greenhouse Gas Emissions Reduction Plan. Construction emissions exceeding 25,000 MT CO_{2e} for the entire construction phase, or 12,500 MT CO_{2e} in any single year are inconsistent with the plan and cannot use the plan for cumulative impact analysis under CEQA.

C.2.7 Cultural Resources

Native American Heritage Commission and California Public Resources Code Requirements

California Public Resources Code (PRC) Sections 5097.91–5097.94 created the nine-member Native American Heritage Commission (NAHC). The NAHC identifies and catalogs places of special religious or social significance to Native Americans and known graves and cemeteries of Native Americans on private lands, identifies the Native American group most likely descended from those Native Americans who may be interred on the project property, makes recommendations related to Native American sacred places that are located on private lands for acquisition by the State or other public agencies for the purpose of facilitating or assuring access thereto by Native Americans, assists Native Americans in obtaining appropriate access to sacred places that are located on public lands for ceremonial or spiritual activities, and performs other duties regarding the preservation and accessibility of sacred sites and burials and the disposition of Native American human remains and burial items. NAHC has the powers and duties identified below.

- (a) To identify and catalog places of special religious or social significance to Native Americans, and known graves and cemeteries of Native Americans on private lands. The identification and cataloging of known graves and cemeteries shall be completed on or before January 1, 1984. NAHC shall notify landowners on whose property such graves and cemeteries are determined to exist, and shall identify the Native American group most likely descended from those Native Americans who may be interred on the property.
- (b) To make recommendations relative to Native American sacred places that are located on private lands, are inaccessible to Native Americans, and have cultural significance to Native Americans for acquisition by the State or other public agencies for the purpose of facilitating or assuring access thereto by Native Americans.
- (c) To make recommendations to the Legislature relative to procedures that will voluntarily encourage private property owners to preserve and protect sacred places in a natural state and to allow appropriate access to Native American religionists for ceremonial or spiritual activities.
- (d) To appoint necessary clerical staff.
- (e) To accept grants or donations, real or in kind, to carry out the purposes of this chapter and the California Native American Graves Protection and Repatriation Act of 2001 (Chapter 5 [commencing with Section 8010] of Part 2 of Division 7 of the California Health and Safety Code).
- (f) To make recommendations to the Director of Parks and Recreation and the California Arts Council relative to the California State Indian Museum and other Indian matters touched upon by department programs.
- (g) To bring an action to prevent severe and irreparable damage to, or assure appropriate access for Native Americans to, a Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine located on public property, pursuant to Section 5097.97. If the court finds that severe and irreparable damage will occur or that appropriate access will be denied, and appropriate mitigation measures are not available, it shall issue an injunction, unless it finds, on clear and convincing evidence that the public interest and necessity require otherwise. The Attorney

General shall represent the commission and the State in litigation concerning affairs of the commission, unless the Attorney General has determined to represent the agency against whom the NAHC's action is directed, in which case the commission shall be authorized to employ other counsel. In an action to enforce this subdivision the NAHC shall introduce evidence showing that a cemetery, place, site, or shrine has been historically regarded as a sacred or sanctified place by Native American people and represents a place of unique historical and cultural significance to an Indian tribe or community.

(h) To request and use the advice and service of all Federal, State, local, and regional agencies, including for purposes of carrying out the California Native American Graves Protection and Repatriation Act of 2001 (Chapter 5 [commencing with Section 8010] of Part 2 of Division 7 of the California Health and Safety Code).

(i) To assist Native Americans in obtaining appropriate access to sacred places that are located on public lands for ceremonial or spiritual activities.

(j) To assist State agencies in any negotiations with agencies of the Federal government for the protection of Native American sacred places that are located on Federal lands.

(k) (1) To mediate, upon application of either of the parties, disputes arising between landowners and known descendants relating to the treatment and disposition of Native American human burials, skeletal remains, and items associated with Native American burials.

(k) (2) The agreements shall provide protection to Native American human burials and skeletal remains from vandalism and inadvertent destruction and provide for sensitive treatment and disposition of Native American burials, skeletal remains, and associated grave goods consistent with the planned use of, or the approved project on, the land.

(l) To assist interested landowners in developing agreements with appropriate Native American groups for treating or disposing, with appropriate dignity, of the human remains and any items associated with Native American burials.

(m) To provide each California Native American Tribe, as defined in Section 21073, on or before July 1, 2016, with a list of all public agencies that may be a lead agency pursuant to Division 13 (commencing with Section 21000) within the geographic area with which the Tribe is Traditionally and Culturally Affiliated, the contact information of those public agencies, and information on how the tribe may request the public agency to notify the Tribe of projects within the jurisdiction of those public agencies for the purposes of requesting consultation pursuant to Section 21080.3.1.

(n) (1) To assume the powers and duties of the former Repatriation Oversight Commission and meet, when necessary and at least quarterly, to perform the following duties:

(A) Order the repatriation of human remains and cultural items in accordance with the act.

(B) Establish mediation procedures and, upon the application of the parties involved, mediate disputes among tribes and museums and agencies relating to the disposition of human remains and cultural items. The commission shall have the power of subpoena for purposes of discovery and may impose civil penalties against any agency or museum that intentionally or willfully fails to comply with the act. Members of the NAHC and NAHC staff shall receive training in

mediation for purposes of this subparagraph. The NAHC may delegate its responsibility to mediate disputes to a certified mediator or NAHC staff.

(C) Establish and maintain an Internet website for communication among tribes and museums and agencies.

(D) Upon the request of Tribes or museums and agencies, analyze and make decisions regarding providing financial assistance to aid in specific repatriation activities.

(E) Make recommendations to the Legislature to assist tribes in obtaining the dedication of appropriate state lands for the purposes of reinterment of human remains and cultural items.

(F) (i) Prepare and submit to the Legislature an annual report detailing commission activities, disbursement of funds, and dispute resolutions relating to the repatriation activities under the act.

(F) (ii) A report submitted to the Legislature pursuant to this subparagraph shall be submitted in compliance with Section 9795 of the California Government Code.

(G) Refer any known noncompliance with the Federal Native American Graves Protection and Repatriation Act (25 USC Sec. 3001 et seq.) to the U.S. Attorney General and the Secretary of the Interior.

(H) Impose administrative civil penalties pursuant to Section 8029 of the California Health and Safety Code against an agency or museum that is determined by the NAHC to have violated the act.

(I) Establish those rules and regulations the NAHC determines to be necessary for the administration of the act.

(2) For purposes of this subdivision, the following terms have the following meanings:

(A) “Act” means the California Native American Graves Protection and Repatriation Act (Chapter 5 (commencing with Section 8010) of Part 2 of Division 7 of the California Health and Safety Code).

(B) “Tribe” means a “California Indian tribe” as that term is used in the act.

California PRC Section 5097.97 further states:

In the event that any Native American organization, tribe, group, or individual advises the commission that a proposed action by a public agency may cause severe or irreparable damage to a Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine located on public property, or may bar appropriate access thereto by Native Americans, the commission shall conduct an investigation as to the effect of the proposed action. Where the commission finds, after a public hearing, that the proposed action would result in such damage or interference, the commission may recommend mitigation measures for consideration by the public agency proposing to take such action. If the public agency fails to accept the mitigation measures, and if the commission finds that the proposed action would do severe and irreparable damage to a Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine

located on public property, the commission may ask the Attorney General to take appropriate legal action pursuant to subdivision (g) of Section 5097.94.

California Regulatory Requirements Related to Human Remains

Guidelines for implementation of CEQA (California Code of Regulations [CCR] Section 15064.5 [d][e]) specifies the procedures that shall be implemented if Native American human remains are known to exist or if there is probable likelihood of their existence in a project site/area (California PRC Section 5097.98); cites the prohibition on disinterring or otherwise disturbing human remains (California Health and Safety Code Section 7050.5); and specifies the procedures that shall be followed in the event of the accidental discovery or recognition of human remains during implementation of a project (California PRC 5097.98), which would apply to the project.

California PRC Section 5097.98 is presented below.

Whenever the commission receives notification of a discovery of Native American human remains from a county coroner pursuant to Subdivision (c) of Section 7050.5 (see below) of the Health and Safety Code, it shall immediately notify those persons it believes to be most likely descended from the deceased Native American. The descendants may, with the permission of the owner of the land, or his or her authorized representative, inspect the site of the discovery of the Native American human remains and may recommend to the owner or the person responsible for the excavation work means for treatment or disposition, with appropriate dignity, of the human remains and any associated grave goods. The descendants shall complete their inspection and make recommendations or preferences for treatment within 48 hours of being granted access to the site.

(b) Upon the discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located, is not damaged or disturbed by further development activity until the landowner has discussed and conferred, as prescribed in this section, with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment. (1) The descendants' preferences for treatment may include the following: (A) The nondestructive removal and analysis of human remains and items associated with Native American human remains. (B) Preservation of Native American human remains and associated items in place. (C) Relinquishment of Native American human remains and associated items to the descendants for treatment. (D) Other culturally appropriate treatment. (2) The parties may also mutually agree to extend discussions, taking into account the possibility that additional or multiple Native American human remains, as defined in this section, are located in the project area, providing a basis for additional treatment measures. (c) For the purposes of this section, "conferral" or "discuss and confer" means the meaningful and timely discussion and careful consideration of the views of each party, in a manner that is cognizant of all parties' cultural values, and where feasible, seeking agreement. Each party shall recognize the other's needs and concerns for confidentiality of information provided to the other. (d)(1) Human remains of a Native American may be an inhumation or cremation, and in any state of decomposition or skeletal completeness. (2) Any items associated with the human remains that are placed or buried with the Native American human remains are to be treated in the same manner as the remains, but do not by themselves constitute human remains. (e) Whenever the commission is unable to identify a descendant, or the descendants identified fail to make a recommendation, or the landowner or his or her authorized representative rejects the

recommendation of the descendants and the mediation provided for in subdivision (k) of Section 5097.94, if invoked, fails to provide measures acceptable to the landowner, the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American human remains with appropriate dignity on the property in a location not subject to further and future subsurface disturbance. To protect these sites, the landowner shall do one or more of the following: (1) Record the site with the commission or the appropriate Information Center. (2) Utilize an open-space or conservation zoning designation or easement. (3) Record a document with the county in which the property is located. The document shall be titled "Notice of Reinterment of Native American Remains" and shall include a legal description of the property, the name of the owner of the property, and the owner's acknowledged signature, in addition to any other information required by this section. The document shall be indexed as a notice under the name of the owner. (f) Upon the discovery of multiple Native American human remains during a ground disturbing land development activity, the landowner may agree that additional conferral with the descendants is necessary to consider culturally appropriate treatment of multiple Native American human remains. Culturally appropriate treatment of the discovery may be ascertained from a review of the site utilizing cultural and archaeological standards. Where the parties are unable to agree on the appropriate treatment measures the human remains and items associated and buried with Native American human remains shall be reinterred with appropriate dignity, pursuant to Subdivision (e).

California Health and Safety Code Section 750.5 is presented below.

(a) Every person who knowingly mutilates or disinters, wantonly disturbs, or willfully removes any human remains in or from any location other than a dedicated cemetery without authority of law is guilty of a misdemeanor, except as provided in Section 5097.99 of the Public Resources Code. The provisions of this subdivision shall not apply to any person carrying out an agreement developed pursuant to subdivision (l) of Section 5097.94 of the Public Resources Code or to any person authorized to implement Section 5097.98 of the Public Resources Code.

(b) In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27491 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of any death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code. The coroner shall make his or her determination within two working days from the time the person responsible for the excavation, or his or her authorized representative, notifies the coroner of the discovery or recognition of the human remains.

(c) If the coroner determines that the remains are not subject to his or her authority and if the coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission.

Assembly Bill 52

See Section 4.8, “Cultural Resources,” Subsection 4.8.2, “Regulatory Setting.”

C.2.8 Energy

No State plans, policies, regulations, or laws related to energy apply to the project.

C.2.9 Environmental Justice

Title 14 California Code of Regulations Section 15131

Title 14, CCR Section 15131 provides that economic or social information may be included in an EIR, but those economic or social effects shall not be considered as significant effects on the environment. In an EIR, the lead agency can trace the chain of cause and effect from the proposed decision on the project through anticipated economic or social changes resulting from the project that, in turn, lead to physical changes in the environment. Identified potential economic/social changes also can be used to determine the significance of the physical changes on the environment.

C.2.10 Geology, Soils, and Paleontological Resources

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) (California PRC Sections 2621–2630) was passed in 1972 to reduce the hazard of surface faulting to structures designed for human occupancy. The main purpose of the law is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The law addresses only the hazard of surface fault rupture and is not directed toward other earthquake hazards. The Alquist-Priolo Act requires the State Geologist to establish regulatory zones known as Earthquake Fault Zones around the surface traces of active faults and to issue appropriate maps. The maps are distributed to all affected cities, counties, and State agencies for their use in planning efforts. Before a project can be permitted in a designated Alquist-Priolo Earthquake Fault Zone, cities and counties must require a geologic investigation to demonstrate that proposed buildings would not be constructed across active faults.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 (California PRC Sections 2690–2699.6) addresses earthquake hazards from non-surface fault rupture, including liquefaction and seismically induced landslides. The act established a mapping program for areas that have the potential for liquefaction, landslide, strong ground shaking, or other earthquake and geologic hazards. The act also specifies that the lead agency for a project may withhold development permits until geologic or soils investigations are conducted for specific sites and mitigation measures are incorporated into plans to reduce hazards associated with seismicity and unstable soils.

Federal Earthquake Hazards Reduction Act

The Earthquake Hazards Reduction Act of 1977 (42 USC 7701) reduces the risk of life and property from future earthquakes by establishing and maintaining an effective earthquake hazards reduction program.

National Pollutant Discharge Elimination System and Storm Water Pollution Prevention Plans

As discussed in detail in Section 4.22, “Water Quality,” the SWRCB and CVRWQCB have adopted specific NPDES permits for a variety of activities that have the potential to discharge wastes (including sediment) to waters of the State. The SWRCB’s Statewide storm water general permit for construction activity (2012-0006-DWQ) is applicable to all land-disturbing construction activities that would disturb 1 acre or more. Compliance with the NPDES permit requires submittal to the CVRWQCB of notices of intent to discharge, and implementation of storm water pollution prevention plans that include best management practices to minimize water quality degradation during construction activities.

Central Valley Flood Protection Board Levee Standards

CVFPB is responsible for ensuring the serviceability of levees and requires permits for any activity that may affect the capacity of the flood control system. CVFPB cooperates with USACE to control flooding along the Sacramento and San Joaquin Rivers and tributaries, and its jurisdiction encompasses the Central Valley, including all tributaries and distributaries of the Sacramento and San Joaquin Rivers.

Within its jurisdiction, CVFPB enforces appropriate standards for the construction, maintenance, and protection of adopted flood control plans that will best protect the public from floods. Approval by CVFPB is required for projects or uses that encroach into rivers and waterways within flood control project areas authorized by the Federal and State government and within regulated streams adopted by CVFPB. CVFPB levee standards are set forth in CCR Title 23, Division 1, Article 8, Sections 111–137.

Urban Levee Design Criteria

California Government Code Sections 65865.5, 65962, and 66474.5 require that levees and floodwalls in the Sacramento-San Joaquin Valley provide protection against a flood that has a 1-in-200 chance of occurring in any given year. The Urban Levee Design Criteria (ULDC) prepared by DWR (2012) provides engineering criteria and guidance for civil engineers in meeting the government code requirements, and offers this same guidance to civil engineers working on levees and floodwalls anywhere in California. The ULDC also provides engineering criteria and guidance for DWR’s urban levee evaluations and participation in urban levee projects.

C.2.11 Groundwater Resources

Porter-Cologne Water Quality Control Act

See discussion above, under Subsection C.2.5, “Biological Resources – Wetlands and Other Waters of the United States.”

Water Quality Control Plan for the Sacramento and San Joaquin River Basins

See discussion above, under Subsection C.1.21, “Water Quality.”

C.2.12 Hazards and Hazardous Materials

California Code of Regulations Title 14, Division 2, Chapter 4, Article 3, Section 1723.1

Section 1723.1 regulates the plugging of oil and gas zones. These regulations, which are administered by the California Department of Oil, Gas, and Geothermal Resources (DOGGR), prescribe the depth intervals which must be cemented as well as the materials that are allowable in plugging practices. In order to receive a permit from DOGGR for a plugged and abandoned cased well, a cement plug must be inserted in the well, extending at least 100 feet above the top of a landed liner, the uppermost perforations, the casing cementing point, the water shut-off holes, or the oil or gas zone, whichever is highest.

California Government Code Section 65962.5

The provisions of California Government Code Section 65962.5 are commonly referred to as the “Cortese List” (after the legislator who authored the legislation that enacted it). The Cortese List is a planning document used by the State and local agencies to comply with CEQA requirements in providing information about the location of hazardous materials release sites. California Government Code Section 65962.5 requires CalEPA to develop an updated Cortese List annually, at minimum. DTSC and SWRCB are responsible for a portion of the information contained in the Cortese List. Other California state and local government agencies are required to provide additional hazardous material release information for the Cortese List. CEQA requires an evaluation as to whether or not a project would be located on a hazardous materials site that is included on the Cortese List.

California Public Resources Code Section 21151.4

Sensitive receptors are people who are considered to have a substantially increased sensitivity or rate of exposure to contaminants. Because of this increased sensitivity, special consideration must be given to projects located near sensitive receptors. CEQA specifically establishes that special consideration must be given to projects located near schools (i.e., within 1/4 mile) when considering hazards and hazardous materials (California PRC Section 21151.4). This consideration allows for careful examination and disclosure of potential health effects on children associated with exposure to hazardous materials, wastes, and substances.

California Public Resources Code Sections 4201-4204 and California Government Code Sections 51175-51189

California PRC Sections 4201-4204 and California Government Code Sections 51175-51189 require identification of fire hazard severity zones within the State of California. Fire hazard severity zones are measured qualitatively, based on: vegetation, topography, weather, crown fire potential (a fire’s tendency to burn upwards into trees and tall brush), and ember production and movement within the area of question. Fire prevention areas considered to be under State jurisdiction are referred to as “state responsibility areas.” In state responsibility areas, CAL FIRE is required to delineate three hazard ranges: moderate, high, and very high. CAL FIRE is also required to delineate “local responsibility areas,” which are under the jurisdiction of local entities (e.g., cities, counties); in local responsibility areas, only very high fire hazard severity zones are delineated. In addition, these codes require that where property abuts wildlands, a defensible space of at least 100 feet must be maintained between any structure and flammable wildland vegetation. CEQA requires that environmental analyses consider the potential exposure of people and structures to wildland fire hazards.

C.2.13 Hydrology, Hydraulics, and Flood Risk Management

2012 Central Valley Flood Protection Plan

Updated every five years, the CVFPP is California's strategic blueprint to improve flood risk management in the Central Valley. It lays out a strategy to prioritize the State's investment in flood management over the next three decades, as well as strategies to promote multi-benefit projects and to integrate and improve ecosystem functions associated with flood risk reduction projects. The CVFPP also incorporates information about systemwide and regional flood management needs, advancements in the best available science, and new policy considerations.

Urban Levee Design Criteria

The ULDC provides criteria and guidance for design, evaluation, operation, and maintenance of levees and floodwalls in urban and urbanizing areas. The ULDC has been developed pursuant to SB 5, which defines the urban level of flood protection as the level of protection that is necessary to withstand flooding that has a 1-in-200 chance of occurring in any given year using criteria consistent with, or developed by, DWR. While cities and counties located outside of the Sacramento-San Joaquin Valley are not required to make findings related to the urban level of flood protection, the ULDC can help inform engineering and local land use decisions for areas at risk of flooding anywhere in California. The ULDC was developed through a collaborative process with stakeholders from local government (including representatives from the Central Valley, San Francisco Bay Area, and Los Angeles Region), State government, and the Federal government. The ULDC supersedes *Version 4 of the Interim Levee Design Criteria for Urban and Urbanizing Areas in the Sacramento-San Joaquin Valley* (Version 4), dated December 15, 2010. The ULDC contains numerous revisions and refinements from Version 4, as well as improvements based upon comments received on the *Draft Urban Levee Design Criteria* dated November 15, 2011.

California Water Code and California Code of Regulations Title 23

CVFPB regulates construction within flood-prone areas of the Central Valley. CVFPB's authority and procedures come from the California Water Code and Title 23 of the CCR. These documents also provide guidance for staff and the public when determining if a permit is needed for any project that may encroach upon, improve, alter or affect adopted plans of flood control (including Federal/State flood control systems, regulated streams, and designated floodways under CVFPB's jurisdiction). In addition to permit application requirements and standards for construction of permitted projects, the regulations also provide direction for conducting meetings, carrying out enforcement actions, meeting requirements of CEQA, and other administrative actions of CVFPB and its staff.

C.2.14 Land Use and Planning, and Agricultural and Forestry Resources

California Important Farmland Inventory System and Farmland Mitigation and Monitoring Program

The Farmland Mapping and Monitoring Program (FMMP) was established by the State of California in 1982 to continue the Important Farmland mapping efforts begun in 1975 by the U.S. Soil Conservation Service (now called the Natural Resources Conservation Service, under the U.S. Department of Agriculture). The intent of the Service was to produce agricultural resource maps, based on soil quality and land use across the nation. The California Department of Conservation (DOC) sponsors the FMMP

and also is responsible for establishing agricultural easements, in accordance with California PRC Sections 10250–10255. The DOC FMMP maps are updated every 2 years with the use of aerial photographs, a computer mapping system, public review, and field reconnaissance.

Important Farmland is classified by DOC as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance. Under CEQA, the designations for Prime Farmland, Farmland of Statewide Importance, and Unique Farmland are defined as “agricultural land” or “farmland” (California PRC Sections 21060.1 and 21095, and State CEQA Guidelines Appendix G).

Williamson Act

The California Land Conservation Act of 1965 (the Williamson Act) is one of the State’s primary agricultural conservation tools. Under this law, private property owners can enter into contracts with local governments to protect land within agricultural preserves for agricultural and open space purposes. Williamson Act contracts consist of a minimum initial term of 10 years, and are automatically extended each year for an additional year unless either party (landowner or the contracting city or county) notifies the other of the intent not to renew the contract. In return, the landowner is guaranteed a relatively stable tax rate that is based on the value of the land for agricultural/open space use only; the tax rate is therefore unaffected by the land’s development potential.

The Williamson Act addresses “compatible” uses. CCR Section 51238.1 states that uses approved on contracted lands shall be consistent with the following principles of compatibility listed below.

- The use will not significantly compromise the long-term productive agricultural capability of the subject contracted parcel or parcels or on other contracted lands in agricultural preserves.
- The use will not significantly displace or impair current or reasonably foreseeable agricultural operations on the subject contracted parcel or parcels or on other contracted lands in agricultural preserves.

The use will not result in the significant removal of adjacent contracted land from agricultural or open space use.

C.2.15 Mineral Resources

California Surface Mining and Reclamation Act

The Surface Mining and Reclamation Act of 1975 (SMARA) (California PRC Section 2710 et seq.) addresses surface mining of minerals and requires the prevention of adverse environmental effects caused by mining, the reclamation of mined lands for alternative uses, and the elimination of hazards to public health and safety from the effects of mining activities. SMARA is implemented through ordinances for permitting developed by local government “lead agencies” that provide the regulatory framework under which local mining and reclamation activities are conducted. The State Mining and Geology Board reviews the local ordinances to ensure that they meet the procedures established by SMARA. The general process consists of obtaining a permit to mine material, implementing a reclamation plan to return the land to a useable condition, and providing financial assurances to ensure the feasibility of the reclamation plan. The process of reclamation includes maintaining water and air quality and minimizing flooding, erosion, and damage to wildlife and aquatic habitats caused by surface mining. SMARA applies to an individual or entity that would disturb more than 1 acre or remove more

than 1,000 cubic yards of material through surface mining activities, including the excavation of borrow pits for soil material.

C.2.16 Noise and Vibration

State plans, policies, regulations, or laws related to noise and vibration that apply to the project are discussed in Section 4.17, “Noise and Vibration,” in Subsection 4.17.2, “Regulatory Setting.”

C.2.17 Recreation

No State plans, policies, regulations, or laws related to recreation apply to the project.

C.2.18 Socioeconomics (including Population, Housing, and Employment)

No State plans, policies, regulations, or laws related to socioeconomics (including population, housing, and employment) apply to the project.

C.2.19 Traffic and Transportation

Caltrans Policies

Caltrans enforces various policies and regulations related to the modification of, or encroachment on, the State highway system. Caltrans also manages the California Freeway and Expressway System, which encompasses both State and Federal highways. State and Federal roadways within the project vicinity consist of I-5 and I-80.

The traffic study area for purposes of this analysis includes I-5 and I-80, which fall under the jurisdiction of Caltrans.

In 2012, Caltrans completed transportation corridor concept reports or corridor system management plans for most State facilities in the City and County of Sacramento including I-5 (Caltrans 2010a), and I-80 (Caltrans 2010b). Transportation corridor concept reports and corridor system management plans identify long-range improvements for specific State freeway and highway corridors and establish the “concept,” or desired level of service for specific corridor segments.

Caltrans has the discretionary authority to issue special permits for the movement of vehicles and loads exceeding the statutory limitations for vehicle size, weight, and loading that are contained in Division 15 of the 2014 California Vehicle Code. The entity requesting such a special permit must complete an application for a transportation permit. These reports, plans, and permits apply to the effects thresholds and to project-related transportation on Caltrans roadways and highways.

C.2.20 Utilities and Service Systems

No State plans, policies, regulations, or laws related to utilities and service systems apply to the project.

C.2.21 Water Quality

Porter-Cologne Water Quality Control Act

See discussion above, under Subsection C.2.5, “Biological Resources – Wetlands and Other Waters of the United States.”

Central Valley Regional Water Quality Control Board Delta Methylmercury Total Maximum Daily Load

The Delta Methylmercury TMDL was adopted by the Regional Board on 22 April 2010. It was approved by SWRCB and the California Office of Administrative Law. Final approval by EPA was received on 20 October 2011. The TMDL was adopted as a Basin Plan Amendment and includes a control program to reduce methylmercury and inorganic mercury in the Delta. The TMDL applies to Delta waterways and Yolo Bypass waterways within the Delta and north of the Legal Delta to which the Commercial and Sport Fishing beneficial use, site-specific methylmercury fish tissue objectives, Delta mercury control implementation program, and monitoring provisions apply.

California Toxics Rule and State Implementation Policy

The California Toxics Rule (CTR) was promulgated in 2000 in response to requirements of the EPA National Toxics Rule (NTR). The NTR and CTR criteria are regulatory criteria adopted to inland surface waters, enclosed bays, and estuaries in California that are subject to regulation pursuant to Section 303(c) of the CWA. The NTR and CTR include criteria for the protection of aquatic life and human health. Human health criteria (water and organisms) apply to all waters with a “Municipal and Domestic Water Supply” beneficial use designation as indicated in the RWQCBs’ Basin Plans. The *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California*, also known as the SIP, was adopted by SWRCB in 2000 to establish provisions for translating CTR criteria, NTR criteria, and basin plan water quality objectives for toxic pollutants.

California Fish and Game Code—Streambed Alteration

See discussion above, under Subsection C.2.4, “Biological Resources – Vegetation and Wildlife.”

California State Nondegradation Policy

In 1968, as required under the Federal antidegradation policy, SWRCB adopted a nondegradation policy aimed at maintaining high quality of waters in California. The nondegradation policy states that the disposal of wastes into State waters shall be regulated to achieve the highest water quality consistent with maximum benefit to the people of the State and to promote the peace, health, safety, and welfare of the people of the State. Any discharges associated with the project would be required to comply with this policy. The nondegradation policy provides as follows.

Where the existing quality of water is better than required under existing water quality control plans, such quality must be maintained until it has been demonstrated that any change would be consistent with maximum benefit to the people of the State and would not unreasonably affect present and anticipated beneficial uses of such water.

Any activity which produces waste or increases the volume or concentration of waste and which discharges to existing high-quality waters is required to meet waste discharge requirements, which are intended to ensure: (1) pollution or nuisance does not occur, and (2) the highest water quality consistent with the maximum benefit to the people of the State is maintained.

Water Quality Control Plan for the Sacramento and San Joaquin River Basins

Pursuant to the Porter-Cologne Act, the Central Valley RWQCB prepares and updates the *Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins* every 3 years; the most recent update was completed in 2016 (CVRWQCB 2016). The Basin Plan describes the officially designated beneficial uses for specific surface water and groundwater resources and the enforceable water quality objectives necessary to protect those beneficial uses. The project site is located within the CVRWQCB's jurisdiction and is subject to the Basin Plan.

The Basin Plan includes numerical and narrative water quality objectives for physical and chemical water quality constituents. Numerical objectives are set for temperature, dissolved oxygen, turbidity, and pH; total dissolved solids, electrical conductivity, bacterial content, and various specific ions; trace metals; and synthetic organic compounds. Narrative objectives are set for parameters such as suspended solids, biostimulatory substances (e.g., nitrogen and phosphorus), oil and grease, color, taste, odor, and aquatic toxicity. Narrative objectives are often precursors to numeric objectives. The primary method used by the CVRWQCB to ensure conformance with the Basin Plan's water quality objectives and implementation policies and procedures is to issue WDRs for projects that may discharge wastes to land or water. The WDRs specify the terms and conditions that must be followed during implementation and operation of a project.

General Order for Dewatering and Other Low Threat Discharges to Surface Waters

The CVRWQCB has adopted a General Dewatering Permit that applies to various categories of dewatering activities. Permit conditions for discharge of these types of wastewaters to surface water are specified in the **General Order for Dewatering and Other Low Threat Discharges to Surface Waters** (Order No. R5-2013-0074) (CVRWQCB 2013).

C.3 Regional and Local Plans and Policies

C.3.1 Aesthetics

Yolo County General Plan

Old River Road, from Yolo County Road 107 (near the Fremont Weir) south to West Sacramento (at the southern end of the Sacramento Weir), is a Yolo County-designated scenic highway (Yolo County 2009).

The following policies from the *Yolo 2030 Countywide General Plan Land Use and Community Character Element* (Yolo County 2009) regarding aesthetics are relevant to the project, as listed below.

- **Policy CC-1.2:** Preserve and enhance the rural landscape as an important scenic feature of the County.
- **Policy CC-1.3:** Protect the rural night sky as an important scenic feature to the greatest feasible extent where lighting is needed.
- **Policy CC-1.4:** Identify and preserve, where possible, landmarks and icons which contribute to the identity and character of the rural areas.
- **Policy CC-1.5:** Significant site features, such as trees, water courses, rock outcroppings, historic structures and scenic views shall be used to guide site planning and design in new development. Where possible, these features shall become focal points of the development.
- **Policy CC-1.12:** Preserve and enhance the scenic quality of the County's rural roadway system. Prohibit projects and activities that would obscure, detract from, or negatively affect the quality of views from designated scenic roadways or scenic highways.
- **Policy CC-1.15:** The following features shall be protected and preserved along designated scenic roadways and routes, except where there are health and safety concerns:
 - Trees and other natural or unique vegetation
 - Landforms and natural or unique features
 - Views and vistas
 - Historic structures (where feasible), including buildings, bridges and signs
- **Policy CC-1.16:** The following features shall be stringently regulated along designated scenic roadways and routes with the intent of preserving and protecting the scenic qualities of the roadway or route:
 - Signage
 - Architectural design of adjoining structures
 - Construction, repair and maintenance operations
 - Landscaping
 - Litter control
 - Water quality
 - Power poles, towers, above-ground wire lines, wind power and
 - Solar power devices and antennae

- **Policy CC-1.17:** Existing trees and vegetation and natural landforms along scenic roadways and routes shall be retained to the greatest feasible extent. Landscaping shall be required to enhance scenic qualities and/or screen unsightly views and shall emphasize the use of native plants and habitat restoration to the extent possible. Removal of trees, particularly those with scenic and/or historic value, shall be generally prohibited along the roadway or route.

Sacramento International Airport Land Use Compatibility Plan

Airport safety areas and referral areas are established to minimize the number of people exposed to aircraft crash hazards, by placing restrictions on land uses in various safety areas. The Sacramento Area Council of Governments (SACOG) (2013) has prepared an Airport Land Use Compatibility Plan for Sacramento International Airport, which designates six safety areas and two referral areas. The actual dimensions of these safety areas at each airport take into account FAA safety zone dimensions along with historical aircraft accident data. Projects located within either Referral Area 1 or Referral Area 2 that include lighting which could be mistaken for airport lighting and/or could cause glare in the eyes of pilots of aircraft using the airport, require review by the Airport Land Use Commission.

C.3.2 Air Quality

Yolo County General Plan

The following policies from the *Yolo 2030 Countywide General Plan* Conservation and Open Space Element, Air Quality (Yolo County 2009) regarding air quality are relevant to the project, as listed below. Only policies that address construction are included, because the project does not involve land use planning decisions.

- **Policy CO-6.2:** Support local and regional air quality improvement efforts.
- **Policy CO-6.6:** Encourage implementation of YSAQMD Best Management Practices, such as those listed below, to reduce emissions and control dust during construction activities:
 - Water all active construction areas at least twice daily.
 - Haul trucks shall maintain at least two feet of freeboard.
 - Cover all trucks hauling soil, sand, and other loose materials.
 - Apply non-toxic binders (e.g., latex acrylic copolymer) to exposed areas after cut-and-fill operations and hydroseed area.
 - Apply chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days).
 - Plant tree windbreaks on the windward perimeter of construction projects if adjacent to open land.
 - Plant vegetative ground cover in disturbed areas as soon as possible.
 - Cover inactive storage piles.
 - Sweep streets if visible soil material is carried out from the construction site.

- Treat accesses to a distance of 100 feet from the paved road with a 6- to 12-inch layer of wood chips or mulch.
- Treat accesses to a distance of 100 feet from the paved road with a 6-inch layer of gravel.

Yolo-Solano Air Quality Management District Rules

YSAQMD adopts air quality rules and regulations. Specific rules applicable to project construction may include, but are not limited to, the rules listed below.

- **Rule 2.3: Ringelman Chart (Opacity):** The developer or contractor is required to limit emissions of visible air contaminants (dust, smoke, or fumes) to the atmosphere.
- **Rule 2.5: Nuisance:** The developer or contractor is not allowed to discharge quantities of air contaminants or other materials which cause injury, detriment, nuisance or annoyance to any considerable number of persons or the public; endanger the comfort, repose, health, or safety of any such persons or the public; or cause or have natural tendency to cause injury or damage to business or property.
- **Rule 2.28: Asphalt:** Cutback and emulsified asphalt paving materials shall be conducted in accordance with District rules.
- **Rule 3.1: General Permit Requirements:** No person shall build, erect, alter, or replace any facility, article, machine, equipment, or other contrivance, the use of which may cause the issuance of air contaminants, or the use of which may eliminate or reduce or control the issuance of air contaminants, without first obtaining an authorization to construct from the YSAQMD. This Rule applies to stationary sources and may apply to construction equipment of certain types if operated in the YSAQMD for more than a total of 180 days within a continuous 12-month period.
- **Rule 3.3: Portable Equipment:** Applies to portable equipment including confined and unconfined abrasive blasting, concrete batch plants, diesel-fired piston internal combustion engines, spark ignition internal combustion engines, and crushing and screening. The rule affects well drilling rigs, power generation, pumps, compressors, pile drivers, welding, cranes and wood chippers. In addition to Rule 3.3 any portable equipment greater than 50 horsepower, other than vehicles, must be registered either with the ARB Portable Equipment Registration Program or YSAQMD.
- **Rule 9.9: Asbestos Containing Materials:** YSAQMD requires consultation and a permit prior to commencing demolition or renovation work where asbestos containing materials may be involved.

C.3.3 Biological Resources – Fish and Aquatic Organisms

Yolo County General Plan

The following policies from the *Yolo 2030 Countywide General Plan* Conservation and Open Space Element (Yolo County 2009) related to biological resources – fish and aquatic organisms are relevant] to the project, as listed below.

- **Policy CO-1.28:** Balance the needs of agriculture with recreation, flood management, and habitat, within the Yolo Bypass.

- **Policy CO-2.3:** Preserve and enhance those biological communities that contribute to the county's rich biodiversity including blue oak and mixed oak woodlands, native grassland prairies, wetlands, riparian areas, aquatic habitat, agricultural lands, heritage valley oak trees, remnant valley oak groves, and roadside tree rows.
- **Policy CO-2.5:** Protect, restore and enhance habitat for sensitive fish species, so long as it does not result in the large-scale conversion of existing agricultural resources.
- **Policy CO-2.7:** Encourage streamside property owners and appropriate public agencies to participate in fishery enhancement projects.
- **Policy CO-2.8:** Encourage all public land management agencies to protect, restore, and enhance the fish habitat within their jurisdiction.
- **Policy CO-2.9:** Protect riparian areas to maintain and balance wildlife values.
- **Policy CO-2.10:** Encourage the restoration of native habitat.
- **Policy CO-2.24:** Promote floodplain management techniques that increase the area of naturally inundated floodplains and the frequency of inundated floodplain habitat, restore some natural flooding processes, river meanders, and widen riparian vegetation, where feasible.
- **Policy CO-2.28:** Balance the needs of aquatic and riparian ecosystem enhancement efforts with flood management objectives.
- **Policy CO-2.30:** Protect and enhance streams, channels, seasonal and permanent marshland, wetlands, sloughs, riparian habitat and vernal pools in land planning and community design.
- **Policy CO-2.31:** Protect wetland ecosystems by minimizing erosion and pollution from grading, especially during grading and construction projects.
- **Policy CO-2.38:** Avoid adverse impacts to wildlife movement corridors and nursery sites (e.g., nest sites, dens, spawning areas, breeding ponds).

C.3.4 Biological Resources – Vegetation and Wildlife

Yolo County Natural Community Conservation Plan and Habitat Conservation Plan

The Yolo Habitat Conservancy, formerly the Yolo County Habitat Conservation Plan/Natural Community Conservation Plan Joint Powers Agency, is directing preparation of the Yolo Habitat Conservation Plan/Natural Communities Conservation Plan (Yolo HCP/NCCP). This HCP/NCCP provides a framework to improve conservation of natural resources, including endangered species habitat, while streamlining the permitting process for planned development, infrastructure, and maintenance activities. It will allow Yolo County, the Yolo Habitat Conservancy, and the Cities of Davis, West Sacramento, Winters, and Woodland to receive Incidental Take Permits under ESA and CESA for activities and projects they conduct and those under their jurisdiction. The Second Administrative Draft of the Yolo HCP/NCCP (Yolo County HCP/NCCP Joint Powers Authority 2015) was issued in March 2015; the Yolo HCP/NCCP has not yet been adopted by participants or approved by the regulatory agencies.

Yolo County Swainson's Hawk Mitigation Fee Program

This mitigation fee program is implemented on behalf of Yolo County and the Cities of Davis, West Sacramento, Winters, and Woodland. The program uses mitigation fees to acquire conservation easements that protect Swainson's hawk habitat. It is an interim program that is dependent upon completion of the Yolo HCP/NCCP, is limited to providing mitigation for impacts to foraging habitat, and does not authorize incidental take of Swainson's hawks. Applications for development of open land within the Yolo HCP/NCCP area are reviewed and acreage-based mitigation fees are collected to compensate for development of the lands. The mitigation fees are designed to be sufficient to fund the acquisition, enhancement, and long-term management of 1 acre of Swainson's hawk foraging habitat for every 1 acre of foraging habitat that is lost to urban development.

Yolo County General Plan

The following policies from the *Yolo 2030 Countywide General Plan* Conservation and Open Space Element (Yolo County 2009) related to biological resources – vegetation and wildlife are relevant to the project, as listed below.

- **Policy CO-1.1:** Expand and enhance an integrated network of open space to support recreation, natural resources, historic and tribal resources, habitat water management, aesthetics, and other beneficial uses.
- **Policy CO-1.9:** Promote the conservation of environmental resources in new and existing park and open space facilities.
- **Policy CO-1.21:** Emphasize the use of native grasses, shrubs and trees as the primary focus of restoration within resource parks and other open spaces.
- **Policy CO-1.28:** Balance the needs of agriculture with recreation, flood management, and habitat, within the Yolo Bypass.
- **Policy CO-2.1:** Consider and maintain the ecological function of landscapes, connecting features, watersheds, and wildlife movement corridors.
- **Policy CO-2.3:** Preserve and enhance those biological communities that contribute to the county's rich biodiversity including blue oak and mixed oak woodlands, native grassland prairies, wetlands, riparian areas, aquatic habitat, agricultural lands, heritage valley oak trees, remnant valley oak groves, and roadside tree rows.
- **Policy CO-2.7:** Encourage streamside property owners and appropriate public agencies to participate in fishery enhancement projects.
- **Policy CO-2.8:** Encourage all public land management agencies to protect, restore, and enhance the fish habitat within their jurisdiction.
- **Policy CO-2.9:** Protect riparian areas to maintain and balance wildlife values.
- **Policy CO-2.10:** Encourage the restoration of native habitat.

- **Policy CO-2.14:** Ensure no net loss of oak woodlands, alkali sinks, rare soils, vernal pools or geological substrates that support rare endemic species, with the following exception. The limited loss of blue oak woodland and grasslands may be acceptable, where the fragmentation of large forests exceeding 10 acres is avoided, and where losses are mitigated.
- **Policy CO-2.16:** Existing native vegetation shall be conserved where possible and integrated into new development if appropriate.
- **Policy CO-2.20:** Encourage the use of wildlife-friendly Best Management Practices to minimize unintentional killing of wildlife, such as restricting mowing during nesting season for ground-nesting birds or draining of flooded fields before fledging of wetland species.
- **Policy CO-2.24:** Promote floodplain management techniques that increase the area of naturally inundated floodplains and the frequency of inundated floodplain habitat, restore some natural flooding processes, river meanders, and widen riparian vegetation, where feasible.
- **Policy CO-2.26:** Coordinate with local watershed stewardship groups to identify opportunities for restoring or enhancing watershed, instream, and riparian biodiversity.
- **Policy CO-2.28:** Balance the needs of aquatic and riparian ecosystem enhancement efforts with flood management objectives.
- **Policy CO-2.29:** Promote native perennial grass habitat restoration and controlled fire management in grazing lands to reduce invasive species cover and enhance rangeland forage.
- **Policy CO-2.30:** Protect and enhance streams, channels, seasonal and permanent marshland, wetlands, sloughs, riparian habitat and vernal pools in land planning and community design.
- **Policy CO-2.31:** Protect wetland ecosystems by minimizing erosion and pollution from grading, especially during grading and construction projects.
- **Policy CO-2.37:** Where applicable in riparian areas, ensure that required state and Federal permits/approvals are secured prior to development of approved projects.
- **Policy CO-2.38:** Avoid adverse impacts to wildlife movement corridors and nursery sites (e.g., nest sites, dens, spawning areas, breeding ponds).
- **Policy CO-2.41:** Require that impacts to species listed under the State or Federal Endangered Species Acts, or species identified as special-status by the resource agencies, be avoided to the greatest feasible extent. If avoidance is not possible, fully mitigate impacts consistent with applicable local, State, and Federal requirements.
- **Policy CO-2.42:** Projects that would impact Swainson's hawk foraging habitat shall participate in the *Agreement Regarding Mitigation for Impacts to Swainson's Hawk Foraging Habitat in Yolo County* entered into by the CDFW and the Yolo County HCP/NCCP Joint Powers Agency, or satisfy other subsequent adopted mitigation requirements consistent with applicable local, State, and Federal requirements.

C.3.5 Biological Resources – Wetlands and Other Waters of the United States

Yolo County General Plan

The following policies from the *Yolo 2030 Countywide General Plan* Conservation and Open Space Element (Yolo County 2009) related to biological resources –wetlands and waters of the United States are relevant to the project, as listed below.

- **Policy CO-1.28:** Balance the needs of agriculture with recreation, flood management, and habitat within the Yolo Bypass.
- **Policy CO-2.3:** Preserve and enhance those biological communities that contribute to the county’s rich biodiversity including blue oak and mixed oak woodlands, native grassland prairies, wetlands, riparian areas, aquatic habitat, agricultural lands, heritage valley oak trees, remnant valley oak groves, and roadside tree rows.
- **Policy CO-2.30:** Protect and enhance streams, channels, seasonal and permanent marshland, wetlands, sloughs, riparian habitat and vernal pools in land planning and community design.
- **Policy CO-2.31:** Protect wetland ecosystems by minimizing erosion and pollution from grading, especially during grading and construction projects.
- **Policy CO-2.5:** Protect, restore and enhance habitat for sensitive fish species, so long as it does not result in the large-scale conversion of existing agricultural resources.
- **Policy CO-2.7:** Encourage streamside property owners and appropriate public agencies to participate in fishery enhancement projects.
- **Policy CO-2.8:** Encourage all public land management agencies to protect, restore, and enhance the fish habitat within their jurisdiction.
- **Policy CO-2.9:** Protect riparian areas to maintain and balance wildlife values.
- **Policy CO-2.10:** Encourage the restoration of native habitat.
- **Policy CO-2.24:** Promote floodplain management techniques that increase the area of naturally inundated floodplains and the frequency of inundated floodplain habitat, restore some natural flooding processes, river meanders, and widen riparian vegetation, where feasible.
- **Policy CO-2.28:** Balance the needs of aquatic and riparian ecosystem enhancement efforts with flood management objectives.
- **Policy CO-2.30:** Protect and enhance streams, channels, seasonal and permanent marshland, wetlands, sloughs, riparian habitat and vernal pools in land planning and community design.
- **Policy CO-2.31:** Protect wetland ecosystems by minimizing erosion and pollution from grading, especially during grading and construction projects.

- **Policy CO-2.38:** Avoid adverse impacts to wildlife movement corridors and nursery sites (e.g., nest sites, dens, spawning areas, breeding ponds).

C.3.6 Climate Change

The following actions from the *Yolo 2030 Countywide General Plan* Conservation and Open Space Element (Yolo County 2009) relate to climate change and are relevant to the project, as listed below.

- **Action CO-A118:** Pursuant to and based on the Climate Action Plan (CAP), the following thresholds shall be used for determining the significance of GHG emissions and climate change impacts associated with future projects:
 - Impacts associated with GHG emissions from projects that are not consistent with the General Plan, do not fall within the assumptions of the General Plan EIR, and/or are not consistent with the CAP, and are subject to CEQA review are rebuttably presumed to be significant and further CEQA analysis is required. The applicant must demonstrate to the County's satisfaction how the project will achieve its fair share of the established targets including:
 - Use of alternative design components and/or operational protocols to achieve the required GHG reductions
 - Use of real, additional, permanent, verifiable and enforceable offsets to achieve required GHG reductions. To the greatest feasible extent, offsets shall be: locally based, project relevant, and consistent with other long term goals of the County
 - The project must also be able to demonstrate that it would not substantially interfere with implementation of CAP strategies, measures, or actions.
- **Action CO-A121:** Adopt urban forestry practices that encourage forestation as a means of storing carbon dioxide, with the goal of doubling the tree canopy in unincorporated communities by 2030. Use appropriate protocols to assess owner eligibility to sell carbon credits including increasing the urban tree canopy, expanding riparian corridors, establishing hedge rows, and enlarging the acreage of permanent crops such as vineyards and orchards.

C.3.7 Cultural Resources

Yolo County General Plan

The following policies from the *Yolo 2030 Countywide General Plan* Conservation and Open Space Element (Yolo County 2009) regarding cultural resources are relevant to the project, as listed below:

- **Policy CO-4.1:** Identify and safeguard important cultural resources.
- **Policy CO-4.5:** Increase knowledge of historic preservation through public education and outreach programs.
- **Policy CO-4.7:** Encourage the identification of historic resources through the integrated use of plaques and markers.
- **Policy CO-4.11:** Honor and respect local tribal heritage.

- **Policy CO-4.12:** Work with culturally affiliated tribes to identify and appropriately address cultural resources and tribal sacred sites through the development review process.
- **Policy CO-4.13:** Avoid or mitigate to the maximum extent feasible the impacts of development on Native American archaeological and cultural resources.

C.3.8 Energy

No regional or local plans, policies, regulations, or ordinances related to energy are relevant to the project.

C.3.9 Environmental Justice

No regional or local plans, policies, regulations, or ordinances related to environmental justice are relevant to the project.

C.3.10 Geology, Soils, and Paleontological Resources

Yolo County General Plan

The following policies from the *Yolo 2030 Countywide General Plan* Health and Safety and Conservation and Open Space Elements (Yolo County 2009) related to geology and soils are relevant to the project, as listed below.

- **Policy HS-1.1:** Regulate land development to avoid unreasonable exposure to geologic hazards.
- **Policy HS-1.2:** All development and construction proposals shall be reviewed by the County to ensure conformance to applicable building standards.
- **Policy HS-1.3:** Require environmental documents prepared in connection with CEQA to address seismic safety issues and to provide adequate mitigation for existing and potential hazards identified.
- **Policy CO-2.31:** Protect wetland ecosystems by minimizing erosion and pollution from grading, especially during grading and construction projects.

The following policy and action from the *Yolo 2030 Countywide General Plan* Conservation and Open Space Element (Yolo County 2009) related to paleontological resources are relevant to the project, as listed below.

- **Policy CO-4.1:** Identify and safeguard important cultural resources.
- **Action CO-A63:** Require cultural resources inventories of all new development projects in areas where a preliminary site survey indicates a medium or high potential for archaeological, historical, or paleontological resources. In addition, require a mitigation plan to protect the resource before the issuance of permits. Mitigation may include:
 - Having a qualified archaeologist or paleontologist present during initial grading or trenching;
 - Redesign of the project to avoid historic or paleontological resources;
 - Capping the site with a layer of fill; and/or

- Excavation and removal of the historical or paleontological resources and curation in an appropriate facility under the direction of a qualified professional.

Professional Paleontological Standards

The Society of Vertebrate Paleontology (1995, 1996), a national scientific organization of professional vertebrate paleontologists, has established standard guidelines that outline acceptable professional practices in the conduct of paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, specimen preparation, analysis, and curation. Most practicing professional paleontologists in the nation adhere to the Society’s assessment, mitigation, and monitoring requirements, as specifically spelled out in its standard guidelines.

C.3.11 Groundwater Resources

The following policies from the *Yolo 2030 Countywide General Plan* (Yolo County 2009) Conservation and Open Space Element related to groundwater resources are relevant to the project, as listed below.

- **Policy CO-5.6:** Improve and protect water quality for municipal, agricultural, and environmental uses.
- **Policy CO-5.23:** Support efforts to meet applicable water quality standards for all surface and groundwater resources.
- **Policy CO-5.27:** Encourage the development of groundwater management plans pursuant to the State Groundwater Management Act (Sections 10750-10756 of the California Water Code) for all regions of the County.

The following objective from the Yolo County Integrated Regional Water Management Plan related to groundwater resources is relevant to the project, as listed below.

- **Water Quality Objective:** Meet State and Federal standards for water quality protection in all surface and groundwater resources.

C.3.12 Hazards and Hazardous Materials

Certified Unified Program Agency

The Yolo County Environmental Health Services Department (EHSD) is the lead local regulatory agency (i.e., Certified Unified Program Agency) for Yolo County and is responsible for a variety of tasks related to the storage, handling, and management of hazardous materials. The Yolo County EHSD has a 24-hour hazardous materials incident response team and responds to incidents involving chemical releases, as well as any other hazardous materials situations. Yolo County EHSD regulates storage and handling of hazardous materials that would be used during project-related construction activities.

Sacramento International Airport Land Use Compatibility Plan

Referral areas and airport safety areas are established to minimize the number of people exposed to aircraft crash hazards, by placing restrictions on land uses in various safety areas. SACOG (2013) has prepared an Airport Land Use Compatibility Plan for Sacramento International Airport, which designates two referral areas and six safety areas. The actual dimensions of these safety areas at each airport take into account FAA safety zone dimensions along with historical aircraft accident data. An

airport referral area is an area in which current or future airport-related noise, overflight, safety, or airspace protection factors may affect land uses or necessitate restrictions on those uses, and therefore certain land use proposals are to be referred to the Airport Land Use Commission for review.

Yolo-Solano Air Quality Management District Asbestos Rules 4.3 and 9.9

Rule 9.9 was enacted to limit the emission of asbestos to the atmosphere and require appropriate work practice standards and waste disposal procedures. Rule 4.3 requires submittal of a form notifying the YSAQMD of the proposed demolition and amounts and types of asbestos to be removed, along with payment of a fee to YSAQMD.

Sacramento-Yolo Mosquito and Vector Control District

The Sacramento-Yolo Mosquito and Vector Control District implements an “integrated pest management” program, which incorporates multiple strategies to achieve effective control of mosquitoes. These strategies consist of:

- source reduction—designing wetlands and operations to be inhospitable to mosquitoes;
- monitoring—implementing monitoring and sampling programs to detect early signs of mosquito population problems;
- biological control—use of biological agents such as mosquitofish to limit larval mosquito populations;
- chemical control—larvicides and adulticides; and
- cultural control—changing the behavior of people so their actions prevent the development of mosquitoes or the transmission of vector-borne disease.

In addition, the Yolo-Solano Mosquito and Vector Control District encourages implementation of the design, management, and vector control strategies outlined in *Best Management Practices for Mosquito Control on California State Properties* (California Department of Public Health 2008); and *Best Management Practices for Mosquito Control in California* (California Department of Public Health and Mosquito and Vector Control Association of California 2012).

Yolo County General Plan

The following actions and policies from the *Yolo 2030 Countywide General Plan* Health and Safety and Public Facilities and Services Elements (Yolo County 2009) related to hazards and hazardous materials are relevant to the project, as listed below.

- **Action HS-A35:** Develop emergency response plans and systems for floodplain evacuation and flood emergency management. Educate the public regarding these plans.
- **Policy HS-3.1:** Manage the development review process to protect people, structures, and personal property from unreasonable risk from wildland fires.
- **Action HS-A39:** Require the design and construction of new roadways and driveways in fire hazard areas to be of sufficient width, radius, and grade to facilitate access by fire-fighting apparatus.

- **Policy HS-4.1:** Minimize exposure to the harmful effects of hazardous materials and waste.
- **Action HS-A47:** New development and redevelopment in areas previously used for agricultural, commercial, or industrial uses shall ensure that soils, groundwater, and buildings affected by hazardous material releases from prior land uses, as well as lead paint and/or asbestos potentially present in building materials, will not have the potential to affect the environment or health and safety of future property owners or users, and any affected areas shall be properly abated. A Phase I Environmental Site Assessment to American Society for Testing and Materials standards shall be required where appropriate and a Phase II Environmental Site Assessment may be required in certain circumstances based on the recommendations/results of the Phase I. Where the Phase I report has identified agricultural cultivation prior to the 1980s, a shallow soil investigation shall be performed at the property in accordance with DTSC guidance for sampling agricultural properties.
- **Policy HS-5.1:** Ensure that land uses within the vicinity of airports are compatible with airport restrictions and operations.
- **Policy HS-5.2:** Ensure that new development near commercial and public use airports is consistent with setbacks, height, and land use restrictions as determined by the Federal Aviation Administration and the Sacramento Area Council of Governments Airport Land Use Commission. Ensure that development proximate to private airstrips addresses compatibility issues.
- **Policy PF.P-8:** Notify the appropriate agencies (e.g., school districts, public safety, water) of new development applications within their service area early in the review process to allow sufficient time to assess impacts on facilities.

C.3.13 Hydrology, Hydraulics, and Flood Risk Management

The following policy and actions from the *Yolo 2030 Countywide General Plan* Conservation and Open Space Element (Yolo County 2009) related to hydrology, hydraulics, and flood risk management are relevant to the project, as listed below.

- **Policy CO-5.30:** Anticipate and adapt to changes in the amount and timing of water availability due to predicted effects of global warming.
- **Action CO-A73:** Participate in regional planning efforts regarding surface water resources, including the Sacramento River, Cache Creek, Putah Creek, Tehama-Colusa Canal, Yolo Bypass, and Sacramento-San Joaquin Delta.
- **Action CO-A93:** Adopt development design standards that use low-impact development techniques that emulate the natural hydrologic regime and reduce the amount of runoff and associated pollutants.

The following policies and actions from the *Yolo 2030 Countywide General Plan* Health and Safety Element (Yolo County 2009) related to hydrology, hydraulics, and flood management are relevant to the project, as listed below.

- **Policy HS-2.1:** Manage the development review process to protect people, structures, and personal property from unreasonable risk from flooding and flood hazards.
- **Policy HS-2.2:** Ensure and enhance the maintenance and integrity of flood control levees.

- **Policy HS-2.8:** Consider and allow for the ecological benefits of flooding while balancing public safety and the protection of property.
- **Action HS-A5:** Require a minimum of 100-year flood protection for new construction, and strive to achieve 200-year flood protection for unincorporated communities.
- **Action HS-A14:** Require a minimum 50-foot setback for all permanent improvements from the toe of any flood control levee.
- **Action HS-A22:** Ensure that the upgrade, expansion, or construction of any flood control levee demonstrates that it will not adversely divert flood water or increase flooding.

Yolo County Improvement Standards

Several policies from the Yolo County Improvement Standards regarding hydrology, hydraulics, and flood risk management are relevant to the project, such as Section 9, “Storm Drainage;” Section 10, “Grading;” and Section 11, “Stormwater Quality, Erosion, and Sediment Control.”

Yolo County Integrated Regional Water Management Plan

The Yolo County Integrated Regional Water Management Plan addresses water supply, water quality, flood management, enhancement of aquatic and riparian habitat, and improvement of the County’s recreational opportunities.

C.3.14 Land Use and Planning, and Agricultural and Forestry Resources

Yolo County General Plan

The following policies from the *Yolo 2030 Countywide General Plan* Land Use and Community Character, Conservation and Open Space, and Agriculture and Economic Development Elements (Yolo County 2009) related to land use and planning, and agricultural and forestry resources are relevant to the project, as listed below.

- **Policy LU-2.4:** Vigorously conserve, preserve, and enhance the productivity of the agricultural lands in areas outside of adopted community growth boundaries and outside of city spheres of influence.
- **Policy CO-1.1:** Expand and enhance an integrated network of open space to support recreation, natural resources, historic and tribal resources, habitat, water management, aesthetics, and other beneficial uses.
- **Policy CO-1.28:** Balance the needs of agriculture with recreation, flood management, and habitat, within the Yolo Bypass.
- **Policy AG-1.6:** Continue to mitigate at a ratio of no less than 1:1 the conversion of farm land and/or the conversion of land designated or zoned for agriculture, to other uses.
- **Policy AG-1.18:** When undertaking improvement of public roadways and drainage facilities, consult with adjoining farmland owners and incorporate designs that minimize impacts on agriculture.

- **Policy AG-1.22:** Protect the integrity of irrigation conveyance systems and related infrastructure from the impacts of adjoining non-agricultural development.

Most of the project site is designated by the County General Plan as Agricultural; a small area in the northern portion of the project site is designated as Specific Plan, as described below.

- **Agriculture:** This designation includes the full range of cultivated agriculture, such as row crops, orchards, vineyards, dryland farming, livestock grazing, forest products, horticulture, floriculture, apiaries, confined animal facilities and equestrian facilities. It also includes agricultural industrial uses (e.g., agricultural research, processing and storage; supply; service; crop dusting; agricultural chemical and equipment sales; surface mining; etc.) as well as agricultural commercial uses (e.g., roadside stands, “Yolo Stores,” wineries, farm-based tourism (e.g., u-pick, dude ranches, lodging), horseshows, rodeos, crop-based seasonal events, ancillary restaurants and/or stores) serving rural areas. The Agriculture designation also includes farmworker housing, surface mining, and incidental habitat.
- **Specific Plan:** This designation allows uses in the Agriculture designation to continue temporarily until such time as the Specific Plan has been adopted, or the land use designation is otherwise amended. Ultimate land uses must be consistent with the adopted Specific Plan. Capital intensive agricultural uses are discouraged in lands designated Specific Plan so as not to preclude later planned uses.

These areas are zoned by Yolo County as Agricultural Intensive (A-N), Public Open Space (POS), and Specific Plan Overlay (SPO) (Yolo County 2014). These zoning codes are defined below.

- The **A-N zoning** is intended to preserve lands best suited for intensive agricultural uses typically dependent on higher quality soils, water availability, and relatively flat topography. The purpose of the zone is to promote those uses, while preventing the encroachment of nonagricultural uses. Uses in the A-N zone are primarily limited to intensive agricultural production and other activities compatible with agricultural uses.
- The **POS zoning** is intended to recognize major publicly-owned open space lands, major natural water bodies, agricultural buffer areas, and habitat preserves. The POS lands are characterized by passive or low management uses.
- The **SPO zoning** applies to existing and planned areas of development typically adjacent to identified Specific Plan designated land. Land uses consistent with the existing land use designation are allowed until a Specific Plan has been adopted, at which point the Specific Plan takes precedence.

Yolo County Farmland Conversion Mitigation Program

Through its Agricultural Conservation and Mitigation Program (Yolo County Zoning Code, Chapter 2, Article 4, Section 8-2.404), Yolo County requires mitigation when farmland is converted to non-agricultural uses for development purposes. The ordinance requires dedication of 3 acres of equivalent agricultural land for each acre of Prime Farmland converted, and dedication of 2 acres of agricultural land for each converted acre that is not designated as Prime Farmland. The ordinance outlines the soil, irrigation, and other requirements of land that can qualify as agricultural mitigation. Agricultural land conversions totaling 20 acres or more are required to implement a farmland conservation easement.

Agricultural conversions totaling 5–20 acres may provide a farmland conservation easement or pay an in-lieu fee. Farmland conservation easements must be located within Yolo County. Agricultural land conversions totaling 5 acres or less must pay an in-lieu fee, and an agricultural conservation easement is not required. The County uses the in-lieu fees to pursue acquisition and maintenance of larger agricultural conservation easements. The ordinance also prohibits more than 5 percent of the land area from use as “stacked mitigation,” which allows credit for agricultural mitigation and habitat or other mitigation on the same property.

C.3.15 Mineral Resources

Yolo County Municipal Code Title 10, Surface Mining and Reclamation

Yolo County’s ordinances related to surface mining (Title 10, Chapters 3, 4, 5, and 8) contain different provisions depending on whether the mining activity would be located in- or off-channel. In both cases, however, the ordinances require that a Conditional Use Permit be obtained and a Reclamation Plan be prepared and approved by the County, including assurances of funding to implement and complete the proposed Reclamation Plan.

Yolo County General Plan

The following policies and action from the *Yolo 2030 Countywide General Plan* Conservation and Open Space Element (Yolo County 2009) related to mineral resources are relevant to the project, as listed below.

- **Policy CO-3.1:** Encourage the production and conservation of mineral resources, balanced by the consideration of important social values, including recreation, water, wildlife, agriculture, aesthetics, flood control, and other environmental factors.
- **Policy CO-3.2:** Ensure that mineral extraction and reclamation operations are compatible with land uses both on-site and within the surrounding area, and are performed in a manner that does not adversely affect the environment.
- **Action CO-A50:** Evaluate any impacts to identified natural gas fields as part of the development review process.

C.3.16 Noise and Vibration

West Sacramento County Noise Ordinance

The City of West Sacramento has a zoning ordinance that includes maximum allowable noise level exposure from transportation noise sources. The maximum allowable Day-Night Average Level (L_{dn})/Community Noise Equipment Level (CNEL) for outdoor activity areas of residential properties is 60 decibels (dB). However, the maximum allowable noise exposures are targeted to requiring reductions and controls for outdoor exposure areas, not for limiting traffic volumes. These zoning standards are not directly applicable to a temporary increase in traffic on surface streets, but can be used in understanding the magnitude of project impacts. (City of West Sacramento 1993.)

Yolo County General Plan

The following policy from the *Yolo 2030 Countywide General Plan* Conservation and Open Space Element (Yolo County 2009) related to noise is relevant to the project, as listed below. The County

noise policies generally apply to land development activities and are not applicable to a construction project that would not substantially alter the land uses in an area.

- **Policy HS-7.8:** Encourage local businesses to reduce vehicle and equipment noise through fleet and equipment modernization or retrofits, use of alternative fuel vehicles and installation of mufflers or other noise reducing equipment.

C.3.17 Recreation

Yolo County General Plan

The following policies from the *Yolo 2030 Countywide General Plan* Conservation and Open Space Element (Yolo County 2009) related to recreation are relevant to the project, as listed below.

- **Policy CO-1.1:** Expand and enhance an integrated network of open space to support recreation, natural resources, historic and tribal resources, habitat, water management, aesthetics, and other beneficial uses.
- **Policy CO-1.28:** Balance the needs of agriculture with recreation, flood management, and habitat, within the Yolo Bypass.

Yolo County Parks & Open Space Master Plan

The following policies from the *Yolo County Parks & Open Space Master Plan* (Yolo County 2006) regarding recreation are relevant to the project, as listed below.

- **M&O P-6. Multiple Benefit Functions of Parks and Open Space Area:** County-wide park management – while seeking to meet the recreational needs of County residents and visitors – should, where possible, also help to accomplish other goals, such as regional conservation, water supply and replenishment, and floodplain management.
- **A&F P-2. Cooperative Relationships with Other Public Agency Providers:** Yolo County will continue to work cooperatively with other government agencies, including cities, special districts, school districts, tribal groups, and the university, for purposes related to improving parks and access to open space, recreation, and conservation, when such purposes are found by the County to be cost-efficient and in the public interest of the citizens of Yolo County.
- **E&D P-5. Public Access to Public Lands:** The County supports existing public access to public lands. The County also supports increased public access to public (County, State, or Federal) lands, including through the use of County “gateways” that would provide access to large areas of non-county-owned lands. Gateways and related access must be compatible with the adopted management programs for the affected public lands, compatible with uses on adjacent or nearby private properties, and protective of sensitive environmental resources.

C.3.18 Socioeconomics (including Population, Housing, and Employment)

No regional or local plans, policies, regulations, or ordinances related to socioeconomics (including population, housing, and employment) apply to the project.

C.3.19 Traffic and Transportation

Yolo County and City of West Sacramento General Plans

The general plans for Yolo County and the City of West Sacramento identify estimated future travel demand and present goals, policies, and implementation programs for transportation systems and facilities within those jurisdictions and their spheres of influence. The focus of these goals and policies is long-term development and design of transportation facilities, improvements to existing roadways, interagency coordination, and encouragement of alternative transportation (Sacramento County 2009; City of West Sacramento 2016). The following goal and policy in these general plans are relevant to the determination of traffic levels and significance thresholds, as listed below.

- **Goal M-3:** To develop and maintain a street and highway system that promotes safe, efficient, and reliable movement of people and goods by multiple transportation modes and routes, reduces air quality impacts and GHG emissions, and minimizes noise impacts.
 - **Policy M-3.2:** Automobile Level of Service: “The City shall endeavor to maintain a Level of Service “C” on all streets within the City, except at intersections and on roadway segments within one-quarter mile of a freeway interchange or bridge crossing of the Deep Water Ship Channel, barge canal. Or Sacramento River, where a Level of Service “D” shall be deemed acceptable, and within pedestrian oriented, high density, mixed use areas, such as the Bridge District Specific Plan area, the Washington Specific Plan area and West Capitol Avenue from Harbor Blvd. east, where a Level of Service “E” shall be deemed acceptable. For purposes of CEQA impact analyses, Level of Service shall be considered as part of General Plan consistency.”

Circulation Diagram and Standards:

- Minor Arterial Roadways are fed by local and collector roads, provide intra city circulation and connection to regional roadways, and often carry heavy traffic volumes. Although their primary purpose is to move heavy volumes of traffic, minor arterial roadways often serve adjacent properties, especially in commercial areas. Speed limits on minor arterial roadways often range from 35 to 45 miles per hour. Bicycles should be accommodated by bike lanes a minimum of six feet in width, ideally with a buffer, physical or striped, separating from adjacent vehicle traffic. For pedestrian connectivity, sidewalks should be provided on both sides of the street. Transit stops should allow for bus pullouts as to not impede the movement of vehicle traffic. On-street parking should not be allowed. Roadways designated as minor arterials on the Circulation Diagram include, among others, Kegle Drive, the western end of West Capitol Avenue, and the southern end of Jefferson Blvd.
- Major Arterial Roadways are fed by local, collector, and minor arterial roadways, provide for major cross-town and regional travel, and carry larger volumes of traffic. They are divided roadways of four or six lanes with a large median area which is used for auxiliary lane purposes at intersections. There should be no direct access to adjacent properties unless no reasonable alternatives exist. Such direct access should be limited to right turn-in and right turn-out movements only. Speed limits on major arterial roadways are typically at least 40 miles per hour. Bicycles should be accommodated by bike lanes a minimum of 6 feet in width, ideally with a buffer, physical or striped, separating from adjacent vehicle traffic. For pedestrian connectivity, sidewalks should be provided on both sides of the street. Transit stops should allow for bus pullouts as to not impede the movement of vehicle traffic. On-street parking should not be allowed. Roadways classified as major arterials on

the Circulation Diagram include, among others, Jefferson Boulevard, Harbor Boulevard, Sacramento Avenue, and West Capitol Avenue.

Yolo County Improvement Standards

Construction in Yolo County is governed by the *County of Yolo Improvement Standards* (Yolo County 2013). The transportation improvement standards (Section 4) govern street and right-of-way widths, structural design, design speeds and minimum stopping sight distances, intersections, bus stops, sidewalks, curbs and gutters, street and safety signs, and pavement striping and markings. In addition, Section 10 regulates grading activities and Section 11 regulates stormwater quality and erosion and sediment control.

Encroachment Permits

Encroachments in County or City road rights-of-way are subject to encroachment permits and the provision of temporary traffic control systems as required by the public works departments of the respective jurisdictions.

C.3.20 Utilities and Service Systems

The following policies from the *Yolo 2030 Countywide General Plan Public Facilities and Services Element* (Yolo County 2009) related to utilities and service systems are relevant to the project, as listed below.

- **Policy PF-2.1:** Improve stormwater runoff quality and reduce impacts to groundwater and surface water resources.
- **Policy PF-4.1:** Ensure the provision of appropriate law enforcement service and facilities to serve existing and planned land uses.
- **Policy PF-5.3:** Require assertive fire protection measures in all development to supplement limited rural fire district resources.
- **Policy PF-5.9:** The County shall require, and applicants must provide, a will-serve letter from the appropriate fire district/department confirming the ability to provide fire protection services to the project, prior to each phase.
- **Policy PF-9.8:** Require salvage, reuse or recycling of construction and demolition materials and debris at all construction sites.
- **Policy PF-9.9:** Encourage use of salvaged and recycled materials in construction.

C.3.21 Water Quality

The following policies and actions from the *Yolo 2030 Countywide General Plan Conservation and Open Space Element* (Yolo County 2009) related to utilities and service systems are relevant to the project, as listed below.

- **Policy CO-5.6:** Improve and protect water quality for municipal, agricultural, and environmental uses.

- **Policy CO-5.23:** Support efforts to meet applicable water quality standards for all surface and groundwater resources.
- **Action CO-A91:** Implement and regularly update the County Stormwater Management Plan and associated programs.
- **Action CO-A93:** Adopt development design standards that use low-impact development techniques that emulate the natural hydrologic regime and reduce runoff and pollutants.
- **Action HS-A13:** Review development proposals to ensure that the need to maintain flood control capacity is balanced with consideration of the environmental health of watercourses that convey floodwaters so as not to cause significant erosion, sedimentation, water quality problems, or loss of habitat.

The following objective from the Yolo County Integrated Regional Water Management Plan related to water quality is relevant to the project, as listed below.

- **Water Quality Objective:** Meet State and Federal standards for water quality protection in all surface and groundwater resources.

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Appendix D. Air Quality and Greenhouse Gas Emissions Modeling Results

D1. Air Quality Modeling Results

D2. Greenhouse Gas Emissions Modeling Results

D1. Air Quality Modeling Results

**Table 3.2-5. Lower Elkhorn Basin Levee Setback Project
Alternative 2 Construction Emissions (Unmitigated/Mitigated)**

Construction Phase	Pollutants (lb/day) ¹									
	ROG		NO _x		CO		PM10		PM2.5	
Year 2018 Construction										
Mobilization	0.3	0.3	4.3	4.3	1.7	1.7	1.4	1.4	0.4	0.4
Site Preparation / Stripping	4.5	4.5	54.9	44.5	35.1	35.1	11.4	6.1	3.2	2.5
Structure Demolition	0.9	0.9	15.8	14.7	7.8	7.8	5.8	4.1	1.5	1.2
Existing Road Removal	3.7	3.7	60.9	53.7	28.4	28.4	81.5	27.2	14.6	6.2
Trench Excavation and Forcemain Installation	2.1	2.1	43.6	41.0	16.9	16.9	532.7	175.2	74.2	23.2
New Road Construction	3.0	3.0	40.0	35.0	19.0	19.0	6.2	6.2	2.5	2.5
New Levee / Seepage Berm and Soil Borrow Extraction	109.3	109.3	3,254.3	3,216.9	674.0	674.0	10,799.7	2,711.4	1,685.4	430.8
Cutoff Wall Installation	2.4	2.4	29.2	24.1	20.7	20.7	542.1	139.2	84.7	22.3
Erosion Protection Installation	15.3	15.3	459.1	455.3	91.0	91.0	134.7	134.7	36.1	36.1
Relief Well Installation	1.9	1.9	22.4	17.9	16.7	16.7	1.0	1.0	0.9	0.9
Existing Pump Station Removal	0.6	0.6	7.2	6.1	6.3	6.3	0.8	0.8	0.4	0.4
Pump Station Installation	0.6	0.5	6.1	4.3	3.6	3.5	0.6	0.5	0.3	0.3
Existing Levee Degrade	23.7	23.7	676.6	656.5	178.9	178.9	9,982.7	3,283.6	1,380.1	426.7
Site Restoration and Demobilization	1.5	1.5	20.0	17.7	9.0	9.0	3.1	3.1	1.3	1.3
Year 2019 Construction										
Mobilization	0.2	0.2	4.0	4.0	1.5	1.5	1.4	1.4	0.4	0.4
Site Preparation / Stripping	4.1	4.1	49.9	40.5	32.5	32.5	16.1	7.2	3.8	2.5
Structure Demolition	0.8	0.8	14.4	13.4	7.6	7.6	8.0	4.6	1.8	1.3
Existing Road Removal	3.3	3.3	50.0	43.5	25.4	25.4	51.6	18.2	9.6	4.4
Trench Excavation and Forcemain Installation	1.4	1.4	23.2	20.9	12.7	12.7	208.9	69.0	29.4	9.4
New Road Construction	2.6	2.6	29.5	25.0	17.3	17.3	3.7	3.7	1.8	1.8
New Levee / Seepage Berm and Soil Borrow Extraction	67.1	67.1	2,007.0	1,987.8	410.3	410.3	7,185.6	2,235.7	1,119.7	354.4
Offsite Borrow Material Transport	41.8	41.8	1,347.0	1,347.0	241.2	241.2	6,522.3	1,960.7	1,060.4	351.9
Cutoff Wall Installation	2.2	2.2	29.0	24.5	19.9	19.9	842.6	216.0	130.9	34.0
Erosion Protection Installation	14.3	14.3	426.8	423.5	85.3	85.3	134.3	134.3	35.8	35.8
Existing Pump Station Removal	0.6	0.6	6.4	5.4	6.2	6.2	0.7	0.7	0.4	0.4
Existing Levee Degrade	26.4	26.4	832.5	814.3	192.7	192.7	13,344.3	4,374.1	1,846.4	568.1
Ecosystem Project Elements										
Site Restoration and Demobilization	1.3	1.3	18.4	16.3	8.8	8.8	3.0	3.0	1.2	1.2
YSAQMD Threshold of Significance	10 tons/year		10 tons/year		None		80 lb/day		None	
Exceeds YSAQMD Threshold?	No		Yes		No		Yes		No	
2018 Annual Emissions² (tons/year)	9 / 9		253 / 249		56 / 56		1072 / 295		162 / 44	
2019 Annual Emissions² (tons/year)	6 / 6		170 / 168		35 / 35		847 / 263		131 / 42	
Conformity Threshold (tons/year)	25		25		100				100	
Mitigated Exceeds Conformity Threshold?	No		Yes		No				No	
<p>Notes: lb/day = pounds per day; NO_x = oxides of nitrogen; PM10 = particulate matter with aerodynamic diameter less than 10 microns; PM2.5 = particulate matter with aerodynamic diameter less than 2.5 microns; ROG = reactive organic gases; YSAQMD = Yolo-Solano Air Quality Management District</p> <p>¹ All emissions are shown in units of pounds per day unless noted otherwise.</p> <p>² Annual emissions, in units of tons per year, were conservatively estimated by multiplying the maximum daily emissions by the number of work days per subphase or task. In reality, emissions would likely fluctuate and would not continue at the maximum level throughout each subphase or task.</p> <p>Source: Data modeled by GEI Consultants, Inc. in 2016</p>										

2018 Unmitigated Emissions

2018 CONSTRUCTION YEAR

Construction Phase	Work Days	Pollutants (lbs/day)					Total MT CO ₂ e
		ROG	No _x	CO	PM ₁₀	PM _{2.5}	
Mobilization		0.26	4.28	1.70	1.38	0.37	8.05
Construction Equipment							
Haul Trucks	12	0.13	4.18	0.75	0.72	0.20	6.85
On-Road Vehicles	12	0.14	0.10	0.95	0.67	0.17	1.21
Fugitive Dust							
Site Preparation/Stripping		4.46	54.92	35.11	11.40	3.20	188.14
Construction Equipment	60	4.23	51.86	33.63	2.08	1.91	158.55
Haul Trucks	60	0.09	2.96	0.54	5.18	0.59	23.55
On-Road Vehicles	60	0.14	0.10	0.95	0.58	0.15	6.04
Fugitive Dust					3.57	0.55	
Structure Demolition		0.91	15.84	7.80	5.78	1.48	9.46
Construction Equipment	5	0.55	5.75	5.69	0.33	0.30	1.95
Haul Trucks	5	0.31	10.05	1.79	2.81	0.75	7.34
On-Road Vehicles	5	0.05	0.03	0.32	0.33	0.08	0.17
Fugitive Dust	5				2.31	0.35	
Existing Road Removal		3.75	60.89	28.44	81.47	14.59	111.12
Construction Equipment	20	2.93	35.73	23.64	1.44	1.32	37.00
Haul Trucks	20	0.77	25.13	4.48	7.37	1.95	73.44
On-Road Vehicles	20	0.05	0.03	0.32	0.35	0.09	0.67
Fugitive Dust	20				72.31	11.23	
Trench Excavation and Forcemain Installation		2.06	43.56	16.85	532.74	74.17	75.29
Construction Equipment	30	1.18	12.56	10.37	0.69	0.63	21.29
Haul Trucks	30	0.83	30.96	6.16	164.88	16.48	52.99
On-Road Vehicles	30	0.05	0.03	0.32	0.28	0.07	1.01
Fugitive Dust	30				366.89	56.99	
New Road Construction		3.04	39.99	19.04	6.15	2.54	197.04
Construction Equipment	60	2.49	24.84	15.72	1.39	1.28	60.82
Haul Trucks	60	0.46	15.08	2.69	4.11	1.09	132.19
On-Road Vehicles	60	0.09	0.07	0.63	0.65	0.16	4.03
Fugitive Dust	60						
New Levee/Seepage Berm & Soil Borrow Extraction		109.27	3254.26	673.97	10799.69	1685.42	59751.87
Construction Equipment	135	15.51	186.82	121.71	7.72	7.10	1272.73
Haul Trucks	135	93.54	3067.28	550.69	2585.54	403.36	58456.49
On-Road Vehicles	135	0.23	0.17	1.58	1.83	0.46	22.65
Fugitive Dust	135				8204.60	1274.50	
Offsite Borrow Material Transport		0.00	0.00	0.00	0.00	0.00	0.00
Construction Equipment	0						
Haul Trucks							
Support Vehicles							
On-Road Vehicles							
Fugitive Dust							
Cutoff Wall Installation (Open Trench Method)		2.38	29.22	20.68	542.06	84.66	234.26
Construction Equipment	120	2.18	25.34	19.34	1.13	1.04	173.73
Haul Trucks	120	0.11	3.81	0.71	9.79	1.06	52.48
Support Vehicles	120						
On-Road Vehicles	120	0.09	0.07	0.63	0.44	0.11	8.05
Fugitive Dust	120				530.69	82.44	
Erosion Protection Installation		15.27	459.10	90.96	134.68	36.12	1960.12
Construction Equipment	30	1.67	19.21	11.87	0.87	0.80	30.27
Haul Trucks	30	13.51	439.83	78.46	133.08	35.14	1927.84
On-Road Vehicles	30	0.09	0.07	0.63	0.73	0.18	2.01
Fugitive Dust	30						
Relief Well Installation		1.89	22.39	16.67	1.03	0.90	38.09
Construction Equipment	30	1.85	22.36	16.35	0.95	0.88	37.09
Haul Trucks	30						
On-Road Vehicles	30	0.05	0.03	0.32	0.08	0.02	1.01
Fugitive Dust	30						

2018 Unmitigated Emissions

2018 CONSTRUCTION YEAR

Existing Pump Station Removal		0.64	7.24	6.28	0.79	0.43	6.17
Construction Equipment	10	0.55	5.75	5.69	0.33	0.30	3.90
Haul Trucks	10	0.04	1.46	0.27	0.24	0.07	1.93
Support Vehicles	10						
On-Road Vehicles	10	0.05	0.03	0.32	0.22	0.06	0.34
Fugitive Dust	10						
Pump Station Installation		0.56	6.12	3.62	0.56	0.34	11.22
Construction Equipment	30	0.49	5.36	3.17	0.30	0.27	7.32
Haul Trucks	30	0.02	0.73	0.13	0.10	0.03	2.90
Support Vehicles	30						
On-Road Vehicles	30	0.05	0.03	0.32	0.17	0.04	1.01
Fugitive Dust	30						
Existing Levee Degrade		23.70	676.59	178.90	9982.65	1380.08	2284.53
Construction Equipment	60	8.15	100.25	63.59	3.98	3.66	301.18
Haul Trucks	60	15.46	576.26	114.68	3135.67	313.36	1979.33
Support Vehicles	60						
On-Road Vehicles	60	0.09	0.07	0.63	0.70	0.18	4.03
Fugitive Dust	60				6842.29	1062.88	
Ecosystem Project Elements		0.00	0.00	0.00	0.00	0.00	0.00
Construction Equipment	0						
Haul Trucks							
Support Vehicles							
On-Road Vehicles							
Fugitive Dust							
Site Restoration and Demobilization		1.47	20.04	9.00	3.07	1.27	16.17
Construction Equipment	10	1.18	11.65	7.18	0.69	0.64	4.42
Haul Trucks	10	0.25	8.36	1.51	2.06	0.55	11.41
Support Vehicles	10						
On-Road Vehicles	10	0.05	0.03	0.32	0.33	0.08	0.34
Fugitive Dust	10						

Year 2018 Construction Maximum Overlaps

Month	Pollutants (lbs/day)				
	ROG	NO _x	CO	PM ₁₀	Direct PM _{2.5}
Month 1	118.65	3390.19	747.03	10899.72	1705.07
Month 2	115.79	3352.74	725.94	11343.83	1762.80
Month 3	121.22	3421.94	765.67	11892.04	1850.00
Month 4	114.70	3323.47	713.70	11347.90	1772.62
Month 5	117.79	3359.23	740.27	11350.28	1774.29
Month 6	129.38	3771.10	805.91	11478.02	1807.45
Month 7	152.11	4439.21	973.52	21462.15	3187.55
Month 8	23.70	676.59	178.90	9982.65	1380.08
Month 9	23.70	676.59	178.90	9982.65	1380.08
Total Emissions (tons/year)	8.80	253.34	56.04	1072.40	162.25
Significance Threshold, Conformity (tons/year)	25.00	25.00	100.00		100.00
Significance Threshold, YSAQMD (lbs/day)				80.00	
Significance Threshold, YSAQMD (tons/year)	10.00	10.00		9.36	

2018 Mitigated Emissions
Construction Equipment 20% NOx Reduction, 75% Material Handling Fugitive Dust PM Reduction,
50% Haul Truck Road Dust PM Reduction

2018 CONSTRUCTION YEAR

Construction Phase	Work Days	Pollutants (lbs/day)					Total MT CO ₂ e
		ROG	No _x	CO	PM ₁₀	PM _{2.5}	
Mobilization		0.26	4.28	1.70	1.38	0.37	8.05
Construction Equipment							
Haul Trucks	12	0.13	4.18	0.75	0.72	0.20	6.85
On-Road Vehicles	12	0.14	0.10	0.95	0.67	0.17	1.21
Fugitive Dust							
Site Preparation/Stripping		4.46	44.55	35.11	6.14	2.50	188.14
Construction Equipment	60	4.23	41.49	33.63	2.08	1.91	158.55
Haul Trucks	60	0.09	2.96	0.54	2.59	0.30	23.55
On-Road Vehicles	60	0.14	0.10	0.95	0.58	0.15	6.04
Fugitive Dust					0.89	0.14	
Structure Demolition		0.91	14.69	7.80	4.05	1.22	9.46
Construction Equipment	5	0.55	4.60	5.69	0.33	0.30	1.95
Haul Trucks	5	0.31	10.05	1.79	2.81	0.75	7.34
On-Road Vehicles	5	0.05	0.03	0.32	0.33	0.08	0.17
Fugitive Dust	5				0.58	0.09	
Existing Road Removal		3.75	53.75	28.44	27.24	6.17	111.12
Construction Equipment	20	2.93	28.58	23.64	1.44	1.32	37.00
Haul Trucks	20	0.77	25.13	4.48	7.37	1.95	73.44
On-Road Vehicles	20	0.05	0.03	0.32	0.35	0.09	0.67
Fugitive Dust	20				18.08	2.81	
Trench Excavation and Forcemain Installation		2.06	41.05	16.85	175.16	23.22	75.29
Construction Equipment	30	1.18	10.05	10.37	0.69	0.63	21.29
Haul Trucks	30	0.83	30.96	6.16	82.47	8.26	52.99
On-Road Vehicles	30	0.05	0.03	0.32	0.28	0.07	1.01
Fugitive Dust	30				91.72	14.25	
New Road Construction		3.04	35.02	19.04	6.15	2.54	197.04
Construction Equipment	60	2.49	19.87	15.72	1.39	1.28	60.82
Haul Trucks	60	0.46	15.08	2.69	4.11	1.09	132.19
On-Road Vehicles	60	0.09	0.07	0.63	0.65	0.16	4.03
Fugitive Dust	60				0.00	0.00	
New Levee/Seepage Berm & Soil Borrow Extraction		109.27	3216.90	673.97	2711.37	430.76	59751.87
Construction Equipment	135	15.51	149.45	121.71	7.72	7.10	1272.73
Haul Trucks	135	93.54	3067.28	550.69	650.66	104.58	58456.49
On-Road Vehicles	135	0.23	0.17	1.58	1.83	0.46	22.65
Fugitive Dust	135				2051.15	318.63	
Offsite Borrow Material Transport		0.00	0.00	0.00	0.00	0.00	0.00
Construction Equipment	0						
Haul Trucks							
Support Vehicles							
On-Road Vehicles							
Fugitive Dust							
Cutoff Wall Installation (Open Trench Method)		2.38	24.15	20.68	139.15	22.30	234.26
Construction Equipment	120	2.18	20.27	19.34	1.13	1.04	173.73
Haul Trucks	120	0.11	3.81	0.71	4.90	0.54	52.48
Support Vehicles	120						
On-Road Vehicles	120	0.09	0.07	0.63	0.44	0.11	8.05
Fugitive Dust	120				132.67	20.61	
Erosion Protection Installation		15.27	455.26	90.96	134.68	36.12	1960.12
Construction Equipment	30	1.67	15.36	11.87	0.87	0.80	30.27
Haul Trucks	30	13.51	439.83	78.46	133.08	35.14	1927.84
On-Road Vehicles	30	0.09	0.07	0.63	0.73	0.18	2.01
Fugitive Dust	30						
Relief Well Installation		1.89	17.92	16.67	1.03	0.90	38.09
Construction Equipment	30	1.85	17.89	16.35	0.95	0.88	37.09
Haul Trucks	30						
On-Road Vehicles	30	0.05	0.03	0.32	0.08	0.02	1.01
Fugitive Dust	30						
Existing Pump Station Removal		0.64	6.09	6.28	0.79	0.43	6.17
Construction Equipment	10	0.55	4.60	5.69	0.33	0.30	3.90
Haul Trucks	10	0.04	1.46	0.27	0.24	0.07	1.93
Support Vehicles	10						
On-Road Vehicles	10	0.05	0.03	0.32	0.22	0.06	0.34
Fugitive Dust	10						
Pump Station Installation		0.53	4.32	3.48	0.47	0.32	8.32
Construction Equipment	30	0.49	4.29	3.17	0.30	0.27	7.32
Haul Trucks	30						
Support Vehicles	30						
On-Road Vehicles	30	0.05	0.03	0.32	0.17	0.04	1.01
Fugitive Dust	30						
Existing Levee Degrade		23.70	656.54	178.90	3283.60	426.72	2284.53
Construction Equipment	60	8.15	80.20	63.59	3.98	3.66	301.18
Haul Trucks	60	15.46	576.26	114.68	1568.34	157.16	1979.33
Support Vehicles	60						
On-Road Vehicles	60	0.09	0.07	0.63	0.70	0.18	4.03
Fugitive Dust	60				1710.57	265.72	

2018 Mitigated Emissions
Construction Equipment 20% NOx Reduction, 75% Material Handling Fugitive Dust PM Reduction,
50% Haul Truck Road Dust PM Reduction

2018 CONSTRUCTION YEAR

Ecosystem Project Elements		0.00	0.00	0.00	0.00	0.00	0.00
Construction Equipment	0						
Haul Trucks							
Support Vehicles							
On-Road Vehicles							
Fugitive Dust							
Site Restoration and Demobilization		1.47	17.71	9.00	3.07	1.27	16.17
Construction Equipment	10	1.18	9.32	7.18	0.69	0.64	4.42
Haul Trucks	10	0.25	8.36	1.51	2.06	0.55	11.41
Support Vehicles	10						
On-Road Vehicles	10	0.05	0.03	0.32	0.33	0.08	0.34
Fugitive Dust	10						

Year 2018 Construction Maximum Overlaps

Month	Pollutants (lbs/day)				
	ROG	NO _x	CO	PM ₁₀	Direct PM _{2.5}
Month 1	118.65	3334.16	747.03	2750.18	441.02
Month 2	115.79	3302.49	725.94	2892.66	456.48
Month 3	121.22	3361.66	765.67	3037.97	481.32
Month 4	114.70	3276.07	713.70	2856.67	455.61
Month 5	117.77	3304.41	740.13	2858.96	457.25
Month 6	129.36	3718.55	805.77	2986.70	490.41
Month 7	152.11	4370.56	973.52	6271.87	917.18
Month 8	23.70	656.54	178.90	3283.60	426.72
Month 9	23.70	656.54	178.90	3283.60	426.72
Total Emissions (tons/year)	8.80	249.17	56.04	295.22	44.35
Significance Threshold, Conformity (tons/year)	25.00	25.00	100.00		100.00
Significance Threshold, YSAQMD (lbs/day)				80.00	
Significance Threshold, YSAQMD (tons/year)	10.00	10.00		9.36	
Emissions to Mitigate/Offset (tons/year)		249.17		285.86	
Approximate Mitigation Fee		\$4,549,844			

Current Cost of Offsets (Carl Moyer) = \$ 18,260.00

Additional PM2.5 Precursor Test

Less than 100 tons/yr?

NOX No

ROG Yes

SO2 Yes

NH4 Yes

2019 Unmitigated Emissions

2019 CONSTRUCTION YEAR

Construction Phase	Work Days	Pollutants (lbs/day)					Total MT CO ₂ e
		ROG	No _x	CO	PM ₁₀	PM _{2.5}	
Mobilization		0.24	4.00	1.54	1.38	0.36	7.93
Construction Equipment							
Haul Trucks	12	0.12	3.91	0.70	0.71	0.20	6.77
On-Road Vehicles	12	0.12	0.09	0.84	0.67	0.17	1.17
Fugitive Dust							
Site Preparation/Stripping		4.13	49.90	32.47	16.06	3.77	61.70
Construction Equipment	20	3.92	47.04	31.14	1.87	1.72	51.99
Haul Trucks	20	0.08	2.77	0.50	5.17	0.59	7.76
On-Road Vehicles	20	0.12	0.09	0.84	0.58	0.15	1.95
Fugitive Dust					8.44	1.31	
Structure Demolition		0.83	14.43	7.61	8.03	1.78	18.67
Construction Equipment	10	0.49	5.03	5.65	0.28	0.26	3.84
Haul Trucks	10	0.29	9.37	1.68	2.80	0.74	14.51
On-Road Vehicles	10	0.04	0.03	0.28	0.33	0.08	0.32
Fugitive Dust	10				4.61	0.70	
Existing Road Removal		3.30	49.96	25.40	51.62	9.63	45.74
Construction Equipment	10	2.71	32.36	21.98	1.30	1.19	18.20
Haul Trucks	10	0.55	17.57	3.14	5.48	1.44	27.21
On-Road Vehicles	10	0.04	0.03	0.28	0.35	0.09	0.32
Fugitive Dust	10				44.50	6.91	
Trench Excavation and Forcemain Installation		1.42	23.22	12.72	208.87	29.35	28.43
Construction Equipment	20	1.08	11.39	10.32	0.61	0.57	13.97
Haul Trucks	20	0.30	11.80	2.12	64.77	6.47	13.81
On-Road Vehicles	20	0.04	0.03	0.28	0.21	0.05	0.65
Fugitive Dust	20				143.27	22.26	
New Road Construction		2.57	29.54	17.34	3.69	1.79	64.53
Construction Equipment	30	2.27	22.45	15.52	1.25	1.15	29.93
Haul Trucks	30	0.22	7.03	1.26	1.86	0.50	32.66
On-Road Vehicles	30	0.08	0.06	0.56	0.59	0.15	1.95
Fugitive Dust	30						
New Levee/Seepage Berm & Soil Borrow Extraction		67.08	2007.00	410.28	7185.57	1119.75	26176.91
Construction Equipment	90	8.29	95.96	67.48	4.07	3.75	483.94
Haul Trucks	90	58.67	1910.95	341.96	1723.23	268.01	25684.21
On-Road Vehicles	90	0.12	0.09	0.84	1.10	0.28	8.76
Fugitive Dust	90				5457.17	847.72	
Offsite Borrow Material Transport		41.84	1347.05	241.24	6522.25	1060.44	18779.63
Construction Equipment							
Haul Trucks	90	41.80	1347.02	240.96	439.84	115.56	18776.72
Support Vehicles							
On-Road Vehicles	90	0.04	0.03	0.28	0.37	0.09	2.92
Fugitive Dust					6082.04	944.78	
Cutoff Wall Installation (Open Trench Method)		2.22	29.04	19.87	842.65	130.91	132.83
Construction Equipment	60	2.00	22.71	18.46	1.00	0.92	85.45
Haul Trucks	60	0.18	6.30	1.13	17.41	1.93	45.43
Support Vehicles	60						
On-Road Vehicles	60	0.04	0.03	0.28	0.30	0.08	1.95
Fugitive Dust	60				823.93	127.99	
Erosion Protection Installation		14.29	426.84	85.32	134.32	35.79	968.31
Construction Equipment	15	1.49	16.81	11.43	0.75	0.69	14.89
Haul Trucks	15	12.72	409.96	73.33	132.85	34.92	952.44
On-Road Vehicles	15	0.08	0.06	0.56	0.73	0.18	0.97
Fugitive Dust	15						
Relief Well Installation		0.00	0.00	0.00	0.00	0.00	0.00
Construction Equipment	0						
Haul Trucks							
On-Road Vehicles							
Fugitive Dust							
Existing Pump Station Removal		0.58	6.43	6.18	0.74	0.38	6.07
Construction Equipment	10	0.49	5.03	5.65	0.28	0.26	3.84
Haul Trucks	10	0.04	1.37	0.25	0.24	0.07	1.91
Support Vehicles	10						
On-Road Vehicles	10	0.04	0.03	0.28	0.22	0.06	0.32
Fugitive Dust	10						

2019 Unmitigated Emissions

2019 CONSTRUCTION YEAR

Pump Station Installation		0.00	0.00	0.00	0.00	0.00	0.00
Construction Equipment	0						
Haul Trucks							
Support Vehicles							
On-Road Vehicles							
Fugitive Dust							
Existing Levee Degrade		26.43	832.51	192.67	13344.31	1846.42	1455.05
Construction Equipment	30	7.56	91.08	58.63	3.60	3.31	148.14
Haul Trucks	30	18.79	741.37	133.48	4136.61	413.28	1304.97
Support Vehicles	30						
On-Road Vehicles	30	0.08	0.06	0.56	0.72	0.18	1.95
Fugitive Dust	30				9203.39	1429.65	
Ecosystem Project Elements		3.55	40.84	29.71	38.90	5.43	71.38
Construction Equipment	30	3.45	40.19	29.05	1.84	1.69	66.72
Haul Trucks	30	0.02	0.59	0.10	36.79	3.67	2.72
Support Vehicles	30						
On-Road Vehicles	30	0.08	0.06	0.56	0.27	0.07	1.95
Fugitive Dust	30						
Site Restoration and Demobilization		1.35	18.43	8.75	3.00	1.19	15.95
Construction Equipment	10	1.07	10.57	7.07	0.62	0.57	4.35
Haul Trucks	10	0.24	7.82	1.40	2.05	0.54	11.28
Support Vehicles	10						
On-Road Vehicles	10	0.04	0.03	0.28	0.33	0.08	0.32
Fugitive Dust	10						

Year 2019 Construction Maximum Overlaps

Month	Pollutants (lbs/day)				
	ROG	NO _x	CO	PM ₁₀	Direct PM _{2.5}
Month 13	75.58	2125.30	477.30	7262.67	1135.30
Month 14	112.92	3406.81	681.57	13920.38	2211.33
Month 15	111.49	3383.59	668.85	13711.52	2181.98
Month 16	111.14	3383.09	671.39	14550.47	2311.10
Month 17	111.71	3389.52	677.56	14551.21	2311.48
Month 18	125.43	3809.93	756.71	14684.79	2346.89
Month 19	45.62	1318.61	316.45	13520.53	1888.83
Month 20	26.43	832.51	192.67	13344.31	1846.42
Total Emissions (tons/year)	5.65	169.75	34.85	846.52	130.51
Significance Threshold, Conformity (tons/year)	25.00	25.00	100.00		100.00
Significance Threshold, YSAQMD (lbs/day)				80.00	
Significance Threshold, YSAQMD (tons/year)	10.00	10.00		8.32	

2019 Mitigated Emissions
Construction Equipment 20% NOx Reduction, 75% Material Handling Fugitive Dust PM Reduction,
50% Haul Truck Road Dust PM Reduction

2019 CONSTRUCTION YEAR

Construction Phase	Work Days	Pollutants (lbs/day)					Total MT CO ₂ e
		ROG	No _x	CO	PM ₁₀	PM _{2.5}	
Mobilization		0.24	4.00	1.54	1.38	0.36	7.93
Construction Equipment							
Haul Trucks	12	0.12	3.91	0.70	0.71	0.20	6.77
On-Road Vehicles	12	0.12	0.09	0.84	0.67	0.17	1.17
Fugitive Dust							
Site Preparation/Stripping		4.13	40.49	32.47	7.15	2.50	61.70
Construction Equipment	20	3.92	37.63	31.14	1.87	1.72	51.99
Haul Trucks	20	0.08	2.77	0.50	2.59	0.30	7.76
On-Road Vehicles	20	0.12	0.09	0.84	0.58	0.15	1.95
Fugitive Dust					2.11	0.33	
Structure Demolition		0.83	13.43	7.61	4.57	1.26	18.67
Construction Equipment	10	0.49	4.02	5.65	0.28	0.26	3.84
Haul Trucks	10	0.29	9.37	1.68	2.80	0.74	14.51
On-Road Vehicles	10	0.04	0.03	0.28	0.33	0.08	0.32
Fugitive Dust	10				1.15	0.17	
Existing Road Removal		3.30	43.49	25.40	18.24	4.45	45.74
Construction Equipment	10	2.71	25.89	21.98	1.30	1.19	18.20
Haul Trucks	10	0.55	17.57	3.14	5.48	1.44	27.21
On-Road Vehicles	10	0.04	0.03	0.28	0.35	0.09	0.32
Fugitive Dust	10				11.13	1.73	
Trench Excavation and Forcemain Installation		1.42	20.94	12.72	69.04	9.43	28.43
Construction Equipment	20	1.08	9.11	10.32	0.61	0.57	13.97
Haul Trucks	20	0.30	11.80	2.12	32.40	3.24	13.81
On-Road Vehicles	20	0.04	0.03	0.28	0.21	0.05	0.65
Fugitive Dust	20				35.82	5.57	
New Road Construction		2.57	25.05	17.34	3.69	1.79	64.53
Construction Equipment	30	2.27	17.96	15.52	1.25	1.15	29.93
Haul Trucks	30	0.22	7.03	1.26	1.86	0.50	32.66
On-Road Vehicles	30	0.08	0.06	0.56	0.59	0.15	1.95
Fugitive Dust	30						
New Levee/Seepage Berm & Soil Borrow Extraction		67.08	1987.81	410.28	2235.68	354.36	26176.91
Construction Equipment	90	8.29	76.77	67.48	4.07	3.75	483.94
Haul Trucks	90	58.67	1910.95	341.96	866.21	138.41	25684.21
On-Road Vehicles	90	0.12	0.09	0.84	1.10	0.28	8.76
Fugitive Dust	90				1364.29	211.93	
Offsite Borrow Material Transport		41.84	1347.05	241.24	1960.72	351.85	18779.63
Construction Equipment							
Haul Trucks	90	41.80	1347.02	240.96	439.84	115.56	18776.72
Support Vehicles							
On-Road Vehicles	90	0.04	0.03	0.28	0.37	0.09	2.92
Fugitive Dust					1520.51	236.20	
Cutoff Wall Installation (Open Trench Method)		2.22	24.50	19.87	216.00	33.97	132.83
Construction Equipment	60	2.00	18.17	18.46	1.00	0.92	85.45
Haul Trucks	60	0.18	6.30	1.13	8.72	0.97	45.43
Support Vehicles	60						
On-Road Vehicles	60	0.04	0.03	0.28	0.30	0.08	1.95
Fugitive Dust	60				205.98	32.00	
Erosion Protection Installation		14.29	423.47	85.32	134.32	35.79	968.31
Construction Equipment	15	1.49	13.45	11.43	0.75	0.69	14.89
Haul Trucks	15	12.72	409.96	73.33	132.85	34.92	952.44
On-Road Vehicles	15	0.08	0.06	0.56	0.73	0.18	0.97
Fugitive Dust	15						
Relief Well Installation		0.00	0.00	0.00	0.00	0.00	0.00
Construction Equipment	0						
Haul Trucks							
On-Road Vehicles							
Fugitive Dust							
Existing Pump Station Removal		0.58	5.43	6.18	0.74	0.38	6.07
Construction Equipment	10	0.49	4.02	5.65	0.28	0.26	3.84
Haul Trucks	10	0.04	1.37	0.25	0.24	0.07	1.91
Support Vehicles	10						
On-Road Vehicles	10	0.04	0.03	0.28	0.22	0.06	0.32
Fugitive Dust	10						
Pump Station Installation		0.00	0.00	0.00	0.00	0.00	0.00
Construction Equipment	0						
Haul Trucks							
Support Vehicles							
On-Road Vehicles							
Fugitive Dust							
Existing Levee Degrade		26.43	814.29	192.67	4374.06	568.12	1455.05
Construction Equipment	30	7.56	72.86	58.63	3.60	3.31	148.14
Haul Trucks	30	18.79	741.37	133.48	2068.91	207.21	1304.97
Support Vehicles	30						
On-Road Vehicles	30	0.08	0.06	0.56	0.72	0.18	1.95
Fugitive Dust	30				2300.85	357.41	

2019 Mitigated Emissions
Construction Equipment 20% NOx Reduction, 75% Material Handling Fugitive Dust PM Reduction,
50% Haul Truck Road Dust PM Reduction

2019 CONSTRUCTION YEAR

Ecosystem Project Elements		3.55	32.80	29.71	20.50	3.60	71.38
Construction Equipment	30	3.45	32.16	29.05	1.84	1.69	66.72
Haul Trucks	30	0.02	0.59	0.10	18.40	1.84	2.72
Support Vehicles	30						
On-Road Vehicles	30	0.08	0.06	0.56	0.27	0.07	1.95
Fugitive Dust	30						
Site Restoration and Demobilization		1.35	16.31	8.75	3.00	1.19	15.95
Construction Equipment	10	1.07	8.46	7.07	0.62	0.57	4.35
Haul Trucks	10	0.24	7.82	1.40	2.05	0.54	11.28
Support Vehicles	10						
On-Road Vehicles	10	0.04	0.03	0.28	0.33	0.08	0.32
Fugitive Dust	10						

Year 2019 Construction Maximum Overlaps

Month	Pollutants (lbs/day)				
	ROG	NO _x	CO	PM ₁₀	Direct PM _{2.5}
Month 13	75.58	2089.22	477.30	2267.03	362.93
Month 14	112.92	3380.85	681.57	4269.13	717.43
Month 15	111.49	3359.91	668.85	4200.09	708.00
Month 16	111.14	3359.36	671.39	4412.40	740.18
Month 17	111.71	3364.78	677.56	4413.14	740.56
Month 18	125.43	3782.83	756.71	4546.73	775.97
Month 19	45.62	1286.88	316.45	4531.89	608.70
Month 20	26.43	814.29	192.67	4374.06	568.12
Total Emissions (tons/year)	5.65	168.09	34.85	263.20	41.83
Significance Threshold, Conformity (tons/year)	25.00	25.00	100.00		100.00
Significance Threshold, YSAQMD (lbs/day)				80.00	
Significance Threshold, YSAQMD (tons/year)	10.00	10.00		8.32	
Emissions to Mitigate/Offset (tons/year)		168.09		254.88	
Approximate Mitigation Fee			\$3,069,385		

Current Cost of Offsets (Carl Moyer) = \$ 18,260.00

Additional PM2.5 Precursor Test
 Less than 100 tons/yr?
 NOX No
 ROG Yes
 SO2 Yes
 NH4 Yes

**Lower Elkhorn Basin
Assumed Construction Schedule
Alternative 2 and 3**

apr may jun jul aug sept oct nov dec
Year 1 (2018)

apr may jun jul aug sept oct nov
Year 2 (2019)

Construction Activity	1	2	3	4	5	6	7	8	9	Work Days	13	14	15	16	17	18	19	20	Work Days	
Mobilization	0.5									12	0.5								12	
Site Preparation/Stripping	1	1	0.5							60	1								20	
Structure Demolition	0.2									5	0.5								10	
Existing Road Removal	1									20	0.5								10	
Trench Excavation and Forcemain Installation		1	0.3							30		1							20	
New Road Construction			0.5	1	0.5					60		0.2	1						30	
New Levee/Seepage Berm & Soil Borrow Extraction	1	1	1	1	1	1	0.5			135		1	1	1	1	0.5			90	
Offsite Borrow Material Transport										0		1	1	1	1	0.5			90	
Cutoff Wall Installation (Open Trench Method)			1	1	1	1	0.5			120				0.5	1	1			60	
Erosion Protection Installation						0.7	0.5			30						0.2	0.5		15	
Relief Well Installation					1	0.2				30									0	
Existing Pump Station Removal					0.5					10					0.5				10	
Pump Station Installation					0.5	0.7				30									0	
Existing Levee Degrade							0.5	1	0.5	60								0.5	0.7	30
Ecosystem Project Elements										0								1		30
Site Restoration and Demobilization							0.5			10								0.5		10

Lower Elkhorn Basin
 On-Road and Off-Road Trips
 Alternative 2 - Unfavorable

Year 1: 2018

Year 2: 2019

Construction Phase/Vehicle Type	EMFAC2011 Class	Workers	Work Days	Daily Haul Trips	Daily One-Way Trips	One-Way Trip Distance (miles)	Workers	Work Days	Daily Haul Trips	Daily One-Way Trips	One-Way Trip Distance (miles)
Mobilization											
Equipment/supply Transport Trucks	HDT		12	5	10	30		12	5	10	30
Highway Dump Truck	HDT										
Water Truck	HDT										
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT										
Lubricating Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT	15	12		30	10	15	12		30	10
Site Preparation/Stripping											
Equipment/supply Transport Trucks	HDT										
Highway Dump Truck	HDT		60	2	4	50		20	2	4	50
Highway Dump Truck	HDT		60	2	4	0.8		20	2	4	0.8
Water Truck	HDT										
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT										
Lubricating/Fuel Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT	15	60		30	10	15	20		30	10
Structure Demolition											
Equipment/supply Transport Trucks	HDT										
Highway Dump Truck	HDT		5	8	16	50		10	8	16	50
Water Truck	HDT										
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT										
Lubricating/Fuel Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT	5	5		10	10	5	10		10	10
Existing Road Removal											
Equipment/supply Transport Trucks	HDT										
Highway Dump Truck	HDT		20	20	40	50		10	15	30	50
Water Truck	HDT										
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT										
Lubricating/Fuel Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT	5	20		10	10	5	10		10	10
Trench Excavation and Force Main Installation											
Equipment/supply Transport Trucks	HDT										
Highway Dump Truck	HDT		30	140	280	0.8		20	55	110	0.8
Water Truck	HDT										
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT										
Lubricating/Fuel Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT	5	30		10	10	5	20		10	10
New Road Construction											
Equipment/supply Transport Trucks	HDT										
Highway Dump Truck	HDT										
Water Truck	HDT										
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT		60	12	24	50		30	6	12	50
Lubricating/Fuel Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT	10	60		20	10	10	30		20	10
New Levee/Seepage Berm & Soil Borrow Extraction											
Equipment/supply Transport Trucks	HDT										
Onsite Dump Truck	HDT		135	768	1536	0.8		90	512	1024	0.8
Offsite Dump Truck	HDT		135	2304	4608	50		90	1536	3072	50
Water Truck	HDT		135		2	50		90		2	50
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT										
Lubricating/Fuel Truck	T7 Utility		135		2	30		90		2	30
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT	25	135		50	10	15	90		30	10

Lower Elkhorn Basin
On-Road and Off-Road Trips
Alternative 2 - Unfavorable

Year 1: 2018

Year 2: 2019

Construction Phase/Vehicle Type	EMFAC2011 Class	Year 1: 2018					Year 2: 2019				
		Workers	Work Days	Daily Haul Trips	Daily One-Way Trips	One-Way Trip Distance (miles)	Workers	Work Days	Daily Haul Trips	Daily One-Way Trips	One-Way Trip Distance (miles)
Offsite Borrow Material Transport											
Equipment/supply Transport Trucks	HDT										
Highway Dump Truck	HDT						90	1150	2300	50	
Water Truck	HDT										
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT										
Lubricating/Fuel Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT						5	90		10	10
Cutoff Wall Installation (Open Trench Method)											
Equipment/supply Transport Trucks	HDT										
Highway Dump Truck	HDT		120	4	8	0.8		60	7	14	0.8
Water Truck	HDT										
Material Transit Truck	HDT		120	4	8	25		60	7	14	25
Aggregate and Asphalt Truck	HDT										
Lubricating/Fuel Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT	10	120		20	10	5	60		10	10
Erosion Protection Installation											
Aggregate and Asphalt Truck	HDT										
Highway Dump Truck	HDT		30	350	700	50		15	350	700	50
Water Truck	HDT										
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT										
Lubricating/Fuel Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT	10	30		20	10	10	15		20	10
Relief Well Installation											
Equipment/supply Transport Trucks	HDT										
Highway Dump Truck	HDT										
Water Truck	HDT										
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT										
Lubricating/Fuel Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT	5	30		10	10					
Existing Pump Station Removal											
Equipment/supply Transport Trucks	HDT										
Highway Dump Truck	HDT		10	2	4	25		10	2	4	25
Water Truck	HDT										
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT										
Lubricating/Fuel Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT	5	10		10	10	5	10		10	10
Pump Station Installation											
Equipment/supply Transport Trucks	HDT										
Highway Dump Truck	HDT										
Water Truck	HDT										
Concrete Transit Truck	HDT			1	2	25					
Aggregate and Asphalt Truck	HDT										
Lubricating/Fuel Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT	5	30		10	10					
Existing Levee Degrade											
Equipment/supply Transport Trucks	HDT										
Highway Dump Truck	HDT		60	2600	5200	0.8		30	3450	6900	0.8
Water Truck	HDT		60		2	50		30		2	50
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT										
Lubricating/Fuel Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT	10	60		20	10	10	30		20	10
Ecosystem Project Elements											
Equipment/supply Transport Trucks	HDT										
Highway Dump Truck	HDT										
Water Truck	HDT							30		1	50
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT										
Lubricating/Fuel Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT						10	30		20	10
Site Restoration and Demobilization											
Equipment/supply Transport Trucks	HDT		10	10	20	30		10	10	20	30
Highway Dump Truck	HDT										
Water Truck	HDT										
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT										
Lubricating/Fuel Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT	5	10		10	10	5	10		10	10

Assumptions

Work Days Per Week		6
Construction Worker Commute	10	miles/one-way

	6
	miles/one-way

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1
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1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Commercial	0.00	User Defined Unit	0.00	0.00	0
Other Asphalt Surfaces	0.00	Acre	0.00	0.00	0
User Defined Residential	0.00	Dwelling Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	6.8	Precipitation Freq (Days)	54
Climate Zone	2			Operational Year	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	187.00	162.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	187.00	162.00
tblOffRoadEquipment	HorsePower	80.00	84.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	97.00	75.00

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tblOffRoadEquipment	HorsePower	231.00	208.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	221.00	82.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	231.00	208.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	187.00	162.00
tblOffRoadEquipment	HorsePower	80.00	84.00
tblOffRoadEquipment	LoadFactor	0.48	0.50
tblOffRoadEquipment	LoadFactor	0.48	0.50
tblOffRoadEquipment	LoadFactor	0.48	0.50
tblOffRoadEquipment	LoadFactor	0.48	0.50
tblOffRoadEquipment	LoadFactor	0.48	0.50
tblOffRoadEquipment	LoadFactor	0.48	0.50
tblOffRoadEquipment	LoadFactor	0.48	0.50
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	6.00	9.00

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

tblOffRoadEquipment	UsageHours	8.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOnRoadDust	AverageVehicleWeight	2.40	11.40
tblOnRoadDust	AverageVehicleWeight	2.40	7.50
tblOnRoadDust	AverageVehicleWeight	2.40	5.80
tblOnRoadDust	AverageVehicleWeight	2.40	12.00
tblOnRoadDust	AverageVehicleWeight	2.40	11.10
tblOnRoadDust	AverageVehicleWeight	2.40	7.50
tblOnRoadDust	AverageVehicleWeight	2.40	6.50
tblOnRoadDust	AverageVehicleWeight	2.40	12.00
tblOnRoadDust	AverageVehicleWeight	2.40	9.40
tblOnRoadDust	AverageVehicleWeight	2.40	11.10
tblOnRoadDust	AverageVehicleWeight	2.40	12.50
tblOnRoadDust	AverageVehicleWeight	2.40	7.50
tblOnRoadDust	AverageVehicleWeight	2.40	12.40
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	0.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	98.40
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	0.00

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tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	99.50
tblOnRoadDust	HaulingPercentPave	94.00	96.90
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	MeanVehicleSpeed	40.00	10.00
tblOnRoadDust	MeanVehicleSpeed	40.00	39.50
tblOnRoadDust	MeanVehicleSpeed	40.00	10.00
tblOnRoadDust	MeanVehicleSpeed	40.00	39.80
tblOnRoadDust	MeanVehicleSpeed	40.00	39.10
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblProjectCharacteristics	OperationalYear	2018	2020
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	25.00

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tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripNumber	9.00	16.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	HaulingTripNumber	0.00	5,200.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	HaulingTripNumber	0.00	10.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	40.00

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tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	50.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblVehicleTrips	CC_TL	8.00	5.00
tblVehicleTrips	CC_TL	8.00	5.00
tblVehicleTrips	CNW_TL	9.00	7.00
tblVehicleTrips	CNW_TL	9.00	7.00
tblVehicleTrips	CW_TL	15.00	10.00
tblVehicleTrips	CW_TL	15.00	10.00
tblVehicleTrips	HO_TL	9.00	7.00
tblVehicleTrips	HS_TL	8.00	5.00
tblVehicleTrips	HW_TL	15.00	10.00

2.0 Emissions Summary

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition - Structure Demolition	Demolition	1/2/2018	1/2/2018	5	1	
2	Building Construction - Mobilization	Building Construction	1/3/2018	1/3/2018	5	1	
3	Building Construction - Site Preparation/Stripping	Building Construction	1/4/2018	1/4/2018	5	1	
4	Building Construction - Existing Road Removal	Building Construction	1/5/2018	1/5/2018	5	1	
5	Building Construction - Trench Excavation and Forcemain Installation	Building Construction	1/6/2018	1/8/2018	5	1	
6	Building Construction - New Road Construction	Building Construction	1/9/2018	1/9/2018	5	1	
7	Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Building Construction	1/10/2018	1/10/2018	5	1	
8	Building Construction - Cutoff Wall Installation (Open Trench Method)	Building Construction	1/11/2018	1/11/2018	5	1	
9	Building Construction - Erosion Protection Installation	Building Construction	1/12/2018	1/12/2018	5	1	
10	Building Construction - Relief Well Installation	Building Construction	1/13/2018	1/15/2018	5	1	
11	Building Construction - Existing Pump Station Removal	Building Construction	1/16/2018	1/16/2018	5	1	
12	Building Construction - Pump Station Installation	Building Construction	1/17/2018	1/17/2018	5	1	
13	Building Construction - Existing Levee Degrade	Building Construction	1/18/2018	1/18/2018	5	1	
14	Building Construction - Site Restoration and Demobilization	Building Construction	1/19/2018	1/19/2018	5	1	

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Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition - Structure Demolition	Excavators	1	9.00	157	0.38
Demolition - Structure Demolition	Rubber Tired Dozer	1	9.00	358	0.40
Demolition - Structure Demolition	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Mobilization	Excavators	0	0.00	157	0.38
Building Construction - Site Preparation/Stripping	Excavators	1	9.00	157	0.38
Building Construction - Site Preparation/Stripping	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Site Preparation/Stripping	Scrapers	3	9.00	356	0.50
Building Construction - Existing Road Removal	Excavators	1	9.00	157	0.38
Building Construction - Existing Road Removal	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Existing Road Removal	Scrapers	1	9.00	356	0.50
Building Construction - Existing Road Removal	Scrapers	1	9.00	356	0.50
Building Construction - Trench Excavation and Forcemain Installation	Excavators	1	9.00	157	0.38
Building Construction - Trench Excavation and Forcemain Installation	Other Construction Equipment	1	9.00	172	0.42
Building Construction - Trench Excavation and Forcemain Installation	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - New Road Construction	Graders	2	9.00	162	0.41
Building Construction - New Road Construction	Pavers	1	9.00	130	0.42

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Building Construction - New Road Construction	Plate Compactors	2	9.00	8	0.43
Building Construction - New Road Construction	Rollers	1	9.00	80	0.38
Building Construction - New Road Construction	Rubber Tired Dozer	2	9.00	358	0.40
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Excavators	4	9.00	157	0.38
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Graders	1	9.00	162	0.41
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Rollers	1	9.00	84	0.38
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Rubber Tired Dozer	2	9.00	358	0.40
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Scrapers	10	9.00	356	0.50
Building Construction - Cutoff Wall Installation (Open Trench Method)	Excavators	1	9.00	157	0.38
Building Construction - Cutoff Wall Installation (Open Trench Method)	Excavators	1	9.00	157	0.38
Building Construction - Cutoff Wall Installation (Open Trench Method)	Rough Terrain Forklift	1	4.00	100	0.40
Building Construction - Cutoff Wall Installation (Open Trench Method)	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Cutoff Wall Installation (Open Trench Method)	Scrapers	1	9.00	356	0.50
Building Construction - Cutoff Wall Installation (Open Trench Method)	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Erosion Protection Installation	Cranes	4	4.00	208	0.29
Building Construction - Erosion Protection Installation	Excavators	2	9.00	157	0.38
Building Construction - Erosion Protection Installation	Rubber Tired Dozer	2	9.00	358	0.40
Building Construction - Relief Well Installation	Bore/Drill Rigs	1	9.00	82	0.50
Building Construction - Relief Well Installation	Excavators	1	9.00	157	0.38
Building Construction - Relief Well Installation	Scrapers	1	9.00	356	0.50

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Building Construction - Existing Pump Station Removal	Excavators	1	9.00	157	0.38
Building Construction - Existing Pump Station Removal	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Existing Pump Station Removal	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Pump Station Installation	Cranes	1	4.00	208	0.29
Building Construction - Pump Station Installation	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Existing Levee Degrade	Excavators	1	9.00	157	0.38
Building Construction - Existing Levee Degrade	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Existing Levee Degrade	Scrapers	6	9.00	356	0.50
Building Construction - Site Restoration and Demobilization	Graders	1	9.00	162	0.41
Building Construction - Site Restoration and Demobilization	Rollers	1	9.00	84	0.38

Trips and VMT

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Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition - Structure Demolition	3	10.00	0.00	16.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Mobilization	0	30.00	0.00	10.00	10.00	7.00	30.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Site Preparation/Stripping	5	30.00	0.00	4.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Site Preparation/Stripping	5	0.00	0.00	4.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Road Removal	4	10.00	0.00	40.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Trench Excavation and New Road Construction	3	10.00	0.00	280.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	8	20.00	0.00	24.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	18	50.00	0.00	1,536.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	18	0.00	0.00	4,608.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	18	0.00	0.00	2.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	18	0.00	0.00	2.00	10.00	7.00	30.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Cutoff Wall Installation	6	20.00	0.00	8.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - Cutoff Wall Installation	6	0.00	0.00	8.00	10.00	7.00	25.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Erosion Protection Installation	8	20.00	0.00	700.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Relief Well Installation	3	10.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Pump Station	3	10.00	0.00	4.00	10.00	7.00	25.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Pump Station Installation	2	10.00	0.00	2.00	10.00	7.00	25.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Levee Decrep	8	20.00	0.00	5,200.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Levee Decrep	8	0.00	0.00	2.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Levee Decrep	2	10.00	0.00	20.00	10.00	7.00	30.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Site Restoration and D										

3.1 Mitigation Measures Construction

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3.2 Demolition - Structure Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3061	0.0000	2.3061	0.3492	0.0000	0.3492			0.0000			0.0000
Off-Road	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035		852.9003	852.9003	0.2655		859.5383
Total	0.5547	5.7483	5.6944	8.4800e-003	2.3061	0.3299	2.6360	0.3492	0.3035	0.6527		852.9003	852.9003	0.2655		859.5383

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3088	10.0533	1.7934	0.0309	2.7577	0.0521	2.8099	0.6964	0.0499	0.7463		3,236.4188	3,236.4188	0.0706		3,238.1834
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3339	5.2000e-004	0.3344	0.0835	4.8000e-004	0.0839		73.9101	73.9101	2.3600e-003		73.9690
Total	0.3541	10.0877	2.1101	0.0316	3.0917	0.0527	3.1443	0.7799	0.0504	0.8302		3,310.3289	3,310.3289	0.0730		3,312.1524

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3.2 Demolition - Structure Demolition - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3061	0.0000	2.3061	0.3492	0.0000	0.3492			0.0000			0.0000
Off-Road	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035	0.0000	852.9003	852.9003	0.2655		859.5383
Total	0.5547	5.7483	5.6944	8.4800e-003	2.3061	0.3299	2.6360	0.3492	0.3035	0.6527	0.0000	852.9003	852.9003	0.2655		859.5383

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3088	10.0533	1.7934	0.0309	2.7577	0.0521	2.8099	0.6964	0.0499	0.7463		3,236.4188	3,236.4188	0.0706		3,238.1834
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3339	5.2000e-004	0.3344	0.0835	4.8000e-004	0.0839		73.9101	73.9101	2.3600e-003		73.9690
Total	0.3541	10.0877	2.1101	0.0316	3.0917	0.0527	3.1443	0.7799	0.0504	0.8302		3,310.3289	3,310.3289	0.0730		3,312.1524

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

3.3 Building Construction - Mobilization - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1266	4.1786	0.7547	0.0120	0.6964	0.0201	0.7166	0.1783	0.0193	0.1975		1,256.748 3	1,256.748 3	0.0378		1,257.692 7
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1361	0.1034	0.9499	2.2300e-003	0.6639	1.5500e-003	0.6655	0.1675	1.4300e-003	0.1689		221.7303	221.7303	7.0700e-003		221.9070
Total	0.2626	4.2820	1.7046	0.0142	1.3604	0.0217	1.3820	0.3458	0.0207	0.3664		1,478.478 6	1,478.478 6	0.0449		1,479.599 7

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

3.3 Building Construction - Mobilization - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1266	4.1786	0.7547	0.0120	0.6964	0.0201	0.7166	0.1783	0.0193	0.1975		1,256.7483	1,256.7483	0.0378		1,257.6927
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1361	0.1034	0.9499	2.2300e-003	0.6639	1.5500e-003	0.6655	0.1675	1.4300e-003	0.1689		221.7303	221.7303	7.0700e-003		221.9070
Total	0.2626	4.2820	1.7046	0.0142	1.3604	0.0217	1.3820	0.3458	0.0207	0.3664		1,478.4786	1,478.4786	0.0449		1,479.5997

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

3.4 Building Construction - Site Preparation/Stripping - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.2345	51.8576	33.6268	0.0574		2.0752	2.0752		1.9092	1.9092		5,780.7820	5,780.7820	1.7996		5,825.7729
Total	4.2345	51.8576	33.6268	0.0574		2.0752	2.0752		1.9092	1.9092		5,780.7820	5,780.7820	1.7996		5,825.7729

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0891	2.9556	0.5364	8.2500e-003	5.1622	0.0138	5.1760	0.5794	0.0132	0.5927		864.4521	864.4521	0.0291		865.1785
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1361	0.1034	0.9499	2.2300e-003	0.5778	1.5500e-003	0.5794	0.1464	1.4300e-003	0.1478		221.7303	221.7303	7.0700e-003		221.9070
Total	0.2251	3.0591	1.4863	0.0105	5.7400	0.0154	5.7554	0.7258	0.0146	0.7404		1,086.1825	1,086.1825	0.0361		1,087.0855

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

3.4 Building Construction - Site Preparation/Stripping - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.2345	51.8576	33.6268	0.0574		2.0752	2.0752		1.9092	1.9092	0.0000	5,780.7820	5,780.7820	1.7996		5,825.7729
Total	4.2345	51.8576	33.6268	0.0574		2.0752	2.0752		1.9092	1.9092	0.0000	5,780.7820	5,780.7820	1.7996		5,825.7729

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0891	2.9556	0.5364	8.2500e-003	5.1622	0.0138	5.1760	0.5794	0.0132	0.5927		864.4521	864.4521	0.0291		865.1785
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1361	0.1034	0.9499	2.2300e-003	0.5778	1.5500e-003	0.5794	0.1464	1.4300e-003	0.1478		221.7303	221.7303	7.0700e-003		221.9070
Total	0.2251	3.0591	1.4863	0.0105	5.7400	0.0154	5.7554	0.7258	0.0146	0.7404		1,086.1825	1,086.1825	0.0361		1,087.0855

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

3.5 Building Construction - Existing Road Removal - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242		4,047.4659	4,047.4659	1.2600		4,078.9667
Total	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242		4,047.4659	4,047.4659	1.2600		4,078.9667

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.7719	25.1331	4.4835	0.0772	7.2423	0.1303	7.3727	1.8265	0.1247	1.9512		8,091.0470	8,091.0470	0.1765		8,095.4586
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3513	5.2000e-004	0.3518	0.0877	4.8000e-004	0.0882		73.9101	73.9101	2.3600e-003		73.9690
Total	0.8172	25.1676	4.8002	0.0779	7.5936	0.1309	7.7245	1.9142	0.1252	2.0394		8,164.9571	8,164.9571	0.1788		8,169.4276

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

3.5 Building Construction - Existing Road Removal - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242	0.0000	4,047.4659	4,047.4659	1.2600		4,078.9667
Total	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242	0.0000	4,047.4659	4,047.4659	1.2600		4,078.9667

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.7719	25.1331	4.4835	0.0772	7.2423	0.1303	7.3727	1.8265	0.1247	1.9512		8,091.0470	8,091.0470	0.1765		8,095.4586
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3513	5.2000e-004	0.3518	0.0877	4.8000e-004	0.0882		73.9101	73.9101	2.3600e-003		73.9690
Total	0.8172	25.1676	4.8002	0.0779	7.5936	0.1309	7.7245	1.9142	0.1252	2.0394		8,164.9571	8,164.9571	0.1788		8,169.4276

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

3.6 Building Construction - Trench Excavation and Forcemain Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1803	12.5639	10.3721	0.0154		0.6885	0.6885		0.6334	0.6334		1,552.3585	1,552.3585	0.4833		1,564.4402
Total	1.1803	12.5639	10.3721	0.0154		0.6885	0.6885		0.6334	0.6334		1,552.3585	1,552.3585	0.4833		1,564.4402

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.8306	30.9620	6.1629	0.0370	164.8276	0.0540	164.8816	16.4264	0.0517	16.4781		3,874.3191	3,874.3191	0.7987		3,894.2867
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.2760	5.2000e-004	0.2766	0.0693	4.8000e-004	0.0697		73.9101	73.9101	2.3600e-003		73.9690
Total	0.8760	30.9965	6.4796	0.0377	165.1036	0.0545	165.1582	16.4956	0.0522	16.5478		3,948.2292	3,948.2292	0.8011		3,968.2557

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

3.6 Building Construction - Trench Excavation and Forcemain Installation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1803	12.5639	10.3721	0.0154		0.6885	0.6885		0.6334	0.6334	0.0000	1,552.3585	1,552.3585	0.4833		1,564.4402
Total	1.1803	12.5639	10.3721	0.0154		0.6885	0.6885		0.6334	0.6334	0.0000	1,552.3585	1,552.3585	0.4833		1,564.4402

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.8306	30.9620	6.1629	0.0370	164.8276	0.0540	164.8816	16.4264	0.0517	16.4781		3,874.3191	3,874.3191	0.7987		3,894.2867
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.2760	5.2000e-004	0.2766	0.0693	4.8000e-004	0.0697		73.9101	73.9101	2.3600e-003		73.9690
Total	0.8760	30.9965	6.4796	0.0377	165.1036	0.0545	165.1582	16.4956	0.0522	16.5478		3,948.2292	3,948.2292	0.8011		3,968.2557

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

3.7 Building Construction - New Road Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.4905	24.8383	15.7211	0.0223		1.3920	1.3920		1.2824	1.2824		2,217.7128	2,217.7128	0.6743		2,234.5704
Total	2.4905	24.8383	15.7211	0.0223		1.3920	1.3920		1.2824	1.2824		2,217.7128	2,217.7128	0.6743		2,234.5704

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.4631	15.0799	2.6901	0.0463	4.0323	0.0782	4.1105	1.0190	0.0748	1.0939		4,854.6282	4,854.6282	0.1059		4,857.2752
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.6504	1.0300e-003	0.6515	0.1627	9.5000e-004	0.1636		147.8202	147.8202	4.7100e-003		147.9380
Total	0.5538	15.1488	3.3234	0.0478	4.6827	0.0792	4.7620	1.1817	0.0758	1.2575		5,002.4485	5,002.4485	0.1106		5,005.2132

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

3.7 Building Construction - New Road Construction - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.4905	24.8383	15.7211	0.0223		1.3920	1.3920		1.2824	1.2824	0.0000	2,217.7128	2,217.7128	0.6743		2,234.5704
Total	2.4905	24.8383	15.7211	0.0223		1.3920	1.3920		1.2824	1.2824	0.0000	2,217.7128	2,217.7128	0.6743		2,234.5704

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.4631	15.0799	2.6901	0.0463	4.0323	0.0782	4.1105	1.0190	0.0748	1.0939		4,854.6282	4,854.6282	0.1059		4,857.2752
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.6504	1.0300e-003	0.6515	0.1627	9.5000e-004	0.1636		147.8202	147.8202	4.7100e-003		147.9380
Total	0.5538	15.1488	3.3234	0.0478	4.6827	0.0792	4.7620	1.1817	0.0758	1.2575		5,002.4485	5,002.4485	0.1106		5,005.2132

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

3.8 Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	15.5068	186.8154	121.7054	0.2049		7.7211	7.7211		7.1034	7.1034		20,623.7177	20,623.7177	6.4204		20,784.2288
Total	15.5068	186.8154	121.7054	0.2049		7.7211	7.7211		7.1034	7.1034		20,623.7177	20,623.7177	6.4204		20,784.2288

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	93.5396	3,067.2759	550.6853	9.1013	2,570.2140	15.3217	2,585.5357	388.7029	14.6587	403.3616		953,997.9279	953,997.9279	24.7264		954,616.0872
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2268	0.1724	1.5832	3.7100e-003	1.8291	2.5800e-003	1.8317	0.4565	2.3800e-003	0.4589		369.5506	369.5506	0.0118		369.8450
Total	93.7663	3,067.4483	552.2685	9.1050	2,572.0431	15.3243	2,587.3674	389.1593	14.6611	403.8205		954,367.4785	954,367.4785	24.7382		954,985.9322

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

3.8 Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	15.5068	186.8154	121.7054	0.2049		7.7211	7.7211		7.1034	7.1034	0.0000	20,623.7177	20,623.7177	6.4204		20,784.2288
Total	15.5068	186.8154	121.7054	0.2049		7.7211	7.7211		7.1034	7.1034	0.0000	20,623.7177	20,623.7177	6.4204		20,784.2288

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	93.5396	3,067.2759	550.6853	9.1013	2,570.2140	15.3217	2,585.5357	388.7029	14.6587	403.3616		953,997.9279	953,997.9279	24.7264		954,616.0872
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2268	0.1724	1.5832	3.7100e-003	1.8291	2.5800e-003	1.8317	0.4565	2.3800e-003	0.4589		369.5506	369.5506	0.0118		369.8450
Total	93.7663	3,067.4483	552.2685	9.1050	2,572.0431	15.3243	2,587.3674	389.1593	14.6611	403.8205		954,367.4785	954,367.4785	24.7382		954,985.9322

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

3.9 Building Construction - Cutoff Wall Installation (Open Trench Method) - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1817	25.3414	19.3445	0.0315		1.1335	1.1335		1.0428	1.0428		3,167.0501	3,167.0501	0.9860		3,191.6987
Total	2.1817	25.3414	19.3445	0.0315		1.1335	1.1335		1.0428	1.0428		3,167.0501	3,167.0501	0.9860		3,191.6987

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1117	3.8066	0.7066	9.1900e-003	9.7756	0.0152	9.7908	1.0484	0.0145	1.0629		962.8907	962.8907	0.0518		964.1851
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.4426	1.0300e-003	0.4437	0.1117	9.5000e-004	0.1126		147.8202	147.8202	4.7100e-003		147.9380
Total	0.2024	3.8755	1.3399	0.0107	10.2182	0.0162	10.2344	1.1600	0.0154	1.1755		1,110.7110	1,110.7110	0.0565		1,112.1231

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

3.9 Building Construction - Cutoff Wall Installation (Open Trench Method) - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1817	25.3414	19.3445	0.0315		1.1335	1.1335		1.0428	1.0428	0.0000	3,167.0501	3,167.0501	0.9860		3,191.6987
Total	2.1817	25.3414	19.3445	0.0315		1.1335	1.1335		1.0428	1.0428	0.0000	3,167.0501	3,167.0501	0.9860		3,191.6987

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1117	3.8066	0.7066	9.1900e-003	9.7756	0.0152	9.7908	1.0484	0.0145	1.0629		962.8907	962.8907	0.0518		964.1851
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.4426	1.0300e-003	0.4437	0.1117	9.5000e-004	0.1126		147.8202	147.8202	4.7100e-003		147.9380
Total	0.2024	3.8755	1.3399	0.0107	10.2182	0.0162	10.2344	1.1600	0.0154	1.1755		1,110.7110	1,110.7110	0.0565		1,112.1231

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

3.10 Building Construction - Erosion Protection Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6743	19.2050	11.8651	0.0219		0.8673	0.8673		0.7980	0.7980		2,207.2462	2,207.2462	0.6872		2,224.4248
Total	1.6743	19.2050	11.8651	0.0219		0.8673	0.8673		0.7980	0.7980		2,207.2462	2,207.2462	0.6872		2,224.4248

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	13.5077	439.8295	78.4617	1.3508	130.8040	2.2809	133.0849	32.9605	2.1822	35.1428		141,593.3231	141,593.3231	3.0881		141,670.5256
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.7258	1.0300e-003	0.7269	0.1812	9.5000e-004	0.1821		147.8202	147.8202	4.7100e-003		147.9380
Total	13.5984	439.8985	79.0950	1.3523	131.5299	2.2819	133.8118	33.1417	2.1832	35.3249		141,741.1433	141,741.1433	3.0928		141,818.4636

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

3.10 Building Construction - Erosion Protection Installation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6743	19.2050	11.8651	0.0219		0.8673	0.8673		0.7980	0.7980	0.0000	2,207.246 2	2,207.246 2	0.6872		2,224.424 8
Total	1.6743	19.2050	11.8651	0.0219		0.8673	0.8673		0.7980	0.7980	0.0000	2,207.246 2	2,207.246 2	0.6872		2,224.424 8

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	13.5077	439.8295	78.4617	1.3508	130.8040	2.2809	133.0849	32.9605	2.1822	35.1428		141,593.3 231	141,593.3 231	3.0881		141,670.5 256
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.7258	1.0300e-003	0.7269	0.1812	9.5000e-004	0.1821		147.8202	147.8202	4.7100e-003		147.9380
Total	13.5984	439.8985	79.0950	1.3523	131.5299	2.2819	133.8118	33.1417	2.1832	35.3249		141,741.1 433	141,741.1 433	3.0928		141,818.4 636

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

3.11 Building Construction - Relief Well Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8458	22.3587	16.3536	0.0269		0.9536	0.9536		0.8773	0.8773		2,704.3656	2,704.3656	0.8419		2,725.4133
Total	1.8458	22.3587	16.3536	0.0269		0.9536	0.9536		0.8773	0.8773		2,704.3656	2,704.3656	0.8419		2,725.4133

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.0761	5.2000e-004	0.0766	0.0202	4.8000e-004	0.0207		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0454	0.0345	0.3166	7.4000e-004	0.0761	5.2000e-004	0.0766	0.0202	4.8000e-004	0.0207		73.9101	73.9101	2.3600e-003		73.9690

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

3.11 Building Construction - Relief Well Installation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8458	22.3587	16.3536	0.0269		0.9536	0.9536		0.8773	0.8773	0.0000	2,704.3656	2,704.3656	0.8419		2,725.4133
Total	1.8458	22.3587	16.3536	0.0269		0.9536	0.9536		0.8773	0.8773	0.0000	2,704.3656	2,704.3656	0.8419		2,725.4133

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.0761	5.2000e-004	0.0766	0.0202	4.8000e-004	0.0207		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0454	0.0345	0.3166	7.4000e-004	0.0761	5.2000e-004	0.0766	0.0202	4.8000e-004	0.0207		73.9101	73.9101	2.3600e-003		73.9690

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

3.12 Building Construction - Existing Pump Station Removal - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035		852.9003	852.9003	0.2655		859.5383
Total	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035		852.9003	852.9003	0.2655		859.5383

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0440	1.4610	0.2653	4.0700e-003	0.2322	6.8000e-003	0.2390	0.0594	6.5100e-003	0.0659		426.0980	426.0980	0.0145		426.4599
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.2213	5.2000e-004	0.2218	0.0558	4.8000e-004	0.0563		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0894	1.4955	0.5819	4.8100e-003	0.4535	7.3200e-003	0.4608	0.1153	6.9900e-003	0.1222		500.0081	500.0081	0.0168		500.4289

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

3.12 Building Construction - Existing Pump Station Removal - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035	0.0000	852.9003	852.9003	0.2655		859.5383
Total	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035	0.0000	852.9003	852.9003	0.2655		859.5383

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0440	1.4610	0.2653	4.0700e-003	0.2322	6.8000e-003	0.2390	0.0594	6.5100e-003	0.0659		426.0980	426.0980	0.0145		426.4599
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.2213	5.2000e-004	0.2218	0.0558	4.8000e-004	0.0563		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0894	1.4955	0.5819	4.8100e-003	0.4535	7.3200e-003	0.4608	0.1153	6.9900e-003	0.1222		500.0081	500.0081	0.0168		500.4289

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

3.13 Building Construction - Pump Station Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4884	5.3583	3.1680	5.3000e-003		0.2950	0.2950		0.2714	0.2714		533.4615	533.4615	0.1661		537.6133
Total	0.4884	5.3583	3.1680	5.3000e-003		0.2950	0.2950		0.2714	0.2714		533.4615	533.4615	0.1661		537.6133

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0220	0.7305	0.1326	2.0300e-003	0.0917	3.4000e-003	0.0951	0.0237	3.2500e-003	0.0270		213.0490	213.0490	7.2400e-003		213.2299
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.1726	5.2000e-004	0.1731	0.0439	4.8000e-004	0.0443		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0674	0.7650	0.4493	2.7700e-003	0.2643	3.9200e-003	0.2682	0.0676	3.7300e-003	0.0713		286.9591	286.9591	9.6000e-003		287.1989

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

3.13 Building Construction - Pump Station Installation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4884	5.3583	3.1680	5.3000e-003		0.2950	0.2950		0.2714	0.2714	0.0000	533.4615	533.4615	0.1661		537.6133
Total	0.4884	5.3583	3.1680	5.3000e-003		0.2950	0.2950		0.2714	0.2714	0.0000	533.4615	533.4615	0.1661		537.6133

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0220	0.7305	0.1326	2.0300e-003	0.0917	3.4000e-003	0.0951	0.0237	3.2500e-003	0.0270		213.0490	213.0490	7.2400e-003		213.2299
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.1726	5.2000e-004	0.1731	0.0439	4.8000e-004	0.0443		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0674	0.7650	0.4493	2.7700e-003	0.2643	3.9200e-003	0.2682	0.0676	3.7300e-003	0.0713		286.9591	286.9591	9.6000e-003		287.1989

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

3.14 Building Construction - Existing Levee Degrade - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	8.1458	100.2544	63.5917	0.1091		3.9825	3.9825		3.6639	3.6639		10,980.7305	10,980.7305	3.4185		11,066.1917
Total	8.1458	100.2544	63.5917	0.1091		3.9825	3.9825		3.6639	3.6639		10,980.7305	10,980.7305	3.4185		11,066.1917

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	15.4645	576.2648	114.6788	0.6909	3,134.6651	1.0095	3,135.6746	312.3937	0.9658	313.3595		72,356.1930	72,356.1930	14.8419		72,727.2410
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.7026	1.0300e-003	0.7036	0.1755	9.5000e-004	0.1764		147.8202	147.8202	4.7100e-003		147.9380
Total	15.5552	576.3337	115.3121	0.6924	3,135.3677	1.0105	3,136.3783	312.5692	0.9667	313.5359		72,504.0132	72,504.0132	14.8466		72,875.1790

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

3.14 Building Construction - Existing Levee Degrade - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	8.1458	100.2544	63.5917	0.1091		3.9825	3.9825		3.6639	3.6639	0.0000	10,980.7305	10,980.7305	3.4185		11,066.1917
Total	8.1458	100.2544	63.5917	0.1091		3.9825	3.9825		3.6639	3.6639	0.0000	10,980.7305	10,980.7305	3.4185		11,066.1917

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	15.4645	576.2648	114.6788	0.6909	3,134.6651	1.0095	3,135.6746	312.3937	0.9658	313.3595		72,356.1930	72,356.1930	14.8419		72,727.2410
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.7026	1.0300e-003	0.7036	0.1755	9.5000e-004	0.1764		147.8202	147.8202	4.7100e-003		147.9380
Total	15.5552	576.3337	115.3121	0.6924	3,135.3677	1.0105	3,136.3783	312.5692	0.9667	313.5359		72,504.0132	72,504.0132	14.8466		72,875.1790

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

3.15 Building Construction - Site Restoration and Demobilization - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1763	11.6495	7.1750	9.6000e-003		0.6920	0.6920		0.6367	0.6367		967.2218	967.2218	0.3011		974.7496
Total	1.1763	11.6495	7.1750	9.6000e-003		0.6920	0.6920		0.6367	0.6367		967.2218	967.2218	0.3011		974.7496

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2532	8.3572	1.5094	0.0240	2.0163	0.0403	2.0566	0.5096	0.0385	0.5481		2,513.4965	2,513.4965	0.0756		2,515.3854
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3252	5.2000e-004	0.3257	0.0813	4.8000e-004	0.0818		73.9101	73.9101	2.3600e-003		73.9690
Total	0.2985	8.3917	1.8261	0.0247	2.3415	0.0408	2.3823	0.5909	0.0390	0.6299		2,587.4066	2,587.4066	0.0779		2,589.3544

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

3.15 Building Construction - Site Restoration and Demobilization - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1763	11.6495	7.1750	9.6000e-003		0.6920	0.6920		0.6367	0.6367	0.0000	967.2218	967.2218	0.3011		974.7496
Total	1.1763	11.6495	7.1750	9.6000e-003		0.6920	0.6920		0.6367	0.6367	0.0000	967.2218	967.2218	0.3011		974.7496

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2532	8.3572	1.5094	0.0240	2.0163	0.0403	2.0566	0.5096	0.0385	0.5481		2,513.4965	2,513.4965	0.0756		2,515.3854
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3252	5.2000e-004	0.3257	0.0813	4.8000e-004	0.0818		73.9101	73.9101	2.3600e-003		73.9690
Total	0.2985	8.3917	1.8261	0.0247	2.3415	0.0408	2.3823	0.5909	0.0390	0.6299		2,587.4066	2,587.4066	0.0779		2,589.3544

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
User Defined Commercial	0.00	0.00	0.00		
User Defined Residential	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
User Defined Commercial	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
User Defined Residential	10.00	5.00	7.00	46.00	13.00	41.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Commercial	0.486608	0.042104	0.206882	0.127088	0.026765	0.005851	0.054651	0.039468	0.001006	0.001905	0.006007	0.000778	0.000886
Other Asphalt Surfaces	0.486608	0.042104	0.206882	0.127088	0.026765	0.005851	0.054651	0.039468	0.001006	0.001905	0.006007	0.000778	0.000886
User Defined Residential	0.486608	0.042104	0.206882	0.127088	0.026765	0.005851	0.054651	0.039468	0.001006	0.001905	0.006007	0.000778	0.000886

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment

Lower Elkhorn Basin Alt 2 Unfavorable - Year 1 - Yolo County, Winter

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2
Yolo County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Commercial	0.00	User Defined Unit	0.00	0.00	0
Other Asphalt Surfaces	0.00	Acre	0.00	0.00	0
User Defined Residential	0.00	Dwelling Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	6.8	Precipitation Freq (Days)	54
Climate Zone	2			Operational Year	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

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tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblFleetMix	FleetMixLandUseSubType	User Defined Commercial	Other Asphalt Surfaces
tblFleetMix	FleetMixLandUseSubType	Other Asphalt Surfaces	User Defined Commercial
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	187.00	162.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	187.00	162.00
tblOffRoadEquipment	HorsePower	80.00	84.00
tblOffRoadEquipment	HorsePower	367.00	356.00
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tblOffRoadEquipment	HorsePower	158.00	157.00

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tbloffRoadEquipment	HorsePower	158.00	157.00
tbloffRoadEquipment	HorsePower	367.00	356.00
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tbloffRoadEquipment	HorsePower	158.00	157.00
tbloffRoadEquipment	HorsePower	97.00	75.00
tbloffRoadEquipment	HorsePower	158.00	157.00
tbloffRoadEquipment	HorsePower	367.00	356.00
tbloffRoadEquipment	HorsePower	97.00	75.00
tbloffRoadEquipment	HorsePower	367.00	356.00
tbloffRoadEquipment	HorsePower	221.00	82.00
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tbloffRoadEquipment	LoadFactor	0.48	0.50
tbloffRoadEquipment	LoadFactor	0.48	0.50
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tbloffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tbloffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00

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tblOffRoadEquipment	UsageHours	6.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOnRoadDust	AverageVehicleWeight	2.40	11.40
tblOnRoadDust	AverageVehicleWeight	2.40	12.40
tblOnRoadDust	AverageVehicleWeight	2.40	7.50
tblOnRoadDust	AverageVehicleWeight	2.40	12.20
tblOnRoadDust	AverageVehicleWeight	2.40	4.40
tblOnRoadDust	AverageVehicleWeight	2.40	11.10
tblOnRoadDust	AverageVehicleWeight	2.40	7.50
tblOnRoadDust	AverageVehicleWeight	2.40	6.50
tblOnRoadDust	AverageVehicleWeight	2.40	11.90
tblOnRoadDust	AverageVehicleWeight	2.40	7.10
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tblOnRoadDust	AverageVehicleWeight	2.40	12.50
tblOnRoadDust	AverageVehicleWeight	2.40	12.50
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tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	0.00
tblOnRoadDust	HaulingPercentPave	94.00	0.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	98.40

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tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	0.00
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tblOnRoadDust	MeanVehicleSpeed	40.00	39.10
tblOnRoadDust	WorkerPercentPave	94.00	100.00
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tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblProjectCharacteristics	OperationalYear	2018	2021

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tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
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tblTripsAndVMT	HaulingTripLength	20.00	50.00
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tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
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tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
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tblTripsAndVMT	HaulingTripNumber	0.00	6,900.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00

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tblTripsAndVMT	WorkerTripNumber	8.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
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tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblVehicleTrips	CC_TL	8.00	5.00
tblVehicleTrips	CC_TL	8.00	5.00
tblVehicleTrips	CNW_TL	9.00	7.00
tblVehicleTrips	CNW_TL	9.00	7.00
tblVehicleTrips	CW_TL	15.00	10.00
tblVehicleTrips	CW_TL	15.00	10.00
tblVehicleTrips	HO_TL	9.00	7.00
tblVehicleTrips	HS_TL	8.00	5.00
tblVehicleTrips	HW_TL	15.00	10.00

2.0 Emissions Summary

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition - Structure Demolition	Demolition	1/2/2019	1/2/2019	5	1	
2	Building Construction - Mobilization	Building Construction	1/3/2019	1/3/2019	5	1	
3	Building Construction - Site Preparation/Stripping	Building Construction	1/4/2019	1/4/2019	5	1	
4	Building Construction - Existing Road Removal	Building Construction	1/5/2019	1/7/2019	5	1	
5	Building Construction - Trench Excavation and Forcemain Installation	Building Construction	1/8/2019	1/8/2019	5	1	
6	Building Construction - New Road Construction	Building Construction	1/9/2019	1/9/2019	5	1	
7	Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Building Construction	1/10/2019	1/10/2019	5	1	
8	Building Construction - Offsite Borrow Material Transport	Building Construction	1/11/2019	1/11/2019	5	1	
9	Building Construction - Cutoff Wall Installation (Open Trench Method)	Building Construction	1/12/2019	1/14/2019	5	1	
10	Building Construction - Erosion Protection Installation	Building Construction	1/15/2019	1/15/2019	5	1	
11	Building Construction - Existing Pump Station Removal	Building Construction	1/16/2019	1/16/2019	5	1	
12	Building Construction - Existing Levee Degrade	Building Construction	1/17/2019	1/17/2019	5	1	
13	Building Construction - Ecosystem Project Elements	Building Construction	1/18/2019	1/18/2019	5	1	
14	Building Construction - Site Restoration and Demobilization	Building Construction	1/19/2019	1/21/2019	5	1	

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition - Structure Demolition	Excavators	1	9.00	157	0.38
Demolition - Structure Demolition	Rubber Tired Dozer	1	9.00	358	0.40
Demolition - Structure Demolition	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Mobilization	Excavators	0	0.00	157	0.38
Building Construction - Site Preparation/Stripping	Excavators	1	9.00	157	0.38
Building Construction - Site Preparation/Stripping	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Site Preparation/Stripping	Scrapers	3	9.00	356	0.50
Building Construction - Existing Road Removal	Excavators	1	9.00	157	0.38
Building Construction - Existing Road Removal	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Existing Road Removal	Scrapers	1	9.00	356	0.50
Building Construction - Existing Road Removal	Scrapers	1	9.00	356	0.50
Building Construction - Trench Excavation and Forcemain Installation	Excavators	1	9.00	157	0.38
Building Construction - Trench Excavation and Forcemain Installation	Other Construction Equipment	1	9.00	172	0.42
Building Construction - Trench Excavation and Forcemain Installation	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - New Road Construction	Graders	2	9.00	162	0.41
Building Construction - New Road Construction	Pavers	1	9.00	130	0.42

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

Building Construction - New Road Construction	Plate Compactors	2	9.00	8	0.43
Building Construction - New Road Construction	Rollers	1	9.00	80	0.38
Building Construction - New Road Construction	Rubber Tired Dozer	2	9.00	358	0.40
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Excavators	4	9.00	157	0.38
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Graders	1	9.00	162	0.41
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Rollers	1	9.00	84	0.38
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Rubber Tired Dozer	2	9.00	358	0.40
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Scrapers	5	9.00	356	0.50
Building Construction - Offsite Borrow Material Transport	Excavators	0	0.00	157	0.38
Building Construction - Cutoff Wall Installation (Open Trench Method)	Excavators	1	9.00	157	0.38
Building Construction - Cutoff Wall Installation (Open Trench Method)	Excavators	1	9.00	157	0.38
Building Construction - Cutoff Wall Installation (Open Trench Method)	Rough Terrain Forklift	1	4.00	100	0.40
Building Construction - Cutoff Wall Installation (Open Trench Method)	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Cutoff Wall Installation (Open Trench Method)	Scrapers	1	9.00	356	0.50
Building Construction - Cutoff Wall Installation (Open Trench Method)	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Erosion Protection Installation	Cranes	4	4.00	208	0.29
Building Construction - Erosion Protection Installation	Excavators	2	9.00	157	0.38
Building Construction - Erosion Protection Installation	Rubber Tired Dozer	2	9.00	358	0.40
Building Construction - Existing Pump Station Removal	Excavators	1	9.00	157	0.38
Building Construction - Existing Pump Station Removal	Rubber Tired Dozer	1	9.00	358	0.40

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

Building Construction - Existing Pump Station Removal	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Existing Levee Degrade	Excavators	1	9.00	157	0.38
Building Construction - Existing Levee Degrade	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Existing Levee Degrade	Scrapers	6	9.00	356	0.50
Building Construction - Ecosystem Project Elements	Tractors/Loaders/Backhoes	4	9.00	75	0.37
Building Construction - Ecosystem Project Elements	Rubber Tired Dozer	3	9.00	358	0.40
Building Construction - Ecosystem Project Elements	Scrapers	2	9.00	356	0.50
Building Construction - Ecosystem Project Elements	Bore/Drill Rigs	1	9.00	82	0.50
Building Construction - Site Restoration and Demobilization	Graders	1	9.00	162	0.41
Building Construction - Site Restoration and Demobilization	Rollers	1	9.00	84	0.38

Trips and VMT

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition - Structure Demolition	3	10.00	0.00	16.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Mobilization	0	30.00	0.00	10.00	10.00	7.00	30.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Site Preparation/Strip	5	30.00	0.00	4.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Site Preparation/Strip	5	0.00	0.00	4.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Road Remov	4	10.00	0.00	30.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Trench Excavation an	3	10.00	0.00	110.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - New Road Constructio	8	20.00	0.00	12.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	13	30.00	0.00	1,024.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	13	0.00	0.00	3,072.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	13	0.00	0.00	2.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	13	0.00	0.00	2.00	10.00	7.00	30.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Offsite Borrow Materia	0	10.00	0.00	2,300.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Cutoff Wall Installation	6	10.00	0.00	14.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - Cutoff Wall Installation	6	0.00	0.00	14.00	10.00	7.00	25.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Erosion Protection Inst	8	20.00	0.00	700.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Pump Station	3	10.00	0.00	4.00	10.00	7.00	25.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Levee Degrad	8	20.00	0.00	6,900.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Levee Degrad	8	0.00	0.00	2.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Erosion Protection Fla	10	20.00	0.00	1.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Site Restoration and D	2	10.00	0.00	20.00	10.00	7.00	30.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

3.2 Demolition - Structure Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.6121	0.0000	4.6121	0.6985	0.0000	0.6985			0.0000			0.0000
Off-Road	0.4940	5.0312	5.6509	8.4700e-003		0.2803	0.2803		0.2579	0.2579		838.8908	838.8908	0.2654		845.5262
Total	0.4940	5.0312	5.6509	8.4700e-003	4.6121	0.2803	4.8925	0.6985	0.2579	0.9564		838.8908	838.8908	0.2654		845.5262

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2908	9.3706	1.6762	0.0305	2.7576	0.0469	2.8045	0.6964	0.0449	0.7413		3,197.9313	3,197.9313	0.0677		3,199.6249
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3339	5.0000e-004	0.3344	0.0835	4.6000e-004	0.0839		71.4571	71.4571	2.0600e-003		71.5086
Total	0.3318	9.4008	1.9553	0.0312	3.0915	0.0474	3.1389	0.7798	0.0454	0.8252		3,269.3885	3,269.3885	0.0698		3,271.1335

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

3.2 Demolition - Structure Demolition - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.6121	0.0000	4.6121	0.6985	0.0000	0.6985			0.0000			0.0000
Off-Road	0.4940	5.0312	5.6509	8.4700e-003		0.2803	0.2803		0.2579	0.2579	0.0000	838.8908	838.8908	0.2654		845.5262
Total	0.4940	5.0312	5.6509	8.4700e-003	4.6121	0.2803	4.8925	0.6985	0.2579	0.9564	0.0000	838.8908	838.8908	0.2654		845.5262

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2908	9.3706	1.6762	0.0305	2.7576	0.0469	2.8045	0.6964	0.0449	0.7413		3,197.9313	3,197.9313	0.0677		3,199.6249
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3339	5.0000e-004	0.3344	0.0835	4.6000e-004	0.0839		71.4571	71.4571	2.0600e-003		71.5086
Total	0.3318	9.4008	1.9553	0.0312	3.0915	0.0474	3.1389	0.7798	0.0454	0.8252		3,269.3885	3,269.3885	0.0698		3,271.1335

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

3.3 Building Construction - Mobilization - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1189	3.9120	0.7003	0.0119	0.6964	0.0181	0.7145	0.1783	0.0173	0.1956		1,242.1996	1,242.1996	0.0366		1,243.1140
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1233	0.0906	0.8373	2.1500e-003	0.6639	1.5000e-003	0.6654	0.1675	1.3800e-003	0.1689		214.3714	214.3714	6.1700e-003		214.5258
Total	0.2422	4.0026	1.5376	0.0140	1.3603	0.0196	1.3799	0.3457	0.0187	0.3645		1,456.5711	1,456.5711	0.0427		1,457.6398

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

3.3 Building Construction - Mobilization - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1189	3.9120	0.7003	0.0119	0.6964	0.0181	0.7145	0.1783	0.0173	0.1956		1,242.1996	1,242.1996	0.0366		1,243.1140
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1233	0.0906	0.8373	2.1500e-003	0.6639	1.5000e-003	0.6654	0.1675	1.3800e-003	0.1689		214.3714	214.3714	6.1700e-003		214.5258
Total	0.2422	4.0026	1.5376	0.0140	1.3603	0.0196	1.3799	0.3457	0.0187	0.3645		1,456.5711	1,456.5711	0.0427		1,457.6398

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

3.4 Building Construction - Site Preparation/Stripping - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.9243	47.0375	31.1394	0.0574		1.8702	1.8702		1.7206	1.7206		5,686.1224	5,686.1224	1.7990		5,731.0981
Total	3.9243	47.0375	31.1394	0.0574		1.8702	1.8702		1.7206	1.7206		5,686.1224	5,686.1224	1.7990		5,731.0981

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0836	2.7717	0.4963	8.1500e-003	5.1622	0.0124	5.1746	0.5794	0.0119	0.5913		854.5624	854.5624	0.0282		855.2673
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1233	0.0906	0.8373	2.1500e-003	0.5778	1.5000e-003	0.5793	0.1464	1.3800e-003	0.1477		214.3714	214.3714	6.1700e-003		214.5258
Total	0.2068	2.8624	1.3336	0.0103	5.7400	0.0139	5.7539	0.7258	0.0133	0.7390		1,068.9338	1,068.9338	0.0344		1,069.7931

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

3.4 Building Construction - Site Preparation/Stripping - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.9243	47.0375	31.1394	0.0574		1.8702	1.8702		1.7206	1.7206	0.0000	5,686.1224	5,686.1224	1.7990		5,731.0981
Total	3.9243	47.0375	31.1394	0.0574		1.8702	1.8702		1.7206	1.7206	0.0000	5,686.1224	5,686.1224	1.7990		5,731.0981

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0836	2.7717	0.4963	8.1500e-003	5.1622	0.0124	5.1746	0.5794	0.0119	0.5913		854.5624	854.5624	0.0282		855.2673
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1233	0.0906	0.8373	2.1500e-003	0.5778	1.5000e-003	0.5793	0.1464	1.3800e-003	0.1477		214.3714	214.3714	6.1700e-003		214.5258
Total	0.2068	2.8624	1.3336	0.0103	5.7400	0.0139	5.7539	0.7258	0.0133	0.7390		1,068.9338	1,068.9338	0.0344		1,069.7931

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

3.5 Building Construction - Existing Road Removal - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.7133	32.3577	21.9755	0.0402		1.2950	1.2950		1.1914	1.1914		3,981.2072	3,981.2072	1.2596		4,012.6975
Total	2.7133	32.3577	21.9755	0.0402		1.2950	1.2950		1.1914	1.1914		3,981.2072	3,981.2072	1.2596		4,012.6975

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.5452	17.5698	3.1429	0.0572	5.3879	0.0880	5.4759	1.3590	0.0842	1.4432		5,996.1213	5,996.1213	0.1270		5,999.2967
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3484	5.0000e-004	0.3489	0.0870	4.6000e-004	0.0875		71.4571	71.4571	2.0600e-003		71.5086
Total	0.5863	17.6000	3.4220	0.0579	5.7363	0.0885	5.8248	1.4461	0.0847	1.5307		6,067.5784	6,067.5784	0.1291		6,070.8053

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

3.5 Building Construction - Existing Road Removal - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.7133	32.3577	21.9755	0.0402		1.2950	1.2950		1.1914	1.1914	0.0000	3,981.207 2	3,981.207 2	1.2596		4,012.697 5
Total	2.7133	32.3577	21.9755	0.0402		1.2950	1.2950		1.1914	1.1914	0.0000	3,981.207 2	3,981.207 2	1.2596		4,012.697 5

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.5452	17.5698	3.1429	0.0572	5.3879	0.0880	5.4759	1.3590	0.0842	1.4432		5,996.121 3	5,996.121 3	0.1270		5,999.296 7
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3484	5.0000e-004	0.3489	0.0870	4.6000e-004	0.0875		71.4571	71.4571	2.0600e-003		71.5086
Total	0.5863	17.6000	3.4220	0.0579	5.7363	0.0885	5.8248	1.4461	0.0847	1.5307		6,067.578 4	6,067.578 4	0.1291		6,070.805 3

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

3.6 Building Construction - Trench Excavation and Forcemain Installation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0846	11.3854	10.3181	0.0154		0.6149	0.6149		0.5658	0.5658		1,527.5499	1,527.5499	0.4833		1,539.6324
Total	1.0846	11.3854	10.3181	0.0154		0.6149	0.6149		0.5658	0.5658		1,527.5499	1,527.5499	0.4833		1,539.6324

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2989	11.8003	2.1246	0.0145	64.7537	0.0191	64.7728	6.4532	0.0183	6.4715		1,514.6866	1,514.6866	0.3097		1,522.4296
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.2098	5.0000e-004	0.2103	0.0530	4.6000e-004	0.0535		71.4571	71.4571	2.0600e-003		71.5086
Total	0.3400	11.8305	2.4037	0.0152	64.9635	0.0196	64.9831	6.5062	0.0187	6.5250		1,586.1437	1,586.1437	0.3118		1,593.9381

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

3.6 Building Construction - Trench Excavation and Forcemain Installation - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0846	11.3854	10.3181	0.0154		0.6149	0.6149		0.5658	0.5658	0.0000	1,527.5499	1,527.5499	0.4833		1,539.6324
Total	1.0846	11.3854	10.3181	0.0154		0.6149	0.6149		0.5658	0.5658	0.0000	1,527.5499	1,527.5499	0.4833		1,539.6324

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2989	11.8003	2.1246	0.0145	64.7537	0.0191	64.7728	6.4532	0.0183	6.4715		1,514.6866	1,514.6866	0.3097		1,522.4296
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.2098	5.0000e-004	0.2103	0.0530	4.6000e-004	0.0535		71.4571	71.4571	2.0600e-003		71.5086
Total	0.3400	11.8305	2.4037	0.0152	64.9635	0.0196	64.9831	6.5062	0.0187	6.5250		1,586.1437	1,586.1437	0.3118		1,593.9381

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

3.7 Building Construction - New Road Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.2735	22.4519	15.5196	0.0223		1.2468	1.2468		1.1488	1.1488		2,182.4048	2,182.4048	0.6740		2,199.2548
Total	2.2735	22.4519	15.5196	0.0223		1.2468	1.2468		1.1488	1.1488		2,182.4048	2,182.4048	0.6740		2,199.2548

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2181	7.0279	1.2572	0.0229	1.8250	0.0352	1.8602	0.4626	0.0337	0.4963		2,398.4485	2,398.4485	0.0508		2,399.7187
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0822	0.0604	0.5582	1.4400e-003	0.5868	1.0000e-003	0.5878	0.1470	9.2000e-004	0.1480		142.9143	142.9143	4.1200e-003		143.0172
Total	0.3002	7.0883	1.8154	0.0243	2.4118	0.0362	2.4480	0.6096	0.0346	0.6442		2,541.3628	2,541.3628	0.0549		2,542.7359

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

3.7 Building Construction - New Road Construction - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.2735	22.4519	15.5196	0.0223		1.2468	1.2468		1.1488	1.1488	0.0000	2,182.4048	2,182.4048	0.6740		2,199.2548
Total	2.2735	22.4519	15.5196	0.0223		1.2468	1.2468		1.1488	1.1488	0.0000	2,182.4048	2,182.4048	0.6740		2,199.2548

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2181	7.0279	1.2572	0.0229	1.8250	0.0352	1.8602	0.4626	0.0337	0.4963		2,398.4485	2,398.4485	0.0508		2,399.7187
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0822	0.0604	0.5582	1.4400e-003	0.5868	1.0000e-003	0.5878	0.1470	9.2000e-004	0.1480		142.9143	142.9143	4.1200e-003		143.0172
Total	0.3002	7.0883	1.8154	0.0243	2.4118	0.0362	2.4480	0.6096	0.0346	0.6442		2,541.3628	2,541.3628	0.0549		2,542.7359

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

3.8 Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	8.2905	95.9633	67.4816	0.1188		4.0718	4.0718		3.7461	3.7461		11,761.3331	11,761.3331	3.7212		11,854.3622
Total	8.2905	95.9633	67.4816	0.1188		4.0718	4.0718		3.7461	3.7461		11,761.3331	11,761.3331	3.7212		11,854.3622

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	58.6670	1,910.9509	341.9628	5.9984	1,714.0310	9.1994	1,723.2304	259.2113	8.8013	268.0126		628,751.3523	628,751.3523	15.9058		629,148.9966
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1233	0.0906	0.8373	2.1500e-003	1.0975	1.5000e-003	1.0990	0.2739	1.3800e-003	0.2753		214.3714	214.3714	6.1700e-003		214.5258
Total	58.7903	1,911.0415	342.8000	6.0006	1,715.1285	9.2009	1,724.3293	259.4852	8.8027	268.2879		628,965.7237	628,965.7237	15.9119		629,363.5223

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

3.8 Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	8.2905	95.9633	67.4816	0.1188		4.0718	4.0718		3.7461	3.7461	0.0000	11,761.3331	11,761.3331	3.7212		11,854.3621
Total	8.2905	95.9633	67.4816	0.1188		4.0718	4.0718		3.7461	3.7461	0.0000	11,761.3331	11,761.3331	3.7212		11,854.3621

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	58.6670	1,910.9509	341.9628	5.9984	1,714.0310	9.1994	1,723.2304	259.2113	8.8013	268.0126		628,751.3523	628,751.3523	15.9058		629,148.9966
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1233	0.0906	0.8373	2.1500e-003	1.0975	1.5000e-003	1.0990	0.2739	1.3800e-003	0.2753		214.3714	214.3714	6.1700e-003		214.5258
Total	58.7903	1,911.0415	342.8000	6.0006	1,715.1285	9.2009	1,724.3293	259.4852	8.8027	268.2879		628,965.7237	628,965.7237	15.9119		629,363.5223

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

3.9 Building Construction - Offsite Borrow Material Transport - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	41.7955	1,347.0177	240.9570	4.3856	433.0967	6.7473	439.8440	109.1086	6.4554	115.5639		459,702.6291	459,702.6291	9.7382		459,946.0829
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3658	5.0000e-004	0.3663	0.0913	4.6000e-004	0.0918		71.4571	71.4571	2.0600e-003		71.5086
Total	41.8366	1,347.0479	241.2361	4.3863	433.4625	6.7478	440.2103	109.1999	6.4558	115.6557		459,774.0862	459,774.0862	9.7402		460,017.5915

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

3.9 Building Construction - Offsite Borrow Material Transport - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	41.7955	1,347.0177	240.9570	4.3856	433.0967	6.7473	439.8440	109.1086	6.4554	115.5639		459,702.6291	459,702.6291	9.7382		459,946.0829
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3658	5.0000e-004	0.3663	0.0913	4.6000e-004	0.0918		71.4571	71.4571	2.0600e-003		71.5086
Total	41.8366	1,347.0479	241.2361	4.3863	433.4625	6.7478	440.2103	109.1999	6.4558	115.6557		459,774.0862	459,774.0862	9.7402		460,017.5915

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

3.10 Building Construction - Cutoff Wall Installation (Open Trench Method) - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9964	22.7090	18.4626	0.0315		1.0001	1.0001		0.9201	0.9201		3,115.1829	3,115.1829	0.9856		3,139.8231
Total	1.9964	22.7090	18.4626	0.0315		1.0001	1.0001		0.9201	0.9201		3,115.1829	3,115.1829	0.9856		3,139.8231

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1825	6.2980	1.1292	0.0159	17.3899	0.0239	17.4138	1.9040	0.0228	1.9268		1,667.0802	1,667.0802	0.0886		1,669.2953
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3021	5.0000e-004	0.3026	0.0757	4.6000e-004	0.0761		71.4571	71.4571	2.0600e-003		71.5086
Total	0.2236	6.3282	1.4083	0.0166	17.6919	0.0244	17.7163	1.9797	0.0233	2.0030		1,738.5373	1,738.5373	0.0907		1,740.8039

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

3.10 Building Construction - Cutoff Wall Installation (Open Trench Method) - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9964	22.7090	18.4626	0.0315		1.0001	1.0001		0.9201	0.9201	0.0000	3,115.1829	3,115.1829	0.9856		3,139.8231
Total	1.9964	22.7090	18.4626	0.0315		1.0001	1.0001		0.9201	0.9201	0.0000	3,115.1829	3,115.1829	0.9856		3,139.8231

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1825	6.2980	1.1292	0.0159	17.3899	0.0239	17.4138	1.9040	0.0228	1.9268		1,667.0802	1,667.0802	0.0886		1,669.2953
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3021	5.0000e-004	0.3026	0.0757	4.6000e-004	0.0761		71.4571	71.4571	2.0600e-003		71.5086
Total	0.2236	6.3282	1.4083	0.0166	17.6919	0.0244	17.7163	1.9797	0.0233	2.0030		1,738.5373	1,738.5373	0.0907		1,740.8039

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

3.11 Building Construction - Erosion Protection Installation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4906	16.8138	11.4252	0.0219		0.7477	0.7477		0.6879	0.6879		2,171.4275	2,171.4275	0.6870		2,188.6029
Total	1.4906	16.8138	11.4252	0.0219		0.7477	0.7477		0.6879	0.6879		2,171.4275	2,171.4275	0.6870		2,188.6029

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	12.7204	409.9619	73.3347	1.3348	130.7958	2.0535	132.8493	32.9575	1.9647	34.9222		139,909.4958	139,909.4958	2.9638		139,983.5905
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0822	0.0604	0.5582	1.4400e-003	0.7258	1.0000e-003	0.7268	0.1812	9.2000e-004	0.1821		142.9143	142.9143	4.1200e-003		143.0172
Total	12.8025	410.0223	73.8929	1.3362	131.5216	2.0545	133.5762	33.1387	1.9656	35.1043		140,052.4101	140,052.4101	2.9679		140,126.6076

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

3.11 Building Construction - Erosion Protection Installation - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4906	16.8138	11.4252	0.0219		0.7477	0.7477		0.6879	0.6879	0.0000	2,171.4275	2,171.4275	0.6870		2,188.6029
Total	1.4906	16.8138	11.4252	0.0219		0.7477	0.7477		0.6879	0.6879	0.0000	2,171.4275	2,171.4275	0.6870		2,188.6029

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	12.7204	409.9619	73.3347	1.3348	130.7958	2.0535	132.8493	32.9575	1.9647	34.9222		139,909.4958	139,909.4958	2.9638		139,983.5905
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0822	0.0604	0.5582	1.4400e-003	0.7258	1.0000e-003	0.7268	0.1812	9.2000e-004	0.1821		142.9143	142.9143	4.1200e-003		143.0172
Total	12.8025	410.0223	73.8929	1.3362	131.5216	2.0545	133.5762	33.1387	1.9656	35.1043		140,052.4101	140,052.4101	2.9679		140,126.6076

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

3.12 Building Construction - Existing Pump Station Removal - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4940	5.0312	5.6509	8.4700e-003		0.2803	0.2803		0.2579	0.2579		838.8908	838.8908	0.2654		845.5262
Total	0.4940	5.0312	5.6509	8.4700e-003		0.2803	0.2803		0.2579	0.2579		838.8908	838.8908	0.2654		845.5262

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0413	1.3703	0.2454	4.0200e-003	0.2321	6.1200e-003	0.2383	0.0594	5.8600e-003	0.0653		421.2291	421.2291	0.0141		421.5804
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.2213	5.0000e-004	0.2218	0.0558	4.6000e-004	0.0563		71.4571	71.4571	2.0600e-003		71.5086
Total	0.0824	1.4005	0.5245	4.7400e-003	0.4535	6.6200e-003	0.4601	0.1153	6.3200e-003	0.1216		492.6863	492.6863	0.0161		493.0890

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

3.12 Building Construction - Existing Pump Station Removal - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4940	5.0312	5.6509	8.4700e-003		0.2803	0.2803		0.2579	0.2579	0.0000	838.8908	838.8908	0.2654		845.5262
Total	0.4940	5.0312	5.6509	8.4700e-003		0.2803	0.2803		0.2579	0.2579	0.0000	838.8908	838.8908	0.2654		845.5262

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0413	1.3703	0.2454	4.0200e-003	0.2321	6.1200e-003	0.2383	0.0594	5.8600e-003	0.0653		421.2291	421.2291	0.0141		421.5804
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.2213	5.0000e-004	0.2218	0.0558	4.6000e-004	0.0563		71.4571	71.4571	2.0600e-003		71.5086
Total	0.0824	1.4005	0.5245	4.7400e-003	0.4535	6.6200e-003	0.4601	0.1153	6.3200e-003	0.1216		492.6863	492.6863	0.0161		493.0890

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

3.13 Building Construction - Existing Levee Degrade - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	7.5571	91.0769	58.6309	0.1091		3.5958	3.5958		3.3081	3.3081		10,800.8678	10,800.8678	3.4173		10,886.2998
Total	7.5571	91.0769	58.6309	0.1091		3.5958	3.5958		3.3081	3.3081		10,800.8678	10,800.8678	3.4173		10,886.2998

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	18.7870	741.3720	133.4826	0.9109	4,135.4026	1.2042	4,136.6068	412.1248	1.1520	413.2768		95,411.8994	95,411.8994	19.4363		95,897.8068
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0822	0.0604	0.5582	1.4400e-003	0.7142	1.0000e-003	0.7152	0.1783	9.2000e-004	0.1792		142.9143	142.9143	4.1200e-003		143.0172
Total	18.8692	741.4324	134.0408	0.9123	4,136.1168	1.2052	4,137.3220	412.3031	1.1530	413.4561		95,554.8137	95,554.8137	19.4404		96,040.8240

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

3.13 Building Construction - Existing Levee Degrade - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	7.5571	91.0769	58.6309	0.1091		3.5958	3.5958		3.3081	3.3081	0.0000	10,800.8678	10,800.8678	3.4173		10,886.2998
Total	7.5571	91.0769	58.6309	0.1091		3.5958	3.5958		3.3081	3.3081	0.0000	10,800.8678	10,800.8678	3.4173		10,886.2998

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	18.7870	741.3720	133.4826	0.9109	4,135.4026	1.2042	4,136.6068	412.1248	1.1520	413.2768		95,411.8994	95,411.8994	19.4363		95,897.8068
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0822	0.0604	0.5582	1.4400e-003	0.7142	1.0000e-003	0.7152	0.1783	9.2000e-004	0.1792		142.9143	142.9143	4.1200e-003		143.0172
Total	18.8692	741.4324	134.0408	0.9123	4,136.1168	1.2052	4,137.3220	412.3031	1.1530	413.4561		95,554.8137	95,554.8137	19.4404		96,040.8240

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

3.14 Building Construction - Ecosystem Project Elements - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4492	40.1939	29.0502	0.0491		1.8399	1.8399		1.6927	1.6927		4,864.2287	4,864.2287	1.5390		4,902.7035
Total	3.4492	40.1939	29.0502	0.0491		1.8399	1.8399		1.6927	1.6927		4,864.2287	4,864.2287	1.5390		4,902.7035

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0182	0.5857	0.1048	1.9100e-003	36.7906	2.9300e-003	36.7935	3.6661	2.8100e-003	3.6689		199.8707	199.8707	4.2300e-003		199.9766
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0822	0.0604	0.5582	1.4400e-003	0.2653	1.0000e-003	0.2663	0.0681	9.2000e-004	0.0691		142.9143	142.9143	4.1200e-003		143.0172
Total	0.1004	0.6461	0.6630	3.3500e-003	37.0559	3.9300e-003	37.0598	3.7343	3.7300e-003	3.7380		342.7850	342.7850	8.3500e-003		342.9938

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

3.14 Building Construction - Ecosystem Project Elements - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4492	40.1939	29.0502	0.0491		1.8399	1.8399		1.6927	1.6927	0.0000	4,864.2287	4,864.2287	1.5390		4,902.7035
Total	3.4492	40.1939	29.0502	0.0491		1.8399	1.8399		1.6927	1.6927	0.0000	4,864.2287	4,864.2287	1.5390		4,902.7035

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0182	0.5857	0.1048	1.9100e-003	36.7906	2.9300e-003	36.7935	3.6661	2.8100e-003	3.6689		199.8707	199.8707	4.2300e-003		199.9766
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0822	0.0604	0.5582	1.4400e-003	0.2653	1.0000e-003	0.2663	0.0681	9.2000e-004	0.0691		142.9143	142.9143	4.1200e-003		143.0172
Total	0.1004	0.6461	0.6630	3.3500e-003	37.0559	3.9300e-003	37.0598	3.7343	3.7300e-003	3.7380		342.7850	342.7850	8.3500e-003		342.9938

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

3.15 Building Construction - Site Restoration and Demobilization - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0700	10.5722	7.0710	9.6000e-003		0.6175	0.6175		0.5681	0.5681		951.2497	951.2497	0.3010		958.7738
Total	1.0700	10.5722	7.0710	9.6000e-003		0.6175	0.6175		0.5681	0.5681		951.2497	951.2497	0.3010		958.7738

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2378	7.8239	1.4006	0.0237	2.0162	0.0362	2.0524	0.5095	0.0347	0.5442		2,484.3993	2,484.3993	0.0732		2,486.2280
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3252	5.0000e-004	0.3257	0.0813	4.6000e-004	0.0818		71.4571	71.4571	2.0600e-003		71.5086
Total	0.2789	7.8541	1.6797	0.0244	2.3414	0.0367	2.3781	0.5909	0.0351	0.6260		2,555.8564	2,555.8564	0.0752		2,557.7366

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

3.15 Building Construction - Site Restoration and Demobilization - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0700	10.5722	7.0710	9.6000e-003		0.6175	0.6175		0.5681	0.5681	0.0000	951.2497	951.2497	0.3010		958.7738
Total	1.0700	10.5722	7.0710	9.6000e-003		0.6175	0.6175		0.5681	0.5681	0.0000	951.2497	951.2497	0.3010		958.7738

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2378	7.8239	1.4006	0.0237	2.0162	0.0362	2.0524	0.5095	0.0347	0.5442		2,484.3993	2,484.3993	0.0732		2,486.2280
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3252	5.0000e-004	0.3257	0.0813	4.6000e-004	0.0818		71.4571	71.4571	2.0600e-003		71.5086
Total	0.2789	7.8541	1.6797	0.0244	2.3414	0.0367	2.3781	0.5909	0.0351	0.6260		2,555.8564	2,555.8564	0.0752		2,557.7366

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
User Defined Commercial	0.00	0.00	0.00		
User Defined Residential	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
User Defined Commercial	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
User Defined Residential	10.00	5.00	7.00	46.00	13.00	41.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.489634	0.040733	0.207886	0.122965	0.024655	0.005612	0.057735	0.040460	0.001009	0.001812	0.005896	0.000768	0.000835
User Defined Commercial	0.489634	0.040733	0.207886	0.122965	0.024655	0.005612	0.057735	0.040460	0.001009	0.001812	0.005896	0.000768	0.000835
User Defined Residential	0.489634	0.040733	0.207886	0.122965	0.024655	0.005612	0.057735	0.040460	0.001009	0.001812	0.005896	0.000768	0.000835

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Land Use	kBTU/yr	lb/day										lb/day						
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Land Use	kBTU/yr	lb/day										lb/day						
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment

Lower Elkhorn Basin Alt 2 Unfavorable - Year 2 - Yolo County, Winter

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

Lower Elkhorn Basin
Fugitive Dust Emissions
Alternative 2

$$EF_0 = k \times (0.0032) \times ((U/5)^{1.3}) / ((M/2)^{1.4})$$

Variable	Amount	Units	Source
EF (PM ₁₀)	0.103	lb/ton	CalEEMod Appendix A
EF (PM _{2.5})	0.016	lb/ton	CalEEMod Appendix A
K (PM ₁₀)	0.35	factor	CalEEMod Appendix A
K (PM _{2.5})	0.053	factor	CalEEMod Appendix A
U (mean wind speed)	7.83	miles/hr	CalEEMod Appendix A
M (moisture content)	12%	percent	CalEEMod Appendix A
Type 1 Levee Fill Density	1.3	tons/cy	Project Engineer
Type 2 Levee Fill Density	1.3	tons/cy	Project Engineer
Aggregate Base Density	1.8	tons/cy	Project Engineer
Excavated Soil density	1.3	tons/cy	Project Engineer

$$E \text{ (lbs)} = EF \text{ (lb/ton)} \times TP \text{ (tons)}$$

	Work Days	Total Materials Moved (cy)	Total Materials Moved (tons)	Daily Materials Moved (tons/day)	Unmitigated		Mitigated		
					Daily PM ₁₀ (lbs/day)	Daily PM _{2.5} (lbs/day)	Daily PM ₁₀ (lbs/day)	Daily PM _{2.5} (lbs/day)	
Year 2018									
Mobilization	12								
Site Preparation/Stripping	60	800	1040	17	3.57	0.55	0.89	0.14	
Structure Demolition	5								
Existing Road Removal	20	3,900	7,020	351	72.31	11.23	18.08	2.81	
Trench Excavation and Forcemain Installation	30	41,100	53,430	1,781	366.89	56.99	91.72	14.25	
New Road Construction	60								
New Levee/Seepage Berm & Soil Borrow Extraction	135	4,136,000	5,376,800	39,828	8204.60	1274.50	2051.15	318.63	
Offsite Borrow Material Transport	0								
Cutoff Wall Installation (Open Trench Method)	120	118,900	154,570	1,288	530.69	82.44	132.67	20.61	
Erosion Protection Installation	30								
Relief Well Installation	30								
Existing Pump Station Removal	10								
Pump Station Installation	30								
Existing Levee Degrade	60	1,533,000	1,992,900	33,215	6842.29	1062.88	1710.57	265.72	
Site Restoration and Demobilization	10								
Year 2019									
Mobilization	12								
Site Preparation/Stripping	20	630	819	41	8.44	1.31	2.11	0.33	
Structure Demolition	10								
Existing Road Removal	10	1,200	2,160	216	44.50	6.91	11.12	1.73	
Trench Excavation and Forcemain Installation	20	10,700	13,910	696	143.27	22.26	35.82	5.56	
New Road Construction	30								
New Levee/Seepage Berm & Soil Borrow Extraction	90	1,834,000	2,384,200	26,491	5457.17	847.72	1364.29	211.93	
Offsite Borrow Material Transport	90	1,022,000	1,328,600	14,762	6082.04	944.78	1520.51	236.20	
Cutoff Wall Installation (Open Trench Method)	60	92,300	119,990	2,000	823.93	127.99	205.98	32.00	
Erosion Protection Installation	15								
Relief Well Installation	0								
Existing Pump Station Removal	10								
Pump Station Installation	0								
Existing Levee Degrade	30	1,031,000	1,340,300	44,677	9203.39	1429.65	2300.85	357.41	
Site Restoration and Demobilization	10								

Basic Construction Measure	0.54	percent reduction
Enhanced Mitigation	0.75	percent reduction

**Table 3.2-5. Lower Elkhorn Basin Levee Setback Project
Alternative 2 - Reuse Construction Emissions (Unmitigated/Mitigated)**

Construction Phase	Pollutants (lb/day) ¹									
	ROG		NO _x		CO		PM10		PM2.5	
Year 2018 Construction										
Mobilization	0.3	0.3	4.3	4.3	1.7	1.7	1.4	1.4	0.4	0.4
Site Preparation / Stripping	4.5	4.5	54.9	44.5	35.1	35.1	11.4	6.1	3.2	2.5
Structure Demolition	0.9	0.9	15.8	14.7	7.8	7.8	5.8	4.1	1.5	1.2
Existing Road Removal	3.7	3.7	60.9	53.7	28.4	28.4	81.5	27.2	14.6	6.2
Trench Excavation and Forcemain Installation	2.1	2.1	43.6	41.0	16.9	16.9	532.7	175.2	74.2	23.2
New Road Construction	3.0	3.0	40.0	35.0	19.0	19.0	6.2	6.2	2.5	2.5
New Levee / Seepage Berm and Soil Borrow Extraction	34.0	34.0	869.1	831.8	259.0	259.0	11,953.3	3,930.8	1,655.7	513.6
Cutoff Wall Installation	2.4	2.4	29.2	24.1	20.7	20.7	542.1	139.2	84.7	22.3
Erosion Protection Installation	15.3	15.3	459.1	455.3	91.0	91.0	134.7	134.7	36.1	36.1
Relief Well Installation	1.9	1.9	22.4	17.9	16.7	16.7	1.0	1.0	0.9	0.9
Existing Pump Station Removal	0.6	0.6	7.2	6.1	6.3	6.3	0.8	0.8	0.4	0.4
Pump Station Installation	0.6	0.6	6.1	4.9	3.6	3.6	0.6	0.6	0.3	0.3
Existing Levee Degrade	23.7	23.7	676.6	656.5	178.9	178.9	9,982.7	3,283.6	1,380.1	426.7
Site Restoration and Demobilization	1.5	1.5	20.0	17.7	9.0	9.0	3.1	3.1	1.3	1.3
Year 2019 Construction										
Mobilization	0.2	0.2	4.0	4.0	1.5	1.5	1.4	1.4	0.4	0.4
Site Preparation / Stripping	4.1	4.1	49.9	40.5	32.5	32.5	16.1	7.2	3.8	2.5
Structure Demolition	0.8	0.8	14.4	13.4	7.6	7.6	8.0	4.6	1.8	1.3
Existing Road Removal	3.3	3.3	50.0	43.5	25.4	25.4	51.6	18.2	9.6	4.4
Trench Excavation and Forcemain Installation	1.4	1.4	23.2	20.9	12.7	12.7	208.9	69.0	29.4	9.4
New Road Construction	2.6	2.6	29.5	25.0	17.3	17.3	3.7	3.7	1.8	1.8
New Levee / Seepage Berm and Soil Borrow Extraction	19.6	19.6	537.8	518.6	147.9	147.9	7,994.3	2,635.8	1,104.7	342.8
Offsite Borrow Material Transport	41.8	41.8	1,347.0	1,347.0	241.2	241.2	6,522.3	1,960.7	1,060.4	351.9
Cutoff Wall Installation	2.2	2.2	29.0	24.5	19.9	19.9	842.6	216.0	130.9	34.0
Erosion Protection Installation	14.3	14.3	426.8	423.5	85.3	85.3	134.3	134.3	35.8	35.8
Existing Pump Station Removal	0.6	0.6	6.4	5.4	6.2	6.2	0.7	0.7	0.4	0.4
Existing Levee Degrade	26.4	26.4	832.5	814.3	192.7	192.7	13,344.3	4,374.1	1,846.4	568.1
Ecosystem Project Elements	3.5	3.5	40.8	32.8	29.7	29.7	38.9	20.5	5.4	3.6
Site Restoration and Demobilization	1.3	1.3	18.4	16.3	8.8	8.8	3.0	3.0	1.2	1.2
YSAQMD Threshold of Significance	10 tons/year		10 tons/year		None		80 lb/day		None	
Exceeds YSAQMD Threshold?	No		Yes		No		Yes		No	
2018 Annual Emissions² (tons/year)	4 / 4		92 / 88		28 / 28		1150 / 378		160 / 50	
2019 Annual Emissions² (tons/year)	4 / 4		104 / 102		23 / 23		883 / 281		130 / 41	
Conformity Threshold (tons/year)	25		25		100				100	
Exceeds Conformity Threshold?	No		Yes		No				No	
<p>Notes: lb/day = pounds per day; NO_x = oxides of nitrogen; PM10 = particulate matter with aerodynamic diameter less than 10 microns; PM2.5 = particulate matter with aerodynamic diameter less than 2.5 microns; ROG = reactive organic gases; YSAQMD = Yolo-Solano Air Quality Management District</p> <p>¹ All emissions are shown in units of pounds per day unless noted otherwise.</p> <p>² Annual emissions, in units of tons per year, were conservatively estimated by multiplying the maximum daily emissions by the number of work days per subphase or task. In reality, emissions would likely fluctuate and would not continue at the maximum level throughout each subphase or task.</p> <p>Source: Data modeled by GEI Consultants, Inc. in 2016</p>										

2018 Unmitigated Emissions

2018 CONSTRUCTION YEAR

Construction Phase	Work Days	Pollutants (lbs/day)					Total MT CO ₂ e
		ROG	No _x	CO	PM ₁₀	PM _{2.5}	
Mobilization		0.26	4.28	1.70	1.38	0.37	8.05
Construction Equipment							
Haul Trucks	12	0.13	4.18	0.75	0.72	0.20	6.85
On-Road Vehicles	12	0.14	0.10	0.95	0.67	0.17	1.21
Fugitive Dust							
Site Preparation/Stripping		4.46	54.92	35.11	11.40	3.20	188.14
Construction Equipment	60	4.23	51.86	33.63	2.08	1.91	158.55
Haul Trucks	60	0.09	2.96	0.54	5.18	0.59	23.55
On-Road Vehicles	60	0.14	0.10	0.95	0.58	0.15	6.04
Fugitive Dust					3.57	0.55	
Structure Demolition		0.91	15.84	7.80	5.78	1.48	9.46
Construction Equipment	5	0.55	5.75	5.69	0.33	0.30	1.95
Haul Trucks	5	0.31	10.05	1.79	2.81	0.75	7.34
On-Road Vehicles	5	0.05	0.03	0.32	0.33	0.08	0.17
Fugitive Dust	5				2.31	0.35	
Existing Road Removal		3.75	60.89	28.44	81.47	14.59	111.12
Construction Equipment	20	2.93	35.73	23.64	1.44	1.32	37.00
Haul Trucks	20	0.77	25.13	4.48	7.37	1.95	73.44
On-Road Vehicles	20	0.05	0.03	0.32	0.35	0.09	0.67
Fugitive Dust	20				72.31	11.23	
Trench Excavation and Forcemain Installation		2.06	43.56	16.85	532.74	74.17	75.29
Construction Equipment	30	1.18	12.56	10.37	0.69	0.63	21.29
Haul Trucks	30	0.83	30.96	6.16	164.88	16.48	52.99
On-Road Vehicles	30	0.05	0.03	0.32	0.28	0.07	1.01
Fugitive Dust	30				366.89	56.99	
New Road Construction		3.04	39.99	19.04	6.15	2.54	197.04
Construction Equipment	60	2.49	24.84	15.72	1.39	1.28	60.82
Haul Trucks	60	0.46	15.08	2.69	4.11	1.09	132.19
On-Road Vehicles	60	0.09	0.07	0.63	0.65	0.16	4.03
Fugitive Dust	60						
New Levee/Seepage Berm & Soil Borrow Extraction		34.04	869.14	259.03	11953.27	1655.70	6573.37
Construction Equipment	135	15.51	186.82	121.71	7.72	7.10	1272.73
Haul Trucks	135	18.31	682.15	135.74	3739.25	373.67	5277.99
On-Road Vehicles	135	0.23	0.17	1.58	1.70	0.43	22.65
Fugitive Dust	135				8204.60	1274.50	
Offsite Borrow Material Transport							
Construction Equipment							
Haul Trucks							
Support Vehicles							
On-Road Vehicles							
Fugitive Dust							
Cutoff Wall Installation (Open Trench Method)		2.38	29.22	20.68	542.06	84.66	234.26
Construction Equipment	120	2.18	25.34	19.34	1.13	1.04	173.73
Haul Trucks	120	0.11	3.81	0.71	9.79	1.06	52.48
Support Vehicles	120						
On-Road Vehicles	120	0.09	0.07	0.63	0.44	0.11	8.05
Fugitive Dust	120				530.69	82.44	
Erosion Protection Installation		15.27	459.10	90.96	134.68	36.12	1960.12
Construction Equipment	30	1.67	19.21	11.87	0.87	0.80	30.27
Haul Trucks	30	13.51	439.83	78.46	133.08	35.14	1927.84
On-Road Vehicles	30	0.09	0.07	0.63	0.73	0.18	2.01
Fugitive Dust	30						
Relief Well Installation		1.89	22.39	16.67	1.03	0.90	38.09
Construction Equipment	30	1.85	22.36	16.35	0.95	0.88	37.09
Haul Trucks	30						
On-Road Vehicles	30	0.05	0.03	0.32	0.08	0.02	1.01
Fugitive Dust	30						

2018 Unmitigated Emissions

2018 CONSTRUCTION YEAR

Existing Pump Station Removal		0.64	7.24	6.28	0.79	0.43	6.17
Construction Equipment	10	0.55	5.75	5.69	0.33	0.30	3.90
Haul Trucks	10	0.04	1.46	0.27	0.24	0.07	1.93
Support Vehicles	10						
On-Road Vehicles	10	0.05	0.03	0.32	0.22	0.06	0.34
Fugitive Dust	10						
Pump Station Installation		0.56	6.12	3.62	0.56	0.34	11.22
Construction Equipment	30	0.49	5.36	3.17	0.30	0.27	7.32
Haul Trucks	30	0.02	0.73	0.13	0.10	0.03	2.90
Support Vehicles	30						
On-Road Vehicles	30	0.05	0.03	0.32	0.17	0.04	1.01
Fugitive Dust	30						
Existing Levee Degrade		23.70	676.59	178.90	9982.65	1380.08	2284.53
Construction Equipment	60	8.15	100.25	63.59	3.98	3.66	301.18
Haul Trucks	60	15.46	576.26	114.68	3135.67	313.36	1979.33
Support Vehicles	60						
On-Road Vehicles	60	0.09	0.07	0.63	0.70	0.18	4.03
Fugitive Dust	60				6842.29	1062.88	
Ecosystem Project Elements	0						
Construction Equipment							
Haul Trucks							
Support Vehicles							
On-Road Vehicles							
Fugitive Dust							
Site Restoration and Demobilization		1.47	20.04	9.00	3.07	1.27	16.17
Construction Equipment	10	1.18	11.65	7.18	0.69	0.64	4.42
Haul Trucks	10	0.25	8.36	1.51	2.06	0.55	11.41
Support Vehicles	10						
On-Road Vehicles	10	0.05	0.03	0.32	0.33	0.08	0.34
Fugitive Dust	10						

Year 2018 Construction Maximum Overlaps

Month	Pollutants (lbs/day)				
	ROG	NO _x	CO	PM ₁₀	Direct PM _{2.5}
Month 1	43.42	1005.07	332.09	12053.31	1675.34
Month 2	40.56	967.61	310.99	12497.41	1733.07
Month 3	45.99	1036.82	350.72	13045.62	1820.27
Month 4	39.47	938.34	298.76	12501.48	1742.90
Month 5	42.56	974.10	325.32	12503.87	1744.57
Month 6	54.15	1385.97	390.96	12631.60	1777.72
Month 7	76.87	2054.09	558.58	22615.73	3157.83
Month 8	23.70	676.59	178.90	9982.65	1380.08
Month 9	23.70	676.59	178.90	9982.65	1380.08
Total Emissions (tons/year)	3.73	92.34	28.03	1150.27	160.25
Significance Threshold, Conformity (tons/year)	25.00	25.00	100.00		100.00
Significance Threshold, YSAQMD (lbs/day)				80.00	
Significance Threshold, YSAQMD (tons/year)	10.00	10.00		9.36	

2018 Mitigated Emissions
Construction Equipment 20% NOx Reduction, 75% PM Reduction, No Reduction for Haul Trucks

2018 CONSTRUCTION YEAR

Construction Phase	Work Days	Pollutants (lbs/day)					Total MT CO ₂ e
		ROG	No _x	CO	PM ₁₀	PM _{2.5}	
Mobilization		0.26	4.28	1.70	1.38	0.37	8.05
Construction Equipment							
Haul Trucks	12	0.13	4.18	0.75	0.72	0.20	6.85
On-Road Vehicles	12	0.14	0.10	0.95	0.67	0.17	1.21
Fugitive Dust							
Site Preparation/Stripping		4.46	44.55	35.11	6.14	2.50	188.14
Construction Equipment	60	4.23	41.49	33.63	2.08	1.91	158.55
Haul Trucks	60	0.09	2.96	0.54	2.59	0.30	23.55
On-Road Vehicles	60	0.14	0.10	0.95	0.58	0.15	6.04
Fugitive Dust					0.89	0.14	
Structure Demolition		0.91	14.69	7.80	4.05	1.22	9.46
Construction Equipment	5	0.55	4.60	5.69	0.33	0.30	1.95
Haul Trucks	5	0.31	10.05	1.79	2.81	0.75	7.34
On-Road Vehicles	5	0.05	0.03	0.32	0.33	0.08	0.17
Fugitive Dust	5				0.58	0.09	
Existing Road Removal		3.75	53.75	28.44	27.24	6.17	111.12
Construction Equipment	20	2.93	28.58	23.64	1.44	1.32	37.00
Haul Trucks	20	0.77	25.13	4.48	7.37	1.95	73.44
On-Road Vehicles	20	0.05	0.03	0.32	0.35	0.09	0.67
Fugitive Dust	20				18.08	2.81	
Trench Excavation and Forcemain Installation		2.06	41.05	16.85	175.16	23.22	75.29
Construction Equipment	30	1.18	10.05	10.37	0.69	0.63	21.29
Haul Trucks	30	0.83	30.96	6.16	82.47	8.26	52.99
On-Road Vehicles	30	0.05	0.03	0.32	0.28	0.07	1.01
Fugitive Dust	30				91.72	14.25	
New Road Construction		3.04	35.02	19.04	6.15	2.54	197.04
Construction Equipment	60	2.49	19.87	15.72	1.39	1.28	60.82
Haul Trucks	60	0.46	15.08	2.69	4.11	1.09	132.19
On-Road Vehicles	60	0.09	0.07	0.63	0.65	0.16	4.03
Fugitive Dust	60				0.00	0.00	
New Levee/Seepage Berm & Soil Borrow Extraction		34.04	831.77	259.03	3930.79	513.56	6573.37
Construction Equipment	135	15.51	149.45	121.71	7.72	7.10	1272.73
Haul Trucks	135	18.31	682.15	135.74	1870.22	187.41	5277.99
On-Road Vehicles	135	0.23	0.17	1.58	1.70	0.43	22.65
Fugitive Dust	135				2051.15	318.63	
Offsite Borrow Material Transport		0.00	0.00	0.00	0.00	0.00	0.00
Construction Equipment	0						
Haul Trucks							
Support Vehicles							
On-Road Vehicles							
Fugitive Dust							
Cutoff Wall Installation (Open Trench Method)		2.38	24.15	20.68	139.15	22.30	234.26
Construction Equipment	120	2.18	20.27	19.34	1.13	1.04	173.73
Haul Trucks	120	0.11	3.81	0.71	4.90	0.54	52.48
Support Vehicles	120						
On-Road Vehicles	120	0.09	0.07	0.63	0.44	0.11	8.05
Fugitive Dust	120				132.67	20.61	
Erosion Protection Installation		15.27	455.26	90.96	134.68	36.12	1960.12
Construction Equipment	30	1.67	15.36	11.87	0.87	0.80	30.27
Haul Trucks	30	13.51	439.83	78.46	133.08	35.14	1927.84
On-Road Vehicles	30	0.09	0.07	0.63	0.73	0.18	2.01
Fugitive Dust	30						
Relief Well Installation		1.89	17.92	16.67	1.03	0.90	38.09
Construction Equipment	30	1.85	17.89	16.35	0.95	0.88	37.09
Haul Trucks	30						
On-Road Vehicles	30	0.05	0.03	0.32	0.08	0.02	1.01
Fugitive Dust	30						
Existing Pump Station Removal		0.64	6.09	6.28	0.79	0.43	6.17
Construction Equipment	10	0.55	4.60	5.69	0.33	0.30	3.90
Haul Trucks	10	0.04	1.46	0.27	0.24	0.07	1.93
Support Vehicles	10						
On-Road Vehicles	10	0.05	0.03	0.32	0.22	0.06	0.34
Fugitive Dust	10						

2018 Mitigated Emissions
Construction Equipment 20% NOx Reduction, 75% PM Reduction, No Reduction for Haul Trucks

2018 CONSTRUCTION YEAR

Pump Station Installation		0.56	4.91	3.62	0.56	0.34	11.22
Construction Equipment	30	0.49	4.29	3.17	0.30	0.27	7.32
Haul Trucks	30	0.02	0.58	0.13	0.10	0.03	2.90
Support Vehicles	30						
On-Road Vehicles	30	0.05	0.03	0.32	0.17	0.04	1.01
Fugitive Dust	30						
Existing Levee Degrade		23.70	656.54	178.90	3283.60	426.72	2284.53
Construction Equipment	60	8.15	80.20	63.59	3.98	3.66	301.18
Haul Trucks	60	15.46	576.26	114.68	1568.34	157.16	1979.33
Support Vehicles	60						
On-Road Vehicles	60	0.09	0.07	0.63	0.70	0.18	4.03
Fugitive Dust	60				1710.57	265.72	
Ecosystem Project Elements		0.00	0.00	0.00	0.00	0.00	0.00
Construction Equipment	0						
Haul Trucks							
Support Vehicles							
On-Road Vehicles							
Fugitive Dust							
Site Restoration and Demobilization		1.47	17.71	9.00	3.07	1.27	16.17
Construction Equipment	10	1.18	9.32	7.18	0.69	0.64	4.42
Haul Trucks	10	0.25	8.36	1.51	2.06	0.55	11.41
Support Vehicles	10						
On-Road Vehicles	10	0.05	0.03	0.32	0.33	0.08	0.34
Fugitive Dust	10						

Year 2018 Construction Maximum Overlaps

Month	Pollutants (lbs/day)				
	ROG	NO _x	CO	PM ₁₀	Direct PM _{2.5}
Month 1	43.42	949.04	332.09	3969.61	523.82
Month 2	40.56	917.37	310.99	4112.09	539.28
Month 3	45.99	976.54	350.72	4257.40	564.12
Month 4	39.47	890.94	298.76	4076.10	538.41
Month 5	42.56	919.86	325.32	4078.49	540.07
Month 6	54.15	1334.01	390.96	4206.22	573.23
Month 7	76.87	1985.43	558.58	7491.30	999.98
Month 8	23.70	656.54	178.90	3283.60	426.72
Month 9	23.70	656.54	178.90	3283.60	426.72
Total Emissions (tons/year)	3.73	88.18	28.03	377.54	49.94
Significance Threshold, Conformity (tons/year)	25.00	25.00	100.00		100.00
Significance Threshold, YSAQMD (lbs/day)				80.00	
Significance Threshold, YSAQMD (tons/year)	10.00	10.00		9.36	
Emissions to Mitigate/Offset (tons/year)		88.18		368.18	
Approximate Mitigation Fee			\$1,610,217		

Current Cost of Offsets (Carl Moyer) = \$ 18,260.00

Additional PM2.5 Precursor Test

Less than 100 tons/yr

- NOX Yes
- ROG Yes
- SO2 Yes
- NH4 Yes

2019 Unmitigated Emissions

2019 CONSTRUCTION YEAR

Construction Phase	Work Days	Pollutants (lbs/day)					Total
		ROG	No _x	CO	PM ₁₀	PM _{2.5}	MT CO ₂ e
Mobilization		0.24	4.00	1.54	1.38	0.36	7.93
Construction Equipment							
Haul Trucks	12	0.12	3.91	0.70	0.71	0.20	6.77
On-Road Vehicles	12	0.12	0.09	0.84	0.67	0.17	1.17
Fugitive Dust							
Site Preparation/Stripping		4.13	49.90	32.47	16.06	3.77	61.70
Construction Equipment	20	3.92	47.04	31.14	1.87	1.72	51.99
Haul Trucks	20	0.08	2.77	0.50	5.17	0.59	7.76
On-Road Vehicles	20	0.12	0.09	0.84	0.58	0.15	1.95
Fugitive Dust					8.44	1.31	
Structure Demolition		0.83	14.43	7.61	8.03	1.78	18.67
Construction Equipment	10	0.49	5.03	5.65	0.28	0.26	3.84
Haul Trucks	10	0.29	9.37	1.68	2.80	0.74	14.51
On-Road Vehicles	10	0.04	0.03	0.28	0.33	0.08	0.32
Fugitive Dust	10				4.61	0.70	
Existing Road Removal		3.30	49.96	25.40	51.62	9.63	45.74
Construction Equipment	10	2.71	32.36	21.98	1.30	1.19	18.20
Haul Trucks	10	0.55	17.57	3.14	5.48	1.44	27.21
On-Road Vehicles	10	0.04	0.03	0.28	0.35	0.09	0.32
Fugitive Dust	10				44.50	6.91	
Trench Excavation and Forcmain Installation		1.42	23.22	12.72	208.87	29.35	28.43
Construction Equipment	20	1.08	11.39	10.32	0.61	0.57	13.97
Haul Trucks	20	0.30	11.80	2.12	64.77	6.47	13.81
On-Road Vehicles	20	0.04	0.03	0.28	0.21	0.05	0.65
Fugitive Dust	20				143.27	22.26	
New Road Construction		2.57	29.54	17.34	3.69	1.79	64.53
Construction Equipment	30	2.27	22.45	15.52	1.25	1.15	29.93
Haul Trucks	30	0.22	7.03	1.26	1.86	0.50	32.66
On-Road Vehicles	30	0.08	0.06	0.56	0.59	0.15	1.95
Fugitive Dust	30						
New Levee/Seepage Berm & Soil Borrow Extraction		19.62	537.84	147.86	7994.27	1104.67	2835.72
Construction Equipment	90	8.29	95.96	67.48	4.07	3.75	483.94
Haul Trucks	90	11.20	441.78	79.54	2532.00	252.95	2343.02
On-Road Vehicles	90	0.12	0.09	0.84	1.03	0.26	8.76
Fugitive Dust	90				5457.17	847.72	
Offsite Borrow Material Transport		41.84	1347.05	241.24	6522.25	1060.44	18779.63
Construction Equipment							
Haul Trucks	90	41.80	1347.02	240.96	439.84	115.56	18776.72
Support Vehicles							
On-Road Vehicles	90	0.04	0.03	0.28	0.37	0.09	2.92
Fugitive Dust					6082.04	944.78	
Cutoff Wall Installation (Open Trench Method)		2.22	29.04	19.87	842.65	130.91	132.83
Construction Equipment	60	2.00	22.71	18.46	1.00	0.92	85.45
Haul Trucks	60	0.18	6.30	1.13	17.41	1.93	45.43
Support Vehicles	60						
On-Road Vehicles	60	0.04	0.03	0.28	0.30	0.08	1.95
Fugitive Dust	60				823.93	127.99	
Erosion Protection Installation		14.29	426.84	85.32	134.32	35.79	968.31
Construction Equipment	15	1.49	16.81	11.43	0.75	0.69	14.89
Haul Trucks	15	12.72	409.96	73.33	132.85	34.92	952.44
On-Road Vehicles	15	0.08	0.06	0.56	0.73	0.18	0.97
Fugitive Dust	15						
Relief Well Installation		0.00	0.00	0.00	0.00	0.00	0.00
Construction Equipment	0						
Haul Trucks							
On-Road Vehicles							
Fugitive Dust							

2019 Unmitigated Emissions

2019 CONSTRUCTION YEAR

Existing Pump Station Removal		0.58	6.43	6.18	0.74	0.38	6.07
Construction Equipment	10	0.49	5.03	5.65	0.28	0.26	3.84
Haul Trucks	10	0.04	1.37	0.25	0.24	0.07	1.91
Support Vehicles	10						
On-Road Vehicles	10	0.04	0.03	0.28	0.22	0.06	0.32
Fugitive Dust	10						
Pump Station Installation		0.00	0.00	0.00	0.00	0.00	0.00
Construction Equipment	0						
Haul Trucks							
Support Vehicles							
On-Road Vehicles							
Fugitive Dust							
Existing Levee Degrade		26.43	832.51	192.67	13344.31	1846.42	1455.05
Construction Equipment	30	7.56	91.08	58.63	3.60	3.31	148.14
Haul Trucks	30	18.79	741.37	133.48	4136.61	413.28	1304.97
Support Vehicles	30						
On-Road Vehicles	30	0.08	0.06	0.56	0.72	0.18	1.95
Fugitive Dust	30				9203.39	1429.65	
Ecosystem Project Elements		3.55	40.84	29.71	38.90	5.43	71.38
Construction Equipment	30	3.45	40.19	29.05	1.84	1.69	66.72
Haul Trucks	30	0.02	0.59	0.10	36.79	3.67	2.72
Support Vehicles	30						
On-Road Vehicles	30	0.08	0.06	0.56	0.27	0.07	1.95
Fugitive Dust	30						
Site Restoration and Demobilization		1.35	18.43	8.75	3.00	1.19	15.95
Construction Equipment	10	1.07	10.57	7.07	0.62	0.57	4.35
Haul Trucks	10	0.24	7.82	1.40	2.05	0.54	11.28
Support Vehicles	10						
On-Road Vehicles	10	0.04	0.03	0.28	0.33	0.08	0.32
Fugitive Dust	10						

Year 2019 Construction Maximum Overlaps

Month	Pollutants (lbs/day)				
	ROG	NO _x	CO	PM ₁₀	Direct PM _{2.5}
Month 13	8.50	118.29	67.01	77.10	15.55
Month 14	65.45	1937.64	419.15	14729.08	2196.25
Month 15	64.03	1914.43	406.43	14520.21	2166.90
Month 16	63.67	1913.92	408.97	15359.16	2296.02
Month 17	64.25	1920.35	415.14	15359.90	2296.40
Month 18	77.97	2340.76	494.28	15493.49	2331.81
Month 19	45.62	1318.61	316.45	13520.53	1888.83
Month 20	26.43	832.51	192.67	13344.31	1846.42
Total Emissions (tons/year)	3.51	103.64	23.04	882.91	129.83
Significance Threshold, Conformity (tons/year)	25.00	25.00	100.00		100.00
Significance Threshold, YSAQMD (lbs/day)				80.00	
Significance Threshold, YSAQMD (tons/year)	10.00	10.00		8.32	

2019 Mitigated Emissions
Construction Equipment 20% NOx Reduction, 75% PM Reduction, No Reduction for Haul Trucks

2019 CONSTRUCTION YEAR

Construction Phase	Work Days	Pollutants (lbs/day)					Total MT CO _{2e}
		ROG	No _x	CO	PM ₁₀	PM _{2.5}	
Mobilization		0.24	4.00	1.54	1.38	0.36	7.93
Construction Equipment							
Haul Trucks	12	0.12	3.91	0.70	0.71	0.20	6.77
On-Road Vehicles	12	0.12	0.09	0.84	0.67	0.17	1.17
Fugitive Dust							
Site Preparation/Stripping		4.13	40.49	32.47	7.15	2.50	61.70
Construction Equipment	20	3.92	37.63	31.14	1.87	1.72	51.99
Haul Trucks	20	0.08	2.77	0.50	2.59	0.30	7.76
On-Road Vehicles	20	0.12	0.09	0.84	0.58	0.15	1.95
Fugitive Dust					2.11	0.33	
Structure Demolition		0.83	13.43	7.61	4.57	1.26	18.67
Construction Equipment	10	0.49	4.02	5.65	0.28	0.26	3.84
Haul Trucks	10	0.29	9.37	1.68	2.80	0.74	14.51
On-Road Vehicles	10	0.04	0.03	0.28	0.33	0.08	0.32
Fugitive Dust	10				1.15	0.17	
Existing Road Removal		3.30	43.49	25.40	18.24	4.45	45.74
Construction Equipment	10	2.71	25.89	21.98	1.30	1.19	18.20
Haul Trucks	10	0.55	17.57	3.14	5.48	1.44	27.21
On-Road Vehicles	10	0.04	0.03	0.28	0.35	0.09	0.32
Fugitive Dust	10				11.13	1.73	
Trench Excavation and Forcemain Installation		1.42	20.94	12.72	69.04	9.43	28.43
Construction Equipment	20	1.08	9.11	10.32	0.61	0.57	13.97
Haul Trucks	20	0.30	11.80	2.12	32.40	3.24	13.81
On-Road Vehicles	20	0.04	0.03	0.28	0.21	0.05	0.65
Fugitive Dust	20				35.82	5.57	
New Road Construction		2.57	25.05	17.34	3.69	1.79	64.53
Construction Equipment	30	2.27	17.96	15.52	1.25	1.15	29.93
Haul Trucks	30	0.22	7.03	1.26	1.86	0.50	32.66
On-Road Vehicles	30	0.08	0.06	0.56	0.59	0.15	1.95
Fugitive Dust	30						
New Levee/Seepage Berm & Soil Borrow Extraction		19.62	518.64	147.86	2635.75	342.75	2835.72
Construction Equipment	90	8.29	76.77	67.48	4.07	3.75	483.94
Haul Trucks	90	11.20	441.78	79.54	1266.36	126.82	2343.02
On-Road Vehicles	90	0.12	0.09	0.84	1.03	0.26	8.76
Fugitive Dust	90				1364.29	211.93	
Offsite Borrow Material Transport		41.84	1347.05	241.24	1960.72	351.85	18779.63
Construction Equipment							
Haul Trucks	90	41.80	1347.02	240.96	439.84	115.56	18776.72
On-Road Vehicles	90	0.04	0.03	0.28	0.37	0.09	2.92
Fugitive Dust					1520.51	236.20	
Cutoff Wall Installation (Open Trench Method)		2.22	24.50	19.87	216.00	33.97	132.83
Construction Equipment	60	2.00	18.17	18.46	1.00	0.92	85.45
Haul Trucks	60	0.18	6.30	1.13	8.72	0.97	45.43
On-Road Vehicles	60	0.04	0.03	0.28	0.30	0.08	1.95
Fugitive Dust	60				205.98	32.00	
Erosion Protection Installation		14.29	423.47	85.32	134.32	35.79	968.31
Construction Equipment	15	1.49	13.45	11.43	0.75	0.69	14.89
Haul Trucks	15	12.72	409.96	73.33	132.85	34.92	952.44
On-Road Vehicles	15	0.08	0.06	0.56	0.73	0.18	0.97
Fugitive Dust	15						
Relief Well Installation		0.00	0.00	0.00	0.00	0.00	0.00
Construction Equipment	0						
Haul Trucks							
On-Road Vehicles							
Fugitive Dust							
Existing Pump Station Removal		0.58	5.43	6.18	0.74	0.38	6.07
Construction Equipment	10	0.49	4.02	5.65	0.28	0.26	3.84
Haul Trucks	10	0.04	1.37	0.25	0.24	0.07	1.91
On-Road Vehicles	10	0.04	0.03	0.28	0.22	0.06	0.32
Fugitive Dust	10						

2019 Mitigated Emissions
Construction Equipment 20% NOx Reduction, 75% PM Reduction, No Reduction for Haul Trucks

2019 CONSTRUCTION YEAR

Pump Station Installation		0.00	0.00	0.00	0.00	0.00	0.00
Construction Equipment	0						
Haul Trucks							
On-Road Vehicles							
Fugitive Dust							
Existing Levee Degrade		26.43	814.29	192.67	4374.06	568.12	1455.05
Construction Equipment	30	7.56	72.86	58.63	3.60	3.31	148.14
Haul Trucks	30	18.79	741.37	133.48	2068.91	207.21	1304.97
On-Road Vehicles	30	0.08	0.06	0.56	0.72	0.18	1.95
Fugitive Dust	30				2300.85	357.41	
Ecosystem Project Elements		3.55	32.80	29.71	20.50	3.60	71.38
Construction Equipment	30	3.45	32.16	29.05	1.84	1.69	66.72
Haul Trucks	30	0.02	0.59	0.10	18.40	1.84	2.72
On-Road Vehicles	30	0.08	0.06	0.56	0.27	0.07	1.95
Fugitive Dust	30						
Site Restoration and Demobilization		1.35	16.31	8.75	3.00	1.19	15.95
Construction Equipment	10	1.07	8.46	7.07	0.62	0.57	4.35
Haul Trucks	10	0.24	7.82	1.40	2.05	0.54	11.28
On-Road Vehicles	10	0.04	0.03	0.28	0.33	0.08	0.32
Fugitive Dust	10						

Year 2019 Construction Maximum Overlaps

Month	Pollutants (lbs/day)					
	ROG	NO _x	CO	PM ₁₀	Direct PM _{2.5}	
Month 13	8.50	101.41	67.01	31.35	8.57	
Month 14	65.45	1911.68	419.15	4669.21	705.83	
Month 15	64.03	1890.74	406.43	4600.17	696.40	
Month 16	63.67	1890.19	408.97	4812.48	728.57	
Month 17	64.25	1895.61	415.14	4813.22	728.95	
Month 18	77.97	2313.66	494.28	4946.80	764.37	
Month 19	45.62	1286.88	316.45	4531.89	608.70	
Month 20	26.43	814.29	192.67	4374.06	568.12	
Total Emissions (tons/year)	3.51	101.98	23.04	281.21	41.31	
Significance Threshold, Conformity (tons/year)	25.00	25.00	100.00		100.00	
Significance Threshold, YSAQMD (lbs/day)				80.00		
Significance Threshold, YSAQMD (tons/year)	10.00	10.00		8.32		
Emissions to Mitigate/Offset (tons/year)		101.98		272.89		
Approximate Mitigation Fee		\$1,862,170				

Current Cost of Offsets (Carl Moyer) =

\$ 18,260.00

Additional PM2.5 Precursor Test

Less than 100 tons/yr

NOX No

ROG Yes

SO2 Yes

NH4 Yes

**Lower Elkhorn Basin
Assumed Construction Schedule
Alternative 2 and 3**

apr may jun jul aug sept oct nov dec
Year 1 (2018)

apr may jun jul aug sept oct nov
Year 2 (2019)

Construction Activity	1	2	3	4	5	6	7	8	9	Work Days	13	14	15	16	17	18	19	20	Work Days	
Mobilization	0.5									12	0.5								12	
Site Preparation/Stripping	1	1	0.5							60	1								20	
Structure Demolition	0.2									5	0.5								10	
Existing Road Removal	1									20	0.5								10	
Trench Excavation and Forcemain Installation		1	0.3							30		1							20	
New Road Construction			0.5	1	0.5					60		0.2	1						30	
New Levee/Seepage Berm & Soil Borrow Extraction	1	1	1	1	1	1	0.5			135		1	1	1	1	0.5			90	
Offsite Borrow Material Transport										0		1	1	1	1	0.5			90	
Cutoff Wall Installation (Open Trench Method)			1	1	1	1	0.5			120				0.5	1	1			60	
Erosion Protection Installation						0.7	0.5			30						0.2	0.5		15	
Relief Well Installation					1	0.2				30									0	
Existing Pump Station Removal					0.5					10					0.5				10	
Pump Station Installation					0.5	0.7				30									0	
Existing Levee Degrade							0.5	1	0.5	60								0.5	0.7	30
Ecosystem Project Elements										0								1		30
Site Restoration and Demobilization							0.5			10								0.5		10

Construction Phase/Vehicle Type	EMFAC2011 Class	Workers	Work Days	Daily Haul Trips	Daily One Way Trips	One-Way Trip Distance (miles)	Workers	Work Days	Daily Haul Trips	Daily One Way Trips	One-Way Trip Distance (miles)
Mobilization											
Equipment/supply Transport Trucks	HDT		12	5	10	30		12	5	10	30
Highway Dump Truck	HDT										
Water Truck	HDT										
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT										
Lubricating/Fuel Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT	15	12		30	10	15	12		30	10
Site Preparation/Stripping											
Equipment/supply Transport Trucks	HDT										
Highway Dump Truck	HDT		60	2	4	50		20	2	4	50
Highway Dump Truck	HDT		60	2	4	0.8		20	2	4	0.8
Water Truck	HDT										
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT										
Lubricating/Fuel Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT	15	60		30	10	15	20		30	10
Structure Demolition											
Equipment/supply Transport Trucks	HDT										
Highway Dump Truck	HDT		5	8	16	50		10	8	16	50
Water Truck	HDT										
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT										
Lubricating/Fuel Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT	5	5		10	10	5	10		10	10
Existing Road Removal											
Equipment/supply Transport Trucks	HDT										
Highway Dump Truck	HDT		20	20	40	50		10	15	30	50
Water Truck	HDT										
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT										
Lubricating/Fuel Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT	5	20		10	10	5	10		10	10
Trench Excavation and Formcain Installation											
Equipment/supply Transport Trucks	HDT										
Highway Dump Truck	HDT		30	140	280	0.8		20	55	110	0.8
Water Truck	HDT										
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT										
Lubricating/Fuel Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT	5	30		10	10	5	20		10	10
New Road Construction											
Equipment/supply Transport Trucks	HDT										
Highway Dump Truck	HDT										
Water Truck	HDT										
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT		60	12	24	50		30	6	12	50
Lubricating/Fuel Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT	10	60		20	10	10	30		20	10
New Levee/Seepage Berm & Soil Borrow Extraction											
Equipment/supply Transport Trucks	HDT										
Onsite Dump Truck	HDT		135	3075	6150	0.8		90	2050	4100	0.8
Offsite Dump Truck	HDT		135	0	0	50		90	0	0	50
Water Truck	HDT		135		2	50		90		2	50
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT										
Lubricating/Fuel Truck	T7 Utility		135		2	30		90		2	30
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT	25	135		50	10	15	90		30	10
Offsite Borrow Material Transport											
Equipment/supply Transport Trucks	HDT										
Highway Dump Truck	HDT							90	1150	2300	50
Water Truck	HDT										
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT										
Lubricating/Fuel Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT						5	90		10	10

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

Lower Elkhorn Basin Alt 2 Reuse - Year 1
Yolo County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Commercial	0.00	User Defined Unit	0.00	0.00	0
Other Asphalt Surfaces	0.00	Acre	0.00	0.00	0
User Defined Residential	0.00	Dwelling Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	6.8	Precipitation Freq (Days)	54
Climate Zone	2			Operational Year	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblFleetMix	FleetMixLandUseSubType	User Defined Commercial	Other Asphalt Surfaces
tblFleetMix	FleetMixLandUseSubType	Other Asphalt Surfaces	User Defined Commercial
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	187.00	162.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	187.00	162.00
tblOffRoadEquipment	HorsePower	80.00	84.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	158.00	157.00

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

tbloffRoadEquipment	HorsePower	367.00	356.00
tbloffRoadEquipment	HorsePower	97.00	75.00
tbloffRoadEquipment	HorsePower	231.00	208.00
tbloffRoadEquipment	HorsePower	158.00	157.00
tbloffRoadEquipment	HorsePower	221.00	82.00
tbloffRoadEquipment	HorsePower	158.00	157.00
tbloffRoadEquipment	HorsePower	367.00	356.00
tbloffRoadEquipment	HorsePower	158.00	157.00
tbloffRoadEquipment	HorsePower	97.00	75.00
tbloffRoadEquipment	HorsePower	231.00	208.00
tbloffRoadEquipment	HorsePower	97.00	75.00
tbloffRoadEquipment	HorsePower	158.00	157.00
tbloffRoadEquipment	HorsePower	367.00	356.00
tbloffRoadEquipment	HorsePower	187.00	162.00
tbloffRoadEquipment	HorsePower	80.00	84.00
tbloffRoadEquipment	LoadFactor	0.48	0.50
tbloffRoadEquipment	LoadFactor	0.48	0.50
tbloffRoadEquipment	LoadFactor	0.48	0.50
tbloffRoadEquipment	LoadFactor	0.48	0.50
tbloffRoadEquipment	LoadFactor	0.48	0.50
tbloffRoadEquipment	LoadFactor	0.48	0.50
tbloffRoadEquipment	LoadFactor	0.48	0.50
tbloffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tbloffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tbloffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tbloffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tbloffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	6.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOnRoadDust	AverageVehicleWeight	2.40	11.40
tblOnRoadDust	AverageVehicleWeight	2.40	7.50
tblOnRoadDust	AverageVehicleWeight	2.40	5.80
tblOnRoadDust	AverageVehicleWeight	2.40	12.00
tblOnRoadDust	AverageVehicleWeight	2.40	11.10
tblOnRoadDust	AverageVehicleWeight	2.40	7.50
tblOnRoadDust	AverageVehicleWeight	2.40	6.50
tblOnRoadDust	AverageVehicleWeight	2.40	12.00
tblOnRoadDust	AverageVehicleWeight	2.40	9.40
tblOnRoadDust	AverageVehicleWeight	2.40	11.10
tblOnRoadDust	AverageVehicleWeight	2.40	11.60
tblOnRoadDust	AverageVehicleWeight	2.40	7.50
tblOnRoadDust	AverageVehicleWeight	2.40	12.40
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	0.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	98.40

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	0.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	0.00
tblOnRoadDust	HaulingPercentPave	94.00	96.90
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	MeanVehicleSpeed	40.00	10.00
tblOnRoadDust	MeanVehicleSpeed	40.00	39.50
tblOnRoadDust	MeanVehicleSpeed	40.00	10.00
tblOnRoadDust	MeanVehicleSpeed	40.00	10.00
tblOnRoadDust	MeanVehicleSpeed	40.00	39.10
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblProjectCharacteristics	OperationalYear	2018	2020
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripNumber	9.00	16.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	HaulingTripNumber	0.00	5,200.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	HaulingTripNumber	0.00	10.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	50.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblVehicleTrips	CC_TL	8.00	5.00
tblVehicleTrips	CC_TL	8.00	5.00
tblVehicleTrips	CNW_TL	9.00	7.00
tblVehicleTrips	CNW_TL	9.00	7.00
tblVehicleTrips	CW_TL	15.00	10.00
tblVehicleTrips	CW_TL	15.00	10.00
tblVehicleTrips	HO_TL	9.00	7.00
tblVehicleTrips	HS_TL	8.00	5.00
tblVehicleTrips	HW_TL	15.00	10.00

2.0 Emissions Summary

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition - Structure Demolition	Demolition	1/2/2018	1/2/2018	5	1	
2	Building Construction - Mobilization	Building Construction	1/3/2018	1/3/2018	5	1	
3	Building Construction - Site Preparation/Stripping	Building Construction	1/4/2018	1/4/2018	5	1	
4	Building Construction - Existing Road Removal	Building Construction	1/5/2018	1/5/2018	5	1	
5	Building Construction - Trench Excavation and Forcemain Installation	Building Construction	1/6/2018	1/8/2018	5	1	
6	Building Construction - New Road Construction	Building Construction	1/9/2018	1/9/2018	5	1	
7	Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Building Construction	1/10/2018	1/10/2018	5	1	
8	Building Construction - Cutoff Wall Installation (Open Trench Method)	Building Construction	1/11/2018	1/11/2018	5	1	
9	Building Construction - Erosion Protection Installation	Building Construction	1/12/2018	1/12/2018	5	1	
10	Building Construction - Relief Well Installation	Building Construction	1/13/2018	1/15/2018	5	1	
11	Building Construction - Existing Pump Station Removal	Building Construction	1/16/2018	1/16/2018	5	1	
12	Building Construction - Pump Station Installation	Building Construction	1/17/2018	1/17/2018	5	1	
13	Building Construction - Existing Levee Degrade	Building Construction	1/18/2018	1/18/2018	5	1	
14	Building Construction - Site Restoration and Demobilization	Building Construction	1/19/2018	1/19/2018	5	1	

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition - Structure Demolition	Excavators	1	9.00	157	0.38
Demolition - Structure Demolition	Rubber Tired Dozer	1	9.00	358	0.40
Demolition - Structure Demolition	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Mobilization	Excavators	0	0.00	157	0.38
Building Construction - Site Preparation/Stripping	Excavators	1	9.00	157	0.38
Building Construction - Site Preparation/Stripping	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Site Preparation/Stripping	Scrapers	3	9.00	356	0.50
Building Construction - Existing Road Removal	Excavators	1	9.00	157	0.38
Building Construction - Existing Road Removal	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Existing Road Removal	Scrapers	1	9.00	356	0.50
Building Construction - Existing Road Removal	Scrapers	1	9.00	356	0.50
Building Construction - Trench Excavation and Forcemain Installation	Excavators	1	9.00	157	0.38
Building Construction - Trench Excavation and Forcemain Installation	Other Construction Equipment	1	9.00	172	0.42
Building Construction - Trench Excavation and Forcemain Installation	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - New Road Construction	Graders	2	9.00	162	0.41
Building Construction - New Road Construction	Pavers	1	9.00	130	0.42

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

Building Construction - New Road Construction	Plate Compactors	2	9.00	8	0.43
Building Construction - New Road Construction	Rollers	1	9.00	80	0.38
Building Construction - New Road Construction	Rubber Tired Dozer	2	9.00	358	0.40
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Excavators	4	9.00	157	0.38
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Graders	1	9.00	162	0.41
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Rollers	1	9.00	84	0.38
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Rubber Tired Dozer	2	9.00	358	0.40
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Scrapers	10	9.00	356	0.50
Building Construction - Cutoff Wall Installation (Open Trench Method)	Excavators	1	9.00	157	0.38
Building Construction - Cutoff Wall Installation (Open Trench Method)	Excavators	1	9.00	157	0.38
Building Construction - Cutoff Wall Installation (Open Trench Method)	Rough Terrain Forklift	1	4.00	100	0.40
Building Construction - Cutoff Wall Installation (Open Trench Method)	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Cutoff Wall Installation (Open Trench Method)	Scrapers	1	9.00	356	0.50
Building Construction - Cutoff Wall Installation (Open Trench Method)	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Erosion Protection Installation	Cranes	4	4.00	208	0.29
Building Construction - Erosion Protection Installation	Excavators	2	9.00	157	0.38
Building Construction - Erosion Protection Installation	Rubber Tired Dozer	2	9.00	358	0.40
Building Construction - Relief Well Installation	Bore/Drill Rigs	1	9.00	82	0.50
Building Construction - Relief Well Installation	Excavators	1	9.00	157	0.38
Building Construction - Relief Well Installation	Scrapers	1	9.00	356	0.50

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

Building Construction - Existing Pump Station Removal	Excavators	1	9.00	157	0.38
Building Construction - Existing Pump Station Removal	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Existing Pump Station Removal	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Pump Station Installation	Cranes	1	4.00	208	0.29
Building Construction - Pump Station Installation	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Existing Levee Degrade	Excavators	1	9.00	157	0.38
Building Construction - Existing Levee Degrade	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Existing Levee Degrade	Scrapers	6	9.00	356	0.50
Building Construction - Site Restoration and Demobilization	Graders	1	9.00	162	0.41
Building Construction - Site Restoration and Demobilization	Rollers	1	9.00	84	0.38

Trips and VMT

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition - Structure Demolition	3	10.00	0.00	16.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Mobilization	0	30.00	0.00	10.00	10.00	7.00	30.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Site Preparation/Strip	5	30.00	0.00	4.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Site Preparation/Strip	5	0.00	0.00	4.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Road Remov	4	10.00	0.00	40.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Trench Excavation an	3	10.00	0.00	280.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - New Road Construction	8	20.00	0.00	24.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	18	50.00	0.00	6,150.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	18	0.00	0.00	2.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	18	0.00	0.00	2.00	10.00	7.00	30.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Cutoff Wall Installation	6	20.00	0.00	8.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - Cutoff Wall Installation	6	0.00	0.00	8.00	10.00	7.00	25.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Erosion Protection Inst	8	20.00	0.00	700.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Relief Well Installation	3	10.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Pump Station	3	10.00	0.00	4.00	10.00	7.00	25.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Pump Station Installati	2	10.00	0.00	2.00	10.00	7.00	25.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Levee Degrad	8	20.00	0.00	5,200.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Levee Degrad	8	0.00	0.00	2.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Site Restoration and D	2	10.00	0.00	20.00	10.00	7.00	30.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

3.2 Demolition - Structure Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3061	0.0000	2.3061	0.3492	0.0000	0.3492			0.0000			0.0000
Off-Road	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035		852.9003	852.9003	0.2655		859.5383
Total	0.5547	5.7483	5.6944	8.4800e-003	2.3061	0.3299	2.6360	0.3492	0.3035	0.6527		852.9003	852.9003	0.2655		859.5383

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3088	10.0533	1.7934	0.0309	2.7577	0.0521	2.8099	0.6964	0.0499	0.7463		3,236.4188	3,236.4188	0.0706		3,238.1834
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3339	5.2000e-004	0.3344	0.0835	4.8000e-004	0.0839		73.9101	73.9101	2.3600e-003		73.9690
Total	0.3541	10.0877	2.1101	0.0316	3.0917	0.0527	3.1443	0.7799	0.0504	0.8302		3,310.3289	3,310.3289	0.0730		3,312.1524

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

3.2 Demolition - Structure Demolition - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3061	0.0000	2.3061	0.3492	0.0000	0.3492			0.0000			0.0000
Off-Road	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035	0.0000	852.9003	852.9003	0.2655		859.5383
Total	0.5547	5.7483	5.6944	8.4800e-003	2.3061	0.3299	2.6360	0.3492	0.3035	0.6527	0.0000	852.9003	852.9003	0.2655		859.5383

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3088	10.0533	1.7934	0.0309	2.7577	0.0521	2.8099	0.6964	0.0499	0.7463		3,236.4188	3,236.4188	0.0706		3,238.1834
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3339	5.2000e-004	0.3344	0.0835	4.8000e-004	0.0839		73.9101	73.9101	2.3600e-003		73.9690
Total	0.3541	10.0877	2.1101	0.0316	3.0917	0.0527	3.1443	0.7799	0.0504	0.8302		3,310.3289	3,310.3289	0.0730		3,312.1524

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

3.3 Building Construction - Mobilization - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1266	4.1786	0.7547	0.0120	0.6964	0.0201	0.7166	0.1783	0.0193	0.1975		1,256.748 3	1,256.748 3	0.0378		1,257.692 7
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1361	0.1034	0.9499	2.2300e-003	0.6639	1.5500e-003	0.6655	0.1675	1.4300e-003	0.1689		221.7303	221.7303	7.0700e-003		221.9070
Total	0.2626	4.2820	1.7046	0.0142	1.3604	0.0217	1.3820	0.3458	0.0207	0.3664		1,478.478 6	1,478.478 6	0.0449		1,479.599 7

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

3.3 Building Construction - Mobilization - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1266	4.1786	0.7547	0.0120	0.6964	0.0201	0.7166	0.1783	0.0193	0.1975		1,256.748 3	1,256.748 3	0.0378		1,257.692 7
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1361	0.1034	0.9499	2.2300e-003	0.6639	1.5500e-003	0.6655	0.1675	1.4300e-003	0.1689		221.7303	221.7303	7.0700e-003		221.9070
Total	0.2626	4.2820	1.7046	0.0142	1.3604	0.0217	1.3820	0.3458	0.0207	0.3664		1,478.478 6	1,478.478 6	0.0449		1,479.599 7

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

3.4 Building Construction - Site Preparation/Stripping - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.2345	51.8576	33.6268	0.0574		2.0752	2.0752		1.9092	1.9092		5,780.7820	5,780.7820	1.7996		5,825.7729
Total	4.2345	51.8576	33.6268	0.0574		2.0752	2.0752		1.9092	1.9092		5,780.7820	5,780.7820	1.7996		5,825.7729

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0891	2.9556	0.5364	8.2500e-003	5.1622	0.0138	5.1760	0.5794	0.0132	0.5927		864.4521	864.4521	0.0291		865.1785
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1361	0.1034	0.9499	2.2300e-003	0.5778	1.5500e-003	0.5794	0.1464	1.4300e-003	0.1478		221.7303	221.7303	7.0700e-003		221.9070
Total	0.2251	3.0591	1.4863	0.0105	5.7400	0.0154	5.7554	0.7258	0.0146	0.7404		1,086.1825	1,086.1825	0.0361		1,087.0855

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

3.4 Building Construction - Site Preparation/Stripping - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.2345	51.8576	33.6268	0.0574		2.0752	2.0752		1.9092	1.9092	0.0000	5,780.7820	5,780.7820	1.7996		5,825.7729
Total	4.2345	51.8576	33.6268	0.0574		2.0752	2.0752		1.9092	1.9092	0.0000	5,780.7820	5,780.7820	1.7996		5,825.7729

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0891	2.9556	0.5364	8.2500e-003	5.1622	0.0138	5.1760	0.5794	0.0132	0.5927		864.4521	864.4521	0.0291		865.1785
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1361	0.1034	0.9499	2.2300e-003	0.5778	1.5500e-003	0.5794	0.1464	1.4300e-003	0.1478		221.7303	221.7303	7.0700e-003		221.9070
Total	0.2251	3.0591	1.4863	0.0105	5.7400	0.0154	5.7554	0.7258	0.0146	0.7404		1,086.1825	1,086.1825	0.0361		1,087.0855

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

3.5 Building Construction - Existing Road Removal - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242		4,047.4659	4,047.4659	1.2600		4,078.9667
Total	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242		4,047.4659	4,047.4659	1.2600		4,078.9667

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.7719	25.1331	4.4835	0.0772	7.2423	0.1303	7.3727	1.8265	0.1247	1.9512		8,091.0470	8,091.0470	0.1765		8,095.4586
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3513	5.2000e-004	0.3518	0.0877	4.8000e-004	0.0882		73.9101	73.9101	2.3600e-003		73.9690
Total	0.8172	25.1676	4.8002	0.0779	7.5936	0.1309	7.7245	1.9142	0.1252	2.0394		8,164.9571	8,164.9571	0.1788		8,169.4276

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

3.5 Building Construction - Existing Road Removal - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242	0.0000	4,047.4659	4,047.4659	1.2600		4,078.9667
Total	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242	0.0000	4,047.4659	4,047.4659	1.2600		4,078.9667

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.7719	25.1331	4.4835	0.0772	7.2423	0.1303	7.3727	1.8265	0.1247	1.9512		8,091.0470	8,091.0470	0.1765		8,095.4586
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3513	5.2000e-004	0.3518	0.0877	4.8000e-004	0.0882		73.9101	73.9101	2.3600e-003		73.9690
Total	0.8172	25.1676	4.8002	0.0779	7.5936	0.1309	7.7245	1.9142	0.1252	2.0394		8,164.9571	8,164.9571	0.1788		8,169.4276

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

3.6 Building Construction - Trench Excavation and Forcemain Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1803	12.5639	10.3721	0.0154		0.6885	0.6885		0.6334	0.6334		1,552.3585	1,552.3585	0.4833		1,564.4402
Total	1.1803	12.5639	10.3721	0.0154		0.6885	0.6885		0.6334	0.6334		1,552.3585	1,552.3585	0.4833		1,564.4402

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.8306	30.9620	6.1629	0.0370	164.8276	0.0540	164.8816	16.4264	0.0517	16.4781		3,874.3191	3,874.3191	0.7987		3,894.2867
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.2760	5.2000e-004	0.2766	0.0693	4.8000e-004	0.0697		73.9101	73.9101	2.3600e-003		73.9690
Total	0.8760	30.9965	6.4796	0.0377	165.1036	0.0545	165.1582	16.4956	0.0522	16.5478		3,948.2292	3,948.2292	0.8011		3,968.2557

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

3.6 Building Construction - Trench Excavation and Forcemain Installation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1803	12.5639	10.3721	0.0154		0.6885	0.6885		0.6334	0.6334	0.0000	1,552.3585	1,552.3585	0.4833		1,564.4402
Total	1.1803	12.5639	10.3721	0.0154		0.6885	0.6885		0.6334	0.6334	0.0000	1,552.3585	1,552.3585	0.4833		1,564.4402

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.8306	30.9620	6.1629	0.0370	164.8276	0.0540	164.8816	16.4264	0.0517	16.4781		3,874.3191	3,874.3191	0.7987		3,894.2867
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.2760	5.2000e-004	0.2766	0.0693	4.8000e-004	0.0697		73.9101	73.9101	2.3600e-003		73.9690
Total	0.8760	30.9965	6.4796	0.0377	165.1036	0.0545	165.1582	16.4956	0.0522	16.5478		3,948.2292	3,948.2292	0.8011		3,968.2557

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

3.7 Building Construction - New Road Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.4905	24.8383	15.7211	0.0223		1.3920	1.3920		1.2824	1.2824		2,217.7128	2,217.7128	0.6743		2,234.5704
Total	2.4905	24.8383	15.7211	0.0223		1.3920	1.3920		1.2824	1.2824		2,217.7128	2,217.7128	0.6743		2,234.5704

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.4631	15.0799	2.6901	0.0463	4.0323	0.0782	4.1105	1.0190	0.0748	1.0939		4,854.6282	4,854.6282	0.1059		4,857.2752
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.6504	1.0300e-003	0.6515	0.1627	9.5000e-004	0.1636		147.8202	147.8202	4.7100e-003		147.9380
Total	0.5538	15.1488	3.3234	0.0478	4.6827	0.0792	4.7620	1.1817	0.0758	1.2575		5,002.4485	5,002.4485	0.1106		5,005.2132

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

3.7 Building Construction - New Road Construction - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.4905	24.8383	15.7211	0.0223		1.3920	1.3920		1.2824	1.2824	0.0000	2,217.7128	2,217.7128	0.6743		2,234.5704
Total	2.4905	24.8383	15.7211	0.0223		1.3920	1.3920		1.2824	1.2824	0.0000	2,217.7128	2,217.7128	0.6743		2,234.5704

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.4631	15.0799	2.6901	0.0463	4.0323	0.0782	4.1105	1.0190	0.0748	1.0939		4,854.6282	4,854.6282	0.1059		4,857.2752
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.6504	1.0300e-003	0.6515	0.1627	9.5000e-004	0.1636		147.8202	147.8202	4.7100e-003		147.9380
Total	0.5538	15.1488	3.3234	0.0478	4.6827	0.0792	4.7620	1.1817	0.0758	1.2575		5,002.4485	5,002.4485	0.1106		5,005.2132

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

3.8 Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	15.5068	186.8154	121.7054	0.2049		7.7211	7.7211		7.1034	7.1034		20,623.7177	20,623.7177	6.4204		20,784.2288
Total	15.5068	186.8154	121.7054	0.2049		7.7211	7.7211		7.1034	7.1034		20,623.7177	20,623.7177	6.4204		20,784.2288

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	18.3080	682.1501	135.7398	0.8188	3,738.0504	1.1968	3,739.2471	372.5255	1.1449	373.6704		85,752.5539	85,752.5539	17.5594		86,191.5381
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2268	0.1724	1.5832	3.7100e-003	1.6985	2.5800e-003	1.7011	0.4244	2.3800e-003	0.4268		369.5506	369.5506	0.0118		369.8450
Total	18.5347	682.3224	137.3230	0.8226	3,739.7489	1.1994	3,740.9482	372.9499	1.1473	374.0972		86,122.1045	86,122.1045	17.5712		86,561.3831

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

3.8 Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	15.5068	186.8154	121.7054	0.2049		7.7211	7.7211		7.1034	7.1034	0.0000	20,623.7177	20,623.7177	6.4204		20,784.2288
Total	15.5068	186.8154	121.7054	0.2049		7.7211	7.7211		7.1034	7.1034	0.0000	20,623.7177	20,623.7177	6.4204		20,784.2288

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	18.3080	682.1501	135.7398	0.8188	3,738.0504	1.1968	3,739.2471	372.5255	1.1449	373.6704		85,752.5539	85,752.5539	17.5594		86,191.5381
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2268	0.1724	1.5832	3.7100e-003	1.6985	2.5800e-003	1.7011	0.4244	2.3800e-003	0.4268		369.5506	369.5506	0.0118		369.8450
Total	18.5347	682.3224	137.3230	0.8226	3,739.7489	1.1994	3,740.9482	372.9499	1.1473	374.0972		86,122.1045	86,122.1045	17.5712		86,561.3831

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

3.9 Building Construction - Cutoff Wall Installation (Open Trench Method) - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1817	25.3414	19.3445	0.0315		1.1335	1.1335		1.0428	1.0428		3,167.0501	3,167.0501	0.9860		3,191.6987
Total	2.1817	25.3414	19.3445	0.0315		1.1335	1.1335		1.0428	1.0428		3,167.0501	3,167.0501	0.9860		3,191.6987

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1117	3.8066	0.7066	9.1900e-003	9.7756	0.0152	9.7908	1.0484	0.0145	1.0629		962.8907	962.8907	0.0518		964.1851
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.4426	1.0300e-003	0.4437	0.1117	9.5000e-004	0.1126		147.8202	147.8202	4.7100e-003		147.9380
Total	0.2024	3.8755	1.3399	0.0107	10.2182	0.0162	10.2344	1.1600	0.0154	1.1755		1,110.7110	1,110.7110	0.0565		1,112.1231

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

3.9 Building Construction - Cutoff Wall Installation (Open Trench Method) - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1817	25.3414	19.3445	0.0315		1.1335	1.1335		1.0428	1.0428	0.0000	3,167.0501	3,167.0501	0.9860		3,191.6987
Total	2.1817	25.3414	19.3445	0.0315		1.1335	1.1335		1.0428	1.0428	0.0000	3,167.0501	3,167.0501	0.9860		3,191.6987

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1117	3.8066	0.7066	9.1900e-003	9.7756	0.0152	9.7908	1.0484	0.0145	1.0629		962.8907	962.8907	0.0518		964.1851
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.4426	1.0300e-003	0.4437	0.1117	9.5000e-004	0.1126		147.8202	147.8202	4.7100e-003		147.9380
Total	0.2024	3.8755	1.3399	0.0107	10.2182	0.0162	10.2344	1.1600	0.0154	1.1755		1,110.7110	1,110.7110	0.0565		1,112.1231

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

3.10 Building Construction - Erosion Protection Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6743	19.2050	11.8651	0.0219		0.8673	0.8673		0.7980	0.7980		2,207.2462	2,207.2462	0.6872		2,224.4248
Total	1.6743	19.2050	11.8651	0.0219		0.8673	0.8673		0.7980	0.7980		2,207.2462	2,207.2462	0.6872		2,224.4248

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	13.5077	439.8295	78.4617	1.3508	130.8040	2.2809	133.0849	32.9605	2.1822	35.1428		141,593.3231	141,593.3231	3.0881		141,670.5256
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.7258	1.0300e-003	0.7269	0.1812	9.5000e-004	0.1821		147.8202	147.8202	4.7100e-003		147.9380
Total	13.5984	439.8985	79.0950	1.3523	131.5299	2.2819	133.8118	33.1417	2.1832	35.3249		141,741.1433	141,741.1433	3.0928		141,818.4636

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

3.10 Building Construction - Erosion Protection Installation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6743	19.2050	11.8651	0.0219		0.8673	0.8673		0.7980	0.7980	0.0000	2,207.246 2	2,207.246 2	0.6872		2,224.424 8
Total	1.6743	19.2050	11.8651	0.0219		0.8673	0.8673		0.7980	0.7980	0.0000	2,207.246 2	2,207.246 2	0.6872		2,224.424 8

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	13.5077	439.8295	78.4617	1.3508	130.8040	2.2809	133.0849	32.9605	2.1822	35.1428		141,593.3 231	141,593.3 231	3.0881		141,670.5 256
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.7258	1.0300e-003	0.7269	0.1812	9.5000e-004	0.1821		147.8202	147.8202	4.7100e-003		147.9380
Total	13.5984	439.8985	79.0950	1.3523	131.5299	2.2819	133.8118	33.1417	2.1832	35.3249		141,741.1 433	141,741.1 433	3.0928		141,818.4 636

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

3.11 Building Construction - Relief Well Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8458	22.3587	16.3536	0.0269		0.9536	0.9536		0.8773	0.8773		2,704.3656	2,704.3656	0.8419		2,725.4133
Total	1.8458	22.3587	16.3536	0.0269		0.9536	0.9536		0.8773	0.8773		2,704.3656	2,704.3656	0.8419		2,725.4133

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.0761	5.2000e-004	0.0766	0.0202	4.8000e-004	0.0207		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0454	0.0345	0.3166	7.4000e-004	0.0761	5.2000e-004	0.0766	0.0202	4.8000e-004	0.0207		73.9101	73.9101	2.3600e-003		73.9690

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

3.11 Building Construction - Relief Well Installation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8458	22.3587	16.3536	0.0269		0.9536	0.9536		0.8773	0.8773	0.0000	2,704.3656	2,704.3656	0.8419		2,725.4133
Total	1.8458	22.3587	16.3536	0.0269		0.9536	0.9536		0.8773	0.8773	0.0000	2,704.3656	2,704.3656	0.8419		2,725.4133

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.0761	5.2000e-004	0.0766	0.0202	4.8000e-004	0.0207		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0454	0.0345	0.3166	7.4000e-004	0.0761	5.2000e-004	0.0766	0.0202	4.8000e-004	0.0207		73.9101	73.9101	2.3600e-003		73.9690

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

3.12 Building Construction - Existing Pump Station Removal - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035		852.9003	852.9003	0.2655		859.5383
Total	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035		852.9003	852.9003	0.2655		859.5383

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0440	1.4610	0.2653	4.0700e-003	0.2322	6.8000e-003	0.2390	0.0594	6.5100e-003	0.0659		426.0980	426.0980	0.0145		426.4599
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.2213	5.2000e-004	0.2218	0.0558	4.8000e-004	0.0563		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0894	1.4955	0.5819	4.8100e-003	0.4535	7.3200e-003	0.4608	0.1153	6.9900e-003	0.1222		500.0081	500.0081	0.0168		500.4289

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

3.12 Building Construction - Existing Pump Station Removal - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035	0.0000	852.9003	852.9003	0.2655		859.5383
Total	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035	0.0000	852.9003	852.9003	0.2655		859.5383

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0440	1.4610	0.2653	4.0700e-003	0.2322	6.8000e-003	0.2390	0.0594	6.5100e-003	0.0659		426.0980	426.0980	0.0145		426.4599
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.2213	5.2000e-004	0.2218	0.0558	4.8000e-004	0.0563		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0894	1.4955	0.5819	4.8100e-003	0.4535	7.3200e-003	0.4608	0.1153	6.9900e-003	0.1222		500.0081	500.0081	0.0168		500.4289

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

3.13 Building Construction - Pump Station Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4884	5.3583	3.1680	5.3000e-003		0.2950	0.2950		0.2714	0.2714		533.4615	533.4615	0.1661		537.6133
Total	0.4884	5.3583	3.1680	5.3000e-003		0.2950	0.2950		0.2714	0.2714		533.4615	533.4615	0.1661		537.6133

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0220	0.7305	0.1326	2.0300e-003	0.0917	3.4000e-003	0.0951	0.0237	3.2500e-003	0.0270		213.0490	213.0490	7.2400e-003		213.2299
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.1726	5.2000e-004	0.1731	0.0439	4.8000e-004	0.0443		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0674	0.7650	0.4493	2.7700e-003	0.2643	3.9200e-003	0.2682	0.0676	3.7300e-003	0.0713		286.9591	286.9591	9.6000e-003		287.1989

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

3.13 Building Construction - Pump Station Installation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4884	5.3583	3.1680	5.3000e-003		0.2950	0.2950		0.2714	0.2714	0.0000	533.4615	533.4615	0.1661		537.6133
Total	0.4884	5.3583	3.1680	5.3000e-003		0.2950	0.2950		0.2714	0.2714	0.0000	533.4615	533.4615	0.1661		537.6133

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0220	0.7305	0.1326	2.0300e-003	0.0917	3.4000e-003	0.0951	0.0237	3.2500e-003	0.0270		213.0490	213.0490	7.2400e-003		213.2299
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.1726	5.2000e-004	0.1731	0.0439	4.8000e-004	0.0443		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0674	0.7650	0.4493	2.7700e-003	0.2643	3.9200e-003	0.2682	0.0676	3.7300e-003	0.0713		286.9591	286.9591	9.6000e-003		287.1989

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

3.14 Building Construction - Existing Levee Degrade - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	8.1458	100.2544	63.5917	0.1091		3.9825	3.9825		3.6639	3.6639		10,980.7305	10,980.7305	3.4185		11,066.1917
Total	8.1458	100.2544	63.5917	0.1091		3.9825	3.9825		3.6639	3.6639		10,980.7305	10,980.7305	3.4185		11,066.1917

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	15.4645	576.2648	114.6788	0.6909	3,134.6651	1.0095	3,135.6746	312.3937	0.9658	313.3595		72,356.1930	72,356.1930	14.8419		72,727.2410
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.7026	1.0300e-003	0.7036	0.1755	9.5000e-004	0.1764		147.8202	147.8202	4.7100e-003		147.9380
Total	15.5552	576.3337	115.3121	0.6924	3,135.3677	1.0105	3,136.3783	312.5692	0.9667	313.5359		72,504.0132	72,504.0132	14.8466		72,875.1790

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

3.14 Building Construction - Existing Levee Degrade - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	8.1458	100.2544	63.5917	0.1091		3.9825	3.9825		3.6639	3.6639	0.0000	10,980.7305	10,980.7305	3.4185		11,066.1917
Total	8.1458	100.2544	63.5917	0.1091		3.9825	3.9825		3.6639	3.6639	0.0000	10,980.7305	10,980.7305	3.4185		11,066.1917

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	15.4645	576.2648	114.6788	0.6909	3,134.6651	1.0095	3,135.6746	312.3937	0.9658	313.3595		72,356.1930	72,356.1930	14.8419		72,727.2410
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.7026	1.0300e-003	0.7036	0.1755	9.5000e-004	0.1764		147.8202	147.8202	4.7100e-003		147.9380
Total	15.5552	576.3337	115.3121	0.6924	3,135.3677	1.0105	3,136.3783	312.5692	0.9667	313.5359		72,504.0132	72,504.0132	14.8466		72,875.1790

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

3.15 Building Construction - Site Restoration and Demobilization - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1763	11.6495	7.1750	9.6000e-003		0.6920	0.6920		0.6367	0.6367		967.2218	967.2218	0.3011		974.7496
Total	1.1763	11.6495	7.1750	9.6000e-003		0.6920	0.6920		0.6367	0.6367		967.2218	967.2218	0.3011		974.7496

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2532	8.3572	1.5094	0.0240	2.0163	0.0403	2.0566	0.5096	0.0385	0.5481		2,513.4965	2,513.4965	0.0756		2,515.3854
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3252	5.2000e-004	0.3257	0.0813	4.8000e-004	0.0818		73.9101	73.9101	2.3600e-003		73.9690
Total	0.2985	8.3917	1.8261	0.0247	2.3415	0.0408	2.3823	0.5909	0.0390	0.6299		2,587.4066	2,587.4066	0.0779		2,589.3544

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

3.15 Building Construction - Site Restoration and Demobilization - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1763	11.6495	7.1750	9.6000e-003		0.6920	0.6920		0.6367	0.6367	0.0000	967.2218	967.2218	0.3011		974.7496
Total	1.1763	11.6495	7.1750	9.6000e-003		0.6920	0.6920		0.6367	0.6367	0.0000	967.2218	967.2218	0.3011		974.7496

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2532	8.3572	1.5094	0.0240	2.0163	0.0403	2.0566	0.5096	0.0385	0.5481		2,513.4965	2,513.4965	0.0756		2,515.3854
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3252	5.2000e-004	0.3257	0.0813	4.8000e-004	0.0818		73.9101	73.9101	2.3600e-003		73.9690
Total	0.2985	8.3917	1.8261	0.0247	2.3415	0.0408	2.3823	0.5909	0.0390	0.6299		2,587.4066	2,587.4066	0.0779		2,589.3544

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
User Defined Commercial	0.00	0.00	0.00		
User Defined Residential	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
User Defined Commercial	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
User Defined Residential	10.00	5.00	7.00	46.00	13.00	41.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.486608	0.042104	0.206882	0.127088	0.026765	0.005851	0.054651	0.039468	0.001006	0.001905	0.006007	0.000778	0.000886
User Defined Commercial	0.486608	0.042104	0.206882	0.127088	0.026765	0.005851	0.054651	0.039468	0.001006	0.001905	0.006007	0.000778	0.000886
User Defined Residential	0.486608	0.042104	0.206882	0.127088	0.026765	0.005851	0.054651	0.039468	0.001006	0.001905	0.006007	0.000778	0.000886

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment

Lower Elkhorn Basin Alt 2 Reuse - Year 1 - Yolo County, Winter

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

Lower Elkhorn Basin Alt 2 Reuse - Year 2
Yolo County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Commercial	0.00	User Defined Unit	0.00	0.00	0
Other Asphalt Surfaces	0.00	Acre	0.00	0.00	0
User Defined Residential	0.00	Dwelling Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	6.8	Precipitation Freq (Days)	54
Climate Zone	2			Operational Year	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblFleetMix	FleetMixLandUseSubType	User Defined Commercial	Other Asphalt Surfaces
tblFleetMix	FleetMixLandUseSubType	Other Asphalt Surfaces	User Defined Commercial
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	187.00	162.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	187.00	162.00
tblOffRoadEquipment	HorsePower	80.00	84.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	158.00	157.00

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

tbloffRoadEquipment	HorsePower	158.00	157.00
tbloffRoadEquipment	HorsePower	367.00	356.00
tbloffRoadEquipment	HorsePower	97.00	75.00
tbloffRoadEquipment	HorsePower	231.00	208.00
tbloffRoadEquipment	HorsePower	158.00	157.00
tbloffRoadEquipment	HorsePower	158.00	157.00
tbloffRoadEquipment	HorsePower	97.00	75.00
tbloffRoadEquipment	HorsePower	158.00	157.00
tbloffRoadEquipment	HorsePower	367.00	356.00
tbloffRoadEquipment	HorsePower	97.00	75.00
tbloffRoadEquipment	HorsePower	367.00	356.00
tbloffRoadEquipment	HorsePower	221.00	82.00
tbloffRoadEquipment	HorsePower	187.00	162.00
tbloffRoadEquipment	HorsePower	80.00	84.00
tbloffRoadEquipment	LoadFactor	0.48	0.50
tbloffRoadEquipment	LoadFactor	0.48	0.50
tbloffRoadEquipment	LoadFactor	0.48	0.50
tbloffRoadEquipment	LoadFactor	0.48	0.50
tbloffRoadEquipment	LoadFactor	0.48	0.50
tbloffRoadEquipment	LoadFactor	0.48	0.50
tbloffRoadEquipment	LoadFactor	0.48	0.50
tbloffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tbloffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tbloffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tbloffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tbloffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tbloffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00

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tblOffRoadEquipment	UsageHours	6.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOnRoadDust	AverageVehicleWeight	2.40	11.40
tblOnRoadDust	AverageVehicleWeight	2.40	12.40
tblOnRoadDust	AverageVehicleWeight	2.40	7.50
tblOnRoadDust	AverageVehicleWeight	2.40	12.20
tblOnRoadDust	AverageVehicleWeight	2.40	4.40
tblOnRoadDust	AverageVehicleWeight	2.40	11.10
tblOnRoadDust	AverageVehicleWeight	2.40	7.50
tblOnRoadDust	AverageVehicleWeight	2.40	6.50
tblOnRoadDust	AverageVehicleWeight	2.40	11.90
tblOnRoadDust	AverageVehicleWeight	2.40	7.10
tblOnRoadDust	AverageVehicleWeight	2.40	10.00
tblOnRoadDust	AverageVehicleWeight	2.40	11.70
tblOnRoadDust	AverageVehicleWeight	2.40	12.50
tblOnRoadDust	AverageVehicleWeight	2.40	10.30
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	0.00
tblOnRoadDust	HaulingPercentPave	94.00	0.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	98.40

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	0.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	0.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	96.90
tblOnRoadDust	MeanVehicleSpeed	40.00	10.00
tblOnRoadDust	MeanVehicleSpeed	40.00	10.00
tblOnRoadDust	MeanVehicleSpeed	40.00	39.50
tblOnRoadDust	MeanVehicleSpeed	40.00	10.00
tblOnRoadDust	MeanVehicleSpeed	40.00	10.00
tblOnRoadDust	MeanVehicleSpeed	40.00	39.10
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
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tblOnRoadDust	WorkerPercentPave	94.00	100.00
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tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblProjectCharacteristics	OperationalYear	2018	2021

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripNumber	18.00	16.00
tblTripsAndVMT	HaulingTripNumber	0.00	700.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	6,900.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblVehicleTrips	CC_TL	8.00	5.00
tblVehicleTrips	CC_TL	8.00	5.00
tblVehicleTrips	CNW_TL	9.00	7.00
tblVehicleTrips	CNW_TL	9.00	7.00
tblVehicleTrips	CW_TL	15.00	10.00
tblVehicleTrips	CW_TL	15.00	10.00
tblVehicleTrips	HO_TL	9.00	7.00
tblVehicleTrips	HS_TL	8.00	5.00
tblVehicleTrips	HW_TL	15.00	10.00

2.0 Emissions Summary

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition - Structure Demolition	Demolition	1/2/2019	1/2/2019	5	1	
2	Building Construction - Mobilization	Building Construction	1/3/2019	1/3/2019	5	1	
3	Building Construction - Site Preparation/Stripping	Building Construction	1/4/2019	1/4/2019	5	1	
4	Building Construction - Existing Road Removal	Building Construction	1/5/2019	1/7/2019	5	1	
5	Building Construction - Trench Excavation and Forcemain Installation	Building Construction	1/8/2019	1/8/2019	5	1	
6	Building Construction - New Road Construction	Building Construction	1/9/2019	1/9/2019	5	1	
7	Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Building Construction	1/10/2019	1/10/2019	5	1	
8	Building Construction - Offsite Borrow Material Transport	Building Construction	1/11/2019	1/11/2019	5	1	
9	Building Construction - Cutoff Wall Installation (Open Trench Method)	Building Construction	1/12/2019	1/14/2019	5	1	
10	Building Construction - Erosion Protection Installation	Building Construction	1/15/2019	1/15/2019	5	1	
11	Building Construction - Existing Pump Station Removal	Building Construction	1/16/2019	1/16/2019	5	1	
12	Building Construction - Existing Levee Degrade	Building Construction	1/17/2019	1/17/2019	5	1	
13	Building Construction - Ecosystem Project Elements	Building Construction	1/18/2019	1/18/2019	5	1	
14	Building Construction - Site Restoration and Demobilization	Building Construction	1/19/2019	1/21/2019	5	1	

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition - Structure Demolition	Excavators	1	9.00	157	0.38
Demolition - Structure Demolition	Rubber Tired Dozer	1	9.00	358	0.40
Demolition - Structure Demolition	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Mobilization	Excavators	0	0.00	157	0.38
Building Construction - Site Preparation/Stripping	Excavators	1	9.00	157	0.38
Building Construction - Site Preparation/Stripping	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Site Preparation/Stripping	Scrapers	3	9.00	356	0.50
Building Construction - Existing Road Removal	Excavators	1	9.00	157	0.38
Building Construction - Existing Road Removal	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Existing Road Removal	Scrapers	1	9.00	356	0.50
Building Construction - Existing Road Removal	Scrapers	1	9.00	356	0.50
Building Construction - Trench Excavation and Forcemain Installation	Excavators	1	9.00	157	0.38
Building Construction - Trench Excavation and Forcemain Installation	Other Construction Equipment	1	9.00	172	0.42
Building Construction - Trench Excavation and Forcemain Installation	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - New Road Construction	Graders	2	9.00	162	0.41
Building Construction - New Road Construction	Pavers	1	9.00	130	0.42

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

Building Construction - New Road Construction	Plate Compactors	2	9.00	8	0.43
Building Construction - New Road Construction	Rollers	1	9.00	80	0.38
Building Construction - New Road Construction	Rubber Tired Dozer	2	9.00	358	0.40
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Excavators	4	9.00	157	0.38
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Graders	1	9.00	162	0.41
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Rollers	1	9.00	84	0.38
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Rubber Tired Dozer	2	9.00	358	0.40
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Scrapers	5	9.00	356	0.50
Building Construction - Offsite Borrow Material Transport	Excavators	0	0.00	157	0.38
Building Construction - Cutoff Wall Installation (Open Trench Method)	Excavators	1	9.00	157	0.38
Building Construction - Cutoff Wall Installation (Open Trench Method)	Excavators	1	9.00	157	0.38
Building Construction - Cutoff Wall Installation (Open Trench Method)	Rough Terrain Forklift	1	4.00	100	0.40
Building Construction - Cutoff Wall Installation (Open Trench Method)	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Cutoff Wall Installation (Open Trench Method)	Scrapers	1	9.00	356	0.50
Building Construction - Cutoff Wall Installation (Open Trench Method)	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Erosion Protection Installation	Cranes	4	4.00	208	0.29
Building Construction - Erosion Protection Installation	Excavators	2	9.00	157	0.38
Building Construction - Erosion Protection Installation	Rubber Tired Dozer	2	9.00	358	0.40
Building Construction - Existing Pump Station Removal	Excavators	1	9.00	157	0.38
Building Construction - Existing Pump Station Removal	Rubber Tired Dozer	1	9.00	358	0.40

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

Building Construction - Existing Pump Station Removal	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Existing Levee Degrade	Excavators	1	9.00	157	0.38
Building Construction - Existing Levee Degrade	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Existing Levee Degrade	Scrapers	6	9.00	356	0.50
Building Construction - Ecosystem Project Elements	Tractors/Loaders/Backhoes	4	9.00	75	0.37
Building Construction - Ecosystem Project Elements	Rubber Tired Dozer	3	9.00	358	0.40
Building Construction - Ecosystem Project Elements	Scrapers	2	9.00	356	0.50
Building Construction - Ecosystem Project Elements	Bore/Drill Rigs	1	9.00	82	0.50
Building Construction - Site Restoration and Demobilization	Graders	1	9.00	162	0.41
Building Construction - Site Restoration and Demobilization	Rollers	1	9.00	84	0.38

Trips and VMT

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition - Structure Demolition	3	10.00	0.00	16.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Mobilization	0	30.00	0.00	10.00	10.00	7.00	30.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Site Preparation/Strip	5	30.00	0.00	4.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Site Preparation/Strip	5	0.00	0.00	4.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Road Remov	4	10.00	0.00	30.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Trench Excavation an	3	10.00	0.00	110.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - New Road Constructi	8	20.00	0.00	12.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	13	30.00	0.00	4,100.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	13	0.00	0.00	2.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	13	0.00	0.00	2.00	10.00	7.00	30.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Offsite Borrow Materia	0	10.00	0.00	2,300.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Cutoff Wall Installation	6	10.00	0.00	14.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - Cutoff Wall Installation	6	0.00	0.00	14.00	10.00	7.00	25.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Erosion Protection Inst	8	20.00	0.00	700.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Pump Station	3	10.00	0.00	4.00	10.00	7.00	25.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Levee Degrad	8	20.00	0.00	6,900.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Levee Degrad	8	0.00	0.00	2.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Erosion Control Plant Pla	10	20.00	0.00	1.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Site Restoration and D	2	10.00	0.00	20.00	10.00	7.00	30.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

3.2 Demolition - Structure Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.6121	0.0000	4.6121	0.6985	0.0000	0.6985			0.0000			0.0000
Off-Road	0.4940	5.0312	5.6509	8.4700e-003		0.2803	0.2803		0.2579	0.2579		838.8908	838.8908	0.2654		845.5262
Total	0.4940	5.0312	5.6509	8.4700e-003	4.6121	0.2803	4.8925	0.6985	0.2579	0.9564		838.8908	838.8908	0.2654		845.5262

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2908	9.3706	1.6762	0.0305	2.7576	0.0469	2.8045	0.6964	0.0449	0.7413		3,197.9313	3,197.9313	0.0677		3,199.6249
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3339	5.0000e-004	0.3344	0.0835	4.6000e-004	0.0839		71.4571	71.4571	2.0600e-003		71.5086
Total	0.3318	9.4008	1.9553	0.0312	3.0915	0.0474	3.1389	0.7798	0.0454	0.8252		3,269.3885	3,269.3885	0.0698		3,271.1335

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

3.2 Demolition - Structure Demolition - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.6121	0.0000	4.6121	0.6985	0.0000	0.6985			0.0000			0.0000
Off-Road	0.4940	5.0312	5.6509	8.4700e-003		0.2803	0.2803		0.2579	0.2579	0.0000	838.8908	838.8908	0.2654		845.5262
Total	0.4940	5.0312	5.6509	8.4700e-003	4.6121	0.2803	4.8925	0.6985	0.2579	0.9564	0.0000	838.8908	838.8908	0.2654		845.5262

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2908	9.3706	1.6762	0.0305	2.7576	0.0469	2.8045	0.6964	0.0449	0.7413		3,197.9313	3,197.9313	0.0677		3,199.6249
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3339	5.0000e-004	0.3344	0.0835	4.6000e-004	0.0839		71.4571	71.4571	2.0600e-003		71.5086
Total	0.3318	9.4008	1.9553	0.0312	3.0915	0.0474	3.1389	0.7798	0.0454	0.8252		3,269.3885	3,269.3885	0.0698		3,271.1335

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

3.3 Building Construction - Mobilization - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1189	3.9120	0.7003	0.0119	0.6964	0.0181	0.7145	0.1783	0.0173	0.1956		1,242.1996	1,242.1996	0.0366		1,243.1140
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1233	0.0906	0.8373	2.1500e-003	0.6639	1.5000e-003	0.6654	0.1675	1.3800e-003	0.1689		214.3714	214.3714	6.1700e-003		214.5258
Total	0.2422	4.0026	1.5376	0.0140	1.3603	0.0196	1.3799	0.3457	0.0187	0.3645		1,456.5711	1,456.5711	0.0427		1,457.6398

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

3.3 Building Construction - Mobilization - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1189	3.9120	0.7003	0.0119	0.6964	0.0181	0.7145	0.1783	0.0173	0.1956		1,242.1996	1,242.1996	0.0366		1,243.1140
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1233	0.0906	0.8373	2.1500e-003	0.6639	1.5000e-003	0.6654	0.1675	1.3800e-003	0.1689		214.3714	214.3714	6.1700e-003		214.5258
Total	0.2422	4.0026	1.5376	0.0140	1.3603	0.0196	1.3799	0.3457	0.0187	0.3645		1,456.5711	1,456.5711	0.0427		1,457.6398

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

3.4 Building Construction - Site Preparation/Stripping - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.9243	47.0375	31.1394	0.0574		1.8702	1.8702		1.7206	1.7206		5,686.1224	5,686.1224	1.7990		5,731.0981
Total	3.9243	47.0375	31.1394	0.0574		1.8702	1.8702		1.7206	1.7206		5,686.1224	5,686.1224	1.7990		5,731.0981

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0836	2.7717	0.4963	8.1500e-003	5.1622	0.0124	5.1746	0.5794	0.0119	0.5913		854.5624	854.5624	0.0282		855.2673
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1233	0.0906	0.8373	2.1500e-003	0.5778	1.5000e-003	0.5793	0.1464	1.3800e-003	0.1477		214.3714	214.3714	6.1700e-003		214.5258
Total	0.2068	2.8624	1.3336	0.0103	5.7400	0.0139	5.7539	0.7258	0.0133	0.7390		1,068.9338	1,068.9338	0.0344		1,069.7931

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3.4 Building Construction - Site Preparation/Stripping - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.9243	47.0375	31.1394	0.0574		1.8702	1.8702		1.7206	1.7206	0.0000	5,686.1224	5,686.1224	1.7990		5,731.0981
Total	3.9243	47.0375	31.1394	0.0574		1.8702	1.8702		1.7206	1.7206	0.0000	5,686.1224	5,686.1224	1.7990		5,731.0981

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0836	2.7717	0.4963	8.1500e-003	5.1622	0.0124	5.1746	0.5794	0.0119	0.5913		854.5624	854.5624	0.0282		855.2673
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1233	0.0906	0.8373	2.1500e-003	0.5778	1.5000e-003	0.5793	0.1464	1.3800e-003	0.1477		214.3714	214.3714	6.1700e-003		214.5258
Total	0.2068	2.8624	1.3336	0.0103	5.7400	0.0139	5.7539	0.7258	0.0133	0.7390		1,068.9338	1,068.9338	0.0344		1,069.7931

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

3.5 Building Construction - Existing Road Removal - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.7133	32.3577	21.9755	0.0402		1.2950	1.2950		1.1914	1.1914		3,981.2072	3,981.2072	1.2596		4,012.6975
Total	2.7133	32.3577	21.9755	0.0402		1.2950	1.2950		1.1914	1.1914		3,981.2072	3,981.2072	1.2596		4,012.6975

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.5452	17.5698	3.1429	0.0572	5.3879	0.0880	5.4759	1.3590	0.0842	1.4432		5,996.1213	5,996.1213	0.1270		5,999.2967
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3484	5.0000e-004	0.3489	0.0870	4.6000e-004	0.0875		71.4571	71.4571	2.0600e-003		71.5086
Total	0.5863	17.6000	3.4220	0.0579	5.7363	0.0885	5.8248	1.4461	0.0847	1.5307		6,067.5784	6,067.5784	0.1291		6,070.8053

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

3.5 Building Construction - Existing Road Removal - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.7133	32.3577	21.9755	0.0402		1.2950	1.2950		1.1914	1.1914	0.0000	3,981.207 2	3,981.207 2	1.2596		4,012.697 5
Total	2.7133	32.3577	21.9755	0.0402		1.2950	1.2950		1.1914	1.1914	0.0000	3,981.207 2	3,981.207 2	1.2596		4,012.697 5

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.5452	17.5698	3.1429	0.0572	5.3879	0.0880	5.4759	1.3590	0.0842	1.4432		5,996.121 3	5,996.121 3	0.1270		5,999.296 7
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3484	5.0000e-004	0.3489	0.0870	4.6000e-004	0.0875		71.4571	71.4571	2.0600e-003		71.5086
Total	0.5863	17.6000	3.4220	0.0579	5.7363	0.0885	5.8248	1.4461	0.0847	1.5307		6,067.578 4	6,067.578 4	0.1291		6,070.805 3

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

3.6 Building Construction - Trench Excavation and Forcemain Installation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0846	11.3854	10.3181	0.0154		0.6149	0.6149		0.5658	0.5658		1,527.5499	1,527.5499	0.4833		1,539.6324
Total	1.0846	11.3854	10.3181	0.0154		0.6149	0.6149		0.5658	0.5658		1,527.5499	1,527.5499	0.4833		1,539.6324

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2989	11.8003	2.1246	0.0145	64.7537	0.0191	64.7728	6.4532	0.0183	6.4715		1,514.6866	1,514.6866	0.3097		1,522.4296
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.2098	5.0000e-004	0.2103	0.0530	4.6000e-004	0.0535		71.4571	71.4571	2.0600e-003		71.5086
Total	0.3400	11.8305	2.4037	0.0152	64.9635	0.0196	64.9831	6.5062	0.0187	6.5250		1,586.1437	1,586.1437	0.3118		1,593.9381

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

3.6 Building Construction - Trench Excavation and Forcemain Installation - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0846	11.3854	10.3181	0.0154		0.6149	0.6149		0.5658	0.5658	0.0000	1,527.5499	1,527.5499	0.4833		1,539.6324
Total	1.0846	11.3854	10.3181	0.0154		0.6149	0.6149		0.5658	0.5658	0.0000	1,527.5499	1,527.5499	0.4833		1,539.6324

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2989	11.8003	2.1246	0.0145	64.7537	0.0191	64.7728	6.4532	0.0183	6.4715		1,514.6866	1,514.6866	0.3097		1,522.4296
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.2098	5.0000e-004	0.2103	0.0530	4.6000e-004	0.0535		71.4571	71.4571	2.0600e-003		71.5086
Total	0.3400	11.8305	2.4037	0.0152	64.9635	0.0196	64.9831	6.5062	0.0187	6.5250		1,586.1437	1,586.1437	0.3118		1,593.9381

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

3.7 Building Construction - New Road Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.2735	22.4519	15.5196	0.0223		1.2468	1.2468		1.1488	1.1488		2,182.4048	2,182.4048	0.6740		2,199.2548
Total	2.2735	22.4519	15.5196	0.0223		1.2468	1.2468		1.1488	1.1488		2,182.4048	2,182.4048	0.6740		2,199.2548

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2181	7.0279	1.2572	0.0229	1.8250	0.0352	1.8602	0.4626	0.0337	0.4963		2,398.4485	2,398.4485	0.0508		2,399.7187
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0822	0.0604	0.5582	1.4400e-003	0.5868	1.0000e-003	0.5878	0.1470	9.2000e-004	0.1480		142.9143	142.9143	4.1200e-003		143.0172
Total	0.3002	7.0883	1.8154	0.0243	2.4118	0.0362	2.4480	0.6096	0.0346	0.6442		2,541.3628	2,541.3628	0.0549		2,542.7359

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

3.7 Building Construction - New Road Construction - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.2735	22.4519	15.5196	0.0223		1.2468	1.2468		1.1488	1.1488	0.0000	2,182.4048	2,182.4048	0.6740		2,199.2548
Total	2.2735	22.4519	15.5196	0.0223		1.2468	1.2468		1.1488	1.1488	0.0000	2,182.4048	2,182.4048	0.6740		2,199.2548

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2181	7.0279	1.2572	0.0229	1.8250	0.0352	1.8602	0.4626	0.0337	0.4963		2,398.4485	2,398.4485	0.0508		2,399.7187
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0822	0.0604	0.5582	1.4400e-003	0.5868	1.0000e-003	0.5878	0.1470	9.2000e-004	0.1480		142.9143	142.9143	4.1200e-003		143.0172
Total	0.3002	7.0883	1.8154	0.0243	2.4118	0.0362	2.4480	0.6096	0.0346	0.6442		2,541.3628	2,541.3628	0.0549		2,542.7359

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

3.8 Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	8.2905	95.9633	67.4816	0.1188		4.0718	4.0718		3.7461	3.7461		11,761.3331	11,761.3331	3.7212		11,854.3622
Total	8.2905	95.9633	67.4816	0.1188		4.0718	4.0718		3.7461	3.7461		11,761.3331	11,761.3331	3.7212		11,854.3622

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	11.2018	441.7831	79.5408	0.5452	2,531.2760	0.7215	2,531.9975	252.2605	0.6903	252.9508		57,104.6810	57,104.6810	11.5599		57,393.6774
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1233	0.0906	0.8373	2.1500e-003	1.0278	1.5000e-003	1.0293	0.2568	1.3800e-003	0.2582		214.3714	214.3714	6.1700e-003		214.5258
Total	11.3251	441.8737	80.3781	0.5473	2,532.3038	0.7230	2,533.0268	252.5173	0.6917	253.2090		57,319.0525	57,319.0525	11.5660		57,608.2032

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

3.8 Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	8.2905	95.9633	67.4816	0.1188		4.0718	4.0718		3.7461	3.7461	0.0000	11,761.3331	11,761.3331	3.7212		11,854.3621
Total	8.2905	95.9633	67.4816	0.1188		4.0718	4.0718		3.7461	3.7461	0.0000	11,761.3331	11,761.3331	3.7212		11,854.3621

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	11.2018	441.7831	79.5408	0.5452	2,531.2760	0.7215	2,531.9975	252.2605	0.6903	252.9508		57,104.6810	57,104.6810	11.5599		57,393.6774
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1233	0.0906	0.8373	2.1500e-003	1.0278	1.5000e-003	1.0293	0.2568	1.3800e-003	0.2582		214.3714	214.3714	6.1700e-003		214.5258
Total	11.3251	441.8737	80.3781	0.5473	2,532.3038	0.7230	2,533.0268	252.5173	0.6917	253.2090		57,319.0525	57,319.0525	11.5660		57,608.2032

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

3.9 Building Construction - Offsite Borrow Material Transport - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	41.7955	1,347.0177	240.9570	4.3856	433.0967	6.7473	439.8440	109.1086	6.4554	115.5639		459,702.6291	459,702.6291	9.7382		459,946.0829
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3658	5.0000e-004	0.3663	0.0913	4.6000e-004	0.0918		71.4571	71.4571	2.0600e-003		71.5086
Total	41.8366	1,347.0479	241.2361	4.3863	433.4625	6.7478	440.2103	109.1999	6.4558	115.6557		459,774.0862	459,774.0862	9.7402		460,017.5915

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

3.9 Building Construction - Offsite Borrow Material Transport - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	41.7955	1,347.0177	240.9570	4.3856	433.0967	6.7473	439.8440	109.1086	6.4554	115.5639		459,702.6291	459,702.6291	9.7382		459,946.0829
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3658	5.0000e-004	0.3663	0.0913	4.6000e-004	0.0918		71.4571	71.4571	2.0600e-003		71.5086
Total	41.8366	1,347.0479	241.2361	4.3863	433.4625	6.7478	440.2103	109.1999	6.4558	115.6557		459,774.0862	459,774.0862	9.7402		460,017.5915

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

3.10 Building Construction - Cutoff Wall Installation (Open Trench Method) - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9964	22.7090	18.4626	0.0315		1.0001	1.0001		0.9201	0.9201		3,115.1829	3,115.1829	0.9856		3,139.8231
Total	1.9964	22.7090	18.4626	0.0315		1.0001	1.0001		0.9201	0.9201		3,115.1829	3,115.1829	0.9856		3,139.8231

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1825	6.2980	1.1292	0.0159	17.3899	0.0239	17.4138	1.9040	0.0228	1.9268		1,667.0802	1,667.0802	0.0886		1,669.2953
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3021	5.0000e-004	0.3026	0.0757	4.6000e-004	0.0761		71.4571	71.4571	2.0600e-003		71.5086
Total	0.2236	6.3282	1.4083	0.0166	17.6919	0.0244	17.7163	1.9797	0.0233	2.0030		1,738.5373	1,738.5373	0.0907		1,740.8039

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

3.10 Building Construction - Cutoff Wall Installation (Open Trench Method) - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9964	22.7090	18.4626	0.0315		1.0001	1.0001		0.9201	0.9201	0.0000	3,115.1829	3,115.1829	0.9856		3,139.8231
Total	1.9964	22.7090	18.4626	0.0315		1.0001	1.0001		0.9201	0.9201	0.0000	3,115.1829	3,115.1829	0.9856		3,139.8231

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1825	6.2980	1.1292	0.0159	17.3899	0.0239	17.4138	1.9040	0.0228	1.9268		1,667.0802	1,667.0802	0.0886		1,669.2953
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3021	5.0000e-004	0.3026	0.0757	4.6000e-004	0.0761		71.4571	71.4571	2.0600e-003		71.5086
Total	0.2236	6.3282	1.4083	0.0166	17.6919	0.0244	17.7163	1.9797	0.0233	2.0030		1,738.5373	1,738.5373	0.0907		1,740.8039

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

3.11 Building Construction - Erosion Protection Installation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4906	16.8138	11.4252	0.0219		0.7477	0.7477		0.6879	0.6879		2,171.4275	2,171.4275	0.6870		2,188.6029
Total	1.4906	16.8138	11.4252	0.0219		0.7477	0.7477		0.6879	0.6879		2,171.4275	2,171.4275	0.6870		2,188.6029

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	12.7204	409.9619	73.3347	1.3348	130.7958	2.0535	132.8493	32.9575	1.9647	34.9222		139,909.4958	139,909.4958	2.9638		139,983.5905
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0822	0.0604	0.5582	1.4400e-003	0.7258	1.0000e-003	0.7268	0.1812	9.2000e-004	0.1821		142.9143	142.9143	4.1200e-003		143.0172
Total	12.8025	410.0223	73.8929	1.3362	131.5216	2.0545	133.5762	33.1387	1.9656	35.1043		140,052.4101	140,052.4101	2.9679		140,126.6076

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

3.11 Building Construction - Erosion Protection Installation - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4906	16.8138	11.4252	0.0219		0.7477	0.7477		0.6879	0.6879	0.0000	2,171.4275	2,171.4275	0.6870		2,188.6029
Total	1.4906	16.8138	11.4252	0.0219		0.7477	0.7477		0.6879	0.6879	0.0000	2,171.4275	2,171.4275	0.6870		2,188.6029

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	12.7204	409.9619	73.3347	1.3348	130.7958	2.0535	132.8493	32.9575	1.9647	34.9222		139,909.4958	139,909.4958	2.9638		139,983.5905
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0822	0.0604	0.5582	1.4400e-003	0.7258	1.0000e-003	0.7268	0.1812	9.2000e-004	0.1821		142.9143	142.9143	4.1200e-003		143.0172
Total	12.8025	410.0223	73.8929	1.3362	131.5216	2.0545	133.5762	33.1387	1.9656	35.1043		140,052.4101	140,052.4101	2.9679		140,126.6076

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

3.12 Building Construction - Existing Pump Station Removal - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4940	5.0312	5.6509	8.4700e-003		0.2803	0.2803		0.2579	0.2579		838.8908	838.8908	0.2654		845.5262
Total	0.4940	5.0312	5.6509	8.4700e-003		0.2803	0.2803		0.2579	0.2579		838.8908	838.8908	0.2654		845.5262

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0413	1.3703	0.2454	4.0200e-003	0.2321	6.1200e-003	0.2383	0.0594	5.8600e-003	0.0653		421.2291	421.2291	0.0141		421.5804
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.2213	5.0000e-004	0.2218	0.0558	4.6000e-004	0.0563		71.4571	71.4571	2.0600e-003		71.5086
Total	0.0824	1.4005	0.5245	4.7400e-003	0.4535	6.6200e-003	0.4601	0.1153	6.3200e-003	0.1216		492.6863	492.6863	0.0161		493.0890

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

3.12 Building Construction - Existing Pump Station Removal - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4940	5.0312	5.6509	8.4700e-003		0.2803	0.2803		0.2579	0.2579	0.0000	838.8908	838.8908	0.2654		845.5262
Total	0.4940	5.0312	5.6509	8.4700e-003		0.2803	0.2803		0.2579	0.2579	0.0000	838.8908	838.8908	0.2654		845.5262

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0413	1.3703	0.2454	4.0200e-003	0.2321	6.1200e-003	0.2383	0.0594	5.8600e-003	0.0653		421.2291	421.2291	0.0141		421.5804
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.2213	5.0000e-004	0.2218	0.0558	4.6000e-004	0.0563		71.4571	71.4571	2.0600e-003		71.5086
Total	0.0824	1.4005	0.5245	4.7400e-003	0.4535	6.6200e-003	0.4601	0.1153	6.3200e-003	0.1216		492.6863	492.6863	0.0161		493.0890

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

3.13 Building Construction - Existing Levee Degrade - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	7.5571	91.0769	58.6309	0.1091		3.5958	3.5958		3.3081	3.3081		10,800.8678	10,800.8678	3.4173		10,886.2998
Total	7.5571	91.0769	58.6309	0.1091		3.5958	3.5958		3.3081	3.3081		10,800.8678	10,800.8678	3.4173		10,886.2998

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	18.7870	741.3720	133.4826	0.9109	4,135.4026	1.2042	4,136.6068	412.1248	1.1520	413.2768		95,411.8994	95,411.8994	19.4363		95,897.8068
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0822	0.0604	0.5582	1.4400e-003	0.7142	1.0000e-003	0.7152	0.1783	9.2000e-004	0.1792		142.9143	142.9143	4.1200e-003		143.0172
Total	18.8692	741.4324	134.0408	0.9123	4,136.1168	1.2052	4,137.3220	412.3031	1.1530	413.4561		95,554.8137	95,554.8137	19.4404		96,040.8240

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

3.13 Building Construction - Existing Levee Degrade - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	7.5571	91.0769	58.6309	0.1091		3.5958	3.5958		3.3081	3.3081	0.0000	10,800.8678	10,800.8678	3.4173		10,886.2998
Total	7.5571	91.0769	58.6309	0.1091		3.5958	3.5958		3.3081	3.3081	0.0000	10,800.8678	10,800.8678	3.4173		10,886.2998

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	18.7870	741.3720	133.4826	0.9109	4,135.4026	1.2042	4,136.6068	412.1248	1.1520	413.2768		95,411.8994	95,411.8994	19.4363		95,897.8068
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0822	0.0604	0.5582	1.4400e-003	0.7142	1.0000e-003	0.7152	0.1783	9.2000e-004	0.1792		142.9143	142.9143	4.1200e-003		143.0172
Total	18.8692	741.4324	134.0408	0.9123	4,136.1168	1.2052	4,137.3220	412.3031	1.1530	413.4561		95,554.8137	95,554.8137	19.4404		96,040.8240

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

3.14 Building Construction - Ecosystem Project Elements - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4492	40.1939	29.0502	0.0491		1.8399	1.8399		1.6927	1.6927		4,864.2287	4,864.2287	1.5390		4,902.7035
Total	3.4492	40.1939	29.0502	0.0491		1.8399	1.8399		1.6927	1.6927		4,864.2287	4,864.2287	1.5390		4,902.7035

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0182	0.5857	0.1048	1.9100e-003	36.7906	2.9300e-003	36.7935	3.6661	2.8100e-003	3.6689		199.8707	199.8707	4.2300e-003		199.9766
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0822	0.0604	0.5582	1.4400e-003	0.2653	1.0000e-003	0.2663	0.0681	9.2000e-004	0.0691		142.9143	142.9143	4.1200e-003		143.0172
Total	0.1004	0.6461	0.6630	3.3500e-003	37.0559	3.9300e-003	37.0598	3.7343	3.7300e-003	3.7380		342.7850	342.7850	8.3500e-003		342.9938

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

3.14 Building Construction - Ecosystem Project Elements - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4492	40.1939	29.0502	0.0491		1.8399	1.8399		1.6927	1.6927	0.0000	4,864.2287	4,864.2287	1.5390		4,902.7035
Total	3.4492	40.1939	29.0502	0.0491		1.8399	1.8399		1.6927	1.6927	0.0000	4,864.2287	4,864.2287	1.5390		4,902.7035

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0182	0.5857	0.1048	1.9100e-003	36.7906	2.9300e-003	36.7935	3.6661	2.8100e-003	3.6689		199.8707	199.8707	4.2300e-003		199.9766
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0822	0.0604	0.5582	1.4400e-003	0.2653	1.0000e-003	0.2663	0.0681	9.2000e-004	0.0691		142.9143	142.9143	4.1200e-003		143.0172
Total	0.1004	0.6461	0.6630	3.3500e-003	37.0559	3.9300e-003	37.0598	3.7343	3.7300e-003	3.7380		342.7850	342.7850	8.3500e-003		342.9938

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

3.15 Building Construction - Site Restoration and Demobilization - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0700	10.5722	7.0710	9.6000e-003		0.6175	0.6175		0.5681	0.5681		951.2497	951.2497	0.3010		958.7738
Total	1.0700	10.5722	7.0710	9.6000e-003		0.6175	0.6175		0.5681	0.5681		951.2497	951.2497	0.3010		958.7738

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2378	7.8239	1.4006	0.0237	2.0162	0.0362	2.0524	0.5095	0.0347	0.5442		2,484.3993	2,484.3993	0.0732		2,486.2280
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3252	5.0000e-004	0.3257	0.0813	4.6000e-004	0.0818		71.4571	71.4571	2.0600e-003		71.5086
Total	0.2789	7.8541	1.6797	0.0244	2.3414	0.0367	2.3781	0.5909	0.0351	0.6260		2,555.8564	2,555.8564	0.0752		2,557.7366

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

3.15 Building Construction - Site Restoration and Demobilization - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0700	10.5722	7.0710	9.6000e-003		0.6175	0.6175		0.5681	0.5681	0.0000	951.2497	951.2497	0.3010		958.7738
Total	1.0700	10.5722	7.0710	9.6000e-003		0.6175	0.6175		0.5681	0.5681	0.0000	951.2497	951.2497	0.3010		958.7738

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2378	7.8239	1.4006	0.0237	2.0162	0.0362	2.0524	0.5095	0.0347	0.5442		2,484.3993	2,484.3993	0.0732		2,486.2280
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3252	5.0000e-004	0.3257	0.0813	4.6000e-004	0.0818		71.4571	71.4571	2.0600e-003		71.5086
Total	0.2789	7.8541	1.6797	0.0244	2.3414	0.0367	2.3781	0.5909	0.0351	0.6260		2,555.8564	2,555.8564	0.0752		2,557.7366

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	lb/day										lb/day						
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000			0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000			0.0000

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
User Defined Commercial	0.00	0.00	0.00		
User Defined Residential	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
User Defined Commercial	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
User Defined Residential	10.00	5.00	7.00	46.00	13.00	41.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.489634	0.040733	0.207886	0.122965	0.024655	0.005612	0.057735	0.040460	0.001009	0.001812	0.005896	0.000768	0.000835
User Defined Commercial	0.489634	0.040733	0.207886	0.122965	0.024655	0.005612	0.057735	0.040460	0.001009	0.001812	0.005896	0.000768	0.000835
User Defined Residential	0.489634	0.040733	0.207886	0.122965	0.024655	0.005612	0.057735	0.040460	0.001009	0.001812	0.005896	0.000768	0.000835

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
SubCategory	lb/day										lb/day						
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000				0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000				0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000			0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment

Lower Elkhorn Basin Alt 2 Reuse - Year 2 - Yolo County, Winter

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

Lower Elkhorn Basin
Fugitive Dust Emissions
Alternative 2 - Reuse

$$EF_0 = k \times (0.0032) \times ((U/5)^{1.3}) / ((M/2)^{1.4})$$

Variable	Amount	Units	Source
EF (PM ₁₀)	0.103	lb/ton	CalEEMod Appendix A
EF (PM _{2.5})	0.016	lb/ton	CalEEMod Appendix A
K (PM ₁₀)	0.35	factor	CalEEMod Appendix A
K (PM _{2.5})	0.053	factor	CalEEMod Appendix A
U (mean wind speed)	7.83	miles/hr	CalEEMod Appendix A
M (moisture content)	12%	percent	CalEEMod Appendix A
Type 1 Levee Fill Density	1.3	tons/cy	Project Engineer
Type 2 Levee Fill Density	1.3	tons/cy	Project Engineer
Aggregate Base Density	1.8	tons/cy	Project Engineer
Excavated Soil density	1.3	tons/cy	Project Engineer

$$E \text{ (lbs)} = EF \text{ (lb/ton)} \times TP \text{ (tons)}$$

	Work Days	Total Materials Moved (cy)	Total Materials Moved (tons)	Daily Materials Moved (tons/day)	Unmitigated		Mitigated	
					Daily PM ₁₀ (lbs/day)	Daily PM _{2.5} (lbs/day)	Daily PM ₁₀ (lbs/day)	Daily PM _{2.5} (lbs/day)
Year 2018								
Mobilization	12							
Site Preparation/Stripping	60	800	1040	17	3.57	0.55	0.89	0.14
Structure Demolition	5							
Existing Road Removal	20	3,900	7,020	351	72.31	11.23	18.08	2.81
Trench Excavation and Formcain Installation	30	41,100	53,430	1,781	366.89	56.99	91.72	14.25
New Road Construction	60							
New Levee/Seepage Berm & Soil Borrow Extraction	135	4,136,000	5,376,800	39,828	8204.60	1274.50	2051.15	318.63
Offsite Borrow Material Transport	0							
Cutoff Wall Installation (Open Trench Method)	120	118,900	154,570	1,288	530.69	82.44	132.67	20.61
Erosion Protection Installation	30							
Relief Well Installation	30							
Existing Pump Station Removal	10							
Pump Station Installation	30							
Existing Levee Degrade	60	1,533,000	1,992,900	33,215	6842.29	1062.88	1710.57	265.72
Site Restoration and Demobilization	10							
Year 2019								
Mobilization	12							
Site Preparation/Stripping	20	630	819	41	8.44	1.31	2.11	0.33
Structure Demolition	10							
Existing Road Removal	10	1,200	2,160	216	44.50	6.91	11.12	1.73
Trench Excavation and Formcain Installation	20	10,700	13,910	696	143.27	22.26	35.82	5.56
New Road Construction	30							
New Levee/Seepage Berm & Soil Borrow Extraction	90	1,834,000	2,384,200	26,491	5457.17	847.72	1364.29	211.93
Offsite Borrow Material Transport	90	1,022,000	1,328,600	14,762	6082.04	944.78	1520.51	236.20
Cutoff Wall Installation (Open Trench Method)	60	92,300	119,990	2,000	823.93	127.99	205.98	32.00
Erosion Protection Installation	15							
Relief Well Installation	0							
Existing Pump Station Removal	10							
Pump Station Installation	0							
Existing Levee Degrade	30	1,031,000	1,340,300	44,677	9203.39	1429.65	2300.85	357.41
Site Restoration and Demobilization	10							

Basic Construction Measure	0.54	percent reduction
Enhanced Mitigation	0.75	percent reduction

**Table 3.2-5. Lower Elkhorn Basin Levee Setback Project
Alternative 3 Construction Emissions (Unmitigated/Mitigated)**

Construction Phase	Pollutants (lb/day) ¹									
	ROG		NO _x		CO		PM10		PM2.5	
Year 2018 Construction										
Mobilization	0.3	0.3	4.3	4.3	1.7	1.7	1.4	1.4	0.4	0.4
Site Preparation / Stripping	4.5	4.5	54.9	44.5	35.1	35.1	12.3	6.4	3.3	2.5
Structure Demolition	0.9	0.9	15.8	14.7	7.8	7.8	5.8	4.1	1.5	1.2
Existing Road Removal	4.1	4.1	70.9	63.8	30.2	30.2	115.2	38.0	20.2	8.2
Trench Excavation and Forcemain Installation	2.4	2.4	55.7	53.2	19.3	19.3	752.0	246.2	104.6	32.5
New Road Construction	3.2	3.2	46.3	41.3	20.2	20.2	8.0	8.0	3.0	3.0
New Levee / Seepage Berm and Soil Borrow Extraction	107.1	107.1	3,182.4	3,145.1	661.1	661.1	10,568.5	2,653.5	1,649.5	421.7
Cutoff Wall Installation	2.4	2.4	30.2	25.1	20.9	20.9	594.1	152.8	92.6	24.4
Erosion Protection Installation	15.3	15.3	459.1	455.3	91.0	91.0	134.7	134.7	36.1	36.1
Relief Well Installation	1.9	1.9	22.4	17.9	16.7	16.7	1.0	1.0	0.9	0.9
Existing Pump Station Removal	0.6	0.6	7.2	6.1	6.3	6.3	0.8	0.8	0.4	0.4
Pump Station Installation	0.6	0.6	6.1	4.9	3.6	3.6	0.6	0.6	0.3	0.3
Existing Levee Degrade	23.7	23.7	676.6	656.5	178.9	178.9	9,982.7	3,283.6	1,380.1	426.7
Site Restoration and Demobilization	1.5	1.5	20.0	17.7	9.0	9.0	3.1	3.1	1.3	1.3
Year 2019 Construction										
Mobilization	0.2	0.2	4.0	4.0	1.5	1.5	1.4	1.4	0.4	0.4
Site Preparation / Stripping	4.1	4.1	49.9	40.5	32.5	32.5	16.1	7.2	3.8	2.5
Structure Demolition	0.8	0.8	14.4	13.4	7.6	7.6	8.0	4.6	1.8	1.3
Existing Road Removal	3.3	3.3	50.0	43.5	25.4	25.4	51.6	18.2	9.6	4.4
Trench Excavation and Forcemain Installation	1.4	1.4	23.2	20.9	12.7	12.7	208.9	69.0	29.4	9.4
New Road Construction	2.6	2.6	29.5	25.0	17.3	17.3	3.7	3.7	1.8	1.8
New Levee / Seepage Berm and Soil Borrow Extraction	67.7	67.7	2,026.2	2,007.0	413.7	413.7	7,201.4	2,243.6	1,122.2	355.6
Offsite Borrow Material Transport	41.8	41.8	1,347.0	1,347.0	241.2	241.2	6,522.2	1,960.7	1,060.4	351.9
Cutoff Wall Installation	2.2	2.2	29.0	24.5	19.9	19.9	842.6	216.0	130.9	34.0
Erosion Protection Installation	14.3	14.3	426.8	423.5	85.3	85.3	134.3	134.3	35.8	35.8
Existing Pump Station Removal	0.6	0.6	6.4	5.4	6.2	6.2	0.7	0.7	0.4	0.4
Existing Levee Degrade	26.4	26.4	832.5	814.3	192.7	192.7	13,344.3	4,374.1	1,846.4	568.1
Ecosystem Project Elements	3.5	3.5	40.8	32.8	29.7	29.7	38.9	20.5	5.4	3.6
Site Restoration and Demobilization	1.3	1.3	18.4	16.3	8.8	8.8	3.0	3.0	1.2	1.2
YSAQMD Threshold of Significance	10 tons/year		10 tons/year		None		80 lb/day		None	
Exceeds YSAQMD Threshold?	No		Yes		No		Yes		No	
2018 Annual Emissions² (tons/year)	9	9	249	245	55	55	1,064	293	161	44
2019 Annual Emissions² (tons/year)	6	6	171	169	35	35	847	264	131	42
Conformity Threshold (tons/year)	25		25		100				100	
Mitigated Exceeds Conformity Threshold?	No		Yes		No				No	
Notes: lb/day = pounds per day; NO _x = oxides of nitrogen; PM10 = particulate matter with aerodynamic diameter less than 10 microns; PM2.5 = particulate matter with aerodynamic diameter less than 2.5 microns; ROG = reactive organic gases; YSAQMD = Yolo-Solano Air Quality Management District										
¹ All emissions are shown in units of pounds per day unless noted otherwise.										
² Annual emissions, in units of tons per year, were conservatively estimated by multiplying the maximum daily emissions by the number of work days per subphase or task. In reality, emissions would likely fluctuate and would not continue at the maximum level throughout each subphase or task.										
Source: Data modeled by GEI Consultants, Inc. in 2016										

2018 Unmitigated Emissions

2018 CONSTRUCTION YEAR

Construction Phase	Work Days	Pollutants (lbs/day)					Total MT CO ₂ e
		ROG	No _x	CO	PM ₁₀	PM _{2.5}	
Mobilization		0.26	4.28	1.70	1.38	0.37	8.05
Construction Equipment							
Haul Trucks	12	0.13	4.18	0.75	0.72	0.20	6.85
On-Road Vehicles	12	0.14	0.10	0.95	0.67	0.17	1.21
Fugitive Dust							
Site Preparation/Stripping		4.46	54.92	35.11	12.29	3.34	188.14
Construction Equipment	60	4.23	51.86	33.63	2.08	1.91	158.55
Haul Trucks	60	0.09	2.96	0.54	5.18	0.59	23.55
On-Road Vehicles	60	0.14	0.10	0.95	0.58	0.15	6.04
Fugitive Dust					4.46	0.69	
Structure Demolition		0.91	15.84	7.80	5.78	1.48	9.46
Construction Equipment	5	0.55	5.75	5.69	0.33	0.30	1.95
Haul Trucks	5	0.31	10.05	1.79	2.81	0.75	7.34
On-Road Vehicles	5	0.05	0.03	0.32	0.33	0.08	0.17
Fugitive Dust	5				2.31	0.35	
Existing Road Removal		4.06	70.95	30.23	115.18	20.17	140.49
Construction Equipment	20	2.93	35.73	23.64	1.44	1.32	37.00
Haul Trucks	20	1.08	35.19	6.28	10.48	2.77	102.82
On-Road Vehicles	20	0.05	0.03	0.32	0.36	0.09	0.67
Fugitive Dust	20				102.90	15.98	
Trench Excavation and Forcemain Installation		2.38	55.72	19.27	751.96	104.64	96.11
Construction Equipment	30	1.18	12.56	10.37	0.69	0.63	21.29
Haul Trucks	30	1.16	43.13	8.58	229.66	22.95	73.81
On-Road Vehicles	30	0.05	0.03	0.32	0.29	0.07	1.01
Fugitive Dust	30				521.32	80.98	
New Road Construction		3.24	46.27	20.17	8.03	3.04	252.12
Construction Equipment	60	2.49	24.84	15.72	1.39	1.28	60.82
Haul Trucks	60	0.66	21.36	3.81	5.97	1.59	187.28
On-Road Vehicles	60	0.09	0.07	0.63	0.67	0.17	4.03
Fugitive Dust	60						
New Levee/Seepage Berm & Soil Borrow Extraction		107.08	3182.42	661.08	10568.53	1649.48	58382.74
Construction Equipment	135	15.51	186.82	121.71	7.72	7.10	1272.73
Haul Trucks	135	91.35	2995.44	537.79	2524.98	393.91	57087.36
On-Road Vehicles	135	0.23	0.17	1.58	1.83	0.46	22.65
Fugitive Dust	135				8034.00	1248.00	
Offsite Borrow Material Transport		0.00	0.00	0.00	0.00	0.00	0.00
Construction Equipment	0						
Haul Trucks							
Support Vehicles							
On-Road Vehicles							
Fugitive Dust							
Cutoff Wall Installation (Open Trench Method)		2.41	30.17	20.86	594.13	92.64	247.38
Construction Equipment	120	2.18	25.34	19.34	1.13	1.04	173.73
Haul Trucks	120	0.14	4.76	0.88	12.28	1.34	65.60
Support Vehicles	120						
On-Road Vehicles	120	0.09	0.07	0.63	0.48	0.12	8.05
Fugitive Dust	120				580.23	90.13	
Erosion Protection Installation		15.27	459.10	90.96	134.68	36.12	1960.12
Construction Equipment	30	1.67	19.21	11.87	0.87	0.80	30.27
Haul Trucks	30	13.51	439.83	78.46	133.08	35.14	1927.84
On-Road Vehicles	30	0.09	0.07	0.63	0.73	0.18	2.01
Fugitive Dust	30						
Relief Well Installation		1.89	22.39	16.67	1.03	0.90	38.09
Construction Equipment	30	1.85	22.36	16.35	0.95	0.88	37.09
Haul Trucks	30						
On-Road Vehicles	30	0.05	0.03	0.32	0.08	0.02	1.01
Fugitive Dust	30						
Existing Pump Station Removal		0.64	7.24	6.28	0.79	0.43	6.17
Construction Equipment	10	0.55	5.75	5.69	0.33	0.30	3.90
Haul Trucks	10	0.04	1.46	0.27	0.24	0.07	1.93
Support Vehicles	10						
On-Road Vehicles	10	0.05	0.03	0.32	0.22	0.06	0.34
Fugitive Dust	10						
Pump Station Installation		0.56	6.12	3.62	0.56	0.34	11.22
Construction Equipment	30	0.49	5.36	3.17	0.30	0.27	7.32
Haul Trucks	30	0.02	0.73	0.13	0.10	0.03	2.90
Support Vehicles	30						
On-Road Vehicles	30	0.05	0.03	0.32	0.17	0.04	1.01
Fugitive Dust	30						
Existing Levee Degrade		23.70	676.59	178.90	9982.65	1380.08	2284.53
Construction Equipment	60	8.15	100.25	63.59	3.98	3.66	301.18
Haul Trucks	60	15.46	576.26	114.68	3135.67	313.36	1979.33
Support Vehicles	60						
On-Road Vehicles	60	0.09	0.07	0.63	0.70	0.18	4.03
Fugitive Dust	60				6842.29	1062.88	

2018 Unmitigated Emissions

2018 CONSTRUCTION YEAR

Ecosystem Project Elements		0.00	0.00	0.00	0.00	0.00	0.00
Construction Equipment	0						
Haul Trucks							
Support Vehicles							
On-Road Vehicles							
Fugitive Dust							
Site Restoration and Demobilization		1.47	20.04	9.00	3.07	1.27	16.17
Construction Equipment	10	1.18	11.65	7.18	0.69	0.64	4.42
Haul Trucks	10	0.25	8.36	1.51	2.06	0.55	11.41
Support Vehicles	10						
On-Road Vehicles	10	0.05	0.03	0.32	0.33	0.08	0.34
Fugitive Dust	10						

Year 2018 Construction Maximum Overlaps

Month	Pollutants (lbs/day)				
	ROG	NO _x	CO	PM ₁₀	PM _{2.5}
Month 1	116.77	3328.40	735.93	10703.17	1674.83
Month 2	113.92	3293.06	715.46	11332.78	1757.46
Month 3	119.57	3369.50	756.49	11934.94	1853.13
Month 4	112.73	3258.86	702.10	11170.69	1745.15
Month 5	115.82	3294.62	728.67	11173.07	1746.82
Month 6	127.21	3700.21	793.18	11298.93	1779.48
Month 7	149.94	4368.32	960.80	21283.06	3159.58
Month 8	23.70	676.59	178.90	9982.65	1380.08
Month 9	23.70	676.59	178.90	9982.65	1380.08
Total Emissions (tons/year)	8.67	249.02	55.27	1063.63	160.84
Significance Threshold, Conformity (tons/year)	25.00	25.00	100.00		100.00
Significance Threshold, YSAQMD (lbs/day)				80.00	
Significance Threshold, YSAQMD (tons/year)	10.00	10.00		9.36	

2018 Mitigated Emissions
Construction Equipment 20% NOx Reduction, 75% Material Handling Fugitive Dust PM Reduction,
50% Haul Truck Road Dust PM Reduction

2018 CONSTRUCTION YEAR							
Construction Phase	Work Days	Pollutants (lbs/day)					Total MT CO ₂ e
		ROG	No _x	CO	PM ₁₀	PM _{2.5}	
Mobilization		0.26	4.28	1.70	1.38	0.37	8.05
Construction Equipment							
Haul Trucks	12	0.13	4.18	0.75	0.72	0.20	6.85
On-Road Vehicles	12	0.14	0.10	0.95	0.67	0.17	1.21
Fugitive Dust							
Site Preparation/Stripping		4.46	44.55	35.11	6.36	2.53	188.14
Construction Equipment	60	4.23	41.49	33.63	2.08	1.91	158.55
Haul Trucks	60	0.09	2.96	0.54	2.59	0.30	23.55
On-Road Vehicles	60	0.14	0.10	0.95	0.58	0.15	6.04
Fugitive Dust					1.12	0.17	
Structure Demolition		0.91	14.69	7.80	4.05	1.22	9.46
Construction Equipment	5	0.55	4.60	5.69	0.33	0.30	1.95
Haul Trucks	5	0.31	10.05	1.79	2.81	0.75	7.34
On-Road Vehicles	5	0.05	0.03	0.32	0.33	0.08	0.17
Fugitive Dust	5				0.58	0.09	
Existing Road Removal		4.06	63.80	30.23	38.01	8.18	140.49
Construction Equipment	20	2.93	28.58	23.64	1.44	1.32	37.00
Haul Trucks	20	1.08	35.19	6.28	10.48	2.77	102.82
On-Road Vehicles	20	0.05	0.03	0.32	0.36	0.09	0.67
Fugitive Dust	20				25.73	4.00	
Trench Excavation and Forcemain Installation		2.38	53.21	19.27	246.18	32.46	96.11
Construction Equipment	30	1.18	10.05	10.37	0.69	0.63	21.29
Haul Trucks	30	1.16	43.13	8.58	114.87	11.51	73.81
On-Road Vehicles	30	0.05	0.03	0.32	0.29	0.07	1.01
Fugitive Dust	30				130.33	20.25	
New Road Construction		3.24	41.30	20.17	8.03	3.04	252.12
Construction Equipment	60	2.49	19.87	15.72	1.39	1.28	60.82
Haul Trucks	60	0.66	21.36	3.81	5.97	1.59	187.28
On-Road Vehicles	60	0.09	0.07	0.63	0.67	0.17	4.03
Fugitive Dust	60				0.00	0.00	
New Levee/Seepage Berm & Soil Borrow Extraction		107.08	3145.06	661.08	2653.49	421.69	58382.74
Construction Equipment	135	15.51	149.45	121.71	7.72	7.10	1272.73
Haul Trucks	135	91.35	2995.44	537.79	635.43	102.13	57087.36
On-Road Vehicles	135	0.23	0.17	1.58	1.83	0.46	22.65
Fugitive Dust	135				2008.50	312.00	
Offsite Borrow Material Transport		0.00	0.00	0.00	0.00	0.00	0.00
Construction Equipment	0						
Haul Trucks							
Support Vehicles							
On-Road Vehicles							
Fugitive Dust							
Cutoff Wall Installation (Open Trench Method)		2.41	25.10	20.86	152.82	24.38	247.38
Construction Equipment	120	2.18	20.27	19.34	1.13	1.04	173.73
Haul Trucks	120	0.14	4.76	0.88	6.15	0.68	65.60
Support Vehicles	120						
On-Road Vehicles	120	0.09	0.07	0.63	0.48	0.12	8.05
Fugitive Dust	120				145.06	22.53	
Erosion Protection Installation		15.27	455.26	90.96	134.68	36.12	1960.12
Construction Equipment	30	1.67	15.36	11.87	0.87	0.80	30.27
Haul Trucks	30	13.51	439.83	78.46	133.08	35.14	1927.84
On-Road Vehicles	30	0.09	0.07	0.63	0.73	0.18	2.01
Fugitive Dust	30						
Relief Well Installation		1.89	17.92	16.67	1.03	0.90	38.09
Construction Equipment	30	1.85	17.89	16.35	0.95	0.88	37.09
Haul Trucks	30						
On-Road Vehicles	30	0.05	0.03	0.32	0.08	0.02	1.01
Fugitive Dust	30						
Existing Pump Station Removal		0.64	6.09	6.28	0.79	0.43	6.17
Construction Equipment	10	0.55	4.60	5.69	0.33	0.30	3.90
Haul Trucks	10	0.04	1.46	0.27	0.24	0.07	1.93
Support Vehicles	10						
On-Road Vehicles	10	0.05	0.03	0.32	0.22	0.06	0.34
Fugitive Dust	10						
Pump Station Installation		0.56	4.91	3.62	0.56	0.34	11.22
Construction Equipment	30	0.49	4.29	3.17	0.30	0.27	7.32
Haul Trucks	30	0.02	0.58	0.13	0.10	0.03	2.90
Support Vehicles	30						
On-Road Vehicles	30	0.05	0.03	0.32	0.17	0.04	1.01
Fugitive Dust	30						
Existing Levee Degrade		23.70	656.54	178.90	3283.60	426.72	2284.53
Construction Equipment	60	8.15	80.20	63.59	3.98	3.66	301.18
Haul Trucks	60	15.46	576.26	114.68	1568.34	157.16	1979.33
Support Vehicles	60						
On-Road Vehicles	60	0.09	0.07	0.63	0.70	0.18	4.03
Fugitive Dust	60				1710.57	265.72	

2018 Mitigated Emissions
Construction Equipment 20% NOx Reduction, 75% Material Handling Fugitive Dust PM Reduction,
50% Haul Truck Road Dust PM Reduction

2018 CONSTRUCTION YEAR

Ecosystem Project Elements		0.00	0.00	0.00	0.00	0.00	0.00
Construction Equipment	0						
Haul Trucks							
Support Vehicles							
On-Road Vehicles							
Fugitive Dust							
Site Restoration and Demobilization		1.47	17.71	9.00	3.07	1.27	16.17
Construction Equipment	10	1.18	9.32	7.18	0.69	0.64	4.42
Haul Trucks	10	0.25	8.36	1.51	2.06	0.55	11.41
Support Vehicles	10						
On-Road Vehicles	10	0.05	0.03	0.32	0.33	0.08	0.34
Fugitive Dust	10						

Year 2018 Construction Maximum Overlaps

Month	Pollutants (lbs/day)				
	ROG	NO_x	CO	PM₁₀	PM_{2.5}
Month 1	116.77	3272.38	735.93	2703.29	433.99
Month 2	113.92	3242.82	715.46	2906.03	456.69
Month 3	119.57	3309.22	756.49	3066.88	484.10
Month 4	112.73	3211.46	702.10	2814.34	449.10
Month 5	115.82	3240.38	728.67	2816.72	450.77
Month 6	127.21	3648.25	793.18	2942.58	483.43
Month 7	149.94	4299.67	960.80	6227.66	910.18
Month 8	23.70	656.54	178.90	3283.60	426.72
Month 9	23.70	656.54	178.90	3283.60	426.72
Total Emissions (tons/year)	8.67	244.86	55.27	293.37	44.04
Significance Threshold, Conformity (tons/year)	25.00	25.00	100.00		100.00
Significance Threshold, YSAQMD (lbs/day)				80.00	
Significance Threshold, YSAQMD (tons/year)	10.00	10.00		9.36	
Emissions to Mitigate/Offset (tons/year)		244.86		284.01	
Approximate Mitigation Fee			\$4,471,109		

Current Cost of Offsets (Carl Moyer) = \$ 18,260.00

Additional PM2.5 Precursor Test

Less than 100 tons/yr?

Nox No
 ROG Yes
 SO2 Yes
 NH4 Yes

2019 Unmitigated Emissions

2019 CONSTRUCTION YEAR

Construction Phase	Work Days	Pollutants (lbs/day)					Total MT CO ₂ e
		ROG	No _x	CO	PM ₁₀	PM _{2.5}	
Mobilization		0.24	4.00	1.54	1.38	0.36	7.93
Construction Equipment							
Haul Trucks	12	0.12	3.91	0.70	0.71	0.20	6.77
On-Road Vehicles	12	0.12	0.09	0.84	0.67	0.17	1.17
Fugitive Dust							
Site Preparation/Stripping		4.13	49.90	32.47	16.06	3.77	61.70
Construction Equipment	20	3.92	47.04	31.14	1.87	1.72	51.99
Haul Trucks	20	0.08	2.77	0.50	5.17	0.59	7.76
On-Road Vehicles	20	0.12	0.09	0.84	0.58	0.15	1.95
Fugitive Dust					8.44	1.31	
Structure Demolition		0.83	14.43	7.61	8.03	1.78	18.67
Construction Equipment	10	0.49	5.03	5.65	0.28	0.26	3.84
Haul Trucks	10	0.29	9.37	1.68	2.80	0.74	14.51
On-Road Vehicles	10	0.04	0.03	0.28	0.33	0.08	0.32
Fugitive Dust	10				4.61	0.70	
Existing Road Removal		3.30	49.96	25.40	51.62	9.63	45.74
Construction Equipment	10	2.71	32.36	21.98	1.30	1.19	18.20
Haul Trucks	10	0.55	17.57	3.14	5.48	1.44	27.21
On-Road Vehicles	10	0.04	0.03	0.28	0.35	0.09	0.32
Fugitive Dust	10				44.50	6.91	
Trench Excavation and Forcemain Installation		1.42	23.22	12.72	208.87	29.35	28.43
Construction Equipment	20	1.08	11.39	10.32	0.61	0.57	13.97
Haul Trucks	20	0.30	11.80	2.12	64.77	6.47	13.81
On-Road Vehicles	20	0.04	0.03	0.28	0.21	0.05	0.65
Fugitive Dust	20				143.27	22.26	
New Road Construction		2.57	29.54	17.34	3.69	1.79	64.53
Construction Equipment	30	2.27	22.45	15.52	1.25	1.15	29.93
Haul Trucks	30	0.22	7.03	1.26	1.86	0.50	32.66
On-Road Vehicles	30	0.08	0.06	0.56	0.59	0.15	1.95
Fugitive Dust	30						
New Levee/Seepage Berm & Soil Borrow Extraction		67.66	2026.19	413.72	7201.41	1122.22	26420.18
Construction Equipment	90	8.29	95.96	67.48	4.07	3.75	483.94
Haul Trucks	90	59.25	1930.14	345.40	1739.07	270.48	25927.49
On-Road Vehicles	90	0.12	0.09	0.84	1.10	0.28	8.76
Fugitive Dust	90				5457.17	847.72	
Offsite Borrow Material Transport		41.84	1347.05	241.24	6522.25	1060.44	18779.63
Construction Equipment							
Haul Trucks	90	41.80	1347.02	240.96	439.84	115.56	18776.72
Support Vehicles							
On-Road Vehicles	90	0.04	0.03	0.28	0.37	0.09	2.92
Fugitive Dust					6082.04	944.78	
Cutoff Wall Installation (Open Trench Method)		2.22	29.04	19.87	842.65	130.91	132.83
Construction Equipment	60	2.00	22.71	18.46	1.00	0.92	85.45
Haul Trucks	60	0.18	6.30	1.13	17.41	1.93	45.43
Support Vehicles	60						
On-Road Vehicles	60	0.04	0.03	0.28	0.30	0.08	1.95
Fugitive Dust	60				823.93	127.99	
Erosion Protection Installation		14.29	426.84	85.32	134.32	35.79	968.31
Construction Equipment	15	1.49	16.81	11.43	0.75	0.69	14.89
Haul Trucks	15	12.72	409.96	73.33	132.85	34.92	952.44
On-Road Vehicles	15	0.08	0.06	0.56	0.73	0.18	0.97
Fugitive Dust	15						
Relief Well Installation		0.00	0.00	0.00	0.00	0.00	0.00
Construction Equipment	0						
Haul Trucks							
On-Road Vehicles							
Fugitive Dust							
Existing Pump Station Removal		0.58	6.43	6.18	0.74	0.38	6.07
Construction Equipment	10	0.49	5.03	5.65	0.28	0.26	3.84
Haul Trucks	10	0.04	1.37	0.25	0.24	0.07	1.91
Support Vehicles	10						
On-Road Vehicles	10	0.04	0.03	0.28	0.22	0.06	0.32
Fugitive Dust	10						
Pump Station Installation		0.00	0.00	0.00	0.00	0.00	0.00
Construction Equipment	0						
Haul Trucks							
Support Vehicles							
On-Road Vehicles							
Fugitive Dust							
Existing Levee Degrade		26.43	832.51	192.67	13344.31	1846.42	1455.05
Construction Equipment	30	7.56	91.08	58.63	3.60	3.31	148.14
Haul Trucks	30	18.79	741.37	133.48	4136.61	413.28	1304.97
Support Vehicles	30						
On-Road Vehicles	30	0.08	0.06	0.56	0.72	0.18	1.95
Fugitive Dust	30				9203.39	1429.65	

2019 Unmitigated Emissions

2019 CONSTRUCTION YEAR

Ecosystem Project Elements		3.55	40.84	29.71	38.90	5.43	71.38
Construction Equipment	30	3.45	40.19	29.05	1.84	1.69	66.72
Haul Trucks	30	0.02	0.59	0.10	36.79	3.67	2.72
Support Vehicles	30						
On-Road Vehicles	30	0.08	0.06	0.56	0.27	0.07	1.95
Fugitive Dust	30						
Site Restoration and Demobilization		1.35	18.43	8.75	3.00	1.19	15.95
Construction Equipment	10	1.07	10.57	7.07	0.62	0.57	4.35
Haul Trucks	10	0.24	7.82	1.40	2.05	0.54	11.28
Support Vehicles	10						
On-Road Vehicles	10	0.04	0.03	0.28	0.33	0.08	0.32
Fugitive Dust	10						

Year 2019 Construction Maximum Overlaps

Month	Pollutants (lbs/day)				
	ROG	NO _x	CO	PM ₁₀	PM _{2.5}
Month 13	76.16	2144.48	480.73	7278.51	1137.76
Month 14	113.50	3426.00	685.01	13936.22	2213.80
Month 15	112.07	3402.78	672.29	13727.35	2184.45
Month 16	111.72	3402.28	674.82	14566.31	2313.57
Month 17	112.29	3408.71	681.00	14567.05	2313.94
Month 18	126.01	3829.11	760.14	14700.63	2349.36
Month 19	45.62	1318.61	316.45	13520.53	1888.83
Month 20	26.43	832.51	192.67	13344.31	1846.42
Total Emissions (tons/year)	5.68	170.61	35.01	847.23	130.62
Significance Threshold, Conformity (tons/year)	25.00	25.00	100.00		100.00
Significance Threshold, YSAQMD (lbs/day)				80.00	
Significance Threshold, YSAQMD (tons/year)	10.00	10.00		8.32	

2019 Mitigated Emissions
Construction Equipment 20% NOx Reduction, 75% Material Handling Fugitive Dust PM Reduction,
50% Haul Truck Road Dust PM Reduction

2019 CONSTRUCTION YEAR							
Construction Phase	Work Days	Pollutants (lbs/day)					Total MT CO ₂ e
		ROG	No _x	CO	PM ₁₀	PM _{2.5}	
Mobilization		0.24	4.00	1.54	1.38	0.36	7.93
Construction Equipment							
Haul Trucks	12	0.12	3.91	0.70	0.71	0.20	6.77
On-Road Vehicles	12	0.12	0.09	0.84	0.67	0.17	1.17
Fugitive Dust							
Site Preparation/Stripping		4.13	40.49	32.47	7.15	2.50	61.70
Construction Equipment	20	3.92	37.63	31.14	1.87	1.72	51.99
Haul Trucks	20	0.08	2.77	0.50	2.59	0.30	7.76
On-Road Vehicles	20	0.12	0.09	0.84	0.58	0.15	1.95
Fugitive Dust					2.11	0.33	
Structure Demolition		0.83	13.43	7.61	4.57	1.26	18.67
Construction Equipment	10	0.49	4.02	5.65	0.28	0.26	3.84
Haul Trucks	10	0.29	9.37	1.68	2.80	0.74	14.51
On-Road Vehicles	10	0.04	0.03	0.28	0.33	0.08	0.32
Fugitive Dust	10				1.15	0.17	
Existing Road Removal		3.30	43.49	25.40	18.24	4.45	45.74
Construction Equipment	10	2.71	25.89	21.98	1.30	1.19	18.20
Haul Trucks	10	0.55	17.57	3.14	5.48	1.44	27.21
On-Road Vehicles	10	0.04	0.03	0.28	0.35	0.09	0.32
Fugitive Dust	10				11.13	1.73	
Trench Excavation and Forcemain Installation		1.42	20.94	12.72	69.04	9.43	28.43
Construction Equipment	20	1.08	9.11	10.32	0.61	0.57	13.97
Haul Trucks	20	0.30	11.80	2.12	32.40	3.24	13.81
On-Road Vehicles	20	0.04	0.03	0.28	0.21	0.05	0.65
Fugitive Dust	20				35.82	5.57	
New Road Construction		2.57	25.05	17.34	3.69	1.79	64.53
Construction Equipment	30	2.27	17.96	15.52	1.25	1.15	29.93
Haul Trucks	30	0.22	7.03	1.26	1.86	0.50	32.66
On-Road Vehicles	30	0.08	0.06	0.56	0.59	0.15	1.95
Fugitive Dust	30						
New Levee/Seepage Berm & Soil Borrow Extraction		67.66	2007.00	413.72	2243.64	355.63	26420.18
Construction Equipment	90	8.29	76.77	67.48	4.07	3.75	483.94
Haul Trucks	90	59.25	1930.14	345.40	874.18	139.68	25927.49
On-Road Vehicles	90	0.12	0.09	0.84	1.10	0.28	8.76
Fugitive Dust	90				1364.29	211.93	
Offsite Borrow Material Transport		41.84	1347.05	241.24	1960.72	351.85	18779.63
Construction Equipment							
Haul Trucks	90	41.80	1347.02	240.96	439.84	115.56	18776.72
Support Vehicles							
On-Road Vehicles	90	0.04	0.03	0.28	0.37	0.09	2.92
Fugitive Dust					1520.51	236.20	
Cutoff Wall Installation (Open Trench Method)		2.22	24.50	19.87	216.00	33.97	132.83
Construction Equipment	60	2.00	18.17	18.46	1.00	0.92	85.45
Haul Trucks	60	0.18	6.30	1.13	8.72	0.97	45.43
Support Vehicles	60						
On-Road Vehicles	60	0.04	0.03	0.28	0.30	0.08	1.95
Fugitive Dust	60				205.98	32.00	
Erosion Protection Installation		14.29	423.47	85.32	134.32	35.79	968.31
Construction Equipment	15	1.49	13.45	11.43	0.75	0.69	14.89
Haul Trucks	15	12.72	409.96	73.33	132.85	34.92	952.44
On-Road Vehicles	15	0.08	0.06	0.56	0.73	0.18	0.97
Fugitive Dust	15						
Relief Well Installation		0.00	0.00	0.00	0.00	0.00	0.00
Construction Equipment	0						
Haul Trucks							
On-Road Vehicles							
Fugitive Dust							
Existing Pump Station Removal		0.58	5.43	6.18	0.74	0.38	6.07
Construction Equipment	10	0.49	4.02	5.65	0.28	0.26	3.84
Haul Trucks	10	0.04	1.37	0.25	0.24	0.07	1.91
Support Vehicles	10						
On-Road Vehicles	10	0.04	0.03	0.28	0.22	0.06	0.32
Fugitive Dust	10						
Pump Station Installation		0.00	0.00	0.00	0.00	0.00	0.00
Construction Equipment	0						
Haul Trucks							
Support Vehicles							
On-Road Vehicles							
Fugitive Dust							
Existing Levee Degrade		26.43	814.29	192.67	4374.06	568.12	1455.05
Construction Equipment	30	7.56	72.86	58.63	3.60	3.31	148.14
Haul Trucks	30	18.79	741.37	133.48	2068.91	207.21	1304.97
Support Vehicles	30						
On-Road Vehicles	30	0.08	0.06	0.56	0.72	0.18	1.95
Fugitive Dust	30				2300.85	357.41	

2019 Mitigated Emissions
Construction Equipment 20% NOx Reduction, 75% Material Handling Fugitive Dust PM Reduction,
50% Haul Truck Road Dust PM Reduction

2019 CONSTRUCTION YEAR

Ecosystem Project Elements		3.55	32.80	29.71	20.50	3.60	71.38
Construction Equipment	30	3.45	32.16	29.05	1.84	1.69	66.72
Haul Trucks	30	0.02	0.59	0.10	18.40	1.84	2.72
Support Vehicles	30						
On-Road Vehicles	30	0.08	0.06	0.56	0.27	0.07	1.95
Fugitive Dust	30						
Site Restoration and Demobilization		1.35	16.31	8.75	3.00	1.19	15.95
Construction Equipment	10	1.07	8.46	7.07	0.62	0.57	4.35
Haul Trucks	10	0.24	7.82	1.40	2.05	0.54	11.28
Support Vehicles	10						
On-Road Vehicles	10	0.04	0.03	0.28	0.33	0.08	0.32
Fugitive Dust	10						

Year 2019 Construction Maximum Overlaps

Month	Pollutants (lbs/day)				
	ROG	NO_x	CO	PM₁₀	PM_{2.5}
Month 13	76.16	2108.41	480.73	2274.99	364.20
Month 14	113.50	3400.04	685.01	4277.09	718.71
Month 15	112.07	3379.10	672.29	4208.06	709.28
Month 16	111.72	3378.54	674.82	4420.37	741.45
Month 17	112.29	3383.97	681.00	4421.11	741.83
Month 18	126.01	3802.02	760.14	4554.69	777.24
Month 19	45.62	1286.88	316.45	4531.89	608.70
Month 20	26.43	814.29	192.67	4374.06	568.12
Total Emissions (tons/year)	5.68	168.96	35.01	263.56	41.88
Significance Threshold, Conformity (tons/year)	25.00	25.00	100.00		100.00
Significance Threshold, YSAQMD (lbs/day)				80.00	
Significance Threshold, YSAQMD (tons/year)	10.00	10.00		8.32	
Emissions to Mitigate/Offset (tons/year)		168.96		255.24	
Approximate Mitigation Fee			\$3,085,151		

Current Cost of Offsets (Carl Moyer) = \$ 18,260.00

Additional PM2.5 Precursor Test
 Less than 100 tons/yr?
 Nox No
 ROG Yes
 SO2 Yes
 NH4 Yes

**Lower Elkhorn Basin
Assumed Construction Schedule
Alternative 2 and 3**

apr may jun jul aug sept oct nov dec
Year 1 (2018)

apr may jun jul aug sept oct nov
Year 2 (2019)

Construction Activity	1	2	3	4	5	6	7	8	9	Work Days	13	14	15	16	17	18	19	20	Work Days	
Mobilization	0.5									12	0.5								12	
Site Preparation/Stripping	1	1	0.5							60	1								20	
Structure Demolition	0.2									5	0.5								10	
Existing Road Removal	1									20	0.5								10	
Trench Excavation and Forcemain Installation		1	0.3							30		1							20	
New Road Construction			0.5	1	0.5					60		0.2	1						30	
New Levee/Seepage Berm & Soil Borrow Extraction	1	1	1	1	1	1	0.5			135		1	1	1	1	0.5			90	
Offsite Borrow Material Transport										0		1	1	1	1	0.5			90	
Cutoff Wall Installation (Open Trench Method)			1	1	1	1	0.5			120				0.5	1	1			60	
Erosion Protection Installation						0.7	0.5			30						0.2	0.5		15	
Relief Well Installation					1	0.2				30									0	
Existing Pump Station Removal					0.5					10					0.5				10	
Pump Station Installation					0.5	0.7				30									0	
Existing Levee Degrade							0.5	1	0.5	60								0.5	0.7	30
Ecosystem Project Elements										0								1		30
Site Restoration and Demobilization							0.5			10								0.5		10

Lower Elkhorn Basin
 On-Road and Off-Road Trips
 Alternative 3 - Unfavorable

Year 1: 2018

Year 2: 2019

Construction Phase/Vehicle Type	EMFAC2011 Class	Workers	Work Days	Daily Haul Trips	Daily One-Way Trips	One-Way Trip Distance (miles)	Workers	Work Days	Daily Haul Trips	Daily One-Way Trips	One-Way Trip Distance (miles)
Mobilization											
Equipment/supply Transport Trucks	HDT		12	5	10	30		12	5	10	30
Highway Dump Truck	HDT										
Water Truck	HDT										
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT										
Lubricating Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT	15	12		30	10	15	12		30	10
Site Preparation/Stripping											
Equipment/supply Transport Trucks	HDT										
Highway Dump Truck	HDT		60	2	4	50		20	2	4	50
Highway Dump Truck	HDT		60	2	4	0.8		20	2	4	0.8
Water Truck	HDT										
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT										
Lubricating/Fuel Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT	15	60		30	10	15	20		30	10
Structure Demolition											
Equipment/supply Transport Trucks	HDT										
Highway Dump Truck	HDT		5	8	16	50		10	8	16	50
Water Truck	HDT										
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT										
Lubricating/Fuel Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT	5	5		10	10	5	10		10	10
Existing Road Removal											
Equipment/supply Transport Trucks	HDT										
Highway Dump Truck	HDT		20	28	56	50		10	15	30	50
Water Truck	HDT										
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT										
Lubricating/Fuel Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT	5	20		10	10	5	10		10	10
Trench Excavation and Forcemain Installation											
Equipment/supply Transport Trucks	HDT										
Highway Dump Truck	HDT		30	195	390	0.8		20	55	110	0.8
Water Truck	HDT										
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT										
Lubricating/Fuel Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT	5	30		10	10	5	20		10	10
New Road Construction											
Equipment/supply Transport Trucks	HDT										
Highway Dump Truck	HDT										
Water Truck	HDT										
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT		60	17	34	50		30	6	12	50
Lubricating/Fuel Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT	10	60		20	10	10	30		20	10
New Levee/Seepage Berm & Soil Borrow Extraction											
Equipment/supply Transport Trucks	HDT										
Highway Dump Truck	HDT		135	750	1500	0.8		90	525	1050	0.8
Highway Dump Truck	HDT		135	2250	4500	50		90	1550	3100	50
Water Truck	HDT		135		2	50		90		2	50
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT										
Lubricating/Fuel Truck	T7 Utility		135		2	30		90		2	30
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT	25	135		50	10	15	90		30	10
Offsite Borrow Material Transport											
Equipment/supply Transport Trucks	HDT										
Highway Dump Truck	HDT							90	1150	2300	50
Water Truck	HDT										
Concrete Transit Truck	HDT										
Aggregate and Asphalt Truck	HDT										
Lubricating/Fuel Truck	T7 Utility										
Pickup Truck	LDT1-2										
Hydro-seed Truck	T6 Instate Heavy										
Construction Workers	LDA-LDT						5	90		10	10

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1
Yolo County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Commercial	0.00	User Defined Unit	0.00	0.00	0
Other Asphalt Surfaces	0.00	Acre	0.00	0.00	0
User Defined Residential	0.00	Dwelling Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	6.8	Precipitation Freq (Days)	54
Climate Zone	2			Operational Year	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	158.00	157.00
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tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	367.00	356.00
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tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	187.00	162.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	187.00	162.00
tblOffRoadEquipment	HorsePower	80.00	84.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	97.00	75.00

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

tblOffRoadEquipment	HorsePower	231.00	208.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	221.00	82.00
tblOffRoadEquipment	HorsePower	158.00	157.00
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tblOffRoadEquipment	HorsePower	231.00	208.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	187.00	162.00
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tblOffRoadEquipment	LoadFactor	0.48	0.50
tblOffRoadEquipment	LoadFactor	0.48	0.50
tblOffRoadEquipment	LoadFactor	0.48	0.50
tblOffRoadEquipment	LoadFactor	0.48	0.50
tblOffRoadEquipment	LoadFactor	0.48	0.50
tblOffRoadEquipment	LoadFactor	0.48	0.50
tblOffRoadEquipment	LoadFactor	0.48	0.50
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	6.00	9.00

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

tblOffRoadEquipment	UsageHours	8.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOnRoadDust	AverageVehicleWeight	2.40	11.40
tblOnRoadDust	AverageVehicleWeight	2.40	7.50
tblOnRoadDust	AverageVehicleWeight	2.40	5.80
tblOnRoadDust	AverageVehicleWeight	2.40	12.00
tblOnRoadDust	AverageVehicleWeight	2.40	11.10
tblOnRoadDust	AverageVehicleWeight	2.40	7.50
tblOnRoadDust	AverageVehicleWeight	2.40	6.50
tblOnRoadDust	AverageVehicleWeight	2.40	12.20
tblOnRoadDust	AverageVehicleWeight	2.40	10.00
tblOnRoadDust	AverageVehicleWeight	2.40	11.40
tblOnRoadDust	AverageVehicleWeight	2.40	12.50
tblOnRoadDust	AverageVehicleWeight	2.40	8.10
tblOnRoadDust	AverageVehicleWeight	2.40	12.40
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	0.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	98.40
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	0.00

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	99.50
tblOnRoadDust	HaulingPercentPave	94.00	96.90
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	MeanVehicleSpeed	40.00	10.00
tblOnRoadDust	MeanVehicleSpeed	40.00	39.50
tblOnRoadDust	MeanVehicleSpeed	40.00	10.00
tblOnRoadDust	MeanVehicleSpeed	40.00	39.80
tblOnRoadDust	MeanVehicleSpeed	40.00	39.10
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
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tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
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tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblProjectCharacteristics	OperationalYear	2018	2020
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	25.00

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripNumber	9.00	16.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	HaulingTripNumber	0.00	5,200.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	HaulingTripNumber	0.00	10.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	56.00

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
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tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	50.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblVehicleTrips	CC_TL	8.00	5.00
tblVehicleTrips	CC_TL	8.00	5.00
tblVehicleTrips	CNW_TL	9.00	7.00
tblVehicleTrips	CNW_TL	9.00	7.00
tblVehicleTrips	CW_TL	15.00	10.00
tblVehicleTrips	CW_TL	15.00	10.00
tblVehicleTrips	HO_TL	9.00	7.00
tblVehicleTrips	HS_TL	8.00	5.00
tblVehicleTrips	HW_TL	15.00	10.00

2.0 Emissions Summary

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition - Structure Demolition	Demolition	1/2/2018	1/2/2018	5	1	
2	Building Construction - Mobilization	Building Construction	1/3/2018	1/3/2018	5	1	
3	Building Construction - Site Preparation/Stripping	Building Construction	1/4/2018	1/4/2018	5	1	
4	Building Construction - Existing Road Removal	Building Construction	1/5/2018	1/5/2018	5	1	
5	Building Construction - Trench Excavation and Forcemain Installation	Building Construction	1/6/2018	1/8/2018	5	1	
6	Building Construction - New Road Construction	Building Construction	1/9/2018	1/9/2018	5	1	
7	Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Building Construction	1/10/2018	1/10/2018	5	1	
8	Building Construction - Cutoff Wall Installation (Open Trench Method)	Building Construction	1/11/2018	1/11/2018	5	1	
9	Building Construction - Erosion Protection Installation	Building Construction	1/12/2018	1/12/2018	5	1	
10	Building Construction - Relief Well Installation	Building Construction	1/13/2018	1/15/2018	5	1	
11	Building Construction - Existing Pump Station Removal	Building Construction	1/16/2018	1/16/2018	5	1	
12	Building Construction - Pump Station Installation	Building Construction	1/17/2018	1/17/2018	5	1	
13	Building Construction - Existing Levee Degrade	Building Construction	1/18/2018	1/18/2018	5	1	
14	Building Construction - Site Restoration and Demobilization	Building Construction	1/19/2018	1/19/2018	5	1	

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition - Structure Demolition	Excavators	1	9.00	157	0.38
Demolition - Structure Demolition	Rubber Tired Dozer	1	9.00	358	0.40
Demolition - Structure Demolition	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Mobilization	Excavators	0	0.00	157	0.38
Building Construction - Site Preparation/Stripping	Excavators	1	9.00	157	0.38
Building Construction - Site Preparation/Stripping	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Site Preparation/Stripping	Scrapers	3	9.00	356	0.50
Building Construction - Existing Road Removal	Excavators	1	9.00	157	0.38
Building Construction - Existing Road Removal	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Existing Road Removal	Scrapers	1	9.00	356	0.50
Building Construction - Existing Road Removal	Scrapers	1	9.00	356	0.50
Building Construction - Trench Excavation and Forcemain Installation	Excavators	1	9.00	157	0.38
Building Construction - Trench Excavation and Forcemain Installation	Other Construction Equipment	1	9.00	172	0.42
Building Construction - Trench Excavation and Forcemain Installation	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - New Road Construction	Graders	2	9.00	162	0.41
Building Construction - New Road Construction	Pavers	1	9.00	130	0.42

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Building Construction - New Road Construction	Plate Compactors	2	9.00	8	0.43
Building Construction - New Road Construction	Rollers	1	9.00	80	0.38
Building Construction - New Road Construction	Rubber Tired Dozer	2	9.00	358	0.40
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Excavators	4	9.00	157	0.38
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Graders	1	9.00	162	0.41
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Rollers	1	9.00	84	0.38
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Rubber Tired Dozer	2	9.00	358	0.40
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Scrapers	10	9.00	356	0.50
Building Construction - Cutoff Wall Installation (Open Trench Method)	Excavators	1	9.00	157	0.38
Building Construction - Cutoff Wall Installation (Open Trench Method)	Excavators	1	9.00	157	0.38
Building Construction - Cutoff Wall Installation (Open Trench Method)	Rough Terrain Forklift	1	4.00	100	0.40
Building Construction - Cutoff Wall Installation (Open Trench Method)	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Cutoff Wall Installation (Open Trench Method)	Scrapers	1	9.00	356	0.50
Building Construction - Cutoff Wall Installation (Open Trench Method)	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Erosion Protection Installation	Cranes	4	4.00	208	0.29
Building Construction - Erosion Protection Installation	Excavators	2	9.00	157	0.38
Building Construction - Erosion Protection Installation	Rubber Tired Dozer	2	9.00	358	0.40
Building Construction - Relief Well Installation	Bore/Drill Rigs	1	9.00	82	0.50
Building Construction - Relief Well Installation	Excavators	1	9.00	157	0.38
Building Construction - Relief Well Installation	Scrapers	1	9.00	356	0.50

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

Building Construction - Existing Pump Station Removal	Excavators	1	9.00	157	0.38
Building Construction - Existing Pump Station Removal	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Existing Pump Station Removal	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Pump Station Installation	Cranes	1	4.00	208	0.29
Building Construction - Pump Station Installation	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Existing Levee Degrade	Excavators	1	9.00	157	0.38
Building Construction - Existing Levee Degrade	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Existing Levee Degrade	Scrapers	6	9.00	356	0.50
Building Construction - Site Restoration and Demobilization	Graders	1	9.00	162	0.41
Building Construction - Site Restoration and Demobilization	Rollers	1	9.00	84	0.38

Trips and VMT

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition - Structure Demolition	3	10.00	0.00	16.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Mobilization	0	30.00	0.00	10.00	10.00	7.00	30.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Site Preparation/Strip	5	30.00	0.00	4.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Site Preparation/Strip	5	0.00	0.00	4.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Road Remov	4	10.00	0.00	56.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Trench Excavation an	3	10.00	0.00	390.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - New Road Constructi	8	20.00	0.00	34.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	18	50.00	0.00	1,500.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	18	0.00	0.00	4,500.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	18	0.00	0.00	2.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	18	0.00	0.00	2.00	10.00	7.00	30.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Cutoff Wall Installati	6	20.00	0.00	10.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - Cutoff Wall Installati	6	0.00	0.00	10.00	10.00	7.00	25.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Erosion Protection Inst	8	20.00	0.00	700.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Relief Well Installation	3	10.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Pump Station	3	10.00	0.00	4.00	10.00	7.00	25.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Pump Station Installati	2	10.00	0.00	2.00	10.00	7.00	25.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Levee Decrad	8	20.00	0.00	5,200.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Levee Decrad	8	0.00	0.00	2.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Site Restoration and D	2	10.00	0.00	20.00	10.00	7.00	30.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

3.2 Demolition - Structure Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3061	0.0000	2.3061	0.3492	0.0000	0.3492			0.0000			0.0000
Off-Road	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035		852.9003	852.9003	0.2655		859.5383
Total	0.5547	5.7483	5.6944	8.4800e-003	2.3061	0.3299	2.6360	0.3492	0.3035	0.6527		852.9003	852.9003	0.2655		859.5383

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3088	10.0533	1.7934	0.0309	2.7577	0.0521	2.8099	0.6964	0.0499	0.7463		3,236.4188	3,236.4188	0.0706		3,238.1834
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3339	5.2000e-004	0.3344	0.0835	4.8000e-004	0.0839		73.9101	73.9101	2.3600e-003		73.9690
Total	0.3541	10.0877	2.1101	0.0316	3.0917	0.0527	3.1443	0.7799	0.0504	0.8302		3,310.3289	3,310.3289	0.0730		3,312.1524

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

3.2 Demolition - Structure Demolition - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3061	0.0000	2.3061	0.3492	0.0000	0.3492			0.0000			0.0000
Off-Road	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035	0.0000	852.9003	852.9003	0.2655		859.5383
Total	0.5547	5.7483	5.6944	8.4800e-003	2.3061	0.3299	2.6360	0.3492	0.3035	0.6527	0.0000	852.9003	852.9003	0.2655		859.5383

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3088	10.0533	1.7934	0.0309	2.7577	0.0521	2.8099	0.6964	0.0499	0.7463		3,236.4188	3,236.4188	0.0706		3,238.1834
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3339	5.2000e-004	0.3344	0.0835	4.8000e-004	0.0839		73.9101	73.9101	2.3600e-003		73.9690
Total	0.3541	10.0877	2.1101	0.0316	3.0917	0.0527	3.1443	0.7799	0.0504	0.8302		3,310.3289	3,310.3289	0.0730		3,312.1524

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

3.3 Building Construction - Mobilization - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1266	4.1786	0.7547	0.0120	0.6964	0.0201	0.7166	0.1783	0.0193	0.1975		1,256.748 3	1,256.748 3	0.0378		1,257.692 7
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1361	0.1034	0.9499	2.2300e-003	0.6639	1.5500e-003	0.6655	0.1675	1.4300e-003	0.1689		221.7303	221.7303	7.0700e-003		221.9070
Total	0.2626	4.2820	1.7046	0.0142	1.3604	0.0217	1.3820	0.3458	0.0207	0.3664		1,478.478 6	1,478.478 6	0.0449		1,479.599 7

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

3.3 Building Construction - Mobilization - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1266	4.1786	0.7547	0.0120	0.6964	0.0201	0.7166	0.1783	0.0193	0.1975		1,256.748 3	1,256.748 3	0.0378		1,257.692 7
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1361	0.1034	0.9499	2.2300e-003	0.6639	1.5500e-003	0.6655	0.1675	1.4300e-003	0.1689		221.7303	221.7303	7.0700e-003		221.9070
Total	0.2626	4.2820	1.7046	0.0142	1.3604	0.0217	1.3820	0.3458	0.0207	0.3664		1,478.478 6	1,478.478 6	0.0449		1,479.599 7

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

3.4 Building Construction - Site Preparation/Stripping - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.2345	51.8576	33.6268	0.0574		2.0752	2.0752		1.9092	1.9092		5,780.7820	5,780.7820	1.7996		5,825.7729
Total	4.2345	51.8576	33.6268	0.0574		2.0752	2.0752		1.9092	1.9092		5,780.7820	5,780.7820	1.7996		5,825.7729

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0891	2.9556	0.5364	8.2500e-003	5.1622	0.0138	5.1760	0.5794	0.0132	0.5927		864.4521	864.4521	0.0291		865.1785
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1361	0.1034	0.9499	2.2300e-003	0.5778	1.5500e-003	0.5794	0.1464	1.4300e-003	0.1478		221.7303	221.7303	7.0700e-003		221.9070
Total	0.2251	3.0591	1.4863	0.0105	5.7400	0.0154	5.7554	0.7258	0.0146	0.7404		1,086.1825	1,086.1825	0.0361		1,087.0855

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

3.4 Building Construction - Site Preparation/Stripping - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.2345	51.8576	33.6268	0.0574		2.0752	2.0752		1.9092	1.9092	0.0000	5,780.7820	5,780.7820	1.7996		5,825.7729
Total	4.2345	51.8576	33.6268	0.0574		2.0752	2.0752		1.9092	1.9092	0.0000	5,780.7820	5,780.7820	1.7996		5,825.7729

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0891	2.9556	0.5364	8.2500e-003	5.1622	0.0138	5.1760	0.5794	0.0132	0.5927		864.4521	864.4521	0.0291		865.1785
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1361	0.1034	0.9499	2.2300e-003	0.5778	1.5500e-003	0.5794	0.1464	1.4300e-003	0.1478		221.7303	221.7303	7.0700e-003		221.9070
Total	0.2251	3.0591	1.4863	0.0105	5.7400	0.0154	5.7554	0.7258	0.0146	0.7404		1,086.1825	1,086.1825	0.0361		1,087.0855

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

3.5 Building Construction - Existing Road Removal - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242		4,047.4659	4,047.4659	1.2600		4,078.9667
Total	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242		4,047.4659	4,047.4659	1.2600		4,078.9667

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.0806	35.1864	6.2769	0.1081	10.3018	0.1825	10.4842	2.5969	0.1746	2.7715		11,327.4659	11,327.4659	0.2471		11,333.6421
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3571	5.2000e-004	0.3576	0.0892	4.8000e-004	0.0896		73.9101	73.9101	2.3600e-003		73.9690
Total	1.1260	35.2208	6.5936	0.1088	10.6589	0.1830	10.8419	2.6861	0.1751	2.8612		11,401.3760	11,401.3760	0.2494		11,407.6111

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

3.5 Building Construction - Existing Road Removal - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242	0.0000	4,047.4659	4,047.4659	1.2600		4,078.9667
Total	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242	0.0000	4,047.4659	4,047.4659	1.2600		4,078.9667

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.0806	35.1864	6.2769	0.1081	10.3018	0.1825	10.4842	2.5969	0.1746	2.7715		11,327.4659	11,327.4659	0.2471		11,333.6421
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3571	5.2000e-004	0.3576	0.0892	4.8000e-004	0.0896		73.9101	73.9101	2.3600e-003		73.9690
Total	1.1260	35.2208	6.5936	0.1088	10.6589	0.1830	10.8419	2.6861	0.1751	2.8612		11,401.3760	11,401.3760	0.2494		11,407.6111

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

3.6 Building Construction - Trench Excavation and Forcemain Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1803	12.5639	10.3721	0.0154		0.6885	0.6885		0.6334	0.6334		1,552.3585	1,552.3585	0.4833		1,564.4402
Total	1.1803	12.5639	10.3721	0.0154		0.6885	0.6885		0.6334	0.6334		1,552.3585	1,552.3585	0.4833		1,564.4402

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.1569	43.1256	8.5841	0.0515	229.5813	0.0752	229.6565	22.8796	0.0720	22.9516		5,396.3731	5,396.3731	1.1125		5,424.1851
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.2934	5.2000e-004	0.2939	0.0735	4.8000e-004	0.0740		73.9101	73.9101	2.3600e-003		73.9690
Total	1.2023	43.1601	8.9007	0.0523	229.8747	0.0757	229.9504	22.9531	0.0725	23.0256		5,470.2832	5,470.2832	1.1148		5,498.1541

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

3.6 Building Construction - Trench Excavation and Forcemain Installation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1803	12.5639	10.3721	0.0154		0.6885	0.6885		0.6334	0.6334	0.0000	1,552.3585	1,552.3585	0.4833		1,564.4402
Total	1.1803	12.5639	10.3721	0.0154		0.6885	0.6885		0.6334	0.6334	0.0000	1,552.3585	1,552.3585	0.4833		1,564.4402

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.1569	43.1256	8.5841	0.0515	229.5813	0.0752	229.6565	22.8796	0.0720	22.9516		5,396.3731	5,396.3731	1.1125		5,424.1851
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.2934	5.2000e-004	0.2939	0.0735	4.8000e-004	0.0740		73.9101	73.9101	2.3600e-003		73.9690
Total	1.2023	43.1601	8.9007	0.0523	229.8747	0.0757	229.9504	22.9531	0.0725	23.0256		5,470.2832	5,470.2832	1.1148		5,498.1541

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

3.7 Building Construction - New Road Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.4905	24.8383	15.7211	0.0223		1.3920	1.3920		1.2824	1.2824		2,217.7128	2,217.7128	0.6743		2,234.5704
Total	2.4905	24.8383	15.7211	0.0223		1.3920	1.3920		1.2824	1.2824		2,217.7128	2,217.7128	0.6743		2,234.5704

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.6561	21.3632	3.8110	0.0656	5.8602	0.1108	5.9710	1.4799	0.1060	1.5859		6,877.3900	6,877.3900	0.1500		6,881.1398
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.6678	1.0300e-003	0.6688	0.1669	9.5000e-004	0.1679		147.8202	147.8202	4.7100e-003		147.9380
Total	0.7468	21.4321	4.4443	0.0671	6.5280	0.1118	6.6398	1.6468	0.1069	1.7538		7,025.2102	7,025.2102	0.1547		7,029.0778

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

3.7 Building Construction - New Road Construction - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.4905	24.8383	15.7211	0.0223		1.3920	1.3920		1.2824	1.2824	0.0000	2,217.7128	2,217.7128	0.6743		2,234.5704
Total	2.4905	24.8383	15.7211	0.0223		1.3920	1.3920		1.2824	1.2824	0.0000	2,217.7128	2,217.7128	0.6743		2,234.5704

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.6561	21.3632	3.8110	0.0656	5.8602	0.1108	5.9710	1.4799	0.1060	1.5859		6,877.3900	6,877.3900	0.1500		6,881.1398
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.6678	1.0300e-003	0.6688	0.1669	9.5000e-004	0.1679		147.8202	147.8202	4.7100e-003		147.9380
Total	0.7468	21.4321	4.4443	0.0671	6.5280	0.1118	6.6398	1.6468	0.1069	1.7538		7,025.2102	7,025.2102	0.1547		7,029.0778

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

3.8 Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	15.5068	186.8154	121.7054	0.2049		7.7211	7.7211		7.1034	7.1034		20,623.7177	20,623.7177	6.4204		20,784.2288
Total	15.5068	186.8154	121.7054	0.2049		7.7211	7.7211		7.1034	7.1034		20,623.7177	20,623.7177	6.4204		20,784.2288

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	91.3488	2,995.4357	537.7874	8.8882	2,510.0162	14.9629	2,524.9791	379.5989	14.3154	393.9143		931,653.9742	931,653.9742	24.1472		932,257.6550
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2268	0.1724	1.5832	3.7100e-003	1.8291	2.5800e-003	1.8317	0.4565	2.3800e-003	0.4589		369.5506	369.5506	0.0118		369.8450
Total	91.5755	2,995.6080	539.3706	8.8919	2,511.8453	14.9654	2,526.8107	380.0554	14.3178	394.3732		932,023.5247	932,023.5247	24.1590		932,627.4999

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

3.8 Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	15.5068	186.8154	121.7054	0.2049		7.7211	7.7211		7.1034	7.1034	0.0000	20,623.7177	20,623.7177	6.4204		20,784.2288
Total	15.5068	186.8154	121.7054	0.2049		7.7211	7.7211		7.1034	7.1034	0.0000	20,623.7177	20,623.7177	6.4204		20,784.2288

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	91.3488	2,995.4357	537.7874	8.8882	2,510.0162	14.9629	2,524.9791	379.5989	14.3154	393.9143		931,653.9742	931,653.9742	24.1472		932,257.6550
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2268	0.1724	1.5832	3.7100e-003	1.8291	2.5800e-003	1.8317	0.4565	2.3800e-003	0.4589		369.5506	369.5506	0.0118		369.8450
Total	91.5755	2,995.6080	539.3706	8.8919	2,511.8453	14.9654	2,526.8107	380.0554	14.3178	394.3732		932,023.5247	932,023.5247	24.1590		932,627.4999

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

3.9 Building Construction - Cutoff Wall Installation (Open Trench Method) - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1817	25.3414	19.3445	0.0315		1.1335	1.1335		1.0428	1.0428		3,167.0501	3,167.0501	0.9860		3,191.6987
Total	2.1817	25.3414	19.3445	0.0315		1.1335	1.1335		1.0428	1.0428		3,167.0501	3,167.0501	0.9860		3,191.6987

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1397	4.7582	0.8833	0.0115	12.2627	0.0189	12.2816	1.3211	0.0181	1.3392		1,203.6134	1,203.6134	0.0647		1,205.2314
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.4771	1.0300e-003	0.4782	0.1201	9.5000e-004	0.1211		147.8202	147.8202	4.7100e-003		147.9380
Total	0.2304	4.8272	1.5166	0.0130	12.7398	0.0200	12.7598	1.4412	0.0191	1.4603		1,351.4337	1,351.4337	0.0694		1,353.1694

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

3.9 Building Construction - Cutoff Wall Installation (Open Trench Method) - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1817	25.3414	19.3445	0.0315		1.1335	1.1335		1.0428	1.0428	0.0000	3,167.0501	3,167.0501	0.9860		3,191.6987
Total	2.1817	25.3414	19.3445	0.0315		1.1335	1.1335		1.0428	1.0428	0.0000	3,167.0501	3,167.0501	0.9860		3,191.6987

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1397	4.7582	0.8833	0.0115	12.2627	0.0189	12.2816	1.3211	0.0181	1.3392		1,203.6134	1,203.6134	0.0647		1,205.2314
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.4771	1.0300e-003	0.4782	0.1201	9.5000e-004	0.1211		147.8202	147.8202	4.7100e-003		147.9380
Total	0.2304	4.8272	1.5166	0.0130	12.7398	0.0200	12.7598	1.4412	0.0191	1.4603		1,351.4337	1,351.4337	0.0694		1,353.1694

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

3.10 Building Construction - Erosion Protection Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6743	19.2050	11.8651	0.0219		0.8673	0.8673		0.7980	0.7980		2,207.2462	2,207.2462	0.6872		2,224.4248
Total	1.6743	19.2050	11.8651	0.0219		0.8673	0.8673		0.7980	0.7980		2,207.2462	2,207.2462	0.6872		2,224.4248

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	13.5077	439.8295	78.4617	1.3508	130.8040	2.2809	133.0849	32.9605	2.1822	35.1428		141,593.3231	141,593.3231	3.0881		141,670.5256
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.7258	1.0300e-003	0.7269	0.1812	9.5000e-004	0.1821		147.8202	147.8202	4.7100e-003		147.9380
Total	13.5984	439.8985	79.0950	1.3523	131.5299	2.2819	133.8118	33.1417	2.1832	35.3249		141,741.1433	141,741.1433	3.0928		141,818.4636

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

3.10 Building Construction - Erosion Protection Installation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6743	19.2050	11.8651	0.0219		0.8673	0.8673		0.7980	0.7980	0.0000	2,207.246 2	2,207.246 2	0.6872		2,224.424 8
Total	1.6743	19.2050	11.8651	0.0219		0.8673	0.8673		0.7980	0.7980	0.0000	2,207.246 2	2,207.246 2	0.6872		2,224.424 8

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	13.5077	439.8295	78.4617	1.3508	130.8040	2.2809	133.0849	32.9605	2.1822	35.1428		141,593.3 231	141,593.3 231	3.0881		141,670.5 256
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.7258	1.0300e-003	0.7269	0.1812	9.5000e-004	0.1821		147.8202	147.8202	4.7100e-003		147.9380
Total	13.5984	439.8985	79.0950	1.3523	131.5299	2.2819	133.8118	33.1417	2.1832	35.3249		141,741.1 433	141,741.1 433	3.0928		141,818.4 636

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

3.11 Building Construction - Relief Well Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8458	22.3587	16.3536	0.0269		0.9536	0.9536		0.8773	0.8773		2,704.3656	2,704.3656	0.8419		2,725.4133
Total	1.8458	22.3587	16.3536	0.0269		0.9536	0.9536		0.8773	0.8773		2,704.3656	2,704.3656	0.8419		2,725.4133

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.0761	5.2000e-004	0.0766	0.0202	4.8000e-004	0.0207		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0454	0.0345	0.3166	7.4000e-004	0.0761	5.2000e-004	0.0766	0.0202	4.8000e-004	0.0207		73.9101	73.9101	2.3600e-003		73.9690

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

3.11 Building Construction - Relief Well Installation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8458	22.3587	16.3536	0.0269		0.9536	0.9536		0.8773	0.8773	0.0000	2,704.3656	2,704.3656	0.8419		2,725.4133
Total	1.8458	22.3587	16.3536	0.0269		0.9536	0.9536		0.8773	0.8773	0.0000	2,704.3656	2,704.3656	0.8419		2,725.4133

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.0761	5.2000e-004	0.0766	0.0202	4.8000e-004	0.0207		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0454	0.0345	0.3166	7.4000e-004	0.0761	5.2000e-004	0.0766	0.0202	4.8000e-004	0.0207		73.9101	73.9101	2.3600e-003		73.9690

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

3.12 Building Construction - Existing Pump Station Removal - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035		852.9003	852.9003	0.2655		859.5383
Total	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035		852.9003	852.9003	0.2655		859.5383

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0440	1.4610	0.2653	4.0700e-003	0.2322	6.8000e-003	0.2390	0.0594	6.5100e-003	0.0659		426.0980	426.0980	0.0145		426.4599
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.2213	5.2000e-004	0.2218	0.0558	4.8000e-004	0.0563		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0894	1.4955	0.5819	4.8100e-003	0.4535	7.3200e-003	0.4608	0.1153	6.9900e-003	0.1222		500.0081	500.0081	0.0168		500.4289

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

3.12 Building Construction - Existing Pump Station Removal - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035	0.0000	852.9003	852.9003	0.2655		859.5383
Total	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035	0.0000	852.9003	852.9003	0.2655		859.5383

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0440	1.4610	0.2653	4.0700e-003	0.2322	6.8000e-003	0.2390	0.0594	6.5100e-003	0.0659		426.0980	426.0980	0.0145		426.4599
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.2213	5.2000e-004	0.2218	0.0558	4.8000e-004	0.0563		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0894	1.4955	0.5819	4.8100e-003	0.4535	7.3200e-003	0.4608	0.1153	6.9900e-003	0.1222		500.0081	500.0081	0.0168		500.4289

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

3.13 Building Construction - Pump Station Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4884	5.3583	3.1680	5.3000e-003		0.2950	0.2950		0.2714	0.2714		533.4615	533.4615	0.1661		537.6133
Total	0.4884	5.3583	3.1680	5.3000e-003		0.2950	0.2950		0.2714	0.2714		533.4615	533.4615	0.1661		537.6133

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0220	0.7305	0.1326	2.0300e-003	0.0917	3.4000e-003	0.0951	0.0237	3.2500e-003	0.0270		213.0490	213.0490	7.2400e-003		213.2299
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.1726	5.2000e-004	0.1731	0.0439	4.8000e-004	0.0443		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0674	0.7650	0.4493	2.7700e-003	0.2643	3.9200e-003	0.2682	0.0676	3.7300e-003	0.0713		286.9591	286.9591	9.6000e-003		287.1989

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

3.13 Building Construction - Pump Station Installation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4884	5.3583	3.1680	5.3000e-003		0.2950	0.2950		0.2714	0.2714	0.0000	533.4615	533.4615	0.1661		537.6133
Total	0.4884	5.3583	3.1680	5.3000e-003		0.2950	0.2950		0.2714	0.2714	0.0000	533.4615	533.4615	0.1661		537.6133

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0220	0.7305	0.1326	2.0300e-003	0.0917	3.4000e-003	0.0951	0.0237	3.2500e-003	0.0270		213.0490	213.0490	7.2400e-003		213.2299
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.1726	5.2000e-004	0.1731	0.0439	4.8000e-004	0.0443		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0674	0.7650	0.4493	2.7700e-003	0.2643	3.9200e-003	0.2682	0.0676	3.7300e-003	0.0713		286.9591	286.9591	9.6000e-003		287.1989

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

3.14 Building Construction - Existing Levee Degrade - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	8.1458	100.2544	63.5917	0.1091		3.9825	3.9825		3.6639	3.6639		10,980.7305	10,980.7305	3.4185		11,066.1917
Total	8.1458	100.2544	63.5917	0.1091		3.9825	3.9825		3.6639	3.6639		10,980.7305	10,980.7305	3.4185		11,066.1917

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	15.4645	576.2648	114.6788	0.6909	3,134.6651	1.0095	3,135.6746	312.3937	0.9658	313.3595		72,356.1930	72,356.1930	14.8419		72,727.2410
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.7026	1.0300e-003	0.7036	0.1755	9.5000e-004	0.1764		147.8202	147.8202	4.7100e-003		147.9380
Total	15.5552	576.3337	115.3121	0.6924	3,135.3677	1.0105	3,136.3783	312.5692	0.9667	313.5359		72,504.0132	72,504.0132	14.8466		72,875.1790

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

3.14 Building Construction - Existing Levee Degrade - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	8.1458	100.2544	63.5917	0.1091		3.9825	3.9825		3.6639	3.6639	0.0000	10,980.7305	10,980.7305	3.4185		11,066.1917
Total	8.1458	100.2544	63.5917	0.1091		3.9825	3.9825		3.6639	3.6639	0.0000	10,980.7305	10,980.7305	3.4185		11,066.1917

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	15.4645	576.2648	114.6788	0.6909	3,134.6651	1.0095	3,135.6746	312.3937	0.9658	313.3595		72,356.1930	72,356.1930	14.8419		72,727.2410
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.7026	1.0300e-003	0.7036	0.1755	9.5000e-004	0.1764		147.8202	147.8202	4.7100e-003		147.9380
Total	15.5552	576.3337	115.3121	0.6924	3,135.3677	1.0105	3,136.3783	312.5692	0.9667	313.5359		72,504.0132	72,504.0132	14.8466		72,875.1790

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

3.15 Building Construction - Site Restoration and Demobilization - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1763	11.6495	7.1750	9.6000e-003		0.6920	0.6920		0.6367	0.6367		967.2218	967.2218	0.3011		974.7496
Total	1.1763	11.6495	7.1750	9.6000e-003		0.6920	0.6920		0.6367	0.6367		967.2218	967.2218	0.3011		974.7496

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2532	8.3572	1.5094	0.0240	2.0163	0.0403	2.0566	0.5096	0.0385	0.5481		2,513.4965	2,513.4965	0.0756		2,515.3854
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3252	5.2000e-004	0.3257	0.0813	4.8000e-004	0.0818		73.9101	73.9101	2.3600e-003		73.9690
Total	0.2985	8.3917	1.8261	0.0247	2.3415	0.0408	2.3823	0.5909	0.0390	0.6299		2,587.4066	2,587.4066	0.0779		2,589.3544

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

3.15 Building Construction - Site Restoration and Demobilization - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1763	11.6495	7.1750	9.6000e-003		0.6920	0.6920		0.6367	0.6367	0.0000	967.2218	967.2218	0.3011		974.7496
Total	1.1763	11.6495	7.1750	9.6000e-003		0.6920	0.6920		0.6367	0.6367	0.0000	967.2218	967.2218	0.3011		974.7496

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2532	8.3572	1.5094	0.0240	2.0163	0.0403	2.0566	0.5096	0.0385	0.5481		2,513.4965	2,513.4965	0.0756		2,515.3854
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3252	5.2000e-004	0.3257	0.0813	4.8000e-004	0.0818		73.9101	73.9101	2.3600e-003		73.9690
Total	0.2985	8.3917	1.8261	0.0247	2.3415	0.0408	2.3823	0.5909	0.0390	0.6299		2,587.4066	2,587.4066	0.0779		2,589.3544

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
User Defined Commercial	0.00	0.00	0.00		
User Defined Residential	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
User Defined Commercial	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
User Defined Residential	10.00	5.00	7.00	46.00	13.00	41.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Commercial	0.486608	0.042104	0.206882	0.127088	0.026765	0.005851	0.054651	0.039468	0.001006	0.001905	0.006007	0.000778	0.000886
Other Asphalt Surfaces	0.486608	0.042104	0.206882	0.127088	0.026765	0.005851	0.054651	0.039468	0.001006	0.001905	0.006007	0.000778	0.000886
User Defined Residential	0.486608	0.042104	0.206882	0.127088	0.026765	0.005851	0.054651	0.039468	0.001006	0.001905	0.006007	0.000778	0.000886

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Land Use	kBTU/yr	lb/day										lb/day						
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Land Use	kBTU/yr	lb/day										lb/day						
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
SubCategory	lb/day										lb/day						
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000				0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000				0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000			0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment

Lower Elkhorn Basin Alt 3 Unfavorable - Year 1 - Yolo County, Winter

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2
Yolo County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Commercial	0.00	User Defined Unit	0.00	0.00	0
Other Asphalt Surfaces	0.00	Acre	0.00	0.00	0
User Defined Residential	0.00	Dwelling Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	6.8	Precipitation Freq (Days)	54
Climate Zone	2			Operational Year	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	187.00	162.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	187.00	162.00
tblOffRoadEquipment	HorsePower	80.00	84.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	367.00	356.00

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	231.00	208.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	221.00	82.00
tblOffRoadEquipment	HorsePower	187.00	162.00
tblOffRoadEquipment	HorsePower	80.00	84.00
tblOffRoadEquipment	LoadFactor	0.48	0.50
tblOffRoadEquipment	LoadFactor	0.48	0.50
tblOffRoadEquipment	LoadFactor	0.48	0.50
tblOffRoadEquipment	LoadFactor	0.48	0.50
tblOffRoadEquipment	LoadFactor	0.48	0.50
tblOffRoadEquipment	LoadFactor	0.48	0.50
tblOffRoadEquipment	LoadFactor	0.48	0.50
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	UsageHours	6.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

tblOffRoadEquipment	UsageHours	8.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOnRoadDust	AverageVehicleWeight	2.40	11.40
tblOnRoadDust	AverageVehicleWeight	2.40	12.40
tblOnRoadDust	AverageVehicleWeight	2.40	7.50
tblOnRoadDust	AverageVehicleWeight	2.40	12.20
tblOnRoadDust	AverageVehicleWeight	2.40	4.40
tblOnRoadDust	AverageVehicleWeight	2.40	11.10
tblOnRoadDust	AverageVehicleWeight	2.40	7.50
tblOnRoadDust	AverageVehicleWeight	2.40	6.50
tblOnRoadDust	AverageVehicleWeight	2.40	11.90
tblOnRoadDust	AverageVehicleWeight	2.40	7.10
tblOnRoadDust	AverageVehicleWeight	2.40	10.00
tblOnRoadDust	AverageVehicleWeight	2.40	12.50
tblOnRoadDust	AverageVehicleWeight	2.40	12.50
tblOnRoadDust	AverageVehicleWeight	2.40	10.30
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	0.00
tblOnRoadDust	HaulingPercentPave	94.00	0.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	98.40
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	0.00

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tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	99.50
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	96.90
tblOnRoadDust	MeanVehicleSpeed	40.00	10.00
tblOnRoadDust	MeanVehicleSpeed	40.00	10.00
tblOnRoadDust	MeanVehicleSpeed	40.00	39.50
tblOnRoadDust	MeanVehicleSpeed	40.00	10.00
tblOnRoadDust	MeanVehicleSpeed	40.00	39.80
tblOnRoadDust	MeanVehicleSpeed	40.00	39.10
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblProjectCharacteristics	OperationalYear	2018	2021
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	50.00

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tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripNumber	18.00	16.00
tblTripsAndVMT	HaulingTripNumber	0.00	700.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	6,900.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	HaulingTripNumber	0.00	10.00

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tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripNumber	8.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00

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tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblVehicleTrips	CC_TL	8.00	5.00
tblVehicleTrips	CC_TL	8.00	5.00
tblVehicleTrips	CNW_TL	9.00	7.00
tblVehicleTrips	CNW_TL	9.00	7.00
tblVehicleTrips	CW_TL	15.00	10.00
tblVehicleTrips	CW_TL	15.00	10.00
tblVehicleTrips	HO_TL	9.00	7.00
tblVehicleTrips	HS_TL	8.00	5.00
tblVehicleTrips	HW_TL	15.00	10.00

2.0 Emissions Summary

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition - Structure Demolition	Demolition	1/2/2019	1/2/2019	5	1	
2	Building Construction - Mobilization	Building Construction	1/3/2019	1/3/2019	5	1	
3	Building Construction - Site Preparation/Stripping	Building Construction	1/4/2019	1/4/2019	5	1	
4	Building Construction - Existing Road Removal	Building Construction	1/5/2019	1/7/2019	5	1	
5	Building Construction - Trench Excavation and Forcemain Installation	Building Construction	1/8/2019	1/8/2019	5	1	
6	Building Construction - New Road Construction	Building Construction	1/9/2019	1/9/2019	5	1	
7	Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Building Construction	1/10/2019	1/10/2019	5	1	
8	Building Construction - Offsite Borrow Material Transport	Building Construction	1/11/2019	1/11/2019	5	1	
9	Building Construction - Cutoff Wall Installation (Open Trench Method)	Building Construction	1/12/2019	1/14/2019	5	1	
10	Building Construction - Erosion Protection Installation	Building Construction	1/15/2019	1/15/2019	5	1	
11	Building Construction - Existing Pump Station Removal	Building Construction	1/16/2019	1/16/2019	5	1	
12	Building Construction - Existing Levee Degrade	Building Construction	1/17/2019	1/17/2019	5	1	
13	Building Construction - Ecosystem Project Elements	Building Construction	1/18/2019	1/18/2019	5	1	
14	Building Construction - Site Restoration and Demobilization	Building Construction	1/19/2019	1/21/2019	5	1	

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Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition - Structure Demolition	Excavators	1	9.00	157	0.38
Demolition - Structure Demolition	Rubber Tired Dozer	1	9.00	358	0.40
Demolition - Structure Demolition	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Mobilization	Excavators	0	0.00	157	0.38
Building Construction - Site Preparation/Stripping	Excavators	1	9.00	157	0.38
Building Construction - Site Preparation/Stripping	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Site Preparation/Stripping	Scrapers	3	9.00	356	0.50
Building Construction - Existing Road Removal	Excavators	1	9.00	157	0.38
Building Construction - Existing Road Removal	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Existing Road Removal	Scrapers	1	9.00	356	0.50
Building Construction - Existing Road Removal	Scrapers	1	9.00	356	0.50
Building Construction - Trench Excavation and Forcemain Installation	Excavators	1	9.00	157	0.38
Building Construction - Trench Excavation and Forcemain Installation	Other Construction Equipment	1	9.00	172	0.42
Building Construction - Trench Excavation and Forcemain Installation	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - New Road Construction	Graders	2	9.00	162	0.41
Building Construction - New Road Construction	Pavers	1	9.00	130	0.42

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Building Construction - New Road Construction	Plate Compactors	2	9.00	8	0.43
Building Construction - New Road Construction	Rollers	1	9.00	80	0.38
Building Construction - New Road Construction	Rubber Tired Dozer	2	9.00	358	0.40
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Excavators	4	9.00	157	0.38
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Graders	1	9.00	162	0.41
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Rollers	1	9.00	84	0.38
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Rubber Tired Dozer	2	9.00	358	0.40
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Scrapers	5	9.00	356	0.50
Building Construction - Offsite Borrow Material Transport	Excavators	0	0.00	157	0.38
Building Construction - Cutoff Wall Installation (Open Trench Method)	Excavators	1	9.00	157	0.38
Building Construction - Cutoff Wall Installation (Open Trench Method)	Excavators	1	9.00	157	0.38
Building Construction - Cutoff Wall Installation (Open Trench Method)	Rough Terrain Forklift	1	4.00	100	0.40
Building Construction - Cutoff Wall Installation (Open Trench Method)	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Cutoff Wall Installation (Open Trench Method)	Scrapers	1	9.00	356	0.50
Building Construction - Cutoff Wall Installation (Open Trench Method)	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Erosion Protection Installation	Cranes	4	4.00	208	0.29
Building Construction - Erosion Protection Installation	Excavators	2	9.00	157	0.38
Building Construction - Erosion Protection Installation	Rubber Tired Dozer	2	9.00	358	0.40
Building Construction - Existing Pump Station Removal	Excavators	1	9.00	157	0.38
Building Construction - Existing Pump Station Removal	Rubber Tired Dozer	1	9.00	358	0.40

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Building Construction - Existing Pump Station Removal	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Existing Levee Degrade	Excavators	1	9.00	157	0.38
Building Construction - Existing Levee Degrade	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Existing Levee Degrade	Scrapers	6	9.00	356	0.50
Building Construction - Ecosystem Project Elements	Tractors/Loaders/Backhoes	4	9.00	75	0.37
Building Construction - Ecosystem Project Elements	Rubber Tired Dozer	3	9.00	358	0.40
Building Construction - Ecosystem Project Elements	Scrapers	2	9.00	356	0.50
Building Construction - Ecosystem Project Elements	Bore/Drill Rigs	1	9.00	82	0.50
Building Construction - Site Restoration and Demobilization	Graders	1	9.00	162	0.41
Building Construction - Site Restoration and Demobilization	Rollers	1	9.00	84	0.38

Trips and VMT

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Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition - Structure Demolition	3	10.00	0.00	16.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Mobilization	0	30.00	0.00	10.00	10.00	7.00	30.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Site Preparation/Strip	5	30.00	0.00	4.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Site Preparation/Strip	5	0.00	0.00	4.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Road Remov	4	10.00	0.00	30.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Trench Excavation an	3	10.00	0.00	110.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - New Road Constructi	8	20.00	0.00	12.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	13	30.00	0.00	1,050.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	13	0.00	0.00	3,100.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	13	0.00	0.00	2.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	13	0.00	0.00	2.00	10.00	7.00	30.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Offsite Borrow Materia	0	10.00	0.00	2,300.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Cutoff Wall Installation	6	10.00	0.00	14.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - Cutoff Wall Installation	6	0.00	0.00	14.00	10.00	7.00	25.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Erosion Protection Inst	8	20.00	0.00	700.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Pump Station	3	10.00	0.00	4.00	10.00	7.00	25.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Levee Degrad	8	20.00	0.00	6,900.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Levee Degrad	8	0.00	0.00	2.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Erosion Control Plant Pla	10	20.00	0.00	1.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Site Restoration and D	2	10.00	0.00	20.00	10.00	7.00	30.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

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3.2 Demolition - Structure Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.6121	0.0000	4.6121	0.6985	0.0000	0.6985			0.0000			0.0000
Off-Road	0.4940	5.0312	5.6509	8.4700e-003		0.2803	0.2803		0.2579	0.2579		838.8908	838.8908	0.2654		845.5262
Total	0.4940	5.0312	5.6509	8.4700e-003	4.6121	0.2803	4.8925	0.6985	0.2579	0.9564		838.8908	838.8908	0.2654		845.5262

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2908	9.3706	1.6762	0.0305	2.7576	0.0469	2.8045	0.6964	0.0449	0.7413		3,197.9313	3,197.9313	0.0677		3,199.6249
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3339	5.0000e-004	0.3344	0.0835	4.6000e-004	0.0839		71.4571	71.4571	2.0600e-003		71.5086
Total	0.3318	9.4008	1.9553	0.0312	3.0915	0.0474	3.1389	0.7798	0.0454	0.8252		3,269.3885	3,269.3885	0.0698		3,271.1335

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3.2 Demolition - Structure Demolition - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.6121	0.0000	4.6121	0.6985	0.0000	0.6985			0.0000			0.0000
Off-Road	0.4940	5.0312	5.6509	8.4700e-003		0.2803	0.2803		0.2579	0.2579	0.0000	838.8908	838.8908	0.2654		845.5262
Total	0.4940	5.0312	5.6509	8.4700e-003	4.6121	0.2803	4.8925	0.6985	0.2579	0.9564	0.0000	838.8908	838.8908	0.2654		845.5262

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2908	9.3706	1.6762	0.0305	2.7576	0.0469	2.8045	0.6964	0.0449	0.7413		3,197.9313	3,197.9313	0.0677		3,199.6249
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3339	5.0000e-004	0.3344	0.0835	4.6000e-004	0.0839		71.4571	71.4571	2.0600e-003		71.5086
Total	0.3318	9.4008	1.9553	0.0312	3.0915	0.0474	3.1389	0.7798	0.0454	0.8252		3,269.3885	3,269.3885	0.0698		3,271.1335

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3.3 Building Construction - Mobilization - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1189	3.9120	0.7003	0.0119	0.6964	0.0181	0.7145	0.1783	0.0173	0.1956		1,242.1996	1,242.1996	0.0366		1,243.1140
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1233	0.0906	0.8373	2.1500e-003	0.6639	1.5000e-003	0.6654	0.1675	1.3800e-003	0.1689		214.3714	214.3714	6.1700e-003		214.5258
Total	0.2422	4.0026	1.5376	0.0140	1.3603	0.0196	1.3799	0.3457	0.0187	0.3645		1,456.5711	1,456.5711	0.0427		1,457.6398

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

3.3 Building Construction - Mobilization - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1189	3.9120	0.7003	0.0119	0.6964	0.0181	0.7145	0.1783	0.0173	0.1956		1,242.1996	1,242.1996	0.0366		1,243.1140
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1233	0.0906	0.8373	2.1500e-003	0.6639	1.5000e-003	0.6654	0.1675	1.3800e-003	0.1689		214.3714	214.3714	6.1700e-003		214.5258
Total	0.2422	4.0026	1.5376	0.0140	1.3603	0.0196	1.3799	0.3457	0.0187	0.3645		1,456.5711	1,456.5711	0.0427		1,457.6398

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

3.4 Building Construction - Site Preparation/Stripping - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.9243	47.0375	31.1394	0.0574		1.8702	1.8702		1.7206	1.7206		5,686.1224	5,686.1224	1.7990		5,731.0981
Total	3.9243	47.0375	31.1394	0.0574		1.8702	1.8702		1.7206	1.7206		5,686.1224	5,686.1224	1.7990		5,731.0981

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0836	2.7717	0.4963	8.1500e-003	5.1622	0.0124	5.1746	0.5794	0.0119	0.5913		854.5624	854.5624	0.0282		855.2673
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1233	0.0906	0.8373	2.1500e-003	0.5778	1.5000e-003	0.5793	0.1464	1.3800e-003	0.1477		214.3714	214.3714	6.1700e-003		214.5258
Total	0.2068	2.8624	1.3336	0.0103	5.7400	0.0139	5.7539	0.7258	0.0133	0.7390		1,068.9338	1,068.9338	0.0344		1,069.7931

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

3.4 Building Construction - Site Preparation/Stripping - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.9243	47.0375	31.1394	0.0574		1.8702	1.8702		1.7206	1.7206	0.0000	5,686.1224	5,686.1224	1.7990		5,731.0981
Total	3.9243	47.0375	31.1394	0.0574		1.8702	1.8702		1.7206	1.7206	0.0000	5,686.1224	5,686.1224	1.7990		5,731.0981

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0836	2.7717	0.4963	8.1500e-003	5.1622	0.0124	5.1746	0.5794	0.0119	0.5913		854.5624	854.5624	0.0282		855.2673
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1233	0.0906	0.8373	2.1500e-003	0.5778	1.5000e-003	0.5793	0.1464	1.3800e-003	0.1477		214.3714	214.3714	6.1700e-003		214.5258
Total	0.2068	2.8624	1.3336	0.0103	5.7400	0.0139	5.7539	0.7258	0.0133	0.7390		1,068.9338	1,068.9338	0.0344		1,069.7931

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

3.5 Building Construction - Existing Road Removal - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.7133	32.3577	21.9755	0.0402		1.2950	1.2950		1.1914	1.1914		3,981.2072	3,981.2072	1.2596		4,012.6975
Total	2.7133	32.3577	21.9755	0.0402		1.2950	1.2950		1.1914	1.1914		3,981.2072	3,981.2072	1.2596		4,012.6975

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.5452	17.5698	3.1429	0.0572	5.3879	0.0880	5.4759	1.3590	0.0842	1.4432		5,996.1213	5,996.1213	0.1270		5,999.2967
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3484	5.0000e-004	0.3489	0.0870	4.6000e-004	0.0875		71.4571	71.4571	2.0600e-003		71.5086
Total	0.5863	17.6000	3.4220	0.0579	5.7363	0.0885	5.8248	1.4461	0.0847	1.5307		6,067.5784	6,067.5784	0.1291		6,070.8053

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

3.5 Building Construction - Existing Road Removal - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.7133	32.3577	21.9755	0.0402		1.2950	1.2950		1.1914	1.1914	0.0000	3,981.207 2	3,981.207 2	1.2596		4,012.697 5
Total	2.7133	32.3577	21.9755	0.0402		1.2950	1.2950		1.1914	1.1914	0.0000	3,981.207 2	3,981.207 2	1.2596		4,012.697 5

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.5452	17.5698	3.1429	0.0572	5.3879	0.0880	5.4759	1.3590	0.0842	1.4432		5,996.121 3	5,996.121 3	0.1270		5,999.296 7
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3484	5.0000e-004	0.3489	0.0870	4.6000e-004	0.0875		71.4571	71.4571	2.0600e-003		71.5086
Total	0.5863	17.6000	3.4220	0.0579	5.7363	0.0885	5.8248	1.4461	0.0847	1.5307		6,067.578 4	6,067.578 4	0.1291		6,070.805 3

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

3.6 Building Construction - Trench Excavation and Forcemain Installation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0846	11.3854	10.3181	0.0154		0.6149	0.6149		0.5658	0.5658		1,527.5499	1,527.5499	0.4833		1,539.6324
Total	1.0846	11.3854	10.3181	0.0154		0.6149	0.6149		0.5658	0.5658		1,527.5499	1,527.5499	0.4833		1,539.6324

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2989	11.8003	2.1246	0.0145	64.7537	0.0191	64.7728	6.4532	0.0183	6.4715		1,514.6866	1,514.6866	0.3097		1,522.4296
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.2098	5.0000e-004	0.2103	0.0530	4.6000e-004	0.0535		71.4571	71.4571	2.0600e-003		71.5086
Total	0.3400	11.8305	2.4037	0.0152	64.9635	0.0196	64.9831	6.5062	0.0187	6.5250		1,586.1437	1,586.1437	0.3118		1,593.9381

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

3.6 Building Construction - Trench Excavation and Forcemain Installation - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0846	11.3854	10.3181	0.0154		0.6149	0.6149		0.5658	0.5658	0.0000	1,527.5499	1,527.5499	0.4833		1,539.6324
Total	1.0846	11.3854	10.3181	0.0154		0.6149	0.6149		0.5658	0.5658	0.0000	1,527.5499	1,527.5499	0.4833		1,539.6324

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2989	11.8003	2.1246	0.0145	64.7537	0.0191	64.7728	6.4532	0.0183	6.4715		1,514.6866	1,514.6866	0.3097		1,522.4296
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.2098	5.0000e-004	0.2103	0.0530	4.6000e-004	0.0535		71.4571	71.4571	2.0600e-003		71.5086
Total	0.3400	11.8305	2.4037	0.0152	64.9635	0.0196	64.9831	6.5062	0.0187	6.5250		1,586.1437	1,586.1437	0.3118		1,593.9381

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

3.7 Building Construction - New Road Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.2735	22.4519	15.5196	0.0223		1.2468	1.2468		1.1488	1.1488		2,182.4048	2,182.4048	0.6740		2,199.2548
Total	2.2735	22.4519	15.5196	0.0223		1.2468	1.2468		1.1488	1.1488		2,182.4048	2,182.4048	0.6740		2,199.2548

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2181	7.0279	1.2572	0.0229	1.8250	0.0352	1.8602	0.4626	0.0337	0.4963		2,398.4485	2,398.4485	0.0508		2,399.7187
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0822	0.0604	0.5582	1.4400e-003	0.5868	1.0000e-003	0.5878	0.1470	9.2000e-004	0.1480		142.9143	142.9143	4.1200e-003		143.0172
Total	0.3002	7.0883	1.8154	0.0243	2.4118	0.0362	2.4480	0.6096	0.0346	0.6442		2,541.3628	2,541.3628	0.0549		2,542.7359

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

3.7 Building Construction - New Road Construction - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.2735	22.4519	15.5196	0.0223		1.2468	1.2468		1.1488	1.1488	0.0000	2,182.4048	2,182.4048	0.6740		2,199.2548
Total	2.2735	22.4519	15.5196	0.0223		1.2468	1.2468		1.1488	1.1488	0.0000	2,182.4048	2,182.4048	0.6740		2,199.2548

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2181	7.0279	1.2572	0.0229	1.8250	0.0352	1.8602	0.4626	0.0337	0.4963		2,398.4485	2,398.4485	0.0508		2,399.7187
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0822	0.0604	0.5582	1.4400e-003	0.5868	1.0000e-003	0.5878	0.1470	9.2000e-004	0.1480		142.9143	142.9143	4.1200e-003		143.0172
Total	0.3002	7.0883	1.8154	0.0243	2.4118	0.0362	2.4480	0.6096	0.0346	0.6442		2,541.3628	2,541.3628	0.0549		2,542.7359

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

3.8 Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	8.2905	95.9633	67.4816	0.1188		4.0718	4.0718		3.7461	3.7461		11,761.33 31	11,761.33 31	3.7212		11,854.36 22
Total	8.2905	95.9633	67.4816	0.1188		4.0718	4.0718		3.7461	3.7461		11,761.33 31	11,761.33 31	3.7212		11,854.36 22

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	59.2465	1,930.138 5	345.3983	6.0552	1,729.785 7	9.2860	1,739.071 7	261.5940	8.8842	270.4782		634,705.7 489	634,705.7 489	16.0975		635,108.1 872
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1233	0.0906	0.8373	2.1500e- 003	1.0975	1.5000e- 003	1.0990	0.2739	1.3800e- 003	0.2753		214.3714	214.3714	6.1700e- 003		214.5258
Total	59.3698	1,930.229 1	346.2356	6.0574	1,730.883 2	9.2875	1,740.170 7	261.8678	8.8856	270.7535		634,920.1 203	634,920.1 203	16.1037		635,322.7 129

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

3.8 Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	8.2905	95.9633	67.4816	0.1188		4.0718	4.0718		3.7461	3.7461	0.0000	11,761.3331	11,761.3331	3.7212		11,854.3621
Total	8.2905	95.9633	67.4816	0.1188		4.0718	4.0718		3.7461	3.7461	0.0000	11,761.3331	11,761.3331	3.7212		11,854.3621

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	59.2465	1,930.1385	345.3983	6.0552	1,729.7857	9.2860	1,739.0717	261.5940	8.8842	270.4782		634,705.7489	634,705.7489	16.0975		635,108.1872
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1233	0.0906	0.8373	2.1500e-003	1.0975	1.5000e-003	1.0990	0.2739	1.3800e-003	0.2753		214.3714	214.3714	6.1700e-003		214.5258
Total	59.3698	1,930.2291	346.2356	6.0574	1,730.8832	9.2875	1,740.1707	261.8678	8.8856	270.7535		634,920.1203	634,920.1203	16.1037		635,322.7129

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

3.9 Building Construction - Offsite Borrow Material Transport - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	41.7955	1,347.0177	240.9570	4.3856	433.0967	6.7473	439.8440	109.1086	6.4554	115.5639		459,702.6291	459,702.6291	9.7382		459,946.0829
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3658	5.0000e-004	0.3663	0.0913	4.6000e-004	0.0918		71.4571	71.4571	2.0600e-003		71.5086
Total	41.8366	1,347.0479	241.2361	4.3863	433.4625	6.7478	440.2103	109.1999	6.4558	115.6557		459,774.0862	459,774.0862	9.7402		460,017.5915

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

3.9 Building Construction - Offsite Borrow Material Transport - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	41.7955	1,347.0177	240.9570	4.3856	433.0967	6.7473	439.8440	109.1086	6.4554	115.5639		459,702.6291	459,702.6291	9.7382		459,946.0829
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3658	5.0000e-004	0.3663	0.0913	4.6000e-004	0.0918		71.4571	71.4571	2.0600e-003		71.5086
Total	41.8366	1,347.0479	241.2361	4.3863	433.4625	6.7478	440.2103	109.1999	6.4558	115.6557		459,774.0862	459,774.0862	9.7402		460,017.5915

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

3.10 Building Construction - Cutoff Wall Installation (Open Trench Method) - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9964	22.7090	18.4626	0.0315		1.0001	1.0001		0.9201	0.9201		3,115.1829	3,115.1829	0.9856		3,139.8231
Total	1.9964	22.7090	18.4626	0.0315		1.0001	1.0001		0.9201	0.9201		3,115.1829	3,115.1829	0.9856		3,139.8231

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1825	6.2980	1.1292	0.0159	17.3899	0.0239	17.4138	1.9040	0.0228	1.9268		1,667.0802	1,667.0802	0.0886		1,669.2953
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3021	5.0000e-004	0.3026	0.0757	4.6000e-004	0.0761		71.4571	71.4571	2.0600e-003		71.5086
Total	0.2236	6.3282	1.4083	0.0166	17.6919	0.0244	17.7163	1.9797	0.0233	2.0030		1,738.5373	1,738.5373	0.0907		1,740.8039

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

3.10 Building Construction - Cutoff Wall Installation (Open Trench Method) - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9964	22.7090	18.4626	0.0315		1.0001	1.0001		0.9201	0.9201	0.0000	3,115.1829	3,115.1829	0.9856		3,139.8231
Total	1.9964	22.7090	18.4626	0.0315		1.0001	1.0001		0.9201	0.9201	0.0000	3,115.1829	3,115.1829	0.9856		3,139.8231

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1825	6.2980	1.1292	0.0159	17.3899	0.0239	17.4138	1.9040	0.0228	1.9268		1,667.0802	1,667.0802	0.0886		1,669.2953
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3021	5.0000e-004	0.3026	0.0757	4.6000e-004	0.0761		71.4571	71.4571	2.0600e-003		71.5086
Total	0.2236	6.3282	1.4083	0.0166	17.6919	0.0244	17.7163	1.9797	0.0233	2.0030		1,738.5373	1,738.5373	0.0907		1,740.8039

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

3.11 Building Construction - Erosion Protection Installation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4906	16.8138	11.4252	0.0219		0.7477	0.7477		0.6879	0.6879		2,171.4275	2,171.4275	0.6870		2,188.6029
Total	1.4906	16.8138	11.4252	0.0219		0.7477	0.7477		0.6879	0.6879		2,171.4275	2,171.4275	0.6870		2,188.6029

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	12.7204	409.9619	73.3347	1.3348	130.7958	2.0535	132.8493	32.9575	1.9647	34.9222		139,909.4958	139,909.4958	2.9638		139,983.5905
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0822	0.0604	0.5582	1.4400e-003	0.7258	1.0000e-003	0.7268	0.1812	9.2000e-004	0.1821		142.9143	142.9143	4.1200e-003		143.0172
Total	12.8025	410.0223	73.8929	1.3362	131.5216	2.0545	133.5762	33.1387	1.9656	35.1043		140,052.4101	140,052.4101	2.9679		140,126.6076

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

3.11 Building Construction - Erosion Protection Installation - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4906	16.8138	11.4252	0.0219		0.7477	0.7477		0.6879	0.6879	0.0000	2,171.4275	2,171.4275	0.6870		2,188.6029
Total	1.4906	16.8138	11.4252	0.0219		0.7477	0.7477		0.6879	0.6879	0.0000	2,171.4275	2,171.4275	0.6870		2,188.6029

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	12.7204	409.9619	73.3347	1.3348	130.7958	2.0535	132.8493	32.9575	1.9647	34.9222		139,909.4958	139,909.4958	2.9638		139,983.5905
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0822	0.0604	0.5582	1.4400e-003	0.7258	1.0000e-003	0.7268	0.1812	9.2000e-004	0.1821		142.9143	142.9143	4.1200e-003		143.0172
Total	12.8025	410.0223	73.8929	1.3362	131.5216	2.0545	133.5762	33.1387	1.9656	35.1043		140,052.4101	140,052.4101	2.9679		140,126.6076

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

3.12 Building Construction - Existing Pump Station Removal - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4940	5.0312	5.6509	8.4700e-003		0.2803	0.2803		0.2579	0.2579		838.8908	838.8908	0.2654		845.5262
Total	0.4940	5.0312	5.6509	8.4700e-003		0.2803	0.2803		0.2579	0.2579		838.8908	838.8908	0.2654		845.5262

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0413	1.3703	0.2454	4.0200e-003	0.2321	6.1200e-003	0.2383	0.0594	5.8600e-003	0.0653		421.2291	421.2291	0.0141		421.5804
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.2213	5.0000e-004	0.2218	0.0558	4.6000e-004	0.0563		71.4571	71.4571	2.0600e-003		71.5086
Total	0.0824	1.4005	0.5245	4.7400e-003	0.4535	6.6200e-003	0.4601	0.1153	6.3200e-003	0.1216		492.6863	492.6863	0.0161		493.0890

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

3.12 Building Construction - Existing Pump Station Removal - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4940	5.0312	5.6509	8.4700e-003		0.2803	0.2803		0.2579	0.2579	0.0000	838.8908	838.8908	0.2654		845.5262
Total	0.4940	5.0312	5.6509	8.4700e-003		0.2803	0.2803		0.2579	0.2579	0.0000	838.8908	838.8908	0.2654		845.5262

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0413	1.3703	0.2454	4.0200e-003	0.2321	6.1200e-003	0.2383	0.0594	5.8600e-003	0.0653		421.2291	421.2291	0.0141		421.5804
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.2213	5.0000e-004	0.2218	0.0558	4.6000e-004	0.0563		71.4571	71.4571	2.0600e-003		71.5086
Total	0.0824	1.4005	0.5245	4.7400e-003	0.4535	6.6200e-003	0.4601	0.1153	6.3200e-003	0.1216		492.6863	492.6863	0.0161		493.0890

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

3.13 Building Construction - Existing Levee Degrade - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	7.5571	91.0769	58.6309	0.1091		3.5958	3.5958		3.3081	3.3081		10,800.8678	10,800.8678	3.4173		10,886.2998
Total	7.5571	91.0769	58.6309	0.1091		3.5958	3.5958		3.3081	3.3081		10,800.8678	10,800.8678	3.4173		10,886.2998

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	18.7870	741.3720	133.4826	0.9109	4,135.4026	1.2042	4,136.6068	412.1248	1.1520	413.2768		95,411.8994	95,411.8994	19.4363		95,897.8068
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0822	0.0604	0.5582	1.4400e-003	0.7142	1.0000e-003	0.7152	0.1783	9.2000e-004	0.1792		142.9143	142.9143	4.1200e-003		143.0172
Total	18.8692	741.4324	134.0408	0.9123	4,136.1168	1.2052	4,137.3220	412.3031	1.1530	413.4561		95,554.8137	95,554.8137	19.4404		96,040.8240

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

3.13 Building Construction - Existing Levee Degrade - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	7.5571	91.0769	58.6309	0.1091		3.5958	3.5958		3.3081	3.3081	0.0000	10,800.8678	10,800.8678	3.4173		10,886.2998
Total	7.5571	91.0769	58.6309	0.1091		3.5958	3.5958		3.3081	3.3081	0.0000	10,800.8678	10,800.8678	3.4173		10,886.2998

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	18.7870	741.3720	133.4826	0.9109	4,135.4026	1.2042	4,136.6068	412.1248	1.1520	413.2768		95,411.8994	95,411.8994	19.4363		95,897.8068
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0822	0.0604	0.5582	1.4400e-003	0.7142	1.0000e-003	0.7152	0.1783	9.2000e-004	0.1792		142.9143	142.9143	4.1200e-003		143.0172
Total	18.8692	741.4324	134.0408	0.9123	4,136.1168	1.2052	4,137.3220	412.3031	1.1530	413.4561		95,554.8137	95,554.8137	19.4404		96,040.8240

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

3.14 Building Construction - Ecosystem Project Elements - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4492	40.1939	29.0502	0.0491		1.8399	1.8399		1.6927	1.6927		4,864.2287	4,864.2287	1.5390		4,902.7035
Total	3.4492	40.1939	29.0502	0.0491		1.8399	1.8399		1.6927	1.6927		4,864.2287	4,864.2287	1.5390		4,902.7035

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0182	0.5857	0.1048	1.9100e-003	36.7906	2.9300e-003	36.7935	3.6661	2.8100e-003	3.6689		199.8707	199.8707	4.2300e-003		199.9766
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0822	0.0604	0.5582	1.4400e-003	0.2653	1.0000e-003	0.2663	0.0681	9.2000e-004	0.0691		142.9143	142.9143	4.1200e-003		143.0172
Total	0.1004	0.6461	0.6630	3.3500e-003	37.0559	3.9300e-003	37.0598	3.7343	3.7300e-003	3.7380		342.7850	342.7850	8.3500e-003		342.9938

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

3.14 Building Construction - Ecosystem Project Elements - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4492	40.1939	29.0502	0.0491		1.8399	1.8399		1.6927	1.6927	0.0000	4,864.2287	4,864.2287	1.5390		4,902.7035
Total	3.4492	40.1939	29.0502	0.0491		1.8399	1.8399		1.6927	1.6927	0.0000	4,864.2287	4,864.2287	1.5390		4,902.7035

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0182	0.5857	0.1048	1.9100e-003	36.7906	2.9300e-003	36.7935	3.6661	2.8100e-003	3.6689		199.8707	199.8707	4.2300e-003		199.9766
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0822	0.0604	0.5582	1.4400e-003	0.2653	1.0000e-003	0.2663	0.0681	9.2000e-004	0.0691		142.9143	142.9143	4.1200e-003		143.0172
Total	0.1004	0.6461	0.6630	3.3500e-003	37.0559	3.9300e-003	37.0598	3.7343	3.7300e-003	3.7380		342.7850	342.7850	8.3500e-003		342.9938

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

3.15 Building Construction - Site Restoration and Demobilization - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0700	10.5722	7.0710	9.6000e-003		0.6175	0.6175		0.5681	0.5681		951.2497	951.2497	0.3010		958.7738
Total	1.0700	10.5722	7.0710	9.6000e-003		0.6175	0.6175		0.5681	0.5681		951.2497	951.2497	0.3010		958.7738

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2378	7.8239	1.4006	0.0237	2.0162	0.0362	2.0524	0.5095	0.0347	0.5442		2,484.3993	2,484.3993	0.0732		2,486.2280
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3252	5.0000e-004	0.3257	0.0813	4.6000e-004	0.0818		71.4571	71.4571	2.0600e-003		71.5086
Total	0.2789	7.8541	1.6797	0.0244	2.3414	0.0367	2.3781	0.5909	0.0351	0.6260		2,555.8564	2,555.8564	0.0752		2,557.7366

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

3.15 Building Construction - Site Restoration and Demobilization - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0700	10.5722	7.0710	9.6000e-003		0.6175	0.6175		0.5681	0.5681	0.0000	951.2497	951.2497	0.3010		958.7738
Total	1.0700	10.5722	7.0710	9.6000e-003		0.6175	0.6175		0.5681	0.5681	0.0000	951.2497	951.2497	0.3010		958.7738

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2378	7.8239	1.4006	0.0237	2.0162	0.0362	2.0524	0.5095	0.0347	0.5442		2,484.3993	2,484.3993	0.0732		2,486.2280
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0411	0.0302	0.2791	7.2000e-004	0.3252	5.0000e-004	0.3257	0.0813	4.6000e-004	0.0818		71.4571	71.4571	2.0600e-003		71.5086
Total	0.2789	7.8541	1.6797	0.0244	2.3414	0.0367	2.3781	0.5909	0.0351	0.6260		2,555.8564	2,555.8564	0.0752		2,557.7366

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
User Defined Commercial	0.00	0.00	0.00		
User Defined Residential	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
User Defined Commercial	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
User Defined Residential	10.00	5.00	7.00	46.00	13.00	41.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Commercial	0.489634	0.040733	0.207886	0.122965	0.024655	0.005612	0.057735	0.040460	0.001009	0.001812	0.005896	0.000768	0.000835
Other Asphalt Surfaces	0.489634	0.040733	0.207886	0.122965	0.024655	0.005612	0.057735	0.040460	0.001009	0.001812	0.005896	0.000768	0.000835
User Defined Residential	0.489634	0.040733	0.207886	0.122965	0.024655	0.005612	0.057735	0.040460	0.001009	0.001812	0.005896	0.000768	0.000835

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment

Lower Elkhorn Basin Alt 3 Unfavorable - Year 2 - Yolo County, Winter

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

**Lower Elkhorn Basin
Fugitive Dust Emissions
Alternative 3 Unfavorable**

$$EF_0 = k \times (0.0032) \times ((U/5)^{1.3}) / ((M/2)^{1.4})$$

Variable	Amount	Units	Source
EF (PM ₁₀)	0.103	lb/ton	CalEEMod Appendix A
EF (PM _{2.5})	0.016	lb/ton	CalEEMod Appendix A
K (PM ₁₀)	0.35	factor	CalEEMod Appendix A
K (PM _{2.5})	0.053	factor	CalEEMod Appendix A
U (mean wind speed)	7.83	miles/hr	CalEEMod Appendix A
M (moisture content)	12%	percent	CalEEMod Appendix A
Type 1 Levee Fill Density	1.3	tons/cy	Project Engineer
Type 2 Levee Fill Density	1.3	tons/cy	Project Engineer
Aggregate Base Density	1.8	tons/cy	Project Engineer
Excavated Soil density	1.3	tons/cy	Project Engineer

$$E \text{ (lbs)} = EF \text{ (lb/ton)} \times TP \text{ (tons)}$$

	Work Days	Total Materials Moved (cy)	Total Materials Moved (tons)	Daily Materials Moved (tons/day)	Unmitigated		Mitigated	
					Daily PM ₁₀ (lbs/day)	Daily PM _{2.5} (lbs/day)	Daily PM ₁₀ (lbs/day)	Daily PM _{2.5} (lbs/day)
Year 2018								
Mobilization	12							
Site Preparation/Stripping	60	1,000	1300	22	4.46	0.69	1.12	0.17
Structure Demolition	5							
Existing Road Removal	20	5,550	9,990	500	102.90	15.98	25.72	4.00
Trench Excavation and Forcemain Installation	30	58,400	75,920	2,531	521.32	80.98	130.33	20.25
New Road Construction	60							
New Levee/Seepage Berm & Soil Borrow Extraction	135	4,050,000	5,265,000	39,000	8034.00	1248.00	2008.50	312.00
Offsite Borrow Material Transport	0							
Cutoff Wall Installation (Open Trench Method)	120	130,000	169,000	1,408	580.23	90.13	145.06	22.53
Erosion Protection Installation	30							
Relief Well Installation	30							
Existing Pump Station Removal	10							
Pump Station Installation	30							
Existing Levee Degrade	60	1,533,000	1,992,900	33,215	6842.29	1062.88	1710.57	265.72
Site Restoration and Demobilization	10							
Year 2019								
Mobilization	12							
Site Preparation/Stripping	20	630	819	41	8.44	1.31	2.11	0.33
Structure Demolition	10							
Existing Road Removal	10	1,200	2,160	216	44.50	6.91	11.12	1.73
Trench Excavation and Forcemain Installation	20	10,700	13,910	696	143.27	22.26	35.82	5.56
New Road Construction	30							
New Levee/Seepage Berm & Soil Borrow Extraction	90	1,834,000	2,384,200	26,491	5457.17	847.72	1364.29	211.93
Offsite Borrow Material Transport	90	1,022,000	1,328,600	14,762	6082.04	944.78	1520.51	236.20
Cutoff Wall Installation (Open Trench Method)	60	92,300	119,990	2,000	823.93	127.99	205.98	32.00
Erosion Protection Installation	15							
Relief Well Installation	0							
Existing Pump Station Removal	10							
Pump Station Installation	0							
Existing Levee Degrade	30	1,031,000	1,340,300	44,677	9203.39	1429.65	2300.85	357.41
Site Restoration and Demobilization	10							

Basic Construction Measure	0.54	percent reduction
Enhanced Mitigation	0.75	percent reduction

**Table 3.2-5. Lower Elkhorn Basin Levee Setback Project
Alternative 4 Construction Emissions (Unmitigated/Mitigated)**

Construction Phase	Pollutants (lb/day) ¹									
	ROG		NO _x		CO		PM10		PM2.5	
Year 2018 Construction										
Mobilization	0.3	0.3	4.3	4.3	1.7	1.7	1.4	1.4	0.4	0.4
Site Preparation / Stripping	3.2	3.2	38.8	31.6	25.1	25.1	11.9	5.8	2.8	2.0
Structure Demolition	0.9	0.9	15.8	14.7	7.8	7.8	5.8	4.1	1.5	1.2
Existing Road Removal	4.3	4.3	78.5	71.3	31.6	31.6	139.7	45.8	24.2	9.6
Trench Excavation and Forcemain Installation	6.7	6.7	108.9	97.5	52.8	52.8	896.9	295.9	126.3	40.7
New Road Construction	2.4	2.4	41.1	37.9	15.7	15.7	8.7	8.7	2.9	2.9
New Levee / Seepage Berm and Soil Borrow Extraction	121.8	121.8	3,458.8	3,405.9	828.3	828.3	11,271.6	3,509.8	1,762.5	562.2
Offsite Borrow Material Transport	29.4	29.4	955.1	764.1	170.7	170.7	4,343.4	1,304.5	706.4	234.3
Cutoff Wall Installation	2.4	2.4	30.2	25.1	20.9	20.9	639.7	164.2	99.7	26.1
Erosion Protection Installation	39.2	39.2	731.1	677.9	363.0	363.0	154.3	154.3	49.2	49.2
Relief Well Installation	1.9	1.9	22.4	17.9	16.7	16.7	1.0	1.0	0.9	0.9
Existing Pump Station Removal	0.6	0.6	7.2	6.1	6.3	6.3	0.8	0.8	0.4	0.4
Pump Station Installation	0.6	0.6	6.1	4.9	3.6	3.6	0.6	0.6	0.3	0.3
Existing Levee Degrade	17.8	17.8	618.0	614.1	133.4	133.4	10,490.0	3,437.5	1,449.9	445.0
Ecosystem Project Elements	3.6	3.6	42.6	34.2	29.5	29.5	39.0	20.6	5.5	3.7
Site Restoration and Demobilization	1.5	1.5	20.0	17.7	9.0	9.0	3.1	3.1	1.3	1.3
YSAQMD Threshold of Significance	10 tons/year		10 tons/year		None		80 lb/day		None	
Exceeds YSAQMD Threshold?	Yes		Yes		No		Yes		No	
2018 Annual Emissions² (tons/year)	10	10	280	273	71	71	1,176	371	179	57
Conformity Threshold (tons/year)	25		25		100				100	
Mitigated Exceeds Conformity Threshold?	No		Yes		No				No	

Notes: lb/day = pounds per day; NO_x = oxides of nitrogen; PM10 = particulate matter with aerodynamic diameter less than 10 microns; PM2.5 = particulate matter with aerodynamic diameter less than 2.5 microns; ROG = reactive organic gases; YSAQMD = Yolo-Solano Air Quality Management District

¹ All emissions are shown in units of pounds per day unless noted otherwise.

² Annual emissions, in units of tons per year, were conservatively estimated by multiplying the maximum daily emissions by the number of work days per subphase or task. In reality, emissions would likely fluctuate and would not continue at the maximum level throughout each subphase or task.

Source: Data modeled by GEI Consultants, Inc. in 2016

2018 Unmitigated Emissions

2018 CONSTRUCTION YEAR

Construction Phase	Work Days	Pollutants (lbs/day)					Total MT CO ₂ e
		ROG	No _x	CO	PM ₁₀	PM _{2.5}	
Mobilization		0.26	4.28	1.70	1.38	0.37	8.05
Construction Equipment							
Haul Trucks	12	0.13	4.18	0.75	0.72	0.20	6.85
On-Road Vehicles	12	0.14	0.10	0.95	0.67	0.17	1.21
Fugitive Dust							
Site Preparation/Stripping		3.16	38.78	25.12	11.88	2.79	140.60
Construction Equipment	60	2.93	35.73	23.64	1.44	1.32	111.01
Haul Trucks	60	0.09	2.96	0.54	5.18	0.59	23.55
On-Road Vehicles	60	0.14	0.10	0.95	0.58	0.15	6.04
Fugitive Dust					4.69	0.73	
Structure Demolition		0.91	15.84	7.80	5.78	1.48	9.46
Construction Equipment	5	0.55	5.75	5.69	0.33	0.30	1.95
Haul Trucks	5	0.31	10.05	1.79	2.81	0.75	7.34
On-Road Vehicles	5	0.05	0.03	0.32	0.33	0.08	0.17
Fugitive Dust	5				2.31	0.35	
Existing Road Removal		4.29	78.49	31.58	139.68	24.22	162.53
Construction Equipment	20	2.93	35.73	23.64	1.44	1.32	37.00
Haul Trucks	20	1.31	42.73	7.62	12.73	3.37	124.85
On-Road Vehicles	20	0.05	0.03	0.32	0.36	0.09	0.67
Fugitive Dust	20				125.15	19.44	
Trench Excavation and Forcemain Installation		6.70	108.92	52.76	896.91	126.32	176.77
Construction Equipment	30	5.26	56.92	42.10	3.01	2.77	86.81
Haul Trucks	30	1.39	51.97	10.34	276.77	27.66	88.95
On-Road Vehicles	30	0.05	0.03	0.32	0.31	0.08	1.01
Fugitive Dust	30				616.83	95.82	
New Road Construction		2.44	41.05	15.71	8.71	2.89	266.13
Construction Equipment	60	1.57	15.85	10.60	0.89	0.82	41.78
Haul Trucks	60	0.77	25.13	4.48	7.14	1.89	220.32
On-Road Vehicles	60	0.09	0.07	0.63	0.68	0.17	4.03
Fugitive Dust	60						
New Levee/Seepage Berm & Soil Borrow Extraction		121.80	3458.77	828.27	11271.61	1762.46	63396.17
Construction Equipment	135	24.16	264.23	253.19	12.50	11.50	2495.42
Haul Trucks	135	97.42	3194.36	573.50	2692.63	420.07	60878.11
On-Road Vehicles	135	0.23	0.17	1.58	1.83	0.46	22.65
Fugitive Dust	135				8564.64	1330.43	
Offsite Borrow Material Transport		29.38	955.09	170.69	4343.37	706.35	2791.45
Construction Equipment							
Haul Trucks	20	29.33	955.06	170.37	291.19	76.85	2790.78
Support Vehicles							
On-Road Vehicles	20	0.05	0.03	0.32	0.37	0.09	0.67
Fugitive Dust					4051.81	629.41	
Cutoff Wall Installation (Open Trench Method)		2.41	30.17	20.86	639.65	99.71	247.38
Construction Equipment	120	2.18	25.34	19.34	1.13	1.04	173.73
Haul Trucks	120	0.14	4.76	0.88	12.28	1.34	65.60
Support Vehicles	120						
On-Road Vehicles	120	0.09	0.07	0.63	0.48	0.12	8.05
Fugitive Dust	120				625.76	97.21	
Erosion Protection Installation		39.19	731.12	363.01	154.31	49.19	2648.97
Construction Equipment	30	24.82	266.09	279.43	12.89	11.86	608.96
Haul Trucks	30	14.28	464.96	82.95	140.69	37.15	2038.00
On-Road Vehicles	30	0.09	0.07	0.63	0.73	0.18	2.01
Fugitive Dust	30						
Relief Well Installation		1.89	22.39	16.67	1.03	0.90	38.09
Construction Equipment	30	1.85	22.36	16.35	0.95	0.88	37.09
Haul Trucks	30						
On-Road Vehicles	30	0.05	0.03	0.32	0.08	0.02	1.01
Fugitive Dust	30						
Existing Pump Station Removal		0.64	7.24	6.28	0.79	0.43	6.17
Construction Equipment	10	0.55	5.75	5.69	0.33	0.30	3.90
Haul Trucks	10	0.04	1.46	0.27	0.24	0.07	1.93
Support Vehicles	10						
On-Road Vehicles	10	0.05	0.03	0.32	0.22	0.06	0.34
Fugitive Dust	10						
Pump Station Installation		0.56	6.12	3.62	0.56	0.34	11.22
Construction Equipment	30	0.49	5.36	3.17	0.30	0.27	7.32
Haul Trucks	30	0.02	0.73	0.13	0.10	0.02	2.90
Support Vehicles	30						
On-Road Vehicles	30	0.05	0.03	0.32	0.17	0.04	1.01
Fugitive Dust	30						
Existing Levee Degrade		17.78	618.04	133.36	10490.02	1449.94	2122.53
Construction Equipment	60	1.63	19.59	13.65	0.80	0.74	63.47
Haul Trucks	60	16.06	598.38	119.08	3253.45	325.13	2055.04
Support Vehicles	60						
On-Road Vehicles	60	0.09	0.07	0.63	0.71	0.18	4.03
Fugitive Dust	60				7235.06	1123.89	

2018 Unmitigated Emissions

2018 CONSTRUCTION YEAR

Ecosystem Project Elements		3.63	42.59	29.52	38.97	5.49	50.49
Construction Equipment	22	3.52	41.89	28.78	1.91	1.76	47.00
Haul Trucks	22	0.02	0.63	0.11	36.79	3.67	2.02
Support Vehicles	22						
On-Road Vehicles	22	0.09	0.07	0.63	0.27	0.07	1.48
Fugitive Dust	22						
Site Restoration and Demobilization		1.47	20.04	9.00	3.07	1.27	16.17
Construction Equipment	10	1.18	11.65	7.18	0.69	0.64	4.42
Haul Trucks	10	0.25	8.36	1.51	2.06	0.55	11.41
Support Vehicles	10						
On-Road Vehicles	10	0.05	0.03	0.32	0.33	0.08	0.34
Fugitive Dust	10						

Year 2018 Construction Maximum Overlaps

Month	Pollutants (lbs/day)				
	ROG	NO _x	CO	PM ₁₀	PM _{2.5}
Month 1	130.42	3596.16	894.48	11430.33	1791.32
Month 2	131.65	3606.48	906.16	12180.40	1891.58
Month 3	136.50	3677.70	942.73	12828.77	1994.17
Month 4	126.65	3529.99	864.84	11919.97	1865.06
Month 5	129.74	3565.75	891.41	11922.36	1866.72
Month 6	195.23	5203.67	1403.12	16410.53	2618.95
Month 7	182.66	4858.15	1354.51	22558.66	3362.56
Month 8	21.41	660.63	162.89	10528.99	1455.43
Month 9	17.78	618.04	133.36	10490.02	1449.94
Total Emissions (tons/year)	10.18	280.25	71.38	1175.62	178.65
Significance Threshold, Conformity (tons/year)	25.00	25.00	100.00		100.00
Significance Threshold, YSAQMD (lbs/day)				80.00	
Significance Threshold, YSAQMD (tons/year)	10.00	10.00		9.36	

2018 Mitigated Emissions
Construction Equipment 20% NOx Reduction, 75% Material Handling Fugitive Dust PM Reduction,
50% Haul Truck Road Dust PM Reduction

2018 CONSTRUCTION YEAR

Construction Phase	Work Days	Pollutants (lbs/day)					Total MT CO ₂ e
		ROG	No _x	CO	PM ₁₀	PM _{2.5}	
Mobilization		0.26	4.28	1.70	1.38	0.37	8.05
Construction Equipment							
Haul Trucks	12	0.13	4.18	0.75	0.72	0.20	6.85
On-Road Vehicles	12	0.14	0.10	0.95	0.67	0.17	1.21
Fugitive Dust							
Site Preparation/Stripping		3.16	31.64	25.12	5.79	1.96	140.60
Construction Equipment	60	2.93	28.58	23.64	1.44	1.32	111.01
Haul Trucks	60	0.09	2.96	0.54	2.59	0.30	23.55
On-Road Vehicles	60	0.14	0.10	0.95	0.58	0.15	6.04
Fugitive Dust					1.17	0.18	
Structure Demolition		0.91	14.69	7.80	4.05	1.22	9.46
Construction Equipment	5	0.55	4.60	5.69	0.33	0.30	1.95
Haul Trucks	5	0.31	10.05	1.79	2.81	0.75	7.34
On-Road Vehicles	5	0.05	0.03	0.32	0.33	0.08	0.17
Fugitive Dust	5				0.58	0.09	
Existing Road Removal		4.29	71.34	31.58	45.82	9.64	162.53
Construction Equipment	20	2.93	28.58	23.64	1.44	1.32	37.00
Haul Trucks	20	1.31	42.73	7.62	12.73	3.37	124.85
On-Road Vehicles	20	0.05	0.03	0.32	0.36	0.09	0.67
Fugitive Dust	20				31.29	4.86	
Trench Excavation and Forcemain Installation		6.70	97.54	52.76	295.95	40.67	176.77
Construction Equipment	30	5.26	45.53	42.10	3.01	2.77	86.81
Haul Trucks	30	1.39	51.97	10.34	138.43	13.87	88.95
On-Road Vehicles	30	0.05	0.03	0.32	0.31	0.08	1.01
Fugitive Dust	30				154.21	23.96	
New Road Construction		2.44	37.88	15.71	8.71	2.89	266.13
Construction Equipment	60	1.57	12.68	10.60	0.89	0.82	41.78
Haul Trucks	60	0.77	25.13	4.48	7.14	1.89	220.32
On-Road Vehicles	60	0.09	0.07	0.63	0.68	0.17	4.03
Fugitive Dust	60						
New Levee/Seepage Berm & Soil Borrow Extraction		121.80	3405.92	828.27	3509.79	562.24	63396.17
Construction Equipment	135	24.16	211.39	253.19	12.50	11.50	2495.42
Haul Trucks	135	97.42	3194.36	573.50	1354.30	217.67	60878.11
On-Road Vehicles	135	0.23	0.17	1.58	1.83	0.46	22.65
Fugitive Dust	135				2141.16	332.61	
Offsite Borrow Material Transport		29.38	764.07	170.69	1304.51	234.30	2791.45
Construction Equipment							
Haul Trucks	20	29.33	764.05	170.37	291.19	76.85	2790.78
Support Vehicles							
On-Road Vehicles	20	0.05	0.03	0.32	0.37	0.09	0.67
Fugitive Dust					1012.95	157.35	
Cutoff Wall Installation (Open Trench Method)		2.41	25.10	20.86	164.20	26.14	247.38
Construction Equipment	120	2.18	20.27	19.34	1.13	1.04	173.73
Haul Trucks	120	0.14	4.76	0.88	6.15	0.68	65.60
Support Vehicles	120						
On-Road Vehicles	120	0.09	0.07	0.63	0.48	0.12	8.05
Fugitive Dust	120				156.44	24.30	
Erosion Protection Installation		39.19	677.91	363.01	154.31	49.19	2648.97
Construction Equipment	30	24.82	212.87	279.43	12.89	11.86	608.96
Haul Trucks	30	14.28	464.96	82.95	140.69	37.15	2038.00
On-Road Vehicles	30	0.09	0.07	0.63	0.73	0.18	2.01
Fugitive Dust	30						
Relief Well Installation		1.89	17.92	16.67	1.03	0.90	38.09
Construction Equipment	30	1.85	17.89	16.35	0.95	0.88	37.09
Haul Trucks	30						
On-Road Vehicles	30	0.05	0.03	0.32	0.08	0.02	1.01
Fugitive Dust	30						
Existing Pump Station Removal		0.64	6.09	6.28	0.79	0.43	6.17
Construction Equipment	10	0.55	4.60	5.69	0.33	0.30	3.90
Haul Trucks	10	0.04	1.46	0.27	0.24	0.07	1.93
Support Vehicles	10						
On-Road Vehicles	10	0.05	0.03	0.32	0.22	0.06	0.34
Fugitive Dust	10						
Pump Station Installation		0.56	4.91	3.62	0.56	0.34	11.22
Construction Equipment	30	0.49	4.29	3.17	0.30	0.27	7.32
Haul Trucks	30	0.02	0.58	0.13	0.10	0.02	2.90
Support Vehicles	30						
On-Road Vehicles	30	0.05	0.03	0.32	0.17	0.04	1.01
Fugitive Dust	30						
Existing Levee Degrade		17.78	614.12	133.36	3437.53	444.96	2122.53
Construction Equipment	60	1.63	15.67	13.65	0.80	0.74	63.47
Haul Trucks	60	16.06	598.38	119.08	1627.25	163.07	2055.04
Support Vehicles	60						
On-Road Vehicles	60	0.09	0.07	0.63	0.71	0.18	4.03
Fugitive Dust	60				1808.77	280.97	

2018 Mitigated Emissions
Construction Equipment 20% NOx Reduction, 75% Material Handling Fugitive Dust PM Reduction,
50% Haul Truck Road Dust PM Reduction

2018 CONSTRUCTION YEAR

Ecosystem Project Elements		3.63	34.21	29.52	20.57	3.66	50.49
Construction Equipment	22	3.52	33.51	28.78	1.91	1.76	47.00
Haul Trucks	22	0.02	0.63	0.11	18.40	1.84	2.02
Support Vehicles	22						
On-Road Vehicles	22	0.09	0.07	0.63	0.27	0.07	1.48
Fugitive Dust	22						
Site Restoration and Demobilization		1.47	17.71	9.00	3.07	1.27	16.17
Construction Equipment	10	1.18	9.32	7.18	0.69	0.64	4.42
Haul Trucks	10	0.25	8.36	1.51	2.06	0.55	11.41
Support Vehicles	10						
On-Road Vehicles	10	0.05	0.03	0.32	0.33	0.08	0.34
Fugitive Dust	10						

Year 2018 Construction Maximum Overlaps

Month	Pollutants (lbs/day)				
	ROG	NO_x	CO	PM₁₀	PM_{2.5}
Month 1	130.42	3527.87	894.48	3566.82	575.42
Month 2	131.65	3535.10	906.16	3811.52	604.87
Month 3	136.50	3598.09	942.73	3984.44	633.90
Month 4	126.65	3468.91	864.84	3682.70	591.27
Month 5	129.74	3497.83	891.41	3685.09	592.93
Month 6	195.23	4895.83	1403.12	5134.40	873.10
Month 7	182.66	4740.77	1354.51	7268.90	1083.79
Month 8	21.41	648.34	162.89	3458.10	448.62
Month 9	17.78	614.12	133.36	3437.53	444.96
Total Emissions (tons/year)	10.18	272.80	71.38	370.87	56.87
Significance Threshold, Conformity (tons/year)	25.00	25.00	100.00		100.00
Significance Threshold, YSAQMD (lbs/day)				80.00	
Significance Threshold, YSAQMD (tons/year)	10.00	10.00		9.36	
Emissions to Mitigate/Offset (tons/year)	0.18	272.80		361.51	
Approximate Mitigation Fee	\$3,348	\$4,981,351			

Current Cost of Offsets (Carl Moyer) = \$ 18,260.00

Additional PM2.5 Precursor Test

Less than 100 tons/yr?

Nox No
 ROG Yes
 SO2 Yes
 NH4 Yes

**Lower Elkhorn Basin
Assumed Construction Schedule
Alternative 4 and 5**

apr may jun jul aug sept oct nov dec
Year 1 (2018)

Construction Activity	1	2	3	4	5	6	7	8	9	Work Days
Mobilization	0.5									12
Site Preparation/Stripping	1	1	0.5							60
Structure Demolition	0.2									5
Existing Road Removal	1									20
Trench Excavation and Forcemain Installation		1	0.3							30
New Road Construction			0.5	1	0.5					60
New Levee/Seepage Berm & Soil Borrow Extraction	1	1	1	1	1	1	0.5			135
Offsite Borrow Material Transport						1				20
Cutoff Wall Installation (Open Trench Method)			1	1	1	1	0.5			120
Erosion Protection Installation						0.7	0.5			30
Relief Well Installation					1	0.2				30
Existing Pump Station Removal					0.5					10
Pump Station Installation					0.5	0.7				30
Existing Levee Degrade							0.5	1	0.5	60
Ecosystem Project Elements								1		
Site Restoration and Demobilization							0.5			10

Construction Phase/Vehicle Type	EMFAC2011 Class	Workers	Work Days	Daily Haul Trips	Daily One-Way Trips	One-Way Trip Distance (miles)
Mobilization						
Equipment/supply Transport Trucks	HDT		12	5	10	30
Highway Dump Truck	HDT					
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	15	12		30	10
Site Preparation/Stripping						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT		60	2	4	50
Highway Dump Truck	HDT		60	2	4	0.8
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	15	60		30	10
Structure Demolition						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT		5	8	16	50
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	5	5		10	10
Existing Road Removal						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT		20	34	68	50
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	5	20		10	10
Trench Excavation and Forcemain Installation						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT		30	235	470	0.8
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	5	30		10	10
New Road Construction						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT					
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT		60	20	40	50
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	10	60		20	10
New Levee/Seepage Berm & Soil Borrow Extraction						
Equipment/supply Transport Trucks	HDT					
Onsite Dump Truck	HDT		135	800	1600	0.8
Offsite Dump Truck	HDT		135	2400	4800	50
Water Truck	HDT		135		1	50
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility		135		2	30
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	25	135		50	10
Offsite Borrow Material Transport						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT		20	760	1520	50
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	5	20		10	10

Construction Phase/Vehicle Type	EMFAC2011 Class	Workers	Work Days	Daily Haul Trips	Daily One-Way Trips	One-Way Trip Distance (miles)
Cutoff Wall Installation (Open Trench Method)						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT		120	5	10	0.8
Water Truck	HDT					
Material Transit Truck	HDT		120	5	10	25
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	10	120		20	10
Erosion Protection Installation						
Aggregate and Asphalt Truck	HDT					
Highway Dump Truck	HDT		30	370	740	50
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	10	30		20	10
Relief Well Installation						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT					
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	5	30		10	10
Existing Pump Station Removal						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT		10	2	4	25
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	5	10		10	10
Pump Station Installation						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT					
Water Truck	HDT					
Concrete Transit Truck	HDT			1	2	25
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	5	30		10	10
Existing Levee Degrade						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT		60	2700	5400	0.8
Water Truck	HDT		60		2	50
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	10	60		20	10
Ecosystem Project Elements						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT					
Water Truck	HDT		22		1	50
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	10	22		20	10
Site Restoration and Demobilization						
Equipment/supply Transport Trucks	HDT		10	10	20	30
Highway Dump Truck	HDT					
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	5	10		10	10

Assumptions	
Work Days Per Week	10
Construction Worker Commute	10

6
miles/one-way

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1
Yolo County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Commercial	0.00	User Defined Unit	0.00	0.00	0
Other Asphalt Surfaces	0.00	Acre	0.00	0.00	0
User Defined Residential	0.00	Dwelling Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	6.8	Precipitation Freq (Days)	54
Climate Zone	2			Operational Year	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblFleetMix	FleetMixLandUseSubType	User Defined Commercial	Other Asphalt Surfaces
tblFleetMix	FleetMixLandUseSubType	Other Asphalt Surfaces	User Defined Commercial
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	187.00	162.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	187.00	162.00
tblOffRoadEquipment	HorsePower	80.00	84.00
tblOffRoadEquipment	HorsePower	367.00	356.00

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

tblOffRoadEquipment	LoadFactor	0.48	0.50
tblOffRoadEquipment	LoadFactor	0.48	0.50
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	UsageHours	6.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOnRoadDust	AverageVehicleWeight	2.40	11.40
tblOnRoadDust	AverageVehicleWeight	2.40	12.40
tblOnRoadDust	AverageVehicleWeight	2.40	7.50
tblOnRoadDust	AverageVehicleWeight	2.40	5.80
tblOnRoadDust	AverageVehicleWeight	2.40	12.10
tblOnRoadDust	AverageVehicleWeight	2.40	4.40
tblOnRoadDust	AverageVehicleWeight	2.40	11.10
tblOnRoadDust	AverageVehicleWeight	2.40	7.50
tblOnRoadDust	AverageVehicleWeight	2.40	6.50
tblOnRoadDust	AverageVehicleWeight	2.40	12.20
tblOnRoadDust	AverageVehicleWeight	2.40	10.40
tblOnRoadDust	AverageVehicleWeight	2.40	11.60
tblOnRoadDust	AverageVehicleWeight	2.40	12.50

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

tblOnRoadDust	AverageVehicleWeight	2.40	12.50
tblOnRoadDust	AverageVehicleWeight	2.40	8.10
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	0.00
tblOnRoadDust	HaulingPercentPave	94.00	0.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	98.40
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	0.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	99.50
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	96.90
tblOnRoadDust	MeanVehicleSpeed	40.00	10.00
tblOnRoadDust	MeanVehicleSpeed	40.00	10.00
tblOnRoadDust	MeanVehicleSpeed	40.00	39.50
tblOnRoadDust	MeanVehicleSpeed	40.00	10.00
tblOnRoadDust	MeanVehicleSpeed	40.00	39.80
tblOnRoadDust	MeanVehicleSpeed	40.00	39.10
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblProjectCharacteristics	OperationalYear	2018	2020
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripNumber	9.00	16.00
tblTripsAndVMT	HaulingTripNumber	0.00	740.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	HaulingTripNumber	0.00	5,400.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	HaulingTripNumber	0.00	10.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	68.00
tblTripsAndVMT	HaulingTripNumber	0.00	470.00
tblTripsAndVMT	HaulingTripNumber	0.00	40.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,600.00
tblTripsAndVMT	HaulingTripNumber	0.00	4,800.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,520.00

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

tblTripsAndVMT	HaulingTripNumber	0.00	10.00
tblTripsAndVMT	HaulingTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	50.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblVehicleTrips	CC_TL	8.00	5.00
tblVehicleTrips	CC_TL	8.00	5.00
tblVehicleTrips	CNW_TL	9.00	7.00
tblVehicleTrips	CNW_TL	9.00	7.00
tblVehicleTrips	CW_TL	15.00	10.00
tblVehicleTrips	CW_TL	15.00	10.00
tblVehicleTrips	HO_TL	9.00	7.00
tblVehicleTrips	HS_TL	8.00	5.00
tblVehicleTrips	HW_TL	15.00	10.00

2.0 Emissions Summary

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition - Structure Demolition	Demolition	1/2/2018	1/2/2018	5	1	
2	Building Construction - Mobilization	Building Construction	1/3/2018	1/3/2018	5	1	
3	Building Construction - Site Preparation/Stripping	Building Construction	1/4/2018	1/4/2018	5	1	
4	Building Construction - Existing Road Removal	Building Construction	1/5/2018	1/5/2018	5	1	
5	Building Construction - Trench Excavation and Forcemain Installation	Building Construction	1/6/2018	1/8/2018	5	1	
6	Building Construction - New Road Construction	Building Construction	1/9/2018	1/9/2018	5	1	
7	Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Building Construction	1/10/2018	1/10/2018	5	1	
8	Building Construction - Offsite Borrow Material Transport	Building Construction	1/11/2018	1/11/2018	5	1	
9	Building Construction - Cutoff Wall Installation (Open Trench Method)	Building Construction	1/12/2018	1/12/2018	5	1	
10	Building Construction - Erosion Protection Installation	Building Construction	1/13/2018	1/15/2018	5	1	
11	Building Construction - Relief Well Installation	Building Construction	1/16/2018	1/16/2018	5	1	
12	Building Construction - Existing Pump Station Removal	Building Construction	1/17/2018	1/17/2018	5	1	
13	Building Construction - Pump Station Installation	Building Construction	1/18/2018	1/18/2018	5	1	
14	Building Construction - Existing Levee Degrade	Building Construction	1/19/2018	1/19/2018	5	1	
15	Building Construction - Ecosystem Project Elements	Building Construction	1/20/2018	1/22/2018	5	1	
16	Building Construction - Site Restoration and Demobilization	Building Construction	1/23/2018	1/23/2018	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition - Structure Demolition	Excavators	1	9.00	157	0.38
Demolition - Structure Demolition	Rubber Tired Dozer	1	9.00	358	0.40
Demolition - Structure Demolition	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Mobilization	Excavators	0	0.00	157	0.38
Building Construction - Site Preparation/Stripping	Excavators	1	9.00	157	0.38
Building Construction - Site Preparation/Stripping	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Site Preparation/Stripping	Scrapers	2	9.00	356	0.50
Building Construction - Existing Road Removal	Excavators	1	9.00	157	0.38
Building Construction - Existing Road Removal	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Existing Road Removal	Scrapers	1	9.00	356	0.50
Building Construction - Existing Road Removal	Scrapers	1	9.00	356	0.50
Building Construction - Trench Excavation and Forcemain Installation	Excavators	2	9.00	157	0.38
Building Construction - Trench Excavation and Forcemain Installation	Other Construction Equipment	7	9.00	172	0.42
Building Construction - Trench Excavation and Forcemain Installation	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - New Road Construction	Graders	1	9.00	162	0.41
Building Construction - New Road Construction	Pavers	1	9.00	130	0.42
Building Construction - New Road Construction	Plate Compactors	1	9.00	8	0.43
Building Construction - New Road Construction	Rollers	1	9.00	80	0.38
Building Construction - New Road Construction	Rubber Tired Dozer	1	9.00	358	0.40

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Excavators	59	9.00	157	0.38
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Graders	1	9.00	162	0.41
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Rollers	1	9.00	84	0.38
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Scrapers	3	9.00	356	0.50
Building Construction - Offsite Borrow Material Transport	Excavators	0	0.00	157	0.38
Building Construction - Cutoff Wall Installation (Open Trench Method)	Excavators	1	9.00	157	0.38
Building Construction - Cutoff Wall Installation (Open Trench Method)	Excavators	1	9.00	157	0.38
Building Construction - Cutoff Wall Installation (Open Trench Method)	Rough Terrain Forklift	4	4.00	100	0.40
Building Construction - Cutoff Wall Installation (Open Trench Method)	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Cutoff Wall Installation (Open Trench Method)	Scrapers	1	9.00	356	0.50
Building Construction - Cutoff Wall Installation (Open Trench Method)	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Erosion Protection Installation	Cranes	1	4.00	208	0.29
Building Construction - Erosion Protection Installation	Excavators	76	9.00	157	0.38
Building Construction - Erosion Protection Installation	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Relief Well Installation	Bore/Drill Rigs	1	9.00	82	0.50
Building Construction - Relief Well Installation	Excavators	1	9.00	157	0.38
Building Construction - Relief Well Installation	Scrapers	1	9.00	356	0.50
Building Construction - Existing Pump Station Removal	Excavators	1	9.00	157	0.38
Building Construction - Existing Pump Station Removal	Rubber Tired Dozer	1	9.00	358	0.40

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

Building Construction - Existing Pump Station Removal	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Pump Station Installation	Cranes	1	4.00	208	0.29
Building Construction - Pump Station Installation	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Existing Levee Degrade	Excavators	1	9.00	157	0.38
Building Construction - Existing Levee Degrade	Rubber Tired Dozer	7	9.00	358	0.40
Building Construction - Existing Levee Degrade	Scrapers	1	9.00	356	0.50
Building Construction - Ecosystem Project Elements	Tractors/Loaders/Backhoes	3	9.00	75	0.37
Building Construction - Ecosystem Project Elements	Rubber Tired Dozer	3	9.00	358	0.40
Building Construction - Ecosystem Project Elements	Scrapers	2	9.00	356	0.50
Building Construction - Ecosystem Project Elements	Bore/Drill Rigs	1	9.00	82	0.50
Building Construction - Site Restoration and Demobilization	Graders	1	9.00	162	0.41
Building Construction - Site Restoration and Demobilization	Rollers	1	9.00	84	0.38

Trips and VMT

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition - Structure Demolition	3	10.00	0.00	16.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Mobilization	0	30.00	0.00	10.00	10.00	7.00	30.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Site Preparation/Strip	4	30.00	0.00	4.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Site Preparation/Strip	4	0.00	0.00	4.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Road Remov	4	10.00	0.00	68.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Trench Excavation an	10	10.00	0.00	470.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - New Road Constructio	5	20.00	0.00	40.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	65	50.00	0.00	1,600.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	65	0.00	0.00	4,800.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	65	0.00	0.00	1.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	65	0.00	0.00	2.00	10.00	7.00	30.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Offsite Borrow Materia	0	10.00	0.00	1,520.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Cutoff Wall Installation	9	20.00	0.00	10.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - Cutoff Wall Installation	9	0.00	0.00	10.00	10.00	7.00	25.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Erosion Protection Inst	78	20.00	0.00	740.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Relief Well Installation	3	10.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Pump Station	3	10.00	0.00	4.00	10.00	7.00	25.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Pump Station Installati	2	10.00	0.00	2.00	10.00	7.00	25.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Levee Degrad	9	20.00	0.00	5,400.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Levee Degrad	9	0.00	0.00	2.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Erosion Control Plant Pla	9	20.00	0.00	1.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Site Restoration and D	2	10.00	0.00	20.00	10.00	7.00	30.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.2 Demolition - Structure Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3061	0.0000	2.3061	0.3492	0.0000	0.3492			0.0000			0.0000
Off-Road	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035		852.9003	852.9003	0.2655		859.5383
Total	0.5547	5.7483	5.6944	8.4800e-003	2.3061	0.3299	2.6360	0.3492	0.3035	0.6527		852.9003	852.9003	0.2655		859.5383

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3088	10.0533	1.7934	0.0309	2.7577	0.0521	2.8099	0.6964	0.0499	0.7463		3,236.4188	3,236.4188	0.0706		3,238.1834
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3339	5.2000e-004	0.3344	0.0835	4.8000e-004	0.0839		73.9101	73.9101	2.3600e-003		73.9690
Total	0.3541	10.0877	2.1101	0.0316	3.0917	0.0527	3.1443	0.7799	0.0504	0.8302		3,310.3289	3,310.3289	0.0730		3,312.1524

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3.2 Demolition - Structure Demolition - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3061	0.0000	2.3061	0.3492	0.0000	0.3492			0.0000			0.0000
Off-Road	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035	0.0000	852.9003	852.9003	0.2655		859.5383
Total	0.5547	5.7483	5.6944	8.4800e-003	2.3061	0.3299	2.6360	0.3492	0.3035	0.6527	0.0000	852.9003	852.9003	0.2655		859.5383

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3088	10.0533	1.7934	0.0309	2.7577	0.0521	2.8099	0.6964	0.0499	0.7463		3,236.4188	3,236.4188	0.0706		3,238.1834
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3339	5.2000e-004	0.3344	0.0835	4.8000e-004	0.0839		73.9101	73.9101	2.3600e-003		73.9690
Total	0.3541	10.0877	2.1101	0.0316	3.0917	0.0527	3.1443	0.7799	0.0504	0.8302		3,310.3289	3,310.3289	0.0730		3,312.1524

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.3 Building Construction - Mobilization - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1266	4.1786	0.7547	0.0120	0.6964	0.0201	0.7166	0.1783	0.0193	0.1975		1,256.748 3	1,256.748 3	0.0378		1,257.692 7
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1361	0.1034	0.9499	2.2300e-003	0.6639	1.5500e-003	0.6655	0.1675	1.4300e-003	0.1689		221.7303	221.7303	7.0700e-003		221.9070
Total	0.2626	4.2820	1.7046	0.0142	1.3604	0.0217	1.3820	0.3458	0.0207	0.3664		1,478.478 6	1,478.478 6	0.0449		1,479.599 7

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.3 Building Construction - Mobilization - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1266	4.1786	0.7547	0.0120	0.6964	0.0201	0.7166	0.1783	0.0193	0.1975		1,256.748 3	1,256.748 3	0.0378		1,257.692 7
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1361	0.1034	0.9499	2.2300e-003	0.6639	1.5500e-003	0.6655	0.1675	1.4300e-003	0.1689		221.7303	221.7303	7.0700e-003		221.9070
Total	0.2626	4.2820	1.7046	0.0142	1.3604	0.0217	1.3820	0.3458	0.0207	0.3664		1,478.478 6	1,478.478 6	0.0449		1,479.599 7

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.4 Building Construction - Site Preparation/Stripping - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242		4,047.4659	4,047.4659	1.2600		4,078.9667
Total	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242		4,047.4659	4,047.4659	1.2600		4,078.9667

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0891	2.9556	0.5364	8.2500e-003	5.1622	0.0138	5.1760	0.5794	0.0132	0.5927		864.4521	864.4521	0.0291		865.1785
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1361	0.1034	0.9499	2.2300e-003	0.5778	1.5500e-003	0.5794	0.1464	1.4300e-003	0.1478		221.7303	221.7303	7.0700e-003		221.9070
Total	0.2251	3.0591	1.4863	0.0105	5.7400	0.0154	5.7554	0.7258	0.0146	0.7404		1,086.1825	1,086.1825	0.0361		1,087.0855

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.4 Building Construction - Site Preparation/Stripping - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242	0.0000	4,047.4659	4,047.4659	1.2600		4,078.9667
Total	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242	0.0000	4,047.4659	4,047.4659	1.2600		4,078.9667

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0891	2.9556	0.5364	8.2500e-003	5.1622	0.0138	5.1760	0.5794	0.0132	0.5927		864.4521	864.4521	0.0291		865.1785
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1361	0.1034	0.9499	2.2300e-003	0.5778	1.5500e-003	0.5794	0.1464	1.4300e-003	0.1478		221.7303	221.7303	7.0700e-003		221.9070
Total	0.2251	3.0591	1.4863	0.0105	5.7400	0.0154	5.7554	0.7258	0.0146	0.7404		1,086.1825	1,086.1825	0.0361		1,087.0855

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.5 Building Construction - Existing Road Removal - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242		4,047.4659	4,047.4659	1.2600		4,078.9667
Total	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242		4,047.4659	4,047.4659	1.2600		4,078.9667

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.3122	42.7263	7.6220	0.1312	12.5093	0.2216	12.7309	3.1534	0.2120	3.3654		13,754.7800	13,754.7800	0.3000		13,762.2796
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3571	5.2000e-004	0.3576	0.0892	4.8000e-004	0.0896		73.9101	73.9101	2.3600e-003		73.9690
Total	1.3575	42.7608	7.9386	0.1320	12.8664	0.2221	13.0885	3.2426	0.2125	3.4551		13,828.6901	13,828.6901	0.3024		13,836.2486

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.5 Building Construction - Existing Road Removal - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242	0.0000	4,047.4659	4,047.4659	1.2600		4,078.9667
Total	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242	0.0000	4,047.4659	4,047.4659	1.2600		4,078.9667

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.3122	42.7263	7.6220	0.1312	12.5093	0.2216	12.7309	3.1534	0.2120	3.3654		13,754.7800	13,754.7800	0.3000		13,762.2796
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3571	5.2000e-004	0.3576	0.0892	4.8000e-004	0.0896		73.9101	73.9101	2.3600e-003		73.9690
Total	1.3575	42.7608	7.9386	0.1320	12.8664	0.2221	13.0885	3.2426	0.2125	3.4551		13,828.6901	13,828.6901	0.3024		13,836.2486

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.6 Building Construction - Trench Excavation and Forcemain Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.2569	56.9183	42.1001	0.0629		3.0080	3.0080		2.7674	2.7674		6,329.9410	6,329.9410	1.9706		6,379.2059
Total	5.2569	56.9183	42.1001	0.0629		3.0080	3.0080		2.7674	2.7674		6,329.9410	6,329.9410	1.9706		6,379.2059

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.3943	51.9719	10.3449	0.0621	276.6749	0.0907	276.7656	27.5729	0.0867	27.6596		6,503.3214	6,503.3214	1.3407		6,536.8385
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3050	5.2000e-004	0.3055	0.0764	4.8000e-004	0.0768		73.9101	73.9101	2.3600e-003		73.9690
Total	1.4396	52.0064	10.6616	0.0628	276.9798	0.0912	277.0710	27.6492	0.0872	27.7364		6,577.2315	6,577.2315	1.3430		6,610.8075

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.6 Building Construction - Trench Excavation and Forcemain Installation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.2569	56.9183	42.1001	0.0629		3.0080	3.0080		2.7674	2.7674	0.0000	6,329.9410	6,329.9410	1.9706		6,379.2059
Total	5.2569	56.9183	42.1001	0.0629		3.0080	3.0080		2.7674	2.7674	0.0000	6,329.9410	6,329.9410	1.9706		6,379.2059

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.3943	51.9719	10.3449	0.0621	276.6749	0.0907	276.7656	27.5729	0.0867	27.6596		6,503.3214	6,503.3214	1.3407		6,536.8385
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3050	5.2000e-004	0.3055	0.0764	4.8000e-004	0.0768		73.9101	73.9101	2.3600e-003		73.9690
Total	1.4396	52.0064	10.6616	0.0628	276.9798	0.0912	277.0710	27.6492	0.0872	27.7364		6,577.2315	6,577.2315	1.3430		6,610.8075

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.7 Building Construction - New Road Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5738	15.8515	10.5954	0.0153		0.8917	0.8917		0.8212	0.8212		1,523.4410	1,523.4410	0.4662		1,535.0964
Total	1.5738	15.8515	10.5954	0.0153		0.8917	0.8917		0.8212	0.8212		1,523.4410	1,523.4410	0.4662		1,535.0964

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.7719	25.1331	4.4835	0.0772	7.0103	0.1303	7.1406	1.7695	0.1247	1.8942		8,091.0470	8,091.0470	0.1765		8,095.4586
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.6794	1.0300e-003	0.6804	0.1698	9.5000e-004	0.1707		147.8202	147.8202	4.7100e-003		147.9380
Total	0.8626	25.2021	5.1168	0.0787	7.6897	0.1314	7.8211	1.9393	0.1257	2.0649		8,238.8673	8,238.8673	0.1812		8,243.3966

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.7 Building Construction - New Road Construction - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5738	15.8515	10.5954	0.0153		0.8917	0.8917		0.8212	0.8212	0.0000	1,523.4410	1,523.4410	0.4662		1,535.0964
Total	1.5738	15.8515	10.5954	0.0153		0.8917	0.8917		0.8212	0.8212	0.0000	1,523.4410	1,523.4410	0.4662		1,535.0964

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.7719	25.1331	4.4835	0.0772	7.0103	0.1303	7.1406	1.7695	0.1247	1.8942		8,091.0470	8,091.0470	0.1765		8,095.4586
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.6794	1.0300e-003	0.6804	0.1698	9.5000e-004	0.1707		147.8202	147.8202	4.7100e-003		147.9380
Total	0.8626	25.2021	5.1168	0.0787	7.6897	0.1314	7.8211	1.9393	0.1257	2.0649		8,238.8673	8,238.8673	0.1812		8,243.3966

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.8 Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	24.1581	264.2348	253.1856	0.4019		12.5022	12.5022		11.5020	11.5020		40,436.3532	40,436.3532	12.5884		40,751.0629
Total	24.1581	264.2348	253.1856	0.4019		12.5022	12.5022		11.5020	11.5020		40,436.3532	40,436.3532	12.5884		40,751.0629

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	97.4151	3,194.3635	573.5028	9.4784	2,676.6779	15.9564	2,692.6344	404.8038	15.2660	420.0698		993,518.2361	993,518.2361	25.7515		994,162.0247
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2268	0.1724	1.5832	3.7100e-003	1.8291	2.5800e-003	1.8317	0.4565	2.3800e-003	0.4589		369.5506	369.5506	0.0118		369.8450
Total	97.6419	3,194.5359	575.0860	9.4821	2,678.5070	15.9590	2,694.4660	405.2603	15.2684	420.5286		993,887.7867	993,887.7867	25.7633		994,531.8697

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.8 Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	24.1581	264.2348	253.1856	0.4019		12.5022	12.5022		11.5020	11.5020	0.0000	40,436.3532	40,436.3532	12.5884		40,751.0629
Total	24.1581	264.2348	253.1856	0.4019		12.5022	12.5022		11.5020	11.5020	0.0000	40,436.3532	40,436.3532	12.5884		40,751.0629

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	97.4151	3,194.3635	573.5028	9.4784	2,676.6779	15.9564	2,692.6344	404.8038	15.2660	420.0698		993,518.2361	993,518.2361	25.7515		994,162.0247
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2268	0.1724	1.5832	3.7100e-003	1.8291	2.5800e-003	1.8317	0.4565	2.3800e-003	0.4589		369.5506	369.5506	0.0118		369.8450
Total	97.6419	3,194.5359	575.0860	9.4821	2,678.5070	15.9590	2,694.4660	405.2603	15.2684	420.5286		993,887.7867	993,887.7867	25.7633		994,531.8697

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.9 Building Construction - Offsite Borrow Material Transport - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	29.3310	955.0584	170.3739	2.9332	286.2383	4.9528	291.1911	72.1131	4.7385	76.8516		307,459.7873	307,459.7873	6.7056		307,627.4270
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3658	5.2000e-004	0.3663	0.0913	4.8000e-004	0.0918		73.9101	73.9101	2.3600e-003		73.9690
Total	29.3763	955.0929	170.6906	2.9339	286.6041	4.9534	291.5575	72.2044	4.7390	76.9434		307,533.6974	307,533.6974	6.7080		307,701.3960

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.9 Building Construction - Offsite Borrow Material Transport - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	29.3310	955.0584	170.3739	2.9332	286.2383	4.9528	291.1911	72.1131	4.7385	76.8516		307,459.7873	307,459.7873	6.7056		307,627.4270
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3658	5.2000e-004	0.3663	0.0913	4.8000e-004	0.0918		73.9101	73.9101	2.3600e-003		73.9690
Total	29.3763	955.0929	170.6906	2.9339	286.6041	4.9534	291.5575	72.2044	4.7390	76.9434		307,533.6974	307,533.6974	6.7080		307,701.3960

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.10 Building Construction - Cutoff Wall Installation (Open Trench Method) - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1817	25.3414	19.3445	0.0315		1.1335	1.1335		1.0428	1.0428		3,167.0501	3,167.0501	0.9860		3,191.6987
Total	2.1817	25.3414	19.3445	0.0315		1.1335	1.1335		1.0428	1.0428		3,167.0501	3,167.0501	0.9860		3,191.6987

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1397	4.7582	0.8833	0.0115	12.2627	0.0189	12.2816	1.3211	0.0181	1.3392		1,203.6134	1,203.6134	0.0647		1,205.2314
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.4771	1.0300e-003	0.4782	0.1201	9.5000e-004	0.1211		147.8202	147.8202	4.7100e-003		147.9380
Total	0.2304	4.8272	1.5166	0.0130	12.7398	0.0200	12.7598	1.4412	0.0191	1.4603		1,351.4337	1,351.4337	0.0694		1,353.1694

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.10 Building Construction - Cutoff Wall Installation (Open Trench Method) - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1817	25.3414	19.3445	0.0315		1.1335	1.1335		1.0428	1.0428	0.0000	3,167.0501	3,167.0501	0.9860		3,191.6987
Total	2.1817	25.3414	19.3445	0.0315		1.1335	1.1335		1.0428	1.0428	0.0000	3,167.0501	3,167.0501	0.9860		3,191.6987

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1397	4.7582	0.8833	0.0115	12.2627	0.0189	12.2816	1.3211	0.0181	1.3392		1,203.6134	1,203.6134	0.0647		1,205.2314
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.4771	1.0300e-003	0.4782	0.1201	9.5000e-004	0.1211		147.8202	147.8202	4.7100e-003		147.9380
Total	0.2304	4.8272	1.5166	0.0130	12.7398	0.0200	12.7598	1.4412	0.0191	1.4603		1,351.4337	1,351.4337	0.0694		1,353.1694

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.11 Building Construction - Erosion Protection Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	24.8224	266.0934	279.4314	0.4414		12.8891	12.8891		11.8580	11.8580		44,404.74 91	44,404.74 91	13.8238		44,750.34 42
Total	24.8224	266.0934	279.4314	0.4414		12.8891	12.8891		11.8580	11.8580		44,404.74 91	44,404.74 91	13.8238		44,750.34 42

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	14.2796	464.9626	82.9452	1.4280	138.2786	2.4113	140.6898	34.8440	2.3069	37.1509		149,684.3 701	149,684.3 701	3.2646		149,765.9 842
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.7258	1.0300e-003	0.7269	0.1812	9.5000e-004	0.1821		147.8202	147.8202	4.7100e-003		147.9380
Total	14.3703	465.0316	83.5785	1.4295	139.0044	2.4123	141.4167	35.0252	2.3079	37.3330		149,832.1 903	149,832.1 903	3.2693		149,913.9 222

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.11 Building Construction - Erosion Protection Installation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	24.8224	266.0934	279.4314	0.4414		12.8891	12.8891		11.8580	11.8580	0.0000	44,404.74 91	44,404.74 91	13.8238		44,750.34 41
Total	24.8224	266.0934	279.4314	0.4414		12.8891	12.8891		11.8580	11.8580	0.0000	44,404.74 91	44,404.74 91	13.8238		44,750.34 41

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	14.2796	464.9626	82.9452	1.4280	138.2786	2.4113	140.6898	34.8440	2.3069	37.1509		149,684.3 701	149,684.3 701	3.2646		149,765.9 842
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e- 003	0.7258	1.0300e- 003	0.7269	0.1812	9.5000e- 004	0.1821		147.8202	147.8202	4.7100e- 003		147.9380
Total	14.3703	465.0316	83.5785	1.4295	139.0044	2.4123	141.4167	35.0252	2.3079	37.3330		149,832.1 903	149,832.1 903	3.2693		149,913.9 222

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.12 Building Construction - Relief Well Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8458	22.3587	16.3536	0.0269		0.9536	0.9536		0.8773	0.8773		2,704.3656	2,704.3656	0.8419		2,725.4133
Total	1.8458	22.3587	16.3536	0.0269		0.9536	0.9536		0.8773	0.8773		2,704.3656	2,704.3656	0.8419		2,725.4133

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.0761	5.2000e-004	0.0766	0.0202	4.8000e-004	0.0207		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0454	0.0345	0.3166	7.4000e-004	0.0761	5.2000e-004	0.0766	0.0202	4.8000e-004	0.0207		73.9101	73.9101	2.3600e-003		73.9690

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.12 Building Construction - Relief Well Installation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8458	22.3587	16.3536	0.0269		0.9536	0.9536		0.8773	0.8773	0.0000	2,704.3656	2,704.3656	0.8419		2,725.4133
Total	1.8458	22.3587	16.3536	0.0269		0.9536	0.9536		0.8773	0.8773	0.0000	2,704.3656	2,704.3656	0.8419		2,725.4133

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.0761	5.2000e-004	0.0766	0.0202	4.8000e-004	0.0207		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0454	0.0345	0.3166	7.4000e-004	0.0761	5.2000e-004	0.0766	0.0202	4.8000e-004	0.0207		73.9101	73.9101	2.3600e-003		73.9690

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.13 Building Construction - Existing Pump Station Removal - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035		852.9003	852.9003	0.2655		859.5383
Total	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035		852.9003	852.9003	0.2655		859.5383

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0440	1.4610	0.2653	4.0700e-003	0.2322	6.8000e-003	0.2390	0.0594	6.5100e-003	0.0659		426.0980	426.0980	0.0145		426.4599
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.2213	5.2000e-004	0.2218	0.0558	4.8000e-004	0.0563		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0894	1.4955	0.5819	4.8100e-003	0.4535	7.3200e-003	0.4608	0.1153	6.9900e-003	0.1222		500.0081	500.0081	0.0168		500.4289

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.13 Building Construction - Existing Pump Station Removal - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035	0.0000	852.9003	852.9003	0.2655		859.5383
Total	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035	0.0000	852.9003	852.9003	0.2655		859.5383

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0440	1.4610	0.2653	4.0700e-003	0.2322	6.8000e-003	0.2390	0.0594	6.5100e-003	0.0659		426.0980	426.0980	0.0145		426.4599
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.2213	5.2000e-004	0.2218	0.0558	4.8000e-004	0.0563		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0894	1.4955	0.5819	4.8100e-003	0.4535	7.3200e-003	0.4608	0.1153	6.9900e-003	0.1222		500.0081	500.0081	0.0168		500.4289

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.14 Building Construction - Pump Station Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4884	5.3583	3.1680	5.3000e-003		0.2950	0.2950		0.2714	0.2714		533.4615	533.4615	0.1661		537.6133
Total	0.4884	5.3583	3.1680	5.3000e-003		0.2950	0.2950		0.2714	0.2714		533.4615	533.4615	0.1661		537.6133

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0220	0.7305	0.1326	2.0300e-003	0.0917	3.4000e-003	0.0951	0.0237	3.2500e-003	0.0270		213.0490	213.0490	7.2400e-003		213.2299
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.1726	5.2000e-004	0.1731	0.0439	4.8000e-004	0.0443		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0674	0.7650	0.4493	2.7700e-003	0.2643	3.9200e-003	0.2682	0.0676	3.7300e-003	0.0713		286.9591	286.9591	9.6000e-003		287.1989

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.14 Building Construction - Pump Station Installation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4884	5.3583	3.1680	5.3000e-003		0.2950	0.2950		0.2714	0.2714	0.0000	533.4615	533.4615	0.1661		537.6133
Total	0.4884	5.3583	3.1680	5.3000e-003		0.2950	0.2950		0.2714	0.2714	0.0000	533.4615	533.4615	0.1661		537.6133

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0220	0.7305	0.1326	2.0300e-003	0.0917	3.4000e-003	0.0951	0.0237	3.2500e-003	0.0270		213.0490	213.0490	7.2400e-003		213.2299
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.1726	5.2000e-004	0.1731	0.0439	4.8000e-004	0.0443		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0674	0.7650	0.4493	2.7700e-003	0.2643	3.9200e-003	0.2682	0.0676	3.7300e-003	0.0713		286.9591	286.9591	9.6000e-003		287.1989

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.15 Building Construction - Existing Levee Degrade - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6270	19.5931	13.6501	0.0230		0.8036	0.8036		0.7393	0.7393		2,314.1498	2,314.1498	0.7204		2,332.1604
Total	1.6270	19.5931	13.6501	0.0230		0.8036	0.8036		0.7393	0.7393		2,314.1498	2,314.1498	0.7204		2,332.1604

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	16.0578	598.3805	119.0809	0.7173	3,252.3991	1.0481	3,253.4472	324.1269	1.0027	325.1295		75,123.5638	75,123.5638	15.4124		75,508.8744
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.7084	1.0300e-003	0.7095	0.1769	9.5000e-004	0.1779		147.8202	147.8202	4.7100e-003		147.9380
Total	16.1485	598.4494	119.7142	0.7188	3,253.1075	1.0491	3,254.1567	324.3038	1.0036	325.3074		75,271.3840	75,271.3840	15.4171		75,656.8124

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.15 Building Construction - Existing Levee Degrade - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6270	19.5931	13.6501	0.0230		0.8036	0.8036		0.7393	0.7393	0.0000	2,314.1498	2,314.1498	0.7204		2,332.1604
Total	1.6270	19.5931	13.6501	0.0230		0.8036	0.8036		0.7393	0.7393	0.0000	2,314.1498	2,314.1498	0.7204		2,332.1604

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	16.0578	598.3805	119.0809	0.7173	3,252.3991	1.0481	3,253.4472	324.1269	1.0027	325.1295		75,123.5638	75,123.5638	15.4124		75,508.8744
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.7084	1.0300e-003	0.7095	0.1769	9.5000e-004	0.1779		147.8202	147.8202	4.7100e-003		147.9380
Total	16.1485	598.4494	119.7142	0.7188	3,253.1075	1.0491	3,254.1567	324.3038	1.0036	325.3074		75,271.3840	75,271.3840	15.4171		75,656.8124

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.16 Building Construction - Ecosystem Project Elements - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5207	41.8925	28.7779	0.0464		1.9077	1.9077		1.7551	1.7551		4,673.0483	4,673.0483	1.4548		4,709.4179
Total	3.5207	41.8925	28.7779	0.0464		1.9077	1.9077		1.7551	1.7551		4,673.0483	4,673.0483	1.4548		4,709.4179

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0193	0.6283	0.1121	1.9300e-003	36.7906	3.2600e-003	36.7939	3.6661	3.1200e-003	3.6693		202.2762	202.2762	4.4100e-003		202.3865
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.2653	1.0300e-003	0.2663	0.0681	9.5000e-004	0.0691		147.8202	147.8202	4.7100e-003		147.9380
Total	0.1100	0.6973	0.7454	3.4200e-003	37.0559	4.2900e-003	37.0602	3.7343	4.0700e-003	3.7383		350.0964	350.0964	9.1200e-003		350.3245

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.16 Building Construction - Ecosystem Project Elements - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5207	41.8925	28.7779	0.0464		1.9077	1.9077		1.7551	1.7551	0.0000	4,673.0483	4,673.0483	1.4548		4,709.4179
Total	3.5207	41.8925	28.7779	0.0464		1.9077	1.9077		1.7551	1.7551	0.0000	4,673.0483	4,673.0483	1.4548		4,709.4179

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0193	0.6283	0.1121	1.9300e-003	36.7906	3.2600e-003	36.7939	3.6661	3.1200e-003	3.6693		202.2762	202.2762	4.4100e-003		202.3865
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.2653	1.0300e-003	0.2663	0.0681	9.5000e-004	0.0691		147.8202	147.8202	4.7100e-003		147.9380
Total	0.1100	0.6973	0.7454	3.4200e-003	37.0559	4.2900e-003	37.0602	3.7343	4.0700e-003	3.7383		350.0964	350.0964	9.1200e-003		350.3245

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.17 Building Construction - Site Restoration and Demobilization - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1763	11.6495	7.1750	9.6000e-003		0.6920	0.6920		0.6367	0.6367		967.2218	967.2218	0.3011		974.7496
Total	1.1763	11.6495	7.1750	9.6000e-003		0.6920	0.6920		0.6367	0.6367		967.2218	967.2218	0.3011		974.7496

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2532	8.3572	1.5094	0.0240	2.0163	0.0403	2.0566	0.5096	0.0385	0.5481		2,513.4965	2,513.4965	0.0756		2,515.3854
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3252	5.2000e-004	0.3257	0.0813	4.8000e-004	0.0818		73.9101	73.9101	2.3600e-003		73.9690
Total	0.2985	8.3917	1.8261	0.0247	2.3415	0.0408	2.3823	0.5909	0.0390	0.6299		2,587.4066	2,587.4066	0.0779		2,589.3544

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

3.17 Building Construction - Site Restoration and Demobilization - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1763	11.6495	7.1750	9.6000e-003		0.6920	0.6920		0.6367	0.6367	0.0000	967.2218	967.2218	0.3011		974.7496
Total	1.1763	11.6495	7.1750	9.6000e-003		0.6920	0.6920		0.6367	0.6367	0.0000	967.2218	967.2218	0.3011		974.7496

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2532	8.3572	1.5094	0.0240	2.0163	0.0403	2.0566	0.5096	0.0385	0.5481		2,513.4965	2,513.4965	0.0756		2,515.3854
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3252	5.2000e-004	0.3257	0.0813	4.8000e-004	0.0818		73.9101	73.9101	2.3600e-003		73.9690
Total	0.2985	8.3917	1.8261	0.0247	2.3415	0.0408	2.3823	0.5909	0.0390	0.6299		2,587.4066	2,587.4066	0.0779		2,589.3544

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
User Defined Commercial	0.00	0.00	0.00		
User Defined Residential	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
User Defined Commercial	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
User Defined Residential	10.00	5.00	7.00	46.00	13.00	41.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.486608	0.042104	0.206882	0.127088	0.026765	0.005851	0.054651	0.039468	0.001006	0.001905	0.006007	0.000778	0.000886
User Defined Commercial	0.486608	0.042104	0.206882	0.127088	0.026765	0.005851	0.054651	0.039468	0.001006	0.001905	0.006007	0.000778	0.000886
User Defined Residential	0.486608	0.042104	0.206882	0.127088	0.026765	0.005851	0.054651	0.039468	0.001006	0.001905	0.006007	0.000778	0.000886

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment

Lower Elkhorn Basin Alt 4 Unfavorable - Year 1 - Yolo County, Winter

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

Lower Elkhorn Basin
 Fugitive Dust Emissions
 Alternative 4 Unfavorable

$$EF_0 = k \times (0.0032) \times ((U/5)^{1.3}) / ((M/2)^{1.4})$$

Variable	Amount	Units	Source
EF (PM ₁₀)	0.103	lb/ton	CalEEMod Appendix A
EF (PM _{2.5})	0.016	lb/ton	CalEEMod Appendix A
K (PM ₁₀)	0.35	factor	CalEEMod Appendix A
K (PM _{2.5})	0.053	factor	CalEEMod Appendix A
U (mean wind speed)	7.83	miles/hr	CalEEMod Appendix A
M (moisture content)	12%	percent	CalEEMod Appendix A
Type 1 Levee Fill Density	1.3	tons/cy	Project Engineer
Type 2 Levee Fill Density	1.3	tons/cy	Project Engineer
Aggregate Base Density	1.8	tons/cy	Project Engineer
Excavated Soil density	1.3	tons/cy	Project Engineer

$$E \text{ (lbs)} = EF \text{ (lb/ton)} \times TP \text{ (tons)}$$

	Work Days	Total Materials Moved (cy)	Total Materials Moved (tons)	Daily Materials Moved (tons/day)	Unmitigated		Mitigated	
					Daily PM ₁₀ (lbs/day)	Daily PM _{2.5} (lbs/day)	Daily PM ₁₀ (lbs/day)	Daily PM _{2.5} (lbs/day)
Year 2018								
Mobilization	12							
Site Preparation/Stripping	60	1,050	1365	23	4.69	0.73	1.17	0.18
Structure Demolition	5							
Existing Road Removal	20	6,750	12,150	608	125.15	19.44	31.29	4.86
Trench Excavation and Forcemain Installation	30	69,100	89,830	2,994	616.83	95.82	154.21	23.95
New Road Construction	60							
New Levee/Seepage Berm & Soil Borrow Extraction	135	4,317,500	5,612,750	41,576	8564.64	1330.43	2141.16	332.61
Offsite Borrow Material Transport	20	151,300	196,690	9,835	4051.81	629.41	1012.95	157.35
Cutoff Wall Installation (Open Trench Method)	120	140,200	182,260	1,519	625.76	97.21	156.44	24.30
Erosion Protection Installation	30							
Relief Well Installation	30							
Existing Pump Station Removal	10							
Pump Station Installation	30							
Existing Levee Degrade	60	1,621,000	2,107,300	35,122	7235.06	1123.89	1808.77	280.97
Site Restoration and Demobilization	10							

Basic Construction Measure	0.54	percent reduction
Enhanced Mitigation	0.75	percent reduction

**Table 3.2-5. Lower Elkhorn Basin Levee Setback Project
Alternative 4 Construction Emissions (Unmitigated/Mitigated)**

Construction Phase	Pollutants (lb/day) ¹									
	ROG		NO _x		CO		PM10		PM2.5	
Year 2018 Construction										
Mobilization	0.3	0.3	4.3	4.3	1.7	1.7	1.4	1.4	0.4	0.4
Site Preparation / Stripping	3.2	3.2	38.8	31.6	25.1	25.1	11.9	5.8	2.8	2.0
Structure Demolition	0.9	0.9	15.8	14.7	7.8	7.8	5.8	4.1	1.5	1.2
Existing Road Removal	4.3	4.3	78.5	71.3	31.6	31.6	139.7	45.8	24.2	9.6
Trench Excavation and Forcemain Installation	6.7	6.7	108.9	97.5	52.8	52.8	896.9	295.9	126.3	40.7
New Road Construction	2.4	2.4	41.1	37.9	15.7	15.7	8.7	8.7	2.9	2.9
New Levee / Seepage Berm and Soil Borrow Extraction	43.4	43.4	973.6	920.7	395.9	395.9	12,428.5	4,080.8	1,727.1	537.5
Offsite Borrow Material Transport	29.4	29.4	955.1	764.1	170.7	170.7	4,343.4	1,304.5	706.4	234.3
Cutoff Wall Installation	2.4	2.4	30.2	25.1	20.9	20.9	639.7	164.2	99.7	26.1
Erosion Protection Installation	39.2	39.2	731.1	677.9	363.0	363.0	154.3	154.3	49.2	49.2
Relief Well Installation	1.9	1.9	22.4	17.9	16.7	16.7	1.0	1.0	0.9	0.9
Existing Pump Station Removal	0.6	0.6	7.2	6.1	6.3	6.3	0.8	0.8	0.4	0.4
Pump Station Installation	0.6	0.6	6.1	4.9	3.6	3.6	0.6	0.6	0.3	0.3
Existing Levee Degrade	17.8	17.8	618.0	614.1	133.4	133.4	10,490.0	3,437.5	1,449.9	445.0
Ecosystem Project Elements	3.6	3.6	42.6	34.2	29.5	29.5	39.0	20.6	5.5	3.7
Site Restoration and Demobilization	1.6	1.6	22.5	20.2	9.5	9.5	3.8	3.8	1.4	1.4
YSAQMD Threshold of Significance	10 tons/year		10 tons/year		None		80 lb/day		None	
Exceeds YSAQMD Threshold?	No		Yes		No		Yes		No	
2018 Annual Emissions² (tons/year)	5	5	113	105	42	42	1,254	409	176	55
Conformity Threshold (tons/year)	25		25		100				100	
Exceeds Conformity Threshold?	No		Yes		No				No	

Notes: lb/day = pounds per day; NO_x = oxides of nitrogen; PM10 = particulate matter with aerodynamic diameter less than 10 microns; PM2.5 = particulate matter with aerodynamic diameter less than 2.5 microns; ROG = reactive organic gases; YSAQMD = Yolo-Solano Air Quality Management District

¹ All emissions are shown in units of pounds per day unless noted otherwise.

² Annual emissions, in units of tons per year, were conservatively estimated by multiplying the maximum daily emissions by the number of work days per subphase or task. In reality, emissions would likely fluctuate and would not continue at the maximum level throughout each subphase or task.

Source: Data modeled by GEI Consultants, Inc. in 2016

2018 Unmitigated Emissions

2018 CONSTRUCTION YEAR

Construction Phase	Work Days	Pollutants (lbs/day)					Total
		ROG	No _x	CO	PM ₁₀	PM _{2.5}	MT CO ₂ e
Mobilization		0.26	4.28	1.70	1.38	0.37	8.05
Construction Equipment							
Haul Trucks	12	0.13	4.18	0.75	0.72	0.20	6.85
On-Road Vehicles	12	0.14	0.10	0.95	0.67	0.17	1.21
Fugitive Dust							
Site Preparation/Stripping		3.16	38.78	25.12	11.88	2.79	140.60
Construction Equipment	60	2.93	35.73	23.64	1.44	1.32	111.01
Haul Trucks	60	0.09	2.96	0.54	5.18	0.59	23.55
On-Road Vehicles	60	0.14	0.10	0.95	0.58	0.15	6.04
Fugitive Dust					4.69	0.73	
Structure Demolition		0.91	15.84	7.80	5.78	1.48	9.46
Construction Equipment	5	0.55	5.75	5.69	0.33	0.30	1.95
Haul Trucks	5	0.31	10.05	1.79	2.81	0.75	7.34
On-Road Vehicles	5	0.05	0.03	0.32	0.33	0.08	0.17
Fugitive Dust	5				2.31	0.35	
Existing Road Removal		4.29	78.49	31.58	139.68	24.22	162.53
Construction Equipment	20	2.93	35.73	23.64	1.44	1.32	37.00
Haul Trucks	20	1.31	42.73	7.62	12.73	3.37	124.85
On-Road Vehicles	20	0.05	0.03	0.32	0.36	0.09	0.67
Fugitive Dust	20				125.15	19.44	
Trench Excavation and Forcemain Installation		6.70	108.92	52.76	896.91	126.32	176.77
Construction Equipment	30	5.26	56.92	42.10	3.01	2.77	86.81
Haul Trucks	30	1.39	51.97	10.34	276.77	27.66	88.95
On-Road Vehicles	30	0.05	0.03	0.32	0.31	0.08	1.01
Fugitive Dust	30				616.83	95.82	
New Road Construction		2.44	41.05	15.71	8.71	2.89	266.13
Construction Equipment	60	1.57	15.85	10.60	0.89	0.82	41.78
Haul Trucks	60	0.77	25.13	4.48	7.14	1.89	220.32
On-Road Vehicles	60	0.09	0.07	0.63	0.68	0.17	4.03
Fugitive Dust	60						
New Levee/Seepage Berm & Soil Borrow Extraction		43.42	973.57	395.90	12428.51	1727.07	7996.58
Construction Equipment	135	24.16	264.23	253.19	12.50	11.50	2495.42
Haul Trucks	135	19.03	709.17	141.13	3849.67	384.71	5478.52
On-Road Vehicles	135	0.23	0.17	1.58	1.70	0.43	22.65
Fugitive Dust	135				8564.64	1330.43	
Offsite Borrow Material Transport		29.38	955.09	170.69	4343.37	706.35	2791.45
Construction Equipment							
Haul Trucks	20	29.33	955.06	170.37	291.19	76.85	2790.78
Support Vehicles							
On-Road Vehicles	20	0.05	0.03	0.32	0.37	0.09	0.67
Fugitive Dust					4051.81	629.41	
Cutoff Wall Installation (Open Trench Method)		2.41	30.17	20.86	639.65	99.71	247.38
Construction Equipment	120	2.18	25.34	19.34	1.13	1.04	173.73
Haul Trucks	120	0.14	4.76	0.88	12.28	1.34	65.60
Support Vehicles	120						
On-Road Vehicles	120	0.09	0.07	0.63	0.48	0.12	8.05
Fugitive Dust	120				625.76	97.21	
Erosion Protection Installation		39.19	731.12	363.01	154.31	49.19	2648.97
Construction Equipment	30	24.82	266.09	279.43	12.89	11.86	608.96
Haul Trucks	30	14.28	464.96	82.95	140.69	37.15	2038.00
On-Road Vehicles	30	0.09	0.07	0.63	0.73	0.18	2.01
Fugitive Dust	30						
Relief Well Installation		1.89	22.39	16.67	1.03	0.90	38.09
Construction Equipment	30	1.85	22.36	16.35	0.95	0.88	37.09
Haul Trucks	30						
On-Road Vehicles	30	0.05	0.03	0.32	0.08	0.02	1.01
Fugitive Dust	30						

2018 Unmitigated Emissions

2018 CONSTRUCTION YEAR

Existing Pump Station Removal		0.64	7.24	6.28	0.79	0.43	6.17
Construction Equipment	10	0.55	5.75	5.69	0.33	0.30	3.90
Haul Trucks	10	0.04	1.46	0.27	0.24	0.07	1.93
Support Vehicles	10						
On-Road Vehicles	10	0.05	0.03	0.32	0.22	0.06	0.34
Fugitive Dust	10						
Pump Station Installation		0.56	6.12	3.62	0.56	0.34	11.22
Construction Equipment	30	0.49	5.36	3.17	0.30	0.27	7.32
Haul Trucks	30	0.02	0.73	0.13	0.10	0.02	2.90
Support Vehicles	30						
On-Road Vehicles	30	0.05	0.03	0.32	0.17	0.04	1.01
Fugitive Dust	30						
Existing Levee Degrade		17.78	618.04	133.36	10490.02	1449.94	2122.53
Construction Equipment	60	1.63	19.59	13.65	0.80	0.74	63.47
Haul Trucks	60	16.06	598.38	119.08	3253.45	325.13	2055.04
Support Vehicles	60						
On-Road Vehicles	60	0.09	0.07	0.63	0.71	0.18	4.03
Fugitive Dust	60				7235.06	1123.89	
Ecosystem Project Elements		3.63	42.59	29.52	38.97	5.49	50.49
Construction Equipment	22	3.52	41.89	28.78	1.91	1.76	47.00
Haul Trucks	22	0.02	0.63	0.11	36.79	3.67	2.02
Support Vehicles	22						
On-Road Vehicles	22	0.09	0.07	0.63	0.27	0.07	1.48
Fugitive Dust	22						
Site Restoration and Demobilization		1.55	22.55	9.45	3.77	1.45	19.59
Construction Equipment	10	1.18	11.65	7.18	0.69	0.64	4.42
Haul Trucks	10	0.33	10.86	1.96	2.74	0.73	14.83
Support Vehicles	10						
On-Road Vehicles	10	0.05	0.03	0.32	0.33	0.08	0.34
Fugitive Dust	10						

Year 2018 Construction Maximum Overlaps

Month	Pollutants (lbs/day)				
	ROG	NO _x	CO	PM ₁₀	PM _{2.5}
Month 1	52.03	1110.96	462.11	12587.24	1755.94
Month 2	53.27	1121.28	473.79	13337.31	1856.19
Month 3	58.12	1192.50	510.36	13985.67	1958.79
Month 4	48.26	1044.80	432.47	13076.88	1829.67
Month 5	51.35	1080.56	459.04	13079.26	1831.33
Month 6	116.84	2718.48	970.75	17567.44	2583.56
Month 7	104.35	2375.46	922.59	23716.26	3327.36
Month 8	21.41	660.63	162.89	10528.99	1455.43
Month 9	17.78	618.04	133.36	10490.02	1449.94
Total Emissions (tons/year)	4.89	112.51	42.20	1253.72	176.26
Significance Threshold, Conformity (tons/year)	25.00	25.00	100.00		100.00
Significance Threshold, YSAQMD (lbs/day)				80.00	
Significance Threshold, YSAQMD (tons/year)	10.00	10.00		9.36	

2018 Mitigated Emissions
Construction Equipment 20% NOx Reduction, 75% PM Reduction, No Reduction for Haul Trucks

2018 CONSTRUCTION YEAR

Construction Phase	Work Days	Pollutants (lbs/day)					Total MT CO ₂ e
		ROG	No _x	CO	PM ₁₀	PM _{2.5}	
Mobilization		0.26	4.28	1.70	1.38	0.37	8.05
Construction Equipment							
Haul Trucks	12	0.13	4.18	0.75	0.72	0.20	6.85
On-Road Vehicles	12	0.14	0.10	0.95	0.67	0.17	1.21
Fugitive Dust							
Site Preparation/Stripping		3.16	31.64	25.12	5.79	1.96	140.60
Construction Equipment	60	2.93	28.58	23.64	1.44	1.32	111.01
Haul Trucks	60	0.09	2.96	0.54	2.59	0.30	23.55
On-Road Vehicles	60	0.14	0.10	0.95	0.58	0.15	6.04
Fugitive Dust					1.17	0.18	
Structure Demolition		0.91	14.69	7.80	4.05	1.22	9.46
Construction Equipment	5	0.55	4.60	5.69	0.33	0.30	1.95
Haul Trucks	5	0.31	10.05	1.79	2.81	0.75	7.34
On-Road Vehicles	5	0.05	0.03	0.32	0.33	0.08	0.17
Fugitive Dust	5				0.58	0.09	
Existing Road Removal		4.29	71.34	31.58	45.82	9.64	162.53
Construction Equipment	20	2.93	28.58	23.64	1.44	1.32	37.00
Haul Trucks	20	1.31	42.73	7.62	12.73	3.37	124.85
On-Road Vehicles	20	0.05	0.03	0.32	0.36	0.09	0.67
Fugitive Dust	20				31.29	4.86	
Trench Excavation and Forcemain Installation		6.70	97.54	52.76	295.95	40.67	176.77
Construction Equipment	30	5.26	45.53	42.10	3.01	2.77	86.81
Haul Trucks	30	1.39	51.97	10.34	138.43	13.87	88.95
On-Road Vehicles	30	0.05	0.03	0.32	0.31	0.08	1.01
Fugitive Dust	30				154.21	23.96	
New Road Construction		2.44	37.88	15.71	8.71	2.89	266.13
Construction Equipment	60	1.57	12.68	10.60	0.89	0.82	41.78
Haul Trucks	60	0.77	25.13	4.48	7.14	1.89	220.32
On-Road Vehicles	60	0.09	0.07	0.63	0.68	0.17	4.03
Fugitive Dust	60						
New Levee/Seepage Berm & Soil Borrow Extraction		43.42	920.73	395.90	4080.82	537.49	7996.58
Construction Equipment	135	24.16	211.39	253.19	12.50	11.50	2495.42
Haul Trucks	135	19.03	709.17	141.13	1925.46	192.95	5478.52
On-Road Vehicles	135	0.23	0.17	1.58	1.70	0.43	22.65
Fugitive Dust	135				2141.16	332.61	
Offsite Borrow Material Transport		29.38	764.07	170.69	1304.51	234.30	2791.45
Construction Equipment							
Haul Trucks	20	29.33	764.05	170.37	291.19	76.85	2790.78
Support Vehicles							
On-Road Vehicles	20	0.05	0.03	0.32	0.37	0.09	0.67
Fugitive Dust					1012.95	157.35	
Cutoff Wall Installation (Open Trench Method)		2.41	25.10	20.86	164.20	26.14	247.38
Construction Equipment	120	2.18	20.27	19.34	1.13	1.04	173.73
Haul Trucks	120	0.14	4.76	0.88	6.15	0.68	65.60
Support Vehicles	120						
On-Road Vehicles	120	0.09	0.07	0.63	0.48	0.12	8.05
Fugitive Dust	120				156.44	24.30	
Erosion Protection Installation		39.19	677.91	363.01	154.31	49.19	2648.97
Construction Equipment	30	24.82	212.87	279.43	12.89	11.86	608.96
Haul Trucks	30	14.28	464.96	82.95	140.69	37.15	2038.00
On-Road Vehicles	30	0.09	0.07	0.63	0.73	0.18	2.01
Fugitive Dust	30						
Relief Well Installation		1.89	17.92	16.67	1.03	0.90	38.09
Construction Equipment	30	1.85	17.89	16.35	0.95	0.88	37.09
Haul Trucks	30						
On-Road Vehicles	30	0.05	0.03	0.32	0.08	0.02	1.01
Fugitive Dust	30						
Existing Pump Station Removal		0.64	6.09	6.28	0.79	0.43	6.17
Construction Equipment	10	0.55	4.60	5.69	0.33	0.30	3.90
Haul Trucks	10	0.04	1.46	0.27	0.24	0.07	1.93
Support Vehicles	10						
On-Road Vehicles	10	0.05	0.03	0.32	0.22	0.06	0.34
Fugitive Dust	10						

2018 Mitigated Emissions
Construction Equipment 20% NOx Reduction, 75% PM Reduction, No Reduction for Haul Trucks

2018 CONSTRUCTION YEAR

		0.56	4.91	3.62	0.56	0.34	11.22
Pump Station Installation							
Construction Equipment	30	0.49	4.29	3.17	0.30	0.27	7.32
Haul Trucks	30	0.02	0.58	0.13	0.10	0.02	2.90
Support Vehicles	30						
On-Road Vehicles	30	0.05	0.03	0.32	0.17	0.04	1.01
Fugitive Dust	30						
Existing Levee Degrade		17.78	614.12	133.36	3437.53	444.96	2122.53
Construction Equipment	60	1.63	15.67	13.65	0.80	0.74	63.47
Haul Trucks	60	16.06	598.38	119.08	1627.25	163.07	2055.04
Support Vehicles	60						
On-Road Vehicles	60	0.09	0.07	0.63	0.71	0.18	4.03
Fugitive Dust	60				1808.77	280.97	
Ecosystem Project Elements		3.63	34.21	29.52	20.57	3.66	50.49
Construction Equipment	22	3.52	33.51	28.78	1.91	1.76	47.00
Haul Trucks	22	0.02	0.63	0.11	18.40	1.84	2.02
Support Vehicles	22						
On-Road Vehicles	22	0.09	0.07	0.63	0.27	0.07	1.48
Fugitive Dust	22						
Site Restoration and Demobilization		1.55	20.22	9.45	3.77	1.45	19.59
Construction Equipment	10	1.18	9.32	7.18	0.69	0.64	4.42
Haul Trucks	10	0.33	10.86	1.96	2.74	0.73	14.83
Support Vehicles	10						
On-Road Vehicles	10	0.05	0.03	0.32	0.33	0.08	0.34
Fugitive Dust	10						

Year 2018 Construction Maximum Overlaps

Month	Pollutants (lbs/day)					
	ROG	NO _x	CO	PM ₁₀	PM _{2.5}	
Month 1	52.03	1042.68	462.11	4137.85	550.67	
Month 2	53.27	1049.91	473.79	4382.55	580.12	
Month 3	58.12	1112.89	510.36	4555.47	609.15	
Month 4	48.26	983.71	432.47	4253.73	566.52	
Month 5	51.35	1012.63	459.04	4256.12	568.18	
Month 6	116.84	2410.63	970.75	5705.43	848.35	
Month 7	104.35	2258.08	922.59	7840.62	1059.23	
Month 8	21.41	648.34	162.89	3458.10	448.62	
Month 9	17.78	614.12	133.36	3437.53	444.96	
Total Emissions (tons/year)	4.89	105.06	42.20	409.42	55.20	
Significance Threshold, Conformity (tons/year)	25.00	25.00	100.00		100.00	
Significance Threshold, YSAQMD (lbs/day)				80.00		
Significance Threshold, YSAQMD (tons/year)	10.00	10.00		9.36		
Emissions to Mitigate/Offset (tons/year)		105.06		400.06		
Approximate Mitigation Fee			\$1,918,451			

Current Cost of Offsets (Carl Moyer) = \$ 18,260.00

Additional PM2.5 Precursor Test

Less than 100 tons/yr?

NOX	No
ROG	Yes
SO2	Yes
NH4	Yes

**Lower Elkhorn Basin
Assumed Construction Schedule
Alternative 4 and 5**

apr may jun jul aug sept oct nov dec
Year 1 (2018)

Construction Activity	1	2	3	4	5	6	7	8	9	Work Days
Mobilization	0.5									12
Site Preparation/Stripping	1	1	0.5							60
Structure Demolition	0.2									5
Existing Road Removal	1									20
Trench Excavation and Forcemain Installation		1	0.3							30
New Road Construction			0.5	1	0.5					60
New Levee/Seepage Berm & Soil Borrow Extraction	1	1	1	1	1	1	0.5			135
Offsite Borrow Material Transport						1				20
Cutoff Wall Installation (Open Trench Method)			1	1	1	1	0.5			120
Erosion Protection Installation						0.7	0.5			30
Relief Well Installation					1	0.2				30
Existing Pump Station Removal					0.5					10
Pump Station Installation					0.5	0.7				30
Existing Levee Degrade							0.5	1	0.5	60
Ecosystem Project Elements								1		
Site Restoration and Demobilization							0.5			10

Construction Phase/Vehicle Type	EMFAC2011 Class	Workers	Work Days	Daily Haul Trips	Daily One-Way Trips	One-Way Trip Distance (miles)
Mobilization						
Equipment/supply Transport Trucks	HDT		12	5	10	30
Highway Dump Truck	HDT					
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	15	12		30	10
Site Preparation/Stripping						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT		60	2	4	50
Highway Dump Truck	HDT		60	2	4	0.8
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	15	60		30	10
Structure Demolition						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT		5	8	16	50
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	5	5		10	10
Existing Road Removal						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT		20	34	68	50
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	5	20		10	10
Trench Excavation and Forcemain Installation						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT		30	235	470	0.8
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	5	30		10	10
New Road Construction						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT					
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT		60	20	40	50
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	10	60		20	10
New Levee/Seepage Berm & Soil Borrow Extraction						
Equipment/supply Transport Trucks	HDT					
Onsite Dump Truck	HDT		135	800	1600	0.8
Offsite Dump Truck	HDT		135	2400	4800	50
Water Truck	HDT		135		1	50
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility		135		2	30
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	25	135		50	10
Offsite Borrow Material Transport						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT		20	760	1520	50
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	5	20		10	10

Construction Phase/Vehicle Type	EMFAC2011 Class	Workers	Work Days	Daily Haul Trips	Daily One-Way Trips	One-Way Trip Distance (miles)
Cutoff Wall Installation (Open Trench Method)						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT		120	5	10	0.8
Water Truck	HDT					
Material Transit Truck	HDT		120	5	10	25
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	10	120		20	10
Erosion Protection Installation						
Aggregate and Asphalt Truck	HDT					
Highway Dump Truck	HDT		30	370	740	50
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	10	30		20	10
Relief Well Installation						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT					
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	5	30		10	10
Existing Pump Station Removal						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT		10	2	4	25
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	5	10		10	10
Pump Station Installation						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT					
Water Truck	HDT					
Concrete Transit Truck	HDT			1	2	25
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	5	30		10	10
Existing Levee Degrade						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT		60	2700	5400	0.8
Water Truck	HDT		60		2	50
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	10	60		20	10
Ecosystem Project Elements						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT					
Water Truck	HDT		22		1	50
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	10	22		20	10
Site Restoration and Demobilization						
Equipment/supply Transport Trucks	HDT		10	10	20	30
Highway Dump Truck	HDT					
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	5	10		10	10

Assumptions	
Work Days Per Week	10
Construction Worker Commute	10

6
miles/one-way

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

Lower Elkhorn Basin Alt 4 Reuse - Year 1
Yolo County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Commercial	0.00	User Defined Unit	0.00	0.00	0
Other Asphalt Surfaces	0.00	Acre	0.00	0.00	0
User Defined Residential	0.00	Dwelling Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	6.8	Precipitation Freq (Days)	54
Climate Zone	2			Operational Year	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	97.00	75.00
tblOffRoadEquipment	HorsePower	187.00	162.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	187.00	162.00
tblOffRoadEquipment	HorsePower	80.00	84.00
tblOffRoadEquipment	HorsePower	367.00	356.00
tblOffRoadEquipment	HorsePower	158.00	157.00
tblOffRoadEquipment	HorsePower	158.00	157.00

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	UsageHours	6.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOffRoadEquipment	UsageHours	8.00	9.00
tblOnRoadDust	AverageVehicleWeight	2.40	11.40
tblOnRoadDust	AverageVehicleWeight	2.40	12.40
tblOnRoadDust	AverageVehicleWeight	2.40	7.50
tblOnRoadDust	AverageVehicleWeight	2.40	5.80
tblOnRoadDust	AverageVehicleWeight	2.40	12.10
tblOnRoadDust	AverageVehicleWeight	2.40	4.40
tblOnRoadDust	AverageVehicleWeight	2.40	11.10
tblOnRoadDust	AverageVehicleWeight	2.40	7.50
tblOnRoadDust	AverageVehicleWeight	2.40	6.50
tblOnRoadDust	AverageVehicleWeight	2.40	12.20
tblOnRoadDust	AverageVehicleWeight	2.40	10.40
tblOnRoadDust	AverageVehicleWeight	2.40	11.60
tblOnRoadDust	AverageVehicleWeight	2.40	11.60
tblOnRoadDust	AverageVehicleWeight	2.40	12.50
tblOnRoadDust	AverageVehicleWeight	2.40	8.10

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblProjectCharacteristics	OperationalYear	2018	2020
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	30.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	0.80
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripNumber	9.00	16.00
tblTripsAndVMT	HaulingTripNumber	0.00	740.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	HaulingTripNumber	0.00	5,400.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	HaulingTripNumber	0.00	10.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	HaulingTripNumber	0.00	68.00
tblTripsAndVMT	HaulingTripNumber	0.00	470.00
tblTripsAndVMT	HaulingTripNumber	0.00	40.00
tblTripsAndVMT	HaulingTripNumber	0.00	6,400.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	2.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,520.00
tblTripsAndVMT	HaulingTripNumber	0.00	10.00
tblTripsAndVMT	HaulingTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripLength	9.00	7.00
tblTripsAndVMT	VendorTripLength	9.00	7.00

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripLength	15.00	10.00
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tblTripsAndVMT	WorkerTripLength	15.00	10.00
tblTripsAndVMT	WorkerTripNumber	8.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	50.00

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblVehicleTrips	CC_TL	8.00	5.00
tblVehicleTrips	CC_TL	8.00	5.00
tblVehicleTrips	CNW_TL	9.00	7.00
tblVehicleTrips	CNW_TL	9.00	7.00
tblVehicleTrips	CW_TL	15.00	10.00
tblVehicleTrips	CW_TL	15.00	10.00
tblVehicleTrips	HO_TL	9.00	7.00
tblVehicleTrips	HS_TL	8.00	5.00
tblVehicleTrips	HW_TL	15.00	10.00

2.0 Emissions Summary

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition - Structure Demolition	Demolition	1/2/2018	1/2/2018	5	1	
2	Building Construction - Mobilization	Building Construction	1/3/2018	1/3/2018	5	1	
3	Building Construction - Site Preparation/Stripping	Building Construction	1/4/2018	1/4/2018	5	1	
4	Building Construction - Existing Road Removal	Building Construction	1/5/2018	1/5/2018	5	1	
5	Building Construction - Trench Excavation and Forcemain Installation	Building Construction	1/6/2018	1/8/2018	5	1	
6	Building Construction - New Road Construction	Building Construction	1/9/2018	1/9/2018	5	1	
7	Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Building Construction	1/10/2018	1/10/2018	5	1	
8	Building Construction - Offsite Borrow Material Transport	Building Construction	1/11/2018	1/11/2018	5	1	
9	Building Construction - Cutoff Wall Installation (Open Trench Method)	Building Construction	1/12/2018	1/12/2018	5	1	
10	Building Construction - Erosion Protection Installation	Building Construction	1/13/2018	1/15/2018	5	1	
11	Building Construction - Relief Well Installation	Building Construction	1/16/2018	1/16/2018	5	1	
12	Building Construction - Existing Pump Station Removal	Building Construction	1/17/2018	1/17/2018	5	1	
13	Building Construction - Pump Station Installation	Building Construction	1/18/2018	1/18/2018	5	1	
14	Building Construction - Existing Levee Degrade	Building Construction	1/19/2018	1/19/2018	5	1	
15	Building Construction - Ecosystem Project Elements	Building Construction	1/20/2018	1/22/2018	5	1	
16	Building Construction - Site Restoration and Demobilization	Building Construction	1/23/2018	1/23/2018	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition - Structure Demolition	Excavators	1	9.00	157	0.38
Demolition - Structure Demolition	Rubber Tired Dozer	1	9.00	358	0.40
Demolition - Structure Demolition	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Mobilization	Excavators	0	0.00	157	0.38
Building Construction - Site Preparation/Stripping	Excavators	1	9.00	157	0.38
Building Construction - Site Preparation/Stripping	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Site Preparation/Stripping	Scrapers	2	9.00	356	0.50
Building Construction - Existing Road Removal	Excavators	1	9.00	157	0.38
Building Construction - Existing Road Removal	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Existing Road Removal	Scrapers	1	9.00	356	0.50
Building Construction - Existing Road Removal	Scrapers	1	9.00	356	0.50
Building Construction - Trench Excavation and Forcemain Installation	Excavators	2	9.00	157	0.38
Building Construction - Trench Excavation and Forcemain Installation	Other Construction Equipment	7	9.00	172	0.42
Building Construction - Trench Excavation and Forcemain Installation	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - New Road Construction	Graders	1	9.00	162	0.41
Building Construction - New Road Construction	Pavers	1	9.00	130	0.42
Building Construction - New Road Construction	Plate Compactors	1	9.00	8	0.43
Building Construction - New Road Construction	Rollers	1	9.00	80	0.38
Building Construction - New Road Construction	Rubber Tired Dozer	1	9.00	358	0.40

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Excavators	59	9.00	157	0.38
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Graders	1	9.00	162	0.41
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Rollers	1	9.00	84	0.38
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Scrapers	3	9.00	356	0.50
Building Construction - Offsite Borrow Material Transport	Excavators	0	0.00	157	0.38
Building Construction - Cutoff Wall Installation (Open Trench Method)	Excavators	1	9.00	157	0.38
Building Construction - Cutoff Wall Installation (Open Trench Method)	Excavators	1	9.00	157	0.38
Building Construction - Cutoff Wall Installation (Open Trench Method)	Rough Terrain Forklift	4	4.00	100	0.40
Building Construction - Cutoff Wall Installation (Open Trench Method)	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Cutoff Wall Installation (Open Trench Method)	Scrapers	1	9.00	356	0.50
Building Construction - Cutoff Wall Installation (Open Trench Method)	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Erosion Protection Installation	Cranes	1	4.00	208	0.29
Building Construction - Erosion Protection Installation	Excavators	76	9.00	157	0.38
Building Construction - Erosion Protection Installation	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Relief Well Installation	Bore/Drill Rigs	1	9.00	82	0.50
Building Construction - Relief Well Installation	Excavators	1	9.00	157	0.38
Building Construction - Relief Well Installation	Scrapers	1	9.00	356	0.50
Building Construction - Existing Pump Station Removal	Excavators	1	9.00	157	0.38
Building Construction - Existing Pump Station Removal	Rubber Tired Dozer	1	9.00	358	0.40

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

Building Construction - Existing Pump Station Removal	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Pump Station Installation	Cranes	1	4.00	208	0.29
Building Construction - Pump Station Installation	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Existing Levee Degrade	Excavators	1	9.00	157	0.38
Building Construction - Existing Levee Degrade	Rubber Tired Dozer	7	9.00	358	0.40
Building Construction - Existing Levee Degrade	Scrapers	1	9.00	356	0.50
Building Construction - Ecosystem Project Elements	Tractors/Loaders/Backhoes	3	9.00	75	0.37
Building Construction - Ecosystem Project Elements	Rubber Tired Dozer	3	9.00	358	0.40
Building Construction - Ecosystem Project Elements	Scrapers	2	9.00	356	0.50
Building Construction - Ecosystem Project Elements	Bore/Drill Rigs	1	9.00	82	0.50
Building Construction - Site Restoration and Demobilization	Graders	1	9.00	162	0.41
Building Construction - Site Restoration and Demobilization	Rollers	1	9.00	84	0.38

Trips and VMT

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition - Structure Demolition	3	10.00	0.00	16.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Mobilization	0	30.00	0.00	10.00	10.00	7.00	30.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Site Preparation/Strip	4	30.00	0.00	4.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Site Preparation/Strip	4	0.00	0.00	4.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Road Remov	4	10.00	0.00	68.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Trench Excavation an	10	10.00	0.00	470.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - New Road Constructio	5	20.00	0.00	40.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	65	50.00	0.00	6,400.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	65	0.00	0.00	1.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	65	0.00	0.00	2.00	10.00	7.00	30.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Offsite Borrow Materia	0	10.00	0.00	1,520.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Cutoff Wall Installation	9	20.00	0.00	10.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - Cutoff Wall Installation	9	0.00	0.00	10.00	10.00	7.00	25.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Erosion Protection Inst	78	20.00	0.00	740.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Relief Well Installation	3	10.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Pump Station	3	10.00	0.00	4.00	10.00	7.00	25.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Pump Station Installati	2	10.00	0.00	2.00	10.00	7.00	25.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Levee Decrad	9	20.00	0.00	5,400.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Levee Decrad	9	0.00	0.00	2.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Erosion Control Plant Pla	9	20.00	0.00	1.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Site Restoration and D	2	10.00	0.00	20.00	10.00	7.00	30.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.2 Demolition - Structure Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3061	0.0000	2.3061	0.3492	0.0000	0.3492			0.0000			0.0000
Off-Road	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035		852.9003	852.9003	0.2655		859.5383
Total	0.5547	5.7483	5.6944	8.4800e-003	2.3061	0.3299	2.6360	0.3492	0.3035	0.6527		852.9003	852.9003	0.2655		859.5383

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3088	10.0533	1.7934	0.0309	2.7577	0.0521	2.8099	0.6964	0.0499	0.7463		3,236.4188	3,236.4188	0.0706		3,238.1834
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3339	5.2000e-004	0.3344	0.0835	4.8000e-004	0.0839		73.9101	73.9101	2.3600e-003		73.9690
Total	0.3541	10.0877	2.1101	0.0316	3.0917	0.0527	3.1443	0.7799	0.0504	0.8302		3,310.3289	3,310.3289	0.0730		3,312.1524

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.2 Demolition - Structure Demolition - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3061	0.0000	2.3061	0.3492	0.0000	0.3492			0.0000			0.0000
Off-Road	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035	0.0000	852.9003	852.9003	0.2655		859.5383
Total	0.5547	5.7483	5.6944	8.4800e-003	2.3061	0.3299	2.6360	0.3492	0.3035	0.6527	0.0000	852.9003	852.9003	0.2655		859.5383

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3088	10.0533	1.7934	0.0309	2.7577	0.0521	2.8099	0.6964	0.0499	0.7463		3,236.4188	3,236.4188	0.0706		3,238.1834
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3339	5.2000e-004	0.3344	0.0835	4.8000e-004	0.0839		73.9101	73.9101	2.3600e-003		73.9690
Total	0.3541	10.0877	2.1101	0.0316	3.0917	0.0527	3.1443	0.7799	0.0504	0.8302		3,310.3289	3,310.3289	0.0730		3,312.1524

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.3 Building Construction - Mobilization - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1266	4.1786	0.7547	0.0120	0.6964	0.0201	0.7166	0.1783	0.0193	0.1975		1,256.748 3	1,256.748 3	0.0378		1,257.692 7
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1361	0.1034	0.9499	2.2300e-003	0.6639	1.5500e-003	0.6655	0.1675	1.4300e-003	0.1689		221.7303	221.7303	7.0700e-003		221.9070
Total	0.2626	4.2820	1.7046	0.0142	1.3604	0.0217	1.3820	0.3458	0.0207	0.3664		1,478.478 6	1,478.478 6	0.0449		1,479.599 7

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.3 Building Construction - Mobilization - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1266	4.1786	0.7547	0.0120	0.6964	0.0201	0.7166	0.1783	0.0193	0.1975		1,256.748 3	1,256.748 3	0.0378		1,257.692 7
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1361	0.1034	0.9499	2.2300e-003	0.6639	1.5500e-003	0.6655	0.1675	1.4300e-003	0.1689		221.7303	221.7303	7.0700e-003		221.9070
Total	0.2626	4.2820	1.7046	0.0142	1.3604	0.0217	1.3820	0.3458	0.0207	0.3664		1,478.478 6	1,478.478 6	0.0449		1,479.599 7

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.4 Building Construction - Site Preparation/Stripping - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242		4,047.4659	4,047.4659	1.2600		4,078.9667
Total	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242		4,047.4659	4,047.4659	1.2600		4,078.9667

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0891	2.9556	0.5364	8.2500e-003	5.1622	0.0138	5.1760	0.5794	0.0132	0.5927		864.4521	864.4521	0.0291		865.1785
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1361	0.1034	0.9499	2.2300e-003	0.5778	1.5500e-003	0.5794	0.1464	1.4300e-003	0.1478		221.7303	221.7303	7.0700e-003		221.9070
Total	0.2251	3.0591	1.4863	0.0105	5.7400	0.0154	5.7554	0.7258	0.0146	0.7404		1,086.1825	1,086.1825	0.0361		1,087.0855

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.4 Building Construction - Site Preparation/Stripping - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242	0.0000	4,047.4659	4,047.4659	1.2600		4,078.9667
Total	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242	0.0000	4,047.4659	4,047.4659	1.2600		4,078.9667

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0891	2.9556	0.5364	8.2500e-003	5.1622	0.0138	5.1760	0.5794	0.0132	0.5927		864.4521	864.4521	0.0291		865.1785
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1361	0.1034	0.9499	2.2300e-003	0.5778	1.5500e-003	0.5794	0.1464	1.4300e-003	0.1478		221.7303	221.7303	7.0700e-003		221.9070
Total	0.2251	3.0591	1.4863	0.0105	5.7400	0.0154	5.7554	0.7258	0.0146	0.7404		1,086.1825	1,086.1825	0.0361		1,087.0855

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.5 Building Construction - Existing Road Removal - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242		4,047.4659	4,047.4659	1.2600		4,078.9667
Total	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242		4,047.4659	4,047.4659	1.2600		4,078.9667

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.3122	42.7263	7.6220	0.1312	12.5093	0.2216	12.7309	3.1534	0.2120	3.3654		13,754.7800	13,754.7800	0.3000		13,762.2796
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3571	5.2000e-004	0.3576	0.0892	4.8000e-004	0.0896		73.9101	73.9101	2.3600e-003		73.9690
Total	1.3575	42.7608	7.9386	0.1320	12.8664	0.2221	13.0885	3.2426	0.2125	3.4551		13,828.6901	13,828.6901	0.3024		13,836.2486

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.5 Building Construction - Existing Road Removal - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242	0.0000	4,047.4659	4,047.4659	1.2600		4,078.9667
Total	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242	0.0000	4,047.4659	4,047.4659	1.2600		4,078.9667

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.3122	42.7263	7.6220	0.1312	12.5093	0.2216	12.7309	3.1534	0.2120	3.3654		13,754.7800	13,754.7800	0.3000		13,762.2796
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3571	5.2000e-004	0.3576	0.0892	4.8000e-004	0.0896		73.9101	73.9101	2.3600e-003		73.9690
Total	1.3575	42.7608	7.9386	0.1320	12.8664	0.2221	13.0885	3.2426	0.2125	3.4551		13,828.6901	13,828.6901	0.3024		13,836.2486

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.6 Building Construction - Trench Excavation and Forcemain Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.2569	56.9183	42.1001	0.0629		3.0080	3.0080		2.7674	2.7674		6,329.9410	6,329.9410	1.9706		6,379.2059
Total	5.2569	56.9183	42.1001	0.0629		3.0080	3.0080		2.7674	2.7674		6,329.9410	6,329.9410	1.9706		6,379.2059

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.3943	51.9719	10.3449	0.0621	276.6749	0.0907	276.7656	27.5729	0.0867	27.6596		6,503.3214	6,503.3214	1.3407		6,536.8385
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3050	5.2000e-004	0.3055	0.0764	4.8000e-004	0.0768		73.9101	73.9101	2.3600e-003		73.9690
Total	1.4396	52.0064	10.6616	0.0628	276.9798	0.0912	277.0710	27.6492	0.0872	27.7364		6,577.2315	6,577.2315	1.3430		6,610.8075

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.6 Building Construction - Trench Excavation and Forcemain Installation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.2569	56.9183	42.1001	0.0629		3.0080	3.0080		2.7674	2.7674	0.0000	6,329.9410	6,329.9410	1.9706		6,379.2059
Total	5.2569	56.9183	42.1001	0.0629		3.0080	3.0080		2.7674	2.7674	0.0000	6,329.9410	6,329.9410	1.9706		6,379.2059

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.3943	51.9719	10.3449	0.0621	276.6749	0.0907	276.7656	27.5729	0.0867	27.6596		6,503.3214	6,503.3214	1.3407		6,536.8385
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3050	5.2000e-004	0.3055	0.0764	4.8000e-004	0.0768		73.9101	73.9101	2.3600e-003		73.9690
Total	1.4396	52.0064	10.6616	0.0628	276.9798	0.0912	277.0710	27.6492	0.0872	27.7364		6,577.2315	6,577.2315	1.3430		6,610.8075

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.7 Building Construction - New Road Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5738	15.8515	10.5954	0.0153		0.8917	0.8917		0.8212	0.8212		1,523.4410	1,523.4410	0.4662		1,535.0964
Total	1.5738	15.8515	10.5954	0.0153		0.8917	0.8917		0.8212	0.8212		1,523.4410	1,523.4410	0.4662		1,535.0964

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.7719	25.1331	4.4835	0.0772	7.0103	0.1303	7.1406	1.7695	0.1247	1.8942		8,091.0470	8,091.0470	0.1765		8,095.4586
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.6794	1.0300e-003	0.6804	0.1698	9.5000e-004	0.1707		147.8202	147.8202	4.7100e-003		147.9380
Total	0.8626	25.2021	5.1168	0.0787	7.6897	0.1314	7.8211	1.9393	0.1257	2.0649		8,238.8673	8,238.8673	0.1812		8,243.3966

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.7 Building Construction - New Road Construction - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5738	15.8515	10.5954	0.0153		0.8917	0.8917		0.8212	0.8212	0.0000	1,523.4410	1,523.4410	0.4662		1,535.0964
Total	1.5738	15.8515	10.5954	0.0153		0.8917	0.8917		0.8212	0.8212	0.0000	1,523.4410	1,523.4410	0.4662		1,535.0964

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.7719	25.1331	4.4835	0.0772	7.0103	0.1303	7.1406	1.7695	0.1247	1.8942		8,091.0470	8,091.0470	0.1765		8,095.4586
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.6794	1.0300e-003	0.6804	0.1698	9.5000e-004	0.1707		147.8202	147.8202	4.7100e-003		147.9380
Total	0.8626	25.2021	5.1168	0.0787	7.6897	0.1314	7.8211	1.9393	0.1257	2.0649		8,238.8673	8,238.8673	0.1812		8,243.3966

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.8 Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	24.1581	264.2348	253.1856	0.4019		12.5022	12.5022		11.5020	11.5020		40,436.3532	40,436.3532	12.5884		40,751.0629
Total	24.1581	264.2348	253.1856	0.4019		12.5022	12.5022		11.5020	11.5020		40,436.3532	40,436.3532	12.5884		40,751.0629

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	19.0303	709.1664	141.1303	0.8499	3,848.4273	1.2417	3,849.6690	383.5257	1.1880	384.7137		89,009.4912	89,009.4912	18.2681		89,466.1934
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2268	0.1724	1.5832	3.7100e-003	1.6985	2.5800e-003	1.7011	0.4244	2.3800e-003	0.4268		369.5506	369.5506	0.0118		369.8450
Total	19.2570	709.3387	142.7135	0.8537	3,850.1258	1.2443	3,851.3701	383.9502	1.1903	385.1405		89,379.0418	89,379.0418	18.2799		89,836.0384

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.8 Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	24.1581	264.2348	253.1856	0.4019		12.5022	12.5022		11.5020	11.5020	0.0000	40,436.35 32	40,436.35 32	12.5884		40,751.06 29
Total	24.1581	264.2348	253.1856	0.4019		12.5022	12.5022		11.5020	11.5020	0.0000	40,436.35 32	40,436.35 32	12.5884		40,751.06 29

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	19.0303	709.1664	141.1303	0.8499	3,848.427 3	1.2417	3,849.669 0	383.5257	1.1880	384.7137		89,009.49 12	89,009.49 12	18.2681		89,466.19 34
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2268	0.1724	1.5832	3.7100e- 003	1.6985	2.5800e- 003	1.7011	0.4244	2.3800e- 003	0.4268		369.5506	369.5506	0.0118		369.8450
Total	19.2570	709.3387	142.7135	0.8537	3,850.125 8	1.2443	3,851.370 1	383.9502	1.1903	385.1405		89,379.04 18	89,379.04 18	18.2799		89,836.03 84

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.9 Building Construction - Offsite Borrow Material Transport - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	29.3310	955.0584	170.3739	2.9332	286.2383	4.9528	291.1911	72.1131	4.7385	76.8516		307,459.7873	307,459.7873	6.7056		307,627.4270
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3658	5.2000e-004	0.3663	0.0913	4.8000e-004	0.0918		73.9101	73.9101	2.3600e-003		73.9690
Total	29.3763	955.0929	170.6906	2.9339	286.6041	4.9534	291.5575	72.2044	4.7390	76.9434		307,533.6974	307,533.6974	6.7080		307,701.3960

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.9 Building Construction - Offsite Borrow Material Transport - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	29.3310	955.0584	170.3739	2.9332	286.2383	4.9528	291.1911	72.1131	4.7385	76.8516		307,459.7873	307,459.7873	6.7056		307,627.4270
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3658	5.2000e-004	0.3663	0.0913	4.8000e-004	0.0918		73.9101	73.9101	2.3600e-003		73.9690
Total	29.3763	955.0929	170.6906	2.9339	286.6041	4.9534	291.5575	72.2044	4.7390	76.9434		307,533.6974	307,533.6974	6.7080		307,701.3960

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.10 Building Construction - Cutoff Wall Installation (Open Trench Method) - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1817	25.3414	19.3445	0.0315		1.1335	1.1335		1.0428	1.0428		3,167.0501	3,167.0501	0.9860		3,191.6987
Total	2.1817	25.3414	19.3445	0.0315		1.1335	1.1335		1.0428	1.0428		3,167.0501	3,167.0501	0.9860		3,191.6987

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1397	4.7582	0.8833	0.0115	12.2627	0.0189	12.2816	1.3211	0.0181	1.3392		1,203.6134	1,203.6134	0.0647		1,205.2314
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.4771	1.0300e-003	0.4782	0.1201	9.5000e-004	0.1211		147.8202	147.8202	4.7100e-003		147.9380
Total	0.2304	4.8272	1.5166	0.0130	12.7398	0.0200	12.7598	1.4412	0.0191	1.4603		1,351.4337	1,351.4337	0.0694		1,353.1694

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.10 Building Construction - Cutoff Wall Installation (Open Trench Method) - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1817	25.3414	19.3445	0.0315		1.1335	1.1335		1.0428	1.0428	0.0000	3,167.0501	3,167.0501	0.9860		3,191.6987
Total	2.1817	25.3414	19.3445	0.0315		1.1335	1.1335		1.0428	1.0428	0.0000	3,167.0501	3,167.0501	0.9860		3,191.6987

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1397	4.7582	0.8833	0.0115	12.2627	0.0189	12.2816	1.3211	0.0181	1.3392		1,203.6134	1,203.6134	0.0647		1,205.2314
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.4771	1.0300e-003	0.4782	0.1201	9.5000e-004	0.1211		147.8202	147.8202	4.7100e-003		147.9380
Total	0.2304	4.8272	1.5166	0.0130	12.7398	0.0200	12.7598	1.4412	0.0191	1.4603		1,351.4337	1,351.4337	0.0694		1,353.1694

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.11 Building Construction - Erosion Protection Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	24.8224	266.0934	279.4314	0.4414		12.8891	12.8891		11.8580	11.8580		44,404.74 91	44,404.74 91	13.8238		44,750.34 42
Total	24.8224	266.0934	279.4314	0.4414		12.8891	12.8891		11.8580	11.8580		44,404.74 91	44,404.74 91	13.8238		44,750.34 42

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	14.2796	464.9626	82.9452	1.4280	138.2786	2.4113	140.6898	34.8440	2.3069	37.1509		149,684.3 701	149,684.3 701	3.2646		149,765.9 842
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.7258	1.0300e-003	0.7269	0.1812	9.5000e-004	0.1821		147.8202	147.8202	4.7100e-003		147.9380
Total	14.3703	465.0316	83.5785	1.4295	139.0044	2.4123	141.4167	35.0252	2.3079	37.3330		149,832.1 903	149,832.1 903	3.2693		149,913.9 222

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.11 Building Construction - Erosion Protection Installation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	24.8224	266.0934	279.4314	0.4414		12.8891	12.8891		11.8580	11.8580	0.0000	44,404.74 91	44,404.74 91	13.8238		44,750.34 41
Total	24.8224	266.0934	279.4314	0.4414		12.8891	12.8891		11.8580	11.8580	0.0000	44,404.74 91	44,404.74 91	13.8238		44,750.34 41

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	14.2796	464.9626	82.9452	1.4280	138.2786	2.4113	140.6898	34.8440	2.3069	37.1509		149,684.3 701	149,684.3 701	3.2646		149,765.9 842
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e- 003	0.7258	1.0300e- 003	0.7269	0.1812	9.5000e- 004	0.1821		147.8202	147.8202	4.7100e- 003		147.9380
Total	14.3703	465.0316	83.5785	1.4295	139.0044	2.4123	141.4167	35.0252	2.3079	37.3330		149,832.1 903	149,832.1 903	3.2693		149,913.9 222

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.12 Building Construction - Relief Well Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8458	22.3587	16.3536	0.0269		0.9536	0.9536		0.8773	0.8773		2,704.3656	2,704.3656	0.8419		2,725.4133
Total	1.8458	22.3587	16.3536	0.0269		0.9536	0.9536		0.8773	0.8773		2,704.3656	2,704.3656	0.8419		2,725.4133

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.0761	5.2000e-004	0.0766	0.0202	4.8000e-004	0.0207		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0454	0.0345	0.3166	7.4000e-004	0.0761	5.2000e-004	0.0766	0.0202	4.8000e-004	0.0207		73.9101	73.9101	2.3600e-003		73.9690

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.12 Building Construction - Relief Well Installation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8458	22.3587	16.3536	0.0269		0.9536	0.9536		0.8773	0.8773	0.0000	2,704.3656	2,704.3656	0.8419		2,725.4133
Total	1.8458	22.3587	16.3536	0.0269		0.9536	0.9536		0.8773	0.8773	0.0000	2,704.3656	2,704.3656	0.8419		2,725.4133

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.0761	5.2000e-004	0.0766	0.0202	4.8000e-004	0.0207		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0454	0.0345	0.3166	7.4000e-004	0.0761	5.2000e-004	0.0766	0.0202	4.8000e-004	0.0207		73.9101	73.9101	2.3600e-003		73.9690

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.13 Building Construction - Existing Pump Station Removal - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035		852.9003	852.9003	0.2655		859.5383
Total	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035		852.9003	852.9003	0.2655		859.5383

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0440	1.4610	0.2653	4.0700e-003	0.2322	6.8000e-003	0.2390	0.0594	6.5100e-003	0.0659		426.0980	426.0980	0.0145		426.4599
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.2213	5.2000e-004	0.2218	0.0558	4.8000e-004	0.0563		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0894	1.4955	0.5819	4.8100e-003	0.4535	7.3200e-003	0.4608	0.1153	6.9900e-003	0.1222		500.0081	500.0081	0.0168		500.4289

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.13 Building Construction - Existing Pump Station Removal - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035	0.0000	852.9003	852.9003	0.2655		859.5383
Total	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035	0.0000	852.9003	852.9003	0.2655		859.5383

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0440	1.4610	0.2653	4.0700e-003	0.2322	6.8000e-003	0.2390	0.0594	6.5100e-003	0.0659		426.0980	426.0980	0.0145		426.4599
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.2213	5.2000e-004	0.2218	0.0558	4.8000e-004	0.0563		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0894	1.4955	0.5819	4.8100e-003	0.4535	7.3200e-003	0.4608	0.1153	6.9900e-003	0.1222		500.0081	500.0081	0.0168		500.4289

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.14 Building Construction - Pump Station Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4884	5.3583	3.1680	5.3000e-003		0.2950	0.2950		0.2714	0.2714		533.4615	533.4615	0.1661		537.6133
Total	0.4884	5.3583	3.1680	5.3000e-003		0.2950	0.2950		0.2714	0.2714		533.4615	533.4615	0.1661		537.6133

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0220	0.7305	0.1326	2.0300e-003	0.0917	3.4000e-003	0.0951	0.0237	3.2500e-003	0.0270		213.0490	213.0490	7.2400e-003		213.2299
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.1726	5.2000e-004	0.1731	0.0439	4.8000e-004	0.0443		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0674	0.7650	0.4493	2.7700e-003	0.2643	3.9200e-003	0.2682	0.0676	3.7300e-003	0.0713		286.9591	286.9591	9.6000e-003		287.1989

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.14 Building Construction - Pump Station Installation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4884	5.3583	3.1680	5.3000e-003		0.2950	0.2950		0.2714	0.2714	0.0000	533.4615	533.4615	0.1661		537.6133
Total	0.4884	5.3583	3.1680	5.3000e-003		0.2950	0.2950		0.2714	0.2714	0.0000	533.4615	533.4615	0.1661		537.6133

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0220	0.7305	0.1326	2.0300e-003	0.0917	3.4000e-003	0.0951	0.0237	3.2500e-003	0.0270		213.0490	213.0490	7.2400e-003		213.2299
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.1726	5.2000e-004	0.1731	0.0439	4.8000e-004	0.0443		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0674	0.7650	0.4493	2.7700e-003	0.2643	3.9200e-003	0.2682	0.0676	3.7300e-003	0.0713		286.9591	286.9591	9.6000e-003		287.1989

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.15 Building Construction - Existing Levee Degrade - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6270	19.5931	13.6501	0.0230		0.8036	0.8036		0.7393	0.7393		2,314.1498	2,314.1498	0.7204		2,332.1604
Total	1.6270	19.5931	13.6501	0.0230		0.8036	0.8036		0.7393	0.7393		2,314.1498	2,314.1498	0.7204		2,332.1604

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	16.0578	598.3805	119.0809	0.7173	3,252.3991	1.0481	3,253.4472	324.1269	1.0027	325.1295		75,123.5638	75,123.5638	15.4124		75,508.8744
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.7084	1.0300e-003	0.7095	0.1769	9.5000e-004	0.1779		147.8202	147.8202	4.7100e-003		147.9380
Total	16.1485	598.4494	119.7142	0.7188	3,253.1075	1.0491	3,254.1567	324.3038	1.0036	325.3074		75,271.3840	75,271.3840	15.4171		75,656.8124

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.15 Building Construction - Existing Levee Degrade - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6270	19.5931	13.6501	0.0230		0.8036	0.8036		0.7393	0.7393	0.0000	2,314.1498	2,314.1498	0.7204		2,332.1604
Total	1.6270	19.5931	13.6501	0.0230		0.8036	0.8036		0.7393	0.7393	0.0000	2,314.1498	2,314.1498	0.7204		2,332.1604

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	16.0578	598.3805	119.0809	0.7173	3,252.3991	1.0481	3,253.4472	324.1269	1.0027	325.1295		75,123.5638	75,123.5638	15.4124		75,508.8744
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.7084	1.0300e-003	0.7095	0.1769	9.5000e-004	0.1779		147.8202	147.8202	4.7100e-003		147.9380
Total	16.1485	598.4494	119.7142	0.7188	3,253.1075	1.0491	3,254.1567	324.3038	1.0036	325.3074		75,271.3840	75,271.3840	15.4171		75,656.8124

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.16 Building Construction - Ecosystem Project Elements - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5207	41.8925	28.7779	0.0464		1.9077	1.9077		1.7551	1.7551		4,673.0483	4,673.0483	1.4548		4,709.4179
Total	3.5207	41.8925	28.7779	0.0464		1.9077	1.9077		1.7551	1.7551		4,673.0483	4,673.0483	1.4548		4,709.4179

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0193	0.6283	0.1121	1.9300e-003	36.7906	3.2600e-003	36.7939	3.6661	3.1200e-003	3.6693		202.2762	202.2762	4.4100e-003		202.3865
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.2653	1.0300e-003	0.2663	0.0681	9.5000e-004	0.0691		147.8202	147.8202	4.7100e-003		147.9380
Total	0.1100	0.6973	0.7454	3.4200e-003	37.0559	4.2900e-003	37.0602	3.7343	4.0700e-003	3.7383		350.0964	350.0964	9.1200e-003		350.3245

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.16 Building Construction - Ecosystem Project Elements - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5207	41.8925	28.7779	0.0464		1.9077	1.9077		1.7551	1.7551	0.0000	4,673.048 3	4,673.048 3	1.4548		4,709.417 9
Total	3.5207	41.8925	28.7779	0.0464		1.9077	1.9077		1.7551	1.7551	0.0000	4,673.048 3	4,673.048 3	1.4548		4,709.417 9

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0193	0.6283	0.1121	1.9300e-003	36.7906	3.2600e-003	36.7939	3.6661	3.1200e-003	3.6693		202.2762	202.2762	4.4100e-003		202.3865
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.2653	1.0300e-003	0.2663	0.0681	9.5000e-004	0.0691		147.8202	147.8202	4.7100e-003		147.9380
Total	0.1100	0.6973	0.7454	3.4200e-003	37.0559	4.2900e-003	37.0602	3.7343	4.0700e-003	3.7383		350.0964	350.0964	9.1200e-003		350.3245

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.17 Building Construction - Site Restoration and Demobilization - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1763	11.6495	7.1750	9.6000e-003		0.6920	0.6920		0.6367	0.6367		967.2218	967.2218	0.3011		974.7496
Total	1.1763	11.6495	7.1750	9.6000e-003		0.6920	0.6920		0.6367	0.6367		967.2218	967.2218	0.3011		974.7496

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2532	8.3572	1.5094	0.0240	2.0163	0.0403	2.0566	0.5096	0.0385	0.5481		2,513.4965	2,513.4965	0.0756		2,515.3854
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3252	5.2000e-004	0.3257	0.0813	4.8000e-004	0.0818		73.9101	73.9101	2.3600e-003		73.9690
Total	0.2985	8.3917	1.8261	0.0247	2.3415	0.0408	2.3823	0.5909	0.0390	0.6299		2,587.4066	2,587.4066	0.0779		2,589.3544

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

3.17 Building Construction - Site Restoration and Demobilization - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1763	11.6495	7.1750	9.6000e-003		0.6920	0.6920		0.6367	0.6367	0.0000	967.2218	967.2218	0.3011		974.7496
Total	1.1763	11.6495	7.1750	9.6000e-003		0.6920	0.6920		0.6367	0.6367	0.0000	967.2218	967.2218	0.3011		974.7496

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2532	8.3572	1.5094	0.0240	2.0163	0.0403	2.0566	0.5096	0.0385	0.5481		2,513.4965	2,513.4965	0.0756		2,515.3854
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3252	5.2000e-004	0.3257	0.0813	4.8000e-004	0.0818		73.9101	73.9101	2.3600e-003		73.9690
Total	0.2985	8.3917	1.8261	0.0247	2.3415	0.0408	2.3823	0.5909	0.0390	0.6299		2,587.4066	2,587.4066	0.0779		2,589.3544

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
User Defined Commercial	0.00	0.00	0.00		
User Defined Residential	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
User Defined Commercial	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
User Defined Residential	10.00	5.00	7.00	46.00	13.00	41.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Commercial	0.486608	0.042104	0.206882	0.127088	0.026765	0.005851	0.054651	0.039468	0.001006	0.001905	0.006007	0.000778	0.000886
Other Asphalt Surfaces	0.486608	0.042104	0.206882	0.127088	0.026765	0.005851	0.054651	0.039468	0.001006	0.001905	0.006007	0.000778	0.000886
User Defined Residential	0.486608	0.042104	0.206882	0.127088	0.026765	0.005851	0.054651	0.039468	0.001006	0.001905	0.006007	0.000778	0.000886

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Land Use	kBTU/yr	lb/day										lb/day						
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Land Use	kBTU/yr	lb/day										lb/day						
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
SubCategory	lb/day										lb/day						
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000				0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000				0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000			0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment

Lower Elkhorn Basin Alt 4 Reuse - Year 1 - Yolo County, Winter

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

Lower Elkhorn Basin
 Fugitive Dust Emissions
 Alternative 4 - Reuse

$$EF_0 = k \times (0.0032) \times ((U/5)^{1.3}) / ((M/2)^{1.4})$$

Variable	Amount	Units	Source
EF (PM ₁₀)	0.103	lb/ton	CalEEMod Appendix A
EF (PM _{2.5})	0.016	lb/ton	CalEEMod Appendix A
K (PM ₁₀)	0.35	factor	CalEEMod Appendix A
K (PM _{2.5})	0.053	factor	CalEEMod Appendix A
U (mean wind speed)	7.83	miles/hr	CalEEMod Appendix A
M (moisture content)	12%	percent	CalEEMod Appendix A
Type 1 Levee Fill Density	1.3	tons/cy	Project Engineer
Type 2 Levee Fill Density	1.3	tons/cy	Project Engineer
Aggregate Base Density	1.8	tons/cy	Project Engineer
Excavated Soil density	1.3	tons/cy	Project Engineer

$$E \text{ (lbs)} = EF \text{ (lb/ton)} \times TP \text{ (tons)}$$

	Work Days	Total Materials Moved (cy)	Total Materials Moved (tons)	Daily Materials Moved (tons/day)	Unmitigated		Mitigated	
					Daily PM ₁₀ (lbs/day)	Daily PM _{2.5} (lbs/day)	Daily PM ₁₀ (lbs/day)	Daily PM _{2.5} (lbs/day)
Year 2018								
Mobilization	12							
Site Preparation/Stripping	60	1,050	1365	23	4.69	0.73	1.17	0.18
Structure Demolition	5							
Existing Road Removal	20	6,750	12,150	608	125.15	19.44	31.29	4.86
Trench Excavation and Forcemain Installation	30	69,100	89,830	2,994	616.83	95.82	154.21	23.95
New Road Construction	60							
New Levee/Seepage Berm & Soil Borrow Extraction	135	4,317,500	5,612,750	41,576	8564.64	1330.43	2141.16	332.61
Offsite Borrow Material Transport	20	151,300	196,690	9,835	4051.81	629.41	1012.95	157.35
Cutoff Wall Installation (Open Trench Method)	120	140,200	182,260	1,519	625.76	97.21	156.44	24.30
Erosion Protection Installation	30							
Relief Well Installation	30							
Existing Pump Station Removal	10							
Pump Station Installation	30							
Existing Levee Degrade	60	1,621,000	2,107,300	35,122	7235.06	1123.89	1808.77	280.97
Site Restoration and Demobilization	10							

Basic Construction Measure	0.54	percent reduction
Enhanced Mitigation	0.75	percent reduction

**Table 3.2-5. Lower Elkhorn Basin Levee Setback Project
Alternative 5 Construction Emissions (Unmitigated/Mitigated)**

Construction Phase	Pollutants (lb/day) ¹									
	ROG		NO _x		CO		PM10		PM2.5	
Year 2018 Construction										
Mobilization	0.3	0.3	4.3	4.3	1.7	1.7	1.4	1.4	0.4	0.4
Site Preparation / Stripping	3.2	3.2	38.8	31.6	25.1	25.1	11.0	5.6	2.7	1.9
Structure Demolition	0.9	0.9	15.8	14.7	7.8	7.8	5.8	4.1	1.5	1.2
Existing Road Removal	4.0	4.0	68.4	61.3	29.8	29.8	105.1	34.9	18.5	7.6
Trench Excavation and Forcemain Installation	6.3	6.3	95.7	84.3	50.1	50.1	671.8	222.0	95.3	31.1
New Road Construction	2.2	2.2	34.8	31.6	14.6	14.6	6.8	6.8	2.4	2.4
New Levee / Seepage Berm and Soil Borrow Extraction	123.8	123.8	3,526.0	3,473.2	840.4	840.4	11,506.3	3,582.7	1,798.9	573.7
Offsite Borrow Material Transport	29.4	29.4	955.1	764.1	170.7	170.7	4,343.4	1,304.5	706.4	234.3
Cutoff Wall Installation	2.4	2.4	30.2	25.1	20.9	20.9	590.1	151.8	92.0	24.2
Erosion Protection Installation	39.4	39.4	737.4	684.2	364.1	364.1	156.2	156.2	49.7	49.7
Relief Well Installation	1.9	1.9	22.4	17.9	16.7	16.7	1.0	1.0	0.9	0.9
Existing Pump Station Removal	0.6	0.6	7.2	6.1	6.3	6.3	0.8	0.8	0.4	0.4
Pump Station Installation	0.6	0.6	6.1	4.9	3.6	3.6	0.6	0.6	0.3	0.3
Existing Levee Degrade	17.8	17.8	618.0	614.1	133.4	133.4	10,490.0	3,437.5	1,449.9	445.0
Ecosystem Project Elements	3.6	3.6	42.6	34.2	29.5	29.5	39.0	20.6	5.5	3.7
Site Restoration and Demobilization	1.5	1.5	20.0	17.7	9.0	9.0	3.1	3.1	1.3	1.3
YSAQMD Threshold of Significance	10 tons/year		10 tons/year		None		80 lb/day		None	
Exceeds YSAQMD Threshold?	Yes		Yes		No		Yes		No	
2018 Annual Emissions² (tons/year)	10	10	284	277	72	72	1,185	374	180	57
Conformity Threshold (tons/year)	25		25		100				100	
Mitigated Exceeds Conformity Threshold?	No		Yes		No				No	
<p>Notes: lb/day = pounds per day; NO_x = oxides of nitrogen; PM10 = particulate matter with aerodynamic diameter less than 10 microns; PM2.5 = particulate matter with aerodynamic diameter less than 2.5 microns; ROG = reactive organic gases; YSAQMD = Yolo-Solano Air Quality Management District</p> <p>¹ All emissions are shown in units of pounds per day unless noted otherwise.</p> <p>² Annual emissions, in units of tons per year, were conservatively estimated by multiplying the maximum daily emissions by the number of work days per subphase or task. In reality, emissions would likely fluctuate and would not continue at the maximum level throughout each subphase or task.</p> <p>Source: Data modeled by GEI Consultants, Inc. in 2016</p>										

2018 Unmitigated Emissions

2018 CONSTRUCTION YEAR

Construction Phase	Work Days	Pollutants (lbs/day)					Total
		ROG	No _x	CO	PM ₁₀	PM _{2.5}	MT CO _{2e}
Mobilization		0.26	4.28	1.70	1.38	0.37	8.05
Construction Equipment							
Haul Trucks	12	0.13	4.18	0.75	0.72	0.20	6.85
On-Road Vehicles	12	0.14	0.10	0.95	0.67	0.17	1.21
Fugitive Dust							
Site Preparation/Stripping		3.16	38.78	25.12	10.98	2.65	140.60
Construction Equipment	60	2.93	35.73	23.64	1.44	1.32	111.01
Haul Trucks	60	0.09	2.96	0.54	5.18	0.59	23.55
On-Road Vehicles	60	0.14	0.10	0.95	0.58	0.15	6.04
Fugitive Dust					3.79	0.59	
Structure Demolition		0.91	15.84	7.80	5.78	1.48	9.46
Construction Equipment	5	0.55	5.75	5.69	0.33	0.30	1.95
Haul Trucks	5	0.31	10.05	1.79	2.81	0.75	7.34
On-Road Vehicles	5	0.05	0.03	0.32	0.33	0.08	0.17
Fugitive Dust	5				2.31	0.35	
Existing Road Removal		3.98	68.43	29.78	105.08	18.51	133.15
Construction Equipment	20	2.93	35.73	23.64	1.44	1.32	37.00
Haul Trucks	20	1.00	32.67	5.83	9.66	2.56	95.47
On-Road Vehicles	20	0.05	0.03	0.32	0.35	0.09	0.67
Fugitive Dust	20				93.63	14.54	
Trench Excavation and Forcemain Installation		6.34	95.66	50.12	671.80	95.27	154.06
Construction Equipment	30	5.26	56.92	42.10	3.01	2.77	86.81
Haul Trucks	30	1.04	38.70	7.70	206.10	20.60	66.24
On-Road Vehicles	30	0.05	0.03	0.32	0.29	0.07	1.01
Fugitive Dust	30				462.40	71.83	
New Road Construction		2.24	34.77	14.59	6.78	2.38	211.05
Construction Equipment	60	1.57	15.85	10.60	0.89	0.82	41.78
Haul Trucks	60	0.58	18.85	3.36	5.23	1.39	165.24
On-Road Vehicles	60	0.09	0.07	0.63	0.66	0.17	4.03
Fugitive Dust	60						
New Levee/Seepage Berm & Soil Borrow Extraction		123.85	3526.03	840.36	11506.27	1798.95	64669.56
Construction Equipment	135	24.16	264.23	253.19	12.50	11.50	2495.42
Haul Trucks	135	99.46	3261.62	585.59	2748.77	428.83	62151.50
On-Road Vehicles	135	0.23	0.17	1.58	1.83	0.46	22.65
Fugitive Dust	135				8743.17	1358.16	
Offsite Borrow Material Transport		29.38	955.09	170.69	4343.37	706.35	2791.45
Construction Equipment							
Haul Trucks	20	29.33	955.06	170.37	291.19	76.85	2790.78
Support Vehicles							
On-Road Vehicles	20	0.05	0.03	0.32	0.37	0.09	0.67
Fugitive Dust					4051.81	629.41	
Cutoff Wall Installation (Open Trench Method)		2.41	30.17	20.86	590.11	92.01	247.38
Construction Equipment	120	2.18	25.34	19.34	1.13	1.04	173.73
Haul Trucks	120	0.14	4.76	0.88	12.28	1.34	65.60
Support Vehicles	120						
On-Road Vehicles	120	0.09	0.07	0.63	0.48	0.12	8.05
Fugitive Dust	120				576.22	89.51	
Erosion Protection Installation		39.39	737.41	364.13	156.21	49.69	2676.51
Construction Equipment	30	24.82	266.09	279.43	12.89	11.86	608.96
Haul Trucks	30	14.47	471.25	84.07	142.59	37.65	2065.54
On-Road Vehicles	30	0.09	0.07	0.63	0.73	0.18	2.01
Fugitive Dust	30						
Relief Well Installation		1.89	22.39	16.67	1.03	0.90	38.09
Construction Equipment	30	1.85	22.36	16.35	0.95	0.88	37.09
Haul Trucks	30						
On-Road Vehicles	30	0.05	0.03	0.32	0.08	0.02	1.01
Fugitive Dust	30						
Existing Pump Station Removal		0.64	7.24	6.28	0.79	0.43	6.17
Construction Equipment	10	0.55	5.75	5.69	0.33	0.30	3.90
Haul Trucks	10	0.04	1.46	0.27	0.24	0.07	1.93
Support Vehicles	10						
On-Road Vehicles	10	0.05	0.03	0.32	0.22	0.06	0.34
Fugitive Dust	10						
Pump Station Installation		0.56	6.12	3.62	0.56	0.34	11.22
Construction Equipment	30	0.49	5.36	3.17	0.30	0.27	7.32
Haul Trucks	30	0.02	0.73	0.13	0.10	0.03	2.90
Support Vehicles	30						
On-Road Vehicles	30	0.05	0.03	0.32	0.17	0.04	1.01
Fugitive Dust	30						
Existing Levee Degrade		17.78	618.04	133.36	10490.02	1449.94	2122.53
Construction Equipment	60	1.63	19.59	13.65	0.80	0.74	63.47
Haul Trucks	60	16.06	598.38	119.08	3253.45	325.13	2055.04
Support Vehicles	60						
On-Road Vehicles	60	0.09	0.07	0.63	0.71	0.18	4.03
Fugitive Dust	60				7235.06	1123.89	

2018 Unmitigated Emissions

2018 CONSTRUCTION YEAR

Ecosystem Project Elements		3.63	42.59	29.52	38.97	5.49	50.49
Construction Equipment	22	3.52	41.89	28.78	1.91	1.76	47.00
Haul Trucks	22	0.02	0.63	0.11	36.79	3.67	2.02
Support Vehicles	22						
On-Road Vehicles	22	0.09	0.07	0.63	0.27	0.07	1.48
Fugitive Dust	22						
Site Restoration and Demobilization		1.47	20.04	9.00	3.08	1.27	16.17
Construction Equipment	10	1.18	11.65	7.18	0.69	0.64	4.42
Haul Trucks	10	0.25	8.36	1.51	2.06	0.55	11.41
Support Vehicles	10						
On-Road Vehicles	10	0.05	0.03	0.32	0.33	0.08	0.34
Fugitive Dust	10						

Year 2018 Construction Maximum Overlaps

Month	Pollutants (lbs/day)				
	ROG	NO _x	CO	PM ₁₀	PM _{2.5}
Month 1	132.16	3653.36	904.78	11629.50	1821.96
Month 2	133.34	3660.47	915.61	12189.05	1896.87
Month 3	138.00	3725.41	951.06	12785.94	1991.26
Month 4	128.50	3590.97	875.81	12103.16	1893.34
Month 5	131.59	3626.73	902.38	12105.54	1895.00
Month 6	197.47	5277.21	1416.33	16597.55	2648.25
Month 7	184.90	4931.69	1367.72	22745.69	3391.86
Month 8	21.41	660.63	162.89	10528.99	1455.43
Month 9	17.78	618.04	133.36	10490.02	1449.94
Total Emissions (tons/year)	10.31	284.39	72.12	1184.71	180.12
Significance Threshold, Conformity (tons/year)	25.00	25.00	100.00		100.00
Significance Threshold, YSAQMD (lbs/day)				80.00	
Significance Threshold, YSAQMD (tons/year)	10.00	10.00		9.36	

2018 Mitigated Emissions
Construction Equipment 20% NOx Reduction, 75% Material Handling Fugitive Dust PM Reduction,
50% Haul Truck Road Dust PM Reduction

2018 CONSTRUCTION YEAR

Construction Phase	Work Days	Pollutants (lbs/day)					Total MT CO ₂ e
		ROG	No _x	CO	PM ₁₀	PM _{2.5}	
Mobilization		0.26	4.28	1.70	1.38	0.37	8.05
Construction Equipment							
Haul Trucks	12	0.13	4.18	0.75	0.72	0.20	6.85
On-Road Vehicles	12	0.14	0.10	0.95	0.67	0.17	1.21
Fugitive Dust							
Site Preparation/Stripping		3.16	31.64	25.12	5.56	1.92	140.60
Construction Equipment	60	2.93	28.58	23.64	1.44	1.32	111.01
Haul Trucks	60	0.09	2.96	0.54	2.59	0.30	23.55
On-Road Vehicles	60	0.14	0.10	0.95	0.58	0.15	6.04
Fugitive Dust					0.95	0.15	
Structure Demolition		0.91	14.69	7.80	4.05	1.22	9.46
Construction Equipment	5	0.55	4.60	5.69	0.33	0.30	1.95
Haul Trucks	5	0.31	10.05	1.79	2.81	0.75	7.34
On-Road Vehicles	5	0.05	0.03	0.32	0.33	0.08	0.17
Fugitive Dust	5				0.58	0.09	
Existing Road Removal		3.98	61.29	29.78	34.86	7.60	133.15
Construction Equipment	20	2.93	28.58	23.64	1.44	1.32	37.00
Haul Trucks	20	1.00	32.67	5.83	9.66	2.56	95.47
On-Road Vehicles	20	0.05	0.03	0.32	0.35	0.09	0.67
Fugitive Dust	20				23.41	3.64	
Trench Excavation and Forcemain Installation		6.34	84.27	50.12	221.98	31.13	154.06
Construction Equipment	30	5.26	45.53	42.10	3.01	2.77	86.81
Haul Trucks	30	1.04	38.70	7.70	103.08	10.33	66.24
On-Road Vehicles	30	0.05	0.03	0.32	0.29	0.07	1.01
Fugitive Dust	30				115.60	17.96	
New Road Construction		2.24	31.60	14.59	6.78	2.38	211.05
Construction Equipment	60	1.57	12.68	10.60	0.89	0.82	41.78
Haul Trucks	60	0.58	18.85	3.36	5.23	1.39	165.24
On-Road Vehicles	60	0.09	0.07	0.63	0.66	0.17	4.03
Fugitive Dust	60						
New Levee/Seepage Berm & Soil Borrow Extraction		123.85	3473.18	840.36	3582.65	573.71	64669.56
Construction Equipment	135	24.16	211.39	253.19	12.50	11.50	2495.42
Haul Trucks	135	99.46	3261.62	585.59	1382.53	222.21	62151.50
On-Road Vehicles	135	0.23	0.17	1.58	1.83	0.46	22.65
Fugitive Dust	135				2185.79	339.54	
Offsite Borrow Material Transport		29.38	764.07	170.69	1304.51	234.30	2791.45
Construction Equipment							
Haul Trucks	20	29.33	764.05	170.37	291.19	76.85	2790.78
Support Vehicles							
On-Road Vehicles	20	0.05	0.03	0.32	0.37	0.09	0.67
Fugitive Dust					1012.95	157.35	
Cutoff Wall Installation (Open Trench Method)		2.41	25.10	20.86	151.82	24.22	247.38
Construction Equipment	120	2.18	20.27	19.34	1.13	1.04	173.73
Haul Trucks	120	0.14	4.76	0.88	6.15	0.68	65.60
Support Vehicles	120						
On-Road Vehicles	120	0.09	0.07	0.63	0.48	0.12	8.05
Fugitive Dust	120				144.05	22.38	
Erosion Protection Installation		39.39	684.19	364.13	156.21	49.69	2676.51
Construction Equipment	30	24.82	212.87	279.43	12.89	11.86	608.96
Haul Trucks	30	14.47	471.25	84.07	142.59	37.65	2065.54
On-Road Vehicles	30	0.09	0.07	0.63	0.73	0.18	2.01
Fugitive Dust	30						
Relief Well Installation		1.89	17.92	16.67	1.03	0.90	38.09
Construction Equipment	30	1.85	17.89	16.35	0.95	0.88	37.09
Haul Trucks	30						
On-Road Vehicles	30	0.05	0.03	0.32	0.08	0.02	1.01
Fugitive Dust	30						
Existing Pump Station Removal		0.64	6.09	6.28	0.79	0.43	6.17
Construction Equipment	10	0.55	4.60	5.69	0.33	0.30	3.90
Haul Trucks	10	0.04	1.46	0.27	0.24	0.07	1.93
Support Vehicles	10						
On-Road Vehicles	10	0.05	0.03	0.32	0.22	0.06	0.34
Fugitive Dust	10						
Pump Station Installation		0.56	4.91	3.62	0.56	0.34	11.22
Construction Equipment	30	0.49	4.29	3.17	0.30	0.27	7.32
Haul Trucks	30	0.02	0.58	0.13	0.10	0.03	2.90
Support Vehicles	30						
On-Road Vehicles	30	0.05	0.03	0.32	0.17	0.04	1.01
Fugitive Dust	30						
Existing Levee Degrade		17.78	614.12	133.36	3437.53	444.96	2122.53
Construction Equipment	60	1.63	15.67	13.65	0.80	0.74	63.47
Haul Trucks	60	16.06	598.38	119.08	1627.25	163.07	2055.04
Support Vehicles	60						
On-Road Vehicles	60	0.09	0.07	0.63	0.71	0.18	4.03
Fugitive Dust	60				1808.77	280.97	

2018 Mitigated Emissions
Construction Equipment 20% NOx Reduction, 75% Material Handling Fugitive Dust PM Reduction,
50% Haul Truck Road Dust PM Reduction

2018 CONSTRUCTION YEAR

Ecosystem Project Elements		3.63	34.21	29.52	20.57	3.66	50.49
Construction Equipment	22	3.52	33.51	28.78	1.91	1.76	47.00
Haul Trucks	22	0.02	0.63	0.11	18.40	1.84	2.02
Support Vehicles	22						
On-Road Vehicles	22	0.09	0.07	0.63	0.27	0.07	1.48
Fugitive Dust	22						
Site Restoration and Demobilization		1.47	17.71	9.00	3.08	1.27	16.17
Construction Equipment	10	1.18	9.32	7.18	0.69	0.64	4.42
Haul Trucks	10	0.25	8.36	1.51	2.06	0.55	11.41
Support Vehicles	10						
On-Road Vehicles	10	0.05	0.03	0.32	0.33	0.08	0.34
Fugitive Dust	10						

Year 2018 Construction Maximum Overlaps

Month	Pollutants (lbs/day)				
	ROG	NO_x	CO	PM₁₀	PM_{2.5}
Month 1	132.16	3585.08	904.78	3628.51	584.82
Month 2	133.34	3589.09	915.61	3810.20	606.76
Month 3	138.00	3645.79	951.06	3968.79	633.35
Month 4	128.50	3529.88	875.81	3741.25	600.30
Month 5	131.59	3558.80	902.38	3743.63	601.97
Month 6	197.47	4969.37	1416.33	5196.78	883.16
Month 7	184.90	4814.30	1367.72	7331.29	1093.84
Month 8	21.41	648.34	162.89	3458.10	448.62
Month 9	17.78	614.12	133.36	3437.53	444.96
Total Emissions (tons/year)	10.31	276.95	72.12	373.79	57.36
Significance Threshold, Conformity (tons/year)	25.00	25.00	100.00		100.00
Significance Threshold, YSAQMD (lbs/day)				80.00	
Significance Threshold, YSAQMD (tons/year)	10.00	10.00		9.36	
Emissions to Mitigate/Offset (tons/year)	0.31	276.95		364.43	
Approximate Mitigation Fee		\$5,666	\$5,057,057		

Current Cost of Offsets (Carl Moyer) = \$ 18,260.00

Additional PM2.5 Precursor Test

Less than 100 tons/yr?

Nox No
 ROG Yes
 SO2 Yes
 NH4 Yes

**Lower Elkhorn Basin
Assumed Construction Schedule
Alternative 4 and 5**

apr may jun jul aug sept oct nov dec
Year 1 (2018)

Construction Activity	1	2	3	4	5	6	7	8	9	Work Days
Mobilization	0.5									12
Site Preparation/Stripping	1	1	0.5							60
Structure Demolition	0.2									5
Existing Road Removal	1									20
Trench Excavation and Forcemain Installation		1	0.3							30
New Road Construction			0.5	1	0.5					60
New Levee/Seepage Berm & Soil Borrow Extraction	1	1	1	1	1	1	0.5			135
Offsite Borrow Material Transport						1				20
Cutoff Wall Installation (Open Trench Method)			1	1	1	1	0.5			120
Erosion Protection Installation						0.7	0.5			30
Relief Well Installation					1	0.2				30
Existing Pump Station Removal					0.5					10
Pump Station Installation					0.5	0.7				30
Existing Levee Degrade							0.5	1	0.5	60
Ecosystem Project Elements								1		
Site Restoration and Demobilization							0.5			10

Construction Phase/Vehicle Type	EMFAC2011 Class	Workers	Work Days	Daily Haul Trips	Daily One-Way Trips	One-Way Trip Distance (miles)
Mobilization						
Equipment/supply Transport Trucks	HDT		12	5	10	30
Highway Dump Truck	HDT					
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	15	12		30	10
Site Preparation/Stripping						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT		60	2	4	50
Highway Dump Truck	HDT		60	2	4	0.8
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	15	60		30	10
Structure Demolition						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT		5	8	16	50
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	5	5		10	10
Existing Road Removal						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT		20	26	52	50
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	5	20		10	10
Trench Excavation and Forcemain Installation						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT		30	175	350	0.8
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	5	30		10	10
New Road Construction						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT					
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT		60	15	30	50
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	10	60		20	10
New Levee/Seepage Berm & Soil Borrow Extraction						
Equipment/supply Transport Trucks	HDT					
Onsite Dump Truck	HDT		135	820	1640	0.8
Offsite Dump Truck	HDT		135	2450	4900	50
Water Truck	HDT		135		2	50
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility		135		2	30
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	25	135		50	10
Offsite Borrow Material Transport						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT		20	760	1520	50
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	5	15		30	10

Construction Phase/Vehicle Type	EMFAC2011 Class	Workers	Work Days	Daily Haul Trips	Daily One-Way Trips	One-Way Trip Distance (miles)
Cutoff Wall Installation (Open Trench Method)						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT		120	5	10	0.8
Water Truck	HDT					
Material Transit Truck	HDT		120	5	10	25
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	10	120		20	10
Erosion Protection Installation						
Aggregate and Asphalt Truck	HDT					
Highway Dump Truck	HDT		30	375	750	50
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	10	30		20	10
Relief Well Installation						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT					
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	5	30		10	10
Existing Pump Station Removal						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT		10	2	4	25
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	5	10		10	10
Pump Station Installation						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT					
Water Truck	HDT					
Concrete Transit Truck	HDT			1	2	25
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	5	30		10	10
Existing Levee Degrade						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT		60	2700	5400	0.8
Water Truck	HDT		60		2	50
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	10	60		20	10
Ecosystem Project Elements						
Equipment/supply Transport Trucks	HDT					
Highway Dump Truck	HDT					
Water Truck	HDT		22		1	50
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	10	22		20	10
Site Restoration and Demobilization						
Equipment/supply Transport Trucks	HDT		10	10	20	30
Highway Dump Truck	HDT					
Water Truck	HDT					
Concrete Transit Truck	HDT					
Aggregate and Asphalt Truck	HDT					
Lubricating/Fuel Truck	T7 Utility					
Pickup Truck	LDT1-2					
Hydro-seed Truck	T6 Instate Heavy					
Construction Workers	LDA-LDT	5	10		10	10

Assumptions	
Work Days Per Week	10
Construction Worker Commute	10

6
miles/one-way

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1
Yolo County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Commercial	0.00	User Defined Unit	0.00	0.00	0
Other Asphalt Surfaces	0.00	Acre	0.00	0.00	0
User Defined Residential	0.00	Dwelling Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	6.8	Precipitation Freq (Days)	54
Climate Zone	2			Operational Year	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
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tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblConstructionPhase	NumDays	0.00	1.00
tblFleetMix	FleetMixLandUseSubType	User Defined Commercial	Other Asphalt Surfaces
tblFleetMix	FleetMixLandUseSubType	Other Asphalt Surfaces	User Defined Commercial
tblOffRoadEquipment	HorsePower	158.00	157.00
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tblOffRoadEquipment	HorsePower	367.00	356.00

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

tblOffRoadEquipment	LoadFactor	0.48	0.50
tblOffRoadEquipment	LoadFactor	0.48	0.50
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
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tblOffRoadEquipment	UsageHours	8.00	9.00
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tblOnRoadDust	AverageVehicleWeight	2.40	12.40
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tblOnRoadDust	AverageVehicleWeight	2.40	5.80
tblOnRoadDust	AverageVehicleWeight	2.40	12.10
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tblOnRoadDust	AverageVehicleWeight	2.40	11.10
tblOnRoadDust	AverageVehicleWeight	2.40	7.50
tblOnRoadDust	AverageVehicleWeight	2.40	6.50
tblOnRoadDust	AverageVehicleWeight	2.40	12.10
tblOnRoadDust	AverageVehicleWeight	2.40	9.80
tblOnRoadDust	AverageVehicleWeight	2.40	11.30
tblOnRoadDust	AverageVehicleWeight	2.40	12.50

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

tblOnRoadDust	AverageVehicleWeight	2.40	12.50
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tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	0.00
tblOnRoadDust	HaulingPercentPave	94.00	0.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	100.00
tblOnRoadDust	HaulingPercentPave	94.00	98.40
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tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
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tblOnRoadDust	WorkerPercentPave	94.00	100.00
tblOnRoadDust	WorkerPercentPave	94.00	100.00
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Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

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Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

tblTripsAndVMT	HaulingTripNumber	0.00	10.00
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Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

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tblVehicleTrips	CW_TL	15.00	10.00
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2.0 Emissions Summary

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition - Structure Demolition	Demolition	1/2/2018	1/2/2018	5	1	
2	Building Construction - Mobilization	Building Construction	1/3/2018	1/3/2018	5	1	
3	Building Construction - Site Preparation/Stripping	Building Construction	1/4/2018	1/4/2018	5	1	
4	Building Construction - Existing Road Removal	Building Construction	1/5/2018	1/5/2018	5	1	
5	Building Construction - Trench Excavation and Forcemain Installation	Building Construction	1/6/2018	1/8/2018	5	1	
6	Building Construction - New Road Construction	Building Construction	1/9/2018	1/9/2018	5	1	
7	Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Building Construction	1/10/2018	1/10/2018	5	1	
8	Building Construction - Offsite Borrow Material Transport	Building Construction	1/11/2018	1/11/2018	5	1	
9	Building Construction - Cutoff Wall Installation (Open Trench Method)	Building Construction	1/12/2018	1/12/2018	5	1	
10	Building Construction - Erosion Protection Installation	Building Construction	1/13/2018	1/15/2018	5	1	
11	Building Construction - Relief Well Installation	Building Construction	1/16/2018	1/16/2018	5	1	
12	Building Construction - Existing Pump Station Removal	Building Construction	1/17/2018	1/17/2018	5	1	
13	Building Construction - Pump Station Installation	Building Construction	1/18/2018	1/18/2018	5	1	
14	Building Construction - Existing Levee Degrade	Building Construction	1/19/2018	1/19/2018	5	1	
15	Building Construction - Ecosystem Project Elements	Building Construction	1/20/2018	1/22/2018	5	1	
16	Building Construction - Site Restoration and Demobilization	Building Construction	1/23/2018	1/23/2018	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition - Structure Demolition	Excavators	1	9.00	157	0.38
Demolition - Structure Demolition	Rubber Tired Dozer	1	9.00	358	0.40
Demolition - Structure Demolition	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Mobilization	Excavators	0	0.00	157	0.38
Building Construction - Site Preparation/Stripping	Excavators	1	9.00	157	0.38
Building Construction - Site Preparation/Stripping	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Site Preparation/Stripping	Scrapers	2	9.00	356	0.50
Building Construction - Existing Road Removal	Excavators	1	9.00	157	0.38
Building Construction - Existing Road Removal	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Existing Road Removal	Scrapers	1	9.00	356	0.50
Building Construction - Existing Road Removal	Scrapers	1	9.00	356	0.50
Building Construction - Trench Excavation and Forcemain Installation	Excavators	2	9.00	157	0.38
Building Construction - Trench Excavation and Forcemain Installation	Other Construction Equipment	7	9.00	172	0.42
Building Construction - Trench Excavation and Forcemain Installation	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - New Road Construction	Graders	1	9.00	162	0.41
Building Construction - New Road Construction	Pavers	1	9.00	130	0.42
Building Construction - New Road Construction	Plate Compactors	1	9.00	8	0.43
Building Construction - New Road Construction	Rollers	1	9.00	80	0.38
Building Construction - New Road Construction	Rubber Tired Dozer	1	9.00	358	0.40

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Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Excavators	59	9.00	157	0.38
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Graders	1	9.00	162	0.41
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Rollers	1	9.00	84	0.38
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction	Scrapers	3	9.00	356	0.50
Building Construction - Offsite Borrow Material Transport	Excavators	0	0.00	157	0.38
Building Construction - Cutoff Wall Installation (Open Trench Method)	Excavators	1	9.00	157	0.38
Building Construction - Cutoff Wall Installation (Open Trench Method)	Excavators	1	9.00	157	0.38
Building Construction - Cutoff Wall Installation (Open Trench Method)	Rough Terrain Forklift	4	4.00	100	0.40
Building Construction - Cutoff Wall Installation (Open Trench Method)	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Cutoff Wall Installation (Open Trench Method)	Scrapers	1	9.00	356	0.50
Building Construction - Cutoff Wall Installation (Open Trench Method)	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Erosion Protection Installation	Cranes	1	4.00	208	0.29
Building Construction - Erosion Protection Installation	Excavators	76	9.00	157	0.38
Building Construction - Erosion Protection Installation	Rubber Tired Dozer	1	9.00	358	0.40
Building Construction - Relief Well Installation	Bore/Drill Rigs	1	9.00	82	0.50
Building Construction - Relief Well Installation	Excavators	1	9.00	157	0.38
Building Construction - Relief Well Installation	Scrapers	1	9.00	356	0.50
Building Construction - Existing Pump Station Removal	Excavators	1	9.00	157	0.38
Building Construction - Existing Pump Station Removal	Rubber Tired Dozer	1	9.00	358	0.40

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

Building Construction - Existing Pump Station Removal	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Pump Station Installation	Cranes	1	4.00	208	0.29
Building Construction - Pump Station Installation	Tractors/Loaders/Backhoes	1	9.00	75	0.37
Building Construction - Existing Levee Degrade	Excavators	1	9.00	157	0.38
Building Construction - Existing Levee Degrade	Rubber Tired Dozer	7	9.00	358	0.40
Building Construction - Existing Levee Degrade	Scrapers	1	9.00	356	0.50
Building Construction - Ecosystem Project Elements	Tractors/Loaders/Backhoes	3	9.00	75	0.37
Building Construction - Ecosystem Project Elements	Rubber Tired Dozer	3	9.00	358	0.40
Building Construction - Ecosystem Project Elements	Scrapers	2	9.00	356	0.50
Building Construction - Ecosystem Project Elements	Bore/Drill Rigs	1	9.00	82	0.50
Building Construction - Site Restoration and Demobilization	Graders	1	9.00	162	0.41
Building Construction - Site Restoration and Demobilization	Rollers	1	9.00	84	0.38

Trips and VMT

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition - Structure Demolition	3	10.00	0.00	16.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Mobilization	0	30.00	0.00	10.00	10.00	7.00	30.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Site Preparation/Strip	4	30.00	0.00	4.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Site Preparation/Strip	4	0.00	0.00	4.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Road Remov	4	10.00	0.00	52.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Trench Excavation an	10	10.00	0.00	350.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - New Road Constructio	5	20.00	0.00	30.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	65	50.00	0.00	1,640.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	65	0.00	0.00	4,900.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	65	0.00	0.00	1.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - New Levee/Seepage	65	0.00	0.00	2.00	10.00	7.00	30.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Offsite Borrow Materia	0	10.00	0.00	1,520.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Cutoff Wall Installation	9	20.00	0.00	10.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - Cutoff Wall Installation	9	0.00	0.00	10.00	10.00	7.00	25.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Erosion Protection Inst	78	20.00	0.00	750.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Relief Well Installation	3	10.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Pump Station	3	10.00	0.00	4.00	10.00	7.00	25.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Pump Station Installati	2	10.00	0.00	2.00	10.00	7.00	25.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Levee Degrad	9	20.00	0.00	5,400.00	10.00	7.00	0.80	LD_Mix	HDT_Mix	HHDT
Building Construction - Existing Levee Degrad	9	0.00	0.00	2.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Erosion Control Plant Pla	9	20.00	0.00	1.00	10.00	7.00	50.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Site Restoration and D	2	10.00	0.00	20.00	10.00	7.00	30.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.2 Demolition - Structure Demolition - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3061	0.0000	2.3061	0.3492	0.0000	0.3492			0.0000			0.0000
Off-Road	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035		852.9003	852.9003	0.2655		859.5383
Total	0.5547	5.7483	5.6944	8.4800e-003	2.3061	0.3299	2.6360	0.3492	0.3035	0.6527		852.9003	852.9003	0.2655		859.5383

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3088	10.0533	1.7934	0.0309	2.7577	0.0521	2.8099	0.6964	0.0499	0.7463		3,236.4188	3,236.4188	0.0706		3,238.1834
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3339	5.2000e-004	0.3344	0.0835	4.8000e-004	0.0839		73.9101	73.9101	2.3600e-003		73.9690
Total	0.3541	10.0877	2.1101	0.0316	3.0917	0.0527	3.1443	0.7799	0.0504	0.8302		3,310.3289	3,310.3289	0.0730		3,312.1524

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3.2 Demolition - Structure Demolition - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3061	0.0000	2.3061	0.3492	0.0000	0.3492			0.0000			0.0000
Off-Road	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035	0.0000	852.9003	852.9003	0.2655		859.5383
Total	0.5547	5.7483	5.6944	8.4800e-003	2.3061	0.3299	2.6360	0.3492	0.3035	0.6527	0.0000	852.9003	852.9003	0.2655		859.5383

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3088	10.0533	1.7934	0.0309	2.7577	0.0521	2.8099	0.6964	0.0499	0.7463		3,236.4188	3,236.4188	0.0706		3,238.1834
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3339	5.2000e-004	0.3344	0.0835	4.8000e-004	0.0839		73.9101	73.9101	2.3600e-003		73.9690
Total	0.3541	10.0877	2.1101	0.0316	3.0917	0.0527	3.1443	0.7799	0.0504	0.8302		3,310.3289	3,310.3289	0.0730		3,312.1524

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.3 Building Construction - Mobilization - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1266	4.1786	0.7547	0.0120	0.6964	0.0201	0.7166	0.1783	0.0193	0.1975		1,256.748 3	1,256.748 3	0.0378		1,257.692 7
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1361	0.1034	0.9499	2.2300e-003	0.6639	1.5500e-003	0.6655	0.1675	1.4300e-003	0.1689		221.7303	221.7303	7.0700e-003		221.9070
Total	0.2626	4.2820	1.7046	0.0142	1.3604	0.0217	1.3820	0.3458	0.0207	0.3664		1,478.478 6	1,478.478 6	0.0449		1,479.599 7

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.3 Building Construction - Mobilization - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1266	4.1786	0.7547	0.0120	0.6964	0.0201	0.7166	0.1783	0.0193	0.1975		1,256.748 3	1,256.748 3	0.0378		1,257.692 7
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1361	0.1034	0.9499	2.2300e-003	0.6639	1.5500e-003	0.6655	0.1675	1.4300e-003	0.1689		221.7303	221.7303	7.0700e-003		221.9070
Total	0.2626	4.2820	1.7046	0.0142	1.3604	0.0217	1.3820	0.3458	0.0207	0.3664		1,478.478 6	1,478.478 6	0.0449		1,479.599 7

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.4 Building Construction - Site Preparation/Stripping - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242		4,047.4659	4,047.4659	1.2600		4,078.9667
Total	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242		4,047.4659	4,047.4659	1.2600		4,078.9667

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0891	2.9556	0.5364	8.2500e-003	5.1622	0.0138	5.1760	0.5794	0.0132	0.5927		864.4521	864.4521	0.0291		865.1785
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1361	0.1034	0.9499	2.2300e-003	0.5778	1.5500e-003	0.5794	0.1464	1.4300e-003	0.1478		221.7303	221.7303	7.0700e-003		221.9070
Total	0.2251	3.0591	1.4863	0.0105	5.7400	0.0154	5.7554	0.7258	0.0146	0.7404		1,086.1825	1,086.1825	0.0361		1,087.0855

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.4 Building Construction - Site Preparation/Stripping - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242	0.0000	4,047.4659	4,047.4659	1.2600		4,078.9667
Total	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242	0.0000	4,047.4659	4,047.4659	1.2600		4,078.9667

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0891	2.9556	0.5364	8.2500e-003	5.1622	0.0138	5.1760	0.5794	0.0132	0.5927		864.4521	864.4521	0.0291		865.1785
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1361	0.1034	0.9499	2.2300e-003	0.5778	1.5500e-003	0.5794	0.1464	1.4300e-003	0.1478		221.7303	221.7303	7.0700e-003		221.9070
Total	0.2251	3.0591	1.4863	0.0105	5.7400	0.0154	5.7554	0.7258	0.0146	0.7404		1,086.1825	1,086.1825	0.0361		1,087.0855

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.5 Building Construction - Existing Road Removal - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242		4,047.4659	4,047.4659	1.2600		4,078.9667
Total	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242		4,047.4659	4,047.4659	1.2600		4,078.9667

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.0034	32.6731	5.8286	0.1004	9.4905	0.1694	9.6599	2.3929	0.1621	2.5550		10,518.3611	10,518.3611	0.2294		10,524.0962
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3542	5.2000e-004	0.3547	0.0885	4.8000e-004	0.0889		73.9101	73.9101	2.3600e-003		73.9690
Total	1.0488	32.7075	6.1452	0.1011	9.8447	0.1700	10.0146	2.4814	0.1626	2.6440		10,592.2713	10,592.2713	0.2318		10,598.0652

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.5 Building Construction - Existing Road Removal - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242	0.0000	4,047.4659	4,047.4659	1.2600		4,078.9667
Total	2.9308	35.7253	23.6384	0.0402		1.4394	1.4394		1.3242	1.3242	0.0000	4,047.4659	4,047.4659	1.2600		4,078.9667

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.0034	32.6731	5.8286	0.1004	9.4905	0.1694	9.6599	2.3929	0.1621	2.5550		10,518.3611	10,518.3611	0.2294		10,524.0962
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3542	5.2000e-004	0.3547	0.0885	4.8000e-004	0.0889		73.9101	73.9101	2.3600e-003		73.9690
Total	1.0488	32.7075	6.1452	0.1011	9.8447	0.1700	10.0146	2.4814	0.1626	2.6440		10,592.2713	10,592.2713	0.2318		10,598.0652

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.6 Building Construction - Trench Excavation and Forcemain Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.2569	56.9183	42.1001	0.0629		3.0080	3.0080		2.7674	2.7674		6,329.9410	6,329.9410	1.9706		6,379.2059
Total	5.2569	56.9183	42.1001	0.0629		3.0080	3.0080		2.7674	2.7674		6,329.9410	6,329.9410	1.9706		6,379.2059

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.0383	38.7025	7.7037	0.0462	206.0345	0.0675	206.1020	20.5330	0.0646	20.5976		4,842.8989	4,842.8989	0.9984		4,867.8584
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.2876	5.2000e-004	0.2881	0.0721	4.8000e-004	0.0726		73.9101	73.9101	2.3600e-003		73.9690
Total	1.0836	38.7369	8.0203	0.0470	206.3221	0.0680	206.3901	20.6051	0.0651	20.6702		4,916.8090	4,916.8090	1.0007		4,941.8274

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.6 Building Construction - Trench Excavation and Forcemain Installation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.2569	56.9183	42.1001	0.0629		3.0080	3.0080		2.7674	2.7674	0.0000	6,329.9410	6,329.9410	1.9706		6,379.2059
Total	5.2569	56.9183	42.1001	0.0629		3.0080	3.0080		2.7674	2.7674	0.0000	6,329.9410	6,329.9410	1.9706		6,379.2059

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.0383	38.7025	7.7037	0.0462	206.0345	0.0675	206.1020	20.5330	0.0646	20.5976		4,842.8989	4,842.8989	0.9984		4,867.8584
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.2876	5.2000e-004	0.2881	0.0721	4.8000e-004	0.0726		73.9101	73.9101	2.3600e-003		73.9690
Total	1.0836	38.7369	8.0203	0.0470	206.3221	0.0680	206.3901	20.6051	0.0651	20.6702		4,916.8090	4,916.8090	1.0007		4,941.8274

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.7 Building Construction - New Road Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5738	15.8515	10.5954	0.0153		0.8917	0.8917		0.8212	0.8212		1,523.4410	1,523.4410	0.4662		1,535.0964
Total	1.5738	15.8515	10.5954	0.0153		0.8917	0.8917		0.8212	0.8212		1,523.4410	1,523.4410	0.4662		1,535.0964

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.5789	18.8498	3.3626	0.0579	5.1273	0.0978	5.2250	1.2951	0.0935	1.3886		6,068.2853	6,068.2853	0.1324		6,071.5940
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.6620	1.0300e-003	0.6631	0.1655	9.5000e-004	0.1665		147.8202	147.8202	4.7100e-003		147.9380
Total	0.6696	18.9188	3.9959	0.0594	5.7893	0.0988	5.8881	1.4606	0.0945	1.5551		6,216.1055	6,216.1055	0.1371		6,219.5320

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.7 Building Construction - New Road Construction - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5738	15.8515	10.5954	0.0153		0.8917	0.8917		0.8212	0.8212	0.0000	1,523.4410	1,523.4410	0.4662		1,535.0964
Total	1.5738	15.8515	10.5954	0.0153		0.8917	0.8917		0.8212	0.8212	0.0000	1,523.4410	1,523.4410	0.4662		1,535.0964

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.5789	18.8498	3.3626	0.0579	5.1273	0.0978	5.2250	1.2951	0.0935	1.3886		6,068.2853	6,068.2853	0.1324		6,071.5940
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.6620	1.0300e-003	0.6631	0.1655	9.5000e-004	0.1665		147.8202	147.8202	4.7100e-003		147.9380
Total	0.6696	18.9188	3.9959	0.0594	5.7893	0.0988	5.8881	1.4606	0.0945	1.5551		6,216.1055	6,216.1055	0.1371		6,219.5320

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.8 Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	24.1581	264.2348	253.1856	0.4019		12.5022	12.5022		11.5020	11.5020		40,436.3532	40,436.3532	12.5884		40,751.0629
Total	24.1581	264.2348	253.1856	0.4019		12.5022	12.5022		11.5020	11.5020		40,436.3532	40,436.3532	12.5884		40,751.0629

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	99.4634	3,261.6195	585.5920	9.6766	2,732.4759	16.2900	2,748.7659	413.2423	15.5851	428.8274		1,014,299.3279	1,014,299.3279	26.3068		1,014,956.9979
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2268	0.1724	1.5832	3.7100e-003	1.8291	2.5800e-003	1.8317	0.4565	2.3800e-003	0.4589		369.5506	369.5506	0.0118		369.8450
Total	99.6902	3,261.7918	587.1752	9.6803	2,734.3050	16.2926	2,750.5976	413.6988	15.5875	429.2863		1,014,668.8785	1,014,668.8785	26.3186		1,015,326.8429

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.8 Building Construction - New Levee/Seepage Berm & Soil Borrow Extraction - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	24.1581	264.2348	253.1856	0.4019		12.5022	12.5022		11.5020	11.5020	0.0000	40,436.3532	40,436.3532	12.5884		40,751.0629
Total	24.1581	264.2348	253.1856	0.4019		12.5022	12.5022		11.5020	11.5020	0.0000	40,436.3532	40,436.3532	12.5884		40,751.0629

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	99.4634	3,261.6195	585.5920	9.6766	2,732.4759	16.2900	2,748.7659	413.2423	15.5851	428.8274		1,014,299.3279	1,014,299.3279	26.3068		1,014,956.9979
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2268	0.1724	1.5832	3.7100e-003	1.8291	2.5800e-003	1.8317	0.4565	2.3800e-003	0.4589		369.5506	369.5506	0.0118		369.8450
Total	99.6902	3,261.7918	587.1752	9.6803	2,734.3050	16.2926	2,750.5976	413.6988	15.5875	429.2863		1,014,668.8785	1,014,668.8785	26.3186		1,015,326.8429

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.9 Building Construction - Offsite Borrow Material Transport - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	29.3310	955.0584	170.3739	2.9332	286.2383	4.9528	291.1911	72.1131	4.7385	76.8516		307,459.7873	307,459.7873	6.7056		307,627.4270
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3658	5.2000e-004	0.3663	0.0913	4.8000e-004	0.0918		73.9101	73.9101	2.3600e-003		73.9690
Total	29.3763	955.0929	170.6906	2.9339	286.6041	4.9534	291.5575	72.2044	4.7390	76.9434		307,533.6974	307,533.6974	6.7080		307,701.3960

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.9 Building Construction - Offsite Borrow Material Transport - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	29.3310	955.0584	170.3739	2.9332	286.2383	4.9528	291.1911	72.1131	4.7385	76.8516		307,459.7873	307,459.7873	6.7056		307,627.4270
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3658	5.2000e-004	0.3663	0.0913	4.8000e-004	0.0918		73.9101	73.9101	2.3600e-003		73.9690
Total	29.3763	955.0929	170.6906	2.9339	286.6041	4.9534	291.5575	72.2044	4.7390	76.9434		307,533.6974	307,533.6974	6.7080		307,701.3960

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.10 Building Construction - Cutoff Wall Installation (Open Trench Method) - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1817	25.3414	19.3445	0.0315		1.1335	1.1335		1.0428	1.0428		3,167.0501	3,167.0501	0.9860		3,191.6987
Total	2.1817	25.3414	19.3445	0.0315		1.1335	1.1335		1.0428	1.0428		3,167.0501	3,167.0501	0.9860		3,191.6987

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1397	4.7582	0.8833	0.0115	12.2627	0.0189	12.2816	1.3211	0.0181	1.3392		1,203.6134	1,203.6134	0.0647		1,205.2314
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.4771	1.0300e-003	0.4782	0.1201	9.5000e-004	0.1211		147.8202	147.8202	4.7100e-003		147.9380
Total	0.2304	4.8272	1.5166	0.0130	12.7398	0.0200	12.7598	1.4412	0.0191	1.4603		1,351.4337	1,351.4337	0.0694		1,353.1694

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.10 Building Construction - Cutoff Wall Installation (Open Trench Method) - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1817	25.3414	19.3445	0.0315		1.1335	1.1335		1.0428	1.0428	0.0000	3,167.0501	3,167.0501	0.9860		3,191.6987
Total	2.1817	25.3414	19.3445	0.0315		1.1335	1.1335		1.0428	1.0428	0.0000	3,167.0501	3,167.0501	0.9860		3,191.6987

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1397	4.7582	0.8833	0.0115	12.2627	0.0189	12.2816	1.3211	0.0181	1.3392		1,203.6134	1,203.6134	0.0647		1,205.2314
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.4771	1.0300e-003	0.4782	0.1201	9.5000e-004	0.1211		147.8202	147.8202	4.7100e-003		147.9380
Total	0.2304	4.8272	1.5166	0.0130	12.7398	0.0200	12.7598	1.4412	0.0191	1.4603		1,351.4337	1,351.4337	0.0694		1,353.1694

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.11 Building Construction - Erosion Protection Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	24.8224	266.0934	279.4314	0.4414		12.8891	12.8891		11.8580	11.8580		44,404.74 91	44,404.74 91	13.8238		44,750.34 42
Total	24.8224	266.0934	279.4314	0.4414		12.8891	12.8891		11.8580	11.8580		44,404.74 91	44,404.74 91	13.8238		44,750.34 42

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	14.4725	471.2459	84.0661	1.4473	140.1472	2.4438	142.5910	35.3149	2.3381	37.6530		151,707.1 319	151,707.1 319	3.3087		151,789.8 489
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.7258	1.0300e-003	0.7269	0.1812	9.5000e-004	0.1821		147.8202	147.8202	4.7100e-003		147.9380
Total	14.5632	471.3149	84.6994	1.4488	140.8730	2.4449	143.3179	35.4960	2.3390	37.8351		151,854.9 521	151,854.9 521	3.3134		151,937.7 869

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.11 Building Construction - Erosion Protection Installation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	24.8224	266.0934	279.4314	0.4414		12.8891	12.8891		11.8580	11.8580	0.0000	44,404.74 91	44,404.74 91	13.8238		44,750.34 41
Total	24.8224	266.0934	279.4314	0.4414		12.8891	12.8891		11.8580	11.8580	0.0000	44,404.74 91	44,404.74 91	13.8238		44,750.34 41

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	14.4725	471.2459	84.0661	1.4473	140.1472	2.4438	142.5910	35.3149	2.3381	37.6530		151,707.1 319	151,707.1 319	3.3087		151,789.8 489
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.7258	1.0300e-003	0.7269	0.1812	9.5000e-004	0.1821		147.8202	147.8202	4.7100e-003		147.9380
Total	14.5632	471.3149	84.6994	1.4488	140.8730	2.4449	143.3179	35.4960	2.3390	37.8351		151,854.9 521	151,854.9 521	3.3134		151,937.7 869

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.12 Building Construction - Relief Well Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8458	22.3587	16.3536	0.0269		0.9536	0.9536		0.8773	0.8773		2,704.3656	2,704.3656	0.8419		2,725.4133
Total	1.8458	22.3587	16.3536	0.0269		0.9536	0.9536		0.8773	0.8773		2,704.3656	2,704.3656	0.8419		2,725.4133

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.0761	5.2000e-004	0.0766	0.0202	4.8000e-004	0.0207		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0454	0.0345	0.3166	7.4000e-004	0.0761	5.2000e-004	0.0766	0.0202	4.8000e-004	0.0207		73.9101	73.9101	2.3600e-003		73.9690

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.12 Building Construction - Relief Well Installation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8458	22.3587	16.3536	0.0269		0.9536	0.9536		0.8773	0.8773	0.0000	2,704.3656	2,704.3656	0.8419		2,725.4133
Total	1.8458	22.3587	16.3536	0.0269		0.9536	0.9536		0.8773	0.8773	0.0000	2,704.3656	2,704.3656	0.8419		2,725.4133

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.0761	5.2000e-004	0.0766	0.0202	4.8000e-004	0.0207		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0454	0.0345	0.3166	7.4000e-004	0.0761	5.2000e-004	0.0766	0.0202	4.8000e-004	0.0207		73.9101	73.9101	2.3600e-003		73.9690

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.13 Building Construction - Existing Pump Station Removal - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035		852.9003	852.9003	0.2655		859.5383
Total	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035		852.9003	852.9003	0.2655		859.5383

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0440	1.4610	0.2653	4.0700e-003	0.2322	6.8000e-003	0.2390	0.0594	6.5100e-003	0.0659		426.0980	426.0980	0.0145		426.4599
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.2213	5.2000e-004	0.2218	0.0558	4.8000e-004	0.0563		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0894	1.4955	0.5819	4.8100e-003	0.4535	7.3200e-003	0.4608	0.1153	6.9900e-003	0.1222		500.0081	500.0081	0.0168		500.4289

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.13 Building Construction - Existing Pump Station Removal - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035	0.0000	852.9003	852.9003	0.2655		859.5383
Total	0.5547	5.7483	5.6944	8.4800e-003		0.3299	0.3299		0.3035	0.3035	0.0000	852.9003	852.9003	0.2655		859.5383

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0440	1.4610	0.2653	4.0700e-003	0.2322	6.8000e-003	0.2390	0.0594	6.5100e-003	0.0659		426.0980	426.0980	0.0145		426.4599
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.2213	5.2000e-004	0.2218	0.0558	4.8000e-004	0.0563		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0894	1.4955	0.5819	4.8100e-003	0.4535	7.3200e-003	0.4608	0.1153	6.9900e-003	0.1222		500.0081	500.0081	0.0168		500.4289

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.14 Building Construction - Pump Station Installation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4884	5.3583	3.1680	5.3000e-003		0.2950	0.2950		0.2714	0.2714		533.4615	533.4615	0.1661		537.6133
Total	0.4884	5.3583	3.1680	5.3000e-003		0.2950	0.2950		0.2714	0.2714		533.4615	533.4615	0.1661		537.6133

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0220	0.7305	0.1326	2.0300e-003	0.0917	3.4000e-003	0.0951	0.0237	3.2500e-003	0.0270		213.0490	213.0490	7.2400e-003		213.2299
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.1726	5.2000e-004	0.1731	0.0439	4.8000e-004	0.0443		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0674	0.7650	0.4493	2.7700e-003	0.2643	3.9200e-003	0.2682	0.0676	3.7300e-003	0.0713		286.9591	286.9591	9.6000e-003		287.1989

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.14 Building Construction - Pump Station Installation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4884	5.3583	3.1680	5.3000e-003		0.2950	0.2950		0.2714	0.2714	0.0000	533.4615	533.4615	0.1661		537.6133
Total	0.4884	5.3583	3.1680	5.3000e-003		0.2950	0.2950		0.2714	0.2714	0.0000	533.4615	533.4615	0.1661		537.6133

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0220	0.7305	0.1326	2.0300e-003	0.0917	3.4000e-003	0.0951	0.0237	3.2500e-003	0.0270		213.0490	213.0490	7.2400e-003		213.2299
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.1726	5.2000e-004	0.1731	0.0439	4.8000e-004	0.0443		73.9101	73.9101	2.3600e-003		73.9690
Total	0.0674	0.7650	0.4493	2.7700e-003	0.2643	3.9200e-003	0.2682	0.0676	3.7300e-003	0.0713		286.9591	286.9591	9.6000e-003		287.1989

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.15 Building Construction - Existing Levee Degrade - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6270	19.5931	13.6501	0.0230		0.8036	0.8036		0.7393	0.7393		2,314.1498	2,314.1498	0.7204		2,332.1604
Total	1.6270	19.5931	13.6501	0.0230		0.8036	0.8036		0.7393	0.7393		2,314.1498	2,314.1498	0.7204		2,332.1604

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	16.0578	598.3805	119.0809	0.7173	3,252.3991	1.0481	3,253.4472	324.1269	1.0027	325.1295		75,123.5638	75,123.5638	15.4124		75,508.8744
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.7084	1.0300e-003	0.7095	0.1769	9.5000e-004	0.1779		147.8202	147.8202	4.7100e-003		147.9380
Total	16.1485	598.4494	119.7142	0.7188	3,253.1075	1.0491	3,254.1567	324.3038	1.0036	325.3074		75,271.3840	75,271.3840	15.4171		75,656.8124

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.15 Building Construction - Existing Levee Degrade - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6270	19.5931	13.6501	0.0230		0.8036	0.8036		0.7393	0.7393	0.0000	2,314.1498	2,314.1498	0.7204		2,332.1604
Total	1.6270	19.5931	13.6501	0.0230		0.8036	0.8036		0.7393	0.7393	0.0000	2,314.1498	2,314.1498	0.7204		2,332.1604

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	16.0578	598.3805	119.0809	0.7173	3,252.3991	1.0481	3,253.4472	324.1269	1.0027	325.1295		75,123.5638	75,123.5638	15.4124		75,508.8744
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.7084	1.0300e-003	0.7095	0.1769	9.5000e-004	0.1779		147.8202	147.8202	4.7100e-003		147.9380
Total	16.1485	598.4494	119.7142	0.7188	3,253.1075	1.0491	3,254.1567	324.3038	1.0036	325.3074		75,271.3840	75,271.3840	15.4171		75,656.8124

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.16 Building Construction - Ecosystem Project Elements - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5207	41.8925	28.7779	0.0464		1.9077	1.9077		1.7551	1.7551		4,673.0483	4,673.0483	1.4548		4,709.4179
Total	3.5207	41.8925	28.7779	0.0464		1.9077	1.9077		1.7551	1.7551		4,673.0483	4,673.0483	1.4548		4,709.4179

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0193	0.6283	0.1121	1.9300e-003	36.7906	3.2600e-003	36.7939	3.6661	3.1200e-003	3.6693		202.2762	202.2762	4.4100e-003		202.3865
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.2653	1.0300e-003	0.2663	0.0681	9.5000e-004	0.0691		147.8202	147.8202	4.7100e-003		147.9380
Total	0.1100	0.6973	0.7454	3.4200e-003	37.0559	4.2900e-003	37.0602	3.7343	4.0700e-003	3.7383		350.0964	350.0964	9.1200e-003		350.3245

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.16 Building Construction - Ecosystem Project Elements - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5207	41.8925	28.7779	0.0464		1.9077	1.9077		1.7551	1.7551	0.0000	4,673.0483	4,673.0483	1.4548		4,709.4179
Total	3.5207	41.8925	28.7779	0.0464		1.9077	1.9077		1.7551	1.7551	0.0000	4,673.0483	4,673.0483	1.4548		4,709.4179

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0193	0.6283	0.1121	1.9300e-003	36.7906	3.2600e-003	36.7939	3.6661	3.1200e-003	3.6693		202.2762	202.2762	4.4100e-003		202.3865
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0907	0.0689	0.6333	1.4900e-003	0.2653	1.0300e-003	0.2663	0.0681	9.5000e-004	0.0691		147.8202	147.8202	4.7100e-003		147.9380
Total	0.1100	0.6973	0.7454	3.4200e-003	37.0559	4.2900e-003	37.0602	3.7343	4.0700e-003	3.7383		350.0964	350.0964	9.1200e-003		350.3245

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.17 Building Construction - Site Restoration and Demobilization - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1763	11.6495	7.1750	9.6000e-003		0.6920	0.6920		0.6367	0.6367		967.2218	967.2218	0.3011		974.7496
Total	1.1763	11.6495	7.1750	9.6000e-003		0.6920	0.6920		0.6367	0.6367		967.2218	967.2218	0.3011		974.7496

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2532	8.3572	1.5094	0.0240	2.0163	0.0403	2.0566	0.5096	0.0385	0.5481		2,513.4965	2,513.4965	0.0756		2,515.3854
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3252	5.2000e-004	0.3257	0.0813	4.8000e-004	0.0818		73.9101	73.9101	2.3600e-003		73.9690
Total	0.2985	8.3917	1.8261	0.0247	2.3415	0.0408	2.3823	0.5909	0.0390	0.6299		2,587.4066	2,587.4066	0.0779		2,589.3544

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

3.17 Building Construction - Site Restoration and Demobilization - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1763	11.6495	7.1750	9.6000e-003		0.6920	0.6920		0.6367	0.6367	0.0000	967.2218	967.2218	0.3011		974.7496
Total	1.1763	11.6495	7.1750	9.6000e-003		0.6920	0.6920		0.6367	0.6367	0.0000	967.2218	967.2218	0.3011		974.7496

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2532	8.3572	1.5094	0.0240	2.0163	0.0403	2.0566	0.5096	0.0385	0.5481		2,513.4965	2,513.4965	0.0756		2,515.3854
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0454	0.0345	0.3166	7.4000e-004	0.3252	5.2000e-004	0.3257	0.0813	4.8000e-004	0.0818		73.9101	73.9101	2.3600e-003		73.9690
Total	0.2985	8.3917	1.8261	0.0247	2.3415	0.0408	2.3823	0.5909	0.0390	0.6299		2,587.4066	2,587.4066	0.0779		2,589.3544

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
User Defined Commercial	0.00	0.00	0.00		
User Defined Residential	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
User Defined Commercial	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
User Defined Residential	10.00	5.00	7.00	46.00	13.00	41.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.486608	0.042104	0.206882	0.127088	0.026765	0.005851	0.054651	0.039468	0.001006	0.001905	0.006007	0.000778	0.000886
User Defined Commercial	0.486608	0.042104	0.206882	0.127088	0.026765	0.005851	0.054651	0.039468	0.001006	0.001905	0.006007	0.000778	0.000886
User Defined Residential	0.486608	0.042104	0.206882	0.127088	0.026765	0.005851	0.054651	0.039468	0.001006	0.001905	0.006007	0.000778	0.000886

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Residential	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment

Lower Elkhorn Basin Alt 5 Unfavorable - Year 1 - Yolo County, Winter

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

Lower Elkhorn Basin
 Fugitive Dust Emissions
 Alternative 5 Unfavorable

$$EF_0 = k \times (0.0032) \times ((U/5)^{1.3}) / ((M/2)^{1.4})$$

Variable	Amount	Units	Source
EF (PM ₁₀)	0.103	lb/ton	CalEEMod Appendix A
EF (PM _{2.5})	0.016	lb/ton	CalEEMod Appendix A
K (PM ₁₀)	0.35	factor	CalEEMod Appendix A
K (PM _{2.5})	0.053	factor	CalEEMod Appendix A
U (mean wind speed)	7.83	miles/hr	CalEEMod Appendix A
M (moisture content)	12%	percent	CalEEMod Appendix A
Type 1 Levee Fill Density	1.3	tons/cy	Project Engineer
Type 2 Levee Fill Density	1.3	tons/cy	Project Engineer
Aggregate Base Density	1.8	tons/cy	Project Engineer
Excavated Soil density	1.3	tons/cy	Project Engineer

$$E \text{ (lbs)} = EF \text{ (lb/ton)} \times TP \text{ (tons)}$$

	Work Days	Total Materials Moved (cy)	Total Materials Moved (tons)	Daily Materials Moved (tons/day)	Unmitigated		Mitigated	
					Daily PM ₁₀ (lbs/day)	Daily PM _{2.5} (lbs/day)	Daily PM ₁₀ (lbs/day)	Daily PM _{2.5} (lbs/day)
Year 2018								
Mobilization	12							
Site Preparation/Stripping	60	850	1105	18	3.79	0.59	0.95	0.15
Structure Demolition	5							
Existing Road Removal	20	5,050	9,090	455	93.63	14.54	23.41	3.64
Trench Excavation and Forcemain Installation	30	51,800	67,340	2,245	462.40	71.83	115.60	17.96
New Road Construction	60							
New Levee/Seepage Berm & Soil Borrow Extraction	135	4,407,500	5,729,750	42,443	8743.17	1358.16	2185.79	339.54
Offsite Borrow Material Transport	20	151,300	196,690	9,835	4051.81	629.41	1012.95	157.35
Cutoff Wall Installation (Open Trench Method)	120	129,100	167,830	1,399	576.22	89.51	144.05	22.38
Erosion Protection Installation	30							
Relief Well Installation	30							
Existing Pump Station Removal	10							
Pump Station Installation	30							
Existing Levee Degrade	60	1,621,000	2,107,300	35,122	7235.06	1123.89	1808.77	280.97
Site Restoration and Demobilization	10							

Basic Construction Measure	0.54	percent reduction
Enhanced Mitigation	0.75	percent reduction

D2. Greenhouse Gas Emissions Modeling Results

Construction-Related Greenhouse Gas Emissions Alternative 2 Unfavorable

Construction Phase	Emissions (MT CO ₂ e)
Year 2018 Construction¹	64,892
Mobilization	8.1
Site Preparation / Stripping	188.1
Structure Demolition	9.5
Existing Road Removal	111.1
Trench Excavation and Forcemain Installation	75.3
New Road Construction	197.0
New Levee / Seepage Berm and Soil Borrow Extraction	59,751.9
Cutoff Wall Installation	234.3
Erosion Protection Installation	1,960.1
Relief Well Installation	38.1
Existing Pump Station Removal	6.2
Pump Station Installation	11.2
Existing Levee Degrade	2,284.5
Site Restoration and Demobilization	16.2
Year 2019 Construction¹	47,833
Mobilization	7.9
Site Preparation / Stripping	61.7
Structure Demolition	18.7
Existing Road Removal	45.7
Trench Excavation and Forcemain Installation	28.4
New Road Construction	64.5
New Levee / Seepage Berm and Soil Borrow Extraction	26,176.9
Offsite Borrow Material Transport	18,779.6
Cutoff Wall Installation	132.8
Erosion Protection Installation	968.3
Existing Pump Station Removal	6.1
Existing Levee Degrade	1,455.1
Ecosystem Project Elements	71.4
Site Restoration and Demobilization	16.0
Total GHG Emissions	112,725

Notes: MT CO₂e = metric tons of carbon dioxide equivalent

¹ Represents the annual emissions that would occur in that given construction year.

Source: Data modeled by GEI Consultants, Inc. in 2016

Construction-Related Greenhouse Gas Emissions Alternative 2 Reuse

Construction Phase	Emissions (MT CO ₂ e)
Year 2018 Construction¹	11,713
Mobilization	8.1
Site Preparation / Stripping	188.1
Structure Demolition	9.5
Existing Road Removal	111.1
Trench Excavation and Forcemain Installation	75.3
New Road Construction	197.0
New Levee / Seepage Berm and Soil Borrow Extraction	6,573.4
Cutoff Wall Installation	234.3
Erosion Protection Installation	1,960.1
Relief Well Installation	38.1
Existing Pump Station Removal	6.2
Pump Station Installation	11.2
Existing Levee Degrade	2,284.5
Site Restoration and Demobilization	16.2
Year 2019 Construction¹	24,492
Mobilization	7.9
Site Preparation / Stripping	61.7
Structure Demolition	18.7
Existing Road Removal	45.7
Trench Excavation and Forcemain Installation	28.4
New Road Construction	64.5
New Levee / Seepage Berm and Soil Borrow Extraction	2,835.7
Offsite Borrow Material Transport	18,779.6
Cutoff Wall Installation	132.8
Erosion Protection Installation	968.3
Existing Pump Station Removal	6.1
Existing Levee Degrade	1,455.1
Ecosystem Project Elements	71.4
Site Restoration and Demobilization	16.0
Total GHG Emissions	36,205

Notes: MT CO₂e = metric tons of carbon dioxide equivalent

¹ Represents the annual emissions that would occur in that given construction year.

Source: Data modeled by GEI Consultants, Inc. in 2016

Construction-Related Greenhouse Gas Emissions Alternative 3 Unfavorable

Construction Phase	Emissions (MT CO ₂ e)
Year 2018 Construction¹	63,641
Mobilization	8.1
Site Preparation / Stripping	188.1
Structure Demolition	9.5
Existing Road Removal	140.5
Trench Excavation and Forcemain Installation	96.1
New Road Construction	252.1
New Levee / Seepage Berm and Soil Borrow Extraction	58,382.7
Cutoff Wall Installation	247.4
Erosion Protection Installation	1,960.1
Relief Well Installation	38.1
Existing Pump Station Removal	6.2
Pump Station Installation	11.2
Existing Levee Degrade	2,284.5
Site Restoration and Demobilization	16.2
Year 2019 Construction¹	48,076
Mobilization	8
Site Preparation / Stripping	62
Structure Demolition	19
Existing Road Removal	46
Trench Excavation and Forcemain Installation	28
New Road Construction	65
New Levee / Seepage Berm and Soil Borrow Extraction	26,420
Offsite Borrow Material Transport	18,780
Cutoff Wall Installation	133
Erosion Protection Installation	968
Existing Pump Station Removal	6
Existing Levee Degrade	1,455
Ecosystem Project Elements	71
Site Restoration and Demobilization	16
Total GHG Emissions	111,717

Notes: MT CO₂e = metric tons of carbon dioxide equivalent

¹ Represents the annual emissions that would occur in that given construction year.

Source: Data modeled by GEI Consultants, Inc. in 2016

Construction-Related Greenhouse Gas Emissions Alternative 4 Unfavorable

Construction Phase	Emissions (MT CO ₂ e)
Year 2018 Construction¹	72092.2
Mobilization	8.1
Site Preparation / Stripping	140.6
Structure Demolition	9.5
Existing Road Removal	162.5
Trench Excavation and Forcemain Installation	176.8
New Road Construction	266.1
New Levee / Seepage Berm and Soil Borrow Extraction	63396.2
Offsite Borrow Material Transport	2791.4
Cutoff Wall Installation	247.4
Erosion Protection Installation	2649.0
Relief Well Installation	38.1
Existing Pump Station Removal	6.2
Pump Station Installation	11.2
Existing Levee Degrade	2122.5
Ecosystem Project Elements	50.5
Site Restoration and Demobilization	16.2
Total GHG Emissions	72,092

Notes: MT CO₂e = metric tons of carbon dioxide equivalent

¹ Represents the annual emissions that would occur in that given construction year.

Source: Data modeled by GEI Consultants, Inc. in 2016

Construction-Related Greenhouse Gas Emissions Alternative 4 Reuse

Construction Phase	Emissions (MT CO ₂ e)
Year 2018 Construction¹	16696.0
Mobilization	8.1
Site Preparation / Stripping	140.6
Structure Demolition	9.5
Existing Road Removal	162.5
Trench Excavation and Forcemain Installation	176.8
New Road Construction	266.1
New Levee / Seepage Berm and Soil Borrow Extraction	7996.6
Offsite Borrow Material Transport	2791.4
Cutoff Wall Installation	247.4
Erosion Protection Installation	2649.0
Relief Well Installation	38.1
Existing Pump Station Removal	6.2
Pump Station Installation	11.2
Existing Levee Degrade	2122.5
Ecosystem Project Elements	50.5
Site Restoration and Demobilization	19.6
Total GHG Emissions	16,696

Notes: MT CO₂e = metric tons of carbon dioxide equivalent

¹ Represents the annual emissions that would occur in that given construction year.

Source: Data modeled by GEI Consultants, Inc. in 2016

**Construction-Related Greenhouse Gas Emissions
Alternative 5 Unfavorable**

Construction Phase	Emissions (MT CO ₂ e)
Year 2018 Construction¹	73,286
Mobilization	8.1
Site Preparation / Stripping	140.6
Structure Demolition	9.5
Existing Road Removal	133.1
Trench Excavation and Forcemain Installation	154.1
New Road Construction	211.0
New Levee / Seepage Berm and Soil Borrow Extraction	64,669.6
Offsite Borrow Material Transport	2,791.4
Cutoff Wall Installation	247.4
Erosion Protection Installation	2,676.5
Relief Well Installation	38.1
Existing Pump Station Removal	6.2
Pump Station Installation	11.2
Existing Levee Degrade	2,122.5
Ecosystem Project Elements	50.5
Site Restoration and Demobilization	16.2
Total GHG Emissions	73,286

Notes: MT CO₂e = metric tons of carbon dioxide equivalent

¹ Represents the annual emissions that would occur in that given construction year.

Source: Data modeled by GEI Consultants, Inc. in 2016

Appendix E. Biological Resources

- E1. U.S. Fish and Wildlife Service Species Letter**
- E2. California Natural Diversity Database and California Native Plant Society Inventory Search Results**
- E3. 2016 Biological Field Reconnaissance Survey Reports**
- E4. 2013-2014 Giant Garter Snake Water Habitat Surveys**

E1. U.S. Fish and Wildlife Service Species Letter



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

PHONE: (916)414-6600 FAX: (916)414-6713

Consultation Code: 08ESMF00-2017-SLI-0770

January 09, 2017

Event Code: 08ESMF00-2017-E-01661

Project Name: Lower Elkhorn Basin Levee Setback- 3 mile buffer

Subject: 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



United States Department of Interior
Fish and Wildlife Service

Project name: Lower Elkhorn Basin Levee Setback- 3 mile buffer

Official Species List

Provided by:

Sacramento Fish and Wildlife Office
FEDERAL BUILDING
2800 COTTAGE WAY, ROOM W-2605
SACRAMENTO, CA 95825
(916) 414-6600

Expect additional Species list documents from the following office(s):

San Francisco Bay-Delta Fish and Wildlife
650 CAPITOL MALL
SUITE 8-300
SACRAMENTO, CA 95814
(916) 930-5603
[http://kim_squires@fws.gov](mailto:kim_squires@fws.gov)

Consultation Code: 08ESMF00-2017-SLI-0770

Event Code: 08ESMF00-2017-E-01661

Project Type: STREAM / WATERBODY / CANALS / LEVEES / DIKES

Project Name: Lower Elkhorn Basin Levee Setback- 3 mile buffer

Project Description: Flood management and species habitat enhancement

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

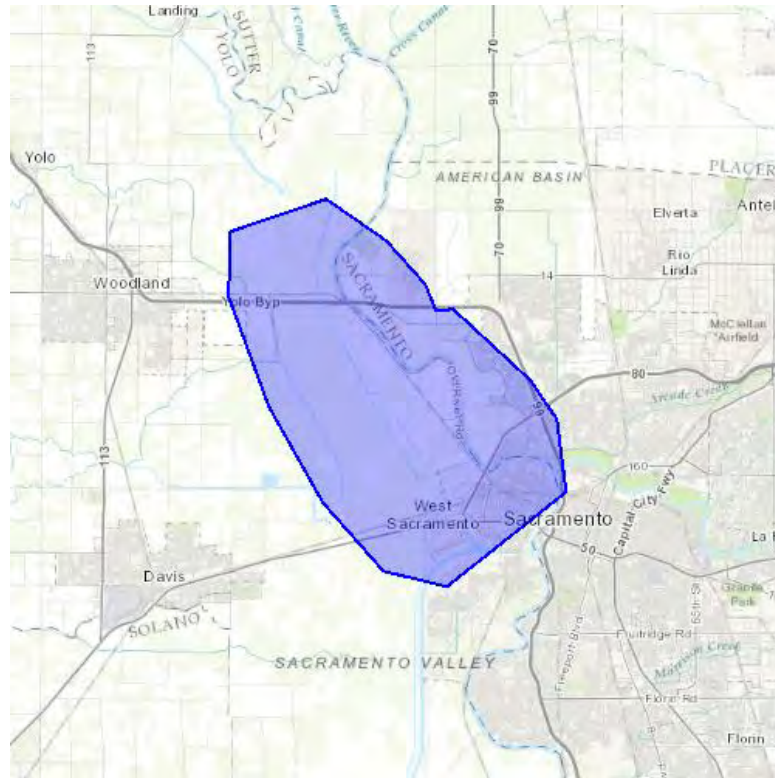
<http://ecos.fws.gov/ipac>, 01/09/2017 12:44 PM



United States Department of Interior
Fish and Wildlife Service

Project name: Lower Elkhorn Basin Levee Setback- 3 mile buffer

Project Location Map:



Project Coordinates: MULTIPOLYGON (((-121.6399383544922 38.71980474264239, -121.6945266723633 38.7050706325604, -121.69555664062501 38.675861332951186, -121.6725540161133 38.626526838378076, -121.64096832275392 38.58386804217583, -121.60629272460938 38.552729904424844, -121.56990051269533 38.5462858464921, -121.5022659301758 38.58816189871531, -121.50741577148439 38.62116234642254, -121.52183532714845 38.638327308061875, -121.56681060791017 38.67023248314003, -121.57608032226564 38.66969637912233, -121.58294677734376 38.681757748501546, -121.60457611083986 38.70078377577087, -121.6399383544922 38.71980474264239)))

Project Counties: Sacramento, CA | Yolo, CA

<http://ecos.fws.gov/ipac>, 01/09/2017 12:44 PM



United States Department of Interior
Fish and Wildlife Service

Project name: Lower Elkhorn Basin Levee Setback- 3 mile buffer

Endangered Species Act Species List

There are a total of 13 threatened or endangered species on your 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. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Amphibians	Status	Has Critical Habitat	Condition(s)
California red-legged frog (<i>Rana draytonii</i>) Population: Wherever found	Threatened	Final designated	
California tiger Salamander (<i>Ambystoma californiense</i>) Population: U.S.A. (Central CA DPS)	Threatened	Final designated	
Birds			
Least Bell's vireo (<i>Vireo bellii pusillus</i>) Population: Wherever found	Endangered	Final designated	
western snowy plover (<i>Charadrius nivosus ssp. nivosus</i>) Population: Pacific Coast population DPS- U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast)	Threatened	Final designated	
Yellow-Billed Cuckoo (<i>Coccyzus americanus</i>) Population: Western U.S. DPS	Threatened	Proposed	
Crustaceans			

<http://ecos.fws.gov/ipac>, 01/09/2017 12:44 PM



United States Department of Interior
Fish and Wildlife Service

Project name: Lower Elkhorn Basin Levee Setback- 3 mile buffer

Conservancy fairy shrimp (<i>Branchinecta conservatio</i>) Population: Wherever found	Endangered	Final designated	
Vernal Pool fairy shrimp (<i>Branchinecta lynchi</i>) Population: Wherever found	Threatened	Final designated	
Vernal Pool tadpole shrimp (<i>Lepidurus packardi</i>) Population: Wherever found	Endangered	Final designated	
Fishes			
Delta smelt (<i>Hypomesus transpacificus</i>) Population: Wherever found	Threatened	Final designated	
steelhead (<i>Oncorhynchus (=salmo) mykiss</i>) Population: Northern California DPS	Threatened	Final designated	
Flowering Plants			
Palmate-Bracted bird's beak (<i>Cordylanthus palmatus</i>) Population: Wherever found	Endangered		
Insects			
Valley Elderberry Longhorn beetle (<i>Desmocerus californicus dimorphus</i>) Population: Wherever found	Threatened	Final designated	
Reptiles			
Giant Garter snake (<i>Thamnophis gigas</i>) Population: Wherever found	Threatened		

<http://ecos.fws.gov/ipac>, 01/09/2017 12:44 PM



United States Department of Interior
Fish and Wildlife Service

Project name: Lower Elkhorn Basin Levee Setback- 3 mile buffer

Critical habitats that lie within your project area

The following critical habitats lie fully or partially within your project area.

Fishes	Critical Habitat Type
Delta smelt (<i>Hypomesus transpacificus</i>) Population: Wherever found	Final designated
steelhead (<i>Oncorhynchus (=salmo) mykiss</i>) Population: Northern California DPS	Final designated

<http://ecos.fws.gov/ipac>, 01/09/2017 12:44 PM

IPaC Trust Resources Report

Generated November 23, 2016 12:18 PM MST, IPaC v3.0.10

This report is for informational purposes only and should not be used for planning or analyzing project level impacts. For project reviews that require U.S. Fish & Wildlife Service review or concurrence, please return to the IPaC website and request an official species list from the Regulatory Documents page.



IPaC - Information for Planning and Conservation (<https://ecos.fws.gov/ipac/>): A project planning tool to help streamline the U.S. Fish & Wildlife Service environmental review process.

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IPaC Trust Resources Report

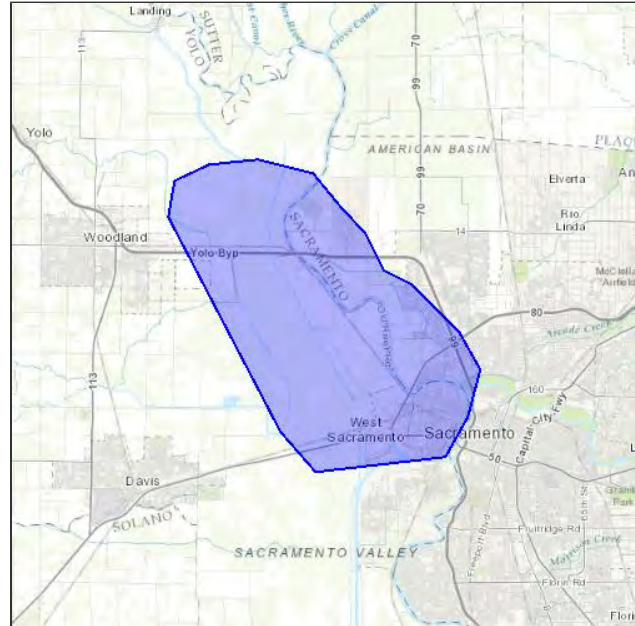


LOCATION

Sacramento and Yolo counties,
California

IPAC LINK

<https://ecos.fws.gov/ipac/project/3UL2R-KAFF5-BNBH3-32IHJ-NWXV5E>



U.S. Fish & Wildlife Service Contact Information

Trust resources in this location are managed by:

San Francisco Bay-delta Fish And Wildlife

650 Capitol Mall
Suite 8-300
Sacramento, CA 95814
(916) 930-5603

Sacramento Fish And Wildlife Office

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

Endangered Species

Proposed, candidate, threatened, and endangered species are managed by the [Endangered Species Program](#) of the U.S. Fish & Wildlife Service.

This USFWS trust resource report is for informational purposes only and should not be used for planning or analyzing project level impacts.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list from the Regulatory Documents section.

[Section 7](#) of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency.

A letter from the local office and a species list which fulfills this requirement can only be obtained by requesting an official species list either from the Regulatory Documents section in IPaC or from the local field office directly.

The list of species below are those that may occur or could potentially be affected by activities in this location:

Amphibians

California Red-legged Frog *Rana draytonii* Threatened

MANAGED BY

Sacramento Fish And Wildlife Office
San Francisco Bay-delta Fish And Wildlife

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=D02D

California Tiger Salamander *Ambystoma californiense* Threatened

MANAGED BY

Sacramento Fish And Wildlife Office
San Francisco Bay-delta Fish And Wildlife

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=D01T

Birds

Least Bell's Vireo *Vireo bellii pusillus* Endangered

MANAGED BY

Sacramento Fish And Wildlife Office
San Francisco Bay-delta Fish And Wildlife

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?scode=B067

Western Snowy Plover *Charadrius alexandrinus nivosus* Threatened

MANAGED BY

Sacramento Fish And Wildlife Office
San Francisco Bay-delta Fish And Wildlife

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?scode=B07C

Yellow-billed Cuckoo *Coccyzus americanus* Threatened

MANAGED BY

Sacramento Fish And Wildlife Office
San Francisco Bay-delta Fish And Wildlife

CRITICAL HABITAT

There is **proposed** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?scode=B06R

Crustaceans

Conservancy Fairy Shrimp *Branchinecta conservatio* Endangered

MANAGED BY

Sacramento Fish And Wildlife Office
San Francisco Bay-delta Fish And Wildlife

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=K03D

Vernal Pool Fairy Shrimp *Branchinecta lynchi* Threatened

MANAGED BY

Sacramento Fish And Wildlife Office
San Francisco Bay-delta Fish And Wildlife

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=K03G

Vernal Pool Tadpole Shrimp *Lepidurus packardii* Endangered

MANAGED BY

Sacramento Fish And Wildlife Office
San Francisco Bay-delta Fish And Wildlife

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=K048

Fishes

Delta Smelt *Hypomesus transpacificus* Threatened

MANAGED BY

Sacramento Fish And Wildlife Office
San Francisco Bay-delta Fish And Wildlife

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=E070

Steelhead *Oncorhynchus (=Salmo) mykiss* Threatened

MANAGED BY

Sacramento Fish And Wildlife Office
San Francisco Bay-delta Fish And Wildlife

CRITICAL HABITAT

No critical habitat has been designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=E08D

Flowering Plants

Palmate-bracted Bird's Beak *Cordylanthus palmatus* Endangered

MANAGED BY

Sacramento Fish And Wildlife Office
San Francisco Bay-delta Fish And Wildlife

CRITICAL HABITAT

No critical habitat has been designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=Q1UT

Insects

Delta Green Ground Beetle *Elaphrus viridis* Threatened

MANAGED BY

San Francisco Bay-delta Fish And Wildlife

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=I01G

Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* Threatened

MANAGED BY

Sacramento Fish And Wildlife Office
San Francisco Bay-delta Fish And Wildlife

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=I01L

Reptiles

Giant Garter Snake *Thamnophis gigas* Threatened

MANAGED BY

Sacramento Fish And Wildlife Office
San Francisco Bay-delta Fish And Wildlife

CRITICAL HABITAT

No critical habitat has been designated for this species.

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=C057

Critical Habitats

This location overlaps all or part of the critical habitat for the following species:

Chinook Salmon *Oncorhynchus (=Salmo) tshawytscha*

Final designated critical habitat

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=E06D#crithab

Delta Smelt *Hypomesus transpacificus*

Final designated critical habitat

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=E070#crithab

Steelhead *Oncorhynchus (=Salmo) mykiss*

Final designated critical habitat

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=E08D#crithab

Migratory Birds

Birds are protected by the [Migratory Bird Treaty Act](#) and the [Bald and Golden Eagle Protection Act](#).

Any activity that results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish & Wildlife Service.^[1] There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures.

1. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Additional information can be found using the following links:

- Birds of Conservation Concern
<http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Conservation measures for birds
<http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Year-round bird occurrence data
<http://www.birdscanada.org/birdmon/default/datasummaries.jsp>

The following species of migratory birds could potentially be affected by activities in this location:

Bald Eagle *Haliaeetus leucocephalus*

Bird of conservation concern

Season: Year-round

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B008

Burrowing Owl *Athene cunicularia*

Bird of conservation concern

Season: Year-round

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0NC

Fox Sparrow *Passerella iliaca*

Bird of conservation concern

Season: Wintering

Least Bittern *Ixobrychus exilis*

Season: Breeding

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B092

Lesser Yellowlegs <i>Tringa flavipes</i>	Bird of conservation concern
Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0MD	
Lewis's Woodpecker <i>Melanerpes lewis</i>	Bird of conservation concern
Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HQ	
Loggerhead Shrike <i>Lanius ludovicianus</i>	Bird of conservation concern
Season: Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FY	
Long-billed Curlew <i>Numenius americanus</i>	Bird of conservation concern
Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B06S	
Marbled Godwit <i>Limosa fedoa</i>	Bird of conservation concern
Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0JL	
Mountain Plover <i>Charadrius montanus</i>	Bird of conservation concern
Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B078	
Nuttall's Woodpecker <i>Picoides nuttallii</i>	Bird of conservation concern
Season: Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HT	
Oak Titmouse <i>Baeolophus inornatus</i>	Bird of conservation concern
Season: Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0MJ	
Peregrine Falcon <i>Falco peregrinus</i>	Bird of conservation concern
Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FU	
Short-eared Owl <i>Asio flammeus</i>	Bird of conservation concern
Season: Wintering http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HD	
Swainson's Hawk <i>Buteo swainsoni</i>	Bird of conservation concern
Season: Breeding http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B070	
Tricolored Blackbird <i>Agelaius tricolor</i>	Bird of conservation concern
Season: Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B06P	
Western Grebe <i>aechmophorus occidentalis</i>	Bird of conservation concern
Season: Year-round http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0EA	

Williamson's Sapsucker *Sphyrapicus thyroideus*

Bird of conservation concern

Season: Year-round

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0FX

Yellow-billed Magpie *Pica nuttalli*

Bird of conservation concern

Season: Year-round

http://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0N8

Wildlife refuges and fish hatcheries

There are no refuges or fish hatcheries in this location

Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

DATA LIMITATIONS

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

DATA EXCLUSIONS

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

DATA PRECAUTIONS

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

This location overlaps all or part of the following wetlands:

Freshwater Emergent Wetland

[PEM/ABHx](#)

[PEMA](#)

[PEMAh](#)

[PEMC](#)

[PEMCh](#)

[PEMCx](#)

[PEMF](#)
[PEMFx](#)
[PEMH](#)
[PEMHx](#)
[PEMJh](#)
[PEMKFx](#)
[PEMKx](#)
[PEMR](#)
[PEMS](#)
[PEMT](#)

Freshwater Forested/shrub Wetland

[PFOA](#)
[PFOAx](#)
[PFOC](#)
[PFOCH](#)
[PFOCx](#)
[PSSA](#)
[PSSC](#)
[PSSCH](#)
[PSSCx](#)
[PSSR](#)

Freshwater Pond

[PABFx](#)
[PABH](#)
[PABHx](#)
[PUBF](#)
[PUBH](#)
[PUBHh](#)
[PUBHx](#)
[PUBK](#)
[PUBKx](#)
[PUBT](#)

Lake

[L1UBHx](#)

[L2USAx](#)

Other

[PUSA](#)

[PUSAh](#)

[PUSC](#)

Riverine

[R1UBVx](#)

[R2UBFx](#)

[R2UBH](#)

[R2UBHx](#)

[R2UBKHx](#)

[R2USC](#)

[R4USFx](#)

A full description for each wetland code can be found at the National Wetlands Inventory website: <http://107.20.228.18/decoders/wetlands.aspx>

E2. California Natural Diversity Database and California Native Plant Society Inventory Search Results

Query Summary:

Quad IS (Clarksburg (3812145) OR Davis (3812156) OR Florin (3812144) OR Grays Bend (3812166) OR Rio Linda (3812164) OR Sacramento East (3812154) OR Sacramento West (3812155) OR Saxon (3812146) OR Taylor Monument (3812165))

Print

Close

CNDDDB Element Query Results

Scientific Name	Common Name	Taxonomic Group	Element Code	Total Occs	Returned Occs	Federal Status	State Status	Global Rank	State Rank	CA Rare Plant Rank	Other Status	Habitats
Accipiter cooperii	Cooper's hawk	Birds	ABNKC12040	107	3	None	None	G5	S4	null	CDFW_WL-Watch List, IUCN_LC-Least Concern	Cismontane woodland, Riparian forest, Riparian woodland, Upper montane coniferous forest
Agelaius tricolor	tricolored blackbird	Birds	ABPBXB0020	859	23	None	Candidate Threatened	G2G3	S1S2	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_EN-Endangered, NABCI_RWL-Red Watch List, USFWS_BCC-Birds of Conservation Concern	Freshwater marsh, Marsh & swamp, Swamp, Wetland
Ammodramus savannarum	grasshopper sparrow	Birds	ABPBXA0020	20	2	None	None	G5	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Valley & foothill grassland
Antrozous pallidus	pallid bat	Mammals	AMACC10010	406	1	None	None	G5	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFS_S-Sensitive, WBWG_H-High Priority	Chaparral, Coastal scrub, Desert wash, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, Riparian woodland, Sonoran desert scrub, Upper montane coniferous forest, Valley & foothill grassland
Archoplites interruptus	Sacramento perch	Fish	AFCQB07010	5	1	None	None	G2G3	S1	null	AFS_TH-Threatened, CDFW_SSC-Species of Special Concern	Aquatic, Sacramento/San Joaquin flowing waters, Sacramento/San Joaquin standing waters
Ardea alba	great egret	Birds	ABNGA04040	37	6	None	None	G5	S4	null	CDF_S-Sensitive, IUCN_LC-Least Concern	Brackish marsh, Estuary, Freshwater marsh, Marsh & swamp, Riparian forest, Wetland
Ardea herodias	great blue heron	Birds	ABNGA04010	137	7	None	None	G5	S4	null	CDF_S-Sensitive, IUCN_LC-Least Concern	Brackish marsh, Estuary, Freshwater marsh, Marsh & swamp, Riparian forest, Wetland
Astragalus tener var. ferrisiae	Ferris' milk-vetch	Dicots	PDFAB0F8R3	18	4	None	None	G2T1	S1	1B.1	BLM_S-Sensitive	Meadow & seep, Valley & foothill grassland, Wetland
Lower Elkhorn Basin Levee Setback Project ADEIS/ADEIR												Alkali playa, Valley & foothill Inc.

Astragalus tener var. tener	alkali milk-vetch	Dicots	PDFAB0F8R1	65	10	None	None	G2T2	S2	1B.2	null	grassland, Vernal pool, Wetland
Athene cunicularia	burrowing owl	Birds	ABNSB10010	1914	87	None	None	G4	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern	Coastal prairie, Coastal scrub, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, Sonoran desert scrub, Valley & foothill grassland
Atriplex cordulata var. cordulata	heartscale	Dicots	PDCHE040B0	66	1	None	None	G3T2	S2	1B.2	BLM_S-Sensitive	Chenopod scrub, Meadow & seep, Valley & foothill grassland
Atriplex depressa	brittlescale	Dicots	PDCHE042L0	61	5	None	None	G2	S2	1B.2	null	Alkali playa, Chenopod scrub, Meadow & seep, Valley & foothill grassland, Vernal pool, Wetland
Bombus crotchii	Crotch bumble bee	Insects	IIHYM24480	233	1	None	None	G3G4	S1S2	null	null	null
Bombus occidentalis	western bumble bee	Insects	IIHYM24250	282	1	None	None	G2G3	S1	null	USFS_S-Sensitive, XERCES_IM-Imperiled	null
Branchinecta conservatio	Conservancy fairy shrimp	Crustaceans	ICBRA03010	43	1	Endangered	None	G2	S2	null	IUCN_EN-Endangered	Valley & foothill grassland, Vernal pool, Wetland
Branchinecta lynchi	vernal pool fairy shrimp	Crustaceans	ICBRA03030	751	39	Threatened	None	G3	S3	null	IUCN_VU-Vulnerable	Valley & foothill grassland, Vernal pool, Wetland
Branchinecta mesovallensis	midvalley fairy shrimp	Crustaceans	ICBRA03150	126	8	None	None	G2	S2S3	null	null	Vernal pool, Wetland
Buteo regalis	ferruginous hawk	Birds	ABNKC19120	107	2	None	None	G4	S3S4	null	CDFW_WL-Watch List, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern	Great Basin grassland, Great Basin scrub, Pinon & juniper woodlands, Valley & foothill grassland
Buteo swainsoni	Swainson's hawk	Birds	ABNKC19070	2409	308	None	Threatened	G5	S3	null	BLM_S-Sensitive, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern	Great Basin grassland, Riparian forest, Riparian woodland, Valley & foothill grassland
Carex comosa	bristly sedge	Monocots	PMCYP032Y0	29	1	None	None	G5	S2	2B.1	null	Coastal prairie, Freshwater marsh, Marsh & swamp, Valley & foothill grassland, Wetland
Charadrius alexandrinus nivosus	western snowy plover	Birds	ABNNB03031	124	2	Threatened	None	G3T3	S2S3	null	CDFW_SSC-Species of Special Concern, NABCI_RWL-Red Watch List, USFWS_BCC-Birds of Conservation Concern	Great Basin standing waters, Sand shore, Wetland
											BLM_S-Sensitive, CDFW_SSC-Species of Special Concern	

Charadrius montanus	mountain plover	Birds	ABNNB03100	88	4	None	None	G3	S2S3	null	IUCN_NT-Near Threatened, NABCI_RWL-Red Watch List, USFWS_BCC-Birds of Conservation Concern	Chenopod scrub, Valley & foothill grassland
Chloropyron palmatum	palmate-bracted salty bird's-beak	Dicots	PDSCR0J0J0	26	3	Endangered	Endangered	G1	S1	1B.1	SB_RSABG-Rancho Santa Ana Botanic Garden	Chenopod scrub, Meadow & seep, Valley & foothill grassland, Wetland
Cicindela hirticollis abrupta	Sacramento Valley tiger beetle	Insects	IICOL02106	6	2	None	None	G5TH	SH	null	null	Sand shore
Coccyzus americanus occidentalis	western yellow-billed cuckoo	Birds	ABNRB02022	155	2	Threatened	Endangered	G5T2T3	S1	null	BLM_S-Sensitive, NABCI_RWL-Red Watch List, USFS_S-Sensitive, USFWS_BCC-Birds of Conservation Concern	Riparian forest
Cuscuta obtusiflora var. glandulosa	Peruvian dodder	Dicots	PDCUS01111	6	1	None	None	G5T4T5	SH	2B.2	null	Marsh & swamp, Wetland
Desmocerus californicus dimorphus	valley elderberry longhorn beetle	Insects	IICOL48011	271	24	Threatened	None	G3T2	S2	null	null	Riparian scrub
Downingia pusilla	dwarf downingia	Dicots	PDCAM060C0	126	6	None	None	GU	S2	2B.2	null	Valley & foothill grassland, Vernal pool, Wetland
Egretta thula	snowy egret	Birds	ABNGA06030	16	1	None	None	G5	S4	null	IUCN_LC-Least Concern	Marsh & swamp, Meadow & seep, Riparian forest, Riparian woodland, Wetland
Elanus leucurus	white-tailed kite	Birds	ABNKC06010	162	17	None	None	G5	S3S4	null	BLM_S-Sensitive, CDFW_FP-Fully Protected, IUCN_LC-Least Concern	Cismontane woodland, Marsh & swamp, Riparian woodland, Valley & foothill grassland, Wetland
Elderberry Savanna	Elderberry Savanna	Riparian	CTT63440CA	4	3	None	None	G2	S2.1	null	null	Riparian scrub
Emys marmorata	western pond turtle	Reptiles	ARAAD02030	1187	7	None	None	G3G4	S3	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_VU-Vulnerable, USFS_S-Sensitive	Aquatic, Artificial flowing waters, Klamath/North coast flowing waters, Klamath/North coast standing waters, Marsh & swamp, Sacramento/San Joaquin flowing waters, Sacramento/San Joaquin standing waters, South coast flowing waters, South coast standing waters, Wetland
Eryngium jepsonii	Jepson's coyote-thistle	Dicots	PDAP10Z130	19	2	None	None	G2	S2	1B.2	null	Valley & foothill grassland, Vernal pool
Extriplex joaquinana	San Joaquin spearscale	Dicots	PDCHE041F3	109	8	None	None	G2	S2	1B.2	BLM_S-Sensitive, SB_RSABG-Rancho Santa Ana Botanic Garden	Alkali playa, Chenopod scrub, Meadow & seep, Valley & foothill grassland
Falco	Lower Elkhorn Basin	Levee Setback Project ADEIS/ADEIR									CDFW_WL-Watch List	Estuary, Great Basin grassland,

columbarius	merlin	Birds	ABNKD06030	35	6	None	None	G5	S3S4	null	IUCN_LC- Least Concern	Valley & foothill grassland
Fritillaria agrestis	stinkbells	Monocots	PMLIL0V010	32	2	None	None	G3	S3	4.2	null	Chaparral, Cismontane woodland, Ultramafic, Valley & foothill grassland
Gratiola heterosepala	Boggs Lake hedge-hyssop	Dicots	PDSCR0R060	94	1	None	Endangered	G2	S2	1B.2	BLM_S- Sensitive	Freshwater marsh, Marsh & swamp, Vernal pool, Wetland
Great Valley Cottonwood Riparian Forest	Great Valley Cottonwood Riparian Forest	Riparian	CTT61410CA	56	1	None	None	G2	S2.1	null	null	Riparian forest
Hibiscus lasiocarpus var. occidentalis	woolly rose- mallow	Dicots	PDMAL0H0R3	173	10	None	None	G5T2	S2	1B.2	SB_RSABG- Rancho Santa Ana Botanic Garden	Freshwater marsh, Marsh & swamp, Wetland
Juglans hindsii	Northern California black walnut	Dicots	PDJUG02040	5	1	None	None	G1	S1	1B.1	SB_USDA-US Dept of Agriculture	Riparian forest, Riparian woodland
Lasionycteris noctivagans	silver-haired bat	Mammals	AMACC02010	138	1	None	None	G5	S3S4	null	IUCN_LC- Least Concern, WBWG_M- Medium Priority	Lower montane coniferous forest, Oldgrowth, Riparian forest
Lasiurus cinereus	hoary bat	Mammals	AMACC05030	235	2	None	None	G5	S4	null	IUCN_LC- Least Concern, WBWG_M- Medium Priority	Broadleaved upland forest, Cismontane woodland, Lower montane coniferous forest, North coast coniferous forest
Legenere limosa	legenere	Dicots	PDCAM0C010	78	7	None	None	G2	S2	1B.1	BLM_S- Sensitive	Vernal pool, Wetland
Lepidium latipes var. heckardii	Heckard's pepper-grass	Dicots	PDBRA1M0K1	14	7	None	None	G4T1	S1	1B.2	null	Valley & foothill grassland, Vernal pool
Lepidurus packardii	vernal pool tadpole shrimp	Crustaceans	ICBRA10010	320	26	Endangered	None	G4	S3S4	null	IUCN_EN- Endangered	Valley & foothill grassland, Vernal pool, Wetland
Lilaeopsis masonii	Mason's lilaeopsis	Dicots	PDAP119030	197	1	None	Rare	G2	S2	1B.1	null	Freshwater marsh, Marsh & swamp, Riparian scrub, Wetland
Linderiella occidentalis	California linderiella	Crustaceans	ICBRA06010	430	40	None	None	G2G3	S2S3	null	IUCN_NT- Near Threatened	Vernal pool
Melospiza melodia	song sparrow ("Modesto" population)	Birds	ABPBXA3010	92	10	None	None	G5	S3?	null	CDFW_SSC- Species of Special Concern	null
Myrmosula pacifica	Antioch multilid wasp	Insects	IIHYM15010	3	1	None	None	GH	SH	null	null	Interior dunes
Navarretia leucocephala ssp. bakeri	Baker's navarretia	Dicots	PDPLM0C0E1	58	2	None	None	G4T2	S2	1B.1	BLM_S- Sensitive	Cismontane woodland, Lower montane coniferous forest, Meadow & seep, Valley & foothill grassland, Vernal pool, Wetland
Neostapfia colusana	Colusa grass	Monocots	PMPOA4C010	62	3	Threatened	Endangered	G1	S1	1B.1	null	Vernal pool, Wetland
Northern Claypan Vernal Pool	Northern Claypan Vernal Pool	Herbaceous	CTT44120CA	21	1	None	None	G1	S1.1	null	null	Vernal pool, Wetland
Northern Hardpan Vernal Pool	Northern Hardpan Vernal Pool	Herbaceous	CTT44110CA	126	8	None	None	G3	S3.1	null	null	Vernal pool, Wetland
Nycticorax nycticorax	black-crowned night heron	Birds	ABNGA11010	26	4	None	None	G5	S4	null	IUCN_LC- Least Concern	Marsh & swamp, Riparian forest, Riparian woodland, Wetland

Oncorhynchus mykiss irideus	steelhead - Central Valley DPS	Fish	AFCHA0209K	31	5	Threatened	None	G5T2Q	S2	null	AFS_TH- Threatened	Aquatic, Sacramento/San Joaquin flowing waters
Oncorhynchus tshawytscha	chinook salmon - Central Valley spring-run ESU	Fish	AFCHA0205A	13	1	Threatened	Threatened	G5	S1	null	AFS_TH- Threatened	Aquatic, Sacramento/San Joaquin flowing waters
Oncorhynchus tshawytscha	chinook salmon - Sacramento River winter-run ESU	Fish	AFCHA0205B	2	1	Endangered	Endangered	G5	S1	null	AFS_EN- Endangered	Aquatic, Sacramento/San Joaquin flowing waters
Phalacrocorax auritus	double-crested cormorant	Birds	ABNFD01020	38	3	None	None	G5	S4	null	CDFW_WL- Watch List, IUCN_LC- Least Concern	Riparian forest, Riparian scrub, Riparian woodland
Plagiobothrys hystriculus	bearded popcomflower	Dicots	PDBOR0V0H0	14	1	None	None	G2	S2	1B.1	null	Valley & foothill grassland, Vernal pool, Wetland
Plegadis chihi	white-faced ibis	Birds	ABNGE02020	20	1	None	None	G5	S3S4	null	CDFW_WL- Watch List, IUCN_LC- Least Concern	Marsh & swamp, Wetland
Pogonichthys macrolepidotus	Sacramento splittail	Fish	AFCJB34020	15	1	None	None	GNR	S3	null	AFS_VU- Vulnerable, CDFW_SSC- Species of Special Concern, IUCN_EN- Endangered	Aquatic, Estuary, Freshwater marsh, Sacramento/San Joaquin flowing waters
Progne subis	purple martin	Birds	ABPAU01010	68	10	None	None	G5	S3	null	CDFW_SSC- Species of Special Concern, IUCN_LC- Least Concern	Broadleaved upland forest, Lower montane coniferous forest
Puccinellia simplex	California alkali grass	Monocots	PMPOA53110	71	8	None	None	G3	S2	1B.2	null	Chenopod scrub, Meadow & seep, Valley & foothill grassland, Vernal pool
Riparia riparia	bank swallow	Birds	ABPAU08010	297	1	None	Threatened	G5	S2	null	BLM_S- Sensitive, IUCN_LC- Least Concern	Riparian scrub, Riparian woodland
Sagittaria sanfordii	Sanford's arrowhead	Monocots	PMALI040Q0	93	23	None	None	G3	S3	1B.2	BLM_S- Sensitive	Marsh & swamp, Wetland
Spirinchus thaleichthys	longfin smelt	Fish	AFCHB03010	45	1	Candidate	Threatened	G5	S1	null	CDFW_SSC- Species of Special Concern	Aquatic, Estuary
Symphotrichum lentum	Suisun Marsh aster	Dicots	PDASTE8470	173	1	None	None	G2	S2	1B.2	SB_RSABG- Rancho Santa Ana Botanic Garden, SB_USDA-US Dept of Agriculture	Brackish marsh, Freshwater marsh, Marsh & swamp, Wetland
												Alkali marsh, Alkali playa, Alpine, Alpine dwarf scrub, Bog & fen, Brackish marsh, Broadleaved upland forest, Chaparral, Chenopod scrub, Cismontane woodland, Closed-cone coniferous forest, Coastal bluff scrub, Coastal dunes, Coastal prairie, Coastal scrub,

Taxidea taxus	American badger	Mammals	AMAJF04010	517	3	None	None	G5	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Desert dunes, Desert wash, Freshwater marsh, Great Basin grassland, Great Basin scrub, Interior dunes, lone formation, Joshua tree woodland, Limestone, Lower montane coniferous forest, Marsh & swamp, Meadow & seep, Mojavean desert scrub, Montane dwarf scrub, North coast coniferous forest, Oldgrowth, Pavement plain, Redwood, Riparian forest, Riparian scrub, Riparian woodland, Salt marsh, Sonoran desert scrub, Sonoran thorn woodland, Ultramafic, Upper montane coniferous forest, Upper Sonoran scrub, Valley & foothill grassland
Thamnophis gigas	giant gartersnake	Reptiles	ARADB36150	347	87	Threatened	Threatened	G2	S2	null	IUCN_VU-Vulnerable	Marsh & swamp, Riparian scrub, Wetland
Trifolium hydrophilum	saline clover	Dicots	PDFAB400R5	49	7	None	None	G2	S2	1B.2	null	Marsh & swamp, Valley & foothill grassland, Vernal pool, Wetland
Tuctoria mucronata	Crampton's tuctoria or Solano grass	Monocots	PMPOA6N020	4	2	Endangered	Endangered	G1	S1	1B.1	SB_RSABG-Rancho Santa Ana Botanic Garden	Valley & foothill grassland, Vernal pool, Wetland
Vireo bellii pusillus	least Bell's vireo	Birds	ABPBW01114	472	2	Endangered	Endangered	G5T2	S2	null	IUCN_NT-Near Threatened, NABCI_YWL-Yellow Watch List	Riparian forest, Riparian scrub, Riparian woodland
Xanthocephalus xanthocephalus	yellow-headed blackbird	Birds	ABPBXB3010	12	1	None	None	G5	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Marsh & swamp, Wetland

Plant List

29 matches found. Click on scientific name for details

Search Criteria

Found in 9 Quads around 38121E5

Scientific Name	Common Name	Family	Lifeform	Rare Plant Rank	State Rank	Global Rank
Astragalus pauperculus	depauperate milk-vetch	Fabaceae	annual herb	4.3	S4	G4
Astragalus tener var. ferrisiae	Ferris' milk-vetch	Fabaceae	annual herb	1B.1	S1	G2T1
Astragalus tener var. tener	alkali milk-vetch	Fabaceae	annual herb	1B.2	S2	G2T2
Atriplex cordulata var. cordulata	heartscale	Chenopodiaceae	annual herb	1B.2	S2	G3T2
Atriplex depressa	brittlescale	Chenopodiaceae	annual herb	1B.2	S2	G2
Carex comosa	bristly sedge	Cyperaceae	perennial rhizomatous herb	2B.1	S2	G5
Centromadia parryi ssp. rudis	Parry's rough tarplant	Asteraceae	annual herb	4.2	S3	G3T3
Chloropyron palmatum	palmate-bracted bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	1B.1	S1	G1
Cuscuta obtusiflora var. glandulosa	Peruvian dodder	Convolvulaceae	annual vine (parasitic)	2B.2	SH	G5T4T5
Downingia pusilla	dwarf downingia	Campanulaceae	annual herb	2B.2	S2	GU
Eryngium jepsonii	Jepson's coyote thistle	Apiaceae	perennial herb	1B.2	S2	G2
Extriplex joaquinana	San Joaquin spearscale	Chenopodiaceae	annual herb	1B.2	S2	G2
Fritillaria agrestis	stinkbells	Liliaceae	perennial bulbiferous herb	4.2	S3	G3
Gratiola heterosepala	Boggs Lake hedge-hyssop	Plantaginaceae	annual herb	1B.2	S2	G2
Hesperervax caulescens	hogwallow starfish	Asteraceae	annual herb	4.2	S3	G3
Hibiscus lasiocarpus var. occidentalis	woolly rose-mallow	Malvaceae	perennial rhizomatous herb	1B.2	S2	G5T2
Juglans hindsii	Northern California black walnut	Juglandaceae	perennial deciduous tree	1B.1	S1	G1
Legenere limosa	legenere	Campanulaceae	annual herb	1B.1	S2	G2
Lepidium latipes var. heckardii	Heckard's pepper-grass	Brassicaceae	annual herb	1B.2	S1	G4T1
Lilaeopsis masonii	Mason's lilaeopsis	Apiaceae	perennial rhizomatous herb	1B.1	S2	G2
Myosurus minimus ssp. apus	little mousetail	Ranunculaceae	annual herb	3.1	S2	G5T2Q
Navarretia leucocephala ssp. bakeri	Baker's navarretia	Polemoniaceae	annual herb	1B.1	S2	G4T2
Neostapfia colusana	Colusa grass	Poaceae	annual herb	1B.1	S1	G1
Plagiobothrys hystriculus	bearded popcornflower	Boraginaceae	annual herb	1B.1	S2	G2
Puccinellia simplex	California alkali grass	Poaceae	annual herb	1B.2	S2	G3
Sagittaria sanfordii	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb	1B.2	S3	G3

<u>Symphotrichum lentum</u>	Suisun Marsh aster	Asteraceae	perennial rhizomatous herb	1B.2	S2	G2
<u>Trifolium hydrophilum</u>	saline clover	Fabaceae	annual herb	1B.2	S2	G2
<u>Tuctoria mucronata</u>	Crampton's tuctoria or Solano grass	Poaceae	annual herb	1B.1	S1	G1

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E3. 2016 Biological Field Reconnaissance Survey Reports

SURVEY METHODS

On March 8, 2016, DWR Biologists conducted field reconnaissance surveys along the levee crown road for the north and south levees of the Sacramento Bypass and the east levee of the Yolo Bypass from the Sacramento Bypass northward to I5. Surveys were conducted in winter before leaves appeared on deciduous trees in order to better observe existing nest sites. These surveys recorded sensitive environmental and biological resources and evaluated the potential interactions on the resources from subsurface investigation activities. Field studies did not include protocol-level surveys for special status species. Sensitive resource locations were added to high-resolution (1"=1000') color aerial project route maps. The resulting data was digitized into ArcMap 10.2.2 shapefiles for spatial determination of potential impacts to sensitive natural resources.

SURVEY RESULTS

The Project Area includes the Sacramento Bypass from the Sacramento River to the Yolo Bypass and the Lower Elkhorn section of the Yolo Bypass from the Sacramento Bypass north to I5. The Project Area is located in Yolo County to the west of Sacramento.

The Levee Segments are:

- Sacramento Bypass
- Lower Elkhorn: RD 0785 Unit 2, RD 0827 Unit 2

The Project Area is composed primarily of actively farmed agricultural land. All geotechnical borings would be confined to these agricultural lands and would not include any in-water work. As such, the area in which geotechnical work would occur is significantly disturbed, and is frequently subject to additional disturbance by heavy farm equipment. The following sections document potential special status species that have the potential to occur in or around the project area. Standard avoidance and minimization measures are also included in these sections; however, the likelihood of any impacts to these species without implementing these measures is low.

SENSITIVE BIOLOGICAL RESOURCES

Special Status Reptile Species: Giant Garter Snake (State Threatened, Federal Threatened)

Potential giant garter snake (GGS) habitat was identified during the biological reconnaissance-level surveys in the channels along the waterside slopes of the north and south levees of Sacramento Bypass, Tule canal along the Lower Elkhorn levee, the drainage canal along the cross levee between RD 785 and RD 827(drainage canal), and a larger channel running north-south thru the nearby agricultural field.

However, the drainage canal, and the larger canal are low quality habitat; therefore, GGS are unlikely to be found in these areas.

Rice is a major crop grown in the Yolo Bypass from County Road 22 in the north and down 4 miles. According to the CNDDDB, GGS were observed within the rice fields and interconnected canals from 2009-2012. There is no rice in the Lower Elkhorn Basin. GGS were observed in the Tule Canal along a one mile stretch of the Lower Elkhorn levee between RD 785 and RD 827 in 1990. Due to the connectivity of the channel to known GGS sightings, GGS avoidance measures should be used for activities closer than 200 feet from a waterbody. The geotech boring project will take place farther than 200 feet from any GGS habitat except for possibly at the very northern extent of this project area.

If activities are moved closer than 200 feet to Tule Canal the following mitigation measures should be followed.

During the GGS active season, as defined by USFWS (May 1 to October 1), snakes may bask in areas such as roadways up to 800 feet from their aquatic habitat. There could be a risk that project activities could harm a basking GGS. Service -approved biological monitors will be required for work conducted in areas containing GGS habitat, such as marshes, sloughs, ponds, small lakes, low-gradient streams, other waterways, agricultural wetlands like irrigation and drainage canals or rice fields, and their adjacent uplands for a distance of 200 feet.

Special Status Invertebrate Species: Valley Elderberry Longhorn Beetle (Federal Threatened)

The valley elderberry longhorn beetle (VELB) is closely associated with its host plant, the blue elderberry *Sambucus nigra ssp. Cerulean* (formerly *S. Mexicana*). Elderberry shrubs that have a stem diameter of 1 inch or greater at ground level are considered VELB habitat by USFWS. The VELB has an active season from March 15 through June 15, when the adult beetle emerges, breeds, and lays eggs. During this active season, VELB may be more susceptible to disturbance. Elderberry shrubs within 100 feet of the boring locations require a USFWS-approved biological monitor. During the inactive period, elderberry shrubs can be approached within 20 feet with a biological monitor present.

The survey was conducted in the winter and no elderberry bushes were observed; however, the boring locations are not within 100 feet of any vegetation that could potentially be an elderberry bush. No mitigation measures are necessary.

Special Status Birds Species: Migratory Birds

Nearly all migratory birds are protected under the Migratory Bird Treaty Act (MBTA) of 1918. The MBTA prohibits the taking or possessing active nests or nesting birds, and prohibits any activity causing nesting birds to abandon their nests during the breeding season. This act is enforced by USFWS.

Many species are also protected under additional laws and regulations, such as the Endangered Species Act (ESA) of 1973, as amended and Executive Order 13186, California Endangered Species Act (CESA). ESA is enforced by USFWS, while CESA is enforced by the California Department of Fish and Wildlife (CDFW).

Project activities can still be scheduled to occur during the breeding season, defined by USFWS as February 1 to August 31 for raptors and March 1 to August 31 for other species. Under these laws, any activity during the breeding season that directly and adversely impacts nesting birds, either through habitat removal or increased disturbance, is prohibited.

Potential Swainson's hawk nesting habitat is found along the Sacramento Bypass, Lower Elkhorn levee, Hwy 124 canal and the mitigation area. All of these areas except for the mitigation area (to which does not currently have access) were checked carefully for the presence of nests and raptors. Two raptor nests were seen along the south levee of the Sacramento Bypass along with four smaller nests. Two raptor nests were spotted on Hwy 124 along the canal that runs from the levee to Old River Road. Two raptor nests were also seen along the Lower Elkhorn levee from Hwy 124 northward to I5. Several smaller nests were also observed in this area. The stands along these levee stretches have several large trees but have been reduced to a narrow band of usually one tree width which is not ideal raptor nesting habitat. The trees lining the nearby Sacramento River and in the mitigation site provide more suitable habitat for nesting sites.

Two pairs of kites and two pairs of harrier hawks were observed in the Sacramento Bypass indicating that this area may be used more for foraging than for nest habitat. Several young red-tailed hawks and 2 unidentified hawks were seen in the immediate area. One pair of harrier hawks was displaying aerial courtship behavior.

Two pairs of cormorants were spotted in the canal along the northern levee of Sacramento Bypass. A heron rookery of at least 50 Black-crowned Night Herons was found along the Lower Elkhorn levee about 2000 feet north from where Hwy 124 turns to the east.

Birds nesting along these levees may not be disturbed by vehicular traffic but may be agitated by foot traffic. Unless the young have fledged by the time drilling starts, a ¼ mile buffer (see map) around the area will be needed to avoid any potential adverse impacts.

Special Status Birds Species: Yellow-billed cuckoo (Federal Candidate)

No habitat for the yellow-billed cuckoo (YBCU) (*Coccyzus americanus*) was identified during the biological surveys. The closest proposed critical habitat is about 23 miles to the north.

The YBCU is known to occupy its California breeding sites between June to mid-September. From mid-August to early September, individual YBCU begin their migration south to South America. Avoidance measures will not be required due to the brevity and relatively low disturbance level of the exploration activities.

Water Quality - Clean Water Act Section 303(d)

The U.S. Environmental Protection Agency's Clean Water Act, Section 303(d) lists the Feather and Bear Rivers in California as "impaired waterways". For impaired water bodies that contain federally-listed fish species, extra conservation measures may be required by the National Marine Fisheries Service and/or USFWS whenever project activities have the potential for impact. The Tule Canal is not listed as an impaired waterway.

Riparian Vegetation

Riparian vegetation is protected by CDFW. Any removal of riparian vegetation requires a Lake and Streambed Alteration Agreement (CDFW Code, 1600 et seq.). Riparian vegetation is present along all the Sacramento Bypass and Lower Elkhorn levee, as well as along the agricultural canal running beside Hwy 124. However, the project activities will be conducted in agricultural fields and will not impact the riparian vegetation.

RECORD OF FIELD ACTIVITY

Date: 04/6/16

Person(s) present: Shelly Amrhein, Gabrielle Bohrer and Kristin Ford

Time: 9:00 am - 2:00 pm

Location: Sacramento Bypass and Yolo Bypass along Lower Elkhorn Basin

Purpose: The purpose of the visit was to document the presence or absence of existing stick nests and of nesting birds or special status species in the proposed project area. The project area includes the Sacramento Bypass from the Sacramento River to the Yolo Bypass and the Lower Elkhorn section of the Yolo Bypass from the Sacramento Bypass north to I5. The project area is located in Yolo County to the west of Sacramento. The proposed project includes a setback levee in the Yolo Bypass along Lower Elkhorn Basin, aligned north to south. It would begin just south of I-5 and would be set back approximately 2,000 feet east of the existing levee in the northern and middle portions of the basin, continuing south approximately 4.2 miles. From there, the levee setback would expand to 3,400 feet in the southern portion of the basin, spanning 1.3 miles, ending at the new Sacramento Bypass levee. The Sacramento Bypass would be expanded by constructing a new setback levee 1,500 feet north of the existing levee and would be approximately 1.3 miles long.

Activities: The survey began at approximately 9:30 am on 4/6/16. The weather conditions were sunny with scattered clouds. The temperature was approximately 65° F with light winds approximately 5 MPH. Land use of the surrounding area is primarily agricultural.

The site was surveyed from end to end traversing the levee crown roads to locate active or inactive nests on both the left and right banks. The surrounding canopy and understory was scanned using 10x42 hand-held binoculars. The banks on both the water and land side of the levees were also surveyed for the presence or absence of special status species.

Species Observed: The project area is primarily agricultural with rudral vegetation. Mixed riparian vegetation is also present with scattered Himalayan blackberry (*Rubus armeniacus*), California wild rose (*Rosa californica*), valley oak (*Quercus lobata*) Fremont cottonwood (*Populus fremontii*), box elder (*Acer negundo*) and various willow and herbaceous species.

Birds observed on or adjacent to the site during the survey included: California quail (*Callipepla californica*), dark-eyed junco (*Junco hyemalis*), killdeer (*Charadrius vociferous*), California towhee (*Melospiza crissalis*), Anna's hummingbird (*Calypte anna*), white-crowned sparrow (*Zonotrichia leucophrys*), tree swallow (*Tachycineta bicolor*), song sparrow (*Melospiza melodia*), Turkey vulture (*Cathartes aura*), house finch, (*Carpodacus mexicanus*), bushtit (*Psaltriparus minimus*), black phoebe (*Sayornis nigricans*), mourning dove (*Zenaida macroura*), Western kingbird (*Tyrannus verticalis*), Red-winged blackbird (*Agelaius phoeniceus*), Western scrub-jay (*Aphelocoma californica*), Eurasian collared-dove (*Streptopelia decaocto*), Great blue heron (*Ardea herodias*), Great egret (*Ardea alba*), American robin (*Turdus migratorius*), European starling (*Sturnus vulgaris*), Great horned owl (*Bubo virginianus*), Red-tailed hawk (*Buteo jamaicensis*), and Swainson's Hawk (*Buteo swainsoni*)

Several Jackrabbits (*Lepus californicus*), Western pond turtle (*Actinemys marmorata*) and western fence lizard (*Sceloporus occidentalis*) were also observed on or adjacent to the site.

Evaluation: Existing stick nest locations (map) were surveyed; an active red-tailed hawk and great horned owl nest were identified. No elderberry shrubs were identified; however a more focused survey for elderberry shrubs will be conducted to rule out impacts to VELB. Marginal suitable habitat for giant garter snake was observed in the channel adjacent to site; Western pond turtles were also observed in this channel. An egret rookery was found approximately three quarters of a mile from the project area on the Sacramento River.



RECORD OF FIELD ACTIVITIES

Dates: 8/17/16, 8/26/16, 9/01/16 & 9/09/16

Person(s) present: Gabrielle Bohrer, Stephanie Chun, Erica Hironaka and Heather White

Time: 9:00 am - 4:00 pm

Location: Sacramento Bypass and Yolo Bypass along Lower Elkhorn Basin

Purpose: The purpose of the visits was to document and assess habitat suitability for giant garter snake (GGS) in the proposed project area. The project area includes the Sacramento Bypass from the Sacramento River to the Yolo Bypass and the Lower Elkhorn section of the Yolo Bypass from the Sacramento Bypass north to I5. The project area is located in Yolo County to the west of Sacramento. The proposed project includes a setback levee in the Yolo Bypass along Lower Elkhorn Basin, aligned north to south. It would begin just south of I-5 and would be set back approximately 2,000 feet east of the existing levee in the northern and middle portions of the basin, continuing south approximately 4.2 miles. From there, the levee setback would expand to 3,400 feet in the southern portion of the basin, spanning 1.3 miles, ending at the new Sacramento Bypass levee. The Sacramento Bypass would be expanded by constructing a new setback levee 1,500 feet north of the existing levee and would be approximately 1.3 miles long.

Protocol: DWR's Flood Maintenance Office's GGS Habitat Suitability Protocol (GGS Protocol 2014) was used to determine habitat suitability for GGS. The GGS Protocol was developed based on U.S. Fish and Wildlife Service's 1999 Draft Recovery Plan for the GGS, Appendix D (U.S. Fish and Wildlife Service, 1999) and through consultation with Eric Hansen and his survey protocol. (Hansen, E.C. 2013). Surveys are conducted by driving along the levee crown road looking out to 200 feet from the levee toe (landside and waterside). If a water feature is identified within 200 feet of the levee toe, the surveyor completes a FMO 2014 GGS Water Habitat Survey Datasheet. For this survey water features that are beyond the levee and within the project footprint were also surveyed and assessed. Each datasheet is given a score for GGS habitat suitability (suitable, marginal or unsuitable).

Activities: The survey began at approximately 9:00 am and concluded around 4:00pm each day. The weather conditions were sunny with scattered clouds. The temperature was approximately 90⁰-95⁰ F with light winds approximately 3-5 MPH. Land use of the surrounding area is primarily agricultural. Water features within the project footprint were surveyed and assessed from end to end traversing the levee crown roads and adjacent roads. Photos were taken of each water feature.

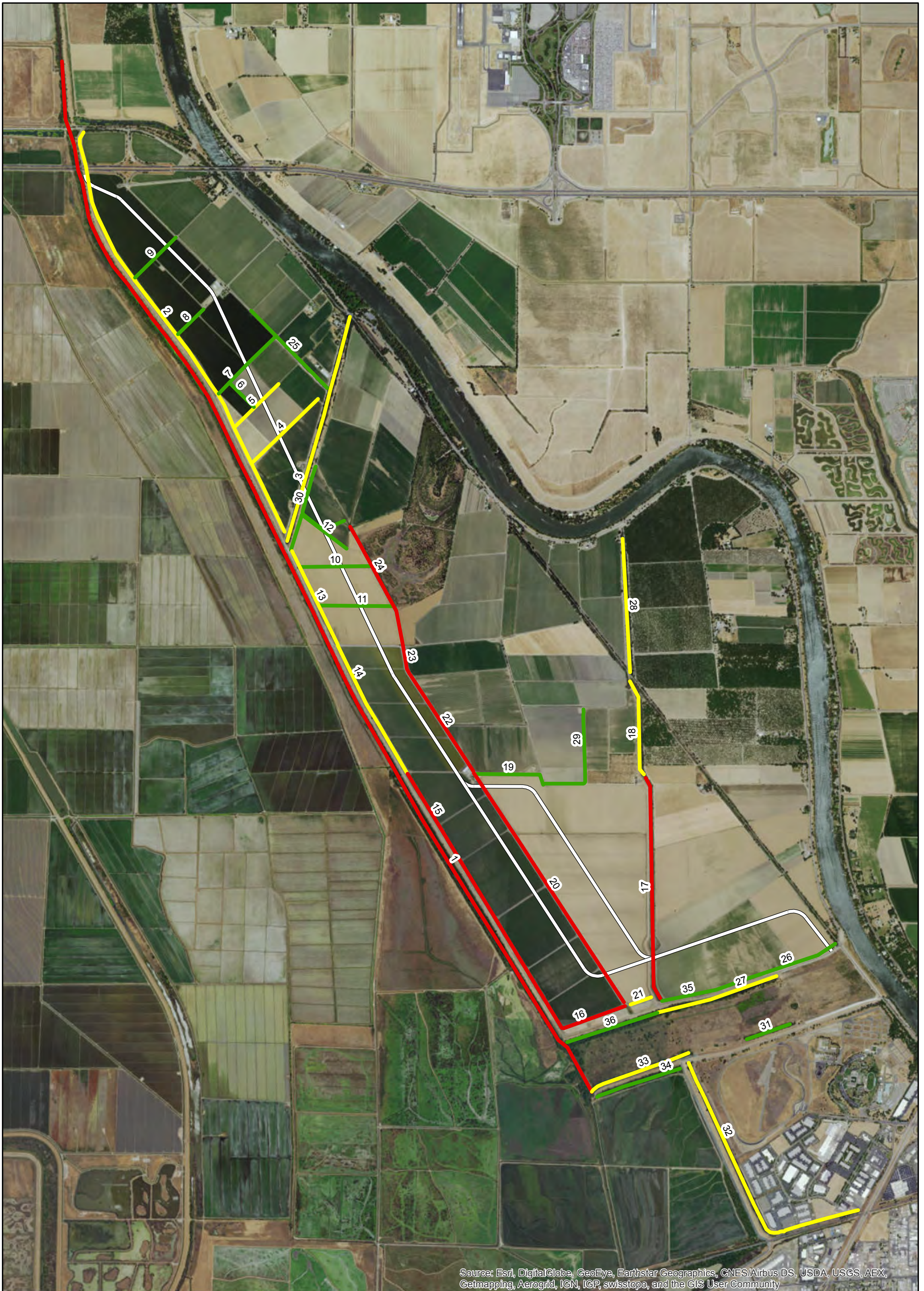
Evaluation: All of the water features were scored as suitable, marginal or unsuitable habitat for GGS. See attached Yolo Bypass Elkhorn Basin Levee Setback Project GGS Survey Map for results.

Reference:

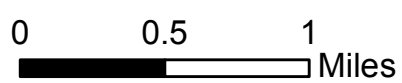
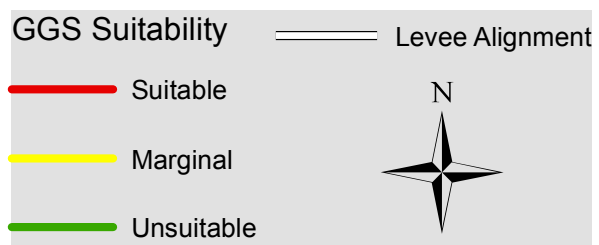
GGS Protocol 2014. Department of Water Resources, Flood Maintenance Office 2014 Levee Survey Plan for Sutter Yard. June 4, 2014.

Hansen, E.C. 2013. Biggs-West Gridley Water District Gray Lodge Wildlife Area Water Supply Project Giant Garter Snake (*Thamnopsis gigas*) Habitat and Impact Assessment. Prepared for Provost and Pritchard Consulting Group. March 27, 2013. Unpublished. 82 pp. + appendices.

U.S. Fish and Wildlife Service. 1999. Draft Recovery Plan for the Giant Garter Snake (*Thamnopsis gigas*). U.S. Fish and Wildlife Service, Portland, Oregon. ix+ 192 pp.



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Yolo Bypass Elkhorn Basin
Levee Setback Project

GGS Survey
 GEI Consultants, Inc.

E.4 2013-2014 Giant Garter Snake Water Habitat Surveys

Blank Habitat Survey Datasheets

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Date: _____ Staff Name(s): _____ Levee Unit: _____ Levee Mile(s): _____
 Survey on: Waterside or Landside Distance from levee toe: _____ (feet) Is water feature || or ⊥ to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: _____ File Name: _____ Point Name: _____

HABITAT ATTRIBUTE		(SCORE)	Review
Water [0 = absent, 1 = present]			
1	Still or slow-flowing water over silt or mud substrate	+ ()	
2	Flowing water over sand, gravel, rock or cement substrate	- ()	
3	Water availability:		
	a) winter runoff or sporadic availability (i.e. ephemeral)	+ ()	
	b) April through October (i.e. irrigation for crops)	+ ()	
	c) all year (i.e. perennial marsh or channel)	+ ()	
4	Site subject to severe seasonal flooding (i.e. within bypass)	- ()	
5	Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+ ()	
6	Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+ ()	
Subtotal:			
Basking/Refugia (Active Season) %= [0 = 0%; 1= 9-24%; 2= 25-74%; 3= 75-100%]			
7	Banks:		
	a) Banks are sunny	+ () %	
	b) Banks shaded by overstory vegetation (i.e. trees, riparian)	-() %	
8	Vegetation in the aquatic habitat:		
	a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+ () %	
	b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	- ()	
9	Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+ () %	
10	Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+ ()	
Subtotal:			
Predator/Prey [0 = absent, 1 = present]			
11	Prey fish present (i.e. small carp, mosquitofish, blackfish)	+ ()	
12	Prey amphibians present (i.e. chorus frog, small bull frog)	+ ()	
13	Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	- ()	
Subtotal:			
Adjacent Land Use [0 = absent, 1 = present]			
14	Natural marsh, wetland, mitigation bank, or manmade pond		
	a) functions ecologically as a wetland	+ ()	
	b) functions for recreational use (i.e. fishing, boating, water skiing)	- ()	
15	Rice fields (fallow or flooded)	+ ()	
16	Upland habitat other than levee for winter refugia (above high water mark)	+ ()	
17	Row crop, orchard, pasture, or other agricultural	- ()	
18	Urban or developed public area	- ()	
Subtotal:			
Levee (footprint of rodent damage repair activities) [0 = absent, 1 = present]			
19	Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+ ()	
20	Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+ ()	
21	Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	- ()	
Subtotal:			
TOTAL SCORE:			
22	Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'?	<input type="checkbox"/> yes <input type="checkbox"/> no	
23	Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee?	<input type="checkbox"/> yes <input type="checkbox"/> no	
Photo #'s:			
Reviewer(s):			Date:

Comments

Water: _____

Basking/Refugia: _____

Predator/Prey: _____

Adjacent land use: _____

Disturbance: _____

FMO 2013-14 Giant Garter Snake Water Habitat Survey Photo Log

Instructions for Photos:

Take photos of each and every water feature within 200 feet of the levee toe from several angles.
Take photos of predators and prey if present, and aquatic or emergent plants if unable to identify.

Levee Name: _____ **Camera Name:** _____ **GPS File Name:** _____

Levee Mile #: _____	Landside <input type="checkbox"/> Waterside <input type="checkbox"/>	Photo #: _____	Direction Photo Taken: N / S / E / W
GPS Point Name: _____	Description: _____		

Levee Mile #: _____	Landside <input type="checkbox"/> Waterside <input type="checkbox"/>	Photo #: _____	Direction Photo Taken: N / S / E / W
GPS Point Name: _____	Description: _____		

Levee Mile #: _____	Landside <input type="checkbox"/> Waterside <input type="checkbox"/>	Photo #: _____	Direction Photo Taken: N / S / E / W
GPS Point Name: _____	Description: _____		

Levee Mile #: _____	Landside <input type="checkbox"/> Waterside <input type="checkbox"/>	Photo #: _____	Direction Photo Taken: N / S / E / W
GPS Point Name: _____	Description: _____		

Levee Mile #: _____	Landside <input type="checkbox"/> Waterside <input type="checkbox"/>	Photo #: _____	Direction Photo Taken: N / S / E / W
GPS Point Name: _____	Description: _____		

Levee Mile #: _____	Landside <input type="checkbox"/> Waterside <input type="checkbox"/>	Photo #: _____	Direction Photo Taken: N / S / E / W
GPS Point Name: _____	Description: _____		

Levee Mile #: _____	Landside <input type="checkbox"/> Waterside <input type="checkbox"/>	Photo #: _____	Direction Photo Taken: N / S / E / W
GPS Point Name: _____	Description: _____		

FMO 2013-14 Giant Garter Snake Water Habitat Survey Photo Log (cont.)

Levee Name: _____ (cont.) Camera Name: _____ GPS File Name: _____

Levee Mile #: _____ Landside Waterside Photo #: _____ Direction Photo Taken: N / S / E / W
GPS Point Name: _____ Description: _____

Levee Mile #: _____ Landside Waterside Photo #: _____ Direction Photo Taken: N / S / E / W
GPS Point Name: _____ Description: _____

Levee Mile #: _____ Landside Waterside Photo #: _____ Direction Photo Taken: N / S / E / W
GPS Point Name: _____ Description: _____

Levee Mile #: _____ Landside Waterside Photo #: _____ Direction Photo Taken: N / S / E / W
GPS Point Name: _____ Description: _____

Levee Mile #: _____ Landside Waterside Photo #: _____ Direction Photo Taken: N / S / E / W
GPS Point Name: _____ Description: _____

Levee Mile #: _____ Landside Waterside Photo #: _____ Direction Photo Taken: N / S / E / W
GPS Point Name: _____ Description: _____

Levee Mile #: _____ Landside Waterside Photo #: _____ Direction Photo Taken: N / S / E / W
GPS Point Name: _____ Description: _____

Levee Mile #: _____ Landside Waterside Photo #: _____ Direction Photo Taken: N / S / E / W
GPS Point Name: _____ Description: _____

Instructions for Completing the

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

*PLEASE NOTE: CHANGES HAVE BEEN MADE SINCE the April 7, 2014 version
USED FOR THE SACRAMENTO YARD 2014 SURVEYS*

General Instructions

- Fill out a Giant Garter Snake Water Habitat Survey Datasheet when a water feature is within 200 feet of the toe of the surveyed levee.
- Fill out the Giant Garter Snake Water Habitat Survey Datasheets completely.
- Familiarize yourself with the datasheet, these instructions, and ask questions prior to conducting surveys in the field.
- Familiarize yourself with determining distances, especially 200 feet, before conducting the surveys.
- Review and test yourself with percent cover plot tests before conducting surveys to gain a better understanding of cover percentages in the field.
- The datasheet is divided into different habitat attribute factors of a water feature. These are Water, Basking/Refugia, Predator/Prey, Adjacent Land Use, and Levee for scoring purposes. The levee section nearest to the water feature is also being evaluated. This is for getting a score specific to the levee itself, which is the footprint of the rodent damage repair activities.
- Note that the scoring values throughout the datasheet are 0, 1, 2, or 3. The scoring is conducted by evaluating the water feature on its attributes, therefore, if that the attribute is present, absent, or to a certain degree then, the appropriate score is given to represent that attribute on the datasheet. The scoring criteria on the datasheet and are as follows:
 - [0 = absent, 1 = present] for questions 1, 2, 3, 4, 8b, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21
 - [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0] for question 5
 - [no breaks = 2; <= 200' = 1; >200' = 0] for question 6
 - % = [0 = 0%; 1= 9-24%; 2= 25-74%; 3= 75-100%] for questions 7a, 7b, 8a, and 9.
- Use the comment sheet to add any comments about the water feature to add detail that may be needed later, or if there are any questionable circumstances that need to be explained.
- After collection, survey data will be reviewed for accuracy, errors, and revised as necessary.
- Each FMO 2014 GGS Water Habitat Survey datasheet is given a score for GGS habitat suitability of that particular water feature. The scores are added or subtracted on either being a positive (+) or negative (-) habitat attributes for GGS. This score is translated into one of three habitat categories (suitable, marginal, or unsuitable). It is assumed that a water feature within 200 feet of the levee toe determines if that levee reach may or may not provide potential habitat for GGS; therefore; the levee itself can be assessed if it provides or does not provide potential GGS habitat. The results of the GGS surveys for each levee unit will be summarized on a Survey Summary Table and a map. See the Department of Water Resources, Flood Maintenance Office 2014 Levee Survey Plan for details on evaluating the results and a general overview of these surveys.
- Note changes from version April 7, 2014: The June's version questions 19, 20, and 21 are from April's questions 10c, 11c, and 21 respectively. The following April questions were collapsed and numbers were changed: 10 a/b (June question 9), 11 a/b (June question 10), and 18/19 (June question 17).

Question Specific Instructions

Datasheet ID

Assign each individual datasheet with a Datasheet ID. Label with a “W” for waterside or “L” for landside and then the number of the datasheet, for example “W1” for the first datasheet for a water feature on the waterside of the levee being surveyed. Therefore the fifth datasheet on the landside will be labeled, “L5”.

Levee Unit

This is the name or code of the levee being surveyed.

Levee Mile #

Note the closest levee mile to the water feature, or the levee miles that the water feature is at along the levee (i.e. 0.1 – 2).

Water

1. Still or slow-flowing water over silt substrate.
Adjacent bank on water side is soil, silt, or mud. Flows less than or equal to 3 mph. Water is often dark or murky rather than clear, i.e. marshes, sloughs, or irrigation canals. Scoring options for this question are 0 if absent OR 1 if present. + (0 / 1).
2. Flowing water over sand, gravel, rock or cement substrate.
Does the channel or bank on water side have impermeable substrate like gravel, rock or cement? Slopes may have cinders or fine concrete riprap placed for erosion control. Typically has flows more than 3 mph. Water is often clear, like in flowing streams or rivers where silt or sediment will not persist, low turbidity. Scoring options for this question are 0 if absent OR 1 if present. - (0 / 1)
3. Water availability.
Factors in this category are based upon the persistence of all water within 200 feet of observed habitat. Scoring options for these questions are 0 if absent OR 1 if present. + (0 / 1).
 - a) winter runoff or sporadic availability (i.e. for only 2 weeks at a time)
Is water available in canals, ditches or wetlands only after rains or from winter runoff?
 - b) April through October only (e.g. rice irrigation, crops)
Is water available in canals and ditches only when growing crops in the adjacent fields?
 - c) all year or permanent water (e.g. perennial marsh or channel).
4. Site subject to severe seasonal flooding (i.e. within bypass).
Is water feature and immediate surrounding area subjected to prolonged inundation by seasonal floodwaters, persistent tidal flows, within bypass, or within the levee sections that flood periodically?
Scoring options for this question are 0 if absent OR 1 if present. - (0 / 1)
5. Connectivity to known populations of GGS: (Determine in office)
The closer the habitat or population of GGS, the higher the score. Take good pictures in the field, but also look on Google Earth to determine if connectivity exists and to measure the distance. Ranked by distance using current California Natural Diversity Database(CNDDDB) occurrence records. Scoring options for this question are if connectivity is within 1 mile then score is 3; within 5 miles then score is 2; within 10 miles then score is 1. + (0/1/2/3)
6. Connectivity to suitable habitat via channels: (Determine in office, but also provide helpful comments if there is a noticeable connectivity or lack of in the field.)
This is ranked by continuity to water features that have CNDDDB occurrence records. Scoring options for this question are if there are no breaks in continuity the score is 2; if there are breaks in connectivity less than or equal to 200 feet the score is 1, if there are breaks greater than 200 feet in distance the score is 0. + (0/1/2)

Basking / Refugia (Active Season)

7. Banks

These questions are looking at the percent of area on the immediate banks of the water feature that a GGS could use to bask in the sun. These questions are addressing the banks together cumulatively, not individually. Therefore questions 7a and 7b should ideally add up to 100 percent together.

a) Banks are sunny

What percentage of the bank receives direct sunlight? Can GGS access sun for basking? Consider where sun will be throughout the day. Scoring options for this question are based on the percent sunny banks; if none (0%) then the score is 0; if low (9-24%) then the score is 1; if moderate (25-74%) then the score is 2; if high (75-100%) then the score is 3. + (0/1/2/3) %.

b) Banks shaded by overstory vegetation:

What percentage of the banks are shaded by overstory vegetation or canopy cover blocking sunlight from reaching the ground surface? Consider where the sun will be throughout the day. Scoring options for this question are based on the percent of the banks being shaded by overstory vegetation; if the shade is from another source, i.e. steep bank, make comments and score the same. If there is no shade, none (0%) then the score is 0; if low (9-24%) then the score is 1; if moderate (25-74%) then the score is 2; if high (75-100%) then the score is 3. + (0/1/2/3) %

8. Vegetation in the aquatic habitat.

These questions evaluate the type and percent of vegetation within the water feature.

a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose).

Does the water feature have aquatic vegetation or emergent vegetation (wetland vegetation), be sure to look at the banks along the inside of the water feature (i.e. canals and ditches), that may provide cover for GGS? Scoring options for this question are based on the percent of aquatic or emergent vegetation within the water feature. If there is none (0%) then the score is 0; low (9-24%) then the score is 1; moderate (25-74%) then the score is 2; high (75-100%) then the score is 3. + (0/1/2/3) %

b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal plants)

Is there terrestrial or upland vegetation within the water feature or aquatic habitat (i.e. canal, ditch, pond, or channel)? Usually associated within ditches that are used seasonally or temporarily. Scoring options for this question are based on the percent of terrestrial or upland vegetation within the water feature. Scoring options for this question are 0 if absent OR 1 if present. + (0 / 1).

9. Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap).

Are there places above ground where a GGS can take temporary refuge to get away from the sun or predators (not be exposed in the open)? This could be vegetation that provides cover for the GGS while still allowing for sunlight to penetrate such as tall grasses, low shrubs, willows, or Himalayan blackberry. Debris such as downed logs, brush piles, wood piles, or ditch/canal clean out vegetation piles where GGS can take temporary refuge in. Rip rap or large rock with enough interstitial space that may be used by GGS for cover. Scoring options for this question are based on the percent of refugia within 200 feet of the water feature. If there is none (0%) then the score is 0; low (9-24%) then the score is 1; moderate (25-74%) then the score is 2; high (75-100%) then the score is 3. + (0/1/2/3)

10. Subsurface retreats within 200 feet from the water feature (i.e. burrows, cracks, crevices).

Are there animals burrows, cracks, crevices, or other types of holes in the ground that may provide cover/refugia for GGS within 200 feet of the water feature? Scoring options for this question are 0 if absent OR 1 if present. + (0 / 1).

Predator / Prey

For the Predator/Prey section, numbers 11 - 13, for now, we will assume that if the water body being surveyed has year round water and is directly connected to a body of water that has water year round, that large predatory fish and prey fish and amphibians are present.

11. Prey fish present:

Are small fish such as mosquitofish, carp, or blackfish present? Watch the water surface for movement, if there is movement, then it can be assumed that prey fish are present in the water feature. Assume presence if the aquatic feature has permanent water or is connected to a permanent water source. Scoring options for this question are 0 if absent OR 1 if present. + (0 / 1).

12. Prey amphibians present:

Assume amphibian prey such as tadpoles and chorus frogs are present if the aquatic feature has permanent water or is near a permanent water feature. Seasonal water sources may also provide enough water for presence of amphibians. Note: toads do not constitute preferred prey for GGS and are not included. Scoring options for this question are 0 if absent OR 1 if present. + (0 / 1).

13. Introduced gamefish present:

Assume predatory gamefish (e.g. black bass, striped bass, channel catfish) are present if the aquatic feature has permanent water and is connected to a permanent water feature. Scoring options for this question are 0 if absent OR 1 if present. - (0 / 1).

ADJACENT LAND USE

This section will evaluate the immediate surrounding land uses around the water feature being evaluated.

14. Natural marsh, wetland, mitigation bank, or manmade pond.

Are there natural or manmade wetland(s) or pond(s) adjacent.

a) Functions ecologically as a wetland

Is there a natural or manmade water feature nearby that functions ecologically as a wetland (from the perspective of a GGS)? Scoring options for this question are 0 if absent (no) OR 1 if present (yes). + (0 / 1).

b) Functions for recreational use (i.e. fishing, boating, water skiing).

Is there a manmade water feature nearby that was created for recreational purposes, or a natural wetland that is used mostly for recreational purposes such as fishing, boating, or water skiing. Scoring options for this question are 0 if absent (no) OR 1 if present (yes). - (0 / 1).

15. Rice fields (fallow/dry or flooded)

Is there a rice field(s) nearby? Due to the timing of the survey or the current drought conditions rice fields may be dry or fallow. Since GGS presence is associated with rice growing regions, by scoring dry rice fields as a positive still gives insight to the surrounding activities that may affect GGS presence related to the levee section. Scoring options for this question are 0 if absent (no) OR 1 if present (yes). + (0 / 1).

16. Upland habitat other than the levee for winter refugia (above the high water mark-flood waters).

Is there upland habitat above the high water mark for the GGS to use as winter refugia within 500 feet of the water feature? Scoring options for this question are 0 if absent (no) OR 1 if present (yes). + (0 / 1).

17. Row crops, orchard, pasture, or other agricultural.

Row crops are usually annually disturbed furrowed fields with shallow ditches that are dug/created annually and have no to little vegetation on the edges. Wheat fields (esp. winter wheat) look a lot like rice fields early in the growing season. Wheat fields are highly disturbed fields with annual disturbed ditches that usually have no vegetation for GGS usage. Orchards represent a 100% canopy cover with ditches usually cleaned out. Pasture lands usually provide no cover and no wetland features available for GGS to use. These types of agriculture are negative attributes for GGS habitat suitability. Any other type of

agriculture beyond rice is grouped into this category. Scoring options for this question are 0 if absent (no) OR 1 if present (yes). - (0 / 1)

18. Urban or developed public area.

This includes parking lots and paved roads.

Scoring options for this question are 0 if absent (no) OR 1 if present (yes). - (0 / 1).

Levee (footprint of rodent damage repair activities)

For this section consider only the levee slopes noted in the **Levee Mile #** above, when answering.

19. Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap).

Are there places above ground where a GGS can take temporary refuge to get away from the sun or predators? This includes vegetation that provides cover for the GGS while still allowing for sunlight to penetrate such as tall grasses, low shrubs, willows, or Himalayan blackberry. Debris such as downed logs, brush piles, wood piles, or ditch/canal clean out vegetation piles where GGS can take temporary refuge in. Rip rap or large rock with enough interstitial space that may be used by GGS for cover. Note: similar to #9 above, except consider only the levee slopes. Scoring options for this question are 0 if absent (no) OR 1 if present (yes). + (0 / 1).

20. Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)

Do the levee slopes have subsurface retreats such as animal burrows, cracks or crevices that are available for a GGS to use above the high water mark. Note: similar to #10 above, except consider only the levee slopes. Scoring options for this question are 0 if absent (no) OR 1 if present (yes). + (0 / 1).

21. Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing).

Is the levee prism subjected to prolonged or regular disturbance by human recreational activities (e.g. fishing, boating, dog walking, hunting). Activities are considered regular if they occur more than 50% of the time between March and November. Scoring options for this question are 0 if absent (no) OR 1 if present (yes). - (0 / 1).

Yes/No

The section collects basic yes/no data about the levee itself.

22. Does the levee provide the ONLY over-wintering refugia above the high water mark within 500' (feet)?

This is 500 feet from the levee itself, not the water feature. Consider the levee reach noted in the **Levee Mile #** above, when answering.

23. Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee?

Consider the levee reach noted in the **Levee Mile #** above, when answering. Do not spend the time to count rodent holes, just if there are noticeable rodent holes or cracks that would be grouted in this section of the levee.






Completed Habitat Survey Datasheets



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

** Revisit 30 15 11 to levee*



-  Strip Map
-  CNDDB GGS
-  1mibuffer
-  Levee Lines
-  canal_lines



Yolo Bypass Levee Setback Project

GGS Survey
Field Work Map

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Datasheet ID: 1

Date: 8-17-16 Staff Name(s): G. Bohner S. Chun entire no drain Levee Unit: 22-19 Levee Mile(s): _____
 Survey on: Waterside or Landside Distance from levee toe: _____ (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: 229157 File Name: 1010setbackII08172016 Point Name: GG8101

HABITAT ATTRIBUTE	(SCORE)	Review
Water [0 = absent, 1 = present]		
1 Still or slow-flowing water over silt or mud substrate	+(1)	
2 Flowing water over sand, gravel, rock or cement substrate	-(0)	
3 Water availability:		
a) winter runoff or sporadic availability (i.e. ephemeral)	+(1)	
b) April through October (i.e. irrigation for crops)	+(1)	
c) all year (i.e. perennial marsh or channel)	+(1)	
4 Site subject to severe seasonal flooding (i.e. within bypass)	-(1)	
5 Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+(3)	
6 Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+(2)	
Subtotal:	8	
Basking/Refugia (Active Season) %= [0 = 0%; 1= 9-24%; 2= 25-74%; 3= 75-100%]		
7 Banks:		
a) Banks are sunny <u>10% - 30%</u>	+(2) %	
b) Banks shaded by overstory vegetation (i.e. trees, riparian)	-(2) %	
8 Vegetation in the aquatic habitat:		
a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+(2) %	
b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	-(0)	
9 Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+(3) %	
10 Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+(1)	
Subtotal:	6	
Predator/Prey [0 = absent, 1 = present]		
11 Prey fish present (i.e. small carp, mosquitofish, blackfish)	+(1)	
12 Prey amphibians present (i.e. chorus frog, small bull frog)	+(1)	
13 Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	-(1)	
Subtotal:	1	
Adjacent Land Use [0 = absent, 1 = present]		
14 Natural marsh, wetland, mitigation bank, or manmade pond		
a) functions ecologically as a wetland	+(0)	
b) functions for recreational use (i.e. fishing, boating, water skiing)	-(0)	
15 Rice fields (fallow or flooded)	+(1)	
16 Upland habitat other than levee for winter refugia (above high water mark)	+(0)	
17 Row crop, orchard, pasture, or other agricultural	-(1)	
18 Urban or developed public area	-(0)	
Subtotal:	0	
Levee (footprint of rodent damage repair activities) [0 = absent, 1 = present]		
19 Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+(1)	
20 Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+(1)	
21 Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	-(0)	
Subtotal:	2	
TOTAL SCORE:		17

22 Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'? yes no
 23 Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee? yes no

Photo #'s: 1943-1945 1955-1957 2003-05 2010-2012
 Reviewer(s): taken @ GGS pt 111 from GGS12 Date: _____

↑ additional photos taken from GGS104 looking at waterside



FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Date: 8-17-16 Staff Name(s): G. Bohn Schum Levee Unit: 22-34 Levee Mile(s): _____
 Survey on: Waterside or Landside Distance from levee toe: 15 (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: 229157 File Name: YoloSetbackII 08172016 Point Name: 668102

HABITAT ATTRIBUTE		(SCORE)	Review
Water [0 = absent, 1 = present]			
1	Still or slow-flowing water over silt or mud substrate	+ (0)	
2	Flowing water over sand, gravel, rock or cement substrate	- (0)	
3	Water availability:		
	a) winter runoff or sporadic availability (i.e. ephemeral)	+ (1)	
	b) April through October (i.e. irrigation for crops)	+ (1)	
	c) all year (i.e. perennial marsh or channel)	+ (0)	
4	Site subject to severe seasonal flooding (i.e. within bypass)	- (0)	
5	Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+ (3)	
6	Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+ (0)	
Subtotal:		5	
Basking/Refugia (Active Season) %= [0 = 0%; 1 = 9-24%; 2 = 25-74%; 3 = 75-100%]			
7	Banks:		
	a) Banks are sunny	+ (3) %	
	b) Banks shaded by overstory vegetation (i.e. trees, riparian)	- (0) %	
8	Vegetation in the aquatic habitat:		
	a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+ (2) %	
	b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	- (1)	
9	Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+ (2) %	
10	Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+ (1)	
Subtotal:		5	
Predator/Prey [0 = absent, 1 = present]			
11	Prey fish present (i.e. small carp, mosquitofish, blackfish)	+ (0)	
12	Prey amphibians present (i.e. chorus frog, small bull frog)	+ (0)	
13	Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	- (0)	
Subtotal:		0	
Adjacent Land Use [0 = absent, 1 = present]			
14	Natural marsh, wetland, mitigation bank, or manmade pond		
	a) functions ecologically as a wetland	+ (1)	
	b) functions for recreational use (i.e. fishing, boating, water skiing)	- (0)	
15	Rice fields (fallow or flooded)	+ (1)	
16	Upland habitat other than levee for winter refugia (above high water mark)	+ (0)	
17	Row crop, orchard, pasture, or other agricultural	- (1)	
18	Urban or developed public area	- (0)	
Subtotal:		1	
Levee (footprint of rodent damage repair activities) [0 = absent, 1 = present]			
19	Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+ (1)	
20	Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+ (1)	
21	Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	- (0)	
Subtotal:		2	
TOTAL SCORE:		13	

22 Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'? yes no
 23 Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee? yes no

Photo #'s: 1946-1948 [1949-1951 | 1952-1954] Date: _____
 Reviewer(s): _____

(additional photos from other pts along canal)

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Datasheet ID:

3

Date: 8-26-16 Staff Name(s): G. Palmer Schen Levee Unit: 7-? Levee Mile(s): _____
 Survey on: Waterside or Landside Distance from levee toe: _____ (feet) Is water feature or to the levee? sidelane
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: 229157 File Name: paloset\acdm\107262016 Point Name: G6S107

<u>HABITAT ATTRIBUTE</u>		(SCORE)	Review
Water [0 = absent, 1 = present]			
1	Still or slow-flowing water over silt or mud substrate	+ (1)	
2	Flowing water over sand, gravel, rock or cement substrate	- (0)	
3	Water availability:		
	a) winter runoff or sporadic availability (i.e. ephemeral)	+ (1)	
	b) April through October (i.e. irrigation for crops)	+ (1)	
	c) all year (i.e. perennial marsh or channel)	+ (1)	
4	Site subject to severe seasonal flooding (i.e. within bypass)	- (0)	
5	Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+ (1)	
6	Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+ (0)	
Subtotal:		5	
Basking/Refugia (Active Season) %= [0 = 0%; 1= 9-24%; 2= 25-74%; 3= 75-100%]			
7	Banks:		
	a) Banks are sunny	+ (2) %	
	b) Banks shaded by overstory vegetation (i.e. trees, riparian)	- (2) %	
8	Vegetation in the aquatic habitat:		
	a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+ (2) %	
	b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	- (0)	
9	Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+ (2) %	
10	Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+ (1)	
Subtotal:		5	
Predator/Prey [0 = absent, 1 = present]			
11	Prey fish present (i.e. small carp, mosquitofish, blackfish)	+ (1)	
12	Prey amphibians present (i.e. chorus frog, small bull frog)	+ (1)	
13	Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	- (1)	
Subtotal:		1	
Adjacent Land Use [0 = absent, 1 = present]			
14	Natural marsh, wetland, mitigation bank, or manmade pond		
	a) functions ecologically as a wetland	+ (1)	
	b) functions for recreational use (i.e. fishing, boating, water skiing)	- (0)	
15	Rice fields (fallow or flooded)	+ (1)	
16	Upland habitat other than levee for winter refugia (above high water mark)	+ (6)	
17	Row crop, orchard, pasture, or other agricultural	- (1)	
18	Urban or developed public area	- (0)	
Subtotal:		1	
Levee (footprint of rodent damage repair activities) [0 = absent, 1 = present]			
19	Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+ (1)	
20	Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+ (1)	
21	Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	- (1)	
Subtotal:		1	
TOTAL SCORE:		13	
22	Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'?	<input type="checkbox"/> yes <input type="checkbox"/> no	
23	Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee?	<input type="checkbox"/> yes <input type="checkbox"/> no	
Photo #'s: <u>1979-1981 1982-1985 1987</u>			
Reviewer(s): _____		Date: _____	

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Datasheet ID: 4

Date: 8-26-16 Staff Name(s): G. Richter S. Chen Levee Unit: 36 Levee Mile(s): _____
 Survey on: Waterside or Landside Distance from levee toe: _____ (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: 229157 File Name: ycosstheadm1082616 Point Name: 665106

HABITAT ATTRIBUTE		(SCORE)	Review
Water [0 = absent, 1 = present]			
1	Still or slow-flowing water over silt or mud substrate	+ (0)	
2	Flowing water over sand, gravel, rock or cement substrate	- (0)	
3	Water availability:		
	a) winter runoff or sporadic availability (i.e. ephemeral)	+ (1)	
	b) April through October (i.e. irrigation for crops)	+ (1)	
	c) all year (i.e. perennial marsh or channel)	+ (0)	
4	Site subject to severe seasonal flooding (i.e. within bypass)	- (0)	
5	Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+ (3)	
6	Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+ (0)	
	Subtotal:	<u>5</u>	
Basking/Refugia (Active Season) %= [0 = 0%; 1= 9-24%; 2= 25-74%; 3= 75-100%]			
7	Banks:		
	a) Banks are sunny	+ (1) %	
	b) Banks shaded by overstory vegetation (i.e. trees, riparian)	- (0) %	
8	Vegetation in the aquatic habitat:		
	a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+ (1) %	
	b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	- (1)	
9	Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+ (2) %	
10	Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+ (1)	
	Subtotal:	<u>4</u>	
Predator/Prey [0 = absent, 1 = present]			
11	Prey fish present (i.e. small carp, mosquitofish, blackfish)	+ (0)	
12	Prey amphibians present (i.e. chorus frog, small bull frog)	+ (0)	
13	Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	- (0)	
	Subtotal:	<u>0</u>	
Adjacent Land Use [0 = absent, 1 = present]			
14	Natural marsh, wetland, mitigation bank, or manmade pond		
	a) functions ecologically as a wetland	+ (4)	
	b) functions for recreational use (i.e. fishing, boating, water skiing)	- (0)	
15	Rice fields (fallow or flooded)	+ (1)	across the reach
16	Upland habitat other than levee for winter refugia (above high water mark)	+ (0)	
17	Row crop, orchard, pasture, or other agricultural	- (1)	
18	Urban or developed public area	- (1)	
	Subtotal:	<u>1</u>	
Levee (footprint of rodent damage repair activities) [0 = absent, 1 = present]			
19	Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+ (1)	
20	Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+ (1)	
21	Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	- (0)	
	Subtotal:	<u>2</u>	
TOTAL SCORE:		<u>12</u>	
22	Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'?	<input type="checkbox"/> yes <input type="checkbox"/> no	
23	Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee?	<input type="checkbox"/> yes <input type="checkbox"/> no	
Photo #'s: <u>1975-1978</u>			
Reviewer(s): _____		Date: _____	

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Datasheet ID: 5

Date: 7-26-16 Staff Name(s): G. Bohner S-chen Levee Unit: 35 Levee Mile(s): _____
 Survey on: Waterside or Landside Distance from levee toe: _____ (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: 1.25
 GPS Name: 229157 File Name: yolooselbcdmIF08262016 Point Name: 665105

HABITAT ATTRIBUTE		(SCORE)	Review
Water [0 = absent, 1 = present]			
1	Still or slow-flowing water over silt or mud substrate	+ (0)	
2	Flowing water over sand, gravel, rock or cement substrate	- (0)	
3	Water availability:		
	a) winter runoff or sporadic availability (i.e. ephemeral)	+ (1)	
	b) April through October (i.e. irrigation for crops)	+ (1)	
	c) all year (i.e. perennial marsh or channel)	+ (0)	
4	Site subject to severe seasonal flooding (i.e. within bypass)	- (0)	
5	Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+ (3)	
6	Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+ (0)	
	Subtotal:	<u>5</u>	
Basking/Refugia (Active Season) %= [0 = 0%; 1= 9-24%; 2= 25-74%; 3= 75-100%]			
7	Banks:		
	a) Banks are sunny	+ (2) %	
	b) Banks shaded by overstory vegetation (i.e. trees, riparian)	- (0) %	
8	Vegetation in the aquatic habitat:		
	a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+ (1) %	
	b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	- (1)	
9	Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+ (2) %	
10	Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+ (1)	
	Subtotal:	<u>3</u>	
Predator/Prey [0 = absent, 1 = present]			
11	Prey fish present (i.e. small carp, mosquitofish, blackfish)	+ (0)	
12	Prey amphibians present (i.e. chorus frog, small bull frog)	+ (0)	
13	Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	- (0)	
	Subtotal:	<u>0</u>	
Adjacent Land Use [0 = absent, 1 = present]			
14	Natural marsh, wetland, mitigation bank, or manmade pond		
	a) functions ecologically as a wetland	+ (1)	
	b) functions for recreational use (i.e. fishing, boating, water skiing)	- (0)	
15	Rice fields (fallow or flooded)	+ (1)	
16	Upland habitat other than levee for winter refugia (above high water mark)	+ (0)	
17	Row crop, orchard, pasture, or other agricultural	- (1)	
18	Urban or developed public area	- (0)	
	Subtotal:	<u>1</u>	
Levee (footprint of rodent damage repair activities) [0 = absent, 1 = present]			
19	Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+ (1)	<u>NA</u>
20	Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+ (1)	<u>NA</u>
21	Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	- (0)	<u>NA</u>
	Subtotal:	<u>2</u>	<u>0</u>
TOTAL SCORE:		<u>18</u>	
22	Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'?	<input type="checkbox"/> yes <input type="checkbox"/> no	
23	Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee?	<input type="checkbox"/> yes <input type="checkbox"/> no	
Photo #'s: <u>1972-1974</u>			
Reviewer(s):			Date:

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Datasheet ID: 6

Date: 8-26-16 Staff Name(s): G. Baker & S. Chun Levee Unit: 30 Levee Mile(s): _____
 Survey on: Waterside or Landside Distance from levee toe: _____ (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: 229157 File Name: VolusiaCoAH#08172016 Point Name: 66S108

HABITAT ATTRIBUTE	(SCORE)	Review
Water [0 = absent, 1 = present]		
1 Still or slow-flowing water over silt or mud substrate	+ (0)	
2 Flowing water over sand, gravel, rock or cement substrate	- (0)	
3 Water availability:		
a) winter runoff or sporadic availability (i.e. ephemeral)	+ (1)	
b) April through October (i.e. irrigation for crops)	+ (1)	
c) all year (i.e. perennial marsh or channel)	+ (0)	
4 Site subject to severe seasonal flooding (i.e. within bypass)	- (0)	
5 Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+ (1)	
6 Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+ (0)	
Subtotal:	3	
Basking/Refugia (Active Season) %= [0 = 0%; 1= 9-24%; 2= 25-74%; 3= 75-100%]		
7 Banks:		
a) Banks are sunny	+ (3) %	
b) Banks shaded by overstory vegetation (i.e. trees, riparian)	- (0) %	
8 Vegetation in the aquatic habitat:		
a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+ (0) %	
b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	- (1)	
9 Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+ (0) %	
10 Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+ (0)	
Subtotal:	2	
Predator/Prey [0 = absent, 1 = present]		
11 Prey fish present (i.e. small carp, mosquitofish, blackfish)	+ (0)	
12 Prey amphibians present (i.e. chorus frog, small bull frog)	+ (0)	
13 Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	- (0)	
Subtotal:	0	
Adjacent Land Use [0 = absent, 1 = present]		
14 Natural marsh, wetland, mitigation bank, or manmade pond		
a) functions ecologically as a wetland	+ (0)	
b) functions for recreational use (i.e. fishing, boating, water skiing)	- (0)	
15 Rice fields (fallow or flooded)	+ (0)	
16 Upland habitat other than levee for winter refugia (above high water mark)	+ (0)	
17 Row crop, orchard, pasture, or other agricultural	- (1)	
18 Urban or developed public area	- (0)	
Subtotal:	-1	
Levee (footprint of rodent damage repair activities) [0 = absent, 1 = present]		
19 Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+ (0)	
20 Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+ (0)	
21 Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	- (0)	
Subtotal:	0	
TOTAL SCORE:		4
22 Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'?	<input type="checkbox"/> yes	<input type="checkbox"/> no
23 Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee?	<input type="checkbox"/> yes	<input type="checkbox"/> no
Photo #'s: <u>1988-1990</u>		
Reviewer(s):		Date:

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Datasheet ID:

7

Date: 8-17-16 Staff Name(s): G. B. S. Chun Levee Unit: 31 Levee Mile(s): _____
 Survey on: Waterside or Landside Distance from levee toe: _____ (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: 229157 File Name: YolosabedchIT08172016 Point Name: GG8104

HABITAT ATTRIBUTE

(SCORE)

Review

Water

[0 = absent, 1 = present]

1	Still or slow-flowing water over silt or mud substrate	+ (0)	
2	Flowing water over sand, gravel, rock or cement substrate	- (0)	
3	Water availability:		
	a) winter runoff or sporadic availability (i.e. ephemeral)	+ (1)	
	b) April through October (i.e. irrigation for crops)	+ (1)	
	c) all year (i.e. perennial marsh or channel)	+ (0)	
4	Site subject to severe seasonal flooding (i.e. within bypass)	- (0)	
5	Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+ (3)	
6	Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+ (0)	
Subtotal:		5	

Basking/Refugia (Active Season)

% = [0 = 0%; 1 = 9-24%; 2 = 25-74%; 3 = 75-100%]

7	Banks:		
	a) Banks are sunny	+ (0) %	
	b) Banks shaded by overstory vegetation (i.e. trees, riparian)	- (3) %	
8	Vegetation in the aquatic habitat:		
	a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+ (1) %	
	b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	- (1)	
9	Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+ (1) %	
10	Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+ (1)	
Subtotal:		- 1	

Predator/Prey

[0 = absent, 1 = present]

11	Prey fish present (i.e. small carp, mosquitofish, blackfish)	+ (0)	
12	Prey amphibians present (i.e. chorus frog, small bull frog)	+ (0)	
13	Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	- (0)	
Subtotal:		0	

Adjacent Land Use

[0 = absent, 1 = present]

14	Natural marsh, wetland, mitigation bank, or manmade pond		
	a) functions ecologically as a wetland	+ (0)	
	b) functions for recreational use (i.e. fishing, boating, water skiing)	- (3)	
15	Rice fields (fallow or flooded)	+ (1)	
16	Upland habitat other than levee for winter refugia (above high water mark)	+ (0)	
17	Row crop, orchard, pasture, or other agricultural	- (1)	
18	Urban or developed public area	- (0)	
Subtotal:		0	

Levee (footprint of rodent damage repair activities)

[0 = absent, 1 = present]

19	Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+ (1)	
20	Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+ (1)	
21	Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	- (0)	
Subtotal:		2	

TOTAL SCORE:

6

22 Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'? yes no

23 Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee? yes no

Photo #'s: 1952-1954

Reviewer(s):

Date:

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Datasheet ID: 8

Date: 8-17-16 Staff Name(s): G. Schie Schen Levee Unit: 29 Levee Mile(s):
 Survey on: Waterside or Landside Distance from levee toe: _____ (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: 229157 File Name: yalosalbachm108172016 Point Name: 668103

HABITAT ATTRIBUTE		(SCORE)	Review
Water [0 = absent, 1 = present]			
1	Still or slow-flowing water over silt or mud substrate	+ (0)	
2	Flowing water over sand, gravel, rock or cement substrate	- (0)	
3	Water availability:		
	a) winter runoff or sporadic availability (i.e. ephemeral)	+ (1)	
	b) April through October (i.e. irrigation for crops)	+ (1)	
	c) all year (i.e. perennial marsh or channel)	+ (0)	
4	Site subject to severe seasonal flooding (i.e. within bypass)	- (0)	
5	Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+ (3)	
6	Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+ (0)	
Subtotal:		5	
Basking/Refugia (Active Season) %= [0 = 0%; 1= 9-24%; 2= 25-74%; 3= 75-100%]			
7	Banks:		
	a) Banks are sunny	+ (2) %	
	b) Banks shaded by overstory vegetation (i.e. trees, riparian)	- (0) %	
8	Vegetation in the aquatic habitat:		
	a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+ (0) %	
	b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	- (1)	
9	Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+ (1) %	
10	Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+ (1)	
Subtotal:		3	
Predator/Prey [0 = absent, 1 = present]			
11	Prey fish present (i.e. small carp, mosquitofish, blackfish)	+ (0)	
12	Prey amphibians present (i.e. chorus frog, small bull frog)	+ (0)	
13	Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	- (0)	
Subtotal:		0	
Adjacent Land Use [0 = absent, 1 = present]			
14	Natural marsh, wetland, mitigation bank, or manmade pond		
	a) functions ecologically as a wetland	+ (0)	
	b) functions for recreational use (i.e. fishing, boating, water skiing)	- (0)	
15	Rice fields (fallow or flooded)	+ (0)	
16	Upland habitat other than levee for winter refugia (above high water mark)	+ (0)	
17	Row crop, orchard, pasture, or other agricultural	- (1)	
18	Urban or developed public area	- (0)	
Subtotal:		-1	
Levee (footprint of rodent damage repair activities) [0 = absent, 1 = present]			
19	Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+ (1)	
20	Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+ (1)	
21	Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	- (0)	
Subtotal:		2	
TOTAL SCORE:		9	
22	Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'?	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	
23	Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee?	<input type="checkbox"/> yes <input type="checkbox"/> no	
Photo #'s: 1949-1951			
Reviewer(s):			Date:

dry
 1st
 counter

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Datasheet ID: 9

Date: 8-17-16 Staff Name(s): G. Bohler S. Chun Levee Unit: 25 Levee Mile(s):
 Survey on: Waterside or Landside Distance from levee toe: 30 (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length:
 GPS Name: 229157 File Name: Yd05elbecVIT08172016 Point Name: EGS 102 1

HABITAT ATTRIBUTE

(SCORE)

Review

Water

[0 = absent, 1 = present]

- 1 Still or slow-flowing water over silt or mud substrate + (0)
- 2 Flowing water over sand, gravel, rock or cement substrate - (0)
- 3 Water availability:
 - a) winter runoff or sporadic availability (i.e. ephemeral) + (1)
 - b) April through October (i.e. irrigation for crops) + (1)
 - c) all year (i.e. perennial marsh or channel) + (0)
- 4 Site subject to severe seasonal flooding (i.e. within bypass) - (0)
- 5 Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0] + (3)
- 6 Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0] + (0)

Subtotal: 5

Basking/Refugia (Active Season)

% = [0 = 0%; 1 = 9-24%; 2 = 25-74%; 3 = 75-100%]

- 7 Banks:
 - a) Banks are sunny + (2) %
 - b) Banks shaded by overstory vegetation (i.e. trees, riparian) - (0) %
- 8 Vegetation in the aquatic habitat:
 - a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose) + (0) %
 - b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present] - (1)
- 9 Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap) + (1) %
- 10 Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present] + (1)

Subtotal: 3

Predator/Prey

[0 = absent, 1 = present]

- 11 Prey fish present (i.e. small carp, mosquitofish, blackfish) + (0)
- 12 Prey amphibians present (i.e. chorus frog, small bull frog) + (0)
- 13 Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source) - (0)

Subtotal: 0

Adjacent Land Use

[0 = absent, 1 = present]

- 14 Natural marsh, wetland, mitigation bank, or manmade pond
 - a) functions ecologically as a wetland + (0)
 - b) functions for recreational use (i.e. fishing, boating, water skiing) - (0)
- 15 Rice fields (fallow or flooded) + (0)
- 16 Upland habitat other than levee for winter refugia (above high water mark) + (0)
- 17 Row crop, orchard, pasture, or other agricultural - (1)
- 18 Urban or developed public area - (0)

Subtotal: 7

Levee (footprint of rodent damage repair activities)

[0 = absent, 1 = present]

- 19 Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap) + (1)
- 20 Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?) + (1)
- 21 Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing) - (0)

Subtotal: 2

TOTAL SCORE:

9

- 22 Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'? yes no
- 23 Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee? yes no

Photo #'s: 1946-48

Reviewer(s):

Date:

*
no levee
10-15

*
Label
complete
dry

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Datasheet ID: 11

Date: 9-1-16 Staff Name(s): G. Bohm, S. Chan Levee Unit: 38 Levee Mile(s): _____
 Survey on: Waterside or Landside Distance from levee toe: _____ (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: 229157 File Name: 101054102108262016 Point Name: GGS111

HABITAT ATTRIBUTE		(SCORE)	Review
Water [0 = absent, 1 = present]			
1	Still or slow-flowing water over silt or mud substrate	+ (0)	
2	Flowing water over sand, gravel, rock or cement substrate	- (0)	
3	Water availability:		
	a) winter runoff or sporadic availability (i.e. ephemeral)	+ (1)	
	b) April through October (i.e. irrigation for crops)	+ (1)	
	c) all year (i.e. perennial marsh or channel)	+ (0)	
4	Site subject to severe seasonal flooding (i.e. within bypass)	- (0)	
5	Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+ (3)	
6	Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+ (0)	
	Subtotal:	5	
Basking/Refugia (Active Season) %= [0 = 0%; 1= 9-24%; 2= 25-74%; 3= 75-100%]			
7	Banks:		
	a) Banks are sunny	+ (1) %	
	b) Banks shaded by overstory vegetation (i.e. trees, riparian)	- (0) %	
8	Vegetation in the aquatic habitat:		
	a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+ (0) %	
	b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	- (1)	
9	Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+ (1) %	
10	Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+ (1)	
	Subtotal:	2	
Predator/Prey [0 = absent, 1 = present]			
11	Prey fish present (i.e. small carp, mosquitofish, blackfish)	+ (0)	
12	Prey amphibians present (i.e. chorus frog, small bull frog)	+ (0)	
13	Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	- (0)	
	Subtotal:	0	
Adjacent Land Use [0 = absent, 1 = present]			
14	Natural marsh, wetland, mitigation bank, or manmade pond		
	a) functions ecologically as a wetland	+ (1)	
	b) functions for recreational use (i.e. fishing, boating, water skiing)	- (1)	
15	Rice fields (fallow or flooded)	+ (0)	
16	Upland habitat other than levee for winter refugia (above high water mark)	+ (0)	
17	Row crop, orchard, pasture, or other agricultural	- (1)	
18	Urban or developed public area	- (0)	
	Subtotal:	- 1	
Levee (footprint of rodent damage repair activities) [0 = absent, 1 = present]			
19	Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+ (1)	
20	Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+ (1)	
21	Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	- (1)	
	Subtotal:	1	
TOTAL SCORE:		7	
22	Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'?	<input type="checkbox"/> yes <input type="checkbox"/> no	
23	Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee?	<input type="checkbox"/> yes <input type="checkbox"/> no	
Photo #'s:	<u>1999-2002</u>		
Reviewer(s):		Date:	

Comments

Water: _____

Basking/Refugia: _____

Predator/Prey: _____

Adjacent land use: _____

Disturbance: _____

Side Ag canal

Datasheet ID: 12

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Date: 9/1 Staff Name(s): Heather White/Erica H. rouds Levee Unit: 887 Levee Mile(s):
 Survey on: Waterside or Landside Distance from levee toe: _____ (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: _____ File Name: _____ Point Name: _____

HABITAT ATTRIBUTE		(SCORE)	Review
Water [0 = absent, 1 = present]			
1	Still or slow-flowing water over silt or mud substrate	+(0)	
2	Flowing water over sand, gravel, rock or cement substrate	-(1)	
3	Water availability:		
	a) winter runoff or sporadic availability (i.e. ephemeral)	+(0)	
	b) April through October (i.e. irrigation for crops)	+(1)	
	c) all year (i.e. perennial marsh or channel)	+(0)	
4	Site subject to severe seasonal flooding (i.e. within bypass)	-(0)	
5	Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+(2)	
6	Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+(0)	
Subtotal:		2	
Basking/Refugia (Active Season) %= [0 = 0%; 1= 9-24%; 2= 25-74%; 3= 75-100%]			
7	Banks:		
	a) Banks are sunny	+(2)%	
	b) Banks shaded by overstory vegetation (i.e. trees, riparian)	-(1)%	
8	Vegetation in the aquatic habitat:		
	a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+(1)%	
	b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	-(1)	
9	Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+(3)%	
10	Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+(1)	
Subtotal:		4	
Predator/Prey [0 = absent, 1 = present]			
11	Prey fish present (i.e. small carp, mosquitofish, blackfish)	+(0)	
12	Prey amphibians present (i.e. chorus frog, small bull frog)	+(0)	
13	Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	-(0)	
Subtotal:		0	
Adjacent Land Use [0 = absent, 1 = present]			
14	Natural marsh, wetland, mitigation bank, or manmade pond		
	a) functions ecologically as a wetland	+(0)	
	b) functions for recreational use (i.e. fishing, boating, water skiing)	-(0)	
15	Rice fields (fallow or flooded)	+(0)	
16	Upland habitat other than levee for winter refugia (above high water mark)	+(0)	
17	Row crop, orchard, pasture, or other agricultural	-(1)	
18	Urban or developed public area	-(0)	
Subtotal:		1	
Levee (footprint of rodent damage repair activities) [0 = absent, 1 = present]			
19	Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+(1)	
20	Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+(1)	
21	Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	-(0)	
Subtotal:		2	
TOTAL SCORE:		7	
22	Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'?	<input type="checkbox"/> yes <input type="checkbox"/> no	
23	Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee?	<input type="checkbox"/> yes <input type="checkbox"/> no	
Photo #'s: 3145 3146			
Reviewer(s):			Date:

Comments

Water: 1 end of canal is full of sand; the other end has emergent wetland veg.

Basking/Refugia:

Predator/Prey: Raptors in area.

Adjacent land use: tomatoes on one side; levee of toe road on other side

Disturbance: Ag.

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Datasheet ID:

13

Date: 9-1-16 Staff Name(s): G. Bohrer, S. Chun Levee Unit: 8-10.5 Levee Mile(s): _____
 Survey on: Waterside or Landside Distance from levee toe: _____ (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: 229157 File Name: yolo set beach II 08262016 Point Name: 06S 110

HABITAT ATTRIBUTE		(SCORE)	Review
Water [0 = absent, 1 = present]			
1	Still or slow-flowing water over silt or mud substrate	+ (1)	
2	Flowing water over sand, gravel, rock or cement substrate	- (0)	
3	Water availability:		
	a) winter runoff or sporadic availability (i.e. ephemeral)	+ (1)	
	b) April through October (i.e. irrigation for crops)	+ (1)	
	c) all year (i.e. perennial marsh or channel)	+ (0)	
4	Site subject to severe seasonal flooding (i.e. within bypass)	- (0)	
5	Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+ (3)	
6	Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+ (0)	
Subtotal:		6	
Basking/Refugia (Active Season) %= [0 = 0%; 1= 9-24%; 2= 25-74%; 3= 75-100%]			
7	Banks:		
	a) Banks are sunny	+ (3) %	
	b) Banks shaded by overstory vegetation (i.e. trees, riparian)	- (0) %	
8	Vegetation in the aquatic habitat:		
	a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+ (3) %	
	b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	- (1)	
9	Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+ (2) %	
10	Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+ (1)	
Subtotal:		8	
Predator/Prey [0 = absent, 1 = present]			
11	Prey fish present (i.e. small carp, mosquitofish, blackfish)	+ (0)	
12	Prey amphibians present (i.e. chorus frog, small bull frog)	+ (0)	
13	Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	- (0)	
Subtotal:		0	
Adjacent Land Use [0 = absent, 1 = present]			
14	Natural marsh, wetland, mitigation bank, or manmade pond		
	a) functions ecologically as a wetland	+ (1)	
	b) functions for recreational use (i.e. fishing, boating, water skiing)	- (1)	
15	Rice fields (fallow or flooded)	+ (0)	
16	Upland habitat other than levee for winter refugia (above high water mark)	+ (0)	
17	Row crop, orchard, pasture, or other agricultural	- (1)	
18	Urban or developed public area	- (0)	
Subtotal:		- 1	
Levee (footprint of rodent damage repair activities) [0 = absent, 1 = present]			
19	Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+ (1)	
20	Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+ (1)	
21	Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	- (1)	
Subtotal:		1	
TOTAL SCORE:		14	
22	Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'?	<input type="checkbox"/> yes <input type="checkbox"/> no	
23	Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee?	<input type="checkbox"/> yes <input type="checkbox"/> no	
Photo #'s: <u>1993-97</u>			
Reviewer(s):			Date:

could?

Comments

Water: _____

Basking/Refugia: _____

Predator/Prey: _____

Adjacent land use: _____

Disturbance: _____

Comments

Water: _____

Basking/Refugia: _____

Predator/Prey: _____

Adjacent land use: _____

Disturbance: _____



FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Date: 9-1-16 Staff Name(s): G. Bohner S. Chun Levee Unit: 1305-19 Levee Mile(s):
 Survey on: Waterside or Landside Distance from levee toe: _____ (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: 20957 File Name: photos\bochner\1109172016 Point Name: GGS114

HABITAT ATTRIBUTE

(SCORE)

Review

Water

[0 = absent, 1 = present]

- 1 Still or slow-flowing water over silt or mud substrate + (1)
- 2 Flowing water over sand, gravel, rock or cement substrate - (0)
- 3 Water availability:
 - a) winter runoff or sporadic availability (i.e. ephemeral) + (1)
 - b) April through October (i.e. irrigation for crops) + (1)
 - c) all year (i.e. perennial marsh or channel) + (0)
- 4 Site subject to severe seasonal flooding (i.e. within bypass) - (0)
- 5 Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0] + (3)
- 6 Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0] + (0)

Subtotal: 6

Basking/Refugia (Active Season)

% = [0 = 0%; 1 = 9-24%; 2 = 25-74%; 3 = 75-100%]

- 7 Banks:
 - a) Banks are sunny + (2) %
 - b) Banks shaded by overstory vegetation (i.e. trees, riparian) - (1) %
- 8 Vegetation in the aquatic habitat:
 - a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose) + (3) %
 - b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present] - (0)
- 9 Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap) + (2) %
- 10 Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present] + (1)

Subtotal: 7

Predator/Prey

[0 = absent, 1 = present]

- 11 Prey fish present (i.e. small carp, mosquitofish, blackfish) + (1)
- 12 Prey amphibians present (i.e. chorus frog, small bull frog) + (1)
- 13 Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source) - (0)

Subtotal: 2

Adjacent Land Use

[0 = absent, 1 = present]

- 14 Natural marsh, wetland, mitigation bank, or manmade pond
 - a) functions ecologically as a wetland + (1)
 - b) functions for recreational use (i.e. fishing, boating, water skiing) - (0)
- 15 Rice fields (fallow or flooded) + (0)
- 16 Upland habitat other than levee for winter refugia (above high water mark) + (0)
- 17 Row crop, orchard, pasture, or other agricultural - (1)
- 18 Urban or developed public area - (0)

Subtotal: 0

Levee (footprint of rodent damage repair activities)

[0 = absent, 1 = present]

- 19 Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap) + (1)
- 20 Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?) + (1)
- 21 Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing) - (0)

Subtotal: 2

TOTAL SCORE: 17

22 Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'? yes no

23 Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee? yes no

Photo #'s: 2095-17

Reviewer(s):

Date:

Comments

Water: _____

Basking/Refugia: _____

Predator/Prey: _____

Adjacent land use: _____

Disturbance: _____

Marginal

Datasheet ID: 16

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Date: 8/26 Staff Name(s): H. White & Hironaka Levee Unit: 20-21 Levee Mile(s):
 Survey on: Waterside or Landside Distance from levee toe: _____ (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: 229158 File Name: Yologgs 0826 10 Point Name: GGS 15

HABITAT ATTRIBUTE		(SCORE)	Review
Water [0 = absent, 1 = present]			
1	Still or slow-flowing water over silt or mud substrate	+(1)	
2	Flowing water over sand, gravel, rock or cement substrate	-(0)	
3	Water availability:		
	a) winter runoff or sporadic availability (i.e. ephemeral)	+(1)	
	b) April through October (i.e. irrigation for crops)	+(1)	
	c) all year (i.e. perennial marsh or channel)	+(1)	
4	Site subject to severe seasonal flooding (i.e. within bypass)	-(0)	
5	Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+(2)	
6	Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+(2)	
Subtotal:		8	
Basking/Refugia (Active Season) %= [0 = 0%; 1 = 9-24%; 2 = 25-74%; 3 = 75-100%]			
7	Banks:		
	a) Banks are sunny	+(1)%	
	b) Banks shaded by overstory vegetation (i.e. trees, riparian)	-(2)%	
8	Vegetation in the aquatic habitat:		
	a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+(3)%	
	b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	-(0)	
9	Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+(3)%	
10	Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+(0)	
Subtotal:		5	
Predator/Prey [0 = absent, 1 = present]			
11	Prey fish present (i.e. small carp, mosquitofish, blackfish)	+(1)	
12	Prey amphibians present (i.e. chorus frog, small bull frog)	+(1)	
13	Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	-(1)	
Subtotal:		1	
Adjacent Land Use [0 = absent, 1 = present]			
14	Natural marsh, wetland, mitigation bank, or manmade pond		
	a) functions ecologically as a wetland	+(0)	
	b) functions for recreational use (i.e. fishing, boating, water skiing)	-(0)	
15	Rice fields (fallow or flooded)	+(0)	
16	Upland habitat other than levee for winter refugia (above high water mark)	+(0)	
17	Row crop, orchard, pasture, or other agricultural	-(1)	
18	Urban or developed public area	-(0)	
Subtotal:		-1	
Levee (footprint of rodent damage repair activities) [0 = absent, 1 = present]			
19	Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+(N/A)	
20	Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+(N/A)	
21	Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	-(N/A)	
Subtotal:		N/A	
TOTAL SCORE:		13	
22	Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'? <input type="checkbox"/> yes <input type="checkbox"/> no		
23	Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee? <input type="checkbox"/> yes <input type="checkbox"/> no		
Photo #'s:	3083 — 3085		
Reviewer(s):		Date:	

Redundant

Comments

Water: Still ag ditch with duckweed ~~and~~ aquatic fern.
Open water.

Basking/Refugia: Blackberry thick on south bank. North bank
has tules, blackberries and poison oak. Oak trees, box elders,
tree of heaven, and willows scattered on banks

Predator/Prey:

Adjacent land use: ~~Past~~ roamed hay

Disturbance: Ag machinery

Suitable

code 1616

Datasheet ID:

17

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Date: 8/26 Staff Name(s): H White, E Honaka Levee Unit: 50 Levee Mile(s): _____
 Survey on: Waterside or Landside Distance from levee toe: 100 (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: 229158 File Name: Y000665082616 Point Name: 66510

HABITAT ATTRIBUTE

(SCORE)

Review

Water

[0 = absent, 1 = present]

- 1 Still or slow-flowing water over silt or mud substrate + (1)
- 2 Flowing water over sand, gravel, rock or cement substrate - (0)
- 3 Water availability:
 - a) winter runoff or sporadic availability (i.e. ephemeral) + (1)
 - b) April through October (i.e. irrigation for crops) + (1)
 - c) all year (i.e. perennial marsh or channel) + (1)
- 4 Site subject to severe seasonal flooding (i.e. within bypass) - (0)
- 5 Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0] + (2)
- 6 Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0] + (2)

Subtotal: 8

Basking/Refugia (Active Season)

% = [0 = 0%; 1 = 9-24%; 2 = 25-74%; 3 = 75-100%]

- 7 Banks:
 - a) Banks are sunny + (2) %
 - b) Banks shaded by overstory vegetation (i.e. trees, riparian) - (1) %
- 8 Vegetation in the aquatic habitat:
 - a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose) + (3) %
 - b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present] - (0)
- 9 Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap) + (3) %
- 10 Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present] + (1)

Subtotal: 8

Predator/Prey

[0 = absent, 1 = present]

- 11 Prey fish present (i.e. small carp, mosquitofish, blackfish) + (1)
- 12 Prey amphibians present (i.e. chorus frog, small bull frog) + (1)
- 13 Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source) - (1)

Subtotal: 1

Adjacent Land Use

[0 = absent, 1 = present]

- 14 Natural marsh, wetland, mitigation bank, or manmade pond
 - a) functions ecologically as a wetland + (0)
 - b) functions for recreational use (i.e. fishing, boating, water skiing) - (0)
- 15 Rice fields (fallow or flooded) + (0)
- 16 Upland habitat other than levee for winter refugia (above high water mark) + (0)
- 17 Row crop, orchard, pasture, or other agricultural - (1)
- 18 Urban or developed public area - (0)

Subtotal: -1

Levee (footprint of rodent damage repair activities)

[0 = absent, 1 = present]

- 19 Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap) + (N/A)
- 20 Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?) + (N/A)
- 21 Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing) - (N/A)

Subtotal: N/A

TOTAL SCORE:

16

22 Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'? yes no

23 Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee? yes no

Photo #'s: ~~3075~~ 3075 3076

Reviewer(s):

Date:

Comments

Water: _____

Basking/Refugia: _____

Predator/Prey: _____

Adjacent land use: _____

Disturbance: _____

Marginal

Datasheet ID: 18

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Date: 8/26/16 Staff Name(s): Heather White & Erica Hironaka Levee Unit: S1 Levee Mile(s):
 Survey on: Waterside or Landside Distance from levee toe: 10 (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length:
 GPS Name: 229158 File Name: Yolo ggs 08 26 16 Point Name: GGS11

HABITAT ATTRIBUTE		(SCORE)	Review
Water [0 = absent, 1 = present]			
1	Still or slow-flowing water over silt or mud substrate	+(1)	
2	Flowing water over sand, gravel, rock or cement substrate	-(0)	
3	Water availability:		
	a) winter runoff or sporadic availability (i.e. ephemeral)	+(1)	
	b) April through October (i.e. irrigation for crops)	+(1)	
	c) all year (i.e. perennial marsh or channel)	+(1)	
4	Site subject to severe seasonal flooding (i.e. within bypass)	-(0)	
5	Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+(2)	
6	Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+(2)	
Subtotal:		8	
Basking/Refugia (Active Season) %= [0 = 0%; 1 = 9-24%; 2 = 25-74%; 3 = 75-100%]			
7	Banks:		
	a) Banks are sunny	+(1)%	
	b) Banks shaded by overstory vegetation (i.e. trees, riparian)	-(3)%	
8	Vegetation in the aquatic habitat:		
	a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+(3)%	
	b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	-(1)	
9	Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+(3)%	
10	Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+(1)	
Subtotal:		4	
Predator/Prey [0 = absent, 1 = present]			
11	Prey fish present (i.e. small carp, mosquitofish, blackfish)	+(1)	
12	Prey amphibians present (i.e. chorus frog, small bull frog)	+(1)	
13	Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	-(1)	
Subtotal:		1	
Adjacent Land Use [0 = absent, 1 = present]			
14	Natural marsh, wetland, mitigation bank, or manmade pond		
	a) functions ecologically as a wetland	+(0)	
	b) functions for recreational use (i.e. fishing, boating, water skiing)	-(0)	
15	Rice fields (fallow or flooded)	+(0)	
16	Upland habitat other than levee for winter refugia (above high water mark)	+(0)	
17	Row crop, orchard, pasture, or other agricultural	-(1)	
18	Urban or developed public area	-(0)	
Subtotal:		1	
Levee (footprint of rodent damage repair activities) [0 = absent, 1 = present]			
19	Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+()	
20	Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+()	
21	Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	-()	
Subtotal:		NA	
TOTAL SCORE:		12	
22	Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'?	<input type="checkbox"/> yes <input type="checkbox"/> no	
23	Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee?	<input type="checkbox"/> yes <input type="checkbox"/> no	
Photo #'s: IMG-3061 to IMG 3071			
Reviewer(s): 3068		Date:	
3067			
3063			
3062			

Comments

Water: _____

Basking/Refugia: _____

Predator/Prey: _____

Adjacent land use: _____

Disturbance: _____

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Datasheet ID: 19A

Date: 7/1 Staff Name(s): Heather White / Erica Hroniska Levee Unit: 46 & 47 Levee Mile(s): _____
 Survey on: Waterside or Landside Distance from levee toe: _____ (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: _____ File Name: _____ Point Name: GGS 17

No levee, only berm next to canal

HABITAT ATTRIBUTE	(SCORE)	Review
Water [0 = absent, 1 = present]		
1 Still or slow-flowing water over silt or mud substrate	+ (0)	
2 Flowing water over sand, gravel, rock or cement substrate	- (0)	
3 Water availability:		
a) winter runoff or sporadic availability (i.e. ephemeral)	+ (0)	
b) April through October (i.e. irrigation for crops)	+ (1)	
c) all year (i.e. perennial marsh or channel)	+ (0)	
4 Site subject to severe seasonal flooding (i.e. within bypass)	- (0)	
5 Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+ (2)	
6 Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+ (0)	
Subtotal:	3	
Basking/Refugia (Active Season) %= [0 = 0%; 1= 9-24%; 2= 25-74%; 3= 75-100%]		
7 Banks:		
a) Banks are sunny	+ (2) %	
b) Banks shaded by overstory vegetation (i.e. trees, riparian)	- (0) %	
8 Vegetation in the aquatic habitat:		
a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+ (3) %	
b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	- (1)	
9 Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+ (2) %	
10 Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+ (1)	
Subtotal:	6	
Predator/Prey [0 = absent, 1 = present]		
11 Prey fish present (i.e. small carp, mosquitofish, blackfish)	+ (0)	
12 Prey amphibians present (i.e. chorus frog, small bull frog)	+ (0)	
13 Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	- (0)	
Subtotal:	0	
Adjacent Land Use [0 = absent, 1 = present]		
14 Natural marsh, wetland, mitigation bank, or manmade pond		
a) functions ecologically as a wetland	+ (0)	
b) functions for recreational use (i.e. fishing, boating, water skiing)	- (0)	
15 Rice fields (fallow or flooded)	+ (0)	
16 Upland habitat other than levee for winter refugia (above high water mark)	+ (0)	
17 Row crop, orchard, pasture, or other agricultural	- (1)	
18 Urban or developed public area	- (0)	
Subtotal:	-1	
Levee (footprint of rodent damage repair activities) [0 = absent, 1 = present]		
19 Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+ (0)	
20 Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+ (0)	
21 Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	- (0)	
Subtotal:	0	
TOTAL SCORE:		8

22 Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'? yes no
 23 Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee? yes no

Photo #'s: 3130 3131 _____
 Reviewer(s): _____ Date: _____

Comments

Water: No water present. Dry ag. canal.

Basking/Refugia: lots of ground squirrels on both sides of road. Road on either side of canal for basking.

Predator/Prey: Ø

Adjacent land use: Row crops & Hay field
↑ tomato ↓ Recently harvested.

Disturbance: Ag.

Not suitable habitat by our estimation, even though it scores as marginal.

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Datasheet ID: 196

Date: 9/1 Staff Name(s): Heather White/Janca Thronke Levee Unit: 46 & 47 Levee Mile(s):
 Survey on: Waterside or Landside Distance from levee toe: _____ (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: _____ File Name: _____ Point Name: GGS 18

next to levee

HABITAT ATTRIBUTE		(SCORE)	Review
Water [0 = absent, 1 = present]			
1	Still or slow-flowing water over silt or mud substrate	+ (0)	
2	Flowing water over sand, gravel, rock or cement substrate	- (0)	
3	Water availability:		
	a) winter runoff or sporadic availability (i.e. ephemeral)	+ (0)	
	b) April through October (i.e. irrigation for crops)	+ (1)	
	c) all year (i.e. perennial marsh or channel)	+ (0)	
4	Site subject to severe seasonal flooding (i.e. within bypass)	- (0)	
5	Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+ (2)	
6	Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+ (0)	
	Subtotal:	3	
Basking/Refugia (Active Season) %= [0 = 0%; 1= 9-24%; 2= 25-74%; 3= 75-100%]			
7	Banks:		
	a) Banks are sunny	+ (3) %	
	b) Banks shaded by overstory vegetation (i.e. trees, riparian)	- (0) %	
8	Vegetation in the aquatic habitat:		
	a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+ (0) %	
	b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	- (0)	
9	Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+ (2) %	
10	Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+ (1)	
	Subtotal:	6	
Predator/Prey [0 = absent, 1 = present]			
11	Prey fish present (i.e. small carp, mosquitofish, blackfish)	+ (0)	
12	Prey amphibians present (i.e. chorus frog, small bull frog)	+ (0)	
13	Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	- (0)	
	Subtotal:	0	
Adjacent Land Use [0 = absent, 1 = present]			
14	Natural marsh, wetland, mitigation bank, or manmade pond		
	a) functions ecologically as a wetland	+ (0)	
	b) functions for recreational use (i.e. fishing, boating, water skiing)	- (0)	
15	Rice fields (fallow or flooded)	+ (0)	
16	Upland habitat other than levee for winter refugia (above high water mark)	+ (0)	
17	Row crop, orchard, pasture, or other agricultural	- (1)	
18	Urban or developed public area	- (0)	
	Subtotal:	-1	
Levee (footprint of rodent damage repair activities) [0 = absent, 1 = present]			
19	Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+ (0)	
20	Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+ (0)	
21	Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	- (0)	
	Subtotal:	0	
TOTAL SCORE:		8	
22	Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'?	<input type="checkbox"/> yes <input type="checkbox"/> no	
23	Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee?	<input type="checkbox"/> yes <input type="checkbox"/> no	
Photo #'s:	3132 3133 3135		
Reviewer(s):		Date:	

Comments

Water: No water present

Basking/Refugia: Could use basking/surface refugia from adjacent ag canals ~~with~~

Predator/Prey: Many raptors sighted

Adjacent land use: tomatoe and fallow fields

Disturbance: Ag disturbance is high. Likely to be filled over at end of season

Not suitable habitat based on visual estimates but still scores as marginal

Suitable

Datasheet ID: 20

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Date: 8/26 Staff Name(s): H White, E Hirayaka Levee Unit: 6, 41-45 Levee Mile(s):
 Survey on: Waterside or Landside Distance from levee toe: _____ (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: 229158 File Name: Yolo GGS 082616 Point Name: GGS 14

HABITAT ATTRIBUTE (SCORE) Review

Water [0 = absent, 1 = present]

1	Still or slow-flowing water over silt or mud substrate	+ (1)	
2	Flowing water over sand, gravel, rock or cement substrate	- (0)	
3	Water availability:		
	a) winter runoff or sporadic availability (i.e. ephemeral)	+ (1)	
	b) April through October (i.e. irrigation for crops)	+ (1)	
	c) all year (i.e. perennial marsh or channel)	+ (1)	
4	Site subject to severe seasonal flooding (i.e. within bypass)	- (0)	
5	Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+ (2)	
6	Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+ (1)	
	Subtotal:	7	

Basking/Refugia (Active Season) %= [0 = 0%; 1= 9-24%; 2= 25-74%; 3= 75-100%]

7	Banks:		
	a) Banks are sunny	+ (3) %	
	b) Banks shaded by overstory vegetation (i.e. trees, riparian)	- (0) %	
8	Vegetation in the aquatic habitat:		
	a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+ (3) %	
	b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	- (0)	
9	Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+ (3) %	
10	Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+ (1)	
	Subtotal:	10	

Predator/Prey [0 = absent, 1 = present]

11	Prey fish present (i.e. small carp, mosquitofish, blackfish)	+ (1)	
12	Prey amphibians present (i.e. chorus frog, small bull frog)	+ (1)	
13	Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	- (1)	
	Subtotal:	1	

Adjacent Land Use [0 = absent, 1 = present]

14	Natural marsh, wetland, mitigation bank, or manmade pond		
	a) functions ecologically as a wetland	+ (0)	
	b) functions for recreational use (i.e. fishing, boating, water skiing)	- (0)	
15	Rice fields (fallow or flooded)	+ (1)	
16	Upland habitat other than levee for winter refugia (above high water mark)	+ (1)	
17	Row crop, orchard, pasture, or other agricultural	- (1)	
18	Urban or developed public area	- (0)	
	Subtotal:	1	

Levee (footprint of rodent damage repair activities) [0 = absent, 1 = present]

19	Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+ (N/A)	
20	Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+ (N/A)	
21	Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	- (N/A)	
	Subtotal:	N/A	

TOTAL SCORE: 19

22 Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'? yes no
 23 Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee? yes no

Photo #'s: 3081 3082
 Reviewer(s): Date:

NA

Comments

Water: Still open water. Culverts placed throughout length of canal

willows Basking/Refugia: Low lying to 6 veg on canal bank. Walnut trees + small interspersed throughout in singular or small clumps. Tule, blackberry, cattails, rose on banks.

Predator/Prey: Saw large fish jump predator?

Adjacent land use: rice, tomato, and hay crops

Disturbance: farming trucks/vehicles.

Marginal

Datasheet ID: 21

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Date: 8/26 Staff Name(s): H. White, E. Hronata Levee Unit: 21 Levee Mile(s):
 Survey on: Waterside or Landside Distance from levee toe: _____ (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: 229158 File Name: YOLO665082616 Point Name: GGS13

HABITAT ATTRIBUTE		(SCORE)	Review
Water [0 = absent, 1 = present]			
1	Still or slow-flowing water over silt or mud substrate	+(1)	
2	Flowing water over sand, gravel, rock or cement substrate	-(0)	
3	Water availability:		
	a) winter runoff or sporadic availability (i.e. ephemeral)	+(1)	
	b) April through October (i.e. irrigation for crops)	+(1)	
	c) all year (i.e. perennial marsh or channel)	+(1)	
4	Site subject to severe seasonal flooding (i.e. within bypass)	-(0)	
5	Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+(2)	
6	Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+(0)	
	Subtotal:	6	
Basking/Refugia (Active Season) %= [0 = 0%; 1= 9-24%; 2= 25-74%; 3= 75-100%]			
7	Banks:		
	a) Banks are sunny	+(1)%	
	b) Banks shaded by overstory vegetation (i.e. trees, riparian)	-(2)%	
8	Vegetation in the aquatic habitat:		
	a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+(1)%	
	b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	-(0)	
9	Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+(1)%	
10	Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+(1)	
	Subtotal:	2	
Predator/Prey [0 = absent, 1 = present]			
11	Prey fish present (i.e. small carp, mosquitofish, blackfish)	+(1)	
12	Prey amphibians present (i.e. chorus frog, small bull frog)	+(1)	
13	Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	-(0)	
	Subtotal:	2	
Adjacent Land Use [0 = absent, 1 = present]			
14	Natural marsh, wetland, mitigation bank, or manmade pond		
	a) functions ecologically as a wetland	+(0)	
	b) functions for recreational use (i.e. fishing, boating, water skiing)	-(0)	
15	Rice fields (fallow or flooded)	+(0)	
16	Upland habitat other than levee for winter refugia (above high water mark)	+(1)	
17	Row crop, orchard, pasture, or other agricultural	-(1)	
18	Urban or developed public area	-(0)	
	Subtotal:	0	
Levee (footprint of rodent damage repair activities) [0 = absent, 1 = present]			
19	Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+(1)	
20	Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+(NA)	
21	Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	-(NA)	
	Subtotal:	1	
TOTAL SCORE:		10	
22	Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'?	<input type="checkbox"/> yes <input type="checkbox"/> no	
23	Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee?	<input type="checkbox"/> yes <input type="checkbox"/> no	
Photo #'s:	3077 → 3080		
Reviewer(s):		Date:	

Comments

Water: _____

Basking/Refugia: _____

Predator/Prey: _____

Adjacent land use: _____

Disturbance: _____

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Datasheet ID: 22

Date: _____ Staff Name(s): H. White & E. Honaka Levee Unit: 53 Levee Mile(s): _____
 Survey on: Waterside or Landside Distance from levee toe: _____ (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: _____ File Name: _____ Point Name: 66519

No levee

HABITAT ATTRIBUTE

(SCORE)

Review

Water

[0 = absent, 1 = present]

1	Still or slow-flowing water over silt or mud substrate	+(1)	
2	Flowing water over sand, gravel, rock or cement substrate	-(0)	
3	Water availability:		
	a) winter runoff or sporadic availability (i.e. ephemeral)	+(1)	
	b) April through October (i.e. irrigation for crops)	+(1)	
	c) all year (i.e. perennial marsh or channel)	+(1)	
4	Site subject to severe seasonal flooding (i.e. within bypass)	-(0)	
5	Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+(2)	
6	Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+(2)	
Subtotal:		8	

Basking/Refugia (Active Season)

% = [0 = 0%; 1= 9-24%; 2= 25-74%; 3= 75-100%]

7	Banks:		
	a) Banks are sunny	+(3) %	
	b) Banks shaded by overstory vegetation (i.e. trees, riparian)	-(1) %	
8	Vegetation in the aquatic habitat:		
	a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+(2) %	
	b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	-(1)	
9	Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+(3) %	
10	Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+(1)	
Subtotal:		7	

Predator/Prey

[0 = absent, 1 = present]

11	Prey fish present (i.e. small carp, mosquitofish, blackfish)	+(1)	
12	Prey amphibians present (i.e. chorus frog, small bull frog)	+(1)	
13	Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	-(0)	
Subtotal:		2	

Adjacent Land Use

[0 = absent, 1 = present]

14	Natural marsh, wetland, mitigation bank, or manmade pond		
	a) functions ecologically as a wetland	+(0)	
	b) functions for recreational use (i.e. fishing, boating, water skiing)	-(0)	
15	Rice fields (fallow or flooded)	+(0)	
16	Upland habitat other than levee for winter refugia (above high water mark)	+(1)	
17	Row crop, orchard, pasture, or other agricultural	-(1)	
18	Urban or developed public area	-(0)	
Subtotal:		0	

Levee (footprint of rodent damage repair activities)

[0 = absent, 1 = present]

19	Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+(0)	
20	Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+(0)	
21	Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	-(0)	
Subtotal:		0	

TOTAL SCORE:

17

22	Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'?	<input type="checkbox"/> yes	<input type="checkbox"/> no
23	Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee?	<input type="checkbox"/> yes	<input type="checkbox"/> no

Photo #'s: _____ Reviewer(s): _____ Date: _____

Comments

Water: Present

Basking/Refugia: Some sections have lots of sun; others quite shady. Road works as upland refugia during flooding.

Predator/Prey: Raptors in area

Adjacent land use: Tomatoes on one side; Road & hay field on other side.

Disturbance: Ag., gravel road

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Datasheet ID:

23

Date: _____ Staff Name(s): _____ Levee Unit: 54 Levee Mile(s): _____
 Survey on: Waterside or Landside Distance from levee toe: _____ (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: _____ File Name: _____ Point Name: GGS 20

HABITAT ATTRIBUTE

(SCORE)

Review

Water

[0 = absent, 1 = present]

1	Still or slow-flowing water over silt or mud substrate	+(0)	
2	Flowing water over sand, gravel, rock or cement substrate	-(0)	
3	Water availability:		
	a) winter runoff or sporadic availability (i.e. ephemeral)	+(1)	
	b) April through October (i.e. irrigation for crops)	+(1)	
	c) all year (i.e. perennial marsh or channel)	+(0)	
4	Site subject to severe seasonal flooding (i.e. within bypass)	-(0)	
5	Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+(2)	
6	Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+(2)	
Subtotal:		6	

Basking/Refugia (Active Season)

% = [0 = 0%; 1 = 9-24%; 2 = 25-74%; 3 = 75-100%]

7	Banks:		
	a) Banks are sunny	+(1)%	
	b) Banks shaded by overstory vegetation (i.e. trees, riparian)	-(3)%	
8	Vegetation in the aquatic habitat:		
	a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+(2)%	
	b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	-(0)	
9	Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+(2)%	
10	Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+(1)	
Subtotal:		3	

Predator/Prey

[0 = absent, 1 = present]

11	Prey fish present (i.e. small carp, mosquitofish, blackfish)	+(0)	
12	Prey amphibians present (i.e. chorus frog, small bull frog)	+(0)	
13	Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	-(0)	
Subtotal:		0	

Adjacent Land Use

[0 = absent, 1 = present]

14	Natural marsh, wetland, mitigation bank, or manmade pond		
	a) functions ecologically as a wetland	+(0)	
	b) functions for recreational use (i.e. fishing, boating, water skiing)	-(0)	
15	Rice fields (fallow or flooded)	+(0)	
16	Upland habitat other than levee for winter refugia (above high water mark)	+(1)	
17	Row crop, orchard, pasture, or other agricultural	-(1)	
18	Urban or developed public area	-(0)	
Subtotal:		0	

Levee (footprint of rodent damage repair activities)

[0 = absent, 1 = present]

19	Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+(0)	
20	Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+(0)	
21	Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	-(0)	
Subtotal:		0	

TOTAL SCORE:

9

22	Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'?	<input type="checkbox"/> yes	<input type="checkbox"/> no
23	Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee?	<input type="checkbox"/> yes	<input type="checkbox"/> no

Photo #'s: _____
 Reviewer(s): _____ Date: _____

Comments

Water: ϕ water present; grasses growing in canal; bottom. #10

Basking/Refugia: More than 200 ft from nearest levee. Willows, bullrush & tules along bank for refugia. Also tall trees on banks of canal. Upland refugia on other side of road adjacent to canal.

Predator/Prey: Raptors sighted near canal

Adjacent land use: Tomatoes and fallow field

Disturbance: Ag machinery

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Datasheet ID: 24

Date: 9/1 Staff Name(s): Heather White / E Hirohata Levee Unit: SS Levee Mile(s): _____
 Survey on: Waterside or Landside Distance from levee toe: _____ (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: _____ File Name: _____ Point Name: GGS 21

<u>HABITAT ATTRIBUTE</u>	(SCORE)	Review
Water [0 = absent, 1 = present]		
1 Still or slow-flowing water over silt or mud substrate	+ (1)	
2 Flowing water over sand, gravel, rock or cement substrate	- (0)	
3 Water availability:		
a) winter runoff or sporadic availability (i.e. ephemeral)	+ (1)	
b) April through October (i.e. irrigation for crops)	+ (1)	
c) all year (i.e. perennial marsh or channel)	+ (1)	
4 Site subject to severe seasonal flooding (i.e. within bypass)	- (0)	
5 Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+ (2)	
6 Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+ (2)	
Subtotal:	8	
Basking/Refugia (Active Season) % = [0 = 0%; 1 = 9-24%; 2 = 25-74%; 3 = 75-100%]		
7 Banks:		
a) Banks are sunny	+ (3) %	
b) Banks shaded by overstory vegetation (i.e. trees, riparian)	- (1) %	
8 Vegetation in the aquatic habitat:		
a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+ (3) %	
b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	- (0)	
9 Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+ (3) %	
10 Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+ (1)	
Subtotal:	9	
Predator/Prey [0 = absent, 1 = present]		
11 Prey fish present (i.e. small carp, mosquitofish, blackfish)	+ (1)	
12 Prey amphibians present (i.e. chorus frog, small bull frog)	+ (1)	
13 Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	- (1)	
Subtotal:	1	
Adjacent Land Use [0 = absent, 1 = present]		
14 Natural marsh, wetland, mitigation bank, or manmade pond		
a) functions ecologically as a wetland	+ (1)	
b) functions for recreational use (i.e. fishing, boating, water skiing)	- (0)	
15 Rice fields (fallow or flooded)	+ (0)	
16 Upland habitat other than levee for winter refugia (above high water mark)	+ (1)	
17 Row crop, orchard, pasture, or other agricultural	- (1)	
18 Urban or developed public area	- (0)	
Subtotal:	1	
Levee (footprint of rodent damage repair activities) [0 = absent, 1 = present]		
19 Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+ (0)	
20 Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+ (0)	
21 Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	- (0)	
Subtotal:	0	
TOTAL SCORE:		19
22 Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'?	<input type="checkbox"/> yes	<input type="checkbox"/> no
23 Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee?	<input type="checkbox"/> yes	<input type="checkbox"/> no
Photo #'s:	<u>3140</u>	<u>3191</u> <u>3142</u>
Reviewer(s):		
Date:		

Comments

Water: Water present. Seems to provide water to adjacent mitigation bank

Basking/Refugia: Blackberry, tules, bullrush and other lowlying veg on bank. in canal bed is lowlying veg and tules.

Predator/Prey: White face ibis, ~~and~~ great egret, and snowy egrets present. Bullfrogs also present

Adjacent land use: Tomato ^{unknown} row crop (grain/nut), and mitigation bank adjacent.

Disturbance: Occasional ag disturbance.

46-47

Datasheet ID: 25

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Date: 8/26/16 Staff Name(s): G. Bona S. Chun Levee Unit: 80 Levee Mile(s): _____
 Survey on: Waterside or Landside Distance from levee toe: _____ (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: 229157 File Name: 1010setbackto817006 Point Name: 66S109

HABITAT ATTRIBUTE		(SCORE)	Review
Water [0 = absent, 1 = present]			
1	Still or slow-flowing water over silt or mud substrate	+ (0)	
2	Flowing water over sand, gravel, rock or cement substrate	- (0)	
3	Water availability:		
	a) winter runoff or sporadic availability (i.e. ephemeral)	+ (1)	
	b) April through October (i.e. irrigation for crops)	+ (1)	
	c) all year (i.e. perennial marsh or channel)	+ (0)	
4	Site subject to severe seasonal flooding (i.e. within bypass)	- (0)	
5	Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+ (1)	
6	Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+ (0)	
Subtotal:		3	
Basking/Refugia (Active Season) %= [0 = 0%; 1= 9-24%; 2= 25-74%; 3= 75-100%]			
7	Banks:		
	a) Banks are sunny	+ (1) %	
	b) Banks shaded by overstory vegetation (i.e. trees, riparian)	- (2) %	
8	Vegetation in the aquatic habitat:		
	a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+ (1) %	
	b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	- (1)	
9	Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+ (6) %	
10	Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+ (0)	
Subtotal:		1	
Predator/Prey [0 = absent, 1 = present]			
11	Prey fish present (i.e. small carp, mosquitofish, blackfish)	+ (0)	
12	Prey amphibians present (i.e. chorus frog, small bull frog)	+ (0)	
13	Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	- (0)	
Subtotal:			
Adjacent Land Use [0 = absent, 1 = present]		0	
14	Natural marsh, wetland, mitigation bank, or manmade pond		
	a) functions ecologically as a wetland	+ (0)	
	b) functions for recreational use (i.e. fishing, boating, water skiing)	- (0)	
15	Rice fields (fallow or flooded)	+ (0)	
16	Upland habitat other than levee for winter refugia (above high water mark)	+ (0)	
17	Row crop, orchard, pasture, or other agricultural	- (1)	
18	Urban or developed public area	- (0)	
Subtotal:		- 1	
Levee (footprint of rodent damage repair activities) [0 = absent, 1 = present]			
19	Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+ (1)	
20	Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+ (1)	
21	Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	- (0)	
Subtotal:		2	
TOTAL SCORE:		5	
22	Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'?	<input type="checkbox"/> yes <input type="checkbox"/> no	
23	Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee?	<input type="checkbox"/> yes <input type="checkbox"/> no	
Photo #'s: <u>1991-1992</u>			
Reviewer(s):			Date:

Comments

Water: _____

Basking/Refugia: _____

Predator/Prey: _____

Adjacent land use: _____

Disturbance: _____

Comments

Water: _____

Basking/Refugia: _____

Predator/Prey: _____

Adjacent land use: _____

Disturbance: _____

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Datasheet ID: 27

Date: 8/17/16 Staff Name(s): G. Bonner, H. White, E. Hivonaka, S. Chun Levee Unit: 2-4 Levee Mile(s):
 Survey on: Waterside or Landside Distance from levee toe: 18 (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: 225691 File Name: Volosetback 08172016 Point Name: GGS2

HABITAT ATTRIBUTE

(SCORE)

Review

Water

[0 = absent, 1 = present]

1	Still or slow-flowing water over silt or mud substrate	+ (1)	
2	Flowing water over sand, gravel, rock or cement substrate	- (0)	
3	Water availability:		
	a) winter runoff or sporadic availability (i.e. ephemeral)	+ (1)	
	b) April through October (i.e. irrigation for crops)	+ (1)	
	c) all year (i.e. perennial marsh or channel)	+ (1)	
4	Site subject to severe seasonal flooding (i.e. within bypass)	- (1)	
5	Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+ (3)	
6	Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+ (2)	
	Subtotal:	8	

Basking/Refugia (Active Season)

0-8% % = [0 = 0%; 1 = 9-24%; 2 = 25-74%; 3 = 75-100%]

7	Banks:		
	a) Banks are sunny	+ (1) %	
	b) Banks shaded by overstory vegetation (i.e. trees, riparian)	- (3) %	
8	Vegetation in the aquatic habitat:		
	a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+ (1) %	
	b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	- (0)	
9	Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+ (1) %	
10	Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+ (1)	
	Subtotal:	1	

Predator/Prey

[0 = absent, 1 = present]

11	Prey fish present (i.e. small carp, mosquitofish, blackfish)	+ (1)	
12	Prey amphibians present (i.e. chorus frog, small bull frog)	+ (1)	
13	Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	- (1)	
	Subtotal:	1	

Adjacent Land Use

[0 = absent, 1 = present]

14	Natural marsh, wetland, mitigation bank, or manmade pond		
	a) functions ecologically as a wetland	+ (1)	
	b) functions for recreational use (i.e. fishing, boating, water skiing)	- (0)	
15	Rice fields (fallow or flooded)	+ (0)	
16	Upland habitat other than levee for winter refugia (above high water mark)	+ (0)	
17	Row crop, orchard, pasture, or other agricultural	- (1)	
18	Urban or developed public area	- (0)	
	Subtotal:	0	

Levee (footprint of rodent damage repair activities)

[0 = absent, 1 = present]

19	Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+ (1)	
20	Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+ (1)	
21	Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	- (1)	
	Subtotal:	1	

TOTAL SCORE: 10

22	Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'?	<input type="checkbox"/> yes <input type="checkbox"/> no
23	Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee?	<input type="checkbox"/> yes <input type="checkbox"/> no

Photo #'s: 1940-1942

Reviewer(s):

Date:

not included in score. redundant in 9+10 for all data sheets

Comments

Water: _____

Basking/Refugia: _____

Predator/Prey: _____

Adjacent land use: _____

Disturbance: _____

Marginal

Datasheet ID: 28

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Date: 6/26/16 Staff Name(s): Heather White + Erica Hironaka Levee Unit: 52 Levee Mile(s):
 Survey on: Waterside or Landside Distance from levee toe: 10 (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length:
 GPS Name: 229158 File Name: ydoggs 082616 Point Name: GGS12

HABITAT ATTRIBUTE		(SCORE)	Review
Water [0 = absent, 1 = present]			
1	Still or slow-flowing water over silt or mud substrate	+(1)	
2	Flowing water over sand, gravel, rock or cement substrate	-(0)	
3	Water availability:		
a)	winter runoff or sporadic availability (i.e. ephemeral)	+(1)	
b)	April through October (i.e. irrigation for crops)	+(1)	
c)	all year (i.e. perennial marsh or channel)	+(1)	
4	Site subject to severe seasonal flooding (i.e. within bypass)	-(0)	
5	Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+(2)	
6	Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+(2)	
Subtotal:		8	
Basking/Refugia (Active Season) %= [0 = 0%; 1 = 9-24%; 2 = 25-74%; 3 = 75-100%]			
7	Banks:		
a)	Banks are sunny	+(0)%	
b)	Banks shaded by overstory vegetation (i.e. trees, riparian)	-(3)%	
8	Vegetation in the aquatic habitat:		
a)	Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+(3)%	
b)	Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	-(1)	
9	Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+(3)%	
10	Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+(1)	
Subtotal:		3	
Predator/Prey [0 = absent, 1 = present]			
11	Prey fish present (i.e. small carp, mosquitofish, blackfish)	+(0)	
12	Prey amphibians present (i.e. chorus frog, small bull frog)	+(1)	
13	Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	-(0)	
Subtotal:		1	
Adjacent Land Use [0 = absent, 1 = present]			
14	Natural marsh, wetland, mitigation bank, or manmade pond		
a)	functions ecologically as a wetland	+(0)	
b)	functions for recreational use (i.e. fishing, boating, water skiing)	-(0)	
15	Rice fields (fallow or flooded)	+(0)	
16	Upland habitat other than levee for winter refugia (above high water mark)	+(0)	
17	Row crop, orchard, pasture, or other agricultural	-(1)	
18	Urban or developed public area	-(0)	
Subtotal:		-1	
Levee (footprint of rodent damage repair activities) [0 = absent, 1 = present]			
19	Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+(N/A)	
20	Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+(N/A)	
21	Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	-(N/A)	
Subtotal:		N/A	
TOTAL SCORE:		11	
22	Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'?	<input type="checkbox"/> yes <input type="checkbox"/> no	
23	Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee?	<input type="checkbox"/> yes <input type="checkbox"/> no	
Photo #'s:	3072 3073 3074		
Reviewer(s):		Date:	

NA

Comments

Water: Very shallow water connected to ~~canal~~^{ag} canal south of railroad track. ~~Channel~~ Channel narrows at this location. Mainly choked up with emergent veg (tules & cattails). Area in middle (near orchard) where channel vegetation is clearer and channel widened.

Basking/Refugia: Mainly star thistle and thistle sp. covering banks adjacent to water source

Predator/Prey: Water so shallow/narrow that unlikely will have game fish or prey species.

Adjacent land use: row crop and orchards

Disturbance: only ag disturbance

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Datasheet ID:

29

Date: 9/1 Staff Name(s): Heather White Erica Hironaka Levee Unit: 52 Levee Mile(s):
 Survey on: Waterside or Landside Distance from levee toe: _____ (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: _____ File Name: YSB0901 Point Name: GGS 16

HABITAT ATTRIBUTE		(SCORE)	Review
Water [0 = absent, 1 = present]			
1	Still or slow-flowing water over silt or mud substrate	+(0)	
2	Flowing water over sand, gravel, rock or cement substrate	-(0)	
3	Water availability:		
	a) winter runoff or sporadic availability (i.e. ephemeral)	+(0)	
	b) April through October (i.e. irrigation for crops)	+(1)	
	c) all year (i.e. perennial marsh or channel)	+(0)	
4	Site subject to severe seasonal flooding (i.e. within bypass)	-(0)	
5	Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+(2)	
6	Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+(0)	
Subtotal:		3	
Basking/Refugia (Active Season) %= [0 = 0%; 1= 9-24%; 2= 25-74%; 3= 75-100%]			
7	Banks:		
	a) Banks are sunny	+(3) %	
	b) Banks shaded by overstory vegetation (i.e. trees, riparian)	-(0) %	
8	Vegetation in the aquatic habitat:		
	a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+(0) %	
	b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	-(2)	
9	Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+(2) %	
10	Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+(2)	
Subtotal:		5	
Predator/Prey [0 = absent, 1 = present]			
11	Prey fish present (i.e. small carp, mosquitofish, blackfish)	+(0)	
12	Prey amphibians present (i.e. chorus frog, small bull frog)	+(0)	
13	Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	-(0)	
Subtotal:		0	
Adjacent Land Use [0 = absent, 1 = present]			
14	Natural marsh, wetland, mitigation bank, or manmade pond		
	a) functions ecologically as a wetland	+(0)	
	b) functions for recreational use (i.e. fishing, boating, water skiing)	-(0)	
15	Rice fields (fallow or flooded)	+(0)	
16	Upland habitat other than levee for winter refugia (above high water mark)	+(0)	
17	Row crop, orchard, pasture, or other agricultural	-(1)	
18	Urban or developed public area	-(0)	
Subtotal:		1	
Levee (footprint of rodent damage repair activities) [0 = absent, 1 = present]			
19	Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+(0)	
20	Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+(0)	
21	Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	-(0)	
Subtotal:		0	
TOTAL SCORE:		7	
22	Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'?	<input type="checkbox"/> yes <input type="checkbox"/> no	
23	Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee?	<input type="checkbox"/> yes <input type="checkbox"/> no	
Photo #'s: 3127 + 3129			
Reviewer(s):			Date:

Comments

Water: _____

Basking/Refugia: _____

Predator/Prey: _____

Adjacent land use: _____

Disturbance: _____

Side is ditch

Datasheet ID:
30

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Date: 9/1 Staff Name(s): Heather White / Erica Hirvonen Levee Unit: _____ Levee Mile(s): _____
 Survey on: Waterside or Landside Distance from levee toe: _____ (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: _____ File Name: _____ Point Name: GGS22

HABITAT ATTRIBUTE		(SCORE)	Review
Water [0 = absent, 1 = present]			
1	Still or slow-flowing water over silt or mud substrate	+ (0)	
2	Flowing water over sand, gravel, rock or cement substrate	- (0)	
3	Water availability:		
	a) winter runoff or sporadic availability (i.e. ephemeral)	+ (0)	
	b) April through October (i.e. irrigation for crops)	+ (1)	
	c) all year (i.e. perennial marsh or channel)	+ (0)	
4	Site subject to severe seasonal flooding (i.e. within bypass)	- (0)	
5	Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+ (2)	
6	Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+ (0)	
	Subtotal:	3	
Basking/Refugia (Active Season) %= [0 = 0%; 1= 9-24%; 2= 25-74%; 3= 75-100%]			
7	Banks:		
	a) Banks are sunny	+ (3) %	
	b) Banks shaded by overstory vegetation (i.e. trees, riparian)	- (0) %	
8	Vegetation in the aquatic habitat:		
	a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+ (0) %	
	b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	- (0)	
9	Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+ (2) %	
10	Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+ (1)	
	Subtotal:	6	
Predator/Prey [0 = absent, 1 = present]			
11	Prey fish present (i.e. small carp, mosquitofish, blackfish)	+ (0)	
12	Prey amphibians present (i.e. chorus frog, small bull frog)	+ (0)	
13	Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	- (0)	
	Subtotal:	0	
Adjacent Land Use [0 = absent, 1 = present]			
14	Natural marsh, wetland, mitigation bank, or manmade pond		
	a) functions ecologically as a wetland	+ (0)	
	b) functions for recreational use (i.e. fishing, boating, water skiing)	- (0)	
15	Rice fields (fallow or flooded)	+ (0)	
16	Upland habitat other than levee for winter refugia (above high water mark)	+ (1)	
17	Row crop, orchard, pasture, or other agricultural	- (1)	
18	Urban or developed public area	- (0)	
	Subtotal:	0	
Levee (footprint of rodent damage repair activities) [0 = absent, 1 = present]			
19	Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+ (0)	
20	Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+ (0)	
21	Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	- (0)	
	Subtotal:	0	
TOTAL SCORE:		9	
22	Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'?	<input type="checkbox"/> yes <input type="checkbox"/> no	
23	Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee?	<input type="checkbox"/> yes <input type="checkbox"/> no	
Photo #'s: 3143 3144			
Reviewer(s):			Date:

Comments

Water: \emptyset water. Clearing day. The ditch seems recently created.

Basking/Refugia: Refugia is adjacent levee.

Predator/Prey: Raptors nearby.

Adjacent land use: Tomatoes and empty field.

Disturbance: Ag disturbance

Does not seem to be adequate GGS habitat.
Potential GGS aquatic resource is separated/isolated from this dry feature by a large levee.

Unsuitable

Datasheet ID:

31

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Date: 8/17 Staff Name(s): Erika H. + Heather W. Levee Unit: _____ Levee Mile(s): _____
 Survey on: Waterside or Landside Distance from levee toe: 40 (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: 225691 File Name: YoloSetbackGGS08172016 Point Name: GGS 3

HABITAT ATTRIBUTE		(SCORE)	Review
Water [0 = absent, 1 = present]			
1	Still or slow-flowing water over silt or mud substrate	+ (0)	
2	Flowing water over sand, gravel, rock or cement substrate	- (0)	
3	Water availability:		
	a) winter runoff or sporadic availability (i.e. ephemeral)	+ (1)	
	b) April through October (i.e. irrigation for crops)	+ (0)	
	c) all year (i.e. perennial marsh or channel)	+ (0)	
4	Site subject to severe seasonal flooding (i.e. within bypass)	- (1)	
5	Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+ (2)	
6	Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+ (0)	
Subtotal:		2	
Basking/Refugia (Active Season) %= [0 = 0%; 1= 9-24%; 2= 25-74%; 3= 75-100%]			
7	Banks:		
	a) Banks are sunny	+ (0) %	
	b) Banks shaded by overstory vegetation (i.e. trees, riparian)	- (3) %	
8	Vegetation in the aquatic habitat:		
	a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+ (0) %	
	b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	- (1)	
9	Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+ (2) %	
10	Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+ (1)	
Subtotal:		-1	
Predator/Prey [0 = absent, 1 = present]			
11	Prey fish present (i.e. small carp, mosquitofish, blackfish)	+ (0)	
12	Prey amphibians present (i.e. chorus frog, small bull frog)	+ (1)	
13	Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	- (0)	
Subtotal:		1	
Adjacent Land Use [0 = absent, 1 = present]			
14	Natural marsh, wetland, mitigation bank, or manmade pond		
	a) functions ecologically as a wetland	+ (0)	
	b) functions for recreational use (i.e. fishing, boating, water skiing)	- (0)	
15	Rice fields (fallow or flooded)	+ (0)	
16	Upland habitat other than levee for winter refugia (above high water mark)	+ (0)	
17	Row crop, orchard, pasture, or other agricultural	- (0)	
18	Urban or developed public area	- (1)	
Subtotal:		-1	
Levee (footprint of rodent damage repair activities) [0 = absent, 1 = present]			
19	Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+ (N/A)	
20	Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+ (N/A)	
21	Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	- (N/A)	
Subtotal:		N/A	
TOTAL SCORE:		7	
22	Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'?	<input type="checkbox"/> yes <input type="checkbox"/> no	
23	Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee?	<input type="checkbox"/> yes <input type="checkbox"/> no	
Photo #'s: <u>3012</u> <u>3013</u>			
Reviewer(s):			Date:

Marg.

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Datasheet ID: 32

Date: 8/17/16 Staff Name(s): Krnica H + Heather W, Levee Unit: _____ Levee Mile(s): _____
 Survey on: Waterside or Landside Distance from levee toe: _____ (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: 225691 File Name: y010 setback ops 0817 2016 Point Name: GGS 4

HABITAT ATTRIBUTE		(SCORE)	Review
Water [0 = absent, 1 = present]			
1	Still or slow-flowing water over silt or mud substrate	+(1)	
2	Flowing water over sand, gravel, rock or cement substrate	-(0)	
3	Water availability:		
	a) winter runoff or sporadic availability (i.e. ephemeral)	+(1)	
	b) April through October (i.e. irrigation for crops)	+(1)	
	c) all year (i.e. perennial marsh or channel)	+(1)	
4	Site subject to severe seasonal flooding (i.e. within bypass)	-(0)	?
5	Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+(2)	
6	Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+()	?
Subtotal:		4	
Basking/Refugia (Active Season) %= [0 = 0%; 1 = 9-24%; 2 = 25-74%; 3 = 75-100%]			
7	Banks:		
	a) Banks are sunny	+(2) %	
	b) Banks shaded by overstory vegetation (i.e. trees, riparian)	-(2) %	
8	Vegetation in the aquatic habitat:		
	a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+(2) %	
	b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	-(0)	
9	Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+(3) %	
10	Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+(1)	
Subtotal:		6	
Predator/Prey [0 = absent, 1 = present]			
11	Prey fish present (i.e. small carp, mosquitofish, blackfish)	+(1)	
12	Prey amphibians present (i.e. chorus frog, small bull frog)	+(1)	
13	Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	-(1)	
Subtotal:		1	
Adjacent Land Use [0 = absent, 1 = present]			
14	Natural marsh, wetland, mitigation bank, or manmade pond		
	a) functions ecologically as a wetland	+(0)	
	b) functions for recreational use (i.e. fishing, boating, water skiing)	-(0)	
15	Rice fields (fallow or flooded)	+(0)	
16	Upland habitat other than levee for winter refugia (above high water mark)	+(1)	
17	Row crop, orchard, pasture, or other agricultural	-(1)	
18	Urban or developed public area	-(1)	
Subtotal:		-2	
Levee (footprint of rodent damage repair activities) [0 = absent, 1 = present]			
19	Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+(1)	
20	Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+(1)	
21	Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	-(0)	
Subtotal:		2	
TOTAL SCORE:		14	
22	Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'?	<input type="checkbox"/> yes <input type="checkbox"/> no	
23	Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee?	<input type="checkbox"/> yes <input type="checkbox"/> no	
Photo #'s: 13014			
Reviewer(s):			Date:

Marginal

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Datasheet ID: 33

Date: 8/17/16 Staff Name(s): Erica H + Heather W Levee Unit: _____ Levee Mile(s): _____
 Survey on: Waterside or Landside Distance from levee toe: 10 (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: 225691 File Name: yolo setback ggs 08/17/2016 Point Name: GGS 5

HABITAT ATTRIBUTE		(SCORE)	Review
Water [0 = absent, 1 = present]			
1	Still or slow-flowing water over silt or mud substrate	+(1)	
2	Flowing water over sand, gravel, rock or cement substrate	-(0)	
3	Water availability:		
	a) winter runoff or sporadic availability (i.e. ephemeral)	+(1)	
	b) April through October (i.e. irrigation for crops)	+(1)	
	c) all year (i.e. perennial marsh or channel)	+(1)	
4	Site subject to severe seasonal flooding (i.e. within bypass)	-(1)	
5	Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+(2)	
6	Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+(2)	
Subtotal:		7	
Basking/Refugia (Active Season) %= [0 = 0%; 1 = 9-24%; 2 = 25-74%; 3 = 75-100%]			
7	Banks:		
	a) Banks are sunny	+(2)%	
	b) Banks shaded by overstory vegetation (i.e. trees, riparian)	-(2)%	
8	Vegetation in the aquatic habitat:		
	a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+(3)%	
	b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	-(0)	
9	Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+(2)%	
10	Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+(1)	
Subtotal:		6	
Predator/Prey [0 = absent, 1 = present]			
11	Prey fish present (i.e. small carp, mosquitofish, blackfish)	+(1)	
12	Prey amphibians present (i.e. chorus frog, small bull frog)	+(1)	
13	Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	-(1)	
Subtotal:		1	
Adjacent Land Use [0 = absent, 1 = present]			
14	Natural marsh, wetland, mitigation bank, or manmade pond		
	a) functions ecologically as a wetland	+(0)	
	b) functions for recreational use (i.e. fishing, boating, water skiing)	-(0)	
15	Rice fields (fallow or flooded)	+(0)	
16	Upland habitat other than levee for winter refugia (above high water mark)	+(1)	
17	Row crop, orchard, pasture, or other agricultural	-(1)	
18	Urban or developed public area	-(1)	
Subtotal:		-1	
Levee (footprint of rodent damage repair activities) [0 = absent, 1 = present]			
19	Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+(1)	
20	Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+(1)	
21	Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	-(0)	
Subtotal:		2	
TOTAL SCORE:		15	
22	Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'? <input type="checkbox"/> yes <input type="checkbox"/> no		
23	Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee? <input type="checkbox"/> yes <input type="checkbox"/> no		
Photo #'s:	3015 3016		
Reviewer(s):		Date:	

Unsuitable

Datasheet ID: 34

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Date: 8/17/16 Staff Name(s): Erica H + Heather W. Levee Unit: Levee Mile(s): Survey on: Waterside or Landside Distance from levee toe: 20 (feet) Is water feature to the levee? Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: GPS Name: 225691 File Name: yolo set back eggs 08172016 Point Name: GGS 6

Table with columns: HABITAT ATTRIBUTE, (SCORE), Review. Rows include Water, Basking/Refugia (Active Season), Predator/Prey, Adjacent Land Use, and Levee (footprint of rodent damage repair activities). Includes handwritten scores and a 'Redundant' note.

Unsuitable

Datasheet ID:
35

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Date: 8/17/16 Staff Name(s): H. White, E. Hironaka Levee Unit: _____ Levee Mile(s): _____
 Survey on: Waterside or Landside Distance from levee toe: 20 (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: 225691 File Name: Yolo setback ggs 08/17/2016 Point Name: GGS7

HABITAT ATTRIBUTE		(SCORE)	Review
Water [0 = absent, 1 = present]			
1	Still or slow-flowing water over silt or mud substrate	+ (0)	
2	Flowing water over sand, gravel, rock or cement substrate	- (0)	
3	Water availability:		
	a) winter runoff or sporadic availability (i.e. ephemeral)	+ (1)	
	b) April through October (i.e. irrigation for crops)	+ (0)	
	c) all year (i.e. perennial marsh or channel)	+ (0)	
4	Site subject to severe seasonal flooding (i.e. within bypass)	- (0)	
5	Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+ (2)	
6	Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+ (0)	
Subtotal:		3	
Basking/Refugia (Active Season) %= [0 = 0%; 1= 9-24%; 2= 25-74%; 3= 75-100%]			
7	Banks:		
	a) Banks are sunny	+ (0) %	
	b) Banks shaded by overstory vegetation (i.e. trees, riparian)	- (2) %	
8	Vegetation in the aquatic habitat:		
	a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+ (2) %	
	b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	- (1)	
9	Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+ (3) %	
10	Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+ (1)	
Subtotal:		3	
Predator/Prey [0 = absent, 1 = present]			
11	Prey fish present (i.e. small carp, mosquitofish, blackfish)	+ (0)	
12	Prey amphibians present (i.e. chorus frog, small bull frog)	+ (0)	
13	Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	- (0)	
Subtotal:		0	
Adjacent Land Use [0 = absent, 1 = present]			
14	Natural marsh, wetland, mitigation bank, or manmade pond		
	a) functions ecologically as a wetland	+ (0)	
	b) functions for recreational use (i.e. fishing, boating, water skiing)	- (0)	
15	Rice fields (fallow or flooded)	+ (0)	
16	Upland habitat other than levee for winter refugia (above high water mark)	+ (0)	
17	Row crop, orchard, pasture, or other agricultural	- (1)	
18	Urban or developed public area	- (0)	
Subtotal:		-1	
Levee (footprint of rodent damage repair activities) [0 = absent, 1 = present]			
19	Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+ (1)	
20	Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+ (1)	
21	Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	- (0)	
Subtotal:		2	
TOTAL SCORE:		7	

22 Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'? yes no
 23 Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee? yes no

Photo #'s: 3020 3021
 Reviewer(s): _____ Date: _____

Connected to GGS1

FMO 2013-14 Giant Garter Snake Water Habitat Survey Datasheets

Datasheet ID:
36

Date: 9/9 Staff Name(s): H White, Schun Levee Unit: 39-40 Levee Mile(s): _____
 Survey on: Waterside or Landside Distance from levee toe: 30 (feet) Is water feature or to the levee?
 Aquatic Habitat Type: IrrDitch ConcCanal AgCanal Channel Stream Marsh Pond Rice Field
 Waterbody: Width: 0-10' 10'-20' 20'-40' >40' Depth: 0-1' 1'-3' >3' Length: _____
 GPS Name: _____ File Name: _____ Point Name: _____

HABITAT ATTRIBUTE	(SCORE)	Review
Water [0 = absent, 1 = present]		
1 Still or slow-flowing water over silt or mud substrate	+ (1)	
2 Flowing water over sand, gravel, rock or cement substrate	- (0)	
3 Water availability:		
a) winter runoff or sporadic availability (i.e. ephemeral)	+ (1)	
b) April through October (i.e. irrigation for crops)	+ (1)	
c) all year (i.e. perennial marsh or channel)	+ (1)	
4 Site subject to severe seasonal flooding (i.e. within bypass)	- (1)	
5 Connectivity to known populations of GGS [within 1 mile = 3; 5 mi = 2; 10 mi = 1; >10 = 0]	+ (3)	
6 Connectivity to suitable habitat via channels [no breaks = 2; <= 200' = 1; >200' = 0]	+ (2)	
Subtotal:	5	
Basking/Refugia (Active Season) %= [0 = 0%; 1= 9-24%; 2= 25-74%; 3= 75-100%]		
7 Banks:		
a) Banks are sunny	+ (0) %	
b) Banks shaded by overstory vegetation (i.e. trees, riparian)	- (3) %	
8 Vegetation in the aquatic habitat:		
a) Aquatic or emergent vegetation present (i.e. cattails, bulrush, tule, primrose)	+ (0) %	
b) Terrestrial vegetation present in aquatic habitat (i.e. non-native ruderal) [0 = absent, 1 = present]	- (0)	
9 Surface refugia within 200' from water feature (i.e. grasses, low shrubs, woody debris, riprap)	+ (2) %	
10 Subsurface retreats within 200' from water (i.e. burrows, cracks, crevices) [0 = absent, 1 = present]	+ (1)	
Subtotal:	0	
Predator/Prey [0 = absent, 1 = present]		
11 Prey fish present (i.e. small carp, mosquitofish, blackfish)	+ (1)	
12 Prey amphibians present (i.e. chorus frog, small bull frog)	+ (1)	
13 Introduced gamefish present (i.e. striped bass, catfish, associated with permanent water source)	- (1)	
Subtotal:	1	
Adjacent Land Use [0 = absent, 1 = present]		
14 Natural marsh, wetland, mitigation bank, or manmade pond		
a) functions ecologically as a wetland	+ (1)	
b) functions for recreational use (i.e. fishing, boating, water skiing)	- (0)	
15 Rice fields (fallow or flooded)	+ (0)	
16 Upland habitat other than levee for winter refugia (above high water mark)	+ (0)	
17 Row crop, orchard, pasture, or other agricultural	- (1)	
18 Urban or developed public area	- (0)	
Subtotal:	0	
Levee (footprint of rodent damage repair activities) [0 = absent, 1 = present]		
19 Surface refugia on levee slopes for daytime cover? (i.e. grasses, low shrubs, riprap)	+ (1)	
20 Subsurface retreats on levee slopes for over-wintering (burrows/cracks/crevices above high water mark?)	+ (1)	
21 Disturbance on levee due to recreational activities? (i.e. walking dogs, hunting, fishing)	- (1)	
Subtotal:	1	
TOTAL SCORE:		9
22 Does the levee provide the ONLY over-wintering refugia above the high water mark within 500'?	<input type="checkbox"/> yes	<input type="checkbox"/> no
23 Are there noticeable ground squirrel burrows or other holes/cracks in this section of levee?	<input type="checkbox"/> yes	<input type="checkbox"/> no
Photo #'s: <u>2021-2025</u>		
Reviewer(s): _____		Date: _____

