INITIAL STUDY
FOR THE
COTTAGE CREEK DAM MODIFICATION PROJECT

Prepared for:

Yuba Water Agency
1220 F Street
Marysville, CA 95901

Prepared by:

ROBERTSON - BRYAN, INC.
Solutions for Progress

9888 Kent Street
Elk Grove, CA 95624
(916) 714-1801

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ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
AMM	Avoidance and minimization measure
APE	area of potential effect
Basin	Sacramento Valley Air Basin
BMPs	best management practices
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CARB	California Air Resources Board
CCAA	California Clean Air Act
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CH_4	methane
CNDDB	California Natural Diversity Database
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CRPR	California Rare Plant Rank
dB	decibels
dBA	A-weighted decibels
dbh	diameter at breast height
ESA	Federal Endangered Species Act
Farmland	Prime Farmland, Unique Farmland, or Farmland of Statewide Importance
FCAA	Federal Clean Air Act
FERC	Federal Energy Regulatory Commission
FR	Federal Register
FRAQMD	Feather River Air Quality Management District
FTA	Federal Transit Administration
GHG	greenhouse gas
lbs/day	pounds per day
Leq	equivalent noise level
Leq[15]	equivalent noise level for a 15 minute measurement period

ACRONYMS AND ABBREVIATIONS

Lmax	maximum noise level
Lmin	Minimum noise level
MT	metric tons
NAAQS	National Ambient Air Quality Standards
NM	Noise Measurement
NO_2	nitrogen dioxide
NO_x	nitrous oxides
NPDES	National Pollutant Discharge Elimination System
PM_{10}	coarse particulate matter - from 2.5 to 10 microns in diameter
$PM_{2.5}$	Fine particulate matter - less than 2.5 microns in diameter
RCNM	Roadway Construction Noise Model
ROG	reactive organic gases
SB	Senate Bill
SF_6	sulfur hexafluoride
SMAQMD	Sacramento Metropolitan Air Quality Management District
SO_2	sulfur dioxide
SWPPP	storm water pollution prevention plan
TAC	toxic air contaminant
TSS	total suspended solids
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USFS	United States Forest Service
VdB	vibration decibels
VMT	vehicle miles traveled
YWA	Yuba Water Agency

1 INTRODUCTION

1.1 Project Overview

The Cottage Creek Dam, owned and operated by the Yuba Water Agency (YWA; formerly the Yuba County Water Agency), is located on Cottage Creek, approximately one-quarter mile upstream of New Bullards Bar Reservoir and near the right upstream abutment of New Bullards Bar Dam. The Cottage Creek Dam currently functions to divert Cottage Creek flows around an existing maintenance yard, water treatment plant, adjoining parking lot, and the right abutment of New Bullards Bar Dam, while the reservoir, the impoundment upstream of the Cottage Creek Dam, serves as a backup water supply for New Bullards Bar Reservoir facilities. An inspection of the Cottage Creek Dam in November 2015 determined that, although the structure remains intact and is not in danger of failing, there were potential issues regarding seepage, deterioration of the glory-hole spillway and erosion along the right abutment of the dam that were significant enough to warrant modifications to the Cottage Creek Dam to resolve future potential dam safety issues. YWA is thus considering modifications to the Cottage Creek Dam to resolve these potential dam safety concerns.

1.2 Regulatory Guidance

This document evaluates the potential environmental impacts of the proposed Cottage Creek Dam Spillway Modification (Proposed Project). This document has been prepared in accordance with the California Environmental Quality Act (CEQA), Public Resources Code section 21000 et seq., and the CEQA Guidelines, Title 14 California Code of Regulations section15000 et seq. This Initial Study was prepared by YWA to determine if the Proposed Project could have significant impacts on the environment. In accordance with CEQA Guidelines section 15064(a), an Environmental Impact Report must be prepared if there is substantial evidence that a project may have significant impacts on the environment. If the lead agency for the CEQA process determines that there is no substantial evidence for such impacts, or if the potential impacts can be reduced through revisions to the project description or the addition of mitigation measures, a Negative Declaration or Mitigated Negative Declaration can be prepared (CEQA Guidelines section 15070). YWA, as the CEQA lead agency for the Proposed Project, has determined that an Initial Study and Mitigated Negative Declaration are the appropriate document for compliance with CEQA and the CEQA Guidelines.

1.3 Public Review

In accordance with CEQA Guidelines section 15073, this document would be circulated to local, state, and federal agencies and to interested organizations and individuals who may wish to review and comment on it. In reviewing this Initial Study and proposed Mitigation Negative Declaration, affected public agencies and the interested public should focus on whether the document sufficiently identifies and analyzes the possible impacts on the environment.

Following the close of the public review period, the YWA Board of Directors would review and evaluate the evidence contained in the Initial Study and proposed Mitigated Negative Declaration and public comments received on these documents. At a scheduled and noticed YWA Board of

Directors public meeting, the Board would review a Statement of Findings prepared for the Proposed Project and would consider adoption of the Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program, and approval of the Proposed Project.

1.4 Summary of Findings

Section 3 of this document contains the analysis and discussion of potential environmental impacts resulting from construction and implementation of the Proposed Project. Based on the resources evaluated, it was determined that the Proposed Project would have no impact on the following resources:

- Agriculture and Forestry Resources
- Land Use/Planning
- Mineral Resources
- Population/Housing
- Public Services

Impacts of the Proposed Project were determined to be less than significant for the following resources:

- Aesthetics
- Air Quality
- Energy
- Geology/Soils
- Greenhouse Gas Emissions
- Hazards & Hazardous Materials
- Hydrology/Water Quality
- Recreation
- Transportation
- Tribal Cultural Resources
- Utilities/Service Systems
- Wildfire

Impacts of the Proposed Project to the following resources would be less than significant with incorporation of the mitigation measures described in Section 3:

- Biological Resources
- Cultural Resources
- Noise

As required by CEQA, a Mitigation Monitoring and Reporting Program will be prepared and adopted at the time of project approval. It will include those mitigation measures that will reduce potentially significant environmental impacts to less than significant levels.

1.5 Document Organization

This document is organized in the following manner:

- **Section 1 - Introduction.** This section provides a project overview and regulatory guidance, and describes the public review process and organization of this document.

- **Section 2 - Project Description.** This section describes project location, history and background, purpose, and components.

- **Section 3 - Environmental Checklist.** This section provides an environmental setting for the Proposed Project and analyzes the potential environmental impacts of the Proposed Project. Resource topics appear in the order that they appear in Appendix G (Environmental Checklist) of the CEQA Guidelines. Mitigation measures are incorporated and discussed, where appropriate, to reduce potentially significant impacts to a less than significant level. Mandatory Findings of Significance also are presented in this section.

- **Section 4 - List of Preparers.** This section contains a list of people that assisted in the preparation of this document.

- **Section 5 - References.** This section identifies the references used in the preparation of this document.

2 PROJECT DESCRIPTION

This section describes the Proposed Project location, provides history and background of the project site, describes the project purpose, and provides a detailed description of the project components.

2.1 Project Location

The Proposed Project is located in northeastern Yuba County, approximately 30 miles northeast of Yuba City, at an approximate elevation of 2,000 feet, within and directly adjacent to the Tahoe National Forest. The Proposed Project is located in Sections 25 and 26 of Township 18 North, Range 7 East, as depicted on the Challenge 2000 United States Geological Survey 7.5-minute quadrangle (Mount Diablo Base and Meridian) (**Figure 1**).

The project site is located adjacent to the Emerald Cove Marina and New Bullards Bar Dam and Reservoir. The parking lot, restrooms, and a water treatment facility associated with the adjacent marina and reservoir are located downstream of the Cottage Creek Dam and between the dam and New Bullards Bar Reservoir and are located within the project site (**Figure 2**).

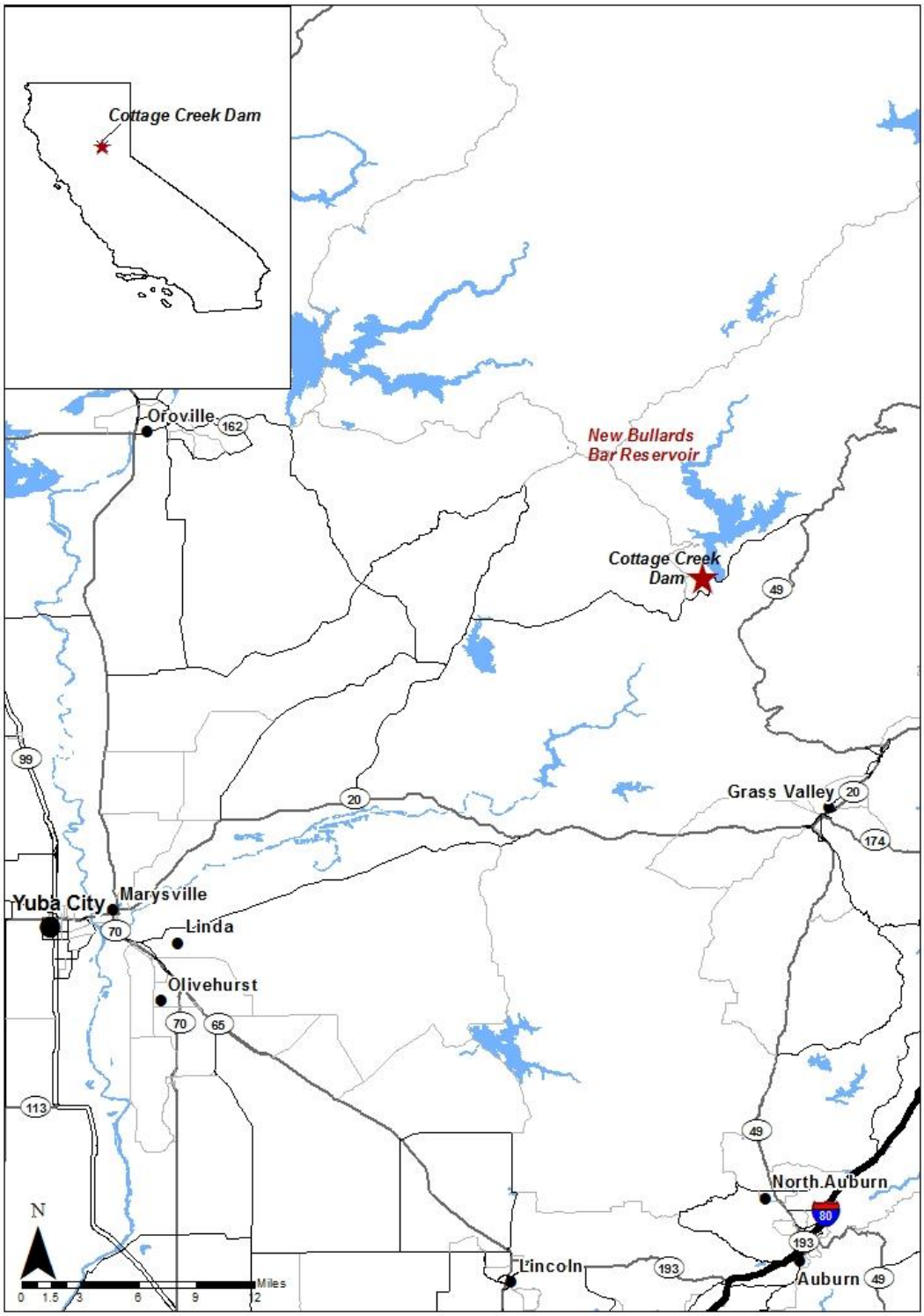

Figure 1. Cottage Creek Dam regional location map.

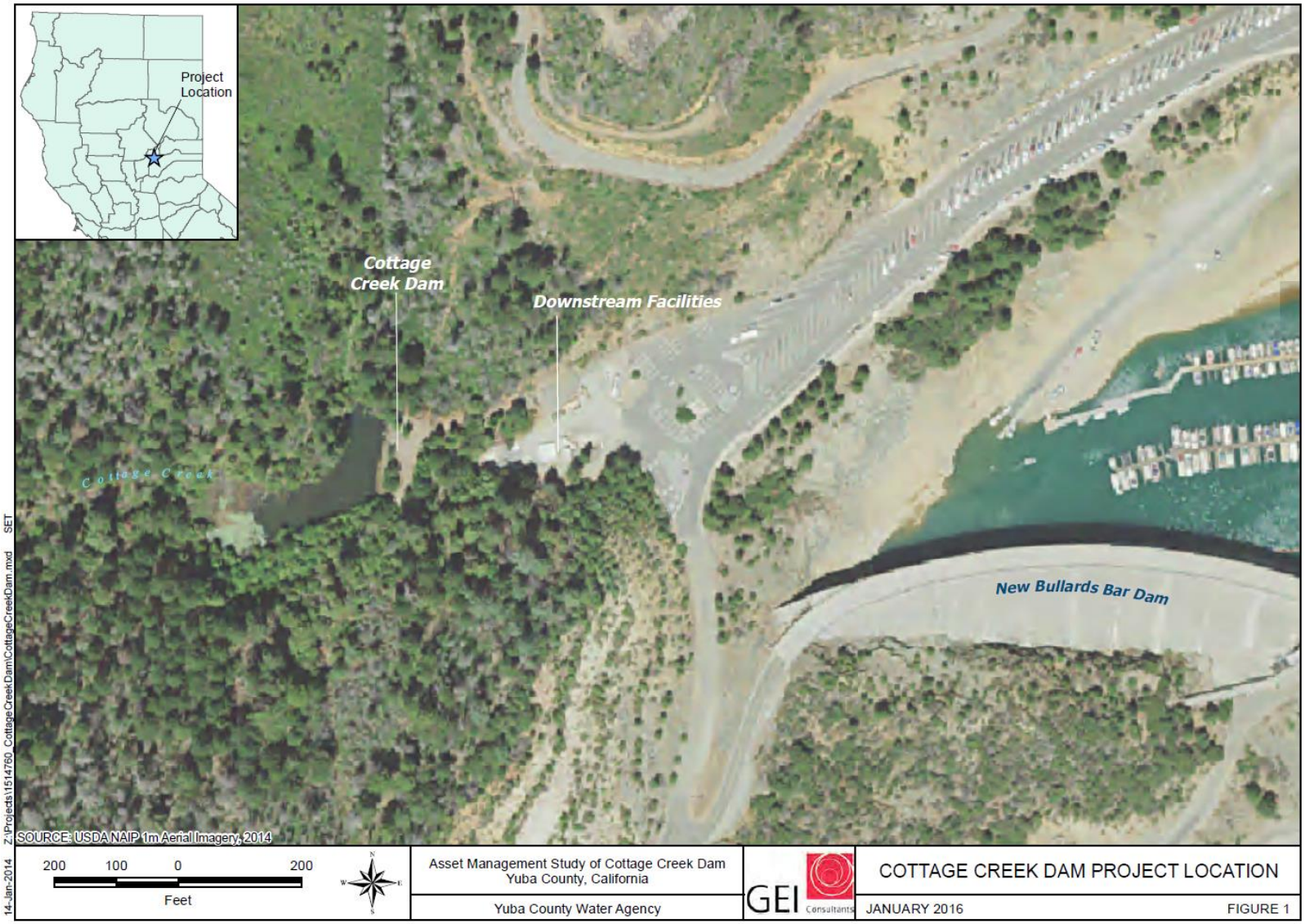

Figure 2. Cottage Creek Dam project location map.

2.2 Project History and Background

Cottage Creek Dam is owned and operated by the YWA, however, a portion of the Cottage Creek Dam and associated reservoir are located on United States Forest Service (USFS) land. Cottage Creek Dam was constructed in 1966 and its original purpose was to support the construction of New Bullards Bar Dam by: (1) diverting Cottage Creek flows around the right abutment of New Bullards Bar Dam, thereby protecting the foundation work area of the main dam and the construction plant located along the north-west bank; and (2) providing a water supply for construction operations of New Bullards Bar Dam. Since completion of New Bullards Bar Dam, the Cottage Creek Dam functions to divert Cottage Creek flows around an existing maintenance yard, water treatment plant, adjoining parking lot, and the right abutment of New Bullards Bar Dam, while the reservoir serves as a backup water supply for New Bullards Bar Reservoir facilities.

Cottage Creek Dam was constructed as an earth and rockfill structure and is approximately 50 feet tall. Cottage Creek Reservoir, the upstream impoundment created by the Cottage Creek Dam, is approximately one acre in size and impounds an estimated 11 acre-feet of water. Cottage Creek Dam has a low level outlet and a glory hole type spillway. The lower outlet is constructed from 18-inch diameter spiral welded pipe. An 18-inch gate valve near the toe of the dam controls the flow from the lower outlet. An adapted reducer routes the flow from the 18-inch spiral welded pipe into a 6-inch PVC pipeline that connects to a second valve and discharges into the common storm water drain, eventually making its way into New Bullards Bar Reservoir. The glory-hole spillway is a 60-inch diameter corrugated metal pipe that has a vertical drop inlet on the upstream face of the dam, emerges at the downstream toe of the dam, travels underground past the storage yard and water treatment facility, and discharges into a storm water drain 300 feet downstream of the toe of the dam. During normal operations the lower outlet valve is closed and the reservoir level is maintained via overflow through the glory-hole spillway. The dam does not have an additional emergency spillway.

It is important to note that Cottage Creek Dam does not fall under the jurisdiction of either the California Division of Dam Safety or the Federal Energy Regulatory Commission due to its small size and its small impoundment area of approximately 11 acre-feet at spillway crest.

Seepage of approximately five gallons per minute was discovered exiting the right downstream toe of the Cottage Creek Dam in May 2015. While investigations found no immediate threat to safety, a daily seepage monitoring plan was instituted and monitoring is on-going.

On November 17, 2015, a site inspection of Cottage Creek Dam was completed. The inspection included assessment of the dam, the upstream reservoir, the downstream water treatment facilities, the current seepage condition, and the downstream discharge path of the spillway. Based on the inspection, it was determined that the approximately 50-year old embankment dam remains intact despite the seepage issues. The following conditions were noted.

- The inlet of the dam spillway remained clear of debris and vegetation.
- The crest of the dam was generally clear from vegetation and trees.

- Trees and vegetation exist along the downstream and upstream slope of the dam, as well as the right and left abutment. Generally, trees range in diameter between 6 and 24 inches.
- Some tree fall was noted along the left downstream abutment and downstream slope of the dam.
- The hillside above the roadway along the right abutment of Cottage Creek Dam was near vertical and indicates sloughing below the root zone.
- Grout holes were noted along the crest of the dam at a spacing of approximately 10 feet.
- Seepage was noted along the spillway downstream of the dam (seepage measurements have been recorded manually since June 18, 2015, and indicate an average seepage flow of approximately five gallons per minute, although seepage levels increase and decrease with reservoir elevation).
- Seepage believed to originate from Cottage Creek appeared to drain along the old streambed/fill interface into New Bullards Bar Reservoir at the right abutment. This seepage was only noted due to an abnormally low New Bullards Bar Reservoir level. It is likely that this seepage has continuously occurred and is not a new occurrence.
- The 60-inch corrugated metal pipe spillway shows signs of rust on the inside lower one-third of the pipe based on observations from the downstream end and the spillway inlet.
- The downstream water treatment facility is located approximately 120 feet downstream of the dam toe and approximately 40 feet from the right downstream abutment of Cottage Creek Dam. The noted seepage has had no visible impact on the water treatment facilities.

Based on original engineering information, the Cottage Creek Dam was meant to exist for only four years, with the dam to be breached and removed and the creek re-diverted into the newly created New Bullards Bar Reservoir after construction of the New Bullards Bar Dam was completed. Instead, Cottage Creek Dam has been in service for nearly 50 years. Although there is no immediate threat to safety, concerns regarding seepage, vegetation, deterioration of the corrugated metal pipe spillway and flood capacity have moved YWA to take action to prevent potential future dam safety issues.

2.3 Project Purpose

The purpose of the Proposed Project is to resolve potential public safety issues associated with the Cottage Creek Dam. If left unaddressed it is expected that issues associated with the aging infrastructure, such as seepage, deterioration of the glory-hole spillway, and drainage problems, will worsen over time. In addition to the potential future public safety issues, the dam has the effect of creating a pooled environment (i.e., the reservoir) within the otherwise lotic Cottage Creek.

2.4 Proposed Project

2.4.1 Project Description Overview

The Proposed Project consists of removing the existing corrugated metal pipe spillway and downstream culvert, excavating a portion of the dam down to a lower elevation, and installing a large concrete box culvert that would be sized to pass all Cottage Creek flows downstream past the Cottage Creek Dam and into New Bullards Bar Reservoir. These actions would result in the drainage of the existing Cottage Creek Reservoir. The existing Cottage Creek Reservoir would no longer capture water, but water would continue to move through the area and the former reservoir would function as a wetland. To minimize cost, the portion of the dam embankment not impacted by the new box culvert would remain in place. The work would be designed with provisions for maintaining the existing water treatment facilities in service and conveying runoff from Cottage Creek downstream of the water treatment plant and recreation facilities.

Implementation of the Proposed Project is not expected to result in a net loss of jurisdictional waters. However, the types of jurisdictional waters are expected to change. At the conclusion of the Proposed Project, the Cottage Creek and unnamed tributary channels located within the existing footprint of the reservoir would be re-established. The remaining areas that are currently open water would naturally convert to a mixture of palustrine emergent wetland and forested wetland or bog.

The Proposed Project includes six major components:

1. mobilization;
2. clearing and grubbing;
3. dewatering;
4. dam excavation and removal of existing corrugated metal pipe spillway and downstream culvert;
5. installation of concrete culvert; and
6. demobilization.

Each of these components is described in detail in the following sections. **Appendix A** contains the engineering drawings for the Proposed Project.

2.4.2 Mobilization

Prior to the initiation of construction work, the contractor would define an area in the vicinity of the project site to store construction materials and equipment (i.e., the staging area). The location of the staging area would be determined by the contractor, but would likely be located within the parking lot of the marina facilities, located downstream of the Cottage Creek Dam, which would eliminate potential impacts to vegetation and other resources. The staging area would be enclosed with construction fencing covered with a mesh screen to limit visibility to the site. Construction and equipment staging and stockpiling would take place within the staging area and

all materials would be stored above ground on platforms, skids or other supports. Mobilization is expected to take 1–2 days.

Contractor fuel trucks and fueling equipment would be parked at the storage yard and driven or transported to the work site for refueling purposes. All materials and equipment would be mobilized from the staging area.

2.4.3 Clearing and Grubbing

Areas of the Proposed Project, including the dam face, are presently covered with mature trees and other native and ruderal vegetation, much of which would need to be cleared and grubbed prior to the initiation of construction activities. To prepare the site, an area of approximately 15,000 square feet would be cleared of all vegetable growth, such as trees logs, upturned stumps, roots of downed trees, brush, grass, and weeds, and all other objectionable materials within the limits of construction would be removed. The dam embankment would also be stripped of all trees that occur in the excavation footprint. A total of 141 trees occur within the clear and grub area, including ponderosa pine, incense cedar, big leaf maple, California laurel, sugar pine, black oak, madrone, Douglas fir, and toyan. Understory vegetation that would be removed include Himalayan blackberry and sword fern. The trees range in size from 2 to 18 inches in diameter. Only five of the 141 trees to be removed are located on USFS lands, primarily because no vegetation would be removed from upstream of the dam.

Access for the vegetation removal would be from the right abutment of the dam. A D-5 dozer and an excavator would be used to remove vegetation. Clearing the site would also require removing 4,000 cubic feet of existing asphalt from the parking lot located downstream of the Cottage Creek Dam by using a pavement cutter or other similar equipment to prepare for spillway removal. All vegetation and asphalt removed from the project site would be taken off site to approved disposal sites. Vegetation and asphalt removal is expected to take approximately 2–4 weeks.

2.4.4 Rerouting Cottage Creek Flows and Dewatering the Reservoir

Prior to modifying Cottage Creek Dam, Cottage Creek flows would be rerouted around Cottage Creek Reservoir. During construction there would need to be precautions to keep water from the construction area. Due to the geography of the site, the only option for diverting Cottage Creek is to install a temporary bypass pipe to move water from Cottage Creek around the Cottage Creek Reservoir and Dam and directly into New Bullards Bar Reservoir. The pipe would be designed to accommodate necessary temporary diversion sizing parameters including; tributary area, imperviousness, project duration, safety factor, and seasonal sizing coefficient. Since the creek upstream of the reservoir and the reservoir are significantly higher in elevation than New Bullards Bar Reservoir the use of pumps should not be necessary to convey the water downstream into New Bullards Bar Reservoir. The pipe would be sized to accommodate the design flow using no more than 80 percent of the pipe full flow capacity. A Manning's n value would be chosen based on the type of pipe material that would be used (i.e., concrete or corrugated metal). Points of tie-in the natural channel would be protected with appropriately sized riprap.

The sequence for stream flow diversion would be as follows:

1. Install flow conveyance pipes, but do not divert flow.
2. Install upstream barrier that channelizes flows into a size and diameter equal to the conveyance pipe. Allow water to flow through the barrier until ready to divert creek flows.
3. Connect conveyance pipe to upstream barrier.

Once flows from Cottage Creek are diverted around the reservoir and into New Bullards Bar Reservoir, Cottage Creek Reservoir would be dewatered using the low-level outlet in order to initiate construction activities on the dam. The low-level outlet runs from the reservoir low-point upstream of the embankment to the downstream drainage ditch that runs along Road 169, and then into New Bullards Bar Reservoir.

The sequence for reservoir dewatering would be as follows:

1. Slowly reduce the water level of the reservoir by one-third.
2. Inspect any dewatered areas for stranded and trapped fish and remove them with dip nets.
3. Slowly reduce the water level of the reservoir by another one-third of the original capacity.
4. Again, inspect dewatered areas for stranded and trapped fish and remove them with dip nets.
5. Reduce the water level to a small ponded area and seine and dip net any stranded fish.
6. If water remains within the dewatered area; seine and dip net the project area until catch rates have reached no fish for 3 consecutive passes.
7. Allow the reservoir to drain completely and check substrate for remaining fish.

Fish relocation would only be performed by qualified fisheries biologists who have experience with fish capture and handling. The fisheries biologist shall be present onsite during the entire process of dewatering activities. The fisheries biologist would measure air and water temperatures throughout the fish relocation process to ensure water temperatures do not exceed 18°C. Fish capture methods would include seining and dip netting. Seines would have a mesh size that is appropriate to ensure entrapment of residing fish and age classes. Fish handling would be kept to a minimum, but if fish handling is necessary the biologist would wet hands prior to touching the fish. Fish would be held in a container (five gallon minimum to prevent overcrowding) with water temperatures not to exceed the temperature of creek waters. Two containers would be available to segregate young-of-the-year fish from larger fish to avoid predation. The containers would be continuously aerated with a battery-powered external bubbler, kept in the shade, and have a lid. For all captured fish, the fisheries biologist would record species and year-class. Fish would be retained for the shortest possible time to ensure stress is minimized and then be placed into New Bullards Bar Reservoir.

2.4.5 Excavate Dam and Remove Existing Corrugated Metal Pipe Spillway and Downstream Culvert

Removal of the existing infrastructure would follow a stepwise process beginning at the dam and finishing with removal of the downstream culvert. Prior to infrastructure removal the upstream pond would be dewatered through the existing toe of the dam. Dewatering operations would continue to occur after the dam is excavated by rerouting all water entering the excavation area around the construction activities. Water would be rerouted to New Bullards Bar Reservoir in a manner that prevents damage to adjacent property and pipe trenches in conformance with all local regulations.

After initial dewatering of the upstream pond, a portion of the dam embankment would be permanently removed at the right abutment to allow installation of the new box culvert at a lower elevation than the current glory hole spillway. Excavation into the south slope of the dam face is expected to encounter the rock abutment, at which point the excavation would follow the abutment slope. The excavation is expected to remove approximately 16,000 cubic yards of soil and 1,500 cubic yards of rock. A final design slope of the excavated dam face is expected to be at a ratio of 2 horizontal to 1 vertical (2H:1V) from an elevation of 2,052 feet (National Geodetic Vertical Datum 29), and not steeper than 2.5H:1V from an elevation of 2,052 feet to 2,082 feet (National Geodetic Vertical Datum 29).

After dam excavation is complete the existing corrugated metal pipe spillway and downstream culvert would be removed. First the riser inlet including the trashrack and relevant appurtenances would be removed. Then, to access and remove the existing underground 60-inch corrugated metal pipe culvert and culvert crossing underneath County Road 169, a trench would be excavated. Dimensions of the proposed trench are provided in drawings C-01 and C-02, located in Appendix A.

Dewatering, excavation and infrastructure removal would take approximately 4–5 weeks. The right abutment and downstream face of the dam would serve as an access route for all of the excavation and removal activities. An excavator or similar type of equipment would be used to excavate the right abutment of the dam. An excavator equipped with a rock bit would be used to break up concrete surrounding the 60-inch corrugated metal pipe. Then a crane would be used to remove the pipe segments. Excavated materials from the dam would be used to backfill the culverts or hauled off site with haul trucks. The removed piping would either be salvaged or hauled off site with haul trucks.

2.4.6 Install Concrete Culvert

Prior to culvert installation the trench would be subgraded with controlled low strength materials or another approved base. Geotextile fabric would be added to the trench prior to culvert installation. The length of open trench would be limited to 600 feet in advance of pipe laying.

A precast 600 feet long, 8-feet by 8-feet concrete box culvert pipe with a headwall extending 5 feet above the structure would be installed in the subgraded trench. Box culvert corners would then be cast in place. The concrete culvert would extend from the upstream toe of the dam, which is located below the ordinary high water mark, to County Road 169. Prior to concrete placement, all water would be properly cut off or diverted by pipes or other means. The concrete

culvert would be installed with the use of mechanical vibrators to eliminate rock pockets and voids and to ensure a smooth, dense and even texture. Vibrators would be used to consolidate the incoming concrete.

After the pipe has been bedded, pipe zone material would be placed simultaneously on both sides of the pipe. Material would be placed around the pipe so that the pipe barrel is completely supported and no voids or uncompacted areas are left beneath the pipes. Then the area would be backfilled with a portion of available fill from dam excavation (6,000 cubic yards) and imported materials (550 cubic yards) to protect the structure from landslides or tree falls. In addition, backfill on the dam would be added to a minimum of 2,055 feet in elevation, then graded to a downstream slope that matches the existing embankment slope (average existing embankment slope is 2H:1V) to ensure stable slopes downstream of the dam. Backfilling would be completed by using large dump trucks (9 yard trucks) to transport backfill, then a bulldozer would be used to compact the material. Dewatering operations would operate continuously to remove and dispose of all water entering the backfill area.

The box culvert would also replace the culvert previously crossing under County Road 169. To restore County Road 169 asphalt pavement sections (a total of 3,500 cubic feet of pavement), aggregate base and Portland cement concrete would be placed, followed by asphalt concrete material that would be installed with an asphalt concrete mat paving machine.

After installation of the culvert, the low-level outlet of the dam would be removed and disposed of offsite. The Cottage Creek channel upstream of the Cottage Creek Dam crest would be graded towards the box culvert inlet at a one percent slope. Then riprap would be installed upstream of the new box culvert. The entire riprap channel would be relined with cobbles and small boulders. Finally, a trash rack would be installed on the upstream end of the box culvert.

Installation of the concrete culvert and associated work would take approximately three months. To complete this component of the Proposed Project various types of equipment would be utilized. Equipment may include trucks for moving in concrete forms, a crane to place forms and precast box sections, and a concrete pump for concrete work and concrete trucks.

2.4.7 Demobilization

At the completion of the Proposed Project, general site clean-up and equipment removal from the work area would occur. These activities would include: removal of trash, debris, construction materials and weeds; regrading of staging and storage areas, if necessary; seeding and mulching the exposed earthwork; and removal of all temporary signage and fencing. Demobilization is expected to take approximately one week.

2.4.8 Schedule

With favorable weather conditions, construction of the Proposed Project is expected to take approximately four months to complete and would be constructed from July to October 2021.

2.4.9 Avoidance and Minimization Measures

The following avoidance and minimization measures (AMM) would be incorporated into YWA's project activities to assist in mitigating the potential environmental effects during construction. **Table 1** summarizes the general AMMs.

Table 1. Summary of avoidance and minimization measures.

Number	Title	Summary
AMM 1	Timing of-In Water Work	Timing of construction would occur during the dry season. Construction activities would not occur at night.
AMM 2	Worker Training	Construction personnel would undergo training and education on applicable environmental rules and regulations, and measures necessary to avoid or minimize effects to sensitive resources.
AMM 3	Construction Best Management Practices (BMPs) and Monitoring	Standard practices and measures that would be implemented prior to, during, and after construction to avoid or minimize impacts to water quality, aquatic habitat, and listed species.
AMM 4	Stormwater Pollution Prevention Plan	A Stormwater Pollution Prevention Plan (SWPPP) would be prepared and implemented for the Proposed Project. The SWPPP would contain measures to minimize pollutants in stormwater discharges during and after construction to prevent water quality degradation due to the Proposed Project.
AMM 5	Erosion and Sediment Control	Measures would be implemented to minimize short-term and long-term erosion, including utilization of straw wattles and other erosion protection measures.
AMM 6	Dispose and reuse of excavated materials.	Measures for handling, storage and disposal of excavated materials and dam infrastructure (i.e., glory hole).
AMM 7	Fish relocation plan	Measures for fish relocation out of Cottage Creek Reservoir into New Bullards Bar Reservoir
AMM 8	Construction site clean-up	Includes revegetation plan and removal of all construction equipment.

AMM 1: Timing of Work

AMM 1 consists of the following measures related to the timing of in-water work.

- Access to the work site would occur during the working hours of 7:00 a.m. to 6:00 p.m. Monday through Friday inclusive, excluding legal holidays.

AMM 2: Worker Training

AMM 2 consists of the following worker training measure.

- All contractors and equipment operators would be given Worker Environmental Awareness Program training to make them aware of the ecological value of the site, including the potential for special-status species and their habitats to be present near the project site, and educate them on how to best avoid impacting the biota and lower Yuba River.

AMM 3: Construction Best Management Practices (BMPs)

AMM 3 consists of the following construction BMPs.

- All stockpiling of materials would occur away from all Waters of the United States.
- Fueling, lubrication, maintenance, storage, and staging of vehicles and equipment would be conducted in a manner that would prevent discharges to any Waters of the United States.
- Fuel transfer vehicles would have absorbent pads, pillows, socks, booms or other spill containment materials placed under the fueling operation.
- Staging, and both temporary and long-term material disposal areas would be located away from Waters of the United States.
- Fuel transfers would take place at least 100 feet from exclusion zones, drainages and streams.
- Personnel involved in the Proposed Project would be trained in emergency response and spill containment techniques.
- Petroleum products would be stored in non-leaking containers at impervious storage sites from which runoff is not permitted to escape.
- Materials and debris from all work areas would be removed following completion of the Proposed Project.
- Fugitive dust would be minimized by watering or implementing other dust control measures.
- Fugitive dust would also be minimized by minimizing areas cleared (i.e., storage areas, staging areas, stockpile areas and vehicle parking), limiting construction vehicle speeds to 15 miles per hour or less, covering haul vehicles, installing wheel washers or other similar methods where vehicles exit the construction sites onto paved roads.
- A fire plan would be developed to include preventative measures, emergency procedures to be followed, current emergency telephone numbers, and an area map.
- No fires would be allowed.
- In extreme weather and/or when fuels are excessively dry, no chainsaw work would be conducted.

AMM 4: Stormwater Pollution Prevention Plan (SWPPP)

AMM 4 consists of preparation of a SWPPP pursuant to the State Water Resources Control Board National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ/NPDES Permit No. CAS000002). The SWPPP shall include specific BMPs to avoid and minimize impacts on water quality during construction activities. The goals of the SWPPP would generally be to protect water quality; establish procedures to minimize accelerated soil erosion; and minimize non-stormwater runoff. The SWPPP would define measures to prevent, control, and minimize impacts from a spill of hazardous, toxic, or petroleum substances during construction of the Proposed Project, as well as a description of potentially hazardous and non-hazardous materials that could be accidentally spilled, potential spill sources, potential spill causes, proper storage and transport methods, spill containment and

recovery measures, agency notification, and responsible parties. Components of the SWPPP would generally include measures that limit risk of release of contaminates to waterways. The SWPPP would have the following primary objectives.

- Stabilization of the site as soon as possible.
- Protection of slopes and channels.
- Reduction of impervious surfaces and promotion of infiltration.
- Controlling the perimeter of the Project site.
- Protection of all nearby receiving waters.
- Following all necessary pollution prevention measures.
- Minimization of the area and duration of exposed soils.

AMM 5: Erosion and Sediment Control

AMM 5 consists of the following erosion and sediment control measures.

- All feasible avoidance and minimization measures would be implemented to control erosion and runoff from areas associated with construction activities.
- Install weed-free straw waddles, straw bales, weed-free fiber rolls or silt fencing, as necessary, to capture sediment.
- Install wind erosion control features (e.g., application of hydraulic mulch or bonded fiber matrix).
- Restore exposed earthwork with seed and mulch as soon as construction is complete

AMM 6: Dispose and Reuse of Excavated Materials

AMM 6 consists of the following measures for disposal and reuse of excavation materials.

- A portion of the storage site would be set aside for the materials that would be used for backfill.
- Removed vegetative material would be chipped, stockpiled, and spread as mulch over the Project site once earthwork is complete, when practical.
- The contractor would remove all debris, rubbish, and other materials that cannot be salvaged and dispose of them at an approved disposal site.

AMM 7: Fish Relocation Plan

AMM 7 consists of the following measures relocating fish present in the Cottage Creek Reservoir.

- Fish relocation would only be performed by qualified fisheries biologists who have experience with fish capture and handling. The fisheries biologist would be present onsite during the entire dewatering process.

- The fisheries biologist would measure air and water temperatures throughout the fish relocation process to ensure water temperatures do not exceed 18 degrees Celsius. Fish capture methods would include seining and dip netting.
- Seines would have a mesh size that is appropriate to ensure entrapment of residing fish and age classes.
- Fish handling would be kept to a minimum, but if fish handling is necessary the biologist would wet hands prior to touching the fish.
- Fish would be retained for the shortest possible time to ensure stress is minimized.

AMM 8: Construction Site Clean-up

AMM 8 consists of the following construction site clean-up measures.

- The revegetation palette would not contain any plants listed on the California Invasive Plant Council Invasive Plant Inventory, which can be accessed online at http://www.cal-ipc.org/ip/inventory/weedlist.php.
- The USFS Native Plant Materials Policy (USFS 2012) would be followed for any erosion control or planting/seeding.
- All construction supplies, materials, and debris from the Proposed Project would be removed following completion of the Proposed Project.

3 ENVIRONMENTAL CHECKLIST

Environmental Factors Potentially Affected

The environmental factors, if checked below, would be potentially affected by the Proposed Project and would involve at least one impact that is a "potentially significant impact" that cannot be reduced to a less than significant level as indicated by the checklist on the following pages.

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

Evaluation of Environmental Impacts

The following Environmental Checklist form is based on the checklist suggested in Appendix G of the State CEQA Guidelines. The Environmental Checklist identifies potential project effects as corresponding to the following categories of impacts:

- **Potentially Significant Impact**: An effect that may be significant based on substantial evidence and the significance criteria. If the Proposed Project may result in one or more Potentially Significant Impacts, an Environmental Impact Report is required.
- **Less than Significant with Mitigation Incorporated**: An effect that, with the implementation of project-specific mitigation measures, is reduced from potentially significant to less than significant.
- **Less than Significant Impact**: An effect for which no significant impacts, only less than significant impacts, result.
- **No Impact**: An effect for which the Proposed Project does not create an impact.

3.1 Aesthetics

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

3.1.1 Setting

The land in eastern Yuba County in the vicinity of New Bullards Bar Reservoir, and Cottage Creek Dam and Reservoir, are located in the foothills of the Sierra Nevada. The area is visually characterized by the prominent feature of the New Bullards Bar Dam and its reservoir, rolling foothills with flattened ridges, and deep valleys. The project area vegetation is characterized by mixed conifer forest with live oak, black oak, and madrone trees. The Cottage Creek Dam site is

located approximately 200 feet upstream in the valley of Cottage Creek from the nearest accessible area to traffic, which is the end of the parking lot for the Cottage Creek boat launch and recreation area adjacent to YWA's fenced maintenance yard where a water treatment plant is located. The project site including Cottage Creek Dam and Reservoir are visible below from County Road 169 above the parking lot, however, the site is not generally visible from the boat launch area, the surface of New Bullards Bar Reservoir, nor from Marysville Road that crosses over New Bullards Bar Dam and is the public access to the boat launch area and County Road 169.

The *Yuba County 2030 General Plan Community Development Element* (Yuba County 2011a) contains broad goals and policies to maintain or enhance the visual quality of the lands within the county. In particular for rural areas such as the project site, Natural Resources Goal NR9, Policy NR9.3 states, "Development in rural communities should be designed to preserve important scenic resources, landmarks, and icons that positively contribute to the rural character."

3.1.2 Discussion

a) A scenic vista is generally considered a view of an area that has remarkable scenery or a resource that is indigenous to the area. The Proposed Project is not located on, adjacent to, or visible from any scenic state highway. Construction of the Proposed Project would modify a portion of the Cottage Creek Dam and eliminate the reservoir pool upstream of the dam, which would not result in a substantial adverse impact on views within the Proposed Project area. There would be no impact upon a scenic vista or other officially designated scenic resource. Therefore, the Proposed Project would have **no impact** on a scenic vista.

b) The Proposed Project is not located on, adjacent to, or visible from any state scenic highway and there are no known designated scenic resources in the project area. Therefore, the Proposed Project would have **no impact** on scenic resources.

c) The project is located in a non-urbanized area. As noted above, the Proposed Project site including the Cottage Creek Dam and Reservoir are not generally visible from public areas. The construction activities for the Proposed Project involves removal of trees at the dam site, and limited excavation and grading activities to lower a portion of the dam structure and construct the box culvert extending to the crossing under County Road 169. Following construction, there would be a temporary period of a year or more when there would be exposed bare ground in the former reservoir pool and graded areas of the box culvert until such time that grasses and herbaceous shrubs grow and revegetate the area. Over the long term following construction, the visual characteristics of the partially remaining Cottage Creek Dam site would not differ appreciably from existing conditions and the Cottage Creek channel upstream of the dam site would appear more natural and consistent with the valley conditions. Therefore, the Proposed Project would not substantially degrade the existing visual character or quality of the site and its surroundings, and would be consistent with Yuba County General Plan policies. Therefore, the Proposed Project would have a **less than significant** impact on the existing visual character of the project site and its surroundings, and would not conflict with applicable zoning and other regulations governing scenic quality.

d) The temporary construction activities over the course of approximately four months would occur primarily during daylight hours, and construction would not result in substantial nighttime lighted activities. The Proposed Project does not involve installation of any new sources of light or glare. Therefore, the Proposed Project would have **no impact** on day or nighttime views in the area.

3.2 Agriculture and Forestry Resources

Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☑
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☑
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined in Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 511049g)?	☐	☐	☐	☑
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☑
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☑

3.2.1 Setting

The Cottage Creek Dam and Reservoir are located on USFS Plumas National Forest land and designated as "public" land in the Yuba County General Plan. The lower portion of Cottage Creek where the box culvert would be installed is on YWA-owned land, which is designated as rural agriculture in the General Plan. None of the project area that would be disturbed by construction is used for agriculture.

3.2.2 Discussion

a) No Prime Farmland, Unique Farmland, or Farmland of Statewide Importance is located within the project area. The Proposed Project would have **no impact** on Farmland conversion to a non-agricultural use.

b) The lower portion of Cottage Creek where the box culvert would be installed is located on land zoned for rural agriculture. However, the project would not disturb any land used

for agriculture or that is subject to Williamson Act contract, and would not result in any changes that would conflict with the zoning. Therefore, the Proposed Project would have **no impact** on existing agricultural use zoning or a Williamson Act contract.

c) A portion of the Proposed Project is located on USFS land. However, construction activities would remove trees only in a small area (less than 0.25 acre) located on the face of the existing Cottage Creek Dam, and would not result in any changes to land use zoning. Therefore, the Proposed Project would have **no impact** on existing zoning for forest land or timberland.

d) As identified in response "c" above, a portion of the project area is located on USFS land. However, the Proposed Project would not result in any direct loss of forest land. Therefore, the Proposed Project would have **no impact** on forest land.

e) As identified in response "b" above, the lower portion of Cottage Creek where the box culvert would be installed is located on land zoned for rural agriculture. However, the Proposed Project would not result in any conversion of Farmland to a different use. Therefore, the Proposed Project would have **no impact** on the conversion Farmland to non-agricultural use or of forest land to a non-forest use.

3.3 Air Quality

Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☑
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☑	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☑	☐
d) Result in other emissions (such as those leading to odors adversely affecting a substantial number of people)?	☐	☐	☑	☐

3.3.1 Setting

The project site is located in Yuba County, which is within the Northern Sacramento Valley Planning Area of the Sacramento Valley Air Basin (Basin). Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants. The climate throughout the Basin is similar, especially in regard to the valley floor where the majority of the population resides. Summers are typically dry and warm. Most of the precipitation occurs during the winter

months from December to March (Sacramento Valley Air Quality Engineering and Enforcement Professionals 2015).

Air quality within the project area is regulated by the United States Environmental Protection Agency (USEPA) and California Air Resources Board (CARB) at the federal and state levels, respectively, and locally by the Feather River Air Quality Management District (FRAQMD). As the local air quality management agency, the FRAQMD is required to monitor air pollutant levels to ensure that state and federal air quality standards are met and, if they are not met, to develop strategies to meet the standards. Depending on whether or not the standards are met or exceeded, the Basin is classified as being in "attainment" or "nonattainment." The health effects associated with criteria pollutants upon which attainment of state and federal air quality standards is measured are described in **Table 2**.

Of the many potential air pollutants, ozone and particulate matter (i.e., respirable [PM_{10}] and fine [$PM_{2.5}$]) are of primary concern within Yuba County. Yuba County is considered to be in "non-attainment" for ozone and PM_{10}, and to be either "attainment" or unclassified for $PM_{2.5}$, nitrogen dioxide, sulfur dioxide, sulfate, lead, carbon monoxide (CO), hydrogen sulfide, and visibility reducing particles under the terms of the California Clean Air Act (CCAA) (CARB 2018). Under the terms of the National Ambient Air Quality Standards (NAAQS), Yuba County is categorized as in "attainment" for 8-hour ozone, PM_{10}, and $PM_{2.5}$ (FRAQMD 2018a).

Criteria air pollutant concentrations are measured at several monitoring stations in the Basin. The Auburn 11645 Attwood Road Monitoring Station and the Yuba City Almond Street Monitoring Station are both 30 miles from the project site. The Auburn station is located at a similar elevation as the project site and reports air quality data for ozone and $PM_{2.5}$. The Yuba City station reports PM_{10}. There are no monitoring stations in the proximity of the project site that record CO emissions. The ambient air quality measurements from the Auburn and Yuba City stations are representative of the air quality near the project site. **Table 3** summarizes the air quality data for the three most recent calendar years for which data is available.

Regulatory Framework

As described above, air quality within the project site is regulated by agencies such as the USEPA and CARB at the federal and state levels, respectively, and locally by the FRAQMD.

Federal

The USEPA is responsible for enforcing the Federal Clean Air Act (FCAA). The USEPA is also responsible for establishing the NAAQS, which are required under the 1977 FCAA and subsequent amendments. The USEPA regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain types of locomotives. The USEPA has jurisdiction over emission sources outside state waters (e.g., beyond the outer continental shelf) and establishes various emission standards, including those for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission standards established by CARB.

The General Conformity regulation of the FCAA was established in 1993 to help states and tribes improve air quality in those areas that do not meet the NAAQS. The regulation contains *de*

minimis thresholds, below which, a project would not be considered to substantially interfere with attainment of national standards associated with air quality planning efforts. The project area is in attainment for all federal standards, thus *de minimis* thresholds do not apply (FRAQMD 2018a).

Table 2. Health effects associated with criteria pollutants.

Pollutant	Adverse Effects
Ozone	(1) Short-term exposures: pulmonary function decrements and localized lung edema in humans and animals, risk to public health implied by alterations in pulmonary morphology and host defense in animals; (2) long-term exposures: risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (3) vegetation damage; and (4) property damage.
Carbon monoxide (CO)	Reduces oxygen delivery leading to: (1) Aggravation of chest pain (angina pectoris) and other aspects of coronary heart disease; (2) decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (3) impairment of central nervous system functions; and (4) possible increased risk to fetuses.
Nitrogen dioxide (NO_2)	(1) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (2) risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; and (3) contribution to atmospheric discoloration.
Sulfur dioxide (SO_2)	(1) Bronchoconstriction accompanied by symptoms that may include wheezing, shortness of breath, and chest tightness during exercise or physical activity in persons with asthma.
Suspended particulate matter (PM_{10})	(1) Excess deaths from short-term and long-term exposures; (2) excess seasonal declines in pulmonary function, especially in children; (3) asthma exacerbation and possibly induction; (4) adverse birth outcomes including low birth weight; (5) increased infant mortality; (6) increased respiratory symptoms in children such as cough and bronchitis; and (7) increased hospitalization for both cardiovascular and respiratory disease (including asthma).[a]
Suspended particulate matter ($PM_{2.5}$)	(1) Excess deaths from short- and long-term exposures; (2) excess seasonal declines in pulmonary function, especially in children; (3) asthma exacerbation and possibly induction; (4) adverse birth outcomes, including low birth weight; (5) increased infant mortality; (6) increased respiratory symptoms in children, such as cough and bronchitis; and (7) increased hospitalization for both cardiovascular and respiratory disease, including asthma.[a]

[a] More detailed discussions on the health effects associated with exposure to suspended particulate matter can be found in the following documents: Office of Environmental Health Hazard Assessment, Particulate Matter Health Effects and Standard Recommendations, www.oehha.ca.gov/air/toxic_contaminants/PM10notice.html#may, May 9, 2002; and USEPA, Air Quality Criteria for Particulate Matter, October 2004.

Source: USEPA 2018

Table 3. Summary of annual data on ambient air quality (2015–2017).

Air Contaminant	2015	2016	2017
Ozone [1]			
Maximum concentration (1-hr/8-hr avg, ppm) [1]	0.109/ 0.100	0.114/ 0.099	0.111/ 0.084
Number of days state standards exceeded (1-hr/8-hr) (>0.09 ppm/>0.070 ppm)	4/NA	5/NA	3/NA
Number of days national standard exceeded (8-hr) (>0.070 ppm)	15	27	28
Fine Particulate Matter ($PM_{2.5}$)			
Maximum concentration (24-hour µg/m^3) [1]	109.8	28.6	29.7
Number of days national standard exceeded (24-hour measured) (>35 µg/m^3)	1	0	0
Respirable Particulate Matter (PM_{10})			
Maximum concentration (24-hour µg/m^3) [1]	68.2	51.4	145.0
Number of days state standard exceeded (>50 µg/m^3)	6	1	19
Number of days national standard exceeded (>150 µg/m^3)	0	0	0

[1] Measurements from the Auburn 11645 Atwood Road Monitoring Station for ozone and $PM_{2.5}$. Measurements of PM_{10} obtained from the Yuba City Almond Street Monitoring Station. Neither station reports CO emissions.

µg/m^3 = micrograms per cubic meter
ppm = parts per million
NA = not available

Source: CARB 2018

State

In California, CARB, which became part of the California Environmental Protection Agency in 1991, is responsible for meeting the state requirements of the FCAA, administering the CCAA, and establishing the California Ambient Air Quality Standards (CAAQS). The CCAA, as amended in 1992, requires all air districts in the state to endeavor to achieve and maintain the CAAQS. The CAAQS are generally more stringent than the corresponding federal standards and incorporate additional standards for sulfates, hydrogen sulfide, vinyl chloride and visibility reducing particles. CARB regulates mobile air pollution sources, such as motor vehicles. The agency is responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. CARB established passenger vehicle fuel specifications, which became effective on March 1996. CARB oversees the functions of local air pollution control districts and air quality management districts, which in turn administer air quality activities at the regional and county level.

Specific state requirements applicable to the construction activities under the Proposed Project include, but are not limited to (FRAQMD 2016):

- **California Vehicle Code section 23114** regarding transportation of material on roads and highways.

- **California Code of Regulations Title 13 Chapter 10 section 2485: Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling.** Limits idling time to 5 minutes for on-road heavy duty diesel trucks.
- **California Code of Regulations Title 13 Chapter 9 Article 4.8 section 2449: Regulation for In-Use Off-Road Diesel Vehicles.** Limits idling time to 5 minutes.

Local

The FRAQMD is a bi-county district that was formed to administer local, state, and federal air quality management programs for Yuba and Sutter counties. The mission of the FRAQMD is to promote and improve the air quality of Sutter and Yuba counties. This is accomplished through monitoring, evaluation, education, by implementing control measures to reduce emissions from stationary sources, permitting and inspection of pollution sources, enforcement of air quality regulations, and by supporting and implementing measures to reduce emissions from motor vehicles. The FRAQMD also responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements other programs and regulations required by the FCAA (including amendments) and CCAA.

As described above, Yuba County is considered to be in "non-attainment" for ozone and PM_{10}, and to be either "attainment" or unclassified for $PM_{2.5}$, nitrogen dioxide, sulfur dioxide, sulfate, lead, CO, hydrogen sulfide, and visibility reducing particles under the terms of the CCAA (CARB 2018). Under the CCAA, areas not in compliance with the state standards must submit plans to reduce emissions and achieve attainment. In 2015, FRAQMD adopted a 2015 Triennial Air Quality Attainment Plan to reduce ozone in the region (Sacramento Valley Air Quality Engineering and Enforcement Professionals 2015). The FRAQMD has also adopted an attainment plan to reduce emissions of PM_{10} (FRAQMD 2018b).

All projects are subject to FRAQMD's rules and regulations in effect at the time of construction (FRAQMD 2016). Specific rules applicable to the construction activities under the Proposed Project include, but are not limited to:

- **Regulation IV: Stationary Emission Sources Permit System and Registration.** Any project that includes the use of equipment capable of releasing emissions to the atmosphere may require permit(s) from FRAQMD prior to equipment operation. The applicant, developer, or operator of a project that includes an emergency generator, boiler, or internal combustion engine should contact the FRAQMD early to determine if a permit is required, and to begin the permit application process. Portable construction equipment (e.g. generators, compressors, pile drivers, lighting equipment, etc.) with an internal combustion engine over 50 horsepower are required to have a FRAQMD permit or a CARB portable equipment registration. Other general types of uses that require a permit include, but are not limited to fumigation chambers, gasoline tanks and dispensing, spray booths, and operations that generate airborne particulate emissions.

- **Rule 3.0: Visible Emissions**. A person shall not discharge into the atmosphere from any single source of emissions whatsoever, any air contaminants for a period or periods aggregating more than three minutes in any one hour which is as dark or darker in shade as that designated as No. 2 on the Ringleman Chart.

- **Rule 3.15: Architectural Coatings**. The developer or contractor is required to use coatings that comply with the volatile organic compound content limits specified in the rule.

- **Rule 3.16: Fugitive Dust**. The developer or contractor is required to control dust emissions from earth moving activities, storage or any other construction activity to prevent airborne dust from leaving the project site.

Furthermore, FRAQMD requires that all projects with a construction phase submit a completed Fugitive Dust Control Plan prior to beginning work (FRAQMD 2018c).

The FRAQMD developed the Indirect Source Review Guidelines to serve as a resource to lead agencies to estimate project air pollutant emissions, identify a project's air quality significant effects, and select the best available mitigation measures designed to avoid or reduce the air quality environmental impacts of transportation and land-use activities (FRAQMD 2010). Based on FRAQMD's Indirect Source Review Guidelines, the Proposed Project is a "Type 2" project, which is a non-land use project that has no operational phase. In other words, once the project is complete, it will not generate ongoing emissions. As such, FRAQMD recommends that only construction emissions be quantified and measured against applicable thresholds. A Type 2 project is considered to have a less than significant impact if the daily emissions do not exceed 25 pounds per day (lbs/day) of nitrogen oxide (NO_X) or reactive organic gases (ROG), and the daily emissions of 80 lbs/day of PM_{10}, as shown in **Table 4**. NO_X and ROG construction emissions may be averaged over the life of the project but may not exceed 4.5 tons/year. FRAQMD also recommends evaluation of construction diesel particulate matter (exhaust PM_{10}) when construction activities are located within 1,000 feet of a sensitive receptor, which would include school sites and residential land uses.

Table 4. FRAQMD air quality significance thresholds for construction.

Pollutant	Threshold
Nitrogen Oxide (NO_X)	25 lbs/day multiplied by project length, not to exceed 4.5 tons/year[1]
Reactive Organic Gasses (ROG)	25 lbs/day multiplied by project length, not to exceed 4.5 tons/year[1]
PM_{10}	80 lbs/day
$PM_{2.5}$	Not Available

[1]NO_X and ROG construction emissions may be averaged over the life of the project, but may not exceed 4.5 tons/year.
Source: FRAQMD 2010

Methodology

Construction emissions associated with development of the Proposed Project were calculated using the California Emissions Estimator Model (CalEEMod), version 2016.3.2. CalEEMod uses project-specific information, including construction phases, schedule, and proposed equipment to estimate a project's construction emissions. Construction emissions modeled include emissions generated by construction equipment used on-site and emissions generated by vehicle trips associated with construction, such as hauling, worker and vendor trips. Construction would include mobilization, clearing and grubbing, dewatering, dam excavation and infrastructure

removal, culvert installation, paving, and demobilization phases. Construction equipment, phases, and schedule were provided by the project engineer. For construction equipment not included in CalEEMod, assumptions were made by applying similar pieces of construction equipment with equivalent size and horsepower.

Assumptions were also made regarding average worker commute trips by construction phase, average haul truck capacity (13 cubic yards), and worker, vendor, and haul trip lengths. The number of workers per phase was estimated as the equipment count per phase plus a foreman and laborer. For example, the clearing phase required three pieces of equipment, therefore, it was assumed that five workers would be on-site (three equipment operators plus a foreman and laborer). The following details the haul trip assumptions by phase:

- **Dam Excavation and Removal:** The project would include hauling 16,000 cubic yards of soil and 1,500 cubic yards of rock to stockpile site three miles from project site. Removal of 14.4 tons of corrugated metal pipe and trash rack materials.
- **Install Concrete Culvert:** The project would include importing 800 cubic yards of structural backfill from Yuba City (40 miles one way) and import of the concrete box culvert in 13 trips from Fresno (260 miles one way). It would also involve import of 6,000 cubic yards fill from the stockpile site three miles away.
- **Paving:** The project would require 43 cubic yards of pavement removal and replacement with truck trips to Yuba City (40 miles one way).

The construction schedule assumed mobilization and clearing would extend for two weeks, dam excavation and dewatering activities would extend for four weeks, and culvert installation would extend for three months. It was also assumed that infrastructure removal would overlap with dam excavation and would extend for three days, and that paving activities would occur for one day and would overlap with demobilization activities. In total, construction was assumed to extend for just over four months, for the purposes of this analysis.

Construction activities would result in temporary air quality impacts that may vary substantially from day to day, depending on the level of activity, the specific type of operation, and, for dust, the prevailing weather conditions. CalEEMod assumptions and results are shown in **Appendix B**. In addition, as detailed in Section 2.4.9, Avoidance and Minimization Measures, modeling assumed the Proposed Project would comply with AMM 3, Construction BMPs, including implementing dust control measures and limiting construction vehicle speeds to 15 miles per hour. In accordance with FRAQMD's guidance, NO_X and ROG emissions from construction of the project were averaged over a 10-year period (the assumed life of the project) and compared to significance thresholds.

Sensitive land uses are generally considered to include those uses where exposure to pollutants could result in health-related risks to individuals. Residential dwellings and places where people recreate or congregate for extended periods of time such as parks or schools are of primary concern because of the potential for increased and prolonged exposure of individuals to pollutants. Sensitive receptors closest to potential construction activities include houseboats in the Emerald Cove Marina approximately 1,000 feet east of the project site. The nearest

residential community is Dobbins which is approximately six miles west of the project site on Marysville Road.

3.3.2 Discussion

a) The Proposed Project consists of temporary construction activity, and would not result in increases in population or employment. Thus, the Proposed Project would be consistent with the population projections in the local air quality plan. Therefore, the Proposed Project would have **no impact** that would conflict with or obstruct implementation of an air quality plan.

b) Past, present, and future development projects contribute to a region's adverse air quality impacts on a cumulative basis. By its very nature, air pollution is largely a cumulative impact. Generally, no single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. The Yuba County portion of the Basin is currently designated as a non-attainment area relative to the CAAQS for ozone and PM_{10}; the county is in attainment relative to the NAAQS. Furthermore, in developing thresholds of significance for air pollutants, FRAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds detailed in Table 4 above, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions both at a project and cumulative level.

Table 5 summarizes the estimated maximum daily construction emissions from development of the Proposed Project. The significance of construction-related air quality impacts was determined by comparing these modeled results with FRAQMD significance thresholds (in Table 4 above). The Proposed Project's construction-generated emissions would not exceed FRAQMD thresholds (

Table 5). Therefore, the Proposed Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under the CAAQS or NAAQS, and impacts would be **less than significant**.

Table 5. Summary of modeled emissions of criteria air pollutants and precursors associated with project construction activities.

	ROG[1]	NO_X[1]	$PM_{2.5}$	PM_{10}
Daily Emissions (lbs/day)[2]	0.4	5.2	3.5	5.6
FRAQMD Threshold (lb/day)	25	25	--	80
Threshold Exceeded?	**No**	**No**	**--**	**No**
Annual Emissions (tons/year)	0.1	0.8	<0.1	0.1
FRAQMD Threshold (tons/year)	4.5	4.5	--	--
Threshold Exceeded?	**No**	**No**	**--**	**--**

[1] NO_X and ROG construction emissions may be averaged over the life of the project but may not exceed 4.5 tons/year.
[2] NO_X and ROG emissions are reported as daily emissions, estimated by amortizing NO_X and ROG emissions from construction of the project over a 10-year period (the assumed life of the project). $PM_{2.5}$ and PM_{10} emissions are reported as maximum daily emissions.
NO_X = nitrogen oxide
ROG = reactive organic gases
$PM_{2.5}$ = fine particulate matter
PM_{10} = particulate matter (i.e., respirable)
lbs/day = pounds per day
FRAQMD = Feather River Air Quality Management District
See **Appendix B** for detail on model inputs, assumptions, and project specific modeling parameters.

c) The potential for the Proposed Project to result in the exposure of sensitive receptors to substantial pollutant concentrations was evaluated for construction-related activities. Project operation would not produce emissions. The FRAQMD guidance for CEQA assessments for construction projects states that the proximity of sensitive receptors to a construction site constitutes a special consideration and may require an evaluation of toxic diesel particulate matter (FRAQMD 2010). Examples of sensitive receptor locations include schools, day care centers, parks/playgrounds, hospitals or nursing centers, and residential dwelling units. If a project is located within 1,000 feet of a sensitive receptor location, then the impact of diesel particulate matter should be addressed in the CEQA assessment.

CARB's (2005) *Air Quality and Land Use Handbook: A Community Health Perspective* provides recommendations for siting certain land uses near land uses that emit toxic air contaminants, like freeways and distribution centers that attract heavy duty trucks. These recommendations are intended to reduce the risk of potential health effects associated with diesel exhaust emitted from trucks. Diesel exhaust contains diesel particulate matter, a toxic air contaminant (TAC) associated with temporary health effects, such as eye-watering, exacerbation of asthma, respiratory irritation, and more serious long-term effects, such as cancer and lung disease (CARB 2005).

During construction, residences and other sensitive receptors may be affected by the temporary construction emissions from diesel-generated particulate matter exhaust. Nearby sensitive receptors include houseboats in the Emerald Cove Marina approximately 1,000 feet east of the project site. The nearest residential community is Dobbins which is approximately six miles west of the project site on Marysville Road. Construction of the Proposed Project would occur for approximately four to five months. Diesel-powered construction equipment includes a dozer, excavator, pavement cutter, pump, crane, and grader. However, at most only four pieces of diesel powered construction equipment would operate at one time during the four- to five-week dam excavation and removal phase. Equipment would operate on average for eight hours per day.

The dose to which receptors are exposed is the primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards). Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for any exposed receptor. Thus, the risks estimated for an exposed individual are higher if a fixed exposure occurs over a longer period of time. According to Office of Environmental Health Hazard Assessment, health risk assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 30-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the Proposed Project (Office of Environmental Health Hazard Assessment 2012). Consequently, it is important to consider use of off-road heavy-duty diesel equipment would be limited to the construction period, which would be at most five months for the Proposed Project. Additionally, studies show that diesel particulate

matter is highly dispersive (e.g., decrease of 70 percent at 500 feet from the source) (Zhu et al. 2002).

The Proposed Project would result in a maximum of 0.9 lbs/day of PM_{10} exhaust and 0.9 lbs/day of $PM_{2.5}$ exhaust from construction equipment operating on the project site and at a distance of 1,000 feet from sensitive receptors. While hauling trucks would also emit diesel exhaust, only a minor portion of mobile diesel particulate matter emissions would be generated within 1,000 feet of the sensitive receptors at Emerald Cove Marina. As noted under "b" above, daily total PM_{10} emissions fall well below FRAQMD's threshold. FRAQMD has not established a quantitative threshold of significance for construction-related TAC emissions, but recommends taking into consideration specific construction-related characteristics of the project, which are described above. Therefore, considering the highly dispersive properties of diesel particulate matter, the relatively low mass of diesel particulate matter emissions that would be generated during Project construction, the distance of sensitive receptors from the site, the limited amount of diesel powered construction equipment potentially operating simultaneously (four pieces of diesel powered equipment), and the relatively short duration of construction activities (five months or less), construction-related TAC emissions would not expose sensitive receptors to a substantial health risk. As a result, the Proposed Project would not conflict with FRAQMD guidance for risks and hazards to receptors associated with new emissions sources. Thus, the Proposed Project would have a **less than significant** impact on sensitive receptors' exposure to pollutant concentrations.

d) As previously mentioned, no new criteria pollutant emission sources, including those leading to odors, are anticipated under long-term project operation. The Proposed Project would have no operational air quality impacts since the Proposed Project would not change the existing use of the site. The Proposed Project would involve modifying an existing dam spillway and would, therefore, not result in long-term emissions. As described above in "b" the significance of construction-related air quality impacts was determined by comparing these modeled results with FRAQMD significance thresholds (in Table 4 andTable 5 above). As shown discussed above in "b" abov the Proposed Project's construction generated emissions would not exceed FRAQMD thresholds. Therefore, the Proposed Project would have a **less than significant** impact on other emissions (such as those leading to odors that adversely affect a number of people).

3.4 Biological Resources

Would the Proposed Project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☑	☐	☐

Would the Proposed Project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☑	☐
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☑	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☑	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☑	☐	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☑

3.4.1 Setting

The Proposed Project may have impacts from either construction or the permanent modifications of Cottage Creek Dam. The project area includes Cottage Creek, Cottage Creek Reservoir, New Bullards Bar Reservoir, the mixed oak/conifer forest located on the downstream dam face and on the surrounding lands, and the parking lot where the staging area would be located.

Methods

Special-status species are defined as species that are legally protected or that are otherwise considered sensitive by federal, state, or local resource agencies. Special-status species are species, subspecies, or varieties that fall into one or more of the following categories, regardless of their legal or protection status:

- officially listed by California or the federal government as endangered, threatened, or rare;
- a candidate for state or federal listing as endangered, threatened, or rare;
- taxa (i.e., taxonomic category or group) that meet the criteria for listing, even if not currently included on any list, as described in California Code of Regulations Section 15380 of the State CEQA Guidelines;

- species identified by California Department of Fish and Wildlife (CDFW) as Species of Special Concern;
- species listed as Fully Protected under the California Fish and Game Code;
- species afforded protection under local planning documents;
- plant taxa considered by the CDFW to be "rare, threatened, or endangered in California" and assigned a California Rare Plant Rank (CRPR). The CDFW system includes five rarity and endangerment ranks for categorizing plant species of concern; and
- bird species protected under the Migratory Bird Treaty Act.

All plants with a CRPR are considered "special plants" by CDFW. The term "special plants" is a broad term used by CDFW to refer to all of the plant taxa inventoried in CDFW's California Natural Diversity Database (CNDDB), regardless of their legal or protection status. Plants ranked as CRPR 1A, 1B, and 2 may qualify as endangered, rare, or threatened species within the definition of the CEQA Guidelines, California Code of Regulations Section 15380. CDFW recommends, and local governments may require, that CRPR 1A, 1B, and 2 species be addressed in CEQA documents.

The term "California Species of Special Concern" is applied by CDFW to animals not listed under the federal Endangered Species Act (ESA) or California Endangered Species Act (CESA), but that are considered to be declining at a rate that could result in listing, or historically occurred in low numbers and known threats to their persistence currently exist.

Special-status species considered for this analysis are based on a field survey by Mark Jennings from May–August, 2017, on a field survey by Natural Investigations Company during the wetland delineation, multiple field surveys by Keith Whitener, Senior Scientist at Robertson-Bryan, Inc., and by review of existing documentation, including the California Natural Diversity Database (2019), the Yuba County 2030 General Plan (Yuba County 2011a), the Yuba County General Plan 2030 Final Environmental Impact Report (Yuba County 2011c), and other recent documents pertaining to biological resources in the region.

The following criteria have been used to determine the potential for special status plants and wildlife species to occur within the project site based on species life history characteristics, life history requirements, past observation and professional expertise.

- **High:** Species is known to occur on or near the project site (based on CNDDB records within five miles and/or based on professional expertise specific to the project site or species), and there is suitable habitat within the project site.
- **Low:** Species is known to occur in the vicinity of the project site, and there is marginal habitat within the project site, or species is not known to occur in the vicinity of the site, but there is suitable habitat on the site.
- **None:** Species is not known to occur on or in the vicinity of the project site and there is no suitable habitat within the project site, or species was surveyed for during the appropriate season with negative results, or species is not known in Yuba County. Species with no potential to occur are not discussed further in this analysis.

Existing Conditions for Plants and Wildlife

The project area contains several habitat types that potentially may be affected by the Proposed Project. The vegetative communities around Cottage Creek Reservoir consist primarily of mixed oak/conifer forests, riparian forest, and ruderal/developed areas. These habitat types, and other minor habitat types, are described below, with a discussion of common plant species that are found in each of the habitat types.

- Mixed Oak/Conifer Forest: The mixed oak /conifer forest consist of Jeffrey pine (*Pinus jeffreyi*), interior live oak (*Quercus wislizeni*), black oak (*Quercus kelloggii*), toyon (*Heteromeles arbutifolia*), and madrone (*Arbutus menziesii*).
- Riparian Forest: The riparian forest overstory is dominated by while alder (*Alnus rhombifolia*) and red willow (*Salix laevigata*), with Himalayan blackberry (*Rubus armeniacus*) and sword fern (*Polystichum munitum*) dominating the understory. There are also cattails (*Typha latifolia*), big-leaf maple (*Acer macrophyllum*) and mountain dogwood (*Dornus nuttallii*) along the edges of the Cottage Creek Reservoir shoreline.
- Ruderal/Developed: Ruderal/developed habitats contain common weedy species such as European annual grasses and forbs.
- Wetlands: A 2017 survey detected two freshwater marshes in the project area (Graening 2017). The marshes are located at the upstream end of Cottage Creek Reservoir. The Cowardin Class is PEMK (palustrine, emergent, artificially flooded). These wetlands are a combined 0.13 acre. The vegetation within the wetlands is entirely cattails.
- Open water: Open water habitat types within or adjacent to the project site include Cottage Creek Reservoir and New Bullards Bar Reservoir. Cottage Creek Reservoir was given the Cowardin Class of palustrine, unconsolidated bottom, artificially flooded during a 2017 delineation survey (Graening 2017).

Special–Status Plants and Wildlife

This section provides an overview of the distribution of special-status plant species and wildlife that may occur at the project site and that are endemic to California. For wildlife this includes species that are listed as threatened or endangered species under the ESA or CESA, or identified as a federal Species of Concern or California Species of Special Concern. Special-status plant and wildlife species that includes the common and scientific names for each species, regulatory status, habitat descriptions, and potential for occurrence on the project site are listed in **Table 6**.

Table 6. Special-status plant and wildlife species with the potential to occur on the project site.

Species	Status[1]	Habitat	Potential for Occurrence
	FESA, CESA, CRPR		
Plants			
Brandegee's clarkia *Clarkia biloba* ssp. brandegeeae	—, —, 4.2	Chaparral, Cismontane woodland, and lower montane coniferous forest with serpentinite or volcanic soil substrates at elevations ranging from 985–3,280 feet. Blooms May–June.	High; suitable habitat exists for the species and it has been documented in the project vicinity.

Species	Status[1]	Habitat	Potential for Occurrence
	FESA, CESA, CRPR		
Butte County fritillary *Fritillaria eastwoodiae*	—, —, 3.2	Chaparral, cismontane woodland, and lower montane coniferous forest sometimes with serpentinite substrates. Blooms March–June.	High; suitable habitat exists for the species and it has been documented in the project vicinity.
Elongate copper moss *Mielichhoferia elongata*	—, —, 4.3	Metamorphic rock, usually acidic, usually vernally mesic, often roadsides, sometimes carbonate. Typically occurs in chaparral, Cismontane woodland, lower montane coniferous forest, meadows and seeps. Is present year round.	High; suitable habitat exists for the species and it has been documented in the project vicinity.
Minute pocket moss *Fissidens pauperculus*	—, —, 1B.2	Most common in north coast coniferous forests in damp coastal soils. Has also been documented In Sierra Nevada foothills. Is present year round.	High; suitable habitat exists for the species and it has been documented in the project vicinity.
Pine Hill flannelbush *Fremontodendron decumbens*	—, —, 1B.2	Chaparral, Cismontane woodland, with gabbroic or serpentinite/rocky substrate. Blooms April–June.	High; suitable habitat exists for the species and it has been documented in the project vicinity.
Sierra arching sedge *Carex cyrtostachya*	—, —, 1B.2	Lower montane coniferous forest, meadows and sweeps, marshes and swamps, and riparian forest.	High; suitable habitat exists for the species and it has been documented in the project vicinity.
Wildlife			
Invertebrates			
Western Pearlshell *Margaritifera falcata*	—, CSC,—	Substrate of perennial creeks and river with clean water at depths generally between 1–5 feet. Typically occur in eddies with cobble and boulders, but can also occur in sand mixed with cobble.	Low; although suitable habitat exists for the species in Cottage Creek the species has not been documented there. The species has been documented within five miles of the project site, but it was in a creek (Oregon Creek) which is located on the opposite side of New Bullards Bar Reservoir from the project site.
Birds			
Bald eagle *Haliaeetus leucocphalus*	—, CE, —	Found at most lakes, reservoirs, rivers and some rangelands. A small number of breeding pairs are found in the central Sierra Nevada foothills. Bald Eagles typically nest within 1 miles of water bodies in tress over 100 feet in height.	High; suitable habitat exists for the species and it has been documented in the project vicinity.
Mammals			
Fisher - West Coast DPS *Pekania pennanti*	FC, CT, —	Coniferous and mixed forests in mountainous areas.	None; although suitable habitat exists for the species and it has been documented in the immediate project vicinity, there have been no documentation of the species at the project site since 1987 or outside of the southern Sierra Nevada since 1995.
Amphibians and reptiles			
California red-legged frog *Rana draytonii*	FT, —, —	A matrix of riparian and upland dispersal habitats. Typically require pools and backwaters within stream, ponds and marshes.	None, although suitable habitat exists and the species has been documented within five miles of the project site a survey conducted for California red-legged frog found no California red-legged frog to inhabit the project site or surrounding vicinity.

Species	Status[1]	Habitat	Potential for Occurrence
	FESA, CESA, CRPR		
Foothill yellow-legged frog *Rana boylii*	—, CT, —	Streams and rivers at low to moderate elevations and in the lower western slopes of the Sierra Nevada.	None, although suitable habitat exists and the species has been documented within five miles of the project site a survey conducted for California red-legged frog found no foothill yellow-legged frogs to inhabit the project site or surrounding vicinity.
Western pond turtle *Emys marmorata*	—, CSC, —	Wetlands, low gradient streams, marshes, ponds, sloughs, small lakes, and their associated uplands.	None; although suitable habitat exists pond turtle has not been documented in the project vicinity. Further, a survey conducted for California red-legged frog found no western pond turtle to inhabit the project site or surrounding vicinity.

CRPR = California Rare Plant Rank; CNDDB = California Natural Diversity Database; CESA = California Endangered Species Act; FESA = Federal Endangered Species Act

[1] Legal Status Definitions:

Federal Endangered Species Act:

FE Endangered (legally protected)

FT Threatened (legally protected)

FC Candidate (no formal protection under the ESA).

California Endangered Species Act:

CE Endangered (legally protected)

CT Threatened (legally protected)

CCT Candidate threatened (legally protected)

CSC Species of special concern (no formal protection other than CEQA consideration)

California Rare Plant Ranks:

1B Plant species considered rare or endangered in California and elsewhere (protected under CEQA, but not legally protected under ESA or CESA)

3 Plants about which more information is needed, A review list

4 Plants of limited distribution, A watch list

Threat ranks:

.1-Seriously threatened in California (greater than 80% of occurrences threatened / high degree and immediacy of threat)

.2-Moderately threatened in California (20-80% of occurrences threatened / moderate degree and immediacy of threat)

.3-Not very threatened in California (fewer than 20% of occurrences threatened/low degree and immediacy of threat or no current threats known)

Source: CNDDB 2019

The only ESA-listed species with the potential to occur at the project site is the California red-legged frog. Protocol level surveys determined that no California red-legged frogs occur in the Cottage Creek Reservoir (Jennings 2017). Although California red-legged frogs are known to inhabit the adjacent Little Oregon Creek drainage approximately 2.5 miles to the northwest, no California red-legged frogs are apparently present in the Cottage Creek drainage, possibly due to forest fires during the past two decades and the difficulty of juvenile and adult frogs moving overland to ponded habitats (on private property) in the upper Cottage Creek drainage (Jennings 2017). During the red-legged frog surveys it was also determined that foothill yellow-legged frogs (*Rana boylii*) and western pond turtles (*Actinemys marmorata*) do not occur in Cottage Creek Reservoir or the surrounding vicinity (Jennings 2017). As such, there would be no effect to these species and these species will not be addressed further.

Special-Status Plants

No special-status plants have been documented in the immediate vicinity or within one mile of the project site. The only special-status plant that has been documented within two miles of the project site is Butte County fritillary. According to CNDDB, all other special-status plant species occurrences have been located two miles or more from the project site.

Bald Eagle

The southern bald eagle (*H. leucocephalus leucocephalus*) was listed as endangered under the Endangered Species Act of 1966 (32 FR 4001). On February 14, 1978 the United States Fish and Wildlife Service (USFWS) ruled to delete the subspecies subspecific names for the southern and northern subspecies, resulting in the designation of a single species (*H. leucocephalus*; 43 FR 6230). This ruling also listed bald eagles endangered in 43 of the 48 contiguous states, including in California, and threatened in the remaining five states. On July 12, 1995 all bald eagles listed as endangered were reclassified as threatened, while the status of threatened remained in effect for the five other states (60 FR 36000). On August 8, 2007 the USFWS ruled to delist the bald eagle in all states (72 FR 37346). In California the bald eagle was listed under CESA as endangered on June 27, 1971. Additional protections for bald eagles in California exist under Fish and Game Code Sections 3503, 3503.5, and 3513, which make it unlawful to take, possess, or needlessly destroy birds' nests or eggs; take possess, or destroy raptors and their eggs and nests; and take or possess any migratory nongame bird or part thereof, designated in the Migratory Bird Threat Act of 1918 (16 U.S.C. 703- 712; Ch. 128; July 13, 1918; 40 Stat 755) as amended). Since federal delisting, protection of bald eagle has continued under the Migratory Bird Threat Act, and the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c) as amended.

The bald eagle is a large raptor that typically nests within one mile of water bodies. Bald eagles choose hunting perches near shallow waters of deep lakes and reservoirs where fish concentrate and are more visible (YCWA 2014a). Prior to the onset of winter, bald eagles will migrate from colder northern climates to warmer southern climates. In winter bald eagles spend nights in a roost. Paired adults will roost in their nesting stand (Jackman et al. 1999, Jackman and Jenkins 2004, Merced Irrigation District 2010), whereas non-paired birds will roost communally. Nests are large structures that are typically found in the upper third of live dominant or co-dominant trees with some canopy above. Most nests are 100 feet or higher from the ground. A single pair of bald eagles will use the same nest each year and may have alternate nests within their breeding territory. Bald eagles can breed as early as four to five years of age, but in healthy populations may not breed until much older (USFWS 2007 as cited in YCWA 2014a). In the Sierra Nevada foothills, breeding typically begins between January and mid-March and ends when young fledge in June or July (Jackman and Jenkins 2004).

In 2011 and 2012 YWA conducted wintering surveys for bald eagles within a one mile radius around the New Bullards Bar Reservoir (YCWA 2014a). The study also included a review and summary of historical surveys by the USFS for bald eagles in the vicinity of New Bullards Bar Reservoir. Historical records from the Tahoe National Forest indicated more than 640 bald eagle occurrences had been documented around New Bullards Bar Reservoir through 2009 (TNF 2009a as cited in YCWA 2014a). During the wintering surveys YWA recorded 15 observation of adult bald eagles and six observations of sub-adult bald eagles (YCWA 2014a). Eight hunting perches were also located around New Bullards Bar Reservoir (YCWA 2014a).

Two bald eagles nests were known to exist on New Bullards Bar Reservoir prior to the 2012 nesting surveys (YCWA 2014a). The Garden Point Peninsula nest, located approximately four miles from and across the reservoir from the project site, was active during the 2012 nesting survey (YCWA 2014a). The other nest, located approximately three miles north of the project

site, was not active during the 2012 survey (YCWA 2014a). By 2013 the unoccupied nest was classified a failure and only a remnant remained (YCWA 2014a). Thus, the 2012 nesting survey identified one active nest at New Bullards Bar Reservoir in 2012, located on Garden Point Peninsula.

Pacific Fisher - West Coast DPS

Pacific Fishers are listed as Federal Candidate species and California Species of Concern. Two remnant populations of Pacific Fisher occur in California. One population occurs in the southern Sierra Nevada in the vicinity of Sequoia and Kings Canyon National Park. Here, the species prefer mature forested areas at elevations between 1,970 and 8,530 feet. Another population exists in the north Coast Ranges of California near the Oregon border. Populations have declined primarily due to loss of habitat from timber harvest activities and trapping. Other potential threats include, large wildfire, changes in forest composition structure due to climate change, and rural and urban development. Collisions with vehicles, predation, rodenticides and viral borne diseases have also contributed to Pacific fisher mortalities (77 FR 70010).

A detailed description of Pacific fisher's presence in the vicinity of New Bullards Bar Reservoir was conducted by YCA for the Federal Energy Regulatory Commission (FERC) Project 2246. The discussion below summarizes the findings in the YCA FERC document (YCWA 2014b) and also includes a review of Pacific fisher occurrences in CNDDB. One occurrence of Pacific fisher was reported at New Bullards Bar Reservoir and New Bullards Bar dam in 1987 (CNDDB 2019). This reported occurrence was obtained from CNDDB and was shown as a non-specific point with a radius that included the project site. In order to protect Pacific fisher, the California Fish and Wildlife displays the location of this occurrence using a non-point specific 0.8-mi polygon that encompasses the exact location of this occurrence.

Since 1987, no additional occurrences have been reported at New Bullards Bar Reservoir and since 1995 no Pacific fisher has been reported in the Sierra Nevada outside of the southern Sierra Nevada population. Despite the 1987 and 1995 reports, a lack of detections outside of the two populations in California suggests the Pacific fisher has been extirpated or reduced to scattered individuals in the central and northern Sierra Nevada (77 FR 70010). According to a recent status review of Pacific fisher in California, there is little empirical evidence of Pacific fisher previously inhabiting the 270 mi gap between the northern and southern populations (YCWA 2014b). Preliminary genetic comparisons of the two California populations suggest that Pacific fishers did not continuously inhabit the 270 mi gap and likely have been separated for more than 1,000 years (California Department of Fish and Game 2010b as cited in YCWA 2014b).

Due to lack of known occurrences and the project's isolation from the two known Pacific fisher populations, the Proposed Project would have no effect on Pacific fisher. As such, the species is not discussed further.

Other Wildlife

Results from the red-legged frog survey showed that Pacific tree frogs (*Hyla regilla*) and Sierra newts (*Taricha torosa sierrae*) were common at the project site and in the surrounding area (Jennings 2017). Common mammal species in the vicinity of the project site include Columbian black-tailed deer (*Odocoileus hemionus columbianus*), black bear (*Ursus americanus*), and

squirrels, such as western grey squirrel (*Sciurus griseus*). Common bird species expected to occur in the vicinity of the project site, many of which are protected under the Migratory Bird Treaty Act, include raptors, such as red-tailed hawk (*Buteo jamaicensis*) and Cooper's hawk (*Accipiter cooperii*); songbirds, including dark-eyed junco (*Junco hyemalis*) and spotted towhee (*Pipilo maculatus*); woodpeckers, such as white-headed woodpecker (*Picoides albolarvatus*) and northern flicker (*Colaptes auratus*); and owls, including great horned owl (*Bubo virginianus*) and western screech owl (*Otus kennicottii*; YCWA 2014b). In November 2014 the USFS observed Asian clams (*Corbicula fluminea*) at the mouth of Cottage Creek and in 2015 YWA received a report of Asian clams in New Bullards Bar Reservoir at Emerald Cove (FERC 2018).

Existing Conditions for Fisheries Resources

There are two separate fish communities that could be affected by the Proposed Project. One community of fish populates Cottage Creek and Cottage Creek Reservoir. A separate fish population inhabits New Bullards Bar Reservoir. Because of the nature of the Proposed Project these two fish communities are discussed separately as they would be affected in different ways by the Proposed Project.

New Bullards Bar Reservoir Fish Community

The fish assemblage of New Bullards Bar Reservoir is dominated by non-native species. Only four of the 24 reported species are native to California (YCWA 2013, 2016). During fish population sampling in New Bullards Bar Reservoir in January and June 2012, YWA only captured 11 fish species compared to the 24 species captured in the past (FERC 2018). Many of the fish that occur in New Bullards Bar Reservoir are present because they have been stocked by CDFW. Based on CDFW stocking records since 1969 the following species have been stocked in New Bullards Bar Reservoir: Kokanee salmon, Rainbow Trout, Brook Trout, Cutthroat Trout, Spotted Bass, Lake Trout, Brown Trout, White Crappie, and Black Crappie. The current fish population of New Bullards Bar Reservoir, as described by the FERC Project No. 2246, is described below in **Table 7** (YCWA 2016). There are conflicting reports on the occurrence of Hardhead in New Bullards Bar Reservoir (YCWA 2016, FERC 2018) and no Hardhead have been documented in the tributaries that flow into New Bullards Bar Reservoir (FERC 2018). If Hardhead did occur in New Bullards Bar Reservoir, it would be the only fish reported to occur in the reservoir that is listed by CDFW as a Species of Special Concern and by the USFS as a Sensitive Species. It is important to note that Hardhead were not captured during the most recent fish population sampling of New Bullards Bar Reservoir in 2012 (FERC 2018).

Table 7. Fishes reported to occur in New Bullards Bar Reservoir

Common Name	Scientific Name	Origin
SUCKERS (CATASTOMIDAE)		
Sacramento Sucker	*Catostomus occidentalis*	N
SUNFISHES (CENTRARCHIDAE)		
Black Crappie	*Pomoxis nigromaculatus*	I
White Crappie	*P. annularus*	I
Bluegill	*Lepomis macrochirus*	I
Warmouth	*L. gulosus*	I
Green Sunfish	*L. cyanellus*	I
Redear Sunfish	*L. microlophus*	I
Largemouth Bass	*Micropterus salmoides*	I
Spotted Bass [1]	*M. punctulatus*	I
Smallmouth Bass	*M. dolomieu*	I
HERRINGS (CLUPEIDAE)		
Threadfin Shad	*Dorosoma petenense*	I
MINNOWS (CYPRINIDAE)		
Common Carp	*Cyprinus carpio*	I
Fathead Minnow	*Pimephales promelas*	I
Golden Shiner	*Notemigonus crysoleucas*	I
Hardhead [2]	*Mylopharodon conocephalus*	N
Sacramento Pikeminnow	*Ptychocheilus grandis*	N
CATFISHES (ICTALURIDAE)		
Brown Bullhead	*Ameiurus nebulosus*	I
White Catfish	*A. catus*	I
Channel Catfish	*Ictalurus punctatus*	I
TROUTS AND SALMON (SALMONIDAE)		
Brook Trout [1]	*Salvelinus fontinalis*	I
Cutthroat Trout [1,3]	*Onchorhynchus clarkia*	I
Kokanee [1]	*O. nerka*	I
Rainbow Trout [1,4]	*O. mykiss*	N
Rainbow trout – Eagle Lake subspecies [3,4]	*O. mykiss aquilarum*	N
Rainbow trout - Kamloops strain [4]	*O. mykiss gairdneri (Kamloops strain)*	I
Brown Trout	*Salmo trutta*	I

[1] Stocked in New Bullards Bar Reservoir by CDFW
[2] Hardhead is listed as a Species of Special Concern by CDFW and a Sensitive Species by the USFS.
[3] Species is Native to California, but introduced to the Yuba Watershed.
[4] Rainbow Trout and two subspecies are considered one species for the purpose of defining the number of species in New Bullards Bar Reservoir.

Hardhead

Hardhead (*M. conocephalus*), a California Species of Special Concern, is a large warm water cyprinid (i.e., minnow) that occurs primarily in large, undisturbed low to mid-elevation rivers and streams (Moyle 2002). Hardhead mature in their third year and spawn primarily in April and May, although some data suggests that spawning may extend into August (Moyle 2002). The preferred habitats of Hardhead include clear pools and runs with substrate composition of sand, gravel, or boulder (Moyle 2002). Although the early life history of juvenile Hardhead is poorly understood, juvenile Hardhead move into deeper habitats, such as the Sacramento River, as they grow (Moyle 2002).

Other Fish Species

The remaining non-special-status species comprising the New Bullards Bar Reservoir Fish comprise a diverse assemblage of cold and warm water fishes occupying multiple trophic levels. The fish community is dominated by introduced species. In 2012 surveys Spotted Bass were the most common species accounting for 66% of the total number caught and 66% of the biomass (FERC 2018). Other common centrachids were Bluegill and Green Sunfish. In 2012 Rainbow Trout and kokanee each represented 5% of the catch (FERC 2018).

Fishing is a popular recreational activity at New Bullards Bar Reservoir and is open year round. Historically, New Bullards Bar Reservoir has been stocked with Rainbow Trout, kokanee, Brook Trout, Cutthroat Trout, and Spotted Bass. Fish stocking has occurred by CDFW since 1959 (YCWA 2016) and continues today. Two to four fish stocking events occur annually between March 1 and October 31 (one to two events per species; YCWA 2016).

Cottage Creek and Cottage Creek Reservoir Fish Community

There has never been any fish monitoring program or formal survey of the fish species in Cottage Creek Reservoir or in Cottage Creek. As such, a review of other local creeks, field observations, and the fish community in New Bullards Bar Reservoir was conducted to determine fish species that may be present in Cottage Creek and Cottage Creek Reservoir. A survey of several tributaries to New Bullards Bar Reservoir found that all tributaries were inhabited by Rainbow Trout (FERC 2018). The North Yuba River and Willow Creek also contained Sacramento Sucker, and Mill Creek contained Brown Trout, but these tributaries have confluences with New Bullards Bar Reservoir that can allow fishes to migrate from the reservoir into the river, unlike Cottage Creek. No other fish species were documented in the tributaries that flow into New Bullards Bar Reservoir (FERC 2018). During the California red-legged frog survey it was determined that Golden Shiners (*N. crysoleucas*) and Bluegill (*L. macrochirus*) are abundant in Cottage Creek Reservoir (Jennings 2017). The fishes that may occur in Cottage Creek and Cottage Creek Reservoir are presented in **Table 8**. For the purposed of the assessment it is assumed that no introduced fish species occur in Cottage Creek and that the introduced species in Cottage Creek Reservoir are self-sustaining population.

Table 8. Fishes that may occur in Cottage Creek and Cottage Creek Reservoir

Common Name	Scientific Name	Origin
Bluegill	*L. macrochirus*	I
Golden Shiner	*N. crysoleucas*	I
Rainbow Trout [1]	*O. mykiss*	N
[1] Fish that occur in tributaries to New Bullards Bar Dam or in creeks within the Plumas or Tahoe National Forests		

Although Bluegill and Golden Shiner were described as "abundant" in Cottage Creek Reservoir (Jennings 2017) the population size of these species is unknown. The number of Rainbow Trout that occur in Cottage Creek and Cottage Creek Reservoir is also unknown.

3.4.2 Discussion

The potential for project-related affects to biological resources is assessed below in responses to the Initial Study checklist questions. The assessment of effects primarily considers the likely

presence of biological resources and their habitats in the project area, the magnitude and duration of direct and indirect effects to the species and their habitats, and the availability of feasible mitigation measures to avoid or minimize the effects.

a) The following discussion assesses potential impacts of the Proposed Project, both directly and through habitat modifications, on species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW (formerly California Department of Fish and Game), USFWS or Migratory Bird Treaty Act, occurring within the affected environment.

   All special-status species with the potential to occur in the project site are listed in Table 6, and Table 7 above. Special-status species with the potential to occur in the project site and that have the potential to be substantially adversely affected, either directly or through habitat modifications, include species listed under CESA, are considered state species of special concern, or are assigned a CRPR. No federally threatened or endangered species have the potential to occur in the project vicinity. No additional special-status species with the potential to be substantially adversely affected are listed in any local or regional plans, policies, or regulations as candidate or sensitive.

Special-Status Plants

Six special-status plans could occur on or adjacent to the project site. Potential affects to these species are discussed below.

Effects to Special-Status Plants

Effects to special-status plant species include;

- Vegetation removal to prepare for dam excavation.

No special-status plant species have been documented at the project site. However, Butte Country fritillary has been documented at several sites within one to two miles of the project site. Because implementation of the Proposed Project would require tree and other vegetation removal, it is possible that special-status plants could be removed.

Mitigation Measure BIO-1: Special-Status Plants

YWA would conduct special-status plant surveys using approved CDFW/USFWS methods during the appropriate season for identification of covered and no-take plant species. If special-status plant species are found in the construction areas, YWA would implement mitigation measures to reduce impacts to less than significant levels. Thus, the effects of the Proposed Project on special-status plants could be potentially significant. Implementation of **Mitigation Measure BIO-1** would reduce this impact to a **less than significant** level.

Special-Status Wildlife

The only special-status wildlife species that may occur in the project vicinity is the bald eagle. Because bald eagles would not be present during the construction period there

would be no temporary effects to the species. However, because the raptors use the same nests from year to year, there is potential for a nest or hunting perch to be disturbed or removed during the construction activities. The effects to bald eagles are discussed in detail below. In addition, potential effects to birds protected under the Migratory Bird Treaty Act are also discussed below.

Effect to Special-Status Wildlife

Effects which could affect bald eagle nests and roosts and birds protected under the Migratory Bird Treaty Act include:

- Permanent removal of trees or other habitat that provide nesting or roosting locations.

Bald Eagles

Bald eagles are known to occur around much of New Bullards Bar Reservoir and an active nest was documented four miles from the project site in 2012 (YCWA 2014a). Because the Proposed Project would be constructed from July through October, and bald eagles reside in norther latitudes or higher elevations during this period the raptors would not be present until after construction was complete. As such, construction noise and other disturbances would not directly affect individual bald eagles. However, because the raptors use the same nests from year to year there is potential for a nest or hunting perch to be disturbed or removed during the construction activities. Because implementation of the Proposed Project would require tree removal and could disturb nests or remove actual or potential perching, roosting, or nesting habitat, the effects of the Proposed Project on bald eagles could be potentially significant. Implementation of **Mitigation Measure BIO-2** would reduce this impact to a **less than significant** level.

Mitigation Measure BIO-2: Avoid or minimize the loss of bald eagle nests.

YWA would implement the following measures to avoid the loss of bald eagle nests:

- A qualified biologist would conduct preconstruction surveys for bald eagles nests and hunting perches near the project site in all trees and snags greater than 15 inches in diameter at breast height. If no nests or hunting perches are found, no further mitigation is required.
- If nests are found, impacts on bald eagles would be avoided by establishing appropriate buffer zones around the nests. A 500-foot buffer zone around bald eagle nests are adequate to protect them from disturbance, but the size of the buffer may be adjusted by a qualified biologist in consultation with CDFW depending on site-specific conditions.

Migratory Birds

The Migratory Bird Treaty Act of 1918 makes it unlawful to take (kill, harm, harass, etc.) any migratory bird listed in 50 CFR 10, including their nests, eggs, or products. The act protects more than 800 species, including geese, ducks, shorebirds, raptors, songbirds, and many relatively common species, and it was originally drafted to put an end to the

commercial trade in birds and their feathers that, by the early years of the 20th century, had wreaked havoc on the populations of many native bird species.

Mitigation Measure BIO-3: Avoid or minimize the loss of migratory bird nests, eggs, or products.

YWA would implement the following measures to avoid the unlawful take of any migratory bird listed in 50 CFR 10, including their nests, eggs, or products.

- A qualified biologist would conduct preconstruction nest surveys within and near the project site at least two weeks before the start of construction. If no nests or are found, no further mitigation is required.
- If nests are found, effects would be avoided by establishing appropriate buffer zones around the nests. Any active non-raptor nests identified within the project area or within 300 feet of the project area may be marked with a 300-foot buffer, and the buffer area may need to be avoided by construction activities until a qualified biologist determines that the chicks have fledged. Active raptor nests within the project area or within 500 feet of the project area may be marked with a 500-foot buffer and the buffer avoided until a qualified biologist determines that the chicks have fledged. If the 300-foot buffer for non-raptor nests or 500-foot buffer for raptor nests cannot be avoided during construction of the Project, the project sponsor may retain a qualified biologist to monitor the nests on a daily basis during construction to ensure that the nests do not fail as the result of noise generated by the construction. The biological monitor may be authorized to halt construction if the construction activities cause negative effects, such as the adults abandoning the nest or chicks falling from the nest.

Fish

Golden Shiner and Bluegill are both abundant in Cottage Creek Reservoir and during cooler months it is possible for Rainbow Trout to also occur in the reservoir. During periods of high flow Rainbow Trout, Bluegill, and Golden Shiner from Cottage Creek Reservoir are likely transported into New Bullards Bar Reservoir through the Cottage Creek Reservoir glory hole. The only fish that likely occur in Cottage Creek in the vicinity of the project site are Rainbow Trout. During warmer periods (i.e., summer months) the shallow reservoir likely becomes too warm to support Rainbow Trout and any fish occurring in Cottage Creek Reservoir likely swim upstream into Cottage Creek where cooler pools are available.

The Proposed Project would lower the spillway and eliminate Cottage Creek Reservoir. The channels of Cottage Creek and the unnamed ephemeral channel that is a tributary to Cottage Creek and flows directly into Cottage Creek Reservoir would be re-established because they would no longer be inundated. This would likely result in the removal of introduced fish species (i.e., Bluegill and Golden Shiner) in Cottage Creek due to removal of open water and cooler water temperatures. However, Rainbow Trout would still utilize the area since they likely occupy Cottage Creek.

Cottage Creek and Cottage Creek Reservoir Fish Community

Specific temporary construction-related impact mechanisms that potentially could affect the Cottage Creek and Cottage Creek Reservoir Fish Community include:

- temporary effects from bypassing Cottage Creek around the Construction Zone;
- temporary effects from draining Cottage Creek Reservoir and relocating fish from Cottage Creek Reservoir to New Bullards Bar Reservoir; and
- Temporary effects from underwater noise.

Because Cottage Creek Reservoir would be drained and Cottage Creek would be diverted through an engineered bypass pipe prior to initiation of the primary construction activities there would be no temporary effects to Cottage Creek or Cottage Creek Reservoir water quality during construction activities. Thus, water quality is not discussed further in this section.

After the Proposed Project is complete the only species that would remain in Cottage Creek is Rainbow Trout. Specific permanent mechanisms that potentially could affect Cottage Creek Rainbow Trout include:

- increased transport from Cottage Creek to New Bullards Bar Reservoir; and
- restoration of natural habitat.

Temporary Effects

Effects from Bypassing Cottage Creek Around the Construction Zone

Before Cottage Creek Reservoir can be drained, it is necessary to reroute Cottage Creek around Cottage Creek Reservoir so that the creek flows bypass the construction area before draining into New Bullards Bar Reservoir. Bypassing Cottage Creek flows would be accomplished by 1) placement of flow conveyance pipes around the construction zone, 2) installation of an upstream barrier at the upper end of Cottage Creek Reservoir that channelizes flows into a size and diameter equal to the conveyance pipe, 3) allowing water to flow through the barrier until ready to divert creek flows, and 4) connecting conveyance pipe to upstream barrier to divert Cottage Creek flows around the construction zone and into New Bullards Bar Reservoir. The engineered bypass pipe would be in place throughout the construction process and would provide downstream fish passage for Cottage Creek Rainbow Trout around the construction site and into New Bullards Bar Reservoir. The only fish known to utilize Cottage Creek are Rainbow Trout (FERC 2018). Thus, this is the only species that would be affected by this component of the Proposed Project. Because it is unknown how many Rainbow Trout utilize Cottage Creek it is also unknown how many Rainbow Trout would be diverted during the course of construction.

The delineation survey conducted in March 2017, measured Cottage Creek water depth at the upstream end of Cottage Creek Reservoir to be approximately 12 inches with flows of several cubic feet/second. Because the construction would occur in summer when

instream flows are at a seasonal low (i.e., lower than in March), it is reasonable to expect flows and water depth to be lower than during the survey. Due to the seasonal conditions, most Rainbow Trout from Cottage Creek would be expected to remain in holding pools upstream of Cottage Creek Reservoir where more energetically favorable habitats exist (Rosenfeld and Boss 2001, Harvey et al. 2005). As such, very few Rainbow Trout, if any, are expected to enter the bypass pipe.

Under existing conditions Cottage Creek Rainbow Trout that swim downstream in the vicinity of Cottage Creek Reservoir would encounter the reservoir during their downstream passage. Cottage Creek Rainbow Trout then remain in Cottage Creek Reservoir, swim back upstream into Cottage Creek, or during periods of higher flow, may enter the glory hole and pass approximately 1,500 feet through existing infrastructure into New Bullards Bar Reservoir. Although passage through the bypass pipe would be slightly longer (i.e., approximately 2,500 feet) during the diversion period, movement through both engineered structures would be similar and the endpoint into New Bullards Bar Reservoir would be the same. Consequently, Cottage Creek fish would not be subject to substantially different conditions during construction as they are under existing conditions.

A CDFW approved biological monitor would be on site to oversee activities associated with installing the bypass system. The biological monitor would have the ability to suspend construction work and recommend measures for minimizing or avoiding adverse effects if any component of the Cottage Creek diversion or appears to be causing harm to fish. Work would recommence only when the biological monitor is satisfied that it is safe to proceed.

Based on the above, the temporary diversion of Cottage Creek would have a **less than significant impact** on Cottage Creek and Cottage Creek Reservoir Fishes.

Effects from draining Cottage Creek Reservoir and relocating fish from Cottage Creek Reservoir to New Bullards Bar Reservoir

The only fish that have been confirmed in Cottage Creek Reservoir are the introduced species Golden Shiner and Bluegill. However, it is suspected that Rainbow Trout also occur in the reservoir since they have been documented in tributaries that flow into New Bullards Bar Reservoir (FERC 2018). After Cottage Creek flows are rerouted, but prior to construction and dewatering of Cottage Creek Reservoir, all fish from Cottage Creek Reservoir would be captured and relocated into New Bullards Bar Reservoir. Although fish relocation could result in some stress and mortality due to injury from relocation methods, stress related to handling, and individual fish eluding capture effects would be minimized by the implementation of a fish relocation plan to avoid and minimize any affects to fish. Furthermore, as described above in the bypass pipe assessment, a CDFW approved biological monitor would be present at the project site throughout the dewatering and fish rescue.

Fish relocation would only be performed by qualified fisheries biologists who have experience with fish capture and handling. The fisheries biologist shall be present onsite

during the entire process of dewatering activities and would measure air and water temperatures throughout the process to ensure water temperatures do not exceed 18°C. Fish capture methods would include seining and dip netting. Seines would have a mesh size that is appropriate to ensure entrapment of residing fish and age classes. Fish handling would be kept to a minimum, but if fish handling is necessary the biologist would wet hands prior to touching the fish. Fish would be held in a container (five gallon minimum to prevent overcrowding) with water temperatures not to exceed the temperature of creek waters. Two containers would be available to segregate young-of-the-year fish from larger fish to avoid predation. The containers would be continuously aerated with a battery-powered external bubbler, kept in the shade, and have a lid. For all captured fish, the fisheries biologist would record species and year-class. Fish would be retained for the shortest possible time to ensure stress is minimized and then be placed into New Bullards Bar Reservoir.

Implementation of the fish relocation plan, and presence of a CDFW approved biological monitor would result in a **less than significant** impact on Cottage Creek Reservoir fish.

Effects of Underwater Noise

Installation of the bypass pipe and diversion would require heavy equipment to operate directly adjacent to and minimally within Cottage Creek and Cottage Creek Reservoir causing periods of elevated noise for one–two days. Similarly, because all construction activities associated with the Proposed Project would involve the use of heavy equipment, construction activities could result in temporary periods of elevated underwater noise levels in the creek upstream of the activities. Noise generated from construction would be loudest during the period of time construction occurs on County Road 169 (i.e., for approximately 10 days). However, the only in-water construction noise would be generated from the bypass and diversion and fish rescue portions of the Proposed Project. All other construction related noise would be produced by equipment operating on the adjacent lands, most of which is a significant distance from the creek (i.e., 1,000 feet).

Construction would not occur at night or on weekends (AMM 1: Timing of In-water Work), leaving a daily period of approximately 13 hours or more with no noise generated from construction activity. Nonetheless, fish would be exposed to noise-generating activities during much of the construction period. Generally, heavy equipment would include an excavator, large dump truck, bulldozer, pavement cutter, and equipment to resurface County Road 169 after installation of the new culvert. Any increase in noise associated with construction activities would be temporary and localized and would not reach levels that would cause substantial impacts, including physical injury or mortality. Additionally, any behavioral startle or avoidance responses that might occur would be brief and would not have biologically significant consequences. If a fish senses underwater noise, the fish would move away from the area of disturbance rather than toward it. Consequently, the underwater noise associated with the Proposed Project would result in a **less than significant** impact.

Permanent Effects

Increased Transport of Fish from Cottage Creek to New Bullards Bar Reservoir

Currently, when Cottage Creek Rainbow Trout enter Cottage Creek Reservoir they remain in the reservoir, return to Cottage Creek, or they enter New Bullards Bar Reservoir during periods of high flow when the fish are flushed into the glory hole in Cottage Creek Reservoir. After the Proposed Project is complete, the area that is currently Cottage Creek Reservoir would convert into a more natural creek and wetland complex without any water impoundment. Because there is no impoundment to capture fish flushed out of the creek during high flows, it is possible that more Rainbow Trout are transported from Cottage Creek to the New Bullards Bar Reservoir after the Proposed Project than prior.

As discussed above, Cottage Creek Rainbow Trout already utilize culverts that connect Cottage Creek Reservoir and New Bullards Bar Reservoir. Although, more Rainbow Trout would likely enter New Bullards Bar Reservoir from Cottage Creek more frequently as compared to existing conditions, the mode of transfer would be similar. Since, New Bullards Bar Reservoir supports a diverse fish assemblage, including Rainbow Trout, any fish that does leave Cottage Creek would arrive in a suitable habitat. Consequently, the increased transport of fish into New Bullards Bar Reservoir would have a have a **less than significant** impact on Cottage Creek Rainbow Trout.

Restoration of Natural Habitat

Draining Cottage Creek Reservoir would allow the former reservoir to return to a more natural creek and wetland complex. The conversion from a shallow, open water habitat to a naturally flowing creek and wetland is expected to benefit Cottage Creek Rainbow Trout. Cottage Creek Reservoir is a shallow body of water that can get very warm and become unsuitable habitat for Rainbow Trout during summer months. Due to the warm water conditions in Cottage Creek Reservoir in summer months, Rainbow Trout are likely to return to Cottage Creek where water temperatures are cooler. Removing Cottage Creek Reservoir would provide additional habitat for Rainbow Trout. Consequently, restoring the ecosystem to a more complex and natural habitat would benefit Cottage Creek Rainbow Trout and result in a **less than significant** impact.

New Bullards Bar Reservoir Fish Community

Temporary construction-related effects to the New Bullards Bar Reservoir fish community include;

- temporary effects to water quality, including increased turbidity and suspended solids as a result of constructing staging and stockpile areas, vegetation removal, dam excavation, removal of the corrugated metal pipe spillway and downstream culvert, and installation of the concrete culvert;
- temporary effects to water quality from contaminants that may wash off construction equipment working adjacent to the reservoir.

New Bullards Bar Reservoir fish populations would not be affected by construction noise due to the distance separating the work areas from the reservoir.

Permanent effects to the New Bullards Bar Reservoir fish community from the Proposed Project include.

- permanent effects due to placement of fish rescued from Cottage Creek Reservoir into New Bullards Bar Reservoir.

Temporary Effects

Effects to Water Quality: Increased Suspended Sediment and Turbidity

Direct discharges of soil and suspended sediment to New Bullards Bar Reservoir resulting in increases in TSS and turbidity levels would be the main concern during the construction period, as much of project construction involves vegetation removal, asphalt removal, and dam excavation. Once construction work commences, the vegetation and asphalt removal is expected to take approximately 2–4 weeks during the dry season. Dam excavation and infrastructure removal would take an additional 4–5 weeks.

Construction-related activities, particularly the removal of 141 trees and asphalt from County Road 169 would result in the temporary disturbance of soils. However, prior to any construction work, Cottage Creek Reservoir would be drained and Cottage Creek would be diverted into a bypass pipe to move water from Cottage Creek directly into New Bullards Bar Reservoir. Thus, Cottage Creek and Cottage Creek Reservoir would not provide potential pathways for TSS and turbidity to enter New Bullards Bar Reservoir during the construction period. Further, much of the construction site is separated from New Bullards Bar Reservoir by the Emerald Cove Marina parking lot and construction would occur during the dry season, so the risk of increased erosion and offsite runoff entering New Bullards Bar Reservoir would be low during the construction period. Although asphalt removal and placement of the culvert under County Road 169 would occur directly adjacent to New Bullards Bar Reservoir, the implementation of appropriate erosion control and pollution prevention BMPs (AMMs 3 and 4) would avoid and minimize construction-related erosion and potential for TSS and turbidity from the construction work to enter into New Bullards Bar Reservoir.

The initial runoff following construction, or return of seasonal rains to previously disturbed sites, can result in “first flush” runoff events with elevated levels of TSS and turbidity. However, after construction activities are completed, exposed earthwork would be seeded and mulched to ensure that erosion does not occur during the wet season. As a result of construction occurring over one season, it also is anticipated that disturbed sediments in the upland areas would be substantially stabilized and resistant to mobilization and transport within the first year after construction is finished. Therefore, the potential Proposed Project effects due to increased suspended sediment and turbidity would have a **less than significant** impact to the New Bullards Bar Fish Community.

Effects to Water Quality: Contaminants Entering New Bullards Bar Reservoir from Construction Equipment

The use of motorized equipment, and storage and handling of fuels and equipment lubricants and fluids, may result in petroleum product discharges that could be harmful to water quality if they directly enter New Bullards Bar Reservoir or are spilled on the ground where they may enter the groundwater, or be mobilized and transported in stormwater runoff following construction. Other potential construction-related contaminants associated with the equipment used or inadvertently discharged by construction workers may include trash, cleaners, solvents, and human sanitary wastes. The potential for direct discharge of equipment-, facility-, or worker-related contaminants to New Bullards Bar Reservoir from vegetation removal, dam removal, and infrastructure removal is anticipated to be minimal because a majority of this work would occur upland from, and on the opposite side of, the Emerald Cove Marina parking lot from New Bullards Bar Reservoir.

The greatest potential for contaminants to enter New Bullards Bar Reservoir would occur during the asphalt removal of County Road 169, and removal and replacement of the culvert. As stated above, construction activities would be conducted during the seasonally dry months when stormwater runoff would be low or nonexistent. Further, construction activities would be conducted in conformance with applicable federal and state regulations pertaining to grading and erosion control, and contaminant spill control and response measures. In particular, the construction work would be subject to authorization under the SWRCB NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ/NPDES Permit No. CAS000002). Therefore, YWA and/or its construction contractor would be required to develop a Stormwater Pollution and Prevention Plan (SWPPP; AMM 4) and implement appropriate construction BMPs for all activities that may result in the discharge of construction-related contaminants from disturbed construction areas. Implementation of appropriate erosion control and pollution prevention BMPs would avoid and minimize construction-related erosion and contaminant discharges. In addition to the BMPs, the SWPPP would include BMP inspection and monitoring activities, and identify responsibilities of all parties, contingency measures, agency contacts, and training requirements and documentation for those personnel responsible for installation, inspection, maintenance, and repair of BMPs.

As such, the potential Proposed Project effects to accidental releases of contaminants would have a **less than significant** impact to the New Bullards Bar Fish Community.

Permanent Effects

Placement of fish rescued from Cottage Creek Reservoir into New Bullards Bar Reservoir

Prior to dewatering Cottage Creek Reservoir, a fish recue would be completed as described above. Because there would not be sufficient habitat in Cottage Creek, above the project site, to place any rescued fish, all fish captured during recue would be transported downstream and placed in New Bullards Bar Reservoir. These fish could include Rainbow Trout, Golden Shiners and Bluegill, all of which presently occur in New

Bullards Bar Reservoir. Because the expected number of fishes transported to New Bullards Bar Reservoir would be expected to be low and all species transported from Cottage Creek Reservoir currently occur in New Bullards Bar Reservoir, the potential effect is expected to be minimal, if at all.

As such, the potential Proposed Project effects to permanent effects due to the transport of fishes from Cottage Creek Reservoir would have a **less than significant** impact to the New Bullards Bar Fish Community.

b) Implementation of the Proposed Project would not involve any substantial removal of any riparian zone; however the riparian zone would change from a zone surrounding open water to one that is a more natural creek and wetland complex, which is expected to benefit the riparian zone. However, because work would take place within a riparian zone, and the riparian zones surrounding Cottage Creek Reservoir meet the criteria of the "stream zone" as regulated by CDFW under the Fish and Game Code, permits would need to be secured to complete the work. The Proposed Project would need to include a Streambed Alteration Agreement under Sections 1600–1616 of the California Fish and Game Code, which would provide for the protection of fish, wildlife, and native plant resources. It is important to note that all vegetation removal currently included in the project description is outside of the riparian zone. As such, the Proposed Project would have a **less than significant** impact to riparian habitat or other sensitive natural communities.

c) An additional 0.58 acres of palustrine emergent and palustrine forested wetlands (Cowardin The only wetlands present at the project site are located at the upstream end of the Cottage Creek Reservoir. The wetland is classified as Cowardin Class PEMK (palustrine, emergent, artificially flooded) and vegetation is entirely cattails. Implementation of the Proposed Project would not require dredging or placement of fill in the wetlands. However, since Cottage Creek would be diverted around the project site for three to four months the wetland may dry out during the construction period depending on their source of water (i.e., creek, seep). After construction is complete and water from Cottage Creek once again flows through the project site the wetlands would become inundated again. An additional 0.58 acres of palustrine emergent and palustrine forested wetlands (Cowardin classes of PEM and PFO) would form in the location of the former reservoir. Thus, after completion of the Proposed Project 0.77 acre of wetland would be present at the project site compared to 0.13 acres of wetland under existing conditions. Because the Proposed Project would result in reconfiguration of jurisdictional waters of the U.S. a permit from the United States Army Corps of Engineers (USACE) under the Clean Water Act Section 404 would be filed prior to project implementation. Thus, the Proposed Project would be conducted with authorization from the USACE under Section 404 of the Clean Water Act. In regard to state protected wetlands, the Proposed Project would meet the newly released "*Statewide Wetland Definition and Procedures*" that help ensure no overall net loss of wetlands, but instead promote an increase in the quantity, quality, and sustainability of waters of the state, including wetlands. Based on these findings, the Proposed Project would have a **less than significant** impact on state or federally protected wetlands.

d) Although the area in the project vicinity may serve as a migratory corridor for some terrestrial wildlife species, Proposed Project implementation would not include any structures or barriers that would substantially interfere with the movement of any wildlife species or established native resident or migratory wildlife corridors. The purpose of the Proposed Project is to remove a portion of the current manmade structure (i.e., Cottage Creek Dam) that currently occupies the area. This would improve the natural function of the area. Therefore, the Proposed Project would reduce structures or barriers that could potentially interfere with movement of wildlife species or established native resident or migratory wildlife corridors.

The only wildlife nursery sites that may be present at the project site are bald eagle or other migratory bird nests. Implementation of **Mitigation Measures BIO-2 and BIO-3** would ensure that no bald eagle or migratory bird nests are disturbed during Proposed Project construction. Thus, no wildlife nursery sites would be impeded by the Proposed Project.

No migratory fish utilize Cottage Creek, Cottage Creek Reservoir, or New Bullards Bar Reservoir. As described above in "a" temporary effects from construction related noise and disturbance associated with the Proposed Project have the potential to affect the movements of resident fish in Cottage Creek. However, if a fish senses underwater noise, the fish would move away from the area of disturbance rather than toward it to an area of the reservoir not impeded by the noise. As such, noise from construction-related activities would not interfere substantially with the movement of resident fish species.

All Cottage Creek Rainbow Trout would be diverted through an engineered bypass pipe, around Cottage Creek Reservoir into New Bullards Bar Reservoir during the construction phase of the Proposed Project. Under existing conditions Cottage Creek Rainbow Trout that swim downstream in the vicinity of Cottage Creek Reservoir would encounter the reservoir during their downstream passage. Cottage Creek Rainbow Trout then remain in Cottage Creek Reservoir, return to Cottage Creek or during periods of higher flow, may enter the Cottage Creek Reservoir glory hole and pass approximately 1,500 feet through existing infrastructure into New Bullards Bar Reservoir. Although passage through the bypass pipe would be slightly longer (i.e., approximately 2,500 feet) during the diversion period, movement through both engineered structures would be similar and the endpoint into New Bullards Bar Reservoir would be the same. Consequently, Cottage Creek fish would not be subject to substantially different conditions during construction as they are under existing conditions. As such, the diversion would not interfere substantially with the movement of Cottage Creek Rainbow Trout.

All fish from Cottage Creek Reservoir would be relocated into New Bullards Bar Reservoir prior to the dewatering of the reservoir by implementing a fish removal and relocation plan. This plan would contain methods for minimizing the risk of stress and mortality during capture. Thus implementation of the plan would minimize potential adverse effects associated with fish stranding during dewatering activities.

Based on the assessments provided above, the Proposed Project would have a **less than significant** impact on the movement of any native or migratory fish or wildlife species,

established native resident of migratory wildlife corridors, or on native wildlife nursery sites.

e) The Proposed Project would result in the removal of 141 trees, including ponderosa pine, incense cedar, big leaf maple, California laurel, sugar pine, black oak, madrone, Douglas fir, and toyan. The trees range in size from 2 to 18-inches in diameter at breast height (dbh). This does not conflict with the tree preservation ordinance descripted in the Yuba County 2030 General Plan (General Plan). The General Plan's tree preservation ordinance is in place to protect oak woodlands, heritage oak trees, and other existing mature trees. To accomplish this the tree preservation ordinance aims to preserve existing oak trees that have a dbh of six inches or greater and all other trees that have a dbh of 30 inches or greater. No trees greater than 18 inches in diameter would be removed. The only oaks that would be removed are black oaks and none measure six inches or more in dbh. The Proposed Project would also not conflict with any other local policies or ordinances protecting biological resources. As such, the Proposed Project would have a **less than significant** impact in regard to conflicting with local policies or ordinances protecting trees or other biological resources.

f) Although a regional conservation plan is currently under development and is intended to serve as a combined federal Habitat Conservation Plan and state Natural Communities Conservation Plan for Yuba and Sutter counties, this plan has not been adopted and is not expected to be adopted before project implementation. Therefore, the Proposed Project would have **no impact** on consistency with an applicable habitat conservation plan or natural community conservation plan.

3.5 Cultural Resources

Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	☐	☑	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☑	☐	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☑	☐	☐

3.5.1 Setting

This section summarizes the *Cultural Resources Inventory and Effects Assessment for the Cottage Creek Dam Project* prepared by Natural Investigations Company (2019).

Prehistoric Setting

The prehistoric timeframes in California's north-central Sierra Nevada region include Paleoindian (13,500–8,500 years before present), Archaic (8,500–1,000 years before present), and Late Prehistoric (1,000 years before present–Historic Contact) periods. There is little archaeological evidence of the Paleoindian and Lower Archaic periods, which predate 5,000 years ago. Excavations of a number of archaeological sites in the subsequent periods show changes in distinct artifact types, subsistence orientation, and settlement patterns, and of an established trans-Sierran trade network, that lasted until historic contact in the early 1800s (Natural Investigations Company 2019).

Ethnographic Setting

The Nisenan (also known as the southern Maidu) historically occupied the project vicinity (Kroeber 1925; Wilson and Towne 1978; as cited in Natural Investigations Company 2019). East from the Sacramento River to the crest of the Sierra Nevada, the drainages of the American, Bear, lower Feather, and Yuba rivers provided these seasonally mobile hunter-gatherers with an abundance of natural resources. Semi-permanent villages were typically situated along the main watercourses in their territory. Similar to other California Native American groups, the Nisenan employed a variety of tools, implements, and enclosures for hunting, fishing, and collecting natural resources. Acorns, of particular importance to the diet, were stored in village granaries before processing with bedrock or portable mortars and pestles.

The traditional culture and lifeways of the Nisenan were disrupted in the 1830s with disease epidemics that swept through the densely populated region and decimated native populations. The discovery in 1848 of gold in the heart of Nisenan territory and the ensuing Gold Rush had a devastating impact on the surviving Nisenan who retreated to the foothills and mountains or labored for the growing ranching, farming, and mining industries.

Historic Setting

The history of this region is deeply tied to the Gold Rush era. Mining communities, including Bullards Bar, along the rivers in the county blossomed soon after Jonas Spect found gold in June 1848 on the Yuba River, approximately 18 miles east of Marysville. Bullards Bar was established as a mining camp on the North Yuba River in 1849 and named for Dr. Bullard, a miner originally from New York. At the confluence of the Yuba and Feather rivers, the town of Marysville ultimately became the commercial center for the mines of the Northern Mother Lode. Freight and supplies were provided to the camps over narrow pack trails and then wider turnpikes, such as the road constructed in 1860, now County Road E-20 (Marysville Road), connecting Downieville via Dobbin's Ranch, Bullards Bar, and Camptonville (Natural Investigations Company 2019).

As the bars were exhausted, mining efforts moved farther from the rivers. Many of the miners who failed to locate productive claims became traders, supplying materials and provisions, or turned to agriculture, ranching, and logging activities. By 1887, Bullards Bar is described as a lumber, mining, and farming community with a post office and public school. Plumas National Forest, which contributes to the local economy by providing timber for harvesting and milling

into lumber, was established in 1905 by President Theodore Roosevelt (Natural Investigations Company 2019).

As early as 1850, a bridge was erected across the North Yuba River at Bullards Bar, but was replaced several times as storms washed the bridges away. The first of four dams in the Bullards Bar area was constructed in 1899, and washed out a year later. The second dam, a 30-foot-tall masonry rock dam built in 1900, is still in place, about 1,000 feet downstream of New Bullards Bar Dam. The third dam, a 200-foot-tall concrete-arch dam known as Old Bullards Bar Dam, was constructed in 1922-1923, acquired by Pacific Gas and Electric Company a few years later, and inundated when the fourth dam, New Bullards Bar Dam, began operation in 1969. New Bullards Bar Dam was designed in 1964 for flood control and hydroelectric power generation as part of YWA's Yuba River Development Project, and was constructed between 1966 and 1969. The two associated powerhouses, New Colgate and New Narrows 2, were completed and operational in 1970 (Natural Investigations Company 2019). Cottage Creek Dam was constructed in 1966 as a zoned earth and rockfill structure, approximately 50 feet high, on Cottage Creek approximately 0.25-mile upstream of and near the right upstream abutment of New Bullards Bar Dam. The dam was designed by the same engineering firm, International Engineering Company of San Francisco, with the same civil engineer, and the same construction company (Perini Yuba Associates of Marysville) that designed and built New Bullards Bar Dam. The purpose of Cottage Creek Dam was to support the construction of New Bullards Bar Dam. It was originally planned to be breached and removed after New Bullards Bar Dam was constructed and the creek re-diverted into New Bullards Bar Reservoir (GEI Consultants 2016).

Results of Project Site Research and Survey

A literature search completed at the North Central Information Center on March 14, 2017, indicated two prior surveys had been conducted within portions of the project site, and an additional three studies had been completed within a 0.25-mile radius of the project. No cultural resources have been previously recorded within the project site. Within the 0.25-mile radius, eight historic-era resources had been previously recorded. Two of these, New Bullards Bar Dam (P-58-002706) and New Bullards Bar Reservoir (P-58-002708), were previously found ineligible for listing on the National Register of Historic Places or California Register of Historical Resources. The Bullards Bar Dam Bridge (16C0048) built in 1970 has also been evaluated by the California Department of Transportation as being ineligible for National Register of Historic Places listing (Natural Investigations Company 2019).

Archival research indicates the project vicinity was part of the gold mining region located along the North Fork Yuba River. The 1861 Official County Map shows the mining camp at Bullards Bar approximately 3 miles northeast of present-day Cottage Creek Dam. Aerial photographs and historic maps indicate the project site remained undeveloped until construction of Cottage Creek Dam in 1966 (Natural Investigations Company 2019).

An intensive-level pedestrian survey of the project site was conducted by Natural Investigations Company archaeologist, Phil Hanes, on March 16, 2017. Regularly spaced survey transects were not employed due to the presence of extreme vegetation overgrowth, steep slopes (20-40 degrees), and the reservoir. All visible ground surface within the project site was carefully examined for cultural material (e.g., flaked stone tools, tool-making debris, stone milling tools,

or fire-affected rock), soil discoloration that might indicate the presence of a cultural midden, soil depressions and features indicative of the former presence of structures or buildings (e.g., postholes, foundations), or historic-era debris (e.g., metal, glass, ceramics).

One historic built-environment resource, Cottage Creek Dam and Reservoir (P-58-003046), was newly identified within the project site and found ineligible through survey evaluation for listing on the National Register of Historic Places or California Register of Historical Resources, either individually or as a construction component of New Bullards Bar Dam, under any criterion of eligibility. No prehistoric or ethnographic sites, and no other historic-era resources were identified during survey of the project site, and none had been previously recorded within the project site (Natural Investigations Company 2019).

The project site has been disturbed by the grading and construction of Cottage Creek Dam and Reservoir, associated access roads, water treatment facility, and maintenance yard, and by adjacent recreation facilities and New Bullards Bar Dam. The sensitivity is low for discovery of archaeological deposits, materials, or features by implementation of the project. The project site is located within disturbed areas that are underlain by sediments formed millions of years prior to the presence of humans in this region (Natural Investigations Company 2019).

Native American Outreach

Natural Investigations Company contacted the Native American Heritage Commission, requesting a search of their Sacred Lands File for traditional cultural resources within or near the project site. The reply from the Native American Heritage Commission, dated March 27, 2017, states that their search was negative for the presence of Native American sacred lands in the immediate vicinity.

By letter dated September 10, 2019, Natural Investigations contacted each of the six Native American tribes or individuals provided by the Native American Heritage Commission, requesting any information regarding sacred lands or other heritage sites that might be impacted by the proposed project. On September 26, 2019, voice mail messages were left for Gary Archuleta, Chairperson of the Mooretown Rancheria of Maidu Indians; Glenda Nelson, Chairperson of the Estom Yumeka Maidu Tribe of the Enterprise Rancheria; Cathy Bishop, Chairperson of the Strawberry Valley Rancheria; Don Ryberg, Chairperson, and Grayson Coney, Cultural Director, of the T-si Akim Maidu; and Gene Whitehouse, Chairperson of the United Auburn Indian Community of the Auburn Rancheria. A response from the United Auburn Indian Community of the Auburn Rancheria requests notification should any resources be identified during project implementation, a tribal monitor be present during ground-disturbing activities, and copies of draft/completed reports, record searches, and environmental technical documents (Natural Investigations Company 2019). Responses have not been received from the other tribes.

For more information regarding Native American outreach, please see Section 3.18, Tribal Cultural Resources.

3.5.2 Discussion

a) One historic-era built environment resource was identified during survey of the project site. The resource, Cottage Creek Dam and Reservoir, was determined ineligible for

listing on the National Register of Historic Places or the California Register of Historical Resources during the current survey process. No archaeological sites were identified during survey of the project site (Natural Investigations Company 2019). Although the potential for discovery of buried archaeological materials within the project site is considered to be low, it is possible that previously unknown historical resources could be discovered during grading and excavation work associated with construction of the project. Inadvertent discovery or damage to historical resources would be a significant impact. Implementation of **Mitigation Measure CULT-1** would ensure that the project would not result in adverse change to historical or archaeological resources, by requiring cessation of work, evaluation of significance, and implementation of proper data recovery and/or preservation procedures upon discovery of previously unknown resources. As such, implementation of **Mitigation Measure CULT-1 would** reduce this impact to a **less than significant** level.

Mitigation Measure CULT-1. Inadvertent discovery of historical and archaeological resources.

In the unlikely event that buried cultural deposits (e.g., prehistoric stone tools, milling stones, historic glass bottles, foundations, cellars, privy pits) are encountered during project implementation, all ground-disturbing activity within 50 feet of the resources shall be halted and a qualified professional archaeologist (36 CFR 61) shall be notified immediately and retained to assess the significance of the find. Construction activities could continue in other areas. If the find is determined to be significant by the qualified archaeologist (i.e., because it is determined to constitute either a historical resource or a unique archaeological resource), the archaeologist shall develop appropriate procedures to protect the integrity of the resource and ensure that no additional resources are affected. Procedures could include but would not necessarily be limited to preservation in place, archival research, subsurface testing, or contiguous block unit excavation and data recovery.

b) No prehistoric or historic-era archaeological sites or ethnographic sites were identified during survey of the project site (Natural Investigations Company 2019). However, it is possible that buried or concealed archaeological resources could be present that may be discovered during ground-disturbing and other construction activities associated with the project. Inadvertent discovery or damage to archaeological resources would be a significant impact. Implementation of **Mitigation Measure CULT-1** would ensure that the project would not result in adverse change to archaeological resources, by requiring cessation of work evaluation of significance, and implementation of proper data recovery and/or preservation procedures upon discovery of previously unknown resources. Therefore, this impact would be reduced to a **less than significant** level.

c) Based on the documentary research described above, no evidence suggests that any prehistoric or historic-era marked or unmarked human interments are present within or in the immediate vicinity of the project site (Natural Investigations Company 2019). However, there is the potential for unmarked, previously unknown Native American or other graves to be present and be uncovered during construction activities. California law recognizes the need to protect historic-era and Native American human burials, skeletal

remains, and grave-associated items from vandalism and inadvertent destruction and any substantial change to or destruction of these resources would be a significant impact. Implementation of the **Mitigation Measure CULT-2** would reduce this impact to a **less than significant** level.

Mitigation Measure CULT-2. Inadvertent discovery of human remains.

In accordance with the California Health and Safety Code, Section 7050.5, and the Public Resources Code 5097.98, regarding the discovery of human remains, if any such finds are encountered during project construction, all work within the vicinity of the find shall cease immediately, a 50-foot-wide buffer surrounding the discovery shall be established, and the YWA shall be immediately notified. The County Coroner shall be contacted immediately to examine and evaluate the find. If the coroner determines that the remains are not recent and are of Native American descent, the Coroner will notify the Native American Heritage Commission, which will determine and notify a Most Likely Descendent. The Most Likely Descendent shall complete the inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

3.6 Energy

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

3.6.1 Setting

As described above in Section 3.3, Air Quality, CARB regulates mobile air pollution sources such as those from motor vehicles. These regulations also ensure that wasteful, inefficient, or unnecessary consumption of energy resources does not occur by off-road diesel vehicles, such as construction equipment.

3.6.2 Discussion

a, b) Proposed Project construction would involve consumption of energy resources related to use of oil, gasoline, and diesel fuel for construction work vehicle trips, hauling truck trips, materials delivery truck trips, and operation of off-road construction equipment. Construction would not require the use of natural gas appliances or equipment. Diesel-powered construction equipment includes a dozer, excavator, pavement cutter, pump, crane, and grader. However, at most, only four pieces of diesel powered construction

equipment would operate at one time during the four- to five-week dam excavation and removal phase. Equipment would operate on average for eight hours per day.

The operation of all construction equipment would be regulated by the CARB In-Use-Off-Road Diesel Vehicle Regulation. This regulation is intended to reduce emissions from in-use off-road, heavy-duty diesel vehicles by limiting idling, requiring all vehicles to be reported to CARB, restricting the addition of older vehicles into construction fleets, requiring emissions by retiring, replacing, or repowering older engines. These regulations would result in the use of fuel efficient construction vehicles.

Based on FRAQMD's Indirect Source Review Guidelines, the Proposed Project is a "Type 2" project, which is a non-land use project that has no operational phase. In other words, once the project is complete, it would not utilize energy resources.

Based on the above, the Proposed Project would not result in wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation. Further, the Proposed Project would not conflict with or obstruct a State or local plan for renewable energy and energy efficiency. As such, the Proposed Project would have a **less than significant** impact on energy.

3.7 Geology/Soils

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

Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☑
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☑
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☑

3.7.1 Setting

Geological and Soil Characteristics

The eastern portion of Yuba County, in the foothills of the Sierra Nevada, including the project area, is generally comprised of metavolcanic (Mesozoic Jura-Trias Metavolcanic) and granitic (Mesozoic Granitic) formations. The geologic and soil characteristics of the project area, and original engineering studies and construction documentation for Cottage Creek Dam prepared in the 1960's, were reviewed in the "Asset Management" report prepared for the Proposed Project (GEI Consultants 2016). Based on the available information, the underlying geology of the project area is the Oregon City formation, which consists of massive, homogeneous metavolcanic rocks. The surface soils are of the Woodleaf-Surnuf-Sites-Mariposa association.

Explorations consisting of borings, exploratory tunnels, and surface mapping around the dam site prior to construction in the 1960's revealed no signs of weaker crushed rock or unexpected formations that would indicate presence of faults under the dam or reservoir areas. The dam is a zoned earthfill embankment consisting of a clayey silt and silty sand core which is covered by an upstream protective zone of rockfill (1/2-inch minus to 12 inches), a transition zone (up to 3-inch material), and a downstream zone (compacted random weathered rock and soil). The material used to construct the dam was sourced from areas around the dam site and a quarry.

There are no Alquist-Priolo seismic faults located in Yuba County. The nearest fault to the project site is the Big Bend-Wolf Creek fault zone, which lies under New Bullards Bar Reservoir and considered inactive (GEI Consultants 2016). The nearest faults considered active are the Little Grass Valley fault and the Cleveland Hill fault, located 18 and 19 miles away, respectively. The Little Grass Valley fault is considered the controlling fault and has a Maximum Credible Earthquake magnitude of 6.75 at a distance of 15 miles from project area.

Paleontological Resources

Project plans, geologic maps of the project site, and relevant geological and paleontological literature were reviewed to determine which geologic units are present within the project site and whether fossils have been recovered within the project site or from those or similar geologic units elsewhere in the region. A search for known fossil localities was also conducted on

September 9, 2019, by Natural Investigations Company through the online collections database of the University of California Museum of Paleontology in order to determine the status and extent of previously recorded paleontological resources within and surrounding the project site.

The University of California Museum of Paleontology database indicates there are no vertebrate localities, one invertebrate locality, and two fossil plant localities in Yuba County, none of which are in the project vicinity (University of California Museum of Paleontology 2019). The invertebrate locality, which is Recent in age, and the Tertiary-age marine plant localities have no specimens listed in the database.

None of the rock units listed in the University of California Museum of Paleontology database for Yuba County are present within the project site, which is underlain by massive amphibolite bedrock exposed along Cottage Creek and associated with the metavolcanic rock unit of the Late Jurassic (~160 million years) Smartville Complex (Saucedo and Wagner 1992, as cited in Natural Investigations Company 2019). Geological work by International Engineering Company for the Yuba River Development Project found the amphibolite bedrock had been transformed by metamorphism from andesite and basaltic flows (International Engineering Company 1966, as cited in Natural Investigations Company 2019).

Paleontological Sensitivity

The metavolcanic rocks that underlie the project site have a zero sensitivity for paleontological resources, as fossils are absent due to the high temperature and pressure conditions associated with their formation. Additionally, the project site contains no unique geologic features.

3.7.2 Discussion

a) The project area is located a considerable distance (18 miles) from the nearest fault zone (Little Grass Valley) that is considered active. However, the Proposed Project involves the deconstruction of the earthen Cottage Creek Dam and its reservoir. The Proposed Project would include lowering the existing dam and the new infrastructure would be designed for a 500-year flood peak, which would lessen potential hazards of a catastrophic flood, debris flows, or landslide in the event of seismic activity. Therefore, there would be **less than significant** impact on the exposure of people or structures to adverse effects involving fault lines, seismic-related ground shaking and failure, and landslides.

b) Construction of the Proposed Project involves excavation and grading to remove a portion of the existing Cottage Creek earthen dam core and construct the box culvert for the Cottage Creek channel. The exposure of disturbed soils could result in soil erosion. However, the Proposed Project would be constructed in the dry season that would ensure minimal potential erosion or loss of topsoil. After construction is complete the exposed earthwork would be seeded and mulched to prevent erosion to ensure that erosion does not occur during the wet season. As a result of construction occurring over one season, it also is anticipated that disturbed sediments in the upland areas would be substantially stabilized and resistant to mobilization and transport within the first year after

construction is finished. Therefore, the Proposed Project would have a **less than significant** impact on soil erosion and loss of topsoil.

c) The project site is located on soils that are generally considered stable, however, erosion hazard is high in areas of steep slopes. The Proposed Project involves the deconstruction of the earthen Cottage Creek dam and its reservoir, which would lessen potential hazards of any unstable geologic unit or soils that may be present. Therefore, the Proposed Project would have a **less than significant** impact on the potential for on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.

d) The Proposed Project is not in an area containing expansive soils and would not involve construction of buildings or other facilities that would be utilized by people. Therefore, the Proposed Project would have **no impact** on the risk to life or property from expansive soils.

e) The Proposed Project would not involve the construction of septic tanks or alternative wastewater disposal systems. Therefore, the Proposed Project would have **no impact** on soils utilized for septic tanks or alternative wastewater disposal systems.

f) No paleontological resources or unique geologic features are known to exist within or near the project site. As noted, the project site is underlain by Late Jurassic metavolcanic rocks and amphibolite that have zero sensitivity for paleontological resources. No mitigation measures for paleontological resources are required. Therefore, the Proposed Project would have **no impact** on a unique paleontological resource or site or unique geologic feature.

3.8 Greenhouse Gas Emissions

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

3.8.1 Setting

Gases that absorb and re-emit infrared radiation in the atmosphere are called greenhouse gases (GHGs). The GHGs that are widely seen as the principal contributors to human-induced climate change include carbon dioxide (CO_2), methane (CH_4), nitrous oxides (NO_x), fluorinated gases such as hydrofluorocarbons and perfluorocarbons, and sulfur hexafluoride (SF_6). Water vapor is

excluded from the list of GHGs because it is short-lived in the atmosphere and its atmospheric concentrations are primarily determined by natural processes, such as oceanic evaporation.

GHGs are emitted by both natural processes and human activities. Of these gases, CO_2, CH_4, and NO_2 are emitted in the greatest quantities from human activities. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH_4 results from off-gassing associated with agricultural practices and landfills. NO_2 is produced by microbial processes in soil and water, including those reactions that occur in fertilizers that contain nitrogen, fossil fuel combustion, and other chemical processes.

Man-made GHGs, many of which have greater heat-absorption potential than CO_2, include fluorinated gases and SF_6 (California Environmental Protection Agency 2006). Different types of GHGs have varying global warming potentials. The global warming potential of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHGs absorb different amounts of heat, a common reference gas (CO_2) is used to relate the amount of heat absorbed to the amount of the gas emissions, referred to as "carbon dioxide equivalent" (CO_2e), and is the amount of a GHG emitted multiplied by its global warming potential. Carbon dioxide has a 100-year global warming potential of one. By contrast, methane has a global warming potential of 25, meaning its global warming effect is 25 times greater than carbon dioxide on a molecule-per-molecule basis (Intergovernmental Panel on Climate Change 2007).

Regulatory Framework

Project implementation would generate GHG emissions through the burning of fossil fuels or other emissions of GHGs, thus potentially contributing to cumulative impacts related to climate change. In response to an increase in man-made GHG concentrations over the past 150 years, California has implemented Assembly Bill (AB) 32, the "California Global Warming Solutions Act of 2006." AB 32 codifies the Statewide goal of reducing emissions to 1990 levels by 2020 (essentially a 15% reduction below 2005 emission levels) and the adoption of regulations to require reporting and verification of statewide GHG emissions. Furthermore, on September 8, 2016, the governor signed Senate Bill (SB) 32 into law, which requires the state to further reduce GHGs to 40 percent below 1990 levels by 2030. SB 32 extends AB 32, directing CARB to ensure that GHGs are reduced to 40 percent below the 1990 level by 2030.

On December 14, 2017, CARB adopted the 2017 Scoping Plan, which provides a framework for achieving the 2030 target. The 2017 Scoping Plan does not provide project-level thresholds for land use development. Instead, it recommends that local governments adopt policies and locally-appropriate quantitative thresholds consistent with a statewide per capita goal of six metric tons (MT) CO_2e by 2030 and two MT CO_2e by 2050 (CARB 2017). As stated in the 2017 Scoping Plan, these goals may be appropriate for plan-level analyses (city, county, subregional, or regional level), but not for specific individual projects because they include all emissions sectors in the state.

Thresholds

The vast majority of individual projects do not generate sufficient GHG emissions to directly influence climate change. However, physical changes caused by a project can contribute

incrementally to cumulative effects that are significant, even if individual changes resulting from a project are limited. The issue of climate change typically involves an analysis of whether a project's contribution towards an impact would be cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects (CEQA Guidelines, Section 15064[h][1]).

According to CEQA Guidelines, projects can tier off of a qualified GHG reduction plan, which allows for project-level evaluation of GHG emissions through the comparison of the project's consistency with the GHG reduction policies included in a qualified GHG reduction plan. This approach is considered by the Association of Environmental Professionals in its white paper, *Beyond Newhall and 2020*, to be the most defensible approach presently available under CEQA to determine the significance of a project's GHG emissions (Association of Environmental Professionals 2016). Neither YWA nor Yuba County has an adopted GHG reduction plan and thus this approach is not currently feasible for this analysis.

To evaluate whether a project may generate a quantity of GHG emissions that may have a significant impact on the environment, a number of operational bright-line significance thresholds have been developed by state agencies. Significance thresholds are numeric mass emissions thresholds which identify the level at which additional analysis of project GHG emissions is necessary. Projects that attain the significance target, with or without mitigation, would result in less than significant GHG emissions.

FRAQMD has not established quantitative significance thresholds for evaluating GHG emissions in CEQA analyses. Instead, FRAQMD, in its *Indirect Source Review Guidelines*, recommends using the California Air Pollution Control Officers Association (2008) *CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act* white paper and other resources when developing GHG evaluations (FRAQMD 2010). The CEQA and Climate Change paper provides a common platform of information and tools to support local governments and was prepared as a resource, not as a guidance document. However, CEQA Guidelines section 15064.4 expressly provides that a "lead agency shall have discretion to determine, in the context of a particular project," whether to "[u]se a model or methodology to quantify greenhouse gas emissions resulting from a project, and which model or methodology to use." A lead agency also has discretion under the CEQA Guidelines to "[r]ely on a qualitative analysis or [quantitative] performance based standards."

The *Yuba County 2030 General Plan Public Health & Safety Element* includes the following applicable policies related to reducing GHG emissions in Yuba County (Yuba County 2011b):

- **Policy HS6:** New developments shall implement emission control measures recommended by the Feather River Air Quality Management District for construction, grading, excavation and demolition, to the maximum extent feasible.

In light of the lack of a specific GHG threshold from FRAQMD, it is appropriate to refer to guidance from other agencies when discussing GHG emissions. Thus, for the purposes of this analysis, thresholds developed by the Sacramento Metropolitan Air Quality Management District (SMAQMD) are considered to determine the significance of GHG emissions. According to the

SMAQMD CEQA Guide (SMAQMD 2009; last revised in 2019), the SMAQMD "recognizes that although there is no known level of emissions that determines if a single project will substantially impact overall GHG emission levels in the atmosphere, a threshold must be set to trigger a review and assessment of the need to mitigate project GHG emissions. Recommended thresholds were developed to ensure at least 90 percent of new GHG emissions would be reviewed and assessed for mitigation, thereby contributing to GHG emissions reduction goals of AB 32, SB 32, the Scoping Plan, and Executive Orders. Lead agencies shall compare the project's estimated GHG emissions to SMAQMD's recommended thresholds of significance for construction of 1,100 metric tons of CO_2e per year." Therefore, if construction of the project exceeds the 1,100 metric tons of CO_2e per year threshold of significance, the projects emissions may have a cumulatively considerable contribution to a significant cumulative environmental impact.

Methods

Emissions associated with construction activities were estimated using CalEEMod, version 2016.3.2 (see Appendix B). Construction would include mobilization, clearing and grubbing, dewatering, dam excavation and infrastructure removal, culvert installation, paving, and demobilization phases. Construction equipment, phases, and schedule were provided by the project engineer. For construction equipment not included in CalEEMod, assumptions were made by applying similar pieces of construction equipment with equivalent size and horsepower. Assumptions were also made regarding average worker commute trips by construction phase, average haul truck capacity (13 cubic yards), and worker, vendor, and hauling trip lengths, as detailed in Section 3.3, Air Quality. CalEEMod assumptions and results are summarized in Appendix B. The analysis focuses on CO_2, CH_4, and NO_2 because these make up 98.9 percent of all GHG emissions by volume (Intergovernmental Panel on Climate Change 2007) and are the GHG emissions that the Proposed Project would emit in the largest quantities. Fluorinated gases, such as hydrofluorocarbons, perfluorocarbons, and SF_6, were also considered for the analysis, but because the project is a dam spillway modification, the quantity of fluorinated gases would not be significant, since fluorinated gases are primarily associated with industrial processes.

3.8.2 Discussion

a) Construction of the Proposed Project would generate GHG emissions from construction equipment. Construction activity is estimated to occur over a period of approximately four to five months. As shown in **Table 9**, construction activity for the Proposed Project would generate an estimated 422.2 MT of CO_2e. The Proposed Project would involve dam spillway modification and thus would not include operational emissions. Project-generated annual GHG emissions would not exceed the 1,100 MT of CO_2e per year threshold and impacts would be **less than significant**.

Table 9. Estimated construction emissions of greenhouse gases.

Construction Year	Annual Emissions (CO_2e MT/year)
2019	422.2[1]

CO_2e = carbon dioxide equivalents
MT = Metric Tons
[1]Modeled values represent total emissions that would occur over the duration of the construction period. See Appendix B for detail on model inputs, assumptions, and project specific modeling parameters.

b) The Proposed Project would be generally consistent with applicable regulations and plans addressing GHG reductions. As discussed in "a" above, the Proposed Project's construction emissions would not exceed SMAQMD recommended thresholds for GHG emissions. SMAQMD's recommended construction threshold and mitigation measures were developed to show consistency with the GHG reduction goals of AB 32 and SB 32. Therefore, the Proposed Project would not conflict with or obstruct implementation of CARB's 2017 Scoping Plan for achieving GHG reductions consistent with AB 32 and SB 32 and would achieve reductions consistent with SMAQMD's guidance. This impact would be **less than significant**.

3.9 Hazards & Hazardous Materials

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

3.9.1 Setting

Hazardous materials and wastes are regulated by federal and state laws and are required to be recycled or properly disposed. Yuba County is the local Certified Unified Program Agency that manages programs for hazardous materials storage and hazardous waste disposal. No hazardous waste sites are located within or adjacent to the project area (California Department of Toxic Substances Control 2018). The potential severity of a hazardous material incident depends on the type, location, and quantity of the material released. The potential for hazardous material or waste spills during transport generally reflects the greatest risk of public exposure given residences that are typically close to transportation corridors.

The project site is primarily located on land owned by YWA with a small portion of the project site (e.g., Cottage Creek Dam and Reservoir) occurring on USFS land. The YWA portion of the project site is in an area identified by the CalFire with very high fire hazard severity (CalFire 2019), which is the highest fire hazard rating. The USFS does not utilize the same fire severity rankings and instead bases severity levels on annual weather conditions. The project site is located within the Dobbins Oregon House Fire District of the Yuba County Foothills Wildfire Protection Plan, immediately adjacent to the Camptonville Community Service District. The project site is generally located within the "threat" zone of the Dobbins Oregon House Fire District, which is the lowest level of risk to people or structures, aside from unrated lands. However, a portion of the project site is located within the area of infrastructure associated with Emerald Cove Marina and this area is located with the "defense" zone of the Dobbins Oregon House Fire District, which is the middle level of risk to people or structures. A number of wildfires have ignited in the vicinity of the project area, including the Bullards Incident Fire in 2010, and are documented in the Wildfire Protection Plan (Yuba County 2014). Altogether, the results of the Wildfire Protection Plan assessment place the project area in an area of moderate to high wildland fire hazard.

There are no airports in the vicinity of the Proposed Project. The closest airports to the project site are two general-aviation airports (Brownsville Aero Pines Airport and Old Aerodome), located approximately 16 miles northwest and 17 miles southwest of the site, respectively.

3.9.2 Discussion

a, b) Hazardous materials such as fuel, and potentially other construction materials, would be present on the project site for the Proposed Project. However, all materials would be used in accordance with applicable federal, state, and local laws, including Cal-OSHA requirements and manufacturer's instructions. Therefore, the Proposed Project would have a **less than significant** impact on the creation of a significant hazard to the public or the environment through the routine transport of disposal materials.

c) The project area is not located within one-quarter mile of an existing or proposed school. Therefore, the Proposed Project would have **no impact** on a school as related to emission of hazardous materials, substances, or waste.

d) Based on a search of the State of California EnviroStor database, the project area is not located on, or near, any federal-, state-, or local-designated hazardous wastes site

(California Department of Toxic Substances Control 2018). Therefore, the Proposed Project would have **no impact** on the related safety of people residing or working in the project area.

e) The Proposed Project is not located within an airport land use plan or within two miles of a public airport or public use airport. Therefore, the Proposed Project would have **no impact** on safety hazards or excessive noise for people residing or working in an airport land use plan area or within two miles of a public or public use airport.

f) Construction of the Proposed Project would require hauling of equipment and materials on county- and state-maintained roads, which could temporarily slow the passage of vehicles during emergencies. However, project-related construction activities would be temporary over the course of approximately four months requiring up to approximately 30 to 35 construction-related trips per day during the most intensive portion of the construction period. Thus, the project-related trips would not substantially hinder the passage of emergency vehicles or the implementation of any evacuation plan. Therefore, the Proposed Project would have a **less than significant** impact on an emergency response plan or emergency evacuation plan.

g) Construction activities for the Proposed Project's facilities would occur in an area designated in the Yuba County General Plan to have "very high" wildland fire risk. Construction of the Proposed Project could present a potential for substantial risk of wildland fire if proper fire prevention measures are not implemented. However, as indicated in Section 2.4.8, a fire plan would be developed and implemented for the construction activities that would reduce the potential construction-related fire hazard. The fire plan would include standard fire prevention measures such as identifying construction sites as non-smoking areas, training personnel, and equipping personnel with portable communication devices. Therefore, the Proposed Project would have a **less than significant** impact on the exposure of people or structures involving wildland fires.

3.10 Hydrology/Water Quality

Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	☐	☐	☑	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.	☐	☐	☐	☑
c) Substantially alter the existing drainage pattern of the site or area including through the alteration of the course of a stream or river or through the addition of impervious surfaces in a manner which would;				

Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
i. Result in substantial erosion or siltation on-or off site;	☐	☐	☑	☐
ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☐	☑	☐
iii. create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☑	☐
iv. Impede or redirect flood flows	☐	☐	☑	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants to project inundation.	☐	☐	☐	☑
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.	☐	☐	☐	☑

3.10.1 Setting

Cottage Creek Dam is located on Cottage Creek, a small tributary of the North Yuba River, approximately 0.25 mile upstream and near the right upstream abutment of New Bullards Bar Dam. Cottage Creek Reservoir drains through a vertical pipe inlet called a glory hole to a drainage ditch then into a culvert under County Road 169 into New Bullards Bar Reservoir. New Bullards Bar Reservoir is the principal storage facility of the Yuba River Development Project and is operated by YWA for water supply and flood control. Along with the New Bullards Reservoir, the Proposed Project is located within the North Yuba River sub-basin, one of seven major drainages in the Yuba River basin. In total, the North Yuba River is approximately 43.3 miles long, and converges with the Middle Yuba River about 2.3 miles south of New Bullards Bar Dam, to form the main stem of the Yuba River.

The Proposed Project would create a safer spillway at a lower elevation, resulting in a significantly lower storage capacity behind Cottage Creek Dam. The channels of Cottage Creek and the unnamed ephemeral channel that is a tributary to Cottage Creek and flows directly into Cottage Creek Reservoir would be re-established because they would no longer be inundated. The remaining areas that are currently open water would naturally convert to wetlands. Approximately 1,100 feet of Cottage Creek would be reestablished; at an estimated average width of 20 feet, this equates to 22,000 square feet (0.50 acre). Approximately 450 feet of the unnamed tributary would be re-established; at an estimated average width of 10 feet, this equates to 4,500 square feet (0.10 acre). Approximately 0.64 acre of open water would become a mixture of palustrine emergent and palustrine forested wetlands. Replacing the culvert (60-inch corrugated metal pipe) under the road to the boat launch (County Road 169) would cause temporary impacts to approximately 500 feet of Cottage Creek.

New Bullard Bar Reservoir and the North Yuba River provide water for several beneficial uses, including: irrigation and stock watering, municipal and domestic supply, power supply, contact and non-contact recreation, warm and cold freshwater habitat, cold spawning habitat, and wildlife habitat (Central Valley Regional Water Quality Control Board 2018).

New Bullards Bar Reservoir and the North Yuba River are Clean Water Act Section 303(d)-listed for impairments associated with mercury (State Water Resources Control Board 2017). The Yuba River watershed, including New Bullards Bar Reservoir, contains a substantial amount of sediments with mercury, as a result of the large scale use of mercury in historical gold mining operations. It is transported by erosion processes and can be converted into methylmercury by bacteria within the sediments. Methylmercury bioaccumulates through the trophic levels of the food chain such that the top trophic levels (i.e., larger predatory fishes) have greater concentrations of methylmercury in their tissues than do the lower trophic levels (e.g., algae and invertebrates). Natural occurrence of mercury is likely within the Cottage Creek watershed; however, significant mining in the watershed has not occurred such that it would be considered a significant contributor of mercury to New Bullards Bar Reservoir or the North Yuba River relative to the larger North Yuba River watershed.

The groundwater basin underlying Yuba County is divided by the Yuba River into the North and South subbasins. These two subbasins encompass an area of approximately 270 square miles and are considered subbasins to the Sacramento Valley groundwater basin. They are hydraulically isolated from the Sacramento Valley basin by surface streams that surround it. On August 11, 2015, YWA passed and adopted a resolution electing to become a groundwater sustainability agency. As part of this commitment YWA has maintained and improved their Groundwater Management Plan that was originally developed in 2005. The current Groundwater Management Plan is designed to build on and formalize the management of the County's groundwater resources and to develop a framework for implementing future activities (YWA 2010).

3.10.2 Discussion

a) Construction activities associated with the Proposed Project with the potential to affect water quality would consist of vegetation removal, dam excavation, culvert replacement, road resurfacing, and restoration of the project site to pre-project conditions. Construction would involve site preparation (e.g., vegetation removal, grubbing, equipment staging and worker parking area development); excavation of the dam and removal of the existing 60-inch corrugated metal pipe spillway and associated piping; removal of the old culvert and installation of the new culvert under County Road 169; and general material storage and handling. Work is planned to occur in a single construction period during the seasonally dry period of the year when risk of rainfall and related stormwater runoff at the site would be minimal. Further, all water would be drained from Cottage Creek Reservoir prior to the initiation of construction activities and Cottage Creek would diverted into a pipe around the construction area and directly into New Bullards Bar Reservoir so that it is protected from construction activities. As such, no changes to the water quality of Cottage Creek a result of construction activities during the Proposed Project are expected to occur.

The above-described construction activities have the potential to result in temporary water quality effects to the following physical or chemical constituents: total suspended solids (TSS), turbidity, oil and grease, petroleum hydrocarbons, and trash. Construction-related eroded soil and runoff also may contain organic matter, plant nutrients (nitrogen and phosphorus), and other contaminants such as trace metals. Although Cottage Creek Reservoir is located close to the Emerald Cove Marina parking lot, there are no trails or easy access points for pedestrians to access the area. As such, typical urban contaminants such as organic matter, nutrients, pesticides, and pathogens from pet wastes would be minimal, if present. Consequently, project-related effects on runoff due to the presence of organic matter, nutrients, pesticides, and pathogens from pet wastes into the creek and New Bullards Bar Reservoir would be negligible and thus are not assessed further.

Total Suspended Solids and Turbidity

Direct discharges of soil and suspended sediment to New Bullards Bar Reservoir resulting in increases in TSS and turbidity levels would be the main concern during the construction period, as much of project construction involves vegetation removal, asphalt removal, and dam excavation. Once construction work commences, the vegetation and asphalt removal is expected to take approximately 2–4 weeks during the dry season. Dam excavation and infrastructure removal would take an additional 4–5 weeks.

Construction-related activities, particularly the removal of 141 trees and asphalt removal would result in the temporary disturbance of soils. However, prior to any construction work, Cottage Creek Reservoir would be drained and Cottage Creek would be diverted into a bypass pipe to move water from Cottage Creek directly into New Bullards Bar Reservoir. Thus, Cottage Creek and Cottage Creek Reservoir would not provide potential pathways for TSS and turbidity to enter New Bullards Bar Reservoir during the construction period. Further, much of the construction site is separated from New Bullards Bar Reservoir by the Emerald Cove Marina parking lot and construction would occur during the dry season, so the risk of increased erosion and offsite runoff entering New Bullards Bar Reservoir would be low during the construction period. Although asphalt removal and placement of the culvert under County Road 169 would occur directly adjacent to New Bullards Bar Reservoir, the implementation of appropriate erosion control and pollution prevention BMPs would avoid and minimize construction-related erosion and potential for TSS and turbidity from the construction work to enter into New Bullards Bar Reservoir.

The initial runoff following construction, or return of seasonal rains to previously disturbed sites, can result in “first flush” runoff events with elevated levels of TSS and turbidity. However, after construction activities commence, exposed earthwork would be seeded and mulched to ensure that erosion does not occur during the wet season. As a result of construction occurring over one season, it also is anticipated that disturbed sediments in the upland areas would be substantially stabilized and resistant to mobilization and transport within the first year after construction is finished.

The replacement of Cottage Creek Reservoir with a wetland would result in lower potential for TSS and turbidity to enter New Bullards Bar Reservoir relative to existing

conditions, because the wetland would act as a sediment trap. Thus, the Proposed Project would not contribute to long-term changes in TSS and turbidity levels in New Bullards Bar Reservoir, the North Yuba River, or downstream waterbodies.

Petroleum Hydrocarbons and Other Construction-Related Contaminants

The use of motorized equipment, and storage and handling of fuels and equipment lubricants and fluids, may result in petroleum product discharges that could be harmful to water quality if they directly enter New Bullards Bar Reservoir or are spilled on the ground where they may enter the groundwater, or be mobilized and transported in stormwater runoff following construction. Other potential construction-related contaminants associated with the equipment used or inadvertently discharged by construction workers may include trash, cleaners, solvents, and human sanitary wastes. The potential for direct discharge of equipment-, facility-, or worker-related contaminants to New Bullards Bar Reservoir from vegetation removal, dam removal, and infrastructure removal is anticipated to be minimal because a majority of this work would occur upland from, and on the opposite side of, the Emerald Cove Marina parking lot from New Bullards Bar Reservoir.

The greatest potential for contaminants to enter New Bullards Bar Reservoir would occur during the asphalt removal of County Road 169, and removal and replacement of the culvert. As stated above, construction activities would be conducted during the seasonally dry months when stormwater runoff would be low or nonexistent. Further, construction activities would be conducted in conformance with applicable federal and state regulations pertaining to grading and erosion control, and contaminant spill control and response measures. In particular, the construction work would be subject to authorization under the SWRCB NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ/NPDES Permit No. CAS000002). Therefore, YWA and/or its construction contractor would be required to develop a SWPPP and implement appropriate construction BMPs for all activities that may result in the discharge of construction-related contaminants from disturbed construction areas. Implementation of appropriate erosion control and pollution prevention BMPs would avoid and minimize construction-related erosion and contaminant discharges. In addition to the BMPs, the SWPPP would include BMP inspection and monitoring activities, and identify responsibilities of all parties, contingency measures, agency contacts, and training requirements and documentation for those personnel responsible for installation, inspection, maintenance, and repair of BMPs.

As such, the potential for indirect discharges of contaminants during the construction period, or via stormwater runoff following construction, is considered low.

Mercury

Mercury primarily is a constituent of concern with respect to long-term changes in concentrations that result in bioaccumulation in the food chain of fish and wildlife species. Construction would not cause Cottage Creek Reservoir sediments to be disturbed, thus mercury that may be present in the sediments would not be discharged

into New Bullards Bar Reservoir during construction activities. The current open water area (i.e., Cottage Creek Reservoir) would naturally convert over time to wetlands. The bioavailability and toxicity of elemental mercury (from whatever primary source) are greatly enhanced through the natural, bacterial conversion of mercury to methylmercury in marshlands or wetlands. These environments tend to be more stagnant, with reduced oxygen concentrations, and promote chemical reduction processes that make methylation possible. However, the new wetland area would be relatively small. Approximately 0.64 acre of open water that is currently Cottage Creek Reservoir would become a mixture of palustrine emergent and palustrine forested wetlands. Thus, a potentially small increase in mercury inputs from the new wetland would not result in adverse effects to beneficial uses, substantially degrade the water quality with regard to mercury, or make the existing Clean Water Act Section 303(d) impairment of New Bullards Bar and the North Yuba River measurably worse.

In summary, the risk of direct discharges of construction-related contaminants to water would be very low, site disturbances would be of short duration during a single dry-weather construction season with limited exposure to rainfall and stormwater runoff, and implementation of construction BMPs would further avoid and minimize potential adverse construction-related effects. Additionally, because construction-related disturbances and potential constituent discharges would be temporary, construction activities would not be expected to cause any substantial increase in levels of any bioaccumulative pollutants that would result in measurably higher body burdens of a pollutant in aquatic organisms or wildlife, nor contribute to long-term water quality degradation from mercury by measurable levels such that the Clean Water Act Section 303(d)-designated beneficial use impairment for New Bullards Bar Reservoir and the North Yuba River would be made discernibly worse. Furthermore, the Proposed Project would not be expected to cause constituent discharges of sufficient frequency and magnitude to result in a substantial increase of exceedances of water quality objectives/criteria, nor substantially degrade water quality with respect to constituents of concern, and thus would not adversely affect any beneficial uses in New Bullards Bar Reservoir or the North Yuba River. In summary, the Proposed Project would not violate water quality standards or waste discharge requirements or otherwise substantially degrade water quality; potential construction-related water quality impacts would be **less than significant**.

b) The Proposed Project would not involve extraction of groundwater or a change in surface water diversion capacity or impervious surface area that would impede groundwater recharge. Therefore, the Proposed Project would have **no impact** on groundwater supplies or recharge or the sustainable groundwater management of the underlying basin.

c) Construction activities would temporarily alter the existing drainage pattern of Cottage Creek. During the construction period, Cottage Creek would be rerouted around Cottage Creek Reservoir so that the reservoir can be dewatered. Due to the geography of the site, the only option for diverting Cottage Creek is to install a bypass pipe to move water from Cottage Creek directly into New Bullards Bar Reservoir. Under existing conditions a small amount of water from Cottage Creek Reservoir is lost through evaporation and

seepage through the dam, and thus does not drain into New Bullards Bar Reservoir. During construction all of the creek water would drain directly into New Bullards Bar Reservoir. While a small amount of Cottage Creek Reservoir water is lost through evaporation and seepage, the amount of creek flow entering New Bullards Bar Reservoir is expected to be very similar to existing conditions during the diversion period, because seepage and evaporation processes are much slower than overland flow and runoff processes.

c-i) The Proposed Project would occur during the dry season so soil erosion is unlikely to occur from rainfall or stormwater runoff events. Because the creek water would flow through an engineered pipe there would not be any additional erosion or siltation entering New Bullards Bar Reservoir relative to existing conditions due to the temporary change in the drainage pattern of the site. Replacing the culvert (60-inch corrugated metal pipe) under the road to the boat launch (County Road 169) would cause temporary impacts to a channel length of approximately 500 feet. During this period there is potential for increased erosion to occur. However, because erosion control BMPs would be in place, substantial erosion or siltation of the area would not occur.

After the Proposed Project is complete, much of the Cottage Creek flow and hydrologic characteristics would be restored to more natural conditions. The channels of Cottage Creek and the unnamed tributary would be re-established because they would no longer be inundated. The remaining areas that were open water would naturally convert to wetlands. As such, the Proposed Project would not destabilize the area; rather the Proposed Project would improve the existing drainage pattern of the site by converting the current engineered reservoir to a more natural wetland. The wetland would help prevent future erosion and filter out suspended sediments, thus reducing the possibility for siltation to move into New Bullards Bar Reservoir. Drainage of Cottage Creek into New Bullards Bar Reservoir would also be improved by the new culvert that would be placed under County Road 169. Following completion of construction, restoration of all areas impacted by construction would occur, including regrading of staging and storage areas and revegetation of disturbed areas. Therefore, the Proposed Project would have a **less than significant** impact on erosion or siltation on or off-site.

c-ii) Conversion of the area from an open water reservoir to a wetland could result in potentially higher runoff flows into New Bullards Bar Reservoir during major storm events as there is less holding capacity in the wetlands compared to the open water reservoir. To improve the existing drainage pattern and to accommodate potentially higher runoff flows, the new infrastructure would be designed for a 500-year flood peak. This is an improvement to the current spillway which was designed using a 100-year flood peak. Cottage Creek Reservoir is very small (an 11 acre-feet impoundment), whereas New Bullards Bar Reservoir has the capacity to store 966,600 acre-feet. As such, potential small increases in runoff created by the removal of part of the Cottage Creek Dam and conversion of Cottage Creek Reservoir to a more natural wetland would not be expected to change runoff patterns in such a way that it would affect flooding or flood flows of New Bullards Bar Reservoir or the North Yuba River. Therefore, the Proposed Project would have a **less than significant impact** on the amount of surface runoff from the site and on- or off-site flooding.

c-iii) As described above in "a," the Proposed Project would not result in substantial contributions of pollutants to adjacent waters. Also, as described above the new infrastructure would be designed to accommodate greater flood peaks (i.e., 500-year flood peak) relative to the existing infrastructure, which is only designed to accommodate a 100-year flood peak. Although there may be periods during major storm events when runoff from the project site would be higher than existing conditions, the improved infrastructure would ensure that the capacity of storm water drainage systems are adequate to accommodate the increased runoff. As such, the drainage system would be improved relative to existing conditions and no exceedances in the capacity of the existing or planned storm water drainage systems would be expected to occur. Therefore, the Proposed Project's contribution of runoff water would have a **less than significant impact** on the capacity of existing or planned stormwater drainage systems or additional sources of polluted runoff.

c-iv) The Proposed Project consists of vegetation removal, removing the existing spillway and downstream culvert, excavating a portion of the dam down to a lower, safer elevation, and installing a large concrete box culvert that would be sized to pass all Cottage Creek flows downstream past the Cottage Creek Dam and into New Bullards Bar Reservoir. These project components would neither impede nor redirect flood flows. Instead, the Proposed Project would reduce seepage flows and the new outlet/spillway features would have an improved capacity for flood flows. The current spillway is designed for a 100-year flood flow and the new outlet/spillway would be designed for use a 500-year flood flow. Therefore, the Proposed Project would have a **less than significant** impact on flood flows.

d) The Proposed Project is not located in a region subject to a seiche or tsunami. Therefore, the Proposed Project would have **no impact** on pollutant release due to inundation by seiche or tsunami.

The Proposed Project is not in a flood hazard zone. Further, the construction period would fall during the dry season and during construction Cottage Creek would be diverted around Cottage Creek Dam into New Bullards Bar Reservoir. As such, there would be no risk of flooding during the construction period. After the completion of the construction, the new infrastructure would be designed to accommodate a 500-year peak flood flow, which is higher than the current design of a 100-year peak flow. Further, the dam and spillway would be lowered relative to existing conditions. These components of the Proposed Project would lessen potential hazards of dam failure and downstream flooding. Therefore, the Proposed Project would have **no impact** on pollutant release due to a flood hazard.

As component of the Proposed Project would be obtaining coverage under the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ/NPDES Permit No. CAS000002). The NPDES permit implements federal and state water quality standards, including provisions of state water quality control plans. Further, to obtain a Section 404 permit from the USACE, the state regional water quality control board would have to issue a Section 401 Water Quality Certification that the project would comply with water quality

standards. Thus, the Proposed Project would not conflict with a water quality control plan. As described above in "b" the Proposed Project would not result in depletion of groundwater or impeded groundwater recharge in the project area. As such, it would not conflict with or obstruct the sustainable Groundwater Management Plan utilized by YWA. Therefore, the Proposed Project would have **no impact** with regard to conflicting with or obstructing the implementation of a water quality control plan or sustainable groundwater management plan.

3.11 Land Use/Planning

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

3.11.1 Setting

The Proposed Project is located in an unincorporated area of Yuba County. The Cottage Creek Dam and Reservoir are located on USFS land zoned as "Public" land under the Yuba County General Plan. The Cottage Creek channel downstream of the dam is located on YWA-owned land that is zoned "Rural Agriculture" land.

3.11.2 Discussion

a) The Proposed Project consists of temporary construction activities over the course of approximately four months in a rural area on public lands, and there are no residential communities in the near vicinity of the project area. Therefore, no local communities would be divided as a result of the Proposed Project. Therefore, the Proposed Project would have **no impact** on an established community.

b) Cottage Creek Dam and the resulting reservoir were constructed to facilitate construction of New Bullards Bar Dam, and are located within lands zones for public and rural agriculture. These land uses are intended to support public recreation and/or general use. The Proposed Project would not affect the public use of these lands or conflict with any land use plan, policy, or regulation. Therefore, the Proposed Project would have **no impact** due to a conflict with any applicable land use plans, policies, or regulations adopted for the purpose of avoiding or mitigation environmental effects.

3.12 Mineral Resources

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

3.12.1 Setting

Precious metals and commercially valuable rock and minerals are available in Yuba County, as documented in the Yuba County General Plan (Yuba County 2011a). The General Plan policies serve to balance compatible mineral resources development and other land uses. Numerous precious metal and mineral mining operations exist within the Sierra Nevada foothills, however, there are no mineral resource extraction activities occurring within the project area.

3.12.2 Discussion

a,b) The Proposed Project would involve a relatively minor amount of temporary construction activity to remove a portion of the Cottage Creek Dam and construct the box culvert downstream for the Cottage Creek channel. The construction activity would not result in the removal of any mineral resources potentially underlying the project area, nor preclude any future mineral extraction activities that might arise. Therefore, the Proposed Project would have **no impact** on the availability of mineral resources.

3.13 Noise

Would the project result in:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☑	☐	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☑	☐

Would the project result in:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☑

3.13.1 Setting

Noise is defined as unwanted sound that disturbs human activity. Noise level (or volume) is generally measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound power levels to be consistent with human hearing response, which is most sensitive to frequencies around 4,000 Hertz (similar to the highest note on a piano) and less sensitive to frequencies below 100 Hertz (similar to a transformer hum).

Sound pressure level is measured on a logarithmic scale with the 0 dB level based on the lowest detectable sound pressure level that people can perceive (an audible sound that is not zero sound pressure level). Based on the logarithmic scale, a doubling of sound energy is equivalent to an increase of 3 dB, and a sound that is 10 dB less than the ambient sound level has no effect on ambient noise. Because of the nature of the human ear, a sound must be about 10 dB greater than the reference sound to be judged as twice as loud. In general, a 3 dBA change in community noise levels is noticeable, while 1-2 dBA changes generally are not perceived. Noise levels typically attenuate (drop off) at a rate of 6 dB per doubling of distance from point sources such as industrial machinery.

In addition to the instantaneous measurement of sound levels, the duration of sound is important since sounds that occur over a long period of time are more likely to be an annoyance or cause direct physical damage or environmental stress. One of the most frequently used noise metrics that considers both duration and sound power level is the equivalent noise level (Leq). The Leq is defined as the single steady A-weighted level that is equivalent to the same amount of energy as that contained in the actual fluctuating levels over a period of time (essentially, the average noise level). Typically, Leq is summed over a one-hour period.

The *Yuba County 2030 General Plan Public Health & Safety Element* (Yuba County 2011b) contains the following policies related to noise that are relevant to the Proposed Project:

- **Policy HS10-4:** If existing noise levels exceed the maximum allowable levels listed in **Table 10**, projects are required to incorporate mitigation to reduce noise exposure in outdoor activities areas to the maximum extent feasible and include mitigation to achieve acceptable interior levels, as defined in Table 10.

- **Policy HS10-7**: New developments shall ensure that construction equipment is properly maintained and equipped with noise control components, such as mufflers, in accordance with manufacturers' specifications.

Table 10. Maximum allowable noise exposure from non-transportation noise sources at noise-sensitive land uses.

Noise Descriptor	Daytime (7 a.m. – 10 p.m.)	Nighttime (10 p.m. – 7 a.m.)
Hourly Energy-Equivalent Noise Level (Leq)	60 dBA	45 dBA
Maximum Noise Level (Lmax)	75 dBA	65 dBA

Notes:
dBA=A-weighted decibel
Each of the noise levels shall be lowered by 5 dBA for simple tone noises, noises consisting primarily of speech, music or for recurring impulsive noises. These noise-level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings). Noise-sensitive land uses include schools, hospitals, rest homes, long-term care facilities, mental care facilities, residences, and other similar land uses.
Source: Yuba County 2011b

Section 8.20.310 of the Yuba County Code states that it shall be unlawful for anyone within 500 feet of a residential zone to operate construction equipment between 10:00 p.m. and 7:00 a.m. in such a manner that a reasonable person of normal sensitiveness residing the area is caused discomfort or annoyance unless a permit has been granted.

Vibration

Vibration is sound radiated through the ground. The rumbling sound caused by the vibration of room surfaces is called groundborne noise. Groundborne vibration is almost exclusively a concern inside buildings and is rarely perceived as a problem outdoors. Groundborne vibration related to human annoyance is generally related to root mean square velocity levels expressed in vibration decibels (VdB) (Federal Transit Administration [FTA] 2018). Based on the FTA's (2018) *Transit Noise and Vibration Impact Assessment Manual* vibration levels decrease by 6 VdB with every doubling of distance.

Yuba County has not adopted any thresholds for construction or operational groundborne vibration impacts. Therefore, vibration thresholds established by the FTA were applied to the project. This analysis applies the following vibration thresholds established by the FTA for disturbance of people: 72 VdB for residences and buildings where people normally sleep, including hotels (FTA 2018). These thresholds apply to "frequent events," which the FTA defines as vibration events occurring more than 70 times per day. The thresholds for frequent events are considered appropriate because of the scale and duration of proposed construction activity.

Sensitive Receptors

Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with each of these uses. The Yuba County General Plan defines noise sensitive land uses as: residences, schools, hospitals, rest homes, long-term medical or mental care facilitates, and similar uses. Noise sensitive receptors closest to the project site include houseboats and live-aboards in the Emerald Cove Marina approximately 1,000 feet east of the project site. The

nearest residential community is Dobbins which is approximately six miles west of the Project site on Marysville Road.

Existing Noise Levels

In order to determine existing noise levels, two 15-minute noise measurements were recorded near the project site between 7:44 and 8:17 a.m. on August 17, 2018, using an ANSI Type II integrating sound level meter. Noise Measurement (NM) 1 was taken at the project site at the Cottage Creek Dam. NM 2 was taken near the parking lot off Road 169 on the western side of the Emerald Cove Marina. **Figure 3** shows the noise measurement locations. **Table 11** summarizes noise measurement activities and results. Average noise levels are provided in Leq for a 15 minute measurement period (Leq[15]).

Table 11. Noise monitoring results.

Measurement Number	Measurement Location	Sample Times	Distance to Primary Noise Source	Leq [15] (dBA)	Lmax (dBA)	Lmin (dBA)
NM 1	Project Site, top of dam	8:02 – 8:17 a.m.	20 feet[1]	54.8	68.9	53.6
NM 2	Parking lot west of Emerald Cove Marina	7:44 – 7:59 a.m.	300 feet[2]	62.7	82.1	45.9

dBA = A-weighted decibel
Leq[15] = equivalent noise level for 15-minute measurement period
Lmax = maximum noise level
Lmin = minimum noise level
NM = noise measurement
[1] Distance to water flowing into existing culvert
[2] Distance to Marysville Road
See Appendix C for noise monitoring data.
Source: Rincon Consultants, Inc. field measurements on August 17, 2018, using an ANSI Type II sound level meter

3.13.2 Discussion

a) The Project would not change the use of the project site, but would allow water to flow through to New Bullards Bar Reservoir and the reservoir above the dam would function as a wetland. The work would be designed with provisions for maintaining the existing water treatment facilities in service and conveying runoff from Cottage Creek downstream of the water treatment plant and recreational facilitates. The Proposed Project would not increase vehicle traffic on surrounding roadways once construction is complete and would not create new sources of noise that may be audible to adjacent noise sensitive receptors.

Figure 3. Noise measurement locations.

The Proposed Project would generate temporary construction noise that would exceed existing ambient noise levels within the vicinity of the project site as well as Yuba County noise standards for nearby sensitive noise receptors. Noise impacts associated with construction activity would be a function of the noise generated by construction equipment, the location and sensitivity of nearby land uses, and the timing and duration of the noise-generating activities. The nearest noise sensitive receptors, houseboats and live-aboards, are located approximately 1,000 feet west of the project site in Emerald Cove Marina.

Construction noise was estimated using the Federal Highway Administration Roadway Construction Noise Model (RCNM; **Appendix D**). The RCNM predicts construction noise levels for a variety of construction operations based on empirical data and the application of acoustical propagation formulas. The RCNM provides reference noise levels for standard construction equipment, with an attenuation of 6 dBA per doubling of distance for stationary equipment and 3 dBA per doubling of distance for mobile equipment. The model does not take into consideration topographic variation of the area; as such, it provides more conservative results. The measured ambient noise level, approximately 63 dBA Leq at NM 2, was attenuated to the nearest noise sensitive receptor and used as the baseline noise level at the nearest sensitive receptor. Construction equipment for each phase of construction was provided by the project applicant as described in the project description. Using the RCNM, construction noise levels were estimated for the nearest noise sensitive receptor at 1,000 feet.

Table 12 shows the maximum expected noise levels at the nearest sensitive receptor based on the combined construction equipment anticipated to be used concurrently during each phase of construction as modeled using the RCNM.

Table 12. Construction noise levels by phase.

Construction Phase	Equipment	Construction Noise Level (dBA Leq) at 1,000 feet	Construction Noise Level (dBA Lmax) at 1,000 feet
Clearing and Grubbing	Dozer, Excavator, Pavement Cutter	58.5	63.5
Dewatering	Pump	51.9	54.9
Dam Excavation and Removal	Crane, Excavator (2), Pump	56.4	54.9
Install Concrete Culvert	Concrete Truck, Crane, Grader, Truck, Mechanical Vibrator	59.4	62.9

dBA = A-weighted decibel
Leq = equivalent noise level
Lmax = maximum noise level
Source: Appendix D

As shown in Table 12, construction noise could reach as high as approximately 59 dBA Leq at the nearest noise sensitive receptor. This exceeds the Yuba County nighttime exterior noise standards for sensitive land uses of 45 dBA Leq, but does not exceed the daytime exterior noise standard of 60 dBA Leq. Therefore, this impact is considered

potentially significant. With implementation of Mitigation Measure NZ-1, which limits the hours of construction operation, this impact would be **less than significant**

Mitigation Measure NZ-1. Minimize Construction Related Noise.

To reduce noise-related impacts to occupants of nearby noise sensitive land uses, project construction shall not occur between the hours of 10:00 p.m. and 7:00 a.m.

b) Construction activity associated with the Proposed Project would be a temporary source of groundborne vibration in the project vicinity. Similar to construction noise, vibration levels would be variable depending on the phase of construction and related equipment use. Vibratory construction equipment used during project construction would include an excavator with a rock bit, mechanical vibrator, dozer, and loaded trucks. An excavator and mechanical vibrator are similar in size and type as a dozer and jackhammer. As shown in **Table 13** vibration levels from a jackhammer, dozer, and loaded truck were used for this analysis. At 1,000 feet, vibration levels would not exceed the 72 VdB threshold for residences and buildings where people normally sleep and construction would not occur during the hours when people normally sleep. The Proposed Project would not involve long-term use of any equipment or process that would result in potentially substantial levels of groundborne vibration. Therefore, impacts would be **less than significant**.

Table 13. Vibration levels at sensitive receptors.

Type of Equipment	Vibration Level (VdB) at 50 feet[1]	Vibration Level (VdB) at 1,000 feet
Large dozer	78	39
Small dozer	48	9
Jackhammer[2]	70	31
Loaded Truck	77	38

VdB = vibration decibels
[1] 50 feet is the reference vibration level
[2] This analysis assumes that vibration from a jackhammer would be similar to that of a mechanical vibrator
Source: FTA 2018

c) The project site is not located within an airport land use plan, within two miles of a public airport or public use airport, or in the vicinity of a private air strip. There are no airports in the vicinity of the Proposed Project. The closest airports to the project are two general-aviation airports (Brownsville Aero Pines Airport and Old Aerodome), located approximately 16 miles northwest and 17 miles southwest of the project site, respectively. Therefore, the Proposed Project would have **no impact** on people residing or working within the vicinity of a private airstrip or an airport land use plan, or within two miles of a public or public use airport.

3.14 Population/Housing

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

3.14.1 Setting

The Proposed Project is located in a rural area of unincorporated Yuba County. Scattered rural residences are located along Marysville Road to the east of New Bullards Bar Reservoir. The community of Dobbins is the residential area approximately six miles west of the project area on Marysville Road.

3.14.2 Discussion

a, b) The Proposed Project would not include construction of new housing or commercial businesses. Construction would be short-term and would not result in construction employees relocating to the project vicinity. No additional permanent staff would be needed for project operation. The Proposed Project would not remove any homes or result in displacement of people. Therefore, the Proposed Project would have **no impact** on population growth, displacement of existing housing, or displacement of people.

3.15 Public Services

Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
i) Fire protection?	☐	☐	☐	☑
ii) Police protection?	☐	☐	☐	☑

Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
iii) Schools?	☐	☐	☐	☑
iv) Parks?	☐	☐	☐	☑
v) Other public facilities?	☐	☐	☐	☑

3.15.1 Setting

The project site is located in the jurisdiction of the Dobbins-Oregon House Fire District. Law enforcement services for the project area are provided by the Yuba County Sheriff's Department from the Brownsville office. The nearest school is the Dobbins Elementary School in Dobbins.

3.15.2 Discussion

a) The Proposed Project involves temporary construction activity on a relatively small area of public lands, which would not directly or indirectly affect existing public services, nor require alteration or provision of additional public services. Therefore, the Proposed Project would have **no impact** on fire and police protection services, schools, parks, or other public facilities.

3.16 Recreation

Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☑	☐
b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☑	☐

3.16.1 Setting

The project area is located within the Cottage Creek boat launch area that is a heavily used recreation area at the New Bullards Bar Reservoir. Recreational facilities within and around the reservoir include the boating, swimming, fishing, camping, and non-motorized trail uses.

The Emerald Cove marina is located directly adjacent to the Proposed Project site and provides visitor services at the Cottage Creek Boat launch ramp. The marina is operated by a private company under lease from YWA. Various types of watercraft utilize the marina including; houseboats, personal watercraft, pontoon boats, fishing boats, pleasure cruisers, sailboats, kayaks, canoes, row boats, rafts, pedal boots, and float tubes. The marina consists of a floating

general store and snack bar, 30 overnight boat slips, 80 mooring buoys, gasoline pumps, and a floating dump station. The Emerald Cove Marina has an expansive parking lot with restrooms.

3.16.2 Discussion

a,b) The Proposed Project involves temporary construction activity on a relatively small area of public lands, which would not directly or indirectly affect the recreational resources of Emerald Cove Marina, the Cottage Creek boat launch area, or other recreational uses on and around New Bullards Bar Reservoir. Although a small area of the Emerald Cove Parking lot may be used as part of the construction equipment staging area this would not impact recreational activities. The parking lot is expansive and the staging area would be located close to the water treatment plant which is the parking area furthest from the Cottage Creek boat launch area. Because there is extensive parking in the parking lot, people would be able to continue to utilize the Emerald Cove Marina throughout the duration of the construction period. Therefore, the Proposed Project would have a **less than significant impact** on the physical deterioration of existing neighborhood or regional parks or other recreational facilities, or the need for the construction or expansion of recreational facilities.

3.17 Transportation

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

3.17.1 Setting

The project site is located within the area covered by the Yuba County 2030 General Plan. Traffic and transportation are discussed in the Community Development Element of the General Plan (Yuba County 2011a), which includes the following policies that are relevant to the Proposed Project:

- **Policy CD16.4:** On County roads in rural areas, Level of Service "D" shall be maintained, as feasible, during the p.m. Peak Hour.

- **Policy CD16.11:** The County would analyze and mitigate transportation impacts in CEQA documents according to their relative increase in vehicular travel demand.

Major roadways within the project vicinity include the following facilities:

- Marysville Road is a paved two lane road that leaves State Route 49 and travels west. The road provides access to Cottage Creek Reservoir and New Bullards Bar Reservoir. In the project vicinity Marysville Road provides one travel lane in each direction. Marysville Road can be accessed from State Route 20 or State Route 49. The annual average daily traffic volume on Marysville Road ranges from 5,520 vehicles State Route 20 to 663 vehicles near State Route 49 (Yuba County 2011c).

- State Route 20 is a regional east-west highway extending west from Marysville through the Yuba County foothills and into Nevada County. State Route 20 is over 24 miles from the project site. In the vicinity of the project State Route 20 provides one travel lane in each direction. The annual average daily traffic volume on State Route 20 ranges from 8,000 vehicles at Marysville Road to 9,000 vehicles at the Yuba/Nevada County line (California Department of Transportation 2017).

- State Route 49 is a regional north-south highway extending from the Amador/El Dorado County line traveling north in El Dorado County, traversing Place, Nevada, Yuba, and Sierra Counties, and ending at the Sierra/Plumas County line north of the City of Loyalton. State Route 49 is over 13 miles from the project site. In the vicinity of the project State Route 49 provides one travel lane in each direction and is a recreational route used by tourists to access local recreational activities. The annual average daily traffic volume on State Route 49 at Marysville Road is 1,600 vehicles (California Department of Transportation 2017).

The nearest bicycle facilities are a Class II bicycle lane located along Marysville Road that runs from Spring Valley Road to Bullards Bar Dam and a Class III bicycle route that runs on Marysville Road from Bullards Bar Dam to State Route 49. The nearest bus route is the Foothills Route, which offers round trip service from Challenge, Brownsville, and Dobbins to Marysville and points in between. The bus route is more than six miles from the project site (Yuba County 2011a).

There are no airports in the vicinity of the Proposed Project. The closest airports to the project site are two general-aviation airports (Brownsville Aero Pines Airport and Old Aerodome), located approximately 16 miles northwest and 17 miles southwest of the site, respectively.

3.17.2 Discussion

a) During construction of the Proposed Project, there would be a temporary increase in construction-related traffic from materials delivery and removal and construction workers traveling to and from the project site. The primary roadways that would be used to access the project site would be Marysville Road via State Routes 20 and 49. These State Routes are operating at acceptable levels of service (Yuba County 2011c). The addition of construction-related vehicle trips would be relatively small compared to existing volumes

and temporary, and would not cause any level of service thresholds to be exceeded nor result in a substantial increase in overall traffic volumes. Thus, the Proposed Project would not substantially affect the capacity, congestion patterns, or traffic circulation on affected roads. Consequently, the temporary construction-related trips for the Proposed Project would not substantially affect the capacity or congestion patterns on affected roads.

The Proposed Project is located 0.1 miles from the nearest bicycle facilities or pedestrian facilities. Construction equipment would utilize the same roadways as other vehicles and would turn from Marysville Road to County Road 169 to access the construction site. This would require the construction equipment and trucks to cross the bicycle lane. Following traffic safety laws the construction equipment/trucks would yield to bicyclists before turning and would not have either a permanent or temporary effect on the performance or safety of the bicycle facilities. The proposed construction would not affect any sidewalks, hiking trails or other pedestrian facilities.

Therefore, the Proposed Project would have a **no impact** on a program plan, ordinance or policy addressing the local circulation system, including transit, roadway, bicycle, and pedestrian facilities.

b) Section 15064.3 of the State CEQA Guidelines provides specific considerations for evaluating a project's transportation impacts. Per Section 15064.3, generally analysis of vehicle miles traveled (VMT) attributable to a project is the most appropriate measure of transportation impacts. The VMT refers to the amount of distance of automobile travel attributable to a specific project. Other relevant considerations may include the effects of the project on transit and non-motorized travel. Except as provided in Section 15064.3(b)(2) regarding roadway capacity, a project's effect on automobile delay does not constitute a significant environmental impact under CEQA. The total VMT attributable to the Proposed Project is estimated to be 62,470 miles all from project construction activities.

   The Proposed Project would not create new developments or other infrastructure that would result in additional VMTs relative to existing conditions. Although the construction component of the Proposed Project would cause additional VMTs for four to five months, these VMTs would be temporary. Further, the temporary additional VMTs would not substantially affect transit and non-motorized vehicle travel or regional VMTs. As such, the Proposed Project would have a **less than significant impact** on the potential to conflict with or be inconsistent with State CEQA Guidelines Section 15064.3, subdivision(b).

c) The Proposed Project would not make any permanent changes to the roads in the vicinity of the project site. For approximately ten days, a small portion of County Road 169 would be operated as a single lane so that the existing infrastructure and asphalt can be removed and the new culvert can be installed. Although this may present a temporary inconvenience by causing cars to wait a couple of minutes to enter or leave the Emerald Cove Marina parking lot, it would not create an incompatible use of the area. Further,

during the majority of the construction period the construction equipment would not be working on roadways or would be working from the existing maintenance yard of the water treatment plant. Therefore, the Proposed Project would have a **less than significant** impact on increased transportation hazards due to a geometric design feature or incompatible uses.

d) Emergency access to Emerald Cove Marina would continue to be provided via Marysville Road and County Road 169 during the entire Proposed Project construction period. Although construction work would limit County Road 169 to one lane for ten days, emergency access would not be affected. As such the Proposed Project would have **no impact** on emergency access.

3.18 Tribal Cultural Resources

Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	☐	☐	☑	☐
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?, or	☐	☐	☑	☐
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?	☐	☐	☑	☐

3.18.1 Setting

The Proposed Project is located in lands historically occupied by the Nisenan (also known as the Southern Maidu) (Kroeber 1925, 1929; Wilson and Towne 1978, as cited in Natural Investigations Company 2019). Prior to Euro-American contact, Nisenan territory included the southern extent of the Sacramento Valley, east of the Sacramento River between the North Fork Yuba River and Cosumnes River on the north and south, respectively, and extended east into the foothills of the Sierra Nevada. Neighboring groups included the Plains Miwok on the south, Southern Patwin to the west across the Sacramento River beyond the Yolo Basin, and Konkow and Maidu to the north. Three Maiduan languages, Konkow, Maiduan, and Nisenan are regarded

as a subgroup of Penutian stock. Ethnographers have also distinguished three Nisenan dialects (Northern Hill, Southern Hill, and Valley) (Kroeber 1925, as cited in Natural Investigations Company 2019).

Like the majority of Native Californians, the Nisenan relied on acorns as a staple food, which were collected in the fall and then stored in granaries (Wilson and Towne 1978, as cited in Natural Investigations Company 2019). These seasonally mobile hunter gatherers also relied on a wide range of abundant natural resources that were available in their territories. Large and small mammals, such as pronghorn antelope, deer, tule elk, black bears, cottontails, and jackrabbits, among other species, were hunted by individuals or by communal groups. Game birds, waterfowl, and fish, particularly salmon, were also important components of the Nisenan diet. In addition to acorns, plant resources included pine nuts, buckeye nuts, hazelnuts, fruits, berries, seeds, and underground tubers.

The traditional culture and lifeways of the Nisenan who inhabited the fertile plains between Sacramento and the Sierra Nevada foothills, were disrupted beginning in the early 1800s. Although Spanish explorers entered Nisenan territory as early as 1808, there is no record of the forced movement of Nisenan to the missions (Wilson and Towne 1978, as cited in Natural Investigations Company 2019). During the Mexican period, native peoples were affected by land grant settlements and decimated by foreign disease epidemics that swept through the densely populated Central Valley. An epidemic that swept the Sacramento Valley in 1833 caused the death of an estimated 75 percent of the Valley Nisenan population, wiping out entire villages (Cook 1955, as cited in Natural Investigations Company 2019).

In the heart of Nisenan territory, the discovery of gold in 1848 at Sutter's Mill on the American River near Coloma had a devastating impact on the remaining Nisenan, as well as other groups of Native Americans in the Central Valley and along the Sierra Nevada foothills (Chartkoff and Chartkoff 1984, as cited in Natural Investigations Company 2019). By 1850, with their lands, resources and way of life being overrun by the steady influx of non-native people during the Gold Rush, surviving Nisenan retreated to the foothills and mountains or labored for the growing ranching, farming, and mining industries (Wilson and Towne 1978, as cited in Natural Investigations Company 2019). Nisenan descendants reside on the Auburn, Berry Creek, Chico, Enterprise, Greenville, Mooretown, Shingle Springs, and Susanville rancherias, as well as on the Round Valley Reservation (Bureau of Indian Affairs 2017 and California Indian Assistance Program 2011, as cited in Natural Investigations Company 2019).

3.18.2 Discussion

a) Natural Investigations contacted the Native American Heritage Commission on March 13, 2017, requesting a search of their Sacred Lands File for traditional cultural resources within or near the project area. The reply from the Native American Heritage Commission, dated March 27, 2017, states that the search failed to indicate the presence of tribal cultural resources in the immediate vicinity of the Project area.

   It is important to note that Native American traditional cultural properties were not identified during consultation between 2009 and 2012 within or near the Area of Potential Effects (APE) for the FERC relicensing of the Yuba River Development Project

(YCWA 2012, as cited in Natural Investigations Company 2020). The 4,306-acre APE for that Proposed Project included a 200-foot radius surrounding New Bullards Bar Reservoir. This effectively included all but the extreme western extent of the Proposed Project area. Participating tribes included United Auburn Indian Community and Nevada City Rancheria, and included individuals with ties to the Strawberry Valley Rancheria. Enterprise Rancheria expressed an interest in participating but did not become a formal tribal participant.

To be considered a tribal cultural resource, a resource must be either:

1. listed or determined to be eligible for listing, on the national, state, or local register of historic resources, or
2. a resource that the lead agency determines, in its discretion and supported by substantial evidence, to treat as a tribal cultural resource pursuant to the criteria in Public Resources Code Section 50241(c). Public Resources Code Section 5024.1(c) provides that a resource is meets criteria for listing as an historic resource in the California Register if in meets any of the following:

    (1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.

    (2) Is associated with the lives of persons important in our past.

    (3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.

    (4) Has yielded, or may be likely to yield, information important in prehistory or history.

The Proposed Project is located within the lands historically occupied by the Nisenan, however it is not known to have any special use. For these reasons, no part of the project site meets any of the Public Resources Code 5020.1(k) and 5024.1(c) criteria listed above. Therefore, the Proposed Project would have a **less than significant** impact to tribal cultural resources as defined in Public Resources Code section 21074.

3.19 Utilities/Service Systems

Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment, or stormwater drainage, electric power, natural gas, or telecommunication facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☐	☑

Would the project…	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
b) Have sufficient water supplies available to serve the project and reasonably forseeable future development during normal, dry, and multiple dry years?	☐	☐	☐	☑
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the providers existing commitments?	☐	☐	☐	☑
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☑	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☑	☐

3.19.1 Setting

No developed stormwater drainage utilities are located in the area; however, Cottage Creek crosses under County Road 169 through a constructed culvert. The nearest solid waste disposal transfer station is the Recology Yuba-Sutter facility near Marysville approximately 35 miles to the west of the project site.

3.19.2 Discussion

a) The Proposed Project does not involve any changes to wastewater, stormwater drainage, electrical power, natural gas, or telecommunication services in the project area, or involve any changes in wastewater disposal activities. Further, the Proposed Project would not generate wastewater that would require a wastewater treatment facility or involve any changes in wastewater disposal activities. Therefore, the Proposed Project would have **no impact** on the need for new or expanded water or wastewater treatment plant, stormwater drainage, electrical power, natural gas, or telecommunication facilities.

b) Cottage Creek Dam was built as a temporary structure does not currently require water service and no new water services are required as part of the project. Therefore, the Proposed Project would have **no impact** on the need for new or expanded water supplies to serve the project.

c) As described above in "b," the Proposed Project does require water service, thus the project would not involve any changes to wastewater services in the project area. Therefore, there would be **no impact** on wastewater treatment plant capacity.

d,e) Removing Cottage Creek Dam would result in the excavation of some rock and soil that are not suitable materials for backfill of the box culvert. The excess excavated material, would be disposed of at a YWA-maintained soil disposal site or the Recology Yuba-Sutter transfer station and landfill. The low level-outlet of the dam would also be

removed and disposed of offsite at the same transfer station. In addition to any trash or refuse produced by construction personnel, the disposal of any solid wastes would comply with applicable federal, state, or local regulations for solid waste disposal. The Proposed Project would not impair the attainment of solid waste reduction goals. Therefore, this impact would be **less than significant** on compliance with statutes and regulations related to solid waste.

3.20 Wildfire

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project …	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☑	☐
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☑	☐
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☑	☐
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☑	☐

3.20.1 Setting

As described above in Section 3.9, Hazards and Hazardous Materials, the YWA portion of the project site is in an area identified by the California Department of Forestry and Fire Protection with very high fire hazard severity (CalFire 2019), which is the highest fire hazard rating. Two large fires (Williams and Pendola) have occurred in Yuba County. Both of these fires destroyed over 100 homes. To prepare the County for future wildland fires the Yuba Watershed Protection & Firesafe Council developed the *Yuba Foothills Community Wildfire Protection Plan* (Yuba County 2014). A component of this document is designed to assist public agencies in making valid and timely decisions for wildfires and evacuation.

3.20.2 Discussion

a) As described above in Section 3.17, Transportation, the temporary construction-related trips for the Proposed Project would not substantially affect the capacity or congestion patterns on affected roads. Emergency access to Emerald Cove Marina would continue to be provided via Marysville Road and County Road 169 during the entire Proposed Project. Although construction work would limit County Road 169 to one lane for ten

days, emergency access would not be affected. As such the Proposed Project would not interfere with *The Yuba Foothills Community Wildfire Protection Plan*, or any other emergency response or emergency evacuation plan. Therefore, there would be a **less than significant** impact on an adopted emergency response plan or emergency evacuation plan.

b) Once Cottage Creek Dam removal is complete, the project area would be graded to a downstream slope that matches the existing embankment slope (average existing embankment slope is 2H:1V) to ensure stable slopes downstream of the dam. Restoring the area where the dam is removed to the same embankment slope as the existing hillside would not pose any increase in wildfire risk. Although construction equipment could generate sparks and could temporarily increase fire risk, AMM 3 includes development of a fire plan that includes preventative measures, emergency procedures to be followed, current emergency telephone numbers, and an area map to ensure there is no additional risk for starting a wildfire from construction. In addition, construction vehicles would be equipped with fire extinguishers to address any possibility of a small fire that could be ignited by construction activities. Thus, there would be a **less than significant** impact on exacerbating wildfire risks and thereby, would not expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.

c) The purpose of the Proposed Project is to remove a portion of the current manmade structure (i.e., Cottage Creek Dam) that currently occupies the area. This would reduce future maintenance activities in the dam area. Modifications to the dam area would not include any structures or any other infrastructure that would increase wildfire risk. Cottage Creek Dam modifications would not have any effect on future fuel reduction activities. Instead, the Proposed Project would reduce fuels in the immediate vicinity of the Proposed Project by removing 141 small trees. Therefore, the Proposed Project would have a **less than significant** impact on exacerbating fire risk or other temporary or ongoing impacts to the environment.

d) The Proposed Project would improve the existing drainage pattern of the site and the wetland would help prevent future erosion. In the area of the dam removal, backfill would be used to protect the area from landslides. Potential small increases in runoff created by the removal of part of the Cottage Creek Dam and conversion of Cottage Creek Reservoir to a more natural wetland would not be expected to change runoff patterns in such a way that it would affect flooding or flood flows. Overall, improvements from the Proposed Project would result in a more stable slope relative to existing conditions. As such, the Proposed Project would have a **less than significant** impact on risks to people or structures as a result of runoff, post-fire slope instability, or drainage changes.

3.21 Mandatory Findings of Significance

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

3.21.1 Discussion

a) With respect to terrestrial wildlife and aquatic life resources in the project area, as discussed in Section 3.4, Biological Resources, implementation of the Proposed Project has the potential to result in temporary construction-related disturbance to potential habitats in the project area, and wildlife and aquatic life species, if present during the time of construction. However, feasible project-specific mitigation measures are identified to minimize and avoid the potential adverse effects. The only permanent effects of the Proposed Project are restoring the ecosystem to a more natural setting. This would benefit the Cottage Creek Rainbow Trout population by providing wetland habitat that is more suitable for Rainbow Trout than the shallow, relatively warm reservoir (i.e., Cottage Creek Reservoir) that currently exists. Consequently, with the implementation of the mitigation measures identified herein, the Proposed Project would not substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory. Therefore, this impact is considered **less than significant**.

b) Cumulative environmental effects are multiple individual affects that, when considered together, would be considerable or compound or increase other environmental impacts. Individual effects may result from a single project or a number of separate projects and

may occur at the same place and point in time or at different locations and over extended periods of time.

The Proposed Project would result in a significant cumulative effect if:

- the cumulative effects of related projects (past, current, and probable future projects) are not significant and the incremental impact of implementing the Proposed Project is substantial enough, when added to the cumulative effects of related projects, to result in a new cumulatively significant impact; or
- the cumulative effects of related projects (past, current, and probable future projects) are already significant and implementation of the Proposed Project would make a considerable contribution to the effect. The standards used herein to determine a considerable contribution are that either the impact must be substantial or must exceed an established threshold of significance.

The Proposed Project would have no impact on Agricultural and Forestry Resources, Land Use and Planning, Mineral Resources, Population and Housing, or Public Services. As such, there would be no cumulative effects to these resource categories.

Due to temporary construction activities to complete to Proposed Project there would be less than significant impacts to Aesthetics, Air Quality, Biological Resources (with mitigation), Cultural Resources (with mitigation), Geology and Soils, Green House Gas Emissions, Hazards and Hazardous Materials, Hydrology and Water Quality, Noise (with mitigation), Recreation, Transportation/Traffic, Tribal Cultural Resources, and Utilities and Service Systems. Since construction activities are short-term and localized, construction activities would not combine in such a way that a significant cumulative effect could occur to these resource categories. In addition, as described in Section 2, Project Description, the Proposed Project includes avoidance and minimization measures that would avoid or minimize potential contributions to cumulative environmental impacts.

There would be no long-term operational effects of the Proposed Project to any of the resource categories except for Biological Resources and Hydrology and Water Quality. Long-term operational impacts to Biological Resources and Hydrology and Water Quality would be less than significant. As described in Sections 3.4 and 3.10, Biological Resources and Hydrology and Water Quality, the Proposed Project would restore much of the Cottage Creek flow and hydrologic characteristics to more natural conditions. The channels of Cottage Creek and the unnamed tributary would be re-established because they would no longer be inundated. The remaining areas that are currently open water would naturally convert to wetlands. As such, the Proposed Project would improve the existing drainage pattern of the site and the wetland would help prevent future erosion and filter out suspended sediments, thus reducing the possibility for siltation to move into New Bullards Bar Reservoir. The restoration of the area would also improve conditions for Cottage Creek Rainbow Trout and, thus, would benefit Biological Resources.

Consequently, the Proposed Project would not have impacts that are individually limited, but cumulatively considerable and this impact would be **less than significant**.

c) Based on the nature and scope of the Proposed Project (i.e., temporary construction activity and restoration of creek habitat) and the analysis herein, the Proposed Project would not result in any direct or indirect substantial adverse effects on human beings. The Proposed Project would result in temporary impacts to human health during project implementation, including changes to air quality as a result of ozone precursors and PM10 emissions (discussed in Section 3.3, Air Quality) and exposure of persons to noise impacts from construction equipment (discussed in Section 3.12, Noise). All the identified potential impacts to human beings would be temporary. Each of the impacts that may cause adverse effects on human beings have been evaluated and found to be less than significant. No substantial adverse effects on human beings would occur; the impact would be **less than significant**.

4 LIST OF PREPARERS

Robertson-Bryan, Inc.

Keith Whitener ..... Senior Scientist
Michelle Brown ..... Associate Engineer
Ellen Preece ..... Project Scientist III

Rincon Consultants, Inc.

Jennifer Haddow ..... Principal
Kari Zajac ..... Project Manager
Lindsey Sarquilla ..... Senior Environmental Planner
Jonathan Schuhrke ..... Geographic Information System Analyst

Natural Investigations Company, Inc.

Cindy Arrington ..... Principal

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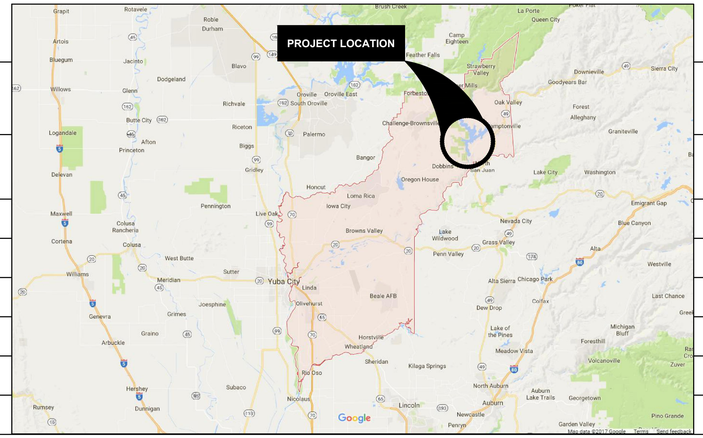
Appendix A

Proposed Project Engineering Drawings

YUBA COUNTY WATER AGENCY
COTTAGE CREEK DAM SPILLWAY MODIFICATION



VICINITY MAP
(NOT TO SCALE)

LOCATION MAP
(NOT TO SCALE)

DRAWING INDEX

SHEET NO.	DWG. NO.	DRAWING TITLE
1	G-01	TITLE, SHEET INDEX, LOCATION MAP, AND VICINITY MAP
2	G-02	SYMBOLS AND ABBREVIATIONS
3	G-03	GENERAL NOTES
4	C-01	EXISTING SITE, LAYDOWN AREAS, SUBSURFACE INVESTIGATION AND SURVEY CONTROL PLANS
5	C-02	NEW SITE AND EXCAVATION PLANS
6	C-03	SPILLWAY PROFILE AND NEW EMBANKMENT SECTION
7	C-04	EXCAVATION SECTIONS
8	C-05	BOX CULVERT PLAN AND PROFILE
9	S-01	GENERAL STRUCTURAL NOTES
10	S-02	STRUCTURAL PLAN AND SECTIONS
11	S-03	STRUCTURAL ELEVATIONS AND SECTIONS
12	S-04	STRUCTURAL DETAILS
13	S-05	TYPICAL STRUCTURAL DETAILS
14	S-06	INLET AND TRASH RACK DETAILS

PREPARED FOR:

YUBA COUNTY WATER AGENCY
1220 F ST
MARYSVILLE, CA
(530) 741-5000

PREPARED BY:

GEI CONSULTANTS, INC.
2868 PROSPECT PARK DRIVE
SUITE 310
RANCHO CORDOVA, CA 95670
(916) 631-4500

GEI PROJECT NO. 1701265
JANUARY 26, 2018

ABBREVIATIONS:

AASHTO	= AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS
AB	= ANCHOR BOLT
AC	= ASPHALTIC CONCRETE
ACI	= AMERICAN CONCRETE INSTITUTE
AC-FT	= ACRE FEET
AF	= ACRE FEET
AISC	= AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ALT	= ALTERNATE
APPROX	= APPROXIMATE
ASTM	= AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWS	= AMERICAN WELDING SOCIETY
BC	= BOX CULVERT
BF	= BOTTOM FACE
BL	= BOTTOM LAYER
BM	= BEAM, BENCHMARK
BOT	= BOTTOM OF
BOC	= BOTTOM OF CONCRETE
BOT	= BOTTOM
BRG	= BEARING
CFS	= CUBIC FEET PER SECOND
CJ	= CONSTRUCTION JOINT
CL, C	= CENTERLINE
CLR	= CLEAR
CMP	= CORRUGATED METAL PIPE
CONC	= CONCRETE
CONN	= CONNECTION
CONT	= CONTINUOUS
CTR	= CENTER
DI	= DUCTILE IRON
DIA, Ø	= DIAMETER
DWG, DWGS	= DRAWING OR DRAWINGS
DWLS	= DOWELS
E	= EAST OR EASTING
EA	= EACH
EJ	= EXPANSION JOINT
EL, ELEV	= ELEVATION
ETC	= ETCETERA
EXC	= EXCAVATION
EX, EXST	= EXISTING
EXT	= EXTENSION
EXP	= EXPANSION
FB	= FLAT BAR
FDN	= FOUNDATION
FF	= FAR FACE
FG	= FINISHED GRADE
FR	= FAR ROW
FS	= FAR SIDE
FT	= FEET OR FOOT
FTG	= FOOTING
GALV	= GALVANIZED
GR	= GRADE
H	= HORIZONTAL
HGL	= HYDRAULIC GRADE LINE
HJ	= HYDRAULIC JUMP
HK	= HOOK
HORIZ	= HORIZONTAL
HS	= HIGH STRENGTH
HT	= HEIGHT
HYD	= HYDRAULIC
HW	= HEADWALL
ID	= INSIDE DIAMETER
IF	= INSIDE FACE
INV	= INVERT
IR	= INSIDE ROW
JT	= JOINT
KSI	= KIPS PER SQUARE INCH
LG	= LONG
LP	= LOW POINT
LRFD	= LOAD RESISTANCE FACTOR DESIGN
LTS	= TENSION LAP SPLICE
MAX	= MAXIMUM
MI	= MILE, MILES, MIRRORED
MIN	= MINIMUM
MISC	= MISCELLANEOUS
MFR	= MANUFACTURER
NAD	= NORTH AMERICAN DATUM
NAVD	= NORTH AMERICAN VERTICAL DATUM
N	= NORTH OR NORTHING
NGVD	= NATIONAL GEODETIC VERTICAL DATUM
NO	= NUMBER
NPDES	= NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM
NTS	= NOT TO SCALE
NWS	= NORMAL WATER SURFACE
OG	= ORIGINAL GROUND
OH	= OVERHEAD
O.N.	= ON CENTER
OD	= OUTSIDE DIAMETER
O.F.	= OUTSIDE FACE
OPNG	= OPENING
OPT	= OPTION
OW	= OUTLET WORKS
OSHA	= OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
PC	= POINT OF CURVATURE
PCF	= POUNDS PER CUBIC FOOT
PI	= POINT OF INTERSECTION
PIP	= PROTECT IN PLACE
PL	= PLATE
PMF	= PROBABLE MAXIMUM FLOOD
PP	= POWER POLE
PSF	= POUNDS PER SQUARE FOOT
PSI	= POUNDS PER SQUARE INCH
PT	= POINT OF TANGENCY
QTY	= QUANTITY
RC	= REINFORCED CONCRETE
REINF	= REINFORCEMENT
REQ'D	= REQUIRED
REV	= REVISION
R.O.W.	= RIGHT OF WAY
RQD	= ROCK QUALITY DESIGNATION
RT	= RIGHT
S	= SLOPE
SIM	= SIMILAR
SPC, SPCS	= SPACE OR SPACES
STA	= STATION
STL	= STEEL
SQ	= SQUARE
SYM	= SYMMETRICAL
T&B	= TOP & BOTTOM
TBD	= TO BE DETERMINED
TF	= TOP FACE
THK	= THICK
TL	= TOP LAYER
TO	= TOP OF
T.O.C.	= TOP OF CONCRETE
T.O.W.	= TOP OF WALL
TS	= TUBE STEEL
TW	= TAILWATER
TYP	= TYPICAL
UG	= UNDERGROUND
UNO	= UNLESS NOTED OTHERWISE
USGS	= UNITED STATES GEOLOGICAL SURVEY
V, VERT	= VERTICAL
VPI	= VERTICAL POINT OF INFLECTION
W/	= WITH
WS	= WATER SURFACE

NOTES:

PERIODS ARE USED ONLY IN CASES WHERE ANOTHER MEANING OR WORD COULD BE UNDERSTOOD. FOR EXAMPLE, T.O. WOULD NOT BE UNDERSTOOD AS THE WORD TO.

SYMBOLS:

EARTH

ROCK

LAYDOWN/STOCKPILE AREA

RIPRAP

GALVANIZED STEEL

BEDDING MATERIAL

NEW STRUCTURE OR NEW FACILITY

STRUCTURE OR FACILITY IN BACKGROUND

CULVERT

CENTERLINE

PROPERTY LINE

RIGHT-OF-WAY OR EASEMENT LINE

TEMPORARY EASEMENT LINE

XX — EXISTING UTILITIES

EXISTING / NEW SILT FENCE

EXISTING / NEW CHAIN LINK FENCE

200 — 200 — EXISTING / NEW MAJOR CONTOUR

EXISTING / NEW MINOR CONTOUR

152.50 — EXISTING SPOT ELEVATION

B-20 — SOIL BORING & IDENTIFICATION NUMBER

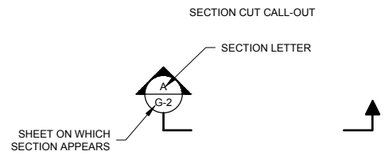
CONTROL POINTS

EXISTING UTILITY POLE

DETAIL & SECTION IDENTIFICATION:

SECTION IDENTIFICATION

SECTION CUT CALL-OUT



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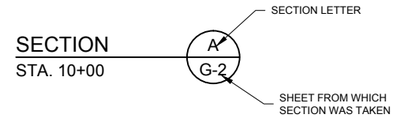
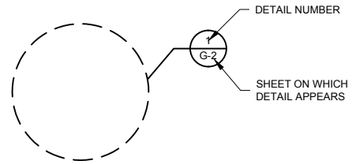


DETAIL IDENTIFICATION

DETAIL CALL-OUT



DETAIL TITLE

NOTES:

1. IF PLAN AND SECTION (OR DETAIL CALL-OUT AND DETAIL) ARE SHOWN ON THE SAME SHEET, THEN THE SHEET NUMBER IS REPLACED WITH "-".
2. IF DETAIL IS SHOWN ON NUMEROUS SHEETS THEN THE SHEET NUMBER IN THE DETAIL TITLE IS REPLACED WITH "VAR" FOR "VARIES".

90% Submittal

NO.	DATE	ISSUE/REVISION	APP
0			

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

GEI Consultants
GEI CONSULTANTS, INC.
2868 PROSPECT PARK DRIVE
SUITE 310
RANCHO CORDOVA, CA 95670
(916) 631-4500

Designed: S. OLDEMEYER
Checked: M. HARGROVE
Drawn: S. OLDEMEYER
Approved By: -

YUBA COUNTY WATER AGENCY

GEI Project 1701265

COTTAGE CREEK DAM SPILLWAY MODIFICATION
YUBA COUNTY, CA

SYMBOLS AND ABBREVIATIONS

DWG. NO. G02

SHEET NO. 2 OF 14

GENERAL NOTES:

1. ALL CONSTRUCTION MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE SPECIFICATIONS, THE YUBA COUNTY IMPROVEMENT STANDARDS, AND STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION. SEE SPECIFICATIONS FOR HIERARCHY.
2. CONTRACTOR SHALL SCHEDULE PRECONSTRUCTION MEETING 15 DAYS PRIOR TO CONSTRUCTION.
3. ALL COUNTY INSPECTIONS MUST BE SCHEDULED AT LEAST (2) DAYS PRIOR TO WORK COMMENCING, EXCLUDING WEEKENDS AND HOLIDAYS.
4. CONTRACTOR SHALL SUBMIT TRAFFIC CONTROL PLAN TO YCWA FOR APPROVAL AT LEAST TWO (2) WORKING DAYS PRIOR TO PRECONSTRUCTION MEETING, EXCLUDING WEEKEND AND HOLIDAYS. ANY CHANGES TO THE TRAFFIC CONTROL PLAN SHALL BE SUBMITTED TO THE COUNTY FOR APPROVAL PRIOR TO CONSTRUCTION.
5. CONTRACTOR SHALL PROVIDE FOR PUBLIC SAFETY AND TRAFFIC CONTROL IN ACCORDANCE WITH STATE OF CALIFORNIA MANUAL OF TRAFFIC CONTROLS. CONTRACTOR SHALL PROVIDE FOR SAFE VEHICULAR AND PEDESTRIAN ACCESS AT ALL TIMES DURING CONSTRUCTION.
6. CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES FOR VERIFICATION OF LOCATIONS OF ALL UNDERGROUND FACILITIES. PROTECT OR RESTORE ALL SURFACE OR SUBSURFACE UTILITIES (E.G. GAS WELLS, GAS PROBES, FENCES, MONITORING WELLS, ETC.) AND OTHER FACILITIES ENCOUNTERED DURING CONSTRUCTION, WHETHER SHOWN ON THE DRAWINGS, OR NOT. NOTIFY NORTHERN CALIFORNIA DIG ALERT 5 DAYS PRIOR TO ANY EXCAVATION AT 811.
7. THE CONTRACTOR IS RESPONSIBLE FOR THE PRESERVATION OF PROPERTY OUTSIDE LIMITS OF CONSTRUCTION.
8. CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING MONUMENTS AND OTHER SURVEY MARKERS. MONUMENTS AND SURVEY MARKERS DESTROYED DURING CONSTRUCTION SHALL BE REPLACED BY A LICENSED LAND SURVEYOR AT THE CONTRACTOR'S EXPENSE. CONTRACTOR SHALL PROVIDE SURVEYOR WITH 2 WORKING DAYS NOTICE PRIOR TO MONUMENT REPLACEMENT.
9. THE PRIME CONTRACTOR SHALL DESIGNATE A PERSON(S) WHO SHALL HAVE THE AUTHORITY TO REPRESENT AND ACT FOR THE CONTRACTOR ON THE JOB SITE DURING ALL WORKING AND NON-WORKING HOURS AND PROVIDE YUBA COUNTY WATER AGENCY WITH CONTACT AND EMERGENCY CONTACT PHONE INFORMATION.
10. CONTRACTOR SHALL HAVE APPROVED PLANS AVAILABLE ON SITE DURING CONSTRUCTION AND CONTRACTOR SHALL CONSTRUCT ALL IMPROVEMENTS TO THE LINE AND GRADE SHOWN ON THE PLANS. ANY DEVIATION FROM THE PLANS SHALL REQUIRE THE WRITTEN APPROVAL OF THE ENGINEER.
11. THE CONTRACTOR SHALL BE IN COMPLIANCE WITH DUST CONTROL PER SECTION 10, STATE OF CALIFORNIA STANDARD SPECIFICATIONS AND AS REQUIRED BY THE FEATHER RIVER AIR QUALITY MANAGEMENT DISTRICT.
12. CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF EXISTING TRAFFIC DELINEATION AND SIGNS. ANY TRAFFIC DELINEATION OR SIGNS DAMAGED DURING ROAD CONSTRUCTION SHALL BE REPLACED WITH LIKE KIND OR AS APPROVED BY YCWA AT THE CONTRACTORS EXPENSE.
13. PRIOR TO PLACING CURB, GUTTER, ASPHALT CONCRETE, OR BASE MATERIAL, ALL UNDERGROUND FACILITIES WITHIN THE ROAD RIGHT-OF-WAY SHALL BE INSTALLED, BACKFILL COMPLETED, AND THE CONTRACTOR SHALL SUBMIT DOCUMENTATION TO THE YUBA COUNTY PUBLIC WORKS DEPARTMENT THAT EACH OF THE UTILITY COMPANIES HAVING FACILITIES WITHIN THE WORK AREA HAVE SATISFACTORY PASSED ACCEPTANCE TESTS.
14. CONTRACTOR IS RESPONSIBLE FOR A ONE (1) YEAR MAINTENANCE PERIOD AFTER THE IMPROVEMENTS ARE ACCEPTED. THERE SHALL BE AN ADDITIONAL ONE (1) YEAR MAINTENANCE PERIOD FOR ANY ITEMS NEEDING REPAIRS AT THE END OF THE MAINTENANCE PERIOD.
15. LIMIT CONSTRUCTION ACTIVITY TO THE PROJECT SITE LIMIT SHOWN ON THE DRAWINGS OR ALLOWED BY THE CONTRACTING OFFICER. RESTORE ALL DAMAGED AREAS TO CONDITIONS EQUAL TO OR BETTER THAN CONDITIONS AT THE START OF CONSTRUCTION.
16. THE LOCATION AND ELEVATIONS OF UNDERGROUND OR EXPOSED EXISTING STRUCTURES AND UTILITIES ARE NOT WARRANTED TO BE EXACT NOR IS IT WARRANTED THAT ALL UNDERGROUND OR EXPOSED STRUCTURES AND UTILITIES ARE SHOWN. INCLUDE INFORMATION FOR ALL UNDERGROUND OR EXPOSED STRUCTURES OR UTILITIES ENCOUNTERED DURING CONSTRUCTION OF THE WORK IN THE RECORD DRAWINGS.
17. IMPLEMENT AND MAINTAIN ALL SEDIMENTATION AND EROSION CONTROL MEASURES DURING CONSTRUCTION. REMOVE WHEN NO LONGER NEEDED.
18. LOCATIONS OF EXISTING FEATURES SHOWN ON THE DRAWINGS ARE APPROXIMATE. CONFIRM LOCATIONS AS REQUIRED TO COMPLETE THE WORK. IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES.

EARTHWORK NOTES:

1. EXCAVATION, EMBANKMENT, AND BACKFILL SHALL CONFORM TO SECTION 02223 "EXCAVATION, BACKFILLING, AND COMPACTION".
2. CLEARING AND GRUBBING SHALL CONFORM TO THE SPECIFICATIONS SECTION 02100 "CLEARING AND GRUBBING".
3. CONSTRUCTION ACTIVITIES OCCURRING BETWEEN OCTOBER 1 AND APRIL 30 SHALL TREAT SUBGRADE FOR STABILIZATION AS PROPOSED BY GEOTECHNICAL ENGINEER AND AS APPROVED BY YCWA.
4. FROM OCTOBER 1 TO APRIL 30 NO MORE THAN 300' OF OPEN TRENCHES ARE ALLOWED THROUGHOUT THE PROJECT SITE AT ONE TIME AND ALL TRENCHES SHALL BE BACKFILLED PRIOR TO RAIN EVENTS.
5. CONTRACTOR IS NOTIFIED THAT JETTING IS NOT ALLOWED IN ANY TRENCHES.
6. ANY TRENCHES IN THE SECTION FROM BACK OF CURB TO BACK OF SIDEWALK SHALL BE BACKFILLED WITH NATIVE MATERIAL AND COMPACTED TO 95% RELATIVE COMPACTION.
7. ALL COMPACTION TESTS SHALL BE CERTIFIED BY A REGISTERED CIVIL ENGINEER PRIOR TO SUBMITTING TEST RESULTS TO THE PUBLIC WORKS DEPARTMENT.
8. EROSION AND SEDIMENT CONTROL MEASURES FOR THIS PROJECT SHALL BE IN COMPLIANCE WITH THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) PREPARED FOR THE PROJECT IN ACCORDANCE WITH THE STATE'S GENERAL PERMIT FOR CONSTRUCTION ACTIVITIES AND THE COUNTY ACCEPTED EROSION AND SEDIMENT CONTROL PLAN. ACCORDING TO STATE LAW, IT IS THE RESPONSIBILITY OF THE PROPERTY OWNER THAT THE SWPPP BMP'S AND BINDER ARE KEPT UP TO DATE TO REFLECT CHANGING SITE CONDITIONS AND THE BINDER IS AVAILABLE ON THE PROJECT SITE AT ALL TIMES FOR REVIEW BY LOCAL AND STATE INSPECTORS

CULVERT CONSTRUCTION AND TESTING NOTES:

1. BEDDING ZONE SHALL BE IN 12-INCH MAX LIFTS, 3/4" CRUSHED ROCK OR CLEAN SAND COMPACTED TO 95%, SEE SPECIFICATION 02223 FOR PLACEMENT AND MATERIAL PROPERTIES.
2. THE CULVERTS SHALL HAVE WATERTIGHT JOINTS AT ALL CONNECTIONS.
3. BEFORE THE CULVERTS ARE ACCEPTED, IT SHALL BE FLUSHED CLEAN AND ALL FOREIGN MATERIAL REMOVED TO THE SATISFACTION OF YCWA.

90% Submittal

Attention: 0 1" If this scale bar does not measure 1" then drawing is not original scale.	NO.	DATE	ISSUE/REVISION	APP
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GEI Consultants
GEI CONSULTANTS, INC.
2868 PROSPECT PARK DRIVE
SUITE 310
RANCHO CORDOVA, CA 95670
(916)631-4500

Designed: S. OLDEMEYER
Checked: M. HARGROVE
Drawn: S. OLDEMEYER
Approved By: -

YUBA COUNTY WATER AGENCY

GEI Project 1701265

COTTAGE CREEK DAM SPILLWAY MODIFICATION
YUBA COUNTY, CA

GENERAL NOTES

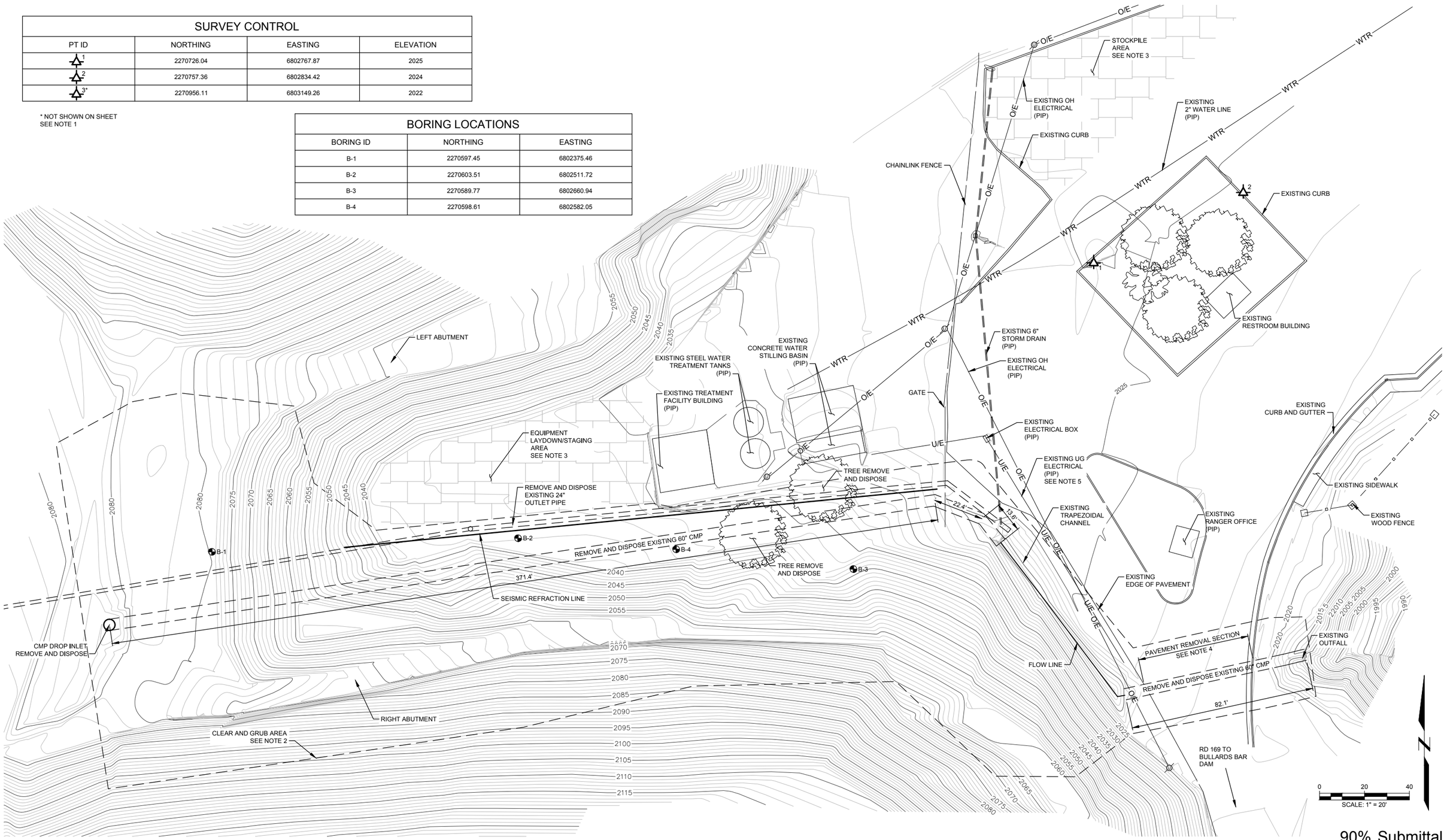
DWG. NO. G03

SHEET NO. 3 OF 14

SURVEY CONTROL			
PT ID	NORTHING	EASTING	ELEVATION
1	2270726.04	6802767.87	2025
2	2270757.36	6802834.42	2024
3*	2270956.11	6803149.26	2022

* NOT SHOWN ON SHEET
SEE NOTE 1

BORING LOCATIONS		
BORING ID	NORTHING	EASTING
B-1	2270597.45	6802375.46
B-2	2270603.51	6802511.72
B-3	2270589.77	6802660.94
B-4	2270598.61	6802582.05



90% Submittal

NOTES:
1. SURVEY BASIS IS NAD83 CALIFORNIA STATE PLANES ZONE ii, US FOOT. CA83-IIF. NAVD29.
2. ALL TREES NOT MARKED FOR PRESERVATION AND ALL LOGS, BRUSH, STUMPS, AND SIMILAR MATERIAL SHALL BE CLEARED FROM WITHIN THE LIMITS OF THE DESIGNATED AREAS. UNLESS OTHERWISE SPECIFIED, ALL STUMPS AND ROOTS THAT HAVE A DIAMETER OF 1-INCH OR LARGER SHALL BE GRUBBED OUT TO A DEPTH OF AT LEAST 2 FEET BELOW SUBGRADE FOR CONCRETE STRUCTURES AND 1 FOOT BELOW THE GROUND SURFACE AT EMBANKMENT SITES.
3. ADDITIONAL STOCKPILE AND LAYDOWN/STAGING AREAS ARE AVAILABLE ONSITE VIA YUBA COUNTY WATER AGENCY APPROVAL.
4. SEE SPECIFICATION 02578 FOR PAVEMENT AND REMOVAL REPLACEMENT.
5. UNDERGROUND ELECTRICAL LINE MUST BE POTHOLED PRIOR TO CONSTRUCTION TO ENSURE THE ALIGNMENT WILL NOT ADVERSELY AFFECT BOX CULVERT LAYOUT.

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2868 PROSPECT PARK DRIVE
SUITE 310
RANCHO CORDOVA, CA 95670
(916)631-4500

Designed: S. OLDEMEYER
Checked: M. HARGROVE
Drawn: S. OLDEMEYER
Approved By: -

YUBA COUNTY WATER AGENCY

GEI Project 1701265

COTTAGE CREEK DAM SPILLWAY MODIFICATION
YUBA COUNTY, CA

EXISTING SITE, LAYDOWN AREAS, SUBSURFACE INVESTIGATION AND SURVEY CONTROL PLANS

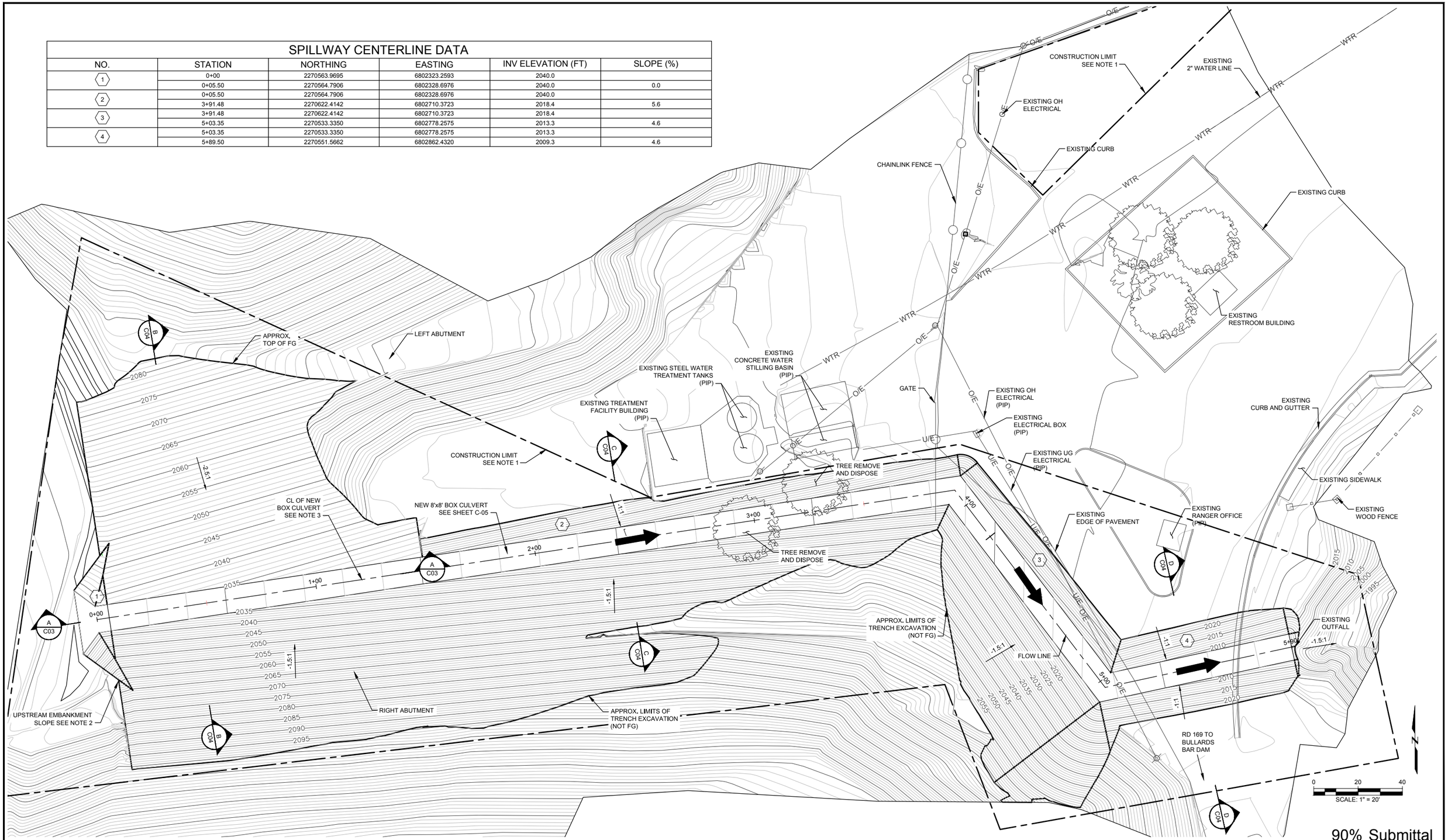
DWG. NO. C01

SHEET NO. 4 OF 14

---- J:\Yuba County Water Agency\Project\1701265 - Cottage Creek Dam Spillway Modification\12.0 CAD\Design\Sheets\C-01.dwg - 1/26/2018

SPILLWAY CENTERLINE DATA

NO.	STATION	NORTHING	EASTING	INV ELEVATION (FT)	SLOPE (%)
1	0+00	2270563.9695	6802323.2593	2040.0	
	0+05.50	2270564.7906	6802328.6976	2040.0	0.0
2	0+05.50	2270564.7906	6802328.6976	2040.0	
	3+91.48	2270622.4142	6802710.3723	2018.4	5.6
3	3+91.48	2270622.4142	6802710.3723	2018.4	
	5+03.35	2270533.3350	6802778.2575	2013.3	4.6
4	5+03.35	2270533.3350	6802778.2575	2013.3	
	5+89.50	2270551.5662	6802862.4320	2009.3	4.6



NOTES:
1. CONSTRUCTION LIMITS SHALL BE SET PRIOR TO WORKING AND FLAGGED AS DESCRIBED IN SPEC SECTION 01570.1.05.
2. GRADE UPSTREAM FACE OF NEW EMBANKMENT AT A 2:1 SLOPE. GRADING DOES NOT SHOW CORRECT CONTOURS DUE TO WATER SURFACE ELEVATION INTERRUPTION DURING SURVEY. SLOPE UPSTREAM STREAM BED 1% TOWARD CULVERT INLET AFTER COTTAGE CREEK BASIN IS DRAINED COMPLETELY.
3. SEE SHEET C05 FOR BOX CULVERT PLAN, PROFILE, AND ALIGNMENT DETAILS.

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GEI Consultants
GEI CONSULTANTS, INC.
2868 PROSPECT PARK DRIVE
SUITE 310
RANCHO CORDOVA, CA 95670
(916)631-4500

Designed: S. OLDEMEYER
Checked: M. HARGROVE
Drawn: S. OLDEMEYER
Approved By: -

YUBA COUNTY WATER AGENCY

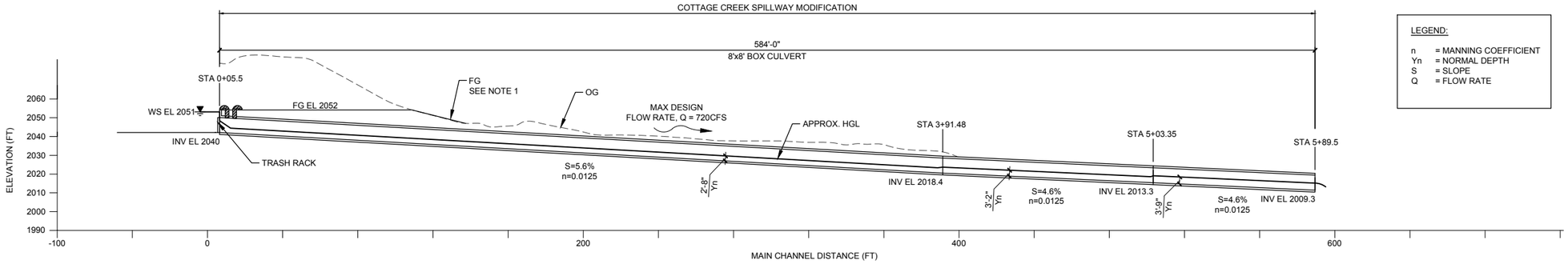
GEI Project 1701265

COTTAGE CREEK DAM SPILLWAY MODIFICATION
YUBA COUNTY, CA

NEW SITE AND EXCAVATION PLANS

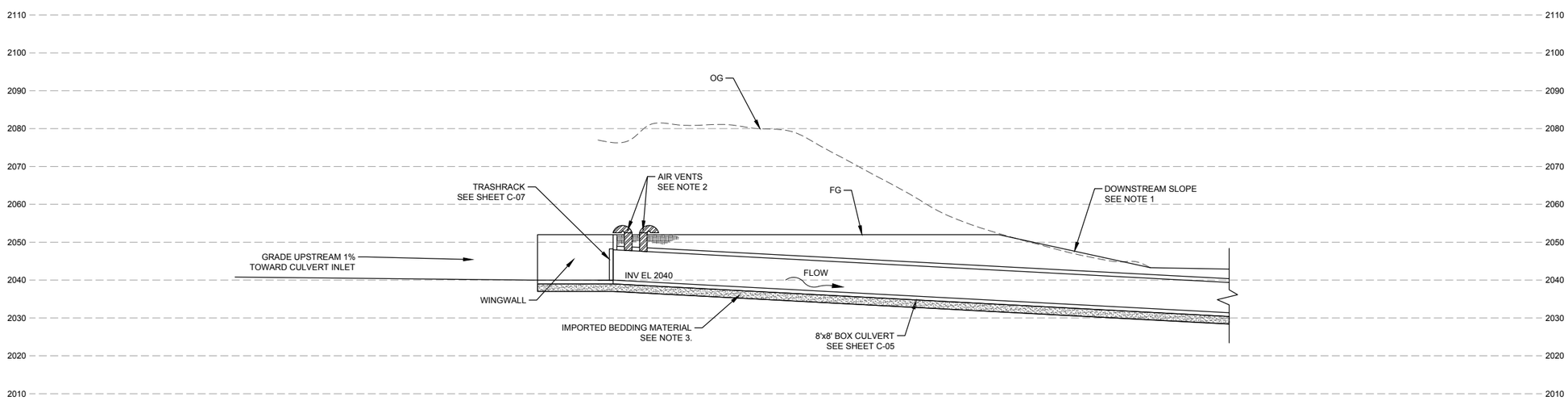
DWG. NO. C02

SHEET NO. 5 OF 14



SPILLWAY PROFILE AND HGL

SCALE: 1/32" = 1'-0"



A / C02 SECTION

SCALE: 1/8" = 1'-0"

90% Submittal

NOTES:
1. FINAL GRADE OF DOWNSTREAM EMBANKMENT BACKFILL SHALL MATCH EXISTING SLOPE (AVERAGE EXISTING EMBANKMENT SLOPE IS 2:1).
2. 2-24" GALVANIZED STEEL AIR VENT PIPES. PIPES SHALL BE A MINIMUM OF 1-FOOT ABOVE THE FINISH GRADE. PIPE SHALL BE SPACED 2-FEET APART AND ALONG THE CL OF THE BOX CULVERT. SEE SHEET C05 FOR LAYOUT.
3. FOR ALLOWABLE BEDDING MATERIAL SEE SPECIFICATION SECTION 02223.

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2868 PROSPECT PARK DRIVE
SUITE 310
RANCHO CORDOVA, CA 95670
(916)631-4500

Designed: S. OLDEMEYER
Checked: M. HARGROVE
Drawn: J. MORIN
Approved By: -

YUBA COUNTY WATER AGENCY

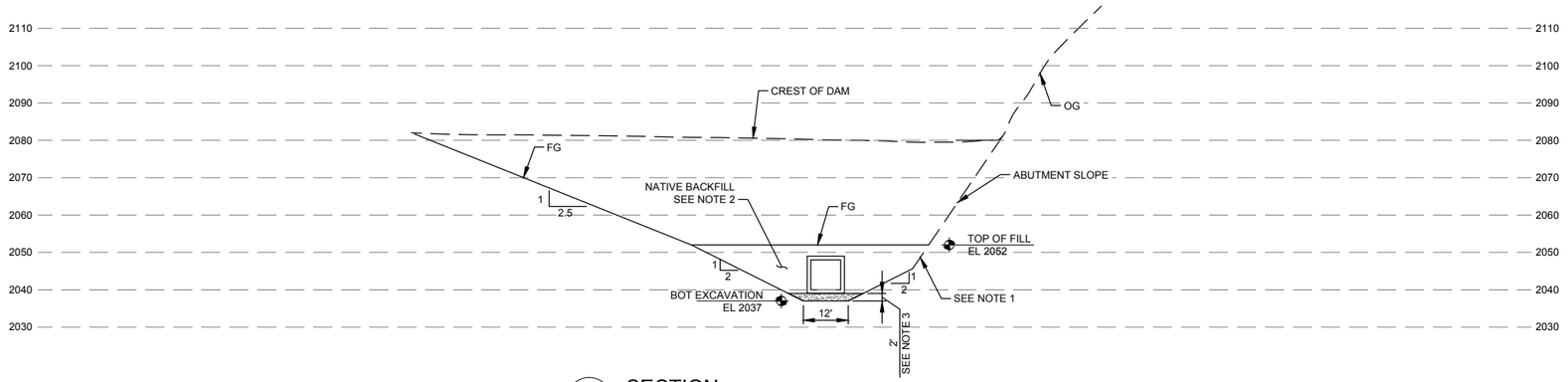
GEI Project 1701265

COTTAGE CREEK DAM SPILLWAY MODIFICATION
YUBA COUNTY, CA

SPILLWAY PROFILE AND
NEW EMBANKMENT SECTION

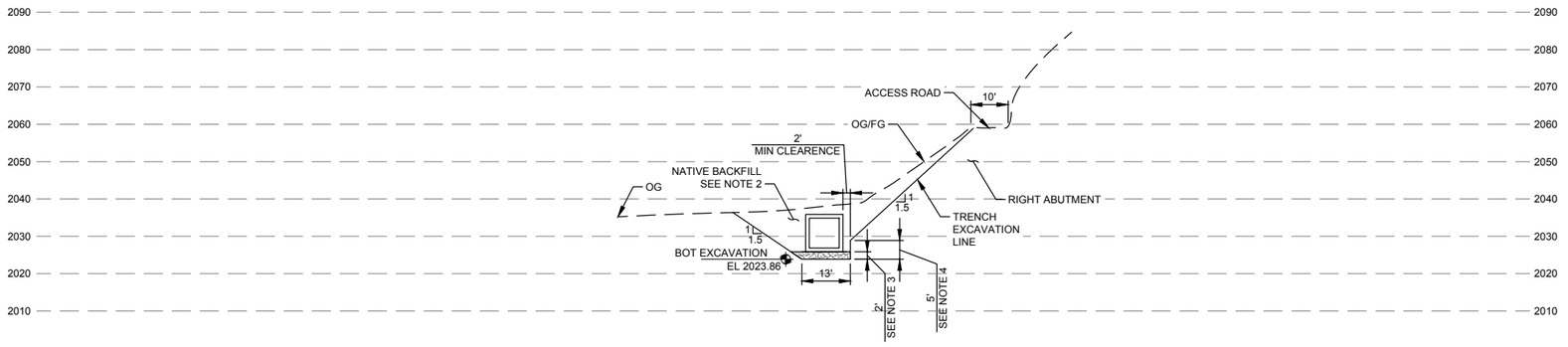
DWG. NO. C03

SHEET NO. 6 OF 14



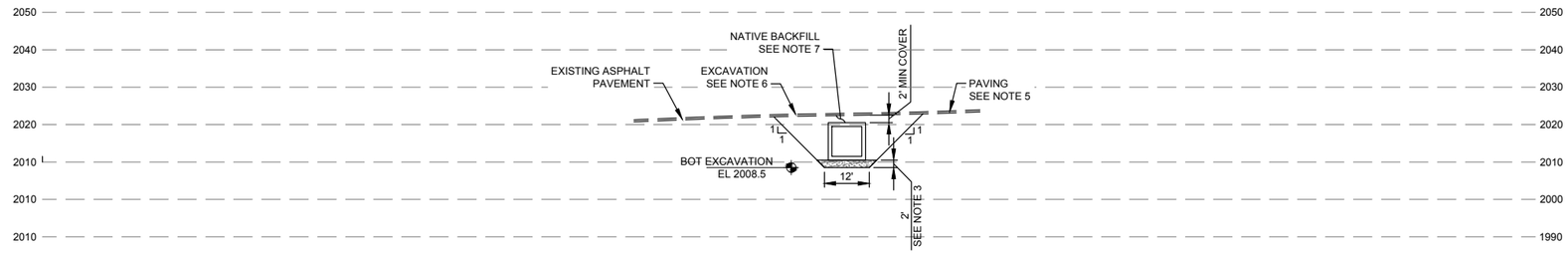
B C02 **SECTION**
GRADING PROFILE
STA 0+00 TO STA 1+50

0 20 40
SCALE: 1" = 20'



C C02 **SECTION**
GRADING PROFILE
STA 1+50 TO STA 5+03.35

0 20 40
SCALE: 1" = 20'



D C02 **SECTION**
GRADING PROFILE
STA 5+03.35 TO STA 5+89.5

0 20 40
SCALE: 1" = 20'

NOTES:
1. THE EMBANKMENT EXCAVATIONS SHALL NOT BE STEEPER THAN 2.0H:1V FROM BOTTOM OF EXCAVATION TO EL 2,052 FT, AND NO STEEPER THAN 2.5:1V FROM EL 2,052 FT TO EL 2,082, NGVD 29. THE EXCAVATION INTO THE SOUTH SLOPE IS EXPECTED TO ENCOUNTER THE ROCK ABUTMENT, AT WHICH POINT THE EXCAVATION SHOULD FOLLOW THE ABUTMENT SLOPE. SEE SPECIFICATION 02223 FOR EXCAVATION AND BACKFILL REQUIREMENTS.
2. AFTER BOX CULVERT IS IN PLACE, CONTRACTOR MUST FILL ABOVE CULVERT WITH NATIVE MATERIAL COMPACTED TO 90% RELATIVE COMPACTION. FINISH GRADE (FG) ELEVATION IS GIVEN FOR THE DAM CREST. FOR ALL OTHER AREAS RETURN FG TO PREEXISTING CONDITIONS.
3. 2-FEET OF IMPORTED BEDDING MATERIAL REQUIRED BENEATH CULVERT, COMPACTED TO 90% RELATIVE COMPACTION, 1.5-FOOT DEPTH REQUIRED IF ROCK IS ENCOUNTERED. FOR ALLOWABLE BEDDING MATERIAL SEE SPECIFICATIONS SECTION 02223.
4. 5-FOOT VERTICAL CUT IS REQUIRED TO LIMIT THE EXCAVATION LIMITS ON THE RIGHT ABUTMENT.
5. AC PAVING THICKNESS IS UNKNOWN. SEE YUBA COUNTY DEPARTMENT OF PUBLIC WORKS "TRENCH DETAIL" FOR REPLACEMENT DETAILS.
6. TO ALLOW ACCESS DURING CONSTRUCTION, CONTRACTOR MAY ONLY TAKE HALF THE ROADWAY WIDTH WHILE EXCAVATION ARE OPEN. TRAFFIC CONTROL MUST BE PRESENT AT ALL TIMES WHEN CREWS ARE ON SITE.
7. NATIVE BACKFILL WITHIN THE ROADWAY SHALL BE COMPACTED TO 95% RELATIVE COMPACTION.

PAVEMENT AND TRENCH RESTORATION NOTES:

- BEDDING ZONE SHALL BE IN 12-INCH MAX LIFTS, 3/4" CRUSHED ROCK OR CLEAN SAND COMPACTED TO 95%, 2 SACK SLURRY, OR AS APPROVED BY PUBLIC WORKS. MINIMUM BEDDING ZONE IS 12-INCH ABOVE CULVERT STRUCTURE, 3-INCH BELOW, AND 6-INCH ON EITHER SIDE.
- TRENCH BACKFILL ZONE SHALL BE PLACED IN 12" MAX LIFTS OF EITHER 3/4" CLASS 2 COMPACTED TO 95%, 2 SACK CEMENT SLURRY, OR AS DIRECTED BY THE ENGINEER.
- TRENCH REPAVING SHALL BE A MINIMUM OF 12-INCHES OF 3/4" CLASS 2 AB COMPACTED TO A MINIMUM 95% RELATIVE COMPACTION PLACED IN TWO OR MORE LIFTS WITH MIN. 3-INCH TYPE B A.C. OR 1-INCH THICKER THAN EXISTING AC. ADDITIONAL 12-INCH KEY GRIND BEYOND SAW-CUT TO HALF THE DEPTH OF EXSITING AC OR A MINIMUM OF 1.5-INCH AND REPLACE.
- AB SHALL CONFORM TO THE PROVISIONS OF SECTION 26 OF THE STATE STANDARD SPECIFICATIONS FOR CLASS 2 AGGREGATE BASE.
- AC SHALL CONFORM TO THE STATE'S STANDARD SPECIFICATIONS PG64-10 (VALLEY) OR PG 64-28 (FOOTHILLS), 1/2-INCH MINIMUM TO 3/4-INCH MAXIMUM. PRIME COAT SHALL BE SC-70 AND SHALL BE APPLIED IF AGGREGATE BASE IS SUBJECTED TO TRAFFIC OR INCLEMENT WEATHER PRIOR TO PAVING.
- FROM OCTOBER 1 TO APRIL 30, PRIOR TO PAVING, ALL BACK OF CURB SHALL BE BACKFILLED TO WITHIN 1-INCH OF TOP OF CURB AND SHALL BE SLOPED AWAY FROM CURB UNLESS APPROVED BY PUBLIC WORKS AND SHALL BE MAINTAINED UNTIL LANDSCAPING IS IN PLACE.
- THE FINISHED GRADE OF AC SHALL BE PLACED 1/4" ABOVE LIP OF GUTTER.
- PRIOR TO ACCEPTANCE OF IMPROVEMENTS, IF THE FINISHED PAVEMENT SURFACE REQUIRES SAW CUTTING FOR REPAIRS, THE PAVEMENT SHALL BE GROUND FROM LIP OF GUTTER TO LIP OF GUTTER AND FROM INTERSECTION TO INTERSECTION AND SHALL BE REPAVED OR AS DETERMINED BY PUBLIC WORKS.

90% Submittal

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NO.	DATE	ISSUE/REVISION	APP
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GEI Consultants
GEI CONSULTANTS, INC.
2868 PROSPECT PARK DRIVE
SUITE 310
RANCHO CORDOVA, CA 95670
(916)631-4500

Designed: S. OLDEMEYER
Checked: M. HARGROVE
Drawn: S. OLDEMEYER
Approved By: -

YUBA COUNTY WATER AGENCY

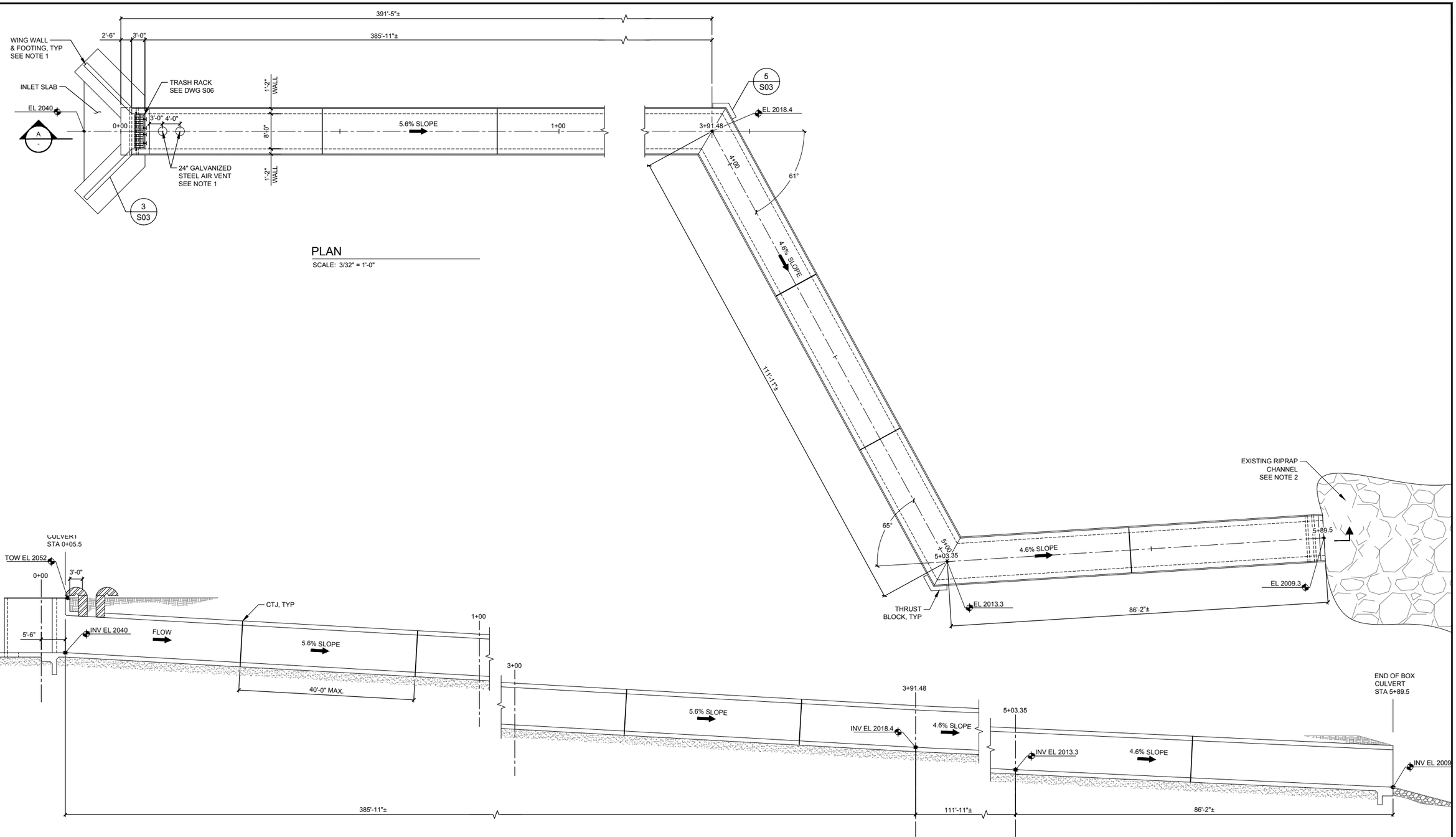
GEI Project 1701265

COTTAGE CREEK DAM SPILLWAY MODIFICATION
YUBA COUNTY, CA

EXCAVATION SECTIONS

DWG. NO. C04

SHEET NO. 7 OF 14



PLAN

SCALE: 3/32" = 1'-0"

A / - PROFILE

TYPICAL BOX CULVERT

SCALE: 3/32" = 1'-0"

90% Submittal

NOTES:
1. FOR INLET AND WING WALL DIMENSIONS SEE DETAIL 3 ON SHEET SO3.
2. EXISTING RIPRAP CHANNEL DOWNSTREAM OF THE BOX CULVERT OUTLET MUST BE MAINTAINED TO ENSURE A FLOW PATH IS FULLY COVERED WITH RIPRAP. IF DURING CONSTRUCTION CHANNEL IS DAMAGED RIPRAP MUST BE REPLACED IN CONJUNCTION WITH SPECIFICATION SECTION 02370.

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2868 PROSPECT PARK DRIVE
SUITE 310
RANCHO CORDOVA, CA 95670
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COTTAGE CREEK DAM SPILLWAY MODIFICATION
YUBA COUNTY, CA

CULVERT PLAN AND PROFILE

DWG. NO. C05

SHEET NO. 8 OF 14

GENERAL NOTES:

1. USE OF DRAWINGS
   1.1 DO NOT SCALE DRAWINGS.
   1.2 WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES AND SPECIFICATIONS, THE MORE STRINGENT REQUIREMENTS SHALL GOVERN. DETAILS ON DRAWINGS TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. DETAILS NOTED TYPICAL APPLY TO ALL SIMILAR CONDITIONS. WHERE NO SPECIFIC DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ELSEWHERE ON THE PROJECT.

2. TEMPORARY CONDITIONS:
   2.1 THE STRUCTURE IS DESIGNED TO FUNCTION AS A UNIT UPON COMPLETION. THE CONTRACTOR IS RESPONSIBLE FOR FURNISHING ALL TEMPORARY BRACING AND/OR SUPPORT THAT MAY BE REQUIRED AS THE RESULT OF THE CONTRACTOR'S CONSTRUCTION METHODS AND/OR SEQUENCES. REFER TO "LATERAL LOAD RESISTING SYSTEM DESCRIPTION" IN DESIGN CRITERIA FOR ADDITIONAL INFORMATION.
   2.2 CONTRACTOR'S CONSTRUCTION AND/OR ERECTION SEQUENCES SHALL RECOGNIZE AND CONSIDER THE EFFECTS OF THERMAL MOVEMENTS OF STRUCTURAL ELEMENTS DURING THE CONSTRUCTION PERIOD.
   2.3 WALLS SHALL NOT BE BACKFILLED UNTIL THE SLABS ARE IN-PLACE AND REACH DESIGN STRENGTH UNLESS ADEQUATE BRACING IS PROVIDED. USE ONLY HAND OPERATED TOOLS FOR COMPACTION ADJACENT TO FOUNDATION AND WALLS.

3. OSHA STANDARDS:
   3.1 THE STRUCTURE IS DESIGNED TO FUNCTION AS A UNIT UPON COMPLETION. NOTHING SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE CONSTRUED AS ELIMINATING THE NEED FOR THE CONTRACTOR TO COMPLY WITH ALL OSHA REQUIREMENTS.
   3.2 THE CONTRACTOR SHALL ADD ALL NECESSARY BOLTS, ANCHOR BOLTS, PLATES, ETC.
   3.3 WHERE THE STRUCTURAL DRAWINGS APPEAR TO CONFLICT WITH OSHA REQUIREMENTS, THE STRUCTURAL DRAWINGS REPRESENT FINAL CONDITIONS ONLY. THE CONTRACTOR SHALL ADD ALL NECESSARY SCAFFOLDING TO MAKE CONCRETE POURS TO ENSURE OSHA COMPLIANCE.

4. CONSTRUCTION ENGINEERING:
   4.1 THE STRUCTURE DEFINED ON THE CONTRACT DOCUMENTS HAS BEEN DESIGNED ONLY FOR LOADS ANTICIPATED ON THE STRUCTURE DURING ITS SERVICE LIFE. PROVIDE ALL REQUIRED ENGINEERING AND OTHER MEASURES TO ACHIEVE THE MEANS, METHODS, AND SEQUENCES OF WORK. SUCH ENGINEERING MAY INCLUDE, BUT IS NOT LIMITED TO:

- LAYOUT,
- DESIGN FOR FORMWORK, SHORING, AND RESHORING,
- DESIGN OF CONCRETE MIXES,
- DESIGN OF TEMPORARY BRACING OF WALLS FOR WIND, SEISMIC, OR SOIL LOADS,
- SURVEYING TO VERIFY CONSTRUCTION TOLERANCES,
- EVALUATION OF TEMPORARY CONSTRUCTION LOADS ON STRUCTURE DUE TO EQUIPMENT AND MATERIALS, AND
- STRUCTURAL ENGINEERING TO RESIST ANY OTHER LOADS NOT IDENTIFIED ON DESIGN DRAWINGS.

5. COORDINATION:
   5.1 STRUCTURAL DRAWINGS ARE NOT STAND-ALONE DOCUMENTS AND ARE INTENDED TO BE USED IN CONJUNCTION WITH DRAWINGS FROM OTHER DISCIPLINES. THE CONTRACTOR SHALL COORDINATE ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS INTO SHOP DRAWINGS AND WORK.
   5.2 COORDINATE DIMENSIONS OF ALL TURNDOWNS, BLOCKOUTS, DEPRESSIONS, ETC., WITH DRAWINGS

FOUNDATION NOTES:

1. DESIGN CRITERIA
   1.1 DEVELOPED PER REQUIREMENTS OF AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND CALIFORNIA BRIDGE DESIGN SPECIFICATIONS.

2. SITE RETAINING WALLS
   2.1 STRUCTURAL FILL
      2.2.1 "ACTIVE CONDITION = 36 PCF
      2.2.2 "AT REST" CONDITION = 56 PCF
      2.2.3 "PASSIVE" CONDITION = 417 PCF
      2.2.4 MAXIMUM FOOTING TOTAL LOAD SOIL BEARING PRESSURE = 4600 PSF
      2.2.5 FRICTION ANGLE USED IN DESIGN TO RESIST LATERAL LOADS = 33°
      2.2.6 WALL DESIGN BASED ON STRUCTURAL FILL

STEEL REINFORCING COVER SCHEDULE	
CONCRETE SECTION	MINIMUM CLEAR COVER
UNIFORM SURFACE IN CONTACT WITH FOUNDATION	4 INCHES
FORMED SURFACES SUCH AS SPILLWAY SLAB AND WALL	
≥ 24 INCH THICKNESS	4 INCHES
> 12 INCHES AND < 24 INCHES IN THICKNESS	3 INCHES
≤ 12 INCHES IN THICKNESS CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	3 INCHES
≤ 12 INCHES CONCRETE EXPOSED EARTH AND WEATHER	2 INCHES

CONCRETE GENERAL NOTES:

1. GENERAL:
   1.1 ALL WORK SHALL CONFORM WITH ACI 301, LATEST EDITION, UNLESS NOTED OTHERWISE IN DRAWINGS OR PROJECT SPECIFICATIONS.
   1.2 DETAIL BARS IN ACCORDANCE WITH THE LATEST EDITIONS OF PUBLICATION SP-66: "ACI DETAILING MANUAL" WITH ADDED REQUIREMENTS OF THE PROJECT SPECIFICATION AND ACI 318: "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE."

2. DIMENSIONS:
   2.1 DIMENSIONS ARE TO THE CENTERLINES OF THE BARS UNLESS OTHERWISE SHOWN. CLEAR COVER DIMENSIONS ARE MARKED "CLR" ALL DIMENSIONS TO A JOINT ARE TO THE CENTERLINE OF THE JOINT. BEAMS, COLUMNS, AND WALLS ARE CENTERED ON REFERENCED LINES.
   2.2 THICKNESS SHOWN FOR WALLS AND SLABS ADJACENT TO UNDISTURBED SOIL OR ROCK ARE MINIMUM DIMENSIONS.

3. STRUCTURAL CONCRETE MIX REQUIREMENTS:
   3.1 SEE SECTION 03 05 00
      3.1.1 BOX CULVERT: F'c = 6,000 PSI @ 28 DAYS
      3.1.2 MUD MAT: F'c = 2,000 PSI @ 28 DAYS
      3.1.3 ALL ELSE: F'c = 4,500 PSI @ 28 DAYS

4. NON-SHRINK GROUT:
   4.1 CONFORM TO ASTM C1107, GRADES B, OR C.
   4.2 ACHIEVE 6000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.

5. FINISHING AND CONCRETE TOLERANCES:
   5.1 REFER TO SPECIFICATIONS FOR REQUIREMENTS AND CONSTRUCTION TOLERANCES FOR HYDRAULIC STRUCTURES.
   5.2 FINISH SURFACES FOR ALL SLABS, WALLS, CONSTRUCTION AND CONTROL JOINTS SHALL BE PROVIDED IN ACCORDANCE WITH THE SPECIFICATIONS.
   5.3 UNLESS OTHERWISE INDICATED, CHAMFER EDGES OF ALL PERMANENTLY EXPOSED CONCRETE SURFACES WITH A 45 DEGREE BEVEL, 3/4 INCH X 3/4 INCH. CHAMFER STRIP MAY NOT BE SHOWN ON THE DESIGN DRAWINGS.

6. CONSTRUCTION/CONTROL JOINTS:
   6.1 SUBMIT DRAWINGS SHOWING CONSTRUCTION AND CONTROL JOINT LOCATIONS ALONG WITH THE SEQUENCE OF POURS. CONSTRUCTION JOINT LOCATIONS AND CASTING SEQUENCE SHALL BE ARRANGED TO MINIMIZE THE EFFECTS OF ELASTIC AND LONG-TERM SHORTENING/SHRINKAGE. NO OTHER JOINTS SHALL BE INTRODUCED UNLESS APPROVED BY THE ENGINEER BEFORE CONCRETE IS PLACED.
   6.2 CONSTRUCTION JOINT LOCATION AND CASTING SEQUENCE SHOWN ON THE DRAWINGS IS SUGGESTED AND HAS BEEN ARRANGED TO MINIMIZE THE EFFECTS OF ELASTIC AND LONG-TERM SHORTENING. SUBMIT DRAWINGS SHOWING PROPOSED CONSTRUCTION JOINT LOCATION AND CASTING SEQUENCE.
   6.3 CONSTRUCTION JOINTS IN SLABS SHALL BE LOCATED TO ACCOMMODATE THE MAXIMUM LENGTH AND AREA THE CONTRACTOR CAN REASONABLY POUR, FINISH, AND JOINT IN THE SAME DAY, BUT SHALL NOT EXCEED A LENGTH OF 150 FEET WITH A MAXIMUM AREA OF 15,000 SQUARE FEET UNLESS APPROVED BY THE ENGINEER.
   6.4 SHEAR FRICTION JOINTS: WHERE CONSTRUCTION JOINTS ARE LABELED AS "ROUGHENED" ON THE DRAWINGS, THE ENTIRE JOINT SURFACE SHALL BE MECHANICALLY ROUGHENED TO A 1/4" AMPLITUDE AND THOROUGHLY CLEANED. EXPOSE THE COURSE AGGREGATE IN THE HARDENED CONCRETE AND REMOVE ALL LOOSE MATERIAL.

7. DETAILING:
   7.1 UNLESS OTHERWISE SHOWN, FOLLOW THE RECOMMENDATIONS OF ACI 315. NO CHANGES SHALL BE MADE WITHOUT PRIOR APPROVAL.

8. REINFORCING FABRICATION:
   8.1 EMBEDMENT AND SPLICE LENGTHS:
      8.1.1 NO SPLICING OF REINFORCEMENT PERMITTED EXCEPT AS NOTED ON DRAWINGS. MAKE BARS CONTINUOUS AROUND CORNERS. WHERE PERMITTED, SPLICES MAY BE MADE BY CONTACT LAPS OR MECHANICAL CONNECTORS.
      8.1.2 SPLICES ARE TO BE MADE SO THAT GIVEN CLEAR DISTANCES TO THE FACE OF CONCRETE WILL BE MAINTAINED.
      8.1.3 UNLESS OTHERWISE SHOWN ON THE DRAWINGS, THE MINIMUM LENGTHS FOR EMBEDMENT AND LAP SPLICES FOR PARALLEL BARS SHALL BE AS GIVEN IN THE SCHEDULE.
      8.1.4 SEE 'LAP SPLICE AND DEVELOPMENT LENGTH SCHEDULE' FOR LAP AND EMBEDMENT LENGTHS.
   8.2 MISCELLANEOUS REINFORCING REQUIREMENTS:
      8.2.1 PROVIDE ADDITIONAL BARS OR STIRRUPS REQUIRED TO SECURE REINFORCING IN PLACE DURING CONCRETE PLACEMENT.
      8.2.2 MAKE ALL REINFORCING BAR BENDS IN THE FABRICATOR'S SHOP UNLESS NOTED.
      8.2.3 NO WELDING OF REINFORCING PERMITTED UNLESS NOTED ON DRAWINGS. WHERE PERMITTED, PERFORM WELDING IN ACCORDANCE WITH AWS D1.4, LATEST EDITION.
      8.2.4 PROVIDE ADDED REINFORCING TO TRIM ALL OPENINGS, NOTCHES, AND REENTRANT CORNERS AS NOTED IN TYPICAL DETAILS.

9. SPACING:
   9.1 THE FIRST AND LAST BARS IN SLABS AND WALLS, AND STIRRUPS IN BEAMS ARE TO START AND END AT A MAXIMUM OF ONE HALF THE ADJACENT BAR SPACING. ALL REINFORCING TO BE EQUALLY SPACED UNLESS OTHERWISE SHOWN ON THE DRAWINGS.

10. REINFORCING MATERIALS:
   10.1 SEE SECTION 03 20 00
   10.2 PLACE REINFORCEMENT IN ACCORDANCE WITH APPROVED REINFORCEMENT SHOP DRAWINGS. IN THE EVENT OF A CONFLICT BETWEEN THESE DRAWINGS AND THE APPROVED SHOP DRAWINGS, THE APPROVED SHOP DRAWINGS SHALL GOVERN.
   10.3 REINFORCEMENT PROTECTION
      10.3.1 SEE "STEEL REINFORCING COVER SCHEDULE" FOR REINFORCING COVER.
      10.3.2 SEE ACI318-11 7.5 AND ACI 301, SECTION 6.3 FOR REINFORCEMENT PLACING TOLERANCES AND ACI 117 FOR ADDITIONAL REQUIREMENTS
   10.4 PROVIDE ACCESSORIES NECESSARY TO PROPERLY SUPPORT REINFORCING AND WELDED WIRE FABRIC AT POSITIONS SHOWN ON PLANS. THE RECOMMENDATIONS OF ACI 315 (DETAILING MANUAL) SHALL BE USED IN SELECTING ACCESSORIES.
   10.5 ALL REINFORCING, DOWELS, BOLTS, AND EMBEDDED PLATES SHALL BE SET AND TIED IN PLACE BEFORE THE CONCRETE IS POURED. "STABBING" INTO PREVIOUSLY PLACED CONCRETE IS NOT PERMITTED.
   10.6 BEFORE PLACING CONCRETE, CHECK ALL APPLICABLE DRAWINGS RELEASED AS SUITABLE FOR CONSTRUCTION INCLUDING MANUFACTURER'S DRAWINGS TO VERIFY THE PRESENCE OF ALL EMBEDDED MATERIAL REQUIRED IN THE PLACEMENT.
   10.7 REINFORCEMENT MAY BE ADJUSTED IN THE FIELD TO CLEAR FORM TIES AND ANCHOR BARS. IN SUCH CASES, RELOCATION OF THE EMBEDDED MATERIALS MUST BE CONSIDERED. IN NO CASE SHOULD BARS BE BENT IN THE FIELD.
   10.8 WHERE POSSIBLE, REINFORCEMENT SHALL BE PLACED TO MAINTAIN A CLEAR DISTANCE OF AT LEAST 1-INCH BETWEEN OTHER REINFORCEMENT, ANCHOR BOLTS, FORM TIES, OR OTHER EMBEDDED METAL WORK. REINFORCEMENT PARALLEL TO ANCHOR BOLTS OR OTHER EMBEDDED METAL WORKS SHALL BE PLACED TO MAINTAIN A CLEAR DISTANCE OF AT LEAST 1-1/3 TIMES THE MAXIMUM SIZE AGGREGATE TO BE USED.

TYPICAL REINFORCING INFORMATION

LAP SPLICE AND DEVELOPMENT LENGTH SHCEDULE (INCHES)											
BAR SIZE (US)	BAR DIAMETER	F'c = 4500 PSI					F'c = 6000 PSI				
		TENSION					TENSION				
		LDH	LTE TOP	LTE	LTS TOP	LTS	LDH	LTE TOP	LTE	LTS TOP	LTS
#3	0.375	6	13	9	17	12	6	13	9	17	12
#4	0.500	6	17	12	22	16	6	17	12	22	16
#5	0.625	8	21	15	27	20	7	21	15	27	20
#6	0.750	9	25	18	33	23	8	25	18	33	23
#7	0.875	11	30	21	39	28	10	29	21	38	27
#8	1.000	13	39	28	51	36	11	34	24	44	31
#9	1.128	14	49	35	64	46	12	43	31	56	40
#10	1.270	16	63	45	82	58	14	54	39	71	51
#11	1.410	18	77	55	100	72	15	67	48	87	62

GENERAL NOTES:

1. 'LCE' COMPRESSION EMBEDMENT LENGTH, 'LCS' = COMPRESSION LAP SPLICE LENGTH,'LDH' = HOOK DEVELOPMENT LENGTH, 'LTE' = TENSION EMBEDMENT LENGTH, 'LTS' TENSION LAP SPLICE LENGTH
2. 'TOP' BARS ARE HORIZONTAL BARS PLACED WITH MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST BELOW THE BAR
3. UNLESS NOTED OTHERWISE, ALL HOOK BARS EXTEND TO THE FAR FACE (LESS COVER)

LAP SPLICE NOTES:

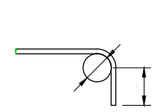
1. ALL SPLICES SHALL BE WIRED IN CONTACT AND STACKED VERTICALLY
2. ALL SPLICE ARE 'LTS' UNLESS NOTED OTHERWISE
3. SMALLER BAR LAP LENGTH SHALL BE USED WHEN SPLICING DIFFERENT SIZED BARS
4. LAP LENGTHS SPECIFICALLY DETAILED ON DRAWINGS SHALL GOVERN IN LIEU OF LAP LENGTHS SCHEDULE
5. BUNDLED BAR SPLICES:
   5.1 INDIVIDUAL BAR SPLICES WITHIN THE BUNDLE SHALL BE STAGGERED
   5.2 INCREASE LAP LENGTH 20% FOR A 3 BAR BUNDLE
   5.3 INCREASE LAP LENGTH 33% FOR A 4 BAR BUNDLE

ADJUSTMENTS FOR GIVEN LAP LENGTHS:

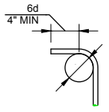
1. IF REINFORCING IS SPECIFIED AS EPOXY COATED, INCREASE SCHEDULED LAP LENGTHS BY 50%
2. IF LIGHTWEIGHT AGGREGATE IS SPECIFIED, INCREASE SCHEDULED LAP LENGTHS BY 30%
3. SCHEDULED LAP LENGTHS ASSUME:
   3.1 CLEAR COVER IS GREATER THAN BAR DIAMETER, AND NOT LESS THAN 3/4"
   3.2 CLEAR SPACING BETWEEN BARS IS GREATER THAN 2 BAR DIAMETERS
   3.3 IF EITHER CONDITION A OR B IS NOT MET FOR A GIVEN BAR, INCREASE LENGTHS BY 50%
4. SPLICE LENGTHS NOTED BASED ON Fy = 60,000 PSI. FOR OTHER YIELD STRENGTHS, MULTIPLY SPLICE LENGTHS NOTED BY Fy/60,000

HOOK EMBEDMENT NOTES:

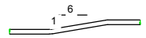
1. SCHEDULED HOOK EMBEDMENT LENGTHS ASSUME:
   1.1 SIDE COVER IS 2 1/2 INCHES OR GREATER
   1.2 COVER BEYOND IS 2 INCHES OR GREATER
2. IF REINFORCING IS SPECIFIED AS EPOXY COATED INCREASE SCHEDULED LAP LENGTHS BY 20%
3. IF LIGHTWEIGHT AGGREGATE IS SPECIFIED, INCREASE SCHEDULED LAP LENGTHS BY 30%
4. IF SIDE COVER IS LESS THAN 2 1/2 INCHES, INCREASE LENGTHS BY 40%



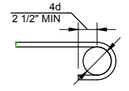
PRINCIPAL REINFORCING 90° HOOK



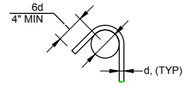
#3-#5 90° HOOK STIRRUPS ONLY



MAX OFFSET BEND



PRINCIPAL REINFORCING 180° HOOK



#3-#8 135° HOOK TIE OR STIRRUPS

D1		D2	
#3 - #8	6d	#3 - #5	4d
#9 - #11	8d	#6 - #8	6d
		#9 - #11	8d

TYPICAL REINFORCING BENDS

NOTES:
1. ALL BENDS SHALL BE MADE COLD
2. #14 & #18 BARS SHALL BE BEND TESTED & LAB APPROVED PRIOR TO BENDING

90% Submittal

NO.	DATE	ISSUE/REVISION	APP

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

GEI Consultants
GEI CONSULTANTS, INC.
2868 PROSPECT PARK DRIVE
SUITE 310
RANCHO CORDOVA, CA 95670
(916)631-4500

Designed: M. KIMBLE
Checked: P. EGGERS
Drawn: M. KIMBLE
Approved By: -

YUBA COUNTY WATER AGENCY

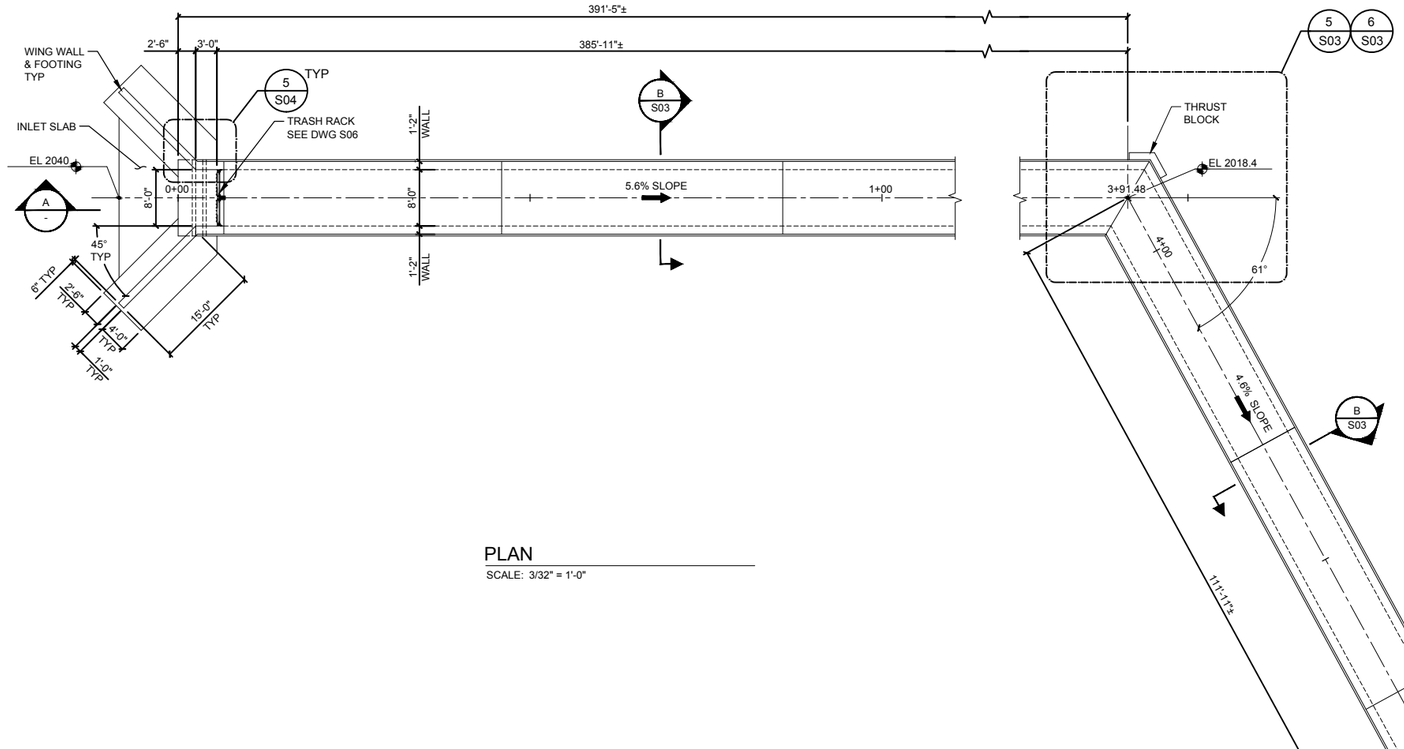
GEI Project 1701265

COTTAGE CREEK DAM SPILLWAY MODIFICATION
YUBA COUNTY, CA

GENERAL STRUCTURAL NOTES

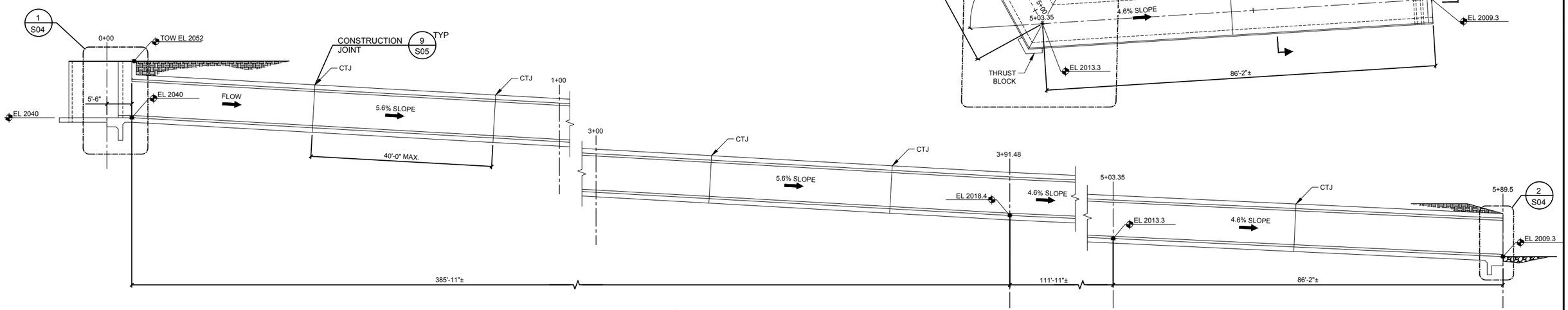
DWG. NO. S01

SHEET NO. 9 OF 14



PLAN

SCALE: 3/32" = 1'-0"



A - PROFILE

TYPICAL BOX CULVERT

0 10 20

SCALE: 3/32" = 1'-0"

NOTES:

1. REFER TO DRAWING C-02 FOR ADDITIONAL SPILLWAY DATA.
2. SUBMIT LOCATION OF CONSTRUCTION JOINTS FOR REVIEW PRIOR TO CONSTRUCTION..
3. CONSTRUCTION JOINTS SHALL BE A MAXIMUM OF 40'-0" APART.
4. SEE DETAILS 1 & 2 ON DRAWING S-05 FOR TYPICAL CONSTRUCTION AND CONTROL JOINTS.

90% Submittal

Attention:

0 1"

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NO.	DATE	ISSUE/REVISION	APP

GEI Consultants
GEI CONSULTANTS, INC.
2868 PROSPECT PARK DRIVE
SUITE 310
RANCHO CORDOVA, CA 95670
(916)631-4500

Designed: M. KIMBLE
Checked: P. EGGERS
Drawn: J. MORIN
Approved By: -

YUBA COUNTY WATER AGENCY

GEI Project 1701265

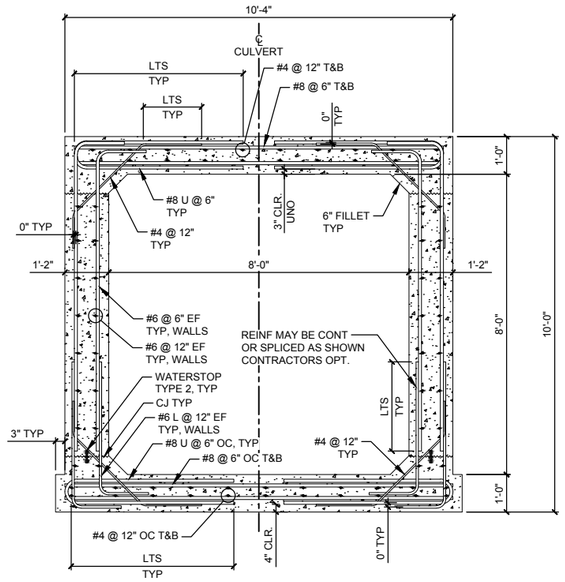
COTTAGE CREEK DAM SPILLWAY MODIFICATION
YUBA COUNTY, CA

STRUCTURAL PLAN

DWG. NO. S02

SHEET NO. 10 OF 14

---- J:\Yuba County Water Agency\Project\1701265 - Cottage Creek Dam Spillway Modification\12.0 CAD\Design\Sheets\S-02.dwg - 1/25/2018

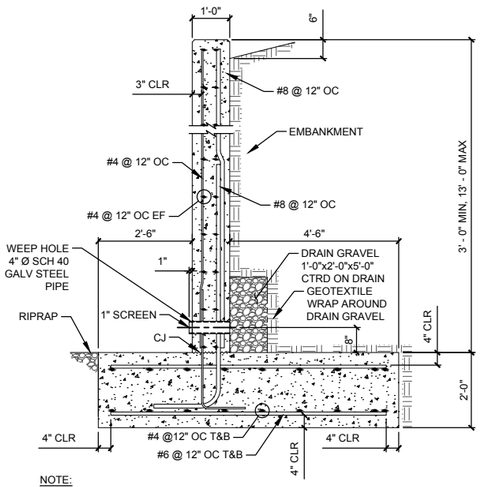


NOTE:

1. SEE DETAILS 3 AND 4 ON DRAWING S-05 FOR WATERSTOP DETAILS.

B / S02 SECTION
TYPICAL BOX CULVERT

SCALE: 1/2" = 1'-0"

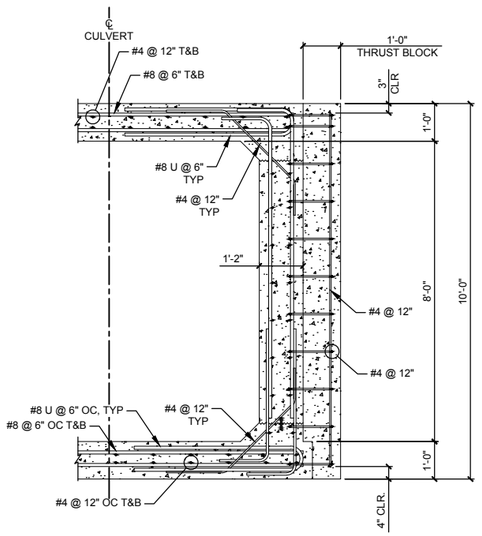


NOTE:

1. SEE DETAILS 3 AND 4 ON DRAWING S-05 FOR WATERSTOP DETAILS.

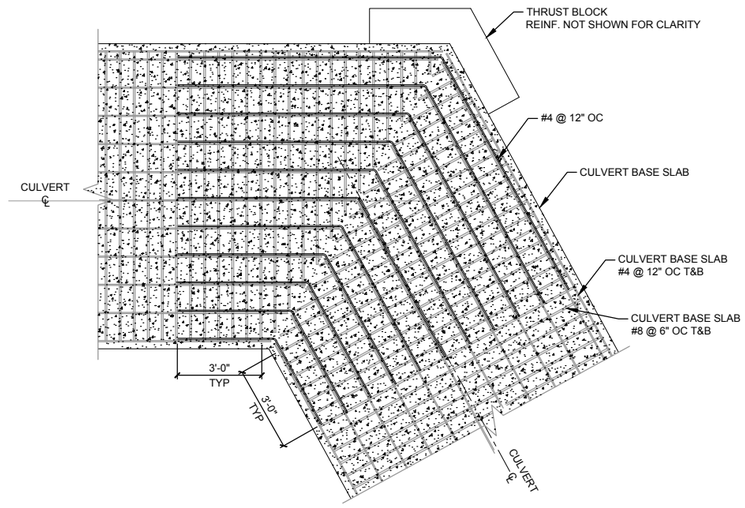
C / - SECTION
TYPICAL WING WALL

SCALE: 1/2" = 1'-0"



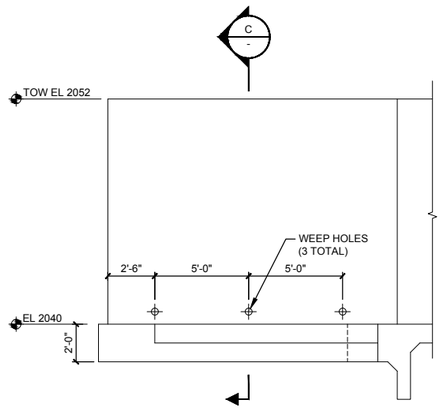
D / - SECTION
TYPICAL CORNER
AT THRUSH BLOCK

SCALE: 1/2" = 1'-0"



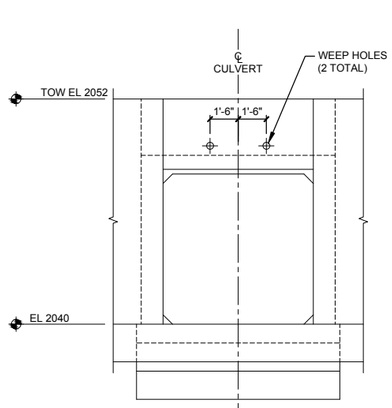
6 / S02 DETAIL
TYPICAL CORNER
AT BASE AND TOP SLAB

SCALE: 3/8" = 1'-0"



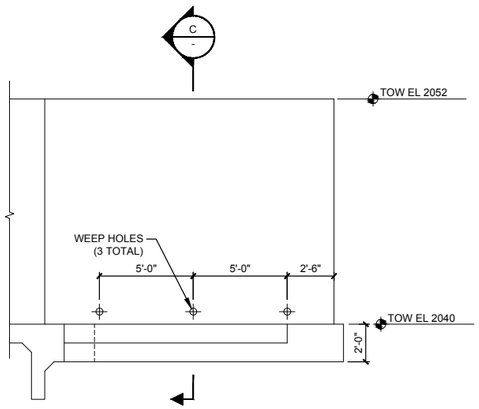
1 / - ELEVATION
INLET

SCALE: 1/4" = 1'-0"



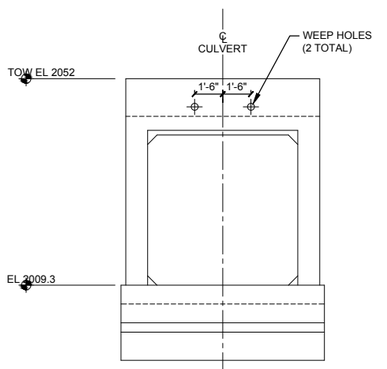
2 / - ELEVATION
INLET

SCALE: 1/4" = 1'-0"



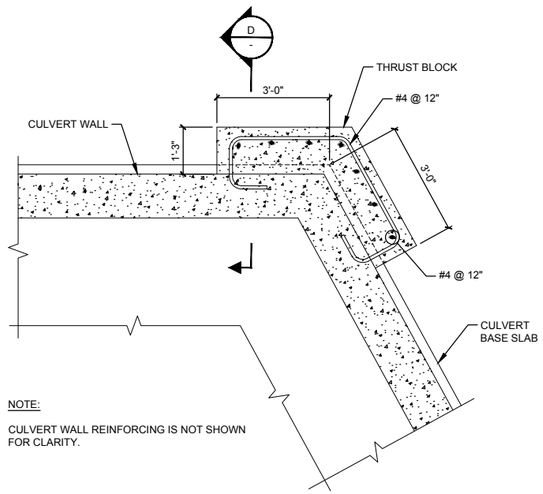
3 / - ELEVATION
INLET

SCALE: 1/4" = 1'-0"



4 / - ELEVATION
OUTLET

SCALE: 1/4" = 1'-0"



NOTE:

CULVERT WALL REINFORCING IS NOT SHOWN FOR CLARITY.

5 / S02 DETAIL
TYPICAL THRUST BLOCK

SCALE: 1/2" = 1'-0"

90% Submittal

NO.	DATE	ISSUE/REVISION	APP

Attention: 0 1"

If this scale bar does not measure 1" then drawing is not original scale.

GEI Consultants
GEI CONSULTANTS, INC.
2868 PROSPECT PARK DRIVE
SUITE 310
RANCHO CORDOVA, CA 95670
(916)631-4500

Designed: M. KIMBLE
Checked: P. EGGERS
Drawn: J. MORIN
Approved By: -

YUBA COUNTY WATER AGENCY

GEI Project 1701265

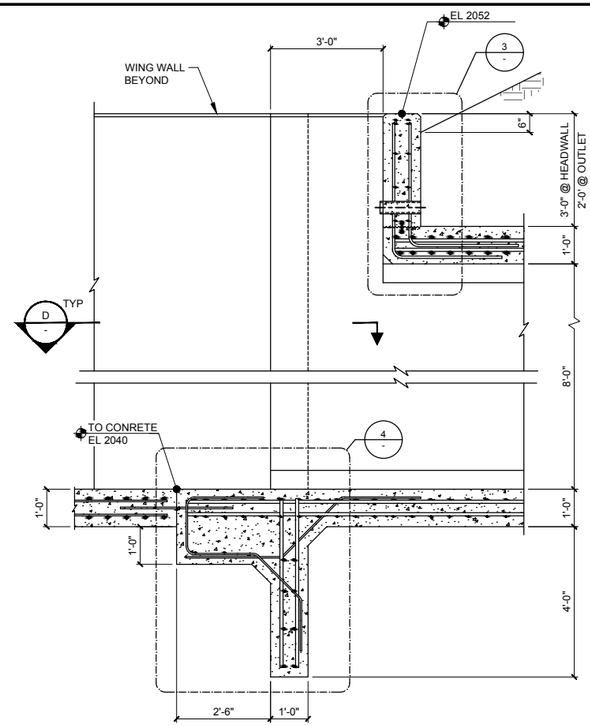
COTTAGE CREEK DAM SPILLWAY MODIFICATION
YUBA COUNTY, CA

STRUCTURAL ELEVATIONS AND SECTIONS

DWG. NO. S03

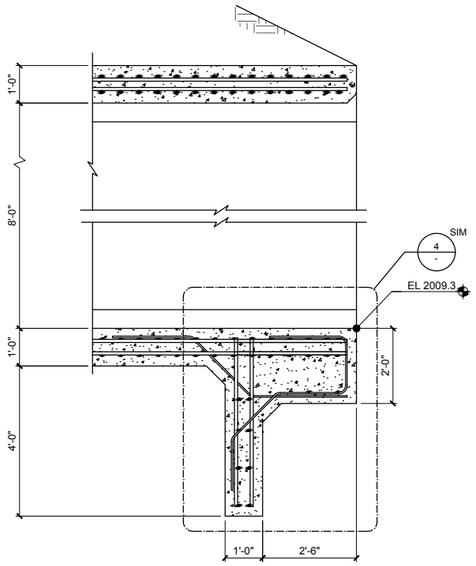
SHEET NO. 11 OF 14

---- J:\Yuba County Water Agency\Project\1701265 - Cottage Creek Dam Spillway Modification\12.0 CAD\Design\Sheets\S-03.dwg - 1/25/2018



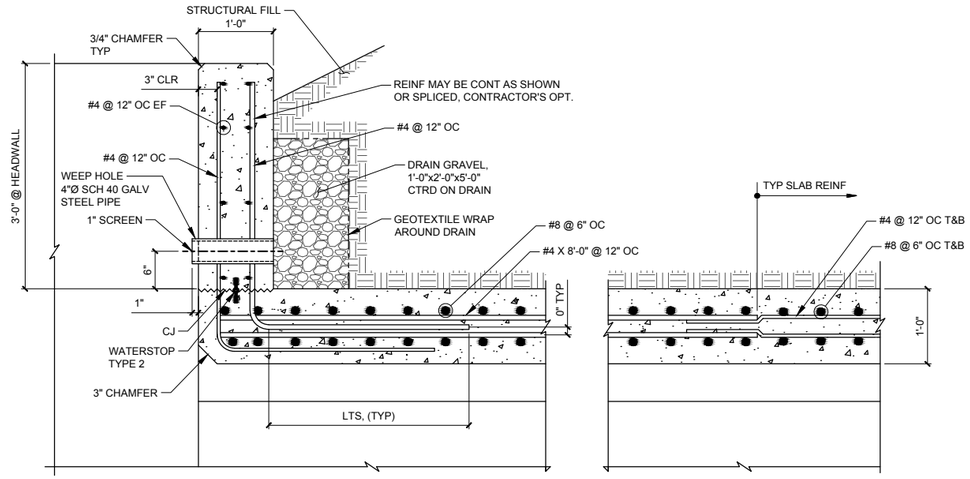
1 S02 DETAIL
BOX CULVERT INLET

SCALE: 1/2" = 1'-0"



2 S02 DETAIL
BOX CULVERT OULET

SCALE: 1/2" = 1'-0"

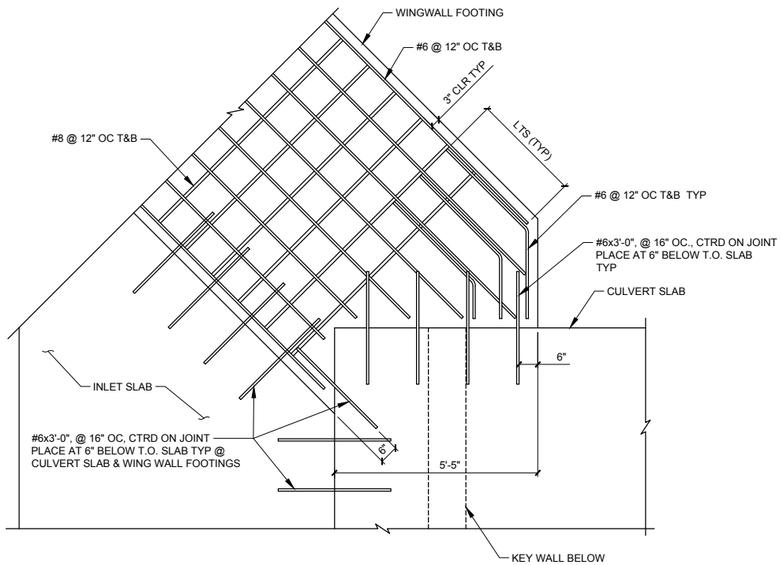


NOTE:

1. SEE DETAILS 3 AND 4 ON DRAWING S-05 FOR WATERSTOP DETAILS.

3 - DETAIL
BOX CULVERT INLET WALL

SCALE: 1" = 1'-0"

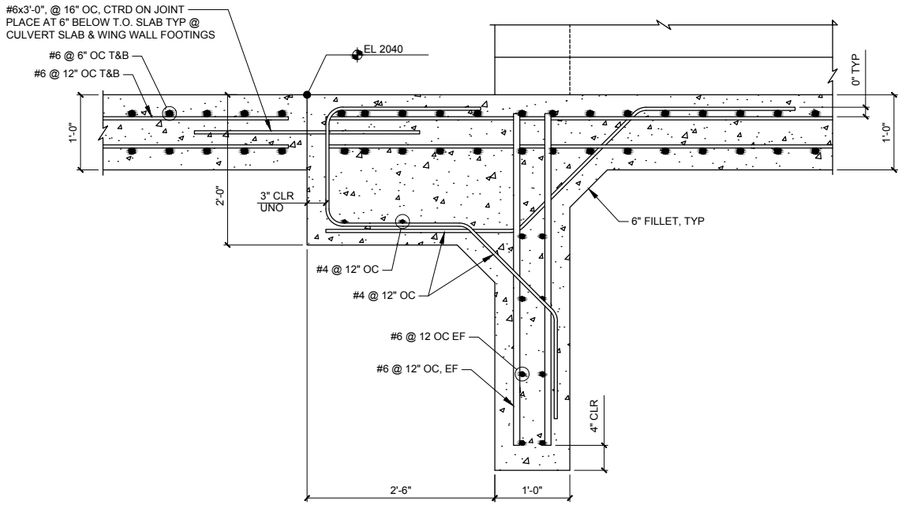


NOTE:

1. TYPICAL CULVERT & INLET SLAB REINFORCEMENT NOT SHOWN FOR CLARITY.

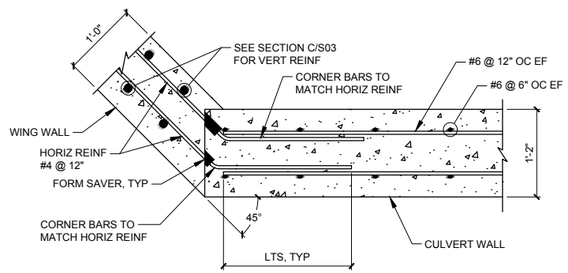
5 - TYPICAL DETAIL
WING WALL FTG. AND CULVERT SLABS

SCALE: 1/2" = 1'-0"



4 - DETAIL
BOX CULVERT CUTOFF WALL

SCALE: 1" = 1'-0"



D - TYPICAL SECTION
INLET WING WALL REINF

SCALE: 1" = 1'-0"

90% Submittal

NO.	DATE	ISSUE/REVISION	APP

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

GEI Consultants
GEI CONSULTANTS, INC.
2868 PROSPECT PARK DRIVE
SUITE 310
RANCHO CORDOVA, CA 95670
(916)631-4500

Designed: M. KIMBLE
Checked: P. EGGERS
Drawn: J. MORIN
Approved By: -

YUBA COUNTY WATER AGENCY

GEI Project 1701265

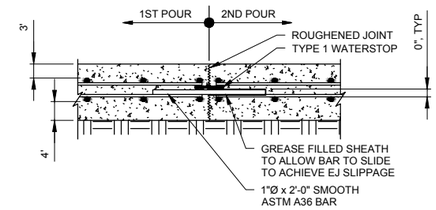
COTTAGE CREEK DAM SPILLWAY MODIFICATION
YUBA COUNTY, CA

STRUCTURAL SECTIONS AND DETAILS

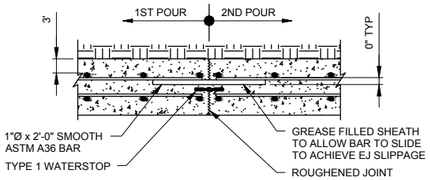
DWG. NO. S-04

SHEET NO. 12 OF 14

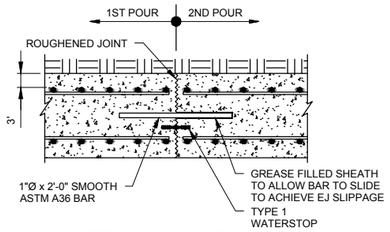
---- J:\Yuba County Water Agency\Project\1701265 - Cottage Creek Dam Spillway Modification\12.0 CAD\Design\Sheets\S-04.dwg - 1/25/2018



CULVERT BOTTOM SLAB CONTROL JOINT (CTJ)



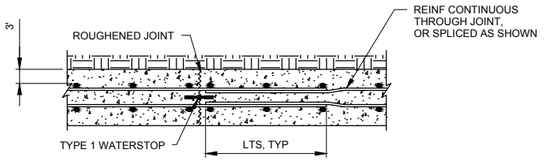
CULVERT WALL CONTROL JOINT (CTJ)



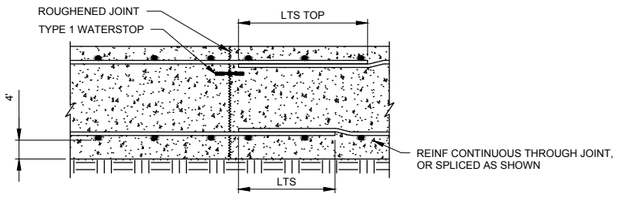
CULVERT TOP SLAB CONTROL JOINT (CTJ)

NOTES:
1. CLEAN SURFACES AND REMOVE STANDING WATER PRIOR TO PLACING CONCRETE.

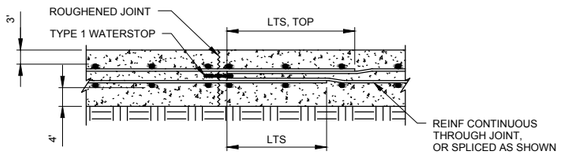
DETAIL 1 / S02
CULVERT CONTROL JOINTS
NOT TO SCALE



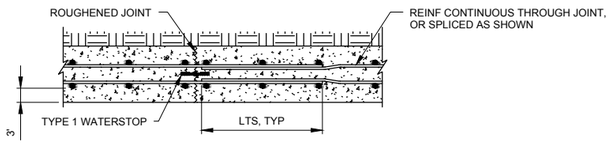
WINGWALL CONSTRUCTION JOINT (CJ)



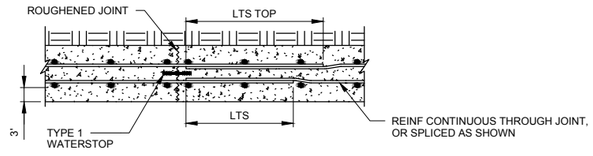
WINGWALL SLAB CONSTRUCTION JOINT (CJ)



CULVERT BOTTOM SLAB CONSTRUCTION JOINT (CJ)



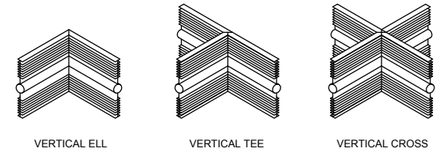
CULVERT WALL CONSTRUCTION JOINT (CJ)

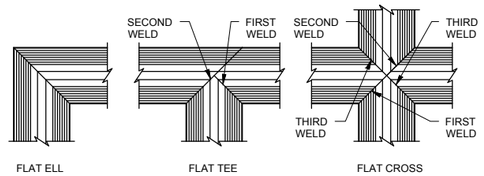


CULVERT TOP SLAB CONSTRUCTION JOINT (CJ)

NOTES:
1. CLEAN SURFACES AND REMOVE STANDING WATER PRIOR TO PLACING CONCRETE.

DETAIL 2 / S02
CONCRETE CONSTRUCTION JOINTS
NOT TO SCALE

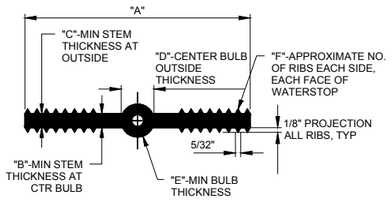




NOTES:

1. ALL FIELD WELDS SHALL BE MADE PER WATERSTOP MANUFACTURER'S RECOMMENDATIONS. ENGINEER SHALL INSPECT ALL FIELD WELDS FOR ACCEPTANCE PRIOR TO CONCRETE PLACEMENT OR WALL FORM PLACEMENT.
2. USE 6 INCH WATERSTOPS IN ALL CONSTRUCTION JOINTS UNLESS SPECIFICALLY SHOWN OTHERWISE.
3. FOR WALLS WITH SINGLE MAT OF REINFORCING LOCATE WATERSTOP ON LIQUID FACE 1" CLEAR OF REINFORCEMENT.

DETAIL 3 / S03
PCV WATERSTOPS JOINTS
NOT TO SCALE



TYPE	SIZE	"A"	"B"	"C"	"D"	"E"	"F"
1	6" x 3/8"	6"	3/8"	3/8"	7/8"	1/4"	6
2	4" x 3/16"	4"	3/16"	3/16"	3/4"	1/4"	5

WATERSTOP NOTES:
1. NON-ROUND CENTER BULBS SHALL HAVE A MINIMUM OUTSIDE DIMENSION OF 'D'.
2. USE 6 INCH WATERSTOPS IN ALL CONSTRUCTION JOINTS UNLESS SPECIFICALLY SHOWN OTHERWISE.

DETAIL 4 / S03
WATERSTOP TYPE 1
NOT TO SCALE

90% Submittal

NO.	DATE	ISSUE/REVISION	APP

Attention:
0 1"
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GEI Consultants
GEI CONSULTANTS, INC.
2868 PROSPECT PARK DRIVE
SUITE 310
RANCHO CORDOVA, CA 95670
(916)631-4500

Designed: M. KIMBLE
Checked: P. EGGERS
Drawn: J. MORIN
Approved By: -

YUBA COUNTY WATER AGENCY

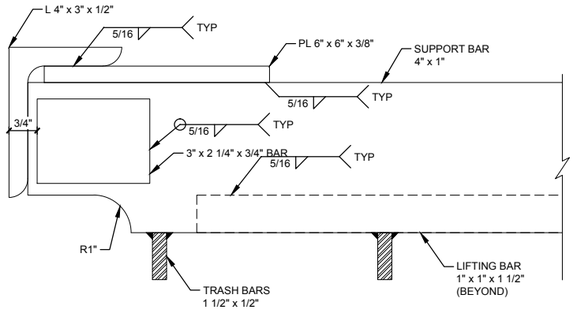
GEI Project 1701265

COTTAGE CREEK DAM SPILLWAY MODIFICATION
YUBA COUNTY, CA

TYPICAL STRUCTURAL DETAILS

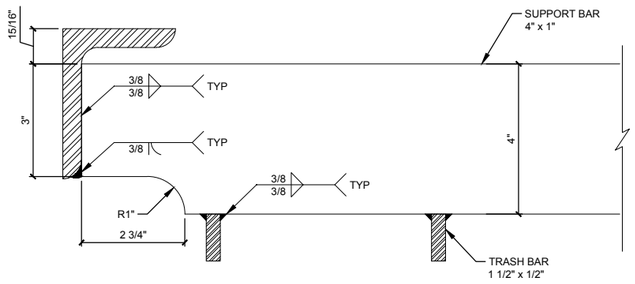
DWG. NO. S05

SHEET NO. 13 OF 14



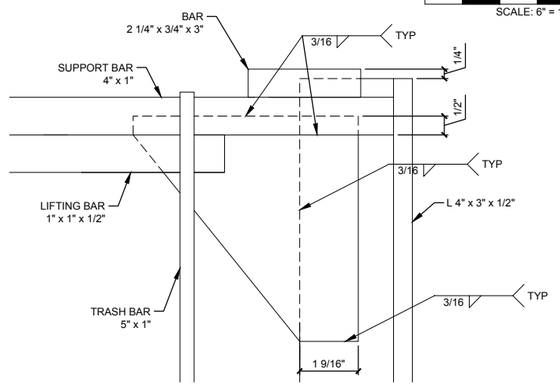
A - SECTION
TRASHRACK-TOP

SCALE: 6" = 1'-0"



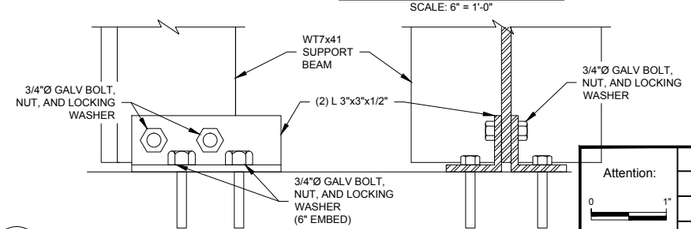
B - SECTION
TRASHRACK-INTERMEDIATE SUPPORT

SCALE: 6" = 1'-0"



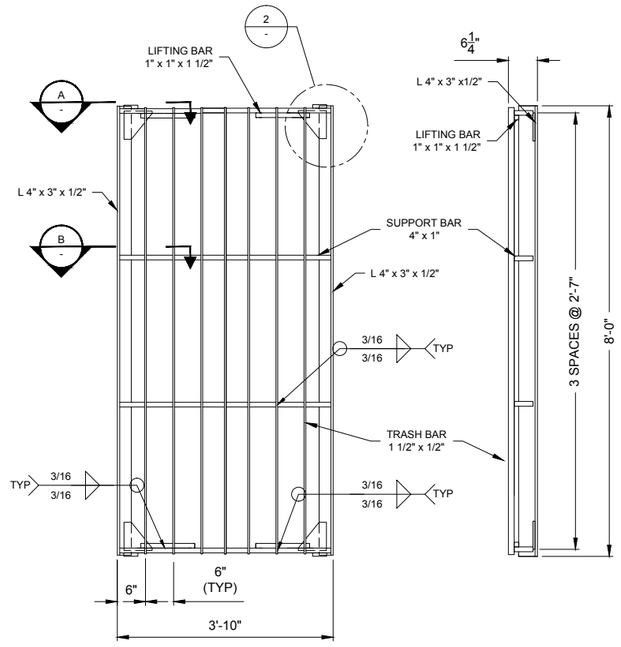
2 - DETAIL
TRASHRACK CORNER

SCALE: 6" = 1'-0"



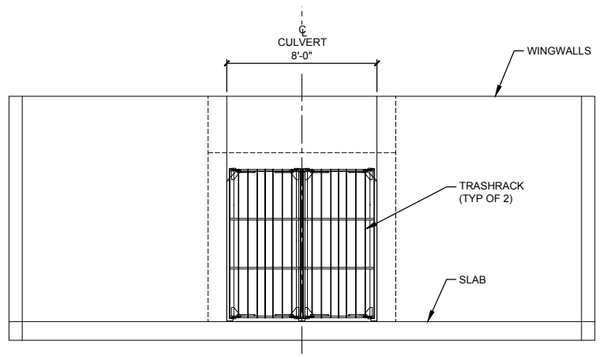
3 - DETAIL
TRASHRACK BEAM CONNECTION

SCALE: 6" = 1'-0"

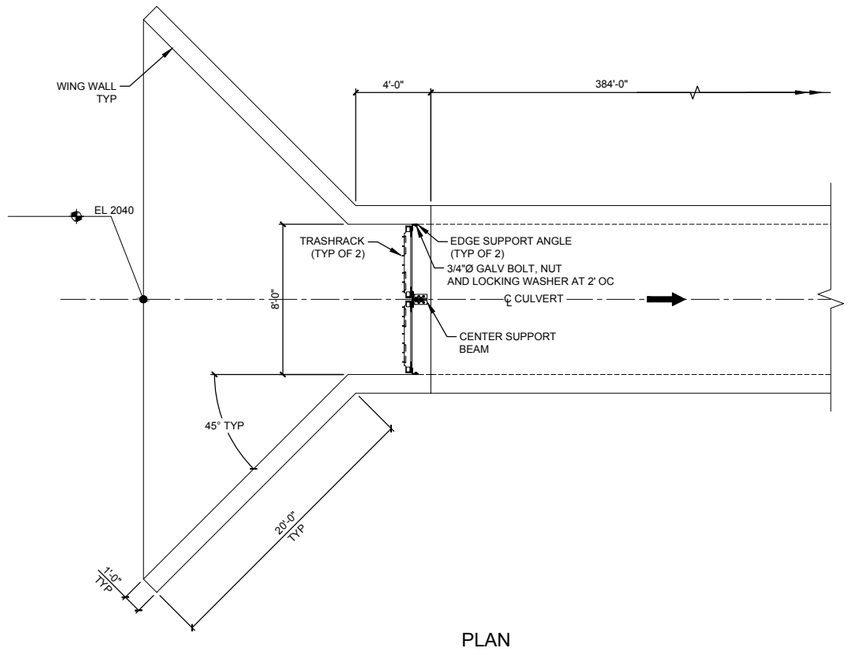


1 - DETAIL
TRASHRACK
(TYP OF 2)

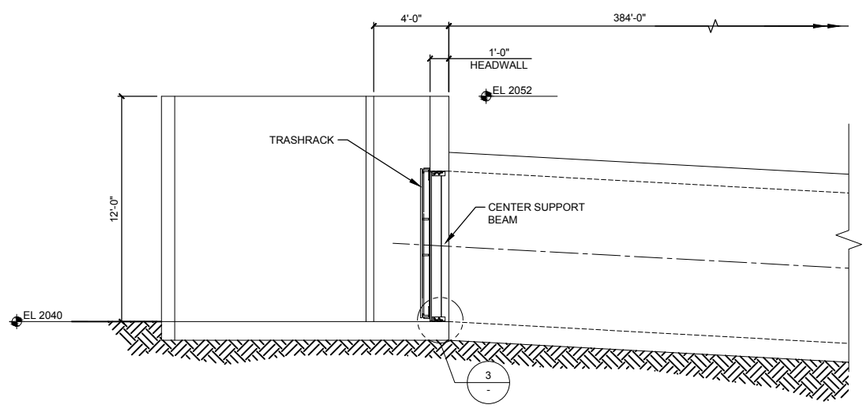
SCALE: 3/4" = 1'-0"



END VIEW
INLET-END VIEW



PLAN
INLET-PLAN



PROFILE
INLET-PROFILE

90% Submittal

Attention:

0 1"

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NO.	DATE	ISSUE/REVISION	APP
0			

GEI Consultants
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2868 PROSPECT PARK DRIVE
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(916)631-4500

Designed:	M. KIMBLE
Checked:	P. EGGERS
Drawn:	S. OLDEMEYER
Approved By:	-

YUBA COUNTY WATER AGENCY

GEI Project 1701265

COTTAGE CREEK DAM SPILLWAY MODIFICATION
YUBA COUNTY, CA

INLET AND TRASH
RACK DETAILS

DWG. NO.
S06

SHEET NO.
14 OF 14

Appendix B

CalEEMod Assumptions and Results

Cottage Creek Dam Spillway Modification Project

Yuba County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	15.00	1000sqft	0.34	15,000.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.4	**Precipitation Freq (Days)**	72
Climate Zone	1			**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

Cottage Creek Dam Spillway Modification Project - Yuba County, Annual

Project Characteristics -

Land Use - Other non-asphalt surfaces proxy for project disturbance area

Construction Phase - Estimated from PD and from client info

Off-road Equipment - Client info

Off-road Equipment - Client info

Off-road Equipment - Paving equipment used as a proxy for concrete mechanical vibrator

Off-road Equipment - Paving equipment used as a proxy for concrete mechanical vibrator

Off-road Equipment - PD. Grader included for hauling trips but 0 equipment emissions

Off-road Equipment - No equipment

Off-road Equipment - Equipment included in dam excavation and dewatering phase

Off-road Equipment - Concrete saw proxy for pavement cutter

Off-road Equipment - Client info

Off-road Equipment - PD

Trips and VMT - Workers = equipment count+. 40 mi one-way to Yuba City, 55 mi to nearest C&D landfill, 260 mi culvert from Fresno, stockpile 3 mi away. Infra removal workers overlap with dam exc phase.

Additional hauling trips and trip lengths from client provided info. Vender trips were accounted for in hauling trips.

Demolition - Removal of 300 ft of pipe and trash rack

Grading - 15,000 sf of cleared vegetation. 16,000 cy of soil and 1500 cy of rock moved during dam excavation

Architectural Coating - Arch coating used as a proxy phase for demob

Vehicle Trips - No operational trips

Construction Off-road Equipment Mitigation - AMM 3: Construction BMPs includes watering, 15 mph limit

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tblArchitecturalCoating	EF_Residential_Exterior	250.00	0.00

tblArchitecturalCoating	EF_Residential_Interior	250.00	0.00
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tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	NumDays	100.00	60.00
tblConstructionPhase	NumDays	100.00	13.00
tblConstructionPhase	NumDays	100.00	60.00
tblConstructionPhase	NumDays	5.00	1.00
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tblGrading	AcresOfGrading	0.00	0.30
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2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0572	0.7695	0.4169	1.2400e-003	0.0562	0.0217	0.0778	0.0233	0.0203	0.0436	0.0000	114.0932	114.0932	0.0152	0.0000	114.4727
Maximum	**0.0572**	**0.7695**	**0.4169**	**1.2400e-003**	**0.0562**	**0.0217**	**0.0778**	**0.0233**	**0.0203**	**0.0436**	**0.0000**	**114.0932**	**114.0932**	**0.0152**	**0.0000**	**114.4727**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0572	0.7695	0.4169	1.2400e-003	0.0384	0.0217	0.0601	0.0140	0.0203	0.0343	0.0000	114.0931	114.0931	0.0152	0.0000	114.4726
Maximum	**0.0572**	**0.7695**	**0.4169**	**1.2400e-003**	**0.0384**	**0.0217**	**0.0601**	**0.0140**	**0.0203**	**0.0343**	**0.0000**	**114.0931**	**114.0931**	**0.0152**	**0.0000**	**114.4726**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**31.65**	**0.00**	**22.84**	**39.83**	**0.00**	**21.30**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	7-1-2019	9-30-2019	0.6904	0.6904
		Highest	0.6904	0.6904

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.5000e-003	0.0000	1.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.7000e-004	2.7000e-004	0.0000	0.0000	2.9000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.5000e-003**	**0.0000**	**1.4000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.7000e-004**	**2.7000e-004**	**0.0000**	**0.0000**	**2.9000e-004**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.5000e-003	0.0000	1.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.7000e-004	2.7000e-004	0.0000	0.0000	2.9000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.5000e-003**	**0.0000**	**1.4000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.7000e-004**	**2.7000e-004**	**0.0000**	**0.0000**	**2.9000e-004**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	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

Cottage Creek Dam Spillway Modification Project - Yuba County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Mobilization and Clearing	Site Preparation	7/1/2019	7/12/2019	5	10	
2	Dam Excavation and Dewater	Grading	7/12/2019	8/8/2019	5	20	
3	Infrastructure Removal	Demolition	7/19/2019	7/23/2019	5	3	
4	Pavement Removal	Demolition	7/19/2019	7/19/2019	5	1	
5	Culvert Install (Backfill- 6,000 cy)	Building Construction	8/9/2019	10/31/2019	5	60	
6	Culvert Delivery	Building Construction	8/9/2019	8/27/2019	5	13	
7	Backfill 800 cy Imported	Building Construction	8/9/2019	10/31/2019	5	60	
8	Paving	Paving	11/1/2019	11/2/2019	5	1	
9	Demobilization	Architectural Coating	11/1/2019	11/7/2019	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.34

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
Mobilization and Clearing	Concrete/Industrial Saws	1	8.00	81	0.73
Mobilization and Clearing	Excavators	1	8.00	158	0.38
Mobilization and Clearing	Graders	0	8.00	187	0.41
Mobilization and Clearing	Rubber Tired Dozers	1	8.00	247	0.40
Mobilization and Clearing	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Dam Excavation and Dewater	Concrete/Industrial Saws	0	8.00	81	0.73
Dam Excavation and Dewater	Cranes	1	8.00	231	0.29

Dam Excavation and Dewater	Excavators	2	8.00	158	0.38
Dam Excavation and Dewater	Graders	0	0.00	187	0.41
Dam Excavation and Dewater	Pumps	1	8.00	84	0.74
Dam Excavation and Dewater	Rubber Tired Dozers	0	1.00	247	0.40
Dam Excavation and Dewater	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Infrastructure Removal	Concrete/Industrial Saws	0	8.00	81	0.73
Infrastructure Removal	Rubber Tired Dozers	0	1.00	247	0.40
Infrastructure Removal	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Culvert Install (Backfill- 6,000 cy)	Cranes	1	8.00	231	0.29
Culvert Install (Backfill- 6,000 cy)	Forklifts	0	6.00	89	0.20
Culvert Install (Backfill- 6,000 cy)	Graders	1		187	0.41
Culvert Install (Backfill- 6,000 cy)	Paving Equipment	1		132	0.36
Culvert Install (Backfill- 6,000 cy)	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	0	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Demobilization	Air Compressors	0	6.00	78	0.48
Pavement Removal	Concrete/Industrial Saws	0	8.00	81	0.73
Pavement Removal	Rubber Tired Dozers	0	1.00	247	0.40
Pavement Removal	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Culvert Delivery	Cranes	0	4.00	231	0.29
Culvert Delivery	Forklifts	0	6.00	89	0.20
Culvert Delivery	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Backfill 800 cy Imported	Cranes	0	4.00	231	0.29
Backfill 800 cy Imported	Forklifts	0	6.00	89	0.20
Backfill 800 cy Imported	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

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
Mobilization and Clearing	3	10.00	0.00	0.00	40.00	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Dam Excavation and Dewater	4	12.00	0.00	2,720.00	40.00	6.60	3.00	LD_Mix	HDT_Mix	HHDT
Infrastructure Removal	0	0.00	0.00	12.00	40.00	6.60	55.00	LD_Mix	HDT_Mix	HHDT
Culvert Install (Backfill- 6,000 cy)	3	10.00	0.00	960.00	40.00	260.00	3.00	LD_Mix	HDT_Mix	HHDT
Paving	1	6.00	0.00	6.00	40.00	40.00	40.00	LD_Mix	HDT_Mix	HHDT
Demobilization	0	2.00	0.00	0.00	40.00	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Pavement Removal	0	0.00	0.00	6.00	16.80	6.60	55.00	LD_Mix	HDT_Mix	HHDT
Culvert Delivery	0	0.00	0.00	26.00	16.80	6.60	260.00	LD_Mix	HDT_Mix	HHDT
Backfill 800 cy Imported	0	0.00	0.00	120.00	16.80	6.60	40.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Mobilization and Clearing - 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	tons/yr										MT/yr					
Fugitive Dust					0.0303	0.0000	0.0303	0.0166	0.0000	0.0166	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.2900e-003	0.0917	0.0563	1.0000e-004		4.7400e-003	4.7400e-003		4.4500e-003	4.4500e-003	0.0000	8.8415	8.8415	2.1400e-003	0.0000	8.8949
Total	**9.2900e-003**	**0.0917**	**0.0563**	**1.0000e-004**	**0.0303**	**4.7400e-003**	**0.0350**	**0.0166**	**4.4500e-003**	**0.0210**	**0.0000**	**8.8415**	**8.8415**	**2.1400e-003**	**0.0000**	**8.8949**

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	tons/yr										MT/yr					
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	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	0.0000	0.0000
Worker	7.3000e-004	7.4000e-004	6.6800e-003	1.0000e-005	1.4500e-003	1.0000e-005	1.4600e-003	3.9000e-004	1.0000e-005	4.0000e-004	0.0000	1.2741	1.2741	6.0000e-005	0.0000	1.2755
Total	**7.3000e-004**	**7.4000e-004**	**6.6800e-003**	**1.0000e-005**	**1.4500e-003**	**1.0000e-005**	**1.4600e-003**	**3.9000e-004**	**1.0000e-005**	**4.0000e-004**	**0.0000**	**1.2741**	**1.2741**	**6.0000e-005**	**0.0000**	**1.2755**

3.2 Mobilization and Clearing - 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	tons/yr										MT/yr					
Fugitive Dust					0.0136	0.0000	0.0136	7.4600e-003	0.0000	7.4600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.2900e-003	0.0917	0.0563	1.0000e-004		4.7400e-003	4.7400e-003		4.4500e-003	4.4500e-003	0.0000	8.8415	8.8415	2.1400e-003	0.0000	8.8949
Total	**9.2900e-003**	**0.0917**	**0.0563**	**1.0000e-004**	**0.0136**	**4.7400e-003**	**0.0184**	**7.4600e-003**	**4.4500e-003**	**0.0119**	**0.0000**	**8.8415**	**8.8415**	**2.1400e-003**	**0.0000**	**8.8949**

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	tons/yr										MT/yr					
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	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	0.0000	0.0000
Worker	7.3000e-004	7.4000e-004	6.6800e-003	1.0000e-005	1.4500e-003	1.0000e-005	1.4600e-003	3.9000e-004	1.0000e-005	4.0000e-004	0.0000	1.2741	1.2741	6.0000e-005	0.0000	1.2755
Total	**7.3000e-004**	**7.4000e-004**	**6.6800e-003**	**1.0000e-005**	**1.4500e-003**	**1.0000e-005**	**1.4600e-003**	**3.9000e-004**	**1.0000e-005**	**4.0000e-004**	**0.0000**	**1.2741**	**1.2741**	**6.0000e-005**	**0.0000**	**1.2755**

3.3 Dam Excavation and Dewater - 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	tons/yr										MT/yr					
Fugitive Dust					1.9000e-003	0.0000	1.9000e-003	2.8000e-004	0.0000	2.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0150	0.1521	0.1260	2.3000e-004		7.5100e-003	7.5100e-003		7.1000e-003	7.1000e-003	0.0000	20.1077	20.1077	4.9500e-003	0.0000	20.2315
Total	**0.0150**	**0.1521**	**0.1260**	**2.3000e-004**	**1.9000e-003**	**7.5100e-003**	**9.4100e-003**	**2.8000e-004**	**7.1000e-003**	**7.3800e-003**	**0.0000**	**20.1077**	**20.1077**	**4.9500e-003**	**0.0000**	**20.2315**

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	tons/yr										MT/yr					
Hauling	5.7900e-003	0.1812	0.0581	2.7000e-004	3.4200e-003	6.7000e-004	4.0900e-003	9.4000e-004	6.4000e-004	1.5800e-003	0.0000	25.2827	25.2827	1.7300e-003	0.0000	25.3259
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7600e-003	1.7800e-003	0.0160	3.0000e-005	3.4900e-003	2.0000e-005	3.5200e-003	9.3000e-004	2.0000e-005	9.5000e-004	0.0000	3.0579	3.0579	1.3000e-004	0.0000	3.0612
Total	**7.5500e-003**	**0.1830**	**0.0741**	**3.0000e-004**	**6.9100e-003**	**6.9000e-004**	**7.6100e-003**	**1.8700e-003**	**6.6000e-004**	**2.5300e-003**	**0.0000**	**28.3406**	**28.3406**	**1.8600e-003**	**0.0000**	**28.3871**

3.3 Dam Excavation and Dewater - 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	tons/yr										MT/yr					
Fugitive Dust					8.6000e-004	0.0000	8.6000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0150	0.1521	0.1260	2.3000e-004		7.5100e-003	7.5100e-003		7.1000e-003	7.1000e-003	0.0000	20.1077	20.1077	4.9500e-003	0.0000	20.2315
Total	**0.0150**	**0.1521**	**0.1260**	**2.3000e-004**	**8.6000e-004**	**7.5100e-003**	**8.3700e-003**	**1.3000e-004**	**7.1000e-003**	**7.2300e-003**	**0.0000**	**20.1077**	**20.1077**	**4.9500e-003**	**0.0000**	**20.2315**

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	tons/yr										MT/yr					
Hauling	5.7900e-003	0.1812	0.0581	2.7000e-004	3.4200e-003	6.7000e-004	4.0900e-003	9.4000e-004	6.4000e-004	1.5800e-003	0.0000	25.2827	25.2827	1.7300e-003	0.0000	25.3259
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7600e-003	1.7800e-003	0.0160	3.0000e-005	3.4900e-003	2.0000e-005	3.5200e-003	9.3000e-004	2.0000e-005	9.5000e-004	0.0000	3.0579	3.0579	1.3000e-004	0.0000	3.0612
Total	**7.5500e-003**	**0.1830**	**0.0741**	**3.0000e-004**	**6.9100e-003**	**6.9000e-004**	**7.6100e-003**	**1.8700e-003**	**6.6000e-004**	**2.5300e-003**	**0.0000**	**28.3406**	**28.3406**	**1.8600e-003**	**0.0000**	**28.3871**

3.4 Infrastructure 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	tons/yr										MT/yr					
Fugitive Dust					1.6000e-004	0.0000	1.6000e-004	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**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	tons/yr										MT/yr					
Hauling	1.5000e-004	4.8900e-003	1.1900e-003	1.0000e-005	2.7000e-004	4.0000e-005	3.1000e-004	8.0000e-005	3.0000e-005	1.1000e-004	0.0000	1.2000	1.2000	1.0000e-005	0.0000	1.2004
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	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	**1.5000e-004**	**4.8900e-003**	**1.1900e-003**	**1.0000e-005**	**2.7000e-004**	**4.0000e-005**	**3.1000e-004**	**8.0000e-005**	**3.0000e-005**	**1.1000e-004**	**0.0000**	**1.2000**	**1.2000**	**1.0000e-005**	**0.0000**	**1.2004**

3.4 Infrastructure 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	tons/yr										MT/yr					
Fugitive Dust					7.0000e-005	0.0000	7.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**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	tons/yr										MT/yr					
Hauling	1.5000e-004	4.8900e-003	1.1900e-003	1.0000e-005	2.7000e-004	4.0000e-005	3.1000e-004	8.0000e-005	3.0000e-005	1.1000e-004	0.0000	1.2000	1.2000	1.0000e-005	0.0000	1.2004
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	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	**1.5000e-004**	**4.8900e-003**	**1.1900e-003**	**1.0000e-005**	**2.7000e-004**	**4.0000e-005**	**3.1000e-004**	**8.0000e-005**	**3.0000e-005**	**1.1000e-004**	**0.0000**	**1.2000**	**1.2000**	**1.0000e-005**	**0.0000**	**1.2004**

3.5 Pavement 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	tons/yr										MT/yr					
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	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**

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	tons/yr										MT/yr					
Hauling	7.0000e-005	2.4400e-003	5.9000e-004	1.0000e-005	1.4000e-004	2.0000e-005	1.6000e-004	4.0000e-005	2.0000e-005	5.0000e-005	0.0000	0.6000	0.6000	1.0000e-005	0.0000	0.6002
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	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	**7.0000e-005**	**2.4400e-003**	**5.9000e-004**	**1.0000e-005**	**1.4000e-004**	**2.0000e-005**	**1.6000e-004**	**4.0000e-005**	**2.0000e-005**	**5.0000e-005**	**0.0000**	**0.6000**	**0.6000**	**1.0000e-005**	**0.0000**	**0.6002**

3.5 Pavement 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	tons/yr										MT/yr					
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	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 Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.0000e-005	2.4400e-003	5.9000e-004	1.0000e-005	1.4000e-004	2.0000e-005	1.6000e-004	4.0000e-005	2.0000e-005	5.0000e-005	0.0000	0.6000	0.6000	1.0000e-005	0.0000	0.6002
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	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	**7.0000e-005**	**2.4400e-003**	**5.9000e-004**	**1.0000e-005**	**1.4000e-004**	**2.0000e-005**	**1.6000e-004**	**4.0000e-005**	**2.0000e-005**	**5.0000e-005**	**0.0000**	**0.6000**	**0.6000**	**1.0000e-005**	**0.0000**	**0.6002**

3.6 Culvert Install (Backfill- 6,000 cy) - 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	tons/yr										MT/yr					
Off-Road	0.0151	0.1802	0.0688	1.7000e-004		7.6400e-003	7.6400e-003		7.0300e-003	7.0300e-003	0.0000	15.5458	15.5458	4.9200e-003	0.0000	15.6688
Total	**0.0151**	**0.1802**	**0.0688**	**1.7000e-004**		**7.6400e-003**	**7.6400e-003**		**7.0300e-003**	**7.0300e-003**	**0.0000**	**15.5458**	**15.5458**	**4.9200e-003**	**0.0000**	**15.6688**

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	tons/yr										MT/yr					
Hauling	2.0400e-003	0.0640	0.0205	9.0000e-005	1.2100e-003	2.4000e-004	1.4400e-003	3.3000e-004	2.3000e-004	5.6000e-004	0.0000	8.9233	8.9233	6.1000e-004	0.0000	8.9385
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.4100e-003	4.4400e-003	0.0401	8.0000e-005	8.7300e-003	6.0000e-005	8.7900e-003	2.3200e-003	6.0000e-005	2.3800e-003	0.0000	7.6446	7.6446	3.4000e-004	0.0000	7.6531
Total	**6.4500e-003**	**0.0684**	**0.0606**	**1.7000e-004**	**9.9400e-003**	**3.0000e-004**	**0.0102**	**2.6500e-003**	**2.9000e-004**	**2.9400e-003**	**0.0000**	**16.5679**	**16.5679**	**9.5000e-004**	**0.0000**	**16.5916**

3.6 Culvert Install (Backfill- 6,000 cy) - 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	tons/yr										MT/yr					
Off-Road	0.0151	0.1802	0.0688	1.7000e-004		7.6400e-003	7.6400e-003		7.0300e-003	7.0300e-003	0.0000	15.5458	15.5458	4.9200e-003	0.0000	15.6688
Total	**0.0151**	**0.1802**	**0.0688**	**1.7000e-004**		**7.6400e-003**	**7.6400e-003**		**7.0300e-003**	**7.0300e-003**	**0.0000**	**15.5458**	**15.5458**	**4.9200e-003**	**0.0000**	**15.6688**

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	tons/yr										MT/yr					
Hauling	2.0400e-003	0.0640	0.0205	9.0000e-005	1.2100e-003	2.4000e-004	1.4400e-003	3.3000e-004	2.3000e-004	5.6000e-004	0.0000	8.9233	8.9233	6.1000e-004	0.0000	8.9385
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.4100e-003	4.4400e-003	0.0401	8.0000e-005	8.7300e-003	6.0000e-005	8.7900e-003	2.3200e-003	6.0000e-005	2.3800e-003	0.0000	7.6446	7.6446	3.4000e-004	0.0000	7.6531
Total	**6.4500e-003**	**0.0684**	**0.0606**	**1.7000e-004**	**9.9400e-003**	**3.0000e-004**	**0.0102**	**2.6500e-003**	**2.9000e-004**	**2.9400e-003**	**0.0000**	**16.5679**	**16.5679**	**9.5000e-004**	**0.0000**	**16.5916**

3.7 Culvert Delivery - 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	tons/yr										MT/yr					
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	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**

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	tons/yr										MT/yr					
Hauling	1.3900e-003	0.0455	0.0105	1.3000e-004	2.8100e-003	3.6000e-004	3.1700e-003	7.7000e-004	3.4000e-004	1.1100e-003	0.0000	11.8973	11.8973	9.0000e-005	0.0000	11.8994
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	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	**1.3900e-003**	**0.0455**	**0.0105**	**1.3000e-004**	**2.8100e-003**	**3.6000e-004**	**3.1700e-003**	**7.7000e-004**	**3.4000e-004**	**1.1100e-003**	**0.0000**	**11.8973**	**11.8973**	**9.0000e-005**	**0.0000**	**11.8994**

3.7 Culvert Delivery - 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	tons/yr										MT/yr					
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	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 Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3900e-003	0.0455	0.0105	1.3000e-004	2.8100e-003	3.6000e-004	3.1700e-003	7.7000e-004	3.4000e-004	1.1100e-003	0.0000	11.8973	11.8973	9.0000e-005	0.0000	11.8994
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	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	**1.3900e-003**	**0.0455**	**0.0105**	**1.3000e-004**	**2.8100e-003**	**3.6000e-004**	**3.1700e-003**	**7.7000e-004**	**3.4000e-004**	**1.1100e-003**	**0.0000**	**11.8973**	**11.8973**	**9.0000e-005**	**0.0000**	**11.8994**

3.8 Backfill 800 cy Imported - 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	tons/yr										MT/yr					
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	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**

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	tons/yr										MT/yr					
Hauling	1.1400e-003	0.0371	9.1800e-003	9.0000e-005	2.0000e-003	2.6000e-004	2.2600e-003	5.5000e-004	2.5000e-004	8.0000e-004	0.0000	8.8602	8.8602	1.2000e-004	0.0000	8.8633
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	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	**1.1400e-003**	**0.0371**	**9.1800e-003**	**9.0000e-005**	**2.0000e-003**	**2.6000e-004**	**2.2600e-003**	**5.5000e-004**	**2.5000e-004**	**8.0000e-004**	**0.0000**	**8.8602**	**8.8602**	**1.2000e-004**	**0.0000**	**8.8633**

3.8 Backfill 800 cy Imported - 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	tons/yr										MT/yr					
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	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 Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.1400e-003	0.0371	9.1800e-003	9.0000e-005	2.0000e-003	2.6000e-004	2.2600e-003	5.5000e-004	2.5000e-004	8.0000e-004	0.0000	8.8602	8.8602	1.2000e-004	0.0000	8.8633
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	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	**1.1400e-003**	**0.0371**	**9.1800e-003**	**9.0000e-005**	**2.0000e-003**	**2.6000e-004**	**2.2600e-003**	**5.5000e-004**	**2.5000e-004**	**8.0000e-004**	**0.0000**	**8.8602**	**8.8602**	**1.2000e-004**	**0.0000**	**8.8633**

3.9 Paving - 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	tons/yr										MT/yr					
Off-Road	1.4000e-004	1.5600e-003	1.4500e-003	0.0000		8.0000e-005	8.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.2112	0.2112	7.0000e-005	0.0000	0.2128
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.4000e-004**	**1.5600e-003**	**1.4500e-003**	**0.0000**		**8.0000e-005**	**8.0000e-005**		**7.0000e-005**	**7.0000e-005**	**0.0000**	**0.2112**	**0.2112**	**7.0000e-005**	**0.0000**	**0.2128**

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	tons/yr										MT/yr					
Hauling	6.0000e-005	1.8500e-003	4.6000e-004	0.0000	1.0000e-004	1.0000e-005	1.1000e-004	3.0000e-005	1.0000e-005	4.0000e-005	0.0000	0.4430	0.4430	1.0000e-005	0.0000	0.4432
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	4.0000e-005	4.0000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0765	0.0765	0.0000	0.0000	0.0765
Total	**1.0000e-004**	**1.8900e-003**	**8.6000e-004**	**0.0000**	**1.9000e-004**	**1.0000e-005**	**2.0000e-004**	**5.0000e-005**	**1.0000e-005**	**6.0000e-005**	**0.0000**	**0.5195**	**0.5195**	**1.0000e-005**	**0.0000**	**0.5197**

3.9 Paving - 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	tons/yr										MT/yr					
Off-Road	1.4000e-004	1.5600e-003	1.4500e-003	0.0000		8.0000e-005	8.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.2112	0.2112	7.0000e-005	0.0000	0.2128
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.4000e-004**	**1.5600e-003**	**1.4500e-003**	**0.0000**		**8.0000e-005**	**8.0000e-005**		**7.0000e-005**	**7.0000e-005**	**0.0000**	**0.2112**	**0.2112**	**7.0000e-005**	**0.0000**	**0.2128**

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	tons/yr										MT/yr					
Hauling	6.0000e-005	1.8500e-003	4.6000e-004	0.0000	1.0000e-004	1.0000e-005	1.1000e-004	3.0000e-005	1.0000e-005	4.0000e-005	0.0000	0.4430	0.4430	1.0000e-005	0.0000	0.4432
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	4.0000e-005	4.0000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0765	0.0765	0.0000	0.0000	0.0765
Total	**1.0000e-004**	**1.8900e-003**	**8.6000e-004**	**0.0000**	**1.9000e-004**	**1.0000e-005**	**2.0000e-004**	**5.0000e-005**	**1.0000e-005**	**6.0000e-005**	**0.0000**	**0.5195**	**0.5195**	**1.0000e-005**	**0.0000**	**0.5197**

3.10 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	tons/yr										MT/yr					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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	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**

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	tons/yr										MT/yr					
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	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	0.0000	0.0000
Worker	7.0000e-005	7.0000e-005	6.7000e-004	0.0000	1.5000e-004	0.0000	1.5000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1274	0.1274	1.0000e-005	0.0000	0.1276
Total	**7.0000e-005**	**7.0000e-005**	**6.7000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**1.5000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1274**	**0.1274**	**1.0000e-005**	**0.0000**	**0.1276**

3.10 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	tons/yr										MT/yr					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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	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 Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
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	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	0.0000	0.0000
Worker	7.0000e-005	7.0000e-005	6.7000e-004	0.0000	1.5000e-004	0.0000	1.5000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1274	0.1274	1.0000e-005	0.0000	0.1276
Total	**7.0000e-005**	**7.0000e-005**	**6.7000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**1.5000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1274**	**0.1274**	**1.0000e-005**	**0.0000**	**0.1276**

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	tons/yr										MT/yr					
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	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	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	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 Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.598783	0.030490	0.175247	0.121692	0.032191	0.006113	0.008473	0.014891	0.001694	0.002175	0.006069	0.001159	0.001023

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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	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	0.0000

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	tons/yr										MT/yr					
Other Non-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
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	tons/yr										MT/yr					
Other Non-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
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**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.5000e-003	0.0000	1.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.7000e-004	2.7000e-004	0.0000	0.0000	2.9000e-004
Unmitigated	1.5000e-003	0.0000	1.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.7000e-004	2.7000e-004	0.0000	0.0000	2.9000e-004

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	tons/yr										MT/yr					
Architectural Coating	5.2000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	9.7000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.7000e-004	2.7000e-004	0.0000	0.0000	2.9000e-004
Total	**1.5000e-003**	**0.0000**	**1.4000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.7000e-004**	**2.7000e-004**	**0.0000**	**0.0000**	**2.9000e-004**

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	tons/yr										MT/yr					
Architectural Coating	5.2000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	9.7000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.4000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.7000e-004	2.7000e-004	0.0000	0.0000	2.9000e-004
Total	**1.5000e-003**	**0.0000**	**1.4000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.7000e-004**	**2.7000e-004**	**0.0000**	**0.0000**	**2.9000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Cottage Creek Dam Spillway Modification Project

Yuba County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	15.00	1000sqft	0.34	15,000.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.4	**Precipitation Freq (Days)**	72
Climate Zone	1			**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

Cottage Creek Dam Spillway Modification Project - Yuba County, Summer

Project Characteristics -

Land Use - Other non-asphalt surfaces proxy for project disturbance area

Construction Phase - Estimated from PD and from client info

Off-road Equipment - Client info

Off-road Equipment - Client info

Off-road Equipment - Paving equipment used as a proxy for concrete mechanical vibrator

Off-road Equipment - Paving equipment used as a proxy for concrete mechanical vibrator

Off-road Equipment - PD. Grader included for hauling trips but 0 equipment emissions

Off-road Equipment - No equipment

Off-road Equipment - Equipment included in dam excavation and dewatering phase

Off-road Equipment - Concrete saw proxy for pavement cutter

Off-road Equipment - Client info

Off-road Equipment - PD

Trips and VMT - Workers = equipment count+. 40 mi one-way to Yuba City, 55 mi to nearest C&D landfill, 260 mi culvert from Fresno, stockpile 3 mi away. Infra removal workers overlap with dam exc phase.
Additional hauling trips and trip lengths from client provided info. Vender trips were accounted for in hauling trips.

Demolition - Removal of 300 ft of pipe and trash rack

Grading - 15,000 sf of cleared vegetation. 1600 cy of soil and 1500 cy of rock moved during dam excavation

Architectural Coating - Arch coating used as a proxy phase for demob

Vehicle Trips - No operational trips

Construction Off-road Equipment Mitigation - AMM 3: Construction BMPs includes watering, 15 mph limit

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	900.00	0.00
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	0.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	0.00
tblArchitecturalCoating	EF_Parking	250.00	0.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	0.00

Cottage Creek Dam Spillway Modification Project - Yuba County, Summer

tblArchitecturalCoating	EF_Residential_Interior	250.00	0.00
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	1.00	10.00
tblConstructionPhase	NumDays	2.00	20.00
tblConstructionPhase	NumDays	10.00	3.00
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	NumDays	100.00	60.00
tblConstructionPhase	NumDays	100.00	13.00
tblConstructionPhase	NumDays	100.00	60.00
tblConstructionPhase	NumDays	5.00	1.00
tblGrading	AcresOfGrading	0.00	0.30
tblGrading	AcresOfGrading	0.00	0.30
tblGrading	MaterialExported	0.00	17,500.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	4.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	3.00
tblTripsAndVMT	HaulingTripLength	20.00	55.00
tblTripsAndVMT	HaulingTripLength	20.00	3.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripLength	20.00	55.00
tblTripsAndVMT	HaulingTripLength	20.00	260.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripNumber	2,188.00	2,720.00
tblTripsAndVMT	HaulingTripNumber	1.00	12.00
tblTripsAndVMT	HaulingTripNumber	0.00	960.00
tblTripsAndVMT	HaulingTripNumber	0.00	6.00
tblTripsAndVMT	HaulingTripNumber	0.00	6.00
tblTripsAndVMT	HaulingTripNumber	0.00	26.00
tblTripsAndVMT	HaulingTripNumber	0.00	120.00
tblTripsAndVMT	VendorTripLength	6.60	260.00

tblTripsAndVMT	VendorTripLength	6.60	40.00
tblTripsAndVMT	VendorTripNumber	2.00	0.00
tblTripsAndVMT	VendorTripNumber	2.00	0.00
tblTripsAndVMT	VendorTripNumber	2.00	0.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripNumber	8.00	10.00
tblTripsAndVMT	WorkerTripNumber	10.00	12.00
tblTripsAndVMT	WorkerTripNumber	6.00	10.00
tblTripsAndVMT	WorkerTripNumber	3.00	6.00
tblTripsAndVMT	WorkerTripNumber	1.00	2.00
tblTripsAndVMT	WorkerTripNumber	6.00	0.00
tblTripsAndVMT	WorkerTripNumber	6.00	0.00
tblVehicleTrips	CC_TL	6.60	0.00
tblVehicleTrips	CNW_TL	6.60	0.00
tblVehicleTrips	CW_TL	14.70	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	4.2580	51.8359	32.9211	0.0768	7.2681	1.7675	9.0355	3.6163	1.6658	5.2821	0.0000	7,704.7460	7,704.7460	1.2276	0.0000	7,735.4373
Maximum	**4.2580**	**51.8359**	**32.9211**	**0.0768**	**7.2681**	**1.7675**	**9.0355**	**3.6163**	**1.6658**	**5.2821**	**0.0000**	**7,704.7460**	**7,704.7460**	**1.2276**	**0.0000**	**7,735.4373**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	4.2580	51.8359	32.9211	0.0768	3.8338	1.7675	5.6013	1.7784	1.6658	3.4442	0.0000	7,704.7460	7,704.7460	1.2276	0.0000	7,735.4373
Maximum	**4.2580**	**51.8359**	**32.9211**	**0.0768**	**3.8338**	**1.7675**	**5.6013**	**1.7784**	**1.6658**	**3.4442**	**0.0000**	**7,704.7460**	**7,704.7460**	**1.2276**	**0.0000**	**7,735.4373**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**47.25**	**0.00**	**38.01**	**50.82**	**0.00**	**34.80**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.3200e-003	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.2800e-003	3.2800e-003	1.0000e-005		3.5000e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	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	**8.3200e-003**	**1.0000e-005**	**1.5400e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**		**3.2800e-003**	**3.2800e-003**	**1.0000e-005**	**0.0000**	**3.5000e-003**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.3200e-003	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.2800e-003	3.2800e-003	1.0000e-005		3.5000e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	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	**8.3200e-003**	**1.0000e-005**	**1.5400e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**		**3.2800e-003**	**3.2800e-003**	**1.0000e-005**	**0.0000**	**3.5000e-003**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	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	Mobilization and Clearing	Site Preparation	7/1/2019	7/12/2019	5	10	
2	Dam Excavation and Dewater	Grading	7/12/2019	8/8/2019	5	20	
3	Infrastructure Removal	Demolition	7/19/2019	7/23/2019	5	3	
4	Pavement Removal	Demolition	7/19/2019	7/19/2019	5	1	
5	Culvert Install (Backfill- 6,000 cy)	Building Construction	8/9/2019	10/31/2019	5	60	
6	Culvert Delivery	Building Construction	8/9/2019	8/27/2019	5	13	
7	Backfill 800 cy Imported	Building Construction	8/9/2019	10/31/2019	5	60	
8	Paving	Paving	11/1/2019	11/2/2019	5	1	
9	Demobilization	Architectural Coating	11/1/2019	11/7/2019	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.34

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
Mobilization and Clearing	Concrete/Industrial Saws	1	8.00	81	0.73

Mobilization and Clearing	Excavators	1	8.00	158	0.38
Mobilization and Clearing	Graders	0	8.00	187	0.41
Mobilization and Clearing	Rubber Tired Dozers	1	8.00	247	0.40
Mobilization and Clearing	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Dam Excavation and Dewater	Concrete/Industrial Saws	0	8.00	81	0.73
Dam Excavation and Dewater	Cranes	1	8.00	231	0.29
Dam Excavation and Dewater	Excavators	2	8.00	158	0.38
Dam Excavation and Dewater	Graders	0	0.00	187	0.41
Dam Excavation and Dewater	Pumps	1	8.00	84	0.74
Dam Excavation and Dewater	Rubber Tired Dozers	0	1.00	247	0.40
Dam Excavation and Dewater	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Infrastructure Removal	Concrete/Industrial Saws	0	8.00	81	0.73
Infrastructure Removal	Rubber Tired Dozers	0	1.00	247	0.40
Infrastructure Removal	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Culvert Install (Backfill- 6,000 cy)	Cranes	1	8.00	231	0.29
Culvert Install (Backfill- 6,000 cy)	Forklifts	0	6.00	89	0.20
Culvert Install (Backfill- 6,000 cy)	Graders	1		187	0.41
Culvert Install (Backfill- 6,000 cy)	Paving Equipment	1		132	0.36
Culvert Install (Backfill- 6,000 cy)	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	0	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Demobilization	Air Compressors	0	6.00	78	0.48
Pavement Removal	Concrete/Industrial Saws	0	8.00	81	0.73
Pavement Removal	Rubber Tired Dozers	0	1.00	247	0.40
Pavement Removal	Tractors/Loaders/Backhoes	0	6.00	97	0.37

Culvert Delivery	Cranes	0	4.00	231	0.29
Culvert Delivery	Forklifts	0	6.00	89	0.20
Culvert Delivery	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Backfill 800 cy Imported	Cranes	0	4.00	231	0.29
Backfill 800 cy Imported	Forklifts	0	6.00	89	0.20
Backfill 800 cy Imported	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

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
Mobilization and Clearing	3	10.00	0.00	0.00	40.00	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Dam Excavation and Dewater	4	12.00	0.00	2,720.00	40.00	6.60	3.00	LD_Mix	HDT_Mix	HHDT
Infrastructure Removal	0	0.00	0.00	12.00	40.00	6.60	55.00	LD_Mix	HDT_Mix	HHDT
Culvert Install (Backfill- 6,000 cy)	3	10.00	0.00	960.00	40.00	260.00	3.00	LD_Mix	HDT_Mix	HHDT
Paving	1	6.00	0.00	6.00	40.00	40.00	40.00	LD_Mix	HDT_Mix	HHDT
Demobilization	0	2.00	0.00	0.00	40.00	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Pavement Removal	0	0.00	0.00	6.00	16.80	6.60	55.00	LD_Mix	HDT_Mix	HHDT
Culvert Delivery	0	0.00	0.00	26.00	16.80	6.60	260.00	LD_Mix	HDT_Mix	HHDT
Backfill 800 cy Imported	0	0.00	0.00	120.00	16.80	6.60	40.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Mobilization and Clearing - 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					6.0539	0.0000	6.0539	3.3137	0.0000	3.3137			0.0000			0.0000
Off-Road	1.8573	18.3448	11.2495	0.0200		0.9475	0.9475		0.8901	0.8901		1,949.2197	1,949.2197	0.4709		1,960.9926
Total	**1.8573**	**18.3448**	**11.2495**	**0.0200**	**6.0539**	**0.9475**	**7.0014**	**3.3137**	**0.8901**	**4.2037**		**1,949.2197**	**1,949.2197**	**0.4709**		**1,960.9926**

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	0.1566	0.1311	1.6159	3.1300e-003	0.3040	2.0100e-003	0.3060	0.0806	1.8600e-003	0.0825		311.3552	311.3552	0.0141		311.7082
Total	**0.1566**	**0.1311**	**1.6159**	**3.1300e-003**	**0.3040**	**2.0100e-003**	**0.3060**	**0.0806**	**1.8600e-003**	**0.0825**		**311.3552**	**311.3552**	**0.0141**		**311.7082**

3.2 Mobilization and Clearing - 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					2.7243	0.0000	2.7243	1.4912	0.0000	1.4912			0.0000			0.0000
Off-Road	1.8573	18.3448	11.2495	0.0200		0.9475	0.9475		0.8901	0.8901	0.0000	1,949.2197	1,949.2197	0.4709		1,960.9926
Total	**1.8573**	**18.3448**	**11.2495**	**0.0200**	**2.7243**	**0.9475**	**3.6718**	**1.4912**	**0.8901**	**2.3812**	**0.0000**	**1,949.2197**	**1,949.2197**	**0.4709**		**1,960.9926**

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	0.1566	0.1311	1.6159	3.1300e-003	0.3040	2.0100e-003	0.3060	0.0806	1.8600e-003	0.0825		311.3552	311.3552	0.0141		311.7082
Total	**0.1566**	**0.1311**	**1.6159**	**3.1300e-003**	**0.3040**	**2.0100e-003**	**0.3060**	**0.0806**	**1.8600e-003**	**0.0825**		**311.3552**	**311.3552**	**0.0141**		**311.7082**

3.3 Dam Excavation and Dewater - 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					0.1902	0.0000	0.1902	0.0281	0.0000	0.0281			0.0000			0.0000
Off-Road	1.4958	15.2046	12.6007	0.0227		0.7512	0.7512		0.7101	0.7101		2,216.4963	2,216.4963	0.5458		2,230.1417
Total	**1.4958**	**15.2046**	**12.6007**	**0.0227**	**0.1902**	**0.7512**	**0.9414**	**0.0281**	**0.7101**	**0.7383**		**2,216.4963**	**2,216.4963**	**0.5458**		**2,230.1417**

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	0.5604	17.9980	5.5160	0.0273	0.3552	0.0643	0.4196	0.0973	0.0615	0.1588		2,854.0486	2,854.0486	0.1799		2,858.5451
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1879	0.1574	1.9391	3.7600e-003	0.3648	2.4200e-003	0.3672	0.0967	2.2300e-003	0.0989		373.6262	373.6262	0.0169		374.0498
Total	**0.7483**	**18.1553**	**7.4551**	**0.0311**	**0.7200**	**0.0667**	**0.7868**	**0.1940**	**0.0638**	**0.2577**		**3,227.6748**	**3,227.6748**	**0.1968**		**3,232.5949**

3.3 Dam Excavation and Dewater - 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					0.0856	0.0000	0.0856	0.0127	0.0000	0.0127			0.0000			0.0000
Off-Road	1.4958	15.2046	12.6007	0.0227		0.7512	0.7512		0.7101	0.7101	0.0000	2,216.4963	2,216.4963	0.5458		2,230.1417
Total	**1.4958**	**15.2046**	**12.6007**	**0.0227**	**0.0856**	**0.7512**	**0.8368**	**0.0127**	**0.7101**	**0.7228**	**0.0000**	**2,216.4963**	**2,216.4963**	**0.5458**		**2,230.1417**

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	0.5604	17.9980	5.5160	0.0273	0.3552	0.0643	0.4196	0.0973	0.0615	0.1588		2,854.0486	2,854.0486	0.1799		2,858.5451
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1879	0.1574	1.9391	3.7600e-003	0.3648	2.4200e-003	0.3672	0.0967	2.2300e-003	0.0989		373.6262	373.6262	0.0169		374.0498
Total	**0.7483**	**18.1553**	**7.4551**	**0.0311**	**0.7200**	**0.0667**	**0.7868**	**0.1940**	**0.0638**	**0.2577**		**3,227.6748**	**3,227.6748**	**0.1968**		**3,232.5949**

3.4 Infrastructure 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					
Fugitive Dust					0.1067	0.0000	0.1067	0.0162	0.0000	0.0162			0.0000			0.0000
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**	**0.1067**	**0.0000**	**0.1067**	**0.0162**	**0.0000**	**0.0162**		**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	0.0993	3.0895	0.7907	8.4400e-003	0.1901	0.0237	0.2139	0.0519	0.0227	0.0746		883.8241	883.8241	0.0101		884.0767
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	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	**0.0993**	**3.0895**	**0.7907**	**8.4400e-003**	**0.1901**	**0.0237**	**0.2139**	**0.0519**	**0.0227**	**0.0746**		**883.8241**	**883.8241**	**0.0101**		**884.0767**

3.4 Infrastructure 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					
Fugitive Dust					0.0480	0.0000	0.0480	7.2700e-003	0.0000	7.2700e-003			0.0000			0.0000
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**	**0.0480**	**0.0000**	**0.0480**	**7.2700e-003**	**0.0000**	**7.2700e-003**	**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	0.0993	3.0895	0.7907	8.4400e-003	0.1901	0.0237	0.2139	0.0519	0.0227	0.0746		883.8241	883.8241	0.0101		884.0767
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	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	**0.0993**	**3.0895**	**0.7907**	**8.4400e-003**	**0.1901**	**0.0237**	**0.2139**	**0.0519**	**0.0227**	**0.0746**		**883.8241**	**883.8241**	**0.0101**		**884.0767**

3.5 Pavement 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	0.0000	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	0.1490	4.6343	1.1860	0.0127	0.2852	0.0356	0.3208	0.0779	0.0340	0.1119		1,325.7361	1,325.7361	0.0152		1,326.1151
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	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	**0.1490**	**4.6343**	**1.1860**	**0.0127**	**0.2852**	**0.0356**	**0.3208**	**0.0779**	**0.0340**	**0.1119**		**1,325.7361**	**1,325.7361**	**0.0152**		**1,326.1151**

3.5 Pavement 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	0.0000	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	0.1490	4.6343	1.1860	0.0127	0.2852	0.0356	0.3208	0.0779	0.0340	0.1119		1,325.7361	1,325.7361	0.0152		1,326.1151
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	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	**0.1490**	**4.6343**	**1.1860**	**0.0127**	**0.2852**	**0.0356**	**0.3208**	**0.0779**	**0.0340**	**0.1119**		**1,325.7361**	**1,325.7361**	**0.0152**		**1,326.1151**

3.6 Culvert Install (Backfill- 6,000 cy) - 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	0.5040	6.0070	2.2930	5.7700e-003		0.2546	0.2546		0.2343	0.2343		571.2106	571.2106	0.1807		575.7287
Total	**0.5040**	**6.0070**	**2.2930**	**5.7700e-003**		**0.2546**	**0.2546**		**0.2343**	**0.2343**		**571.2106**	**571.2106**	**0.1807**		**575.7287**

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	0.0659	2.1174	0.6489	3.2100e-003	0.0418	7.5700e-003	0.0494	0.0114	7.2400e-003	0.0187		335.7704	335.7704	0.0212		336.2994
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1566	0.1311	1.6159	3.1300e-003	0.3040	2.0100e-003	0.3060	0.0806	1.8600e-003	0.0825		311.3552	311.3552	0.0141		311.7082
Total	**0.2225**	**2.2486**	**2.2648**	**6.3400e-003**	**0.3458**	**9.5800e-003**	**0.3554**	**0.0920**	**9.1000e-003**	**0.1011**		**647.1256**	**647.1256**	**0.0353**		**648.0076**

3.6 Culvert Install (Backfill- 6,000 cy) - 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	0.5040	6.0070	2.2930	5.7700e-003		0.2546	0.2546		0.2343	0.2343	0.0000	571.2106	571.2106	0.1807		575.7287
Total	**0.5040**	**6.0070**	**2.2930**	**5.7700e-003**		**0.2546**	**0.2546**		**0.2343**	**0.2343**	**0.0000**	**571.2106**	**571.2106**	**0.1807**		**575.7287**

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	0.0659	2.1174	0.6489	3.2100e-003	0.0418	7.5700e-003	0.0494	0.0114	7.2400e-003	0.0187		335.7704	335.7704	0.0212		336.2994
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1566	0.1311	1.6159	3.1300e-003	0.3040	2.0100e-003	0.3060	0.0806	1.8600e-003	0.0825		311.3552	311.3552	0.0141		311.7082
Total	**0.2225**	**2.2486**	**2.2648**	**6.3400e-003**	**0.3458**	**9.5800e-003**	**0.3554**	**0.0920**	**9.1000e-003**	**0.1011**		**647.1256**	**647.1256**	**0.0353**		**648.0076**

3.7 Culvert Delivery - 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	0.2129	6.5912	1.6340	0.0193	0.4493	0.0549	0.5041	0.1227	0.0525	0.1752		2,018.6014	2,018.6014	0.0146		2,018.9651
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	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	**0.2129**	**6.5912**	**1.6340**	**0.0193**	**0.4493**	**0.0549**	**0.5041**	**0.1227**	**0.0525**	**0.1752**		**2,018.6014**	**2,018.6014**	**0.0146**		**2,018.9651**

3.7 Culvert Delivery - 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	0.2129	6.5912	1.6340	0.0193	0.4493	0.0549	0.5041	0.1227	0.0525	0.1752		2,018.6014	2,018.6014	0.0146		2,018.9651
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	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	**0.2129**	**6.5912**	**1.6340**	**0.0193**	**0.4493**	**0.0549**	**0.5041**	**0.1227**	**0.0525**	**0.1752**		**2,018.6014**	**2,018.6014**	**0.0146**		**2,018.9651**

3.8 Backfill 800 cy Imported - 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	0.0377	1.1755	0.3047	3.1200e-003	0.0692	8.7100e-003	0.0779	0.0189	8.3300e-003	0.0272		326.5445	326.5445	4.3600e-003		326.6535
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	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	**0.0377**	**1.1755**	**0.3047**	**3.1200e-003**	**0.0692**	**8.7100e-003**	**0.0779**	**0.0189**	**8.3300e-003**	**0.0272**		**326.5445**	**326.5445**	**4.3600e-003**		**326.6535**

3.8 Backfill 800 cy Imported - 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	0.0377	1.1755	0.3047	3.1200e-003	0.0692	8.7100e-003	0.0779	0.0189	8.3300e-003	0.0272		326.5445	326.5445	4.3600e-003		326.6535
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	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	**0.0377**	**1.1755**	**0.3047**	**3.1200e-003**	**0.0692**	**8.7100e-003**	**0.0779**	**0.0189**	**8.3300e-003**	**0.0272**		**326.5445**	**326.5445**	**4.3600e-003**		**326.6535**

3.9 Paving - 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	0.2877	3.1246	2.9017	4.7000e-003		0.1530	0.1530		0.1408	0.1408		465.4982	465.4982	0.1473		469.1802
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.2877**	**3.1246**	**2.9017**	**4.7000e-003**		**0.1530**	**0.1530**		**0.1408**	**0.1408**		**465.4982**	**465.4982**	**0.1473**		**469.1802**

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	0.1131	3.5265	0.9141	9.3600e-003	0.2075	0.0261	0.2336	0.0567	0.0250	0.0817		979.6335	979.6335	0.0131		979.9604
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0940	0.0787	0.9695	1.8800e-003	0.1824	1.2100e-003	0.1836	0.0484	1.1100e-003	0.0495		186.8131	186.8131	8.4700e-003		187.0249
Total	**0.2071**	**3.6052**	**1.8836**	**0.0112**	**0.3899**	**0.0273**	**0.4172**	**0.1050**	**0.0261**	**0.1311**		**1,166.4466**	**1,166.4466**	**0.0216**		**1,166.9853**

3.9 Paving - 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	0.2877	3.1246	2.9017	4.7000e-003		0.1530	0.1530		0.1408	0.1408	0.0000	465.4982	465.4982	0.1473		469.1802
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.2877**	**3.1246**	**2.9017**	**4.7000e-003**		**0.1530**	**0.1530**		**0.1408**	**0.1408**	**0.0000**	**465.4982**	**465.4982**	**0.1473**		**469.1802**

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	0.1131	3.5265	0.9141	9.3600e-003	0.2075	0.0261	0.2336	0.0567	0.0250	0.0817		979.6335	979.6335	0.0131		979.9604
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0940	0.0787	0.9695	1.8800e-003	0.1824	1.2100e-003	0.1836	0.0484	1.1100e-003	0.0495		186.8131	186.8131	8.4700e-003		187.0249
Total	**0.2071**	**3.6052**	**1.8836**	**0.0112**	**0.3899**	**0.0273**	**0.4172**	**0.1050**	**0.0261**	**0.1311**		**1,166.4466**	**1,166.4466**	**0.0216**		**1,166.9853**

3.10 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					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
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	0.0000	0.0000	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	0.0313	0.0262	0.3232	6.3000e-004	0.0608	4.0000e-004	0.0612	0.0161	3.7000e-004	0.0165		62.2710	62.2710	2.8200e-003		62.3416
Total	**0.0313**	**0.0262**	**0.3232**	**6.3000e-004**	**0.0608**	**4.0000e-004**	**0.0612**	**0.0161**	**3.7000e-004**	**0.0165**		**62.2710**	**62.2710**	**2.8200e-003**		**62.3416**

3.10 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					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
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	0.0000	0.0000	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	0.0313	0.0262	0.3232	6.3000e-004	0.0608	4.0000e-004	0.0612	0.0161	3.7000e-004	0.0165		62.2710	62.2710	2.8200e-003		62.3416
Total	**0.0313**	**0.0262**	**0.3232**	**6.3000e-004**	**0.0608**	**4.0000e-004**	**0.0612**	**0.0161**	**3.7000e-004**	**0.0165**		**62.2710**	**62.2710**	**2.8200e-003**		**62.3416**

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

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	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 Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.598783	0.030490	0.175247	0.121692	0.032191	0.006113	0.008473	0.014891	0.001694	0.002175	0.006069	0.001159	0.001023

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
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

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 Non-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
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 Non-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
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

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 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	8.3200e-003	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.2800e-003	3.2800e-003	1.0000e-005		3.5000e-003
Unmitigated	8.3200e-003	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.2800e-003	3.2800e-003	1.0000e-005		3.5000e-003

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	2.8600e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.3100e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.4000e-004	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.2800e-003	3.2800e-003	1.0000e-005		3.5000e-003
Total	**8.3100e-003**	**1.0000e-005**	**1.5400e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**3.2800e-003**	**3.2800e-003**	**1.0000e-005**		**3.5000e-003**

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	2.8600e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.3100e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.4000e-004	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.2800e-003	3.2800e-003	1.0000e-005		3.5000e-003
Total	**8.3100e-003**	**1.0000e-005**	**1.5400e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**3.2800e-003**	**3.2800e-003**	**1.0000e-005**		**3.5000e-003**

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Cottage Creek Dam Spillway Modification Project

Yuba County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	15.00	1000sqft	0.34	15,000.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.4	**Precipitation Freq (Days)**	72
Climate Zone	1			**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

Project Characteristics -

Land Use - Other non-asphalt surfaces proxy for project disturbance area

Construction Phase - Estimated from PD and from client info

Off-road Equipment - Client info

Off-road Equipment - Client info

Off-road Equipment - Paving equipment used as a proxy for concrete mechanical vibrator

Off-road Equipment - Paving equipment used as a proxy for concrete mechanical vibrator

Off-road Equipment - PD. Grader included for hauling trips but 0 equipment emissions

Off-road Equipment - No equipment

Off-road Equipment - Equipment included in dam excavation and dewatering phase

Off-road Equipment - Concrete saw proxy for pavement cutter

Off-road Equipment - Client info

Off-road Equipment - PD

Trips and VMT - Workers = equipment count+. 40 mi one-way to Yuba City, 55 mi to nearest C&D landfill, 260 mi culvert from Fresno, stockpile 3 mi away. Infra removal workers overlap with dam exc phase.
Additional hauling trips and trip lengths from client provided info. Vender trips were accounted for in hauling trips.

Demolition - Removal of 300 ft of pipe and trash rack

Grading - 15,000 sf of cleared vegetation. 1600 cy of soil and 1500 cy of rock moved during dam excavation

Architectural Coating - Arch coating used as a proxy phase for demob

Vehicle Trips - No operational trips

Construction Off-road Equipment Mitigation - AMM 3: Construction BMPs includes watering, 15 mph limit

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	900.00	0.00
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	0.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	0.00
tblArchitecturalCoating	EF_Parking	250.00	0.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	0.00

Cottage Creek Dam Spillway Modification Project - Yuba County, Winter

tblArchitecturalCoating	EF_Residential_Interior	250.00	0.00
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	1.00	10.00
tblConstructionPhase	NumDays	2.00	20.00
tblConstructionPhase	NumDays	10.00	3.00
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	NumDays	100.00	60.00
tblConstructionPhase	NumDays	100.00	13.00
tblConstructionPhase	NumDays	100.00	60.00
tblConstructionPhase	NumDays	5.00	1.00
tblGrading	AcresOfGrading	0.00	0.30
tblGrading	AcresOfGrading	0.00	0.30
tblGrading	MaterialExported	0.00	17,500.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	4.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	3.00
tblTripsAndVMT	HaulingTripLength	20.00	55.00
tblTripsAndVMT	HaulingTripLength	20.00	3.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripLength	20.00	55.00
tblTripsAndVMT	HaulingTripLength	20.00	260.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripNumber	2,188.00	2,720.00
tblTripsAndVMT	HaulingTripNumber	1.00	12.00
tblTripsAndVMT	HaulingTripNumber	0.00	960.00
tblTripsAndVMT	HaulingTripNumber	0.00	6.00
tblTripsAndVMT	HaulingTripNumber	0.00	6.00
tblTripsAndVMT	HaulingTripNumber	0.00	26.00
tblTripsAndVMT	HaulingTripNumber	0.00	120.00
tblTripsAndVMT	VendorTripLength	6.60	260.00

tblTripsAndVMT	VendorTripLength	6.60	40.00
tblTripsAndVMT	VendorTripNumber	2.00	0.00
tblTripsAndVMT	VendorTripNumber	2.00	0.00
tblTripsAndVMT	VendorTripNumber	2.00	0.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripNumber	8.00	10.00
tblTripsAndVMT	WorkerTripNumber	10.00	12.00
tblTripsAndVMT	WorkerTripNumber	6.00	10.00
tblTripsAndVMT	WorkerTripNumber	3.00	6.00
tblTripsAndVMT	WorkerTripNumber	1.00	2.00
tblTripsAndVMT	WorkerTripNumber	6.00	0.00
tblTripsAndVMT	WorkerTripNumber	6.00	0.00
tblVehicleTrips	CC_TL	6.60	0.00
tblVehicleTrips	CNW_TL	6.60	0.00
tblVehicleTrips	CW_TL	14.70	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	4.3334	51.8581	33.3186	0.0745	7.2681	1.7748	9.0429	3.6163	1.6729	5.2892	0.0000	7,460.1797	7,460.1797	1.2519	0.0000	7,491.4766
Maximum	**4.3334**	**51.8581**	**33.3186**	**0.0745**	**7.2681**	**1.7748**	**9.0429**	**3.6163**	**1.6729**	**5.2892**	**0.0000**	**7,460.1797**	**7,460.1797**	**1.2519**	**0.0000**	**7,491.4766**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	4.3334	51.8581	33.3186	0.0745	3.8338	1.7748	5.6087	1.7784	1.6729	3.4512	0.0000	7,460.1797	7,460.1797	1.2519	0.0000	7,491.4766
Maximum	**4.3334**	**51.8581**	**33.3186**	**0.0745**	**3.8338**	**1.7748**	**5.6087**	**1.7784**	**1.6729**	**3.4512**	**0.0000**	**7,460.1797**	**7,460.1797**	**1.2519**	**0.0000**	**7,491.4766**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**47.25**	**0.00**	**37.98**	**50.82**	**0.00**	**34.75**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.3200e-003	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.2800e-003	3.2800e-003	1.0000e-005		3.5000e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	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	**8.3200e-003**	**1.0000e-005**	**1.5400e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**		**3.2800e-003**	**3.2800e-003**	**1.0000e-005**	**0.0000**	**3.5000e-003**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8.3200e-003	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.2800e-003	3.2800e-003	1.0000e-005		3.5000e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	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	**8.3200e-003**	**1.0000e-005**	**1.5400e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**		**3.2800e-003**	**3.2800e-003**	**1.0000e-005**	**0.0000**	**3.5000e-003**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	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	Mobilization and Clearing	Site Preparation	7/1/2019	7/12/2019	5	10	
2	Dam Excavation and Dewater	Grading	7/12/2019	8/8/2019	5	20	
3	Infrastructure Removal	Demolition	7/19/2019	7/23/2019	5	3	
4	Pavement Removal	Demolition	7/19/2019	7/19/2019	5	1	
5	Culvert Install (Backfill- 6,000 cy)	Building Construction	8/9/2019	10/31/2019	5	60	
6	Culvert Delivery	Building Construction	8/9/2019	8/27/2019	5	13	
7	Backfill 800 cy Imported	Building Construction	8/9/2019	10/31/2019	5	60	
8	Paving	Paving	11/1/2019	11/2/2019	5	1	
9	Demobilization	Architectural Coating	11/1/2019	11/7/2019	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.34

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
Mobilization and Clearing	Concrete/Industrial Saws	1	8.00	81	0.73

Mobilization and Clearing	Excavators	1	8.00	158	0.38
Mobilization and Clearing	Graders	0	8.00	187	0.41
Mobilization and Clearing	Rubber Tired Dozers	1	8.00	247	0.40
Mobilization and Clearing	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Dam Excavation and Dewater	Concrete/Industrial Saws	0	8.00	81	0.73
Dam Excavation and Dewater	Cranes	1	8.00	231	0.29
Dam Excavation and Dewater	Excavators	2	8.00	158	0.38
Dam Excavation and Dewater	Graders	0	0.00	187	0.41
Dam Excavation and Dewater	Pumps	1	8.00	84	0.74
Dam Excavation and Dewater	Rubber Tired Dozers	0	1.00	247	0.40
Dam Excavation and Dewater	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Infrastructure Removal	Concrete/Industrial Saws	0	8.00	81	0.73
Infrastructure Removal	Rubber Tired Dozers	0	1.00	247	0.40
Infrastructure Removal	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Culvert Install (Backfill- 6,000 cy)	Cranes	1	8.00	231	0.29
Culvert Install (Backfill- 6,000 cy)	Forklifts	0	6.00	89	0.20
Culvert Install (Backfill- 6,000 cy)	Graders	1		187	0.41
Culvert Install (Backfill- 6,000 cy)	Paving Equipment	1		132	0.36
Culvert Install (Backfill- 6,000 cy)	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	0	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Demobilization	Air Compressors	0	6.00	78	0.48
Pavement Removal	Concrete/Industrial Saws	0	8.00	81	0.73
Pavement Removal	Rubber Tired Dozers	0	1.00	247	0.40
Pavement Removal	Tractors/Loaders/Backhoes	0	6.00	97	0.37

Culvert Delivery	Cranes	0	4.00	231	0.29
Culvert Delivery	Forklifts	0	6.00	89	0.20
Culvert Delivery	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Backfill 800 cy Imported	Cranes	0	4.00	231	0.29
Backfill 800 cy Imported	Forklifts	0	6.00	89	0.20
Backfill 800 cy Imported	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

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
Mobilization and Clearing	3	10.00	0.00	0.00	40.00	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Dam Excavation and Dewater	4	12.00	0.00	2,720.00	40.00	6.60	3.00	LD_Mix	HDT_Mix	HHDT
Infrastructure Removal	0	0.00	0.00	12.00	40.00	6.60	55.00	LD_Mix	HDT_Mix	HHDT
Culvert Install (Backfill- 6,000 cy)	3	10.00	0.00	960.00	40.00	260.00	3.00	LD_Mix	HDT_Mix	HHDT
Paving	1	6.00	0.00	6.00	40.00	40.00	40.00	LD_Mix	HDT_Mix	HHDT
Demobilization	0	2.00	0.00	0.00	40.00	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Pavement Removal	0	0.00	0.00	6.00	16.80	6.60	55.00	LD_Mix	HDT_Mix	HHDT
Culvert Delivery	0	0.00	0.00	26.00	16.80	6.60	260.00	LD_Mix	HDT_Mix	HHDT
Backfill 800 cy Imported	0	0.00	0.00	120.00	16.80	6.60	40.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Mobilization and Clearing - 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					6.0539	0.0000	6.0539	3.3137	0.0000	3.3137			0.0000			0.0000
Off-Road	1.8573	18.3448	11.2495	0.0200		0.9475	0.9475		0.8901	0.8901		1,949.2197	1,949.2197	0.4709		1,960.9926
Total	**1.8573**	**18.3448**	**11.2495**	**0.0200**	**6.0539**	**0.9475**	**7.0014**	**3.3137**	**0.8901**	**4.2037**		**1,949.2197**	**1,949.2197**	**0.4709**		**1,960.9926**

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	0.1641	0.1661	1.3198	2.7400e-003	0.3040	2.0100e-003	0.3060	0.0806	1.8600e-003	0.0825		272.8168	272.8168	0.0122		273.1212
Total	**0.1641**	**0.1661**	**1.3198**	**2.7400e-003**	**0.3040**	**2.0100e-003**	**0.3060**	**0.0806**	**1.8600e-003**	**0.0825**		**272.8168**	**272.8168**	**0.0122**		**273.1212**

3.2 Mobilization and Clearing - 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					2.7243	0.0000	2.7243	1.4912	0.0000	1.4912			0.0000			0.0000
Off-Road	1.8573	18.3448	11.2495	0.0200		0.9475	0.9475		0.8901	0.8901	0.0000	1,949.2197	1,949.2197	0.4709		1,960.9926
Total	**1.8573**	**18.3448**	**11.2495**	**0.0200**	**2.7243**	**0.9475**	**3.6718**	**1.4912**	**0.8901**	**2.3812**	**0.0000**	**1,949.2197**	**1,949.2197**	**0.4709**		**1,960.9926**

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	0.1641	0.1661	1.3198	2.7400e-003	0.3040	2.0100e-003	0.3060	0.0806	1.8600e-003	0.0825		272.8168	272.8168	0.0122		273.1212
Total	**0.1641**	**0.1661**	**1.3198**	**2.7400e-003**	**0.3040**	**2.0100e-003**	**0.3060**	**0.0806**	**1.8600e-003**	**0.0825**		**272.8168**	**272.8168**	**0.0122**		**273.1212**

3.3 Dam Excavation and Dewater - 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					0.1902	0.0000	0.1902	0.0281	0.0000	0.0281			0.0000			0.0000
Off-Road	1.4958	15.2046	12.6007	0.0227		0.7512	0.7512		0.7101	0.7101		2,216.4963	2,216.4963	0.5458		2,230.1417
Total	**1.4958**	**15.2046**	**12.6007**	**0.0227**	**0.1902**	**0.7512**	**0.9414**	**0.0281**	**0.7101**	**0.7383**		**2,216.4963**	**2,216.4963**	**0.5458**		**2,230.1417**

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	0.6192	17.9433	6.5649	0.0258	0.3552	0.0717	0.4269	0.0973	0.0686	0.1659		2,694.2668	2,694.2668	0.2084		2,699.4757
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1970	0.1993	1.5838	3.2900e-003	0.3648	2.4200e-003	0.3672	0.0967	2.2300e-003	0.0989		327.3802	327.3802	0.0146		327.7454
Total	**0.8162**	**18.1427**	**8.1486**	**0.0291**	**0.7200**	**0.0741**	**0.7941**	**0.1940**	**0.0708**	**0.2648**		**3,021.6469**	**3,021.6469**	**0.2230**		**3,027.2211**

3.3 Dam Excavation and Dewater - 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					0.0856	0.0000	0.0856	0.0127	0.0000	0.0127			0.0000			0.0000
Off-Road	1.4958	15.2046	12.6007	0.0227		0.7512	0.7512		0.7101	0.7101	0.0000	2,216.4963	2,216.4963	0.5458		2,230.1417
Total	**1.4958**	**15.2046**	**12.6007**	**0.0227**	**0.0856**	**0.7512**	**0.8368**	**0.0127**	**0.7101**	**0.7228**	**0.0000**	**2,216.4963**	**2,216.4963**	**0.5458**		**2,230.1417**

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	0.6192	17.9433	6.5649	0.0258	0.3552	0.0717	0.4269	0.0973	0.0686	0.1659		2,694.2668	2,694.2668	0.2084		2,699.4757
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1970	0.1993	1.5838	3.2900e-003	0.3648	2.4200e-003	0.3672	0.0967	2.2300e-003	0.0989		327.3802	327.3802	0.0146		327.7454
Total	**0.8162**	**18.1427**	**8.1486**	**0.0291**	**0.7200**	**0.0741**	**0.7941**	**0.1940**	**0.0708**	**0.2648**		**3,021.6469**	**3,021.6469**	**0.2230**		**3,027.2211**

3.4 Infrastructure 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					
Fugitive Dust					0.1067	0.0000	0.1067	0.0162	0.0000	0.0162			0.0000			0.0000
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**	**0.1067**	**0.0000**	**0.1067**	**0.0162**	**0.0000**	**0.0162**		**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	0.1013	3.3070	0.8193	8.4000e-003	0.1901	0.0239	0.2141	0.0519	0.0229	0.0748		879.1246	879.1246	0.0109		879.3961
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	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	**0.1013**	**3.3070**	**0.8193**	**8.4000e-003**	**0.1901**	**0.0239**	**0.2141**	**0.0519**	**0.0229**	**0.0748**		**879.1246**	**879.1246**	**0.0109**		**879.3961**

3.4 Infrastructure 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					
Fugitive Dust					0.0480	0.0000	0.0480	7.2700e-003	0.0000	7.2700e-003			0.0000			0.0000
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**	**0.0480**	**0.0000**	**0.0480**	**7.2700e-003**	**0.0000**	**7.2700e-003**	**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	0.1013	3.3070	0.8193	8.4000e-003	0.1901	0.0239	0.2141	0.0519	0.0229	0.0748		879.1246	879.1246	0.0109		879.3961
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	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	**0.1013**	**3.3070**	**0.8193**	**8.4000e-003**	**0.1901**	**0.0239**	**0.2141**	**0.0519**	**0.0229**	**0.0748**		**879.1246**	**879.1246**	**0.0109**		**879.3961**

3.5 Pavement 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	0.0000	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	0.1520	4.9605	1.2289	0.0126	0.2852	0.0359	0.3211	0.0779	0.0343	0.1122		1,318.6869	1,318.6869	0.0163		1,319.0941
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	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	**0.1520**	**4.9605**	**1.2289**	**0.0126**	**0.2852**	**0.0359**	**0.3211**	**0.0779**	**0.0343**	**0.1122**		**1,318.6869**	**1,318.6869**	**0.0163**		**1,319.0941**

3.5 Pavement 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	0.0000	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	0.1520	4.9605	1.2289	0.0126	0.2852	0.0359	0.3211	0.0779	0.0343	0.1122		1,318.6869	1,318.6869	0.0163		1,319.0941
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	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	**0.1520**	**4.9605**	**1.2289**	**0.0126**	**0.2852**	**0.0359**	**0.3211**	**0.0779**	**0.0343**	**0.1122**		**1,318.6869**	**1,318.6869**	**0.0163**		**1,319.0941**

3.6 Culvert Install (Backfill- 6,000 cy) - 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	0.5040	6.0070	2.2930	5.7700e-003		0.2546	0.2546		0.2343	0.2343		571.2106	571.2106	0.1807		575.7287
Total	**0.5040**	**6.0070**	**2.2930**	**5.7700e-003**		**0.2546**	**0.2546**		**0.2343**	**0.2343**		**571.2106**	**571.2106**	**0.1807**		**575.7287**

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	0.0728	2.1110	0.7723	3.0400e-003	0.0418	8.4400e-003	0.0502	0.0114	8.0700e-003	0.0195		316.9726	316.9726	0.0245		317.5854
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1641	0.1661	1.3198	2.7400e-003	0.3040	2.0100e-003	0.3060	0.0806	1.8600e-003	0.0825		272.8168	272.8168	0.0122		273.1212
Total	**0.2370**	**2.2771**	**2.0921**	**5.7800e-003**	**0.3458**	**0.0105**	**0.3562**	**0.0920**	**9.9300e-003**	**0.1020**		**589.7894**	**589.7894**	**0.0367**		**590.7066**

3.6 Culvert Install (Backfill- 6,000 cy) - 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	0.5040	6.0070	2.2930	5.7700e-003		0.2546	0.2546		0.2343	0.2343	0.0000	571.2106	571.2106	0.1807		575.7287
Total	**0.5040**	**6.0070**	**2.2930**	**5.7700e-003**		**0.2546**	**0.2546**		**0.2343**	**0.2343**	**0.0000**	**571.2106**	**571.2106**	**0.1807**		**575.7287**

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	0.0728	2.1110	0.7723	3.0400e-003	0.0418	8.4400e-003	0.0502	0.0114	8.0700e-003	0.0195		316.9726	316.9726	0.0245		317.5854
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1641	0.1661	1.3198	2.7400e-003	0.3040	2.0100e-003	0.3060	0.0806	1.8600e-003	0.0825		272.8168	272.8168	0.0122		273.1212
Total	**0.2370**	**2.2771**	**2.0921**	**5.7800e-003**	**0.3458**	**0.0105**	**0.3562**	**0.0920**	**9.9300e-003**	**0.1020**		**589.7894**	**589.7894**	**0.0367**		**590.7066**

3.7 Culvert Delivery - 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	0.2145	7.1319	1.6440	0.0193	0.4493	0.0550	0.5042	0.1227	0.0526	0.1753		2,016.2517	2,016.2517	0.0148		2,016.6206
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	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	**0.2145**	**7.1319**	**1.6440**	**0.0193**	**0.4493**	**0.0550**	**0.5042**	**0.1227**	**0.0526**	**0.1753**		**2,016.2517**	**2,016.2517**	**0.0148**		**2,016.6206**

3.7 Culvert Delivery - 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	0.2145	7.1319	1.6440	0.0193	0.4493	0.0550	0.5042	0.1227	0.0526	0.1753		2,016.2517	2,016.2517	0.0148		2,016.6206
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	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	**0.2145**	**7.1319**	**1.6440**	**0.0193**	**0.4493**	**0.0550**	**0.5042**	**0.1227**	**0.0526**	**0.1753**		**2,016.2517**	**2,016.2517**	**0.0148**		**2,016.6206**

3.8 Backfill 800 cy Imported - 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	0.0387	1.2527	0.3193	3.1000e-003	0.0692	8.8200e-003	0.0780	0.0189	8.4300e-003	0.0273		324.1948	324.1948	4.7500e-003		324.3135
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	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	**0.0387**	**1.2527**	**0.3193**	**3.1000e-003**	**0.0692**	**8.8200e-003**	**0.0780**	**0.0189**	**8.4300e-003**	**0.0273**		**324.1948**	**324.1948**	**4.7500e-003**		**324.3135**

3.8 Backfill 800 cy Imported - 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	0.0387	1.2527	0.3193	3.1000e-003	0.0692	8.8200e-003	0.0780	0.0189	8.4300e-003	0.0273		324.1948	324.1948	4.7500e-003		324.3135
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	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	**0.0387**	**1.2527**	**0.3193**	**3.1000e-003**	**0.0692**	**8.8200e-003**	**0.0780**	**0.0189**	**8.4300e-003**	**0.0273**		**324.1948**	**324.1948**	**4.7500e-003**		**324.3135**

3.9 Paving - 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	0.2877	3.1246	2.9017	4.7000e-003		0.1530	0.1530		0.1408	0.1408		465.4982	465.4982	0.1473		469.1802
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.2877**	**3.1246**	**2.9017**	**4.7000e-003**		**0.1530**	**0.1530**		**0.1408**	**0.1408**		**465.4982**	**465.4982**	**0.1473**		**469.1802**

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	0.1160	3.7580	0.9580	9.2900e-003	0.2075	0.0265	0.2339	0.0567	0.0253	0.0820		972.5843	972.5843	0.0142		972.9404
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0985	0.0997	0.7919	1.6500e-003	0.1824	1.2100e-003	0.1836	0.0484	1.1100e-003	0.0495		163.6901	163.6901	7.3100e-003		163.8727
Total	**0.2145**	**3.8576**	**1.7499**	**0.0109**	**0.3899**	**0.0277**	**0.4175**	**0.1050**	**0.0264**	**0.1314**		**1,136.2744**	**1,136.2744**	**0.0216**		**1,136.8131**

3.9 Paving - 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	0.2877	3.1246	2.9017	4.7000e-003		0.1530	0.1530		0.1408	0.1408	0.0000	465.4982	465.4982	0.1473		469.1802
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.2877**	**3.1246**	**2.9017**	**4.7000e-003**		**0.1530**	**0.1530**		**0.1408**	**0.1408**	**0.0000**	**465.4982**	**465.4982**	**0.1473**		**469.1802**

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	0.1160	3.7580	0.9580	9.2900e-003	0.2075	0.0265	0.2339	0.0567	0.0253	0.0820		972.5843	972.5843	0.0142		972.9404
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0985	0.0997	0.7919	1.6500e-003	0.1824	1.2100e-003	0.1836	0.0484	1.1100e-003	0.0495		163.6901	163.6901	7.3100e-003		163.8727
Total	**0.2145**	**3.8576**	**1.7499**	**0.0109**	**0.3899**	**0.0277**	**0.4175**	**0.1050**	**0.0264**	**0.1314**		**1,136.2744**	**1,136.2744**	**0.0216**		**1,136.8131**

3.10 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					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
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	0.0000	0.0000	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	0.0328	0.0332	0.2640	5.5000e-004	0.0608	4.0000e-004	0.0612	0.0161	3.7000e-004	0.0165		54.5634	54.5634	2.4400e-003		54.6242
Total	**0.0328**	**0.0332**	**0.2640**	**5.5000e-004**	**0.0608**	**4.0000e-004**	**0.0612**	**0.0161**	**3.7000e-004**	**0.0165**		**54.5634**	**54.5634**	**2.4400e-003**		**54.6242**

3.10 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					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
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	0.0000	0.0000	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	0.0328	0.0332	0.2640	5.5000e-004	0.0608	4.0000e-004	0.0612	0.0161	3.7000e-004	0.0165		54.5634	54.5634	2.4400e-003		54.6242
Total	**0.0328**	**0.0332**	**0.2640**	**5.5000e-004**	**0.0608**	**4.0000e-004**	**0.0612**	**0.0161**	**3.7000e-004**	**0.0165**		**54.5634**	**54.5634**	**2.4400e-003**		**54.6242**

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

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	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 Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.598783	0.030490	0.175247	0.121692	0.032191	0.006113	0.008473	0.014891	0.001694	0.002175	0.006069	0.001159	0.001023

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
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

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 Non-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
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 Non-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
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

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 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	8.3200e-003	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.2800e-003	3.2800e-003	1.0000e-005		3.5000e-003
Unmitigated	8.3200e-003	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.2800e-003	3.2800e-003	1.0000e-005		3.5000e-003

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	2.8600e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.3100e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.4000e-004	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.2800e-003	3.2800e-003	1.0000e-005		3.5000e-003
Total	**8.3100e-003**	**1.0000e-005**	**1.5400e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**3.2800e-003**	**3.2800e-003**	**1.0000e-005**		**3.5000e-003**

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	2.8600e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.3100e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.4000e-004	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.2800e-003	3.2800e-003	1.0000e-005		3.5000e-003
Total	**8.3100e-003**	**1.0000e-005**	**1.5400e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**3.2800e-003**	**3.2800e-003**	**1.0000e-005**		**3.5000e-003**

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix C

Noise Monitoring Data in the Project Vicinity

Noise Measurement 1

- Freq Weight : A
- Time Weight : FAST
- Level Range : 40-100
- Max dB : 68.8 - 2009/06/27 14:08:47
- Level Range : 40-100
- SEL : 84.3
- Leq : 54.8
-

No.s	Date Time	(dB)
1	2009/06/27 13:56:39	54.7
2	2009/06/27 13:56:40	54.5
3	2009/06/27 13:56:41	55.2
4	2009/06/27 13:56:42	55.2
5	2009/06/27 13:56:43	54.4
6	2009/06/27 13:56:44	54.7
7	2009/06/27 13:56:45	54.2
8	2009/06/27 13:56:46	54.1
9	2009/06/27 13:56:47	54.7
10	2009/06/27 13:56:48	54.1
11	2009/06/27 13:56:49	54.0
12	2009/06/27 13:56:50	54.1
13	2009/06/27 13:56:51	54.5
14	2009/06/27 13:56:52	54.2
15	2009/06/27 13:56:53	54.4
16	2009/06/27 13:56:54	54.4
17	2009/06/27 13:56:55	54.2
18	2009/06/27 13:56:56	54.4
19	2009/06/27 13:56:57	54.0
20	2009/06/27 13:56:58	54.5
21	2009/06/27 13:56:59	54.4
22	2009/06/27 13:57:00	54.2
23	2009/06/27 13:57:01	54.3
24	2009/06/27 13:57:02	54.3
25	2009/06/27 13:57:03	54.4
26	2009/06/27 13:57:04	54.5
27	2009/06/27 13:57:05	54.3
28	2009/06/27 13:57:06	54.5
29	2009/06/27 13:57:07	54.4
30	2009/06/27 13:57:08	54.5
31	2009/06/27 13:57:09	54.8
32	2009/06/27 13:57:10	54.4
33	2009/06/27 13:57:11	54.6
34	2009/06/27 13:57:12	54.3
35	2009/06/27 13:57:13	54.5
36	2009/06/27 13:57:14	54.4
37	2009/06/27 13:57:15	54.7
38	2009/06/27 13:57:16	54.4
39	2009/06/27 13:57:17	54.3
40	2009/06/27 13:57:18	54.6
41	2009/06/27 13:57:19	54.3
42	2009/06/27 13:57:20	54.7
43	2009/06/27 13:57:21	54.6
44	2009/06/27 13:57:22	54.5
45	2009/06/27 13:57:23	54.4
46	2009/06/27 13:57:24	54.2
47	2009/06/27 13:57:25	54.3
48	2009/06/27 13:57:26	54.7
49	2009/06/27 13:57:27	54.7
50	2009/06/27 13:57:28	54.7
51	2009/06/27 13:57:29	54.3
52	2009/06/27 13:57:30	54.2
53	2009/06/27 13:57:31	54.6
54	2009/06/27 13:57:32	54.3
55	2009/06/27 13:57:33	54.3
56	2009/06/27 13:57:34	54.4
57	2009/06/27 13:57:35	54.2
58	2009/06/27 13:57:36	54.6
59	2009/06/27 13:57:37	54.7
60	2009/06/27 13:57:38	55.0
61	2009/06/27 13:57:39	54.7
62	2009/06/27 13:57:40	54.7
63	2009/06/27 13:57:41	54.3
64	2009/06/27 13:57:42	54.4
65	2009/06/27 13:57:43	54.4
66	2009/06/27 13:57:44	54.8
67	2009/06/27 13:57:45	54.7
68	2009/06/27 13:57:46	55.5
69	2009/06/27 13:57:47	55.1
70	2009/06/27 13:57:48	54.9
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507	2009/06/27 14:05:05	54.7
508	2009/06/27 14:05:06	54.2
509	2009/06/27 14:05:07	54.3
510	2009/06/27 14:05:08	54.8
511	2009/06/27 14:05:09	54.5
512	2009/06/27 14:05:10	54.5
513	2009/06/27 14:05:11	54.8
514	2009/06/27 14:05:12	54.3
515	2009/06/27 14:05:13	54.4
516	2009/06/27 14:05:14	54.5
517	2009/06/27 14:05:15	54.3
518	2009/06/27 14:05:16	54.2
519	2009/06/27 14:05:17	54.8
520	2009/06/27 14:05:18	54.2
521	2009/06/27 14:05:19	55.9
522	2009/06/27 14:05:20	54.1
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524	2009/06/27 14:05:22	54.4
525	2009/06/27 14:05:23	54.8
526	2009/06/27 14:05:24	55.3
527	2009/06/27 14:05:25	55.6
528	2009/06/27 14:05:26	55.1
529	2009/06/27 14:05:27	55.1
530	2009/06/27 14:05:28	54.1
531	2009/06/27 14:05:29	54.4
532	2009/06/27 14:05:30	55.0
533	2009/06/27 14:05:31	54.5
534	2009/06/27 14:05:32	54.5
535	2009/06/27 14:05:33	55.1
536	2009/06/27 14:05:34	54.7
537	2009/06/27 14:05:35	54.7
538	2009/06/27 14:05:36	54.7
539	2009/06/27 14:05:37	54.8
540	2009/06/27 14:05:38	54.9
541	2009/06/27 14:05:39	54.9
542	2009/06/27 14:05:40	54.4
543	2009/06/27 14:05:41	55.5
544	2009/06/27 14:05:42	54.8
545	2009/06/27 14:05:43	54.4
546	2009/06/27 14:05:44	57.4
547	2009/06/27 14:05:45	54.4
548	2009/06/27 14:05:46	54.7
549	2009/06/27 14:05:47	54.4
550	2009/06/27 14:05:48	54.4
551	2009/06/27 14:05:49	54.3
552	2009/06/27 14:05:50	54.4
553	2009/06/27 14:05:51	54.5
554	2009/06/27 14:05:52	54.7
555	2009/06/27 14:05:53	54.6
556	2009/06/27 14:05:54	54.3
557	2009/06/27 14:05:55	54.5
558	2009/06/27 14:05:56	54.6
559	2009/06/27 14:05:57	54.1
560	2009/06/27 14:05:58	53.9
561	2009/06/27 14:05:59	54.4
562	2009/06/27 14:06:00	54.0
563	2009/06/27 14:06:01	54.5
564	2009/06/27 14:06:02	54.5
565	2009/06/27 14:06:03	54.9
566	2009/06/27 14:06:04	55.0
567	2009/06/27 14:06:05	54.6
568	2009/06/27 14:06:06	54.8
569	2009/06/27 14:06:07	54.7
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571	2009/06/27 14:06:09	54.3
572	2009/06/27 14:06:10	54.6
573	2009/06/27 14:06:11	54.3
574	2009/06/27 14:06:12	54.4
575	2009/06/27 14:06:13	54.6
576	2009/06/27 14:06:14	54.3
577	2009/06/27 14:06:15	54.8
578	2009/06/27 14:06:16	54.8
579	2009/06/27 14:06:17	54.0
580	2009/06/27 14:06:18	54.2

581	2009/06/27	14:06:19	54.0
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583	2009/06/27	14:06:21	54.5
584	2009/06/27	14:06:22	55.4
585	2009/06/27	14:06:23	55.0
586	2009/06/27	14:06:24	54.3
587	2009/06/27	14:06:25	54.2
588	2009/06/27	14:06:26	54.4
589	2009/06/27	14:06:27	54.8
590	2009/06/27	14:06:28	54.5
591	2009/06/27	14:06:29	55.1
592	2009/06/27	14:06:30	54.5
593	2009/06/27	14:06:31	54.7
594	2009/06/27	14:06:32	54.5
595	2009/06/27	14:06:33	54.9
596	2009/06/27	14:06:34	54.8
597	2009/06/27	14:06:35	54.5
598	2009/06/27	14:06:36	54.1
599	2009/06/27	14:06:37	54.6
600	2009/06/27	14:06:38	54.5
601	2009/06/27	14:06:39	54.5
602	2009/06/27	14:06:40	54.6
603	2009/06/27	14:06:41	54.4
604	2009/06/27	14:06:42	54.3
605	2009/06/27	14:06:43	54.6
606	2009/06/27	14:06:44	54.5
607	2009/06/27	14:06:45	54.7
608	2009/06/27	14:06:46	54.5
609	2009/06/27	14:06:47	54.5
610	2009/06/27	14:06:48	54.6
611	2009/06/27	14:06:49	54.7
612	2009/06/27	14:06:50	54.2
613	2009/06/27	14:06:51	54.5
614	2009/06/27	14:06:52	54.4
615	2009/06/27	14:06:53	54.8
616	2009/06/27	14:06:54	54.3
617	2009/06/27	14:06:55	54.7
618	2009/06/27	14:06:56	54.6
619	2009/06/27	14:06:57	54.2
620	2009/06/27	14:06:58	54.3
621	2009/06/27	14:06:59	54.3
622	2009/06/27	14:07:00	54.5
623	2009/06/27	14:07:01	54.5
624	2009/06/27	14:07:02	55.1
625	2009/06/27	14:07:03	54.2
626	2009/06/27	14:07:04	54.8
627	2009/06/27	14:07:05	54.6
628	2009/06/27	14:07:06	54.6
629	2009/06/27	14:07:07	54.8
630	2009/06/27	14:07:08	54.3
631	2009/06/27	14:07:09	54.5
632	2009/06/27	14:07:10	54.9
633	2009/06/27	14:07:11	54.8
634	2009/06/27	14:07:12	54.6
635	2009/06/27	14:07:13	55.9
636	2009/06/27	14:07:14	55.0
637	2009/06/27	14:07:15	54.6
638	2009/06/27	14:07:16	54.8
639	2009/06/27	14:07:17	54.4
640	2009/06/27	14:07:18	54.6
641	2009/06/27	14:07:19	54.9
642	2009/06/27	14:07:20	54.4
643	2009/06/27	14:07:21	54.8
644	2009/06/27	14:07:22	54.1
645	2009/06/27	14:07:23	54.5
646	2009/06/27	14:07:24	54.8
647	2009/06/27	14:07:25	54.4
648	2009/06/27	14:07:26	54.4
649	2009/06/27	14:07:27	54.4
650	2009/06/27	14:07:28	54.3
651	2009/06/27	14:07:29	54.4
652	2009/06/27	14:07:30	53.9
653	2009/06/27	14:07:31	54.6
654	2009/06/27	14:07:32	54.1
655	2009/06/27	14:07:33	54.3
656	2009/06/27	14:07:34	55.3
657	2009/06/27	14:07:35	56.0
658	2009/06/27	14:07:36	55.0
659	2009/06/27	14:07:37	55.0
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661	2009/06/27	14:07:39	56.2
662	2009/06/27	14:07:40	54.9
663	2009/06/27	14:07:41	54.7
664	2009/06/27	14:07:42	55.2
665	2009/06/27	14:07:43	54.4
666	2009/06/27	14:07:44	54.4
667	2009/06/27	14:07:45	54.6
668	2009/06/27	14:07:46	55.5
669	2009/06/27	14:07:47	55.3
670	2009/06/27	14:07:48	55.3
671	2009/06/27	14:07:49	55.3
672	2009/06/27	14:07:50	55.4
673	2009/06/27	14:07:51	54.4
674	2009/06/27	14:07:52	54.3
675	2009/06/27	14:07:53	54.5
676	2009/06/27	14:07:54	54.2
677	2009/06/27	14:07:55	54.9
678	2009/06/27	14:07:56	54.8
679	2009/06/27	14:07:57	54.4

680	2009/06/27	14:07:58	55.7
681	2009/06/27	14:07:59	55.2
682	2009/06/27	14:08:00	54.4
683	2009/06/27	14:08:01	54.4
684	2009/06/27	14:08:02	54.7
685	2009/06/27	14:08:03	54.6
686	2009/06/27	14:08:04	54.5
687	2009/06/27	14:08:05	54.8
688	2009/06/27	14:08:06	54.5
689	2009/06/27	14:08:07	54.1
690	2009/06/27	14:08:08	54.5
691	2009/06/27	14:08:09	54.5
692	2009/06/27	14:08:10	54.4
693	2009/06/27	14:08:11	54.6
694	2009/06/27	14:08:12	54.5
695	2009/06/27	14:08:13	54.8
696	2009/06/27	14:08:14	54.1
697	2009/06/27	14:08:15	54.7
698	2009/06/27	14:08:16	54.6
699	2009/06/27	14:08:17	54.7
700	2009/06/27	14:08:18	54.8
701	2009/06/27	14:08:19	54.6
702	2009/06/27	14:08:20	54.4
703	2009/06/27	14:08:21	54.5
704	2009/06/27	14:08:22	54.5
705	2009/06/27	14:08:23	54.1
706	2009/06/27	14:08:24	54.3
707	2009/06/27	14:08:25	54.2
708	2009/06/27	14:08:26	54.2
709	2009/06/27	14:08:27	54.2
710	2009/06/27	14:08:28	55.0
711	2009/06/27	14:08:29	54.6
712	2009/06/27	14:08:30	54.6
713	2009/06/27	14:08:31	54.7
714	2009/06/27	14:08:32	54.2
715	2009/06/27	14:08:33	54.7
716	2009/06/27	14:08:34	54.1
717	2009/06/27	14:08:35	54.6
718	2009/06/27	14:08:36	54.7
719	2009/06/27	14:08:37	54.5
720	2009/06/27	14:08:38	54.4
721	2009/06/27	14:08:39	54.6
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723	2009/06/27	14:08:41	54.3
724	2009/06/27	14:08:42	54.8
725	2009/06/27	14:08:43	54.8
726	2009/06/27	14:08:44	54.4
727	2009/06/27	14:08:45	54.6
728	2009/06/27	14:08:46	54.2
729	2009/06/27	14:08:47	55.3
730	2009/06/27	14:08:48	54.6
731	2009/06/27	14:08:49	54.8
732	2009/06/27	14:08:50	54.5
733	2009/06/27	14:08:51	54.4
734	2009/06/27	14:08:52	55.4
735	2009/06/27	14:08:53	54.7
736	2009/06/27	14:08:54	54.8
737	2009/06/27	14:08:55	54.7
738	2009/06/27	14:08:56	55.1
739	2009/06/27	14:08:57	54.5
740	2009/06/27	14:08:58	55.0
741	2009/06/27	14:08:59	54.4
742	2009/06/27	14:09:00	54.2
743	2009/06/27	14:09:01	54.7
744	2009/06/27	14:09:02	54.4
745	2009/06/27	14:09:03	55.1
746	2009/06/27	14:09:04	54.7
747	2009/06/27	14:09:05	55.0
748	2009/06/27	14:09:06	54.1
749	2009/06/27	14:09:07	54.6
750	2009/06/27	14:09:08	54.6
751	2009/06/27	14:09:09	54.5
752	2009/06/27	14:09:10	54.8
753	2009/06/27	14:09:11	54.5
754	2009/06/27	14:09:12	54.5
755	2009/06/27	14:09:13	54.5
756	2009/06/27	14:09:14	54.4
757	2009/06/27	14:09:15	54.6
758	2009/06/27	14:09:16	54.4
759	2009/06/27	14:09:17	54.3
760	2009/06/27	14:09:18	54.5
761	2009/06/27	14:09:19	54.3
762	2009/06/27	14:09:20	54.8
763	2009/06/27	14:09:21	54.4
764	2009/06/27	14:09:22	54.7
765	2009/06/27	14:09:23	54.2
766	2009/06/27	14:09:24	54.8
767	2009/06/27	14:09:25	55.0
768	2009/06/27	14:09:26	55.5
769	2009/06/27	14:09:27	55.0
770	2009/06/27	14:09:28	55.1
771	2009/06/27	14:09:29	54.9
772	2009/06/27	14:09:30	54.7
773	2009/06/27	14:09:31	56.6
774	2009/06/27	14:09:32	57.1
775	2009/06/27	14:09:33	57.4
776	2009/06/27	14:09:34	56.0
777	2009/06/27	14:09:35	60.6
778	2009/06/27	14:09:36	58.7

779	2009/06/27	14:09:37	55.6
780	2009/06/27	14:09:38	55.1
781	2009/06/27	14:09:39	58.4
782	2009/06/27	14:09:40	55.1
783	2009/06/27	14:09:41	58.3
784	2009/06/27	14:09:42	59.1
785	2009/06/27	14:09:43	55.4
786	2009/06/27	14:09:44	55.1
787	2009/06/27	14:09:45	54.9
788	2009/06/27	14:09:46	55.2
789	2009/06/27	14:09:47	54.9
790	2009/06/27	14:09:48	57.4
791	2009/06/27	14:09:49	57.4
792	2009/06/27	14:09:50	58.4
793	2009/06/27	14:09:51	56.3
794	2009/06/27	14:09:52	56.8
795	2009/06/27	14:09:53	55.4
796	2009/06/27	14:09:54	55.4
797	2009/06/27	14:09:55	55.0
798	2009/06/27	14:09:56	56.1
799	2009/06/27	14:09:57	55.1
800	2009/06/27	14:09:58	54.5
801	2009/06/27	14:09:59	54.6
802	2009/06/27	14:10:00	54.4
803	2009/06/27	14:10:01	54.6
804	2009/06/27	14:10:02	54.2
805	2009/06/27	14:10:03	55.5
806	2009/06/27	14:10:04	54.4
807	2009/06/27	14:10:05	55.1
808	2009/06/27	14:10:06	54.8
809	2009/06/27	14:10:07	54.7
810	2009/06/27	14:10:08	56.1
811	2009/06/27	14:10:09	63.3
812	2009/06/27	14:10:10	54.6
813	2009/06/27	14:10:11	54.6
814	2009/06/27	14:10:12	54.6
815	2009/06/27	14:10:13	54.8
816	2009/06/27	14:10:14	54.9
817	2009/06/27	14:10:15	54.5
818	2009/06/27	14:10:16	53.9
819	2009/06/27	14:10:17	54.4
820	2009/06/27	14:10:18	54.0
821	2009/06/27	14:10:19	54.3
822	2009/06/27	14:10:20	54.4
823	2009/06/27	14:10:21	54.2
824	2009/06/27	14:10:22	54.1
825	2009/06/27	14:10:23	55.0
826	2009/06/27	14:10:24	54.9
827	2009/06/27	14:10:25	56.3
828	2009/06/27	14:10:26	54.8
829	2009/06/27	14:10:27	54.6
830	2009/06/27	14:10:28	54.6
831	2009/06/27	14:10:29	55.1
832	2009/06/27	14:10:30	54.9
833	2009/06/27	14:10:31	54.7
834	2009/06/27	14:10:32	54.3
835	2009/06/27	14:10:33	54.7
836	2009/06/27	14:10:34	56.0
837	2009/06/27	14:10:35	54.8
838	2009/06/27	14:10:36	54.7
839	2009/06/27	14:10:37	54.5
840	2009/06/27	14:10:38	54.5
841	2009/06/27	14:10:39	54.2
842	2009/06/27	14:10:40	54.5
843	2009/06/27	14:10:41	54.7
844	2009/06/27	14:10:42	54.8
845	2009/06/27	14:10:43	55.0
846	2009/06/27	14:10:44	54.5
847	2009/06/27	14:10:45	54.7
848	2009/06/27	14:10:46	54.5
849	2009/06/27	14:10:47	54.6
850	2009/06/27	14:10:48	54.5
851	2009/06/27	14:10:49	54.3
852	2009/06/27	14:10:50	54.6
853	2009/06/27	14:10:51	54.5
854	2009/06/27	14:10:52	54.5
855	2009/06/27	14:10:53	54.6
856	2009/06/27	14:10:54	54.6
857	2009/06/27	14:10:55	54.5
858	2009/06/27	14:10:56	54.9
859	2009/06/27	14:10:57	54.4
860	2009/06/27	14:10:58	54.6
861	2009/06/27	14:10:59	54.7
862	2009/06/27	14:11:00	54.3
863	2009/06/27	14:11:01	54.5
864	2009/06/27	14:11:02	54.8
865	2009/06/27	14:11:03	54.6
866	2009/06/27	14:11:04	54.4
867	2009/06/27	14:11:05	54.9
868	2009/06/27	14:11:06	55.3
869	2009/06/27	14:11:07	54.8
870	2009/06/27	14:11:08	55.1
871	2009/06/27	14:11:09	55.1
872	2009/06/27	14:11:10	55.5
873	2009/06/27	14:11:11	54.9
874	2009/06/27	14:11:12	55.3
875	2009/06/27	14:11:13	55.3
876	2009/06/27	14:11:14	55.4
877	2009/06/27	14:11:15	55.9

878	2009/06/27	14:11:16	56.2
879	2009/06/27	14:11:17	57.1
880	2009/06/27	14:11:18	57.0
881	2009/06/27	14:11:19	58.1
882	2009/06/27	14:11:20	58.4
883	2009/06/27	14:11:21	59.0
884	2009/06/27	14:11:22	58.4
885	2009/06/27	14:11:23	57.5
886	2009/06/27	14:11:24	56.6
887	2009/06/27	14:11:25	55.9
888	2009/06/27	14:11:26	55.4
889	2009/06/27	14:11:27	54.8
890	2009/06/27	14:11:28	55.0
891	2009/06/27	14:11:29	54.9
892	2009/06/27	14:11:30	55.0
893	2009/06/27	14:11:31	54.7
894	2009/06/27	14:11:32	55.1
895	2009/06/27	14:11:33	54.3
896	2009/06/27	14:11:34	54.7
897	2009/06/27	14:11:35	54.8
898	2009/06/27	14:11:36	55.1
899	2009/06/27	14:11:37	54.8
900	2009/06/27	14:11:38	54.4

Noise Measurement 2

- Freq Weight : A
- Time Weight : FAST
- Level Range : 40-100
- Max dB : 82.1 - 2009/06/27 13:40:54
- Level Range : 40-100
- SEL : 92.2
- Leq : 62.7
-

No.s	Date Time	(dB)
633	2009/05/28 01:37:13	51.9
634	2009/05/28 01:37:14	51.6
635	2009/05/28 01:37:15	52.6
636	2009/05/28 01:37:16	52.8
637	2009/05/28 01:37:17	53.2
638	2009/05/28 01:37:18	53.6
639	2009/05/28 01:37:19	54.6
640	2009/05/28 01:37:20	54.7
641	2009/05/28 01:37:21	54.7
642	2009/05/28 01:37:22	52.7
643	2009/05/28 01:37:23	53.1
644	2009/05/28 01:37:24	53.2
645	2009/05/28 01:37:25	54.2
646	2009/05/28 01:37:26	52.7
647	2009/05/28 01:37:27	52.0
648	2009/05/28 01:37:28	51.6
649	2009/05/28 01:37:29	51.5
650	2009/05/28 01:37:30	52.0
651	2009/05/28 01:37:31	52.0
652	2009/05/28 01:37:32	51.0
653	2009/05/28 01:37:33	52.1
654	2009/05/28 01:37:34	51.3
655	2009/05/28 01:37:35	51.3
656	2009/05/28 01:37:36	51.4
657	2009/05/28 01:37:37	51.8
658	2009/05/28 01:37:38	52.7
659	2009/05/28 01:37:39	52.7
660	2009/05/28 01:37:40	52.3
661	2009/05/28 01:37:41	52.4
662	2009/05/28 01:37:42	52.3
663	2009/05/28 01:37:43	53.0
664	2009/05/28 01:37:44	53.4
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619	2009/06/27	13:48:39	53.1
620	2009/06/27	13:48:40	54.6
621	2009/06/27	13:48:41	48.6
622	2009/06/27	13:48:42	47.1
623	2009/06/27	13:48:43	47.1
624	2009/06/27	13:48:44	47.2
625	2009/06/27	13:48:45	48.0
626	2009/06/27	13:48:46	48.5
627	2009/06/27	13:48:47	49.1
628	2009/06/27	13:48:48	49.8
629	2009/06/27	13:48:49	50.2
630	2009/06/27	13:48:50	49.3
631	2009/06/27	13:48:51	49.6
632	2009/06/27	13:48:52	49.4
633	2009/06/27	13:48:53	50.3
634	2009/06/27	13:48:54	51.4
635	2009/06/27	13:48:55	53.0
636	2009/06/27	13:48:56	53.0
637	2009/06/27	13:48:57	56.5
638	2009/06/27	13:48:58	58.5
639	2009/06/27	13:48:59	63.9
640	2009/06/27	13:49:00	72.3
641	2009/06/27	13:49:01	76.6
642	2009/06/27	13:49:02	75.5
643	2009/06/27	13:49:03	69.7
644	2009/06/27	13:49:04	66.3
645	2009/06/27	13:49:05	63.9
646	2009/06/27	13:49:06	65.1
647	2009/06/27	13:49:07	66.4
648	2009/06/27	13:49:08	66.2
649	2009/06/27	13:49:09	66.6
650	2009/06/27	13:49:10	67.0
651	2009/06/27	13:49:11	66.1
652	2009/06/27	13:49:12	62.1
653	2009/06/27	13:49:13	55.2
654	2009/06/27	13:49:14	51.5
655	2009/06/27	13:49:15	51.7
656	2009/06/27	13:49:16	51.4
657	2009/06/27	13:49:17	49.6
658	2009/06/27	13:49:18	47.5
659	2009/06/27	13:49:19	47.5
660	2009/06/27	13:49:20	47.8
661	2009/06/27	13:49:21	47.4
662	2009/06/27	13:49:22	47.1
663	2009/06/27	13:49:23	47.4
664	2009/06/27	13:49:24	48.9
665	2009/06/27	13:49:25	47.6
666	2009/06/27	13:49:26	48.8
667	2009/06/27	13:49:27	49.1
668	2009/06/27	13:49:28	49.1
669	2009/06/27	13:49:29	49.2
670	2009/06/27	13:49:30	50.4
671	2009/06/27	13:49:31	50.0
672	2009/06/27	13:49:32	50.7
673	2009/06/27	13:49:33	51.3
674	2009/06/27	13:49:34	50.6
675	2009/06/27	13:49:35	52.1
676	2009/06/27	13:49:36	53.2
677	2009/06/27	13:49:37	51.4
678	2009/06/27	13:49:38	52.3
679	2009/06/27	13:49:39	51.3
680	2009/06/27	13:49:40	51.1
681	2009/06/27	13:49:41	51.9
682	2009/06/27	13:49:42	53.2
683	2009/06/27	13:49:43	54.1
684	2009/06/27	13:49:44	54.9
685	2009/06/27	13:49:45	55.9
686	2009/06/27	13:49:46	58.0
687	2009/06/27	13:49:47	61.5
688	2009/06/27	13:49:48	63.8
689	2009/06/27	13:49:49	65.9
690	2009/06/27	13:49:50	67.1
691	2009/06/27	13:49:51	65.4
692	2009/06/27	13:49:52	63.7
693	2009/06/27	13:49:53	61.8
694	2009/06/27	13:49:54	60.3
695	2009/06/27	13:49:55	57.6
696	2009/06/27	13:49:56	56.7
697	2009/06/27	13:49:57	53.7
698	2009/06/27	13:49:58	51.4
699	2009/06/27	13:49:59	50.1
700	2009/06/27	13:50:00	50.1
701	2009/06/27	13:50:01	51.8
702	2009/06/27	13:50:02	51.0
703	2009/06/27	13:50:03	50.7
704	2009/06/27	13:50:04	51.1
705	2009/06/27	13:50:05	50.8
706	2009/06/27	13:50:06	51.3
707	2009/06/27	13:50:07	50.4
708	2009/06/27	13:50:08	50.6

709	2009/06/27	13:50:09	49.9
710	2009/06/27	13:50:10	50.7
711	2009/06/27	13:50:11	51.2
712	2009/06/27	13:50:12	49.1
713	2009/06/27	13:50:13	49.3
714	2009/06/27	13:50:14	49.6
715	2009/06/27	13:50:15	49.8
716	2009/06/27	13:50:16	49.4
717	2009/06/27	13:50:17	50.1
718	2009/06/27	13:50:18	50.1
719	2009/06/27	13:50:19	50.3
720	2009/06/27	13:50:20	51.3
721	2009/06/27	13:50:21	52.0
722	2009/06/27	13:50:22	51.4
723	2009/06/27	13:50:23	53.2
724	2009/06/27	13:50:24	55.5
725	2009/06/27	13:50:25	56.2
726	2009/06/27	13:50:26	55.2
727	2009/06/27	13:50:27	55.8
728	2009/06/27	13:50:28	55.5
729	2009/06/27	13:50:29	56.8
730	2009/06/27	13:50:30	60.2
731	2009/06/27	13:50:31	63.5
732	2009/06/27	13:50:32	64.3
733	2009/06/27	13:50:33	61.4
734	2009/06/27	13:50:34	60.2
735	2009/06/27	13:50:35	58.2
736	2009/06/27	13:50:36	56.6
737	2009/06/27	13:50:37	58.7
738	2009/06/27	13:50:38	57.5
739	2009/06/27	13:50:39	58.4
740	2009/06/27	13:50:40	60.9
741	2009/06/27	13:50:41	61.6
742	2009/06/27	13:50:42	58.2
743	2009/06/27	13:50:43	58.2
744	2009/06/27	13:50:44	55.5
745	2009/06/27	13:50:45	54.8
746	2009/06/27	13:50:46	54.8
747	2009/06/27	13:50:47	55.3
748	2009/06/27	13:50:48	54.2
749	2009/06/27	13:50:49	54.2
750	2009/06/27	13:50:50	52.8
751	2009/06/27	13:50:51	50.9
752	2009/06/27	13:50:52	49.8
753	2009/06/27	13:50:53	48.9
754	2009/06/27	13:50:54	48.8
755	2009/06/27	13:50:55	49.8
756	2009/06/27	13:50:56	47.8
757	2009/06/27	13:50:57	48.2
758	2009/06/27	13:50:58	49.1
759	2009/06/27	13:50:59	48.7
760	2009/06/27	13:51:00	49.6
761	2009/06/27	13:51:01	50.3
762	2009/06/27	13:51:02	49.6
763	2009/06/27	13:51:03	51.2
764	2009/06/27	13:51:04	50.1
765	2009/06/27	13:51:05	49.2
766	2009/06/27	13:51:06	49.5
767	2009/06/27	13:51:07	48.7
768	2009/06/27	13:51:08	48.7
769	2009/06/27	13:51:09	48.3
770	2009/06/27	13:51:10	50.0
771	2009/06/27	13:51:11	48.4
772	2009/06/27	13:51:12	47.8
773	2009/06/27	13:51:13	47.3
774	2009/06/27	13:51:14	46.9
775	2009/06/27	13:51:15	46.6
776	2009/06/27	13:51:16	46.3
777	2009/06/27	13:51:17	46.7
778	2009/06/27	13:51:18	47.4
779	2009/06/27	13:51:19	47.3
780	2009/06/27	13:51:20	46.7
781	2009/06/27	13:51:21	47.0
782	2009/06/27	13:51:22	46.8
783	2009/06/27	13:51:23	47.0
784	2009/06/27	13:51:24	48.2
785	2009/06/27	13:51:25	46.9
786	2009/06/27	13:51:26	46.9
787	2009/06/27	13:51:27	48.5
788	2009/06/27	13:51:28	46.0
789	2009/06/27	13:51:29	46.8
790	2009/06/27	13:51:30	46.2
791	2009/06/27	13:51:31	48.3
792	2009/06/27	13:51:32	47.1
793	2009/06/27	13:51:33	52.3
794	2009/06/27	13:51:34	49.0
795	2009/06/27	13:51:35	48.1
796	2009/06/27	13:51:36	49.8
797	2009/06/27	13:51:37	47.2
798	2009/06/27	13:51:38	49.2
799	2009/06/27	13:51:39	48.0
800	2009/06/27	13:51:40	47.9
801	2009/06/27	13:51:41	49.8
802	2009/06/27	13:51:42	48.0
803	2009/06/27	13:51:43	47.0
804	2009/06/27	13:51:44	47.3
805	2009/06/27	13:51:45	46.8
806	2009/06/27	13:51:46	47.8
807	2009/06/27	13:51:47	47.1

808	2009/06/27	13:51:48	47.1
809	2009/06/27	13:51:49	48.5
810	2009/06/27	13:51:50	47.7
811	2009/06/27	13:51:51	47.3
812	2009/06/27	13:51:52	47.6
813	2009/06/27	13:51:53	47.6
814	2009/06/27	13:51:54	47.5
815	2009/06/27	13:51:55	47.8
816	2009/06/27	13:51:56	48.1
817	2009/06/27	13:51:57	48.0
818	2009/06/27	13:51:58	48.0
819	2009/06/27	13:51:59	47.7
820	2009/06/27	13:52:00	48.2
821	2009/06/27	13:52:01	47.6
822	2009/06/27	13:52:02	48.9
823	2009/06/27	13:52:03	48.3
824	2009/06/27	13:52:04	48.7
825	2009/06/27	13:52:05	49.4
826	2009/06/27	13:52:06	50.3
827	2009/06/27	13:52:07	51.7
828	2009/06/27	13:52:08	50.5
829	2009/06/27	13:52:09	51.9
830	2009/06/27	13:52:10	50.3
831	2009/06/27	13:52:11	49.9
832	2009/06/27	13:52:12	49.9
833	2009/06/27	13:52:13	49.5
834	2009/06/27	13:52:14	48.5
835	2009/06/27	13:52:15	49.0
836	2009/06/27	13:52:16	48.9
837	2009/06/27	13:52:17	49.2
838	2009/06/27	13:52:18	49.6
839	2009/06/27	13:52:19	49.8
840	2009/06/27	13:52:20	50.9
841	2009/06/27	13:52:21	53.0
842	2009/06/27	13:52:22	50.1
843	2009/06/27	13:52:23	50.7
844	2009/06/27	13:52:24	51.1
845	2009/06/27	13:52:25	51.3
846	2009/06/27	13:52:26	50.0
847	2009/06/27	13:52:27	56.0
848	2009/06/27	13:52:28	62.8
849	2009/06/27	13:52:29	63.2
850	2009/06/27	13:52:30	60.8
851	2009/06/27	13:52:31	59.9
852	2009/06/27	13:52:32	58.8
853	2009/06/27	13:52:33	59.6
854	2009/06/27	13:52:34	57.6
855	2009/06/27	13:52:35	61.2
856	2009/06/27	13:52:36	61.1
857	2009/06/27	13:52:37	60.2
858	2009/06/27	13:52:38	63.2
859	2009/06/27	13:52:39	60.4
860	2009/06/27	13:52:40	59.2
861	2009/06/27	13:52:41	58.0
862	2009/06/27	13:52:42	57.0
863	2009/06/27	13:52:43	57.5
864	2009/06/27	13:52:44	54.4
865	2009/06/27	13:52:45	54.9
866	2009/06/27	13:52:46	54.3
867	2009/06/27	13:52:47	52.8
868	2009/06/27	13:52:48	54.0
869	2009/06/27	13:52:49	51.4
870	2009/06/27	13:52:50	51.1
871	2009/06/27	13:52:51	53.3
872	2009/06/27	13:52:52	52.7
873	2009/06/27	13:52:53	54.2
874	2009/06/27	13:52:54	53.1
875	2009/06/27	13:52:55	54.2
876	2009/06/27	13:52:56	51.5
877	2009/06/27	13:52:57	52.1
878	2009/06/27	13:52:58	51.7
879	2009/06/27	13:52:59	52.7
880	2009/06/27	13:53:00	52.5
881	2009/06/27	13:53:01	52.1
882	2009/06/27	13:53:02	52.8
883	2009/06/27	13:53:03	52.2
884	2009/06/27	13:53:04	51.3
885	2009/06/27	13:53:05	52.2
886	2009/06/27	13:53:06	51.4
887	2009/06/27	13:53:07	50.4
888	2009/06/27	13:53:08	49.8
889	2009/06/27	13:53:09	50.9
890	2009/06/27	13:53:10	49.9
891	2009/06/27	13:53:11	50.6
892	2009/06/27	13:53:12	49.6
893	2009/06/27	13:53:13	49.6
894	2009/06/27	13:53:14	49.4
895	2009/06/27	13:53:15	49.6
896	2009/06/27	13:53:16	49.9
897	2009/06/27	13:53:17	51.6
898	2009/06/27	13:53:18	56.6
899	2009/06/27	13:53:19	59.8
900	2009/06/27	13:53:20	57.8

Appendix D

Roadway Construction Noise Modeling Results

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat 8/21/2018
Case Descr Cottage Creek Dam Clearing and Grubbing

					---- Receptor #1 ----
		Baselines (dBA)			
Description	Land Use	Daytime	Evening	Night	
House Boa	Residential	68.7	50	45	

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	1000	0
Excavator	No	40		80.7	1000	0
Pavement Scarafier	No	20		89.5	1000	0

			Results				
	Calculated (dBA)		Noise Limits (dBA)				
			Day		Evening		Night
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Dozer	55.6	51.7	N/A	N/A	N/A	N/A	N/A
Excavator	54.7	50.7	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	63.5	56.5	N/A	N/A	N/A	N/A	N/A
Total	63.5	58.5	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat 8/21/2018
Case Descr Cottage Creek Dam Dewatering

		Baselines (dBA)			---- Receptor #1 ----
Description	Land Use	Daytime	Evening	Night	
House Boa	Residential	68.7	50	45	

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Pumps	No	50		80.9	1000	0

	Calculated (dBA)		Results	Noise Limits (dBA)			
			Day		Evening		Night
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Pumps	54.9	51.9	N/A	N/A	N/A	N/A	N/A
Total	54.9	51.9	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date 8/21/2018
Case Descr Cottage Creek Dam Excavation and Removal

			---- Receptor #1 ----
	Baselines (dBA)		
DescriptionLand Use	Daytime	Evening	Night
House BoatResidential	68.7	50	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	1000	0
Excavator	No	40		80.7	1000	0
Excavator	No	40		80.7	1000	0
Pumps	No	50		80.9	1000	0

			Results				
	Calculated (dBA)		Noise Limits (dBA)				
			Day		Evening		Night
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Crane	54.5	46.6	N/A	N/A	N/A	N/A	N/A
Excavator	54.7	50.7	N/A	N/A	N/A	N/A	N/A
Excavator	54.7	50.7	N/A	N/A	N/A	N/A	N/A
Pumps	54.9	51.9	N/A	N/A	N/A	N/A	N/A
Total	54.9	56.4	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report dat 8/21/2018
Case Descr Cottage Creek Dam Install Concrete Culvert

		Baselines (dBA)		---- Receptor #1 ----
Description	Land Use	Daytime	Evening	Night
House Boa	Residential	68.7	50	45

			Equipment			
			Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Concrete Mixer Truck	No	40		78.8	1000	0
Crane	No	16		80.6	1000	0
Grader	No	40	85		1000	0
Jackhammer	Yes	20		88.9	1000	0
Dump Truck	No	40		76.5	1000	0

			Results				
	Calculated (dBA)		Noise Limits (dBA)				
			Day		Evening		Night
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Concrete Mixer Truck	52.8	48.8	N/A	N/A	N/A	N/A	N/A
Crane	54.5	46.6	N/A	N/A	N/A	N/A	N/A
Grader	59	55	N/A	N/A	N/A	N/A	N/A
Jackhammer	62.9	55.9	N/A	N/A	N/A	N/A	N/A
Dump Truck	50.4	46.5	N/A	N/A	N/A	N/A	N/A
Total	62.9	59.4	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.