Draft Supplemental Environmental Assessment

Isabella Lake Dam Safety Modification Project
Permanent Relocation of the U.S. Forest Service Visitor Center

Kern County, California

April 2021

Lead Agency:
U.S. Army Corps of Engineers
South Pacific Division
Sacramento District

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

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Acronyms and Abbreviations

AADT	Annual average daily traffic
ABA	Architectural Barriers Act
ADA	Americans with Disabilities Act
APE	Area of Potential Effects
BLM	Bureau of Land Management
BMPs	Best Management Practices
BO	Biological Opinion
CAR	Coordination Act Report
CARB	California Air Quality Resources Board
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNVMP	Construction Noise and Vibration Monitoring Plan
CO_2e	Carbon dioxide equivalent
Corps	U.S. Army Corps of Engineers
CVRWCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
CY	Cubic yards
dB	Decibel
dBA	A-weighted sound level
DEIS	Draft Environmental Impact Statement
DSM	Dam Safety Modification
EA	Environmental Assessment
EIS	Environmental Impact Statement
EDR	Environmental Data Resources, Inc.
EPA	Environmental Protection Agency
ESA	Endangered Species Act
EKAPCD	Eastern Kern Air Pollution Control District
EO	Executive Order
ER	Engineering Regulation
FACW	Facultative wetland
FONSI	Finding of No Significant Impact
FWCA	Fish and Wildlife Coordination Act
GHG	Greenhouse Gases
HPTP	Historic Properties Treatment Plan
HTRW	Hazardous, Toxic, and Radiological Waste
Isabella Dams	Isabella Lake Main Dam, Spillway and Auxiliary Dam
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding

NAGPRA	Native American Graves Protection and Repatriation Act of 1990
NPDES	National Pollution Discharge Elimination System
NEPA	National Environmental Quality Act
NHPA	National Historic Preservation Act
NHRP	National Cooperative Highway Research Program
PA	Programmatic Agreement
PM	Particulate Matter
QA	Quality Assurance
RCEM	Road Construction Emissions Model
ROD	Record of Decision
ROG	Reactive Organic Gasses
RWQCB	Regional Water Quality Control Board
RV	Recreational Vehicle
SEA	Environmental Assessment
SCE	Southern California Edison
SHPO	California State Historic Preservation Officer
SIP	California State Implementation Plan
SJVAPCD	San Joaquin Valley Air Pollution Control District
SR	State Route
SQF	Sequoia National Forest
SWPPP	Storm Water Pollution Prevention Plan
USDA	U.S. Department of Agriculture
USFS	U.S. Department of Agriculture, Forest Service
USFWS	U.S. Fish and Wildlife Service
VELB	Valley Elderberry Longhorn Beetle

1.0 PURPOSE AND NEED FOR ACTION

1.1 Proposed Action

Pursuant to the National Environmental Policy Act of 1969 (NEPA), as amended, this Supplemental Environmental Assessment (SEA) discusses and discloses beneficial or adverse potential effects that would result from the proposed re-relocation of the U.S. Department of Agriculture, Forest Service, Sequoia National Forest (USFS) Visitor Center as part of the Isabella Lake Dam Safety Modification (DSM) project. The U.S. Army Corps of Engineers, Sacramento District (Corps), is the lead agency and the USFS is the cooperating agency for the purposes of NEPA.

1.2 Location of the Project Area

Isabella Lake is situated approximately 35 miles northeast of Bakersfield in Kern County, California, along California State Road (SR) 178, one mile upstream of the town of Lake Isabella (Figure 1). Water from the Kern River is retained by Isabella Lake Dam to form Isabella Lake in the southernmost part of the Sequoia National Forest. The proposed alternatives are situated around the town of Lake Isabella and the shoreline immediately east of the Auxiliary Dam (Figure 2).

1.3 Background and Need for Action

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

The Corps completed a DSM Report in October 2012 that recommended remediation measures to reduce the public safety and property damage risks posed by floods, earthquakes, and seepage at the Isabella Dams. The Corps prepared a Draft Environmental Impact Statement (DEIS) in March 2012 (2012a). In October 2012, the Corps published a Final Environmental Impact Statement (FEIS) for the proposed remediation of the Isabella Dams (2012b). The FEIS describes the anticipated direct and indirect impacts expected to occur because of the remediation, including impacts to existing federal, state, local and privately owned infrastructure in the Isabella Dams vicinity (Corps 2012b).

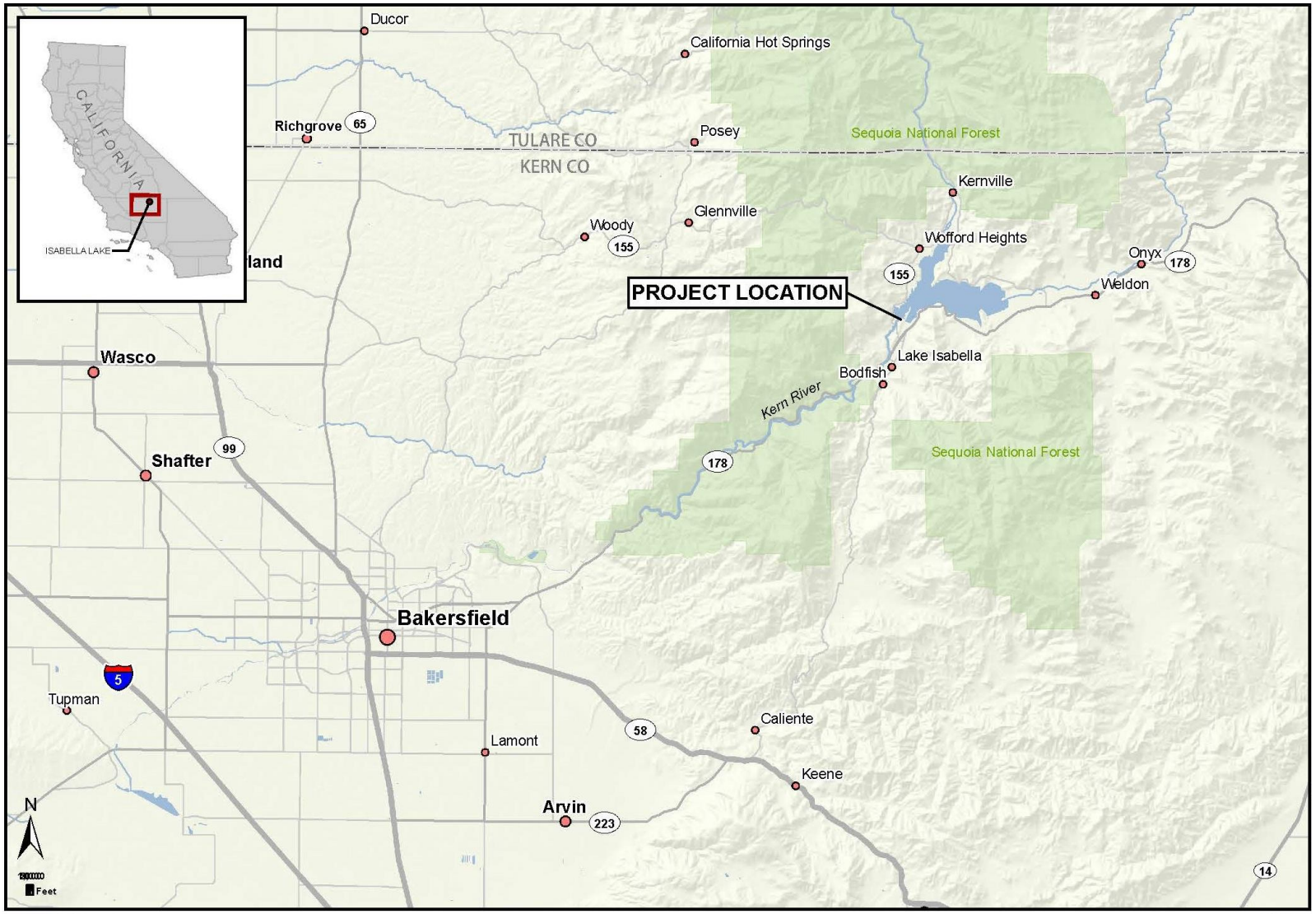

Figure 1. Project Location.

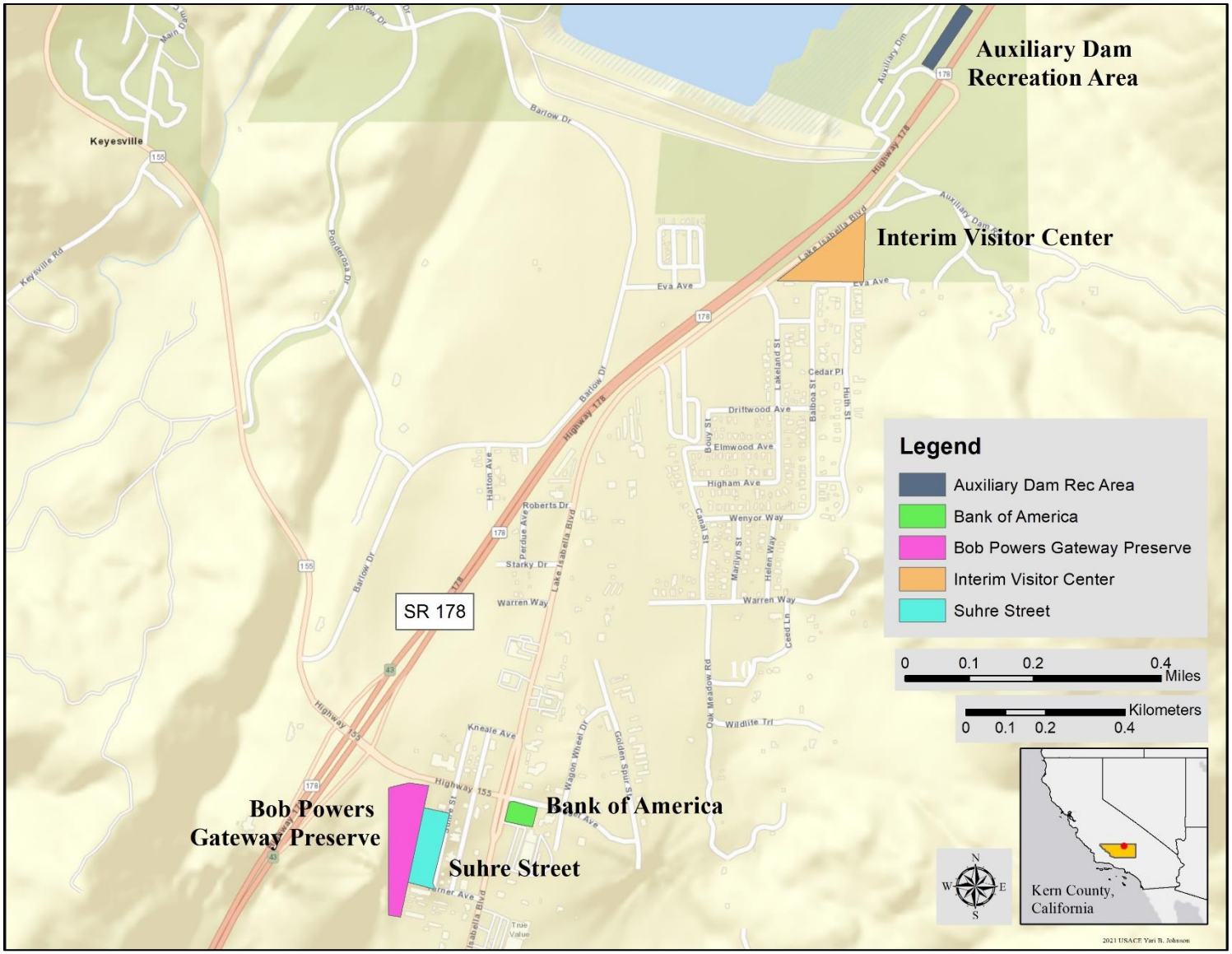

Figure 2. Location of proposed alternatives.

Several USFS buildings were impacted by construction of the Isabella Lake DSM project. The Corps is responsible to provide an "in-kind" replacement for any USFS resources affected by construction of the Lake Isabella DSM project (Corps 1964; 1991; 2016). The replacement must provide levels of service and/or access at least equivalent to those existing prior to the project construction at a new location selected by the USFS (Corps 1964). The original USFS visitor use services were rendered from an approximately 450-square foot space located within the lobby of the 5,707-square foot USFS Administration Building. The original USFS Administration Building was located between the main dam and auxiliary dam overlooking Isabella Lake off Ponderosa Drive, a windy unpaved road. The visitor center was open Monday through Friday from 8:00 am to 4:30 pm from April through October. Visitor services included permit sales, maps, brochures, trail guides, interpretive displays, and information about the recreational opportunities in the Kern River Valley. A six-foot long counter offered T-shirts, hats, and USFS mementos for sale.

The original design for the Lake Isabella work center and fire station included an integrated, well-designed visitor center with counter space, public restrooms, and safety separation between visitor staff and the public. The visitor center portion of the building was integrated into the whole structure design and fit into the landscape. Due to public issues with this location for the visitor center, the portion of the building that provided visitor services was removed from the final design. Instead, the Corps provided an interim USFS visitor center, which provides similar services as the original visitor area inside the USFS Administration Building, until a permanent location is established (Corps 2016). This interim facility was initially located within a modular building in the parking lot adjacent to the USFS fire station. Due to safety concerns, lack of counter and display space, and other issues, the USFS moved the visitor services to a conference room inside the relocated fire station.

1.3.1 Purpose

The purpose of this SEA is to identify the most suitable option for in-kind replacement of USFS visitor use services affected by the Isabella DSM project. The need for supplemental NEPA analysis was identified in Section 1.9 of the DEIS (Corps 2012a), and Section 1.4 of the FEIS (Corps 2012b). This SEA also addresses in part, the Isabella Lake DSM Project Record of Decision (ROD), signed December 2012, which stated that the Corps would explore and identify mitigation measures to offset adverse effects on recreation resulting from construction of the Isabella Lake DSM project.

1.3.2 Need

Based on the findings in the FEIS, it was anticipated that the visitor experience would be substantially diminished at specific recreation areas if a recreation mitigation plan was not implemented to offset impacts (Corps 2012b). Relocation of some critical services, such as the fire station and staff administrative offices (addressed in SEA #3), needed to be complete prior to the beginning of dam remediation. The provision of visitor use services was determined by USFS to be possible in an interim capacity without permanent relocation as a predecessor to dam remediation. Additionally, local public preference for a permanent multi-agency facility, in a location separate from the fire station and administrative offices, required additional

investigation and evaluation. Therefore, the Corps is re-evaluating and revisiting relocation of the visitor center. This Draft SEA discloses the selection process and the Final SEA will identify a permanent solution for the visitor center.

The USFS requested that alternative locations be able to accommodate parking for large recreational vehicles (RVs) and up to 125 visitors per day, have a low maintenance building and landscape, are within two air miles of the intersection of SR 178 and 155, and have an entrance within 200 feet of major road or highway to allow for good visibility as well as ease of access to visitors.

1.4 Authority

The preliminary study for a flood reduction and water supply project on the Kern River was authorized by the Flood Control Act of 1936, Public Law 74-738, June 22, 1936. Construction of Isabella Dam and Lake was authorized by the Flood Control Act of 1944, Public Law 78-534, Chapter 665, Section 10, page 901.

Removal and replacement of affected USFS facilities was found to be consistent with a 1964 Memorandum of Agreement (MOA) (Corps 1964) and a 1991 *Memorandum Of Understanding Between And Pertaining To Interchange Of Lands And Management Of The Water And Land Resources At Isabella Lake Project, Sequoia National Forest, Kern County, California* (MOU) (Corps 1991). This MOU states that those facilities "which will be destroyed or rendered useless by reason of the water resource development and which are still needed by the Department of Agriculture will be removed or replaced by the Department of the Army at a location to be determined by the Department of Agriculture in such kind and quantity as will provide levels of service and/or access at least equivalent to those existing prior to the project construction, subject to interagency budgetary procedures."

These written agreements state, in part, that if the Corps construction at Isabella impacted existing USFS structures or facilities, the Corps would replace the facilities with an equivalent level of service in a location determined by the USFS.

The Water Resources Development Act of 2020, Public Law 116-260, provides the Corps with authority to acquire real property for a permanent visitor center, if it is determined that the final preferred action alternative requires such acquisition.

Additional Federal project authority is detailed in the FEIS for the Isabella Lake DSM project (Corps 2012b) and the USDA Forest Service Administration and Recreation Facilities Relocation SEA (Corps 2016).

1.5 Purpose of the SEA

This SEA fulfills the commitment to continue NEPA assessment of the potential effects of the Isabella Lake DSM project. Due to project complexity and unresolved design issues, the 2012 FEIS identified the need for supplemental NEPA assessments to address subsequent design refinements. As with other supplemental NEPA assessment needs identified in Section 1.4 of the

FEIS, this Supplemental EA is tiered to the FEIS. Information and assessments that have not changed since the 2012 FEIS analysis will not be restated in this SEA.

1.6 Decision Needed

The District Engineer, Commander of the Sacramento District, must decide in the Final SEA whether the proposed action alternative qualifies for a Finding of No Significant Impact (FONSI) under NEPA or whether a supplemental environmental impact statement must be prepared due to potentially significant environmental impacts.

1.7 Prior NEPA Documents

This SEA tiers to the 2012 FEIS (Corps 2012b) for the Isabella Lake DSM project. The 2012 DEIS (Corps 2012a) provides a primary source for detailed environmental assessment. The FEIS is focused on preferred alternatives and subsequent changes to the DEIS analyses. Additional SEAs tiered to the FEIS are as follows:

- SEA 1 – Phase I Real Estate Acquisition and Relocation 2014
- SEA 2 – Phase II Real Estate Acquisition and Relocation 2015
- SEA 3 – USDA Forest Service Administration and Recreation Facilities Relocation 2016
- SEA 4 – Borel Canal Easement Acquisition 2016
- SEA 5 – Dams and Spillway Design Refinements 2016
- SEA 6 – French Gulch State Route 155 Improvements 2017
- SEA 7 – Temporary Water Control Manual Deviation 2017

These NEPA documents with decision documents are available online at: http://www.spk.usace.army.mil/Missions/Civil-Works/Isabella-Dam/

Copies of the Isabella Lake DSM Project FEIS and other NEPA documents may also be obtained by contacting the Sacramento District Public Affairs Office, 1325 J Street, Sacramento, CA 95814. Phone (916) 557-5101; email: isabella@usace.army.mil.

2.0 ALTERNATIVES

The following section describes the alternative development process, and alternative actions considered in this SEA. Six proposed alternatives are addressed in this Draft SEA and each are evaluated in detail (Figure 2). The alternative locations were selected using USFS criteria, input from the public, and a fall 2019 site location survey. The Final SEA and FONSI, if appropriate, will identify the preferred action alternative as selected by the USFS. The “no action” alternative, required by NEPA, is also evaluated and utilized as a baseline to illustrate the potential effects of not upgrading or relocating the interim visitor center as described in the proposed alternatives. The proposed alternatives are evaluated in detail and compared to the no action alternative. All proposed alternatives would require a redesign and remodel to the existing structure and surrounding area to best suit its mission – either as a permanent visitor center or as a fire station only.

This Draft SEA is intended as an aid to decision-making for the USFS, the primary agency responsible for the mission of visitor use and recreation at Isabella Lake and surrounding lands. In its draft form, the SEA describes the final array of alternatives that might meet the USFS requirements. Based on the Corps-USDA 1964 MOA and 1991 MOU, the permanent visitor center needs to provide service and/or access that is at least equivalent to the original visitor center and comply with interagency budgetary procedures. The Final SEA will include a recommended alternative, with input from public review and comments, based on three main criteria:

1) Ability to Provide Equivalent Visitor Use Services/Operational efficiency – the ability of the proposed alternative to provide equivalent services as described in Section 1.3 and, based on the staffing profile that USFS used prior to relocation, addresses staffing during peak and off-peak seasons, time to move staff to and from locations based on seasons and peak-use days, and security of the facility outside of business hours;
2) Equivalent Access/Site Suitability – the location of the proposed alternatives in proximity to the visitors who will be using the resource, primarily recreationists coming to the area for day use, fishing, and camping, will be a factor in determining a recommendation; and
3) Compliance with Interagency Budgetary Procedures/Cost – the direct cost of construction at a site, operational and maintenance cost to the USFS, the transactional cost to purchase real property, and time to implement the proposed alternatives will be considered in determining a recommendation.

Both the USFS and Corps must comply with federal laws and regulations, including those related to the environment. Impacts to environmental resources are implicit in the decision and are thus not included in the above final selection criteria.

2.1 Alternatives Considered But Eliminated from Further Consideration

An additional alternative option was considered but was not selected. This alternative was the Quality Assurance (QA) Lab, located in proximity to the current construction trailers on the DSM project construction site. Upon completion of the DSM project, the building is currently planned to be repurposed. The QA Lab alternative was removed from consideration during a joint Corps-USFS planning charrette based on agreement that it did not meet the minimum requirements to fit the purpose of the USFS visitor use service mission.

2.2 Alternative 1 - No Action

NEPA requires the Federal lead agency (Corps) to analyze a “no action” alternative that describes the future conditions that would reasonably be expected to exist in the absence of the Preferred Alternative or Proposed Action and serves as the environmental baseline against which the adverse and beneficial effects of the action alternatives are evaluated. In this SEA, the no action alternative (Alternative 1) would be to maintain the current interim visitor center located adjacent to the USFS relocated fire station on Lake Isabella Boulevard (Figure 3). The current

visitor center is sharing the USFS fire station premises and meets the minimum need of a visitor center. It has a large asphalt concrete parking lot, eight parking stalls, two Americans with Disabilities Act of 1990 (ADA)-compliant parking stalls with ADA access to the building and the trailer, and 16 stalls for employees. The site is visible from SR 178 and is located off Lake Isabella Road and all utilities are functional. Although minor changes are needed to meet the full service needs of the original visitor center prior to relocation, the no action alternative would not make these changes. The facilities would remain in their current state, unless action was taken by the USFS. No further updates to the interim visitor center would occur under the Isabella Lake DSM project.

2.3 Alternative 2 – Improve Interim Visitor Center

Under this alternative, the Corps would add measures to make the interim visitor center into an acceptable permanent solution by improving visitor services without constructing a new building (Figure 3). To do this, the Corps would make minor improvements to the existing site, such as upgrading visitor restrooms so that they are compliant with ADA; installing an ADA-compliant visitor services counter, a workstation with locking cabinets, a locking door behind the reception area as an escape route for safety, additional telecom/data lines, electrical outlets for computers or display lights, a thermostat for the visitor office that is separate from the fire station, security cameras for the exterior door and interior visitation area, two benches closer to the front door so visitors can wait outside; restriping the parking area to make it more appropriate for visitor use; and adding “visitor center” signage outside the building and on local roads to direct visitors to the center. Other improvements could include options such as kiosks, interpretive signage, virtual platforms for visitor information, and additional creative ideas for "non-structural" solutions to the visitor-use service problem. As part of this alternative, the Corps would either remove the modular building or repurpose it into a suitable space for the USFS.

See Appendix A for site photos of Alternative 2.

The Corps estimates that it would cost approximately $500,000 to $1,000,000 to upgrade the interim visitor center and make it suitable as a long-term option for the USFS. This includes the cost of removing or repurposing the existing modular building. See Table 1, located at the end of Section 2.0, for a comparison of estimated construction costs by alternative. Ongoing operations and maintenance costs are the responsibility of the managing agency (USFS).

Figure 3. Location of the No Action alternative and Alternative 2 – Improve Interim Visitor Center.

2.4 Alternative 3 – Bank of America

This alternative is a formerly operated Bank of America located on the corner of Lake Isabella Boulevard and Nugget Avenue in the town of Lake Isabella (Figure 4). The site has easy access from SR 178; visitors would exit east on Kernville Road and then cross Lake Isabella Road to Nugget Avenue. The existing building would be reconfigured or modified to serve as the visitor center. The structure is ADA/Architectural Barriers Act of 1968 (ABA) accessible. The open interior space would provide flexibility for space reconfiguration.

The property is privately owned, developed, and is not currently occupied. The site is approximately 1.05 acres, with a 4,738-square foot building, and a 34,000-square foot asphalt parking lot. The parking lot has 42 parking stalls, 3 recently upgraded ADA parking stalls, and an ADA ramp from the street to the building. On the north side of the parking lot there is undeveloped sidewalk that could be developed to accommodate two RVs. Alternatively, parking spaces on the south side could be restriped to make parking for three RVs. Adjacent trees would be trimmed to above vehicle heights. The pavement condition is fair with several large utility patches, surface weathering, alligator cracking, and longitudinal and transverse cracking, and would need to be resurfaced. Water drains away from the building offsite through a 300-foot concrete v-channel. Sewer and water are both located onsite and connected to the building.

The design for the Bank of America site would consist of either reconfiguring or partially demolishing the existing building. The Corps would choose the most economical option. The existing hardscape would be re-used. There would be two ADA parking stalls with ADA access to the building, 22 regular parking stalls, three 18 by 50-foot RV parking stalls, and bus pickup/drop off. A more detailed list of construction quantities is specified in Table 2, which is located at the end of Section 2.0. Existing trees and landscaping would be left in place. Some additional landscaping would be added east of the visitor center, between the central parking areas.

See Appendix A for site photos of Alternative 3.

The estimated cost for construction is $4,500,000. This does not include contingency, design, or construction supervision, inspection and overhead. Cost estimates include completely redoing the parking lot but do not include demolition or removing parts of the existing building if that becomes necessary. See Table 1, located at the end of Section 2.0, for a comparison of estimated construction costs by alternative. Ongoing operations and maintenance costs are the responsibility of the managing agency (USFS).

Figure 4. Location and design of the Bank of America alternative.

2.5 Alternative 4 – Bob Powers Gateway Preserve

This alternative is located off the intersection of Turner Avenue and Suhre Street in the town of Lake Isabella (Figure 5). The site is visible from SR 178 and partly visible from Kernville Road. Visitors would enter the site by exiting SR 178, heading east on Kernville Road, south on Lake Isabella Rd, and then right to go west on Turner Avenue. The entrance would be located at the corner of Turner Avenue and Suhre Street through an easement owned by the town of Lake Isabella.

The visitor center would be built on approximately 1.5 acres of the 18-acre site, which is undeveloped property owned by Kern County and currently leased to the Kern River Valley Heritage Preserve, a local land trust. The property is managed as a nature preserve and is dominated by an emergent wetland, mostly alkaline and sub-alkaline marsh, and meadow. Kern County provided the design plan for this alternative.

The closest sewer connection is located on the Suhre Street site east of the property. Building an on-site septic system is another option for providing sewage. This option may not be feasible given the limited availability of upland land and the need to avoid wetlands. Further study would be required to determine the best means of obtaining sewage onsite. The closest water connection is located on Turner Avenue south of the project site. It would take approximately 1,100 linear feet of pipe to connect to the building through use of easements. There is a power pole with a transformer located near the entrance to the Suhre Street Property, owned by Southern California Edison (SCE). Approximately 1,300 feet of underground or overhead line would be needed to the building through easements. There is a telephone connection located at the corner of Tuner Avenue and Suhre Street. It is estimated that approximately 700 linear feet of cable underground to the building through easements would be required. Turner Avenue and Suhre Street are both approximately 15 feet wide, compared to normal streets that are 24 feet wide. Kern County has stated that these two streets are adequate to handle traffic for a visitor center. Therefore, improvements to these streets are not included in the cost estimates mentioned at the end of this section.

Based on the design plan from Kern County, the site would consist of a west-facing 30 by 60-foot visitor center, an estimated 38,000 square feet of asphalt concrete pavement, and a 120-foot diameter roundabout with accessible pedestrian access from the parking lot to the building through a concrete cement sidewalk. The design would have two ADA parking stalls with ADA access to the building, 20 regular parking stalls, bicycle parking near the building, three RV parking stalls, county bus pickup/drop off, and natural trail access to the wetland. A prefabricated structure would be preferred to minimize construction activities on this site and minimize the new building footprint and associated hardscape. Refer to Table 2 for more details on construction quantities.

There are potential significant natural resource concerns for this alternative site. The alkali mariposa lily (*Calochortus striatus*) is located on the Bob Powers Gateway Preserve, which was established in part to protect and increase the alkali mariposa lily population (KRVHF 2011). This plant is a species of conservation concern for the USFS. The proposed visitor center

footprint for this alternative would occur directly over the alkali mariposa lily population on the preserve and would therefore adversely affect this sensitive species. At this time, there has been no documented success in maintaining viability of an entire alkali mariposa lily population by transplant actions. See Section 3.3 for more details on impacts to special status species. According the USFWS National Wetlands Inventory and a Corps wetland delineation from 1988, there are wetlands across most of the property. The visitor center footprint for this alternative was designed to avoid most of the wetland as delineated in 1988 from a hand-drawn map. Based on updated field surveys from March 2021 the current design encroaches on wetlands. According to Executive Order 11990, federal agencies are prohibited from constructing on wetlands when practical alternatives are available. If this alternative location is selected, the design would have to be greatly altered and further wetland surveys with hydrologic monitoring would be needed. Given the wetland constraints, it may not be possible to create a re-design that complies with Executive Order 11990. See Section 3.4 for more details on impacts to wetlands and water quality.

See Appendix A for site photos of Alternative 4.

The estimated cost for construction is $8,250,000, which includes the cost of building an entrance road through the existing easement. This does not include contingency, design, or construction supervision, inspection and overhead. It also does not include water and sewer costs, which are estimated to be about $750,000. See Table 1, located at the end of Section 2.0, for a comparison of estimated construction costs by alternative. Additional wetland surveys and hydrologic monitoring would cost about $250,000. If wetlands do not preclude construction at this alternative, a supplemental EIS along with mitigation would be needed to address effects to vegetation and special status species. The cost of doing a supplemental EIS would be about $1,000,0000. Mitigation would range between $500,000 to $1,500,000, not including contracting costs. Ongoing operations and maintenance costs are the responsibility of the managing agency (USFS).

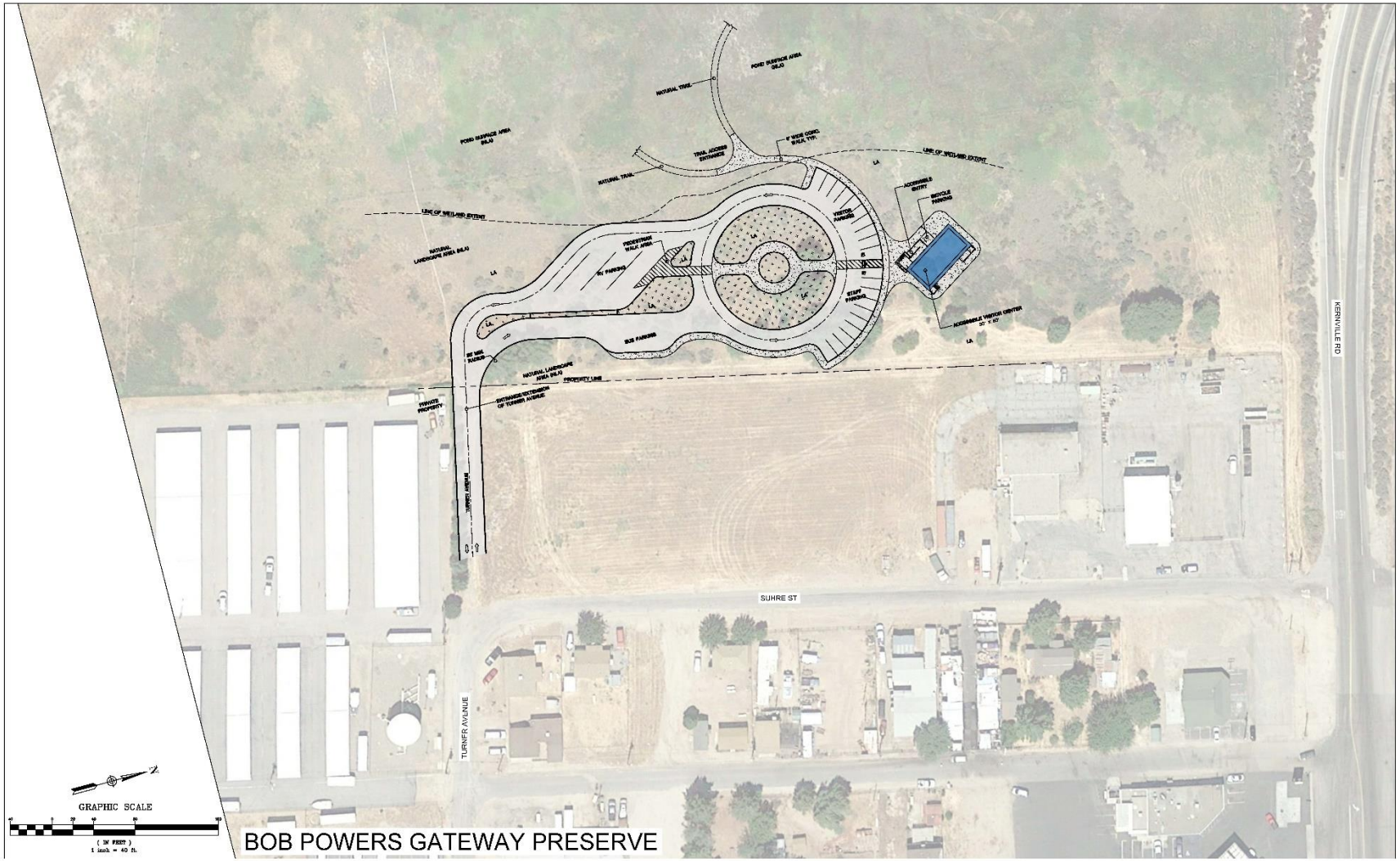

Figure 5. Location and design of the Bob Powers Gateway Preserve alternative.

2.6 Alternative 5 – Suhre Street

This alternative is located off Turner Avenue adjacent to the Bob Powers Gateway Preserve in the town of Lake Isabella (Figure 6). The site is visible from SR 178 and Kernville Road. Visitors would enter the site by exiting SR 178, heading east on Kernville Road, south on Lake Isabella Rd, and then turning right to go west on Turner Ave. The existing structure would be demolished due to poor structural integrity and a new structure would be constructed on top of the existing building footprint.

The 2.88-acre parcel is privately owned and unoccupied with approximately 2 acres of undeveloped open land containing dense, mowed grass, a 4,000-square foot building, 19,300 square feet of dilapidated asphalt concrete pavement, 2,100 square feet of concrete, including sidewalks, and 760 feet of fence. The property is relatively flat and gently slopes west towards the fenced property line of the Bob Powers Gateway Preserve. The pavement condition is poor with high weathering, large longitudinal and transvers cracking with grass growing from cracks. The undeveloped shoulder along Suhre Street exhibits erosion from having no stormwater control.

Sewer and water are both located onsite. Sewer connects to the building on the northeast side of the Suhre Street property. The local water company is Erskine Creek and the water connection to the building is located on the northwest side of the property near Suhre Street. Power would be provided to the new building by SCE through a power line and transformer located near the northwest corner of property near Suhre Street. Telecommunications are provided by Frontier Communications at the corner of Turner Avenue and Suhre Street on the city easement.

The design for the Suhre Street site would consist of a northeast-facing 30 by 60-foot visitor center with an estimated 36,000 sq. ft. of asphalt concrete pavement. A sidewalk would lead visitors to potential nature trails at the Bob Powers Gateway Preserve. These trails would be constructed, operated, and maintained by Kern County or others. The existing hardscape would be re-used. There would be two ADA parking stalls with ADA access to the building, 28 regular parking stalls, three 18 by 50-foot RV parking stalls, and bus pickup/drop off. Visitors would exit through Turner Avenue or Suhre Street. Visitors could also enter and exit on Suhre Street but would not be allowed to enter Suhre Street from Kernville Road. Turner Avenue and Suhre Street are both approximately 15 feet wide, compared to normal streets that are 24 feet wide. See Table 2 for more information on construction quantities.

The Bob Powers Gateway Preserve Strategic Plan proposed the Suhre Street property as an optional expansion for the Preserve and location for a visitor center (KRVHF 2011). The Strategic Plan indicated that acquiring the site would provide maximum opportunity for Preserve-related access, parking and infrastructure support (*e.g.*, water, wastewater, electrical, and mechanical) and would maximize resource stewardship of the Preserve (KRVHF 2011).

See Appendix A for site photos of Alternative 5.

The estimated cost for construction is $7,500,000. This does not include contingency, design, or construction supervision, inspection and overhead. See Table 1, located at the end of Section 2.0, for a comparison of estimated construction costs by alternative. Ongoing operations and maintenance costs are the responsibility of the managing agency (USFS).

2.7 Alternative 6 – Auxiliary Dam Recreation Area

This alternative is located adjacent to SR 178 at the end of Lake Isabella Boulevard near the current construction staging area for the Auxiliary Dam improvements. Figure 7 shows an approximate location for this alternative. The final location could shift due to design refinements but would remain within the Auxiliary Dam Recreation Area with high visibility from SR 178. Visitors would enter the site by turning off SR 178. A few existing restrooms and other recreation facilities have been relocated or re-constructed as part of the Isabella DSM project. The designs for these recreation facilities are also shown on Figure 7 as a reference. An existing haul/maintenance road runs through the site.

The site is federally owned and located adjacent to the recreational boating area near the shore of Lake Isabella. This site slopes towards the lake at a 10 percent grade. Sewage would be conducted through use of septic tanks or a connection from the town of Isabella. No water is located close to site; existing restrooms are no flow. Water is available through Erskine Creek, the local water company, but would require about 2700 feet of piping through use of easements. Power would be provided to the new building by SCE through an existing connection. There is no communication infrastructure close to this site.

The design for the Auxiliary Dam Recreation Area site would consist of a south-facing 30 by 60-foot visitor center and an estimated 38,000 square feet of asphalt concrete pavement. A prefabricated structure would be preferred to minimize construction activities on this site and minimize the new building footprint and associated hardscape. The design would have two ADA parking stalls with ADA access to the building, 19 regular parking stalls, three RV parking stalls, a bus pickup/drop off area, and a turnaround for vehicles. Table 2 shows construction quantities for each alternative in more detail.

See Appendix A for site photos of Alternative 6.

The estimated cost for construction is $5,000,000. This does not include contingency, design, or construction supervision, inspection and overhead. It also does not include sewage, water, or power costs, which are estimated to be about $1,000,000. See Table 1 for estimated construction costs for each alternative. Ongoing operations and maintenance costs are the responsibility of the managing agency (USFS).

2.8 Schedule

Construction is expected to begin in March 2023 and be complete by March 2024, dependent upon any real estate acquisition requirements.

Figure 6. Location and design of the Suhre Street alternative.

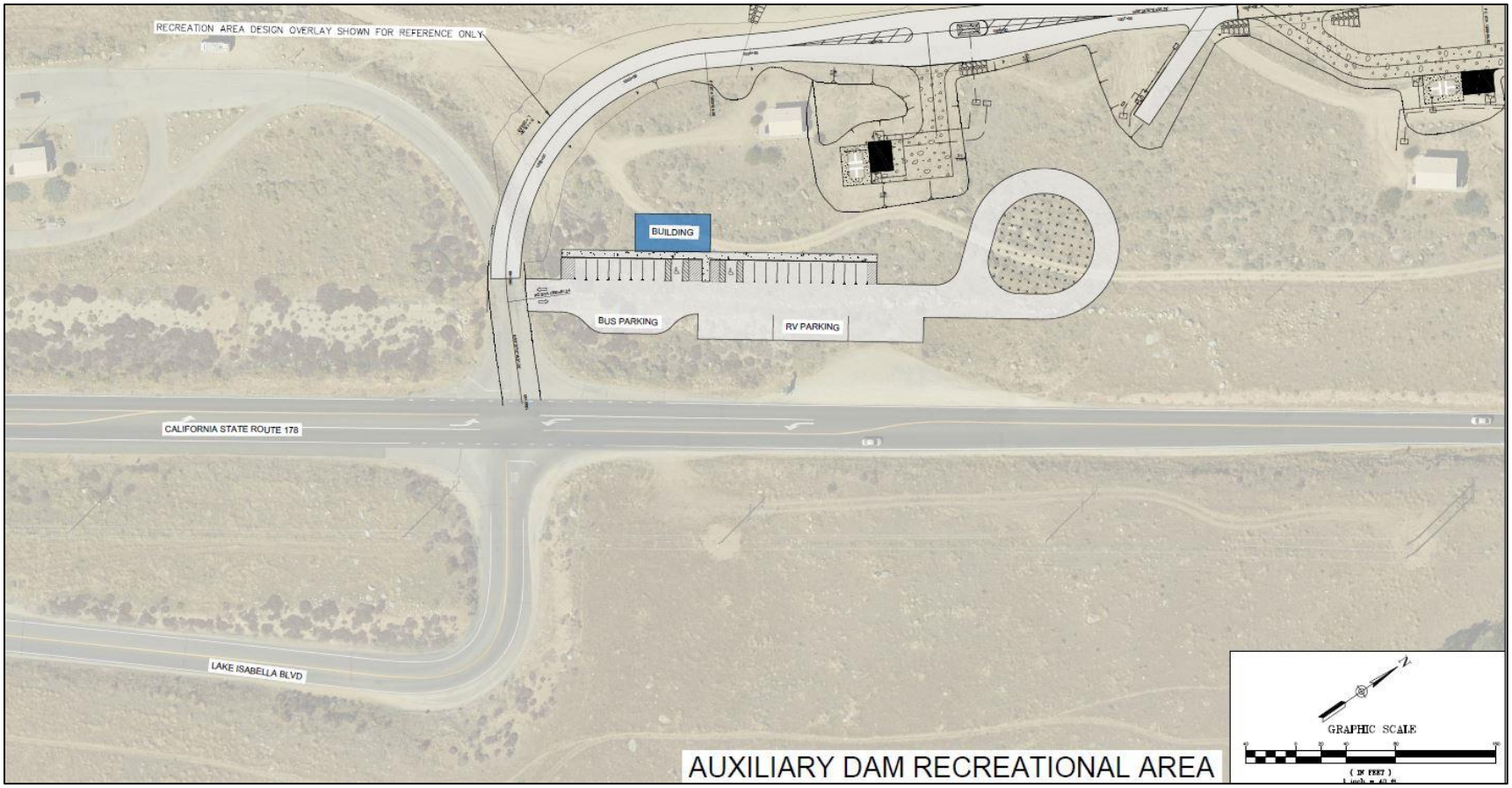

Figure 7. Location and design of the Auxiliary Dam Recreation Area alternative.

Table 1. Estimated construction costs for each alternative.

	Estimated cost
Improve Interim	$1,000,000
Bank of America	$4,500,000
Bob Powers Gateway Preserve	$9,000,000
Suhre Street	$7,500,000
Auxiliary Dam Recreation Area	$6,000,000

Note: These are rough order of magnitude costs for the purposes of comparing the alternatives and only reflect capital costs of construction; actual construction costs have an estimated range of +/-25%. The Government will also evaluate operation and maintenance costs when evaluating economics of each alternative.

Table 2. Estimated construction quantities for each alternative.

	Land clearing (acres)	Building demolition (cf)	Haul to dump (cy)	Grading (sy)	Soil excavation (cy)	Road excavation (cy)	Gravel (cy)	Asphalt (tons)	Concrete curb & gutter (linear feet)
Improve Interim	-	-	-	-	-	-	-	-	-
Bank of America	-	60,000	2,000	-	-	-	200	75	-
Bob Powers	2.00	-	-	30,000	2,000	1,500	3,000	700	1,000
Suhre Street	2.00	300,000	10,000	10,000	1,000	-	1,000	400	1,000
Auxiliary Dam	1.25	-	1,250	10,000	1,500	-	1,500	1,000	1,000

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section describes the environmental resources as well as the effects of the proposed alternatives on area resources. Section 3.1 discusses those resources that were not evaluated in detail. Sections 3.2 through 3.8 describe the environmental resources evaluated in detail, including the existing conditions, the no action alternative, effects of the proposed alternatives, and proposed measures to avoid, reduce, minimize, mitigate, or compensate for any potential significant effects. In determining effects, the consequences of the proposed alternatives are compared to the consequence of taking no action. Impacts are identified as direct or indirect. Effects are assessed for significance based on significance criteria. The significance criteria used in this document are based on factual or scientific information and data, and regulatory standards of federal and state agencies. Section 3.9 summarizes the effects by resource for each of the alternatives.

3.1 Environmental Resources Not Evaluated in Detail

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

3.1.1 Growth-Inducing Effects

The proposed alternatives would not directly or indirectly induce growth in or near the community surrounding the Isabella Dams. Unplanned growth is not expected as the proposed alternatives provide an in-kind replacement for an existing service, the USFS visitor center. The proposed alternatives would not result in a substantial increase in the number of permanent workers or employees, or a need for additional permanent housing and local services. New development would be consistent with existing Kern County General Plan policies and zoning ordinances regarding land use, open space, conservation, flood protection, and public health and safety. Therefore, the proposed alternatives would have no growth-inducing effects.

3.1.2 Land Use

The Land Use section of the Draft EIS (Section 3.11) sufficiently characterized the regulatory setting for this resource. An alternative would be considered to have a significant effect on land use if it would result in incompatible land uses with existing and planned land uses in the area, be inconsistent with land use designations or goals, policy or regulation, or produce a permanent conversion of prime and unique farmlands to other land uses. No farmland or timberland lie within the proposed alternative areas. The proposed alternatives are compatible with existing and planned land uses. Thus, they would not have a significant effect on land use.

3.1.3 Socioeconomics and Environmental Justice

Section 3.15 of the DEIS characterized the regulatory setting for this resource. Based on the Environmental Justice Screening and Mapping Tool, which aggregates data from the U.S. Census and other sources, the local area within three miles of the proposed alternatives has a population of about 4,700 people (USEPA 2021). This area has a higher percentage of elderly (older than age 64) and low-income people, but a lower percentage of people of color compared to the state average (USEPA 2021). The proposed alternatives were selected based on criteria from the USFS, as well as local input, and not on the demographics of the community. The proposed alternatives would not have a disproportionally adverse effect on these populations. Indices for environmental hazards for the area are lower than state average (USEPA 2021). Any property acquisitions, if needed, would be conducted in compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 United States Code [USC] § 4601, *et seq.*) and implementing regulation (49 Code of Federal Regulations [CFR] Part 24). As a result, the effects of the proposed alternatives on socioeconomics and environmental justice would be less than significant.

3.1.4 Aesthetics and Visual Resources

The visual aesthetics sections of the DEIS (Section 3.13) and FEIS (Section 3.11) adequately characterized the regulatory setting and the general visual resources of the area surrounding the proposed alternatives. There have been no additional revisions, studies or new data generated that are relevant to the discussion of the affected environment. While views of Isabella Lake and the Kern River qualify as scenic resources, no part of the proposed alternatives would affect views of the lake or river. Each proposed alternative is in an area with existing buildings in the surrounding landscape. The building exterior at the final selected alternative would conform to the USFS *FS-710 Built Environment Image Guide for National Forests and Grasslands* and would also integrate the architectural style and characteristics of the surrounding area.

3.1.5 Geology, Soils, and Seismicity

The Geology, Soils, and Seismicity section of the Isabella Lake DSM Project EIS (DEIS Section 3.4 pages 3-5 and FEIS Section 3.2 pages 3-2) sufficiently characterizes the regulatory setting and affected environment for this resource. There have been no additional revisions, studies, or new data relevant to the discussion of the affected environment. Best Management Practices (BMPs) specified in Section 3.4.4 of the DEIS are expected to reduce any potential geology, soils, and seismicity impacts to a less than significant level (DEIS pages 3-30). The proposed alternatives do not present significant new circumstances or information regarding the nature and scope of effects to geology, soils, and seismicity associated with the DSM project that would change the analysis present in the 2012 DEIS and FEIS. The proposed alternatives would not produce any adverse effects to geology, soils, or seismicity.

3.1.6 Hazardous and Toxic Waste

The hazardous, toxic, and radiological waste (HTRW) section of the Draft EIS (Section 3.9.1) sufficiently characterizes the regulatory setting for this resource. The Corps conducted environmental site assessments in the area during October and November 2010 (DEIS Section 3.9.2). The environmental site assessments also addressed HTRW on USFS property surrounding the lake that could be affected by the proposed project. The Corps would conduct further HTRW investigations as needed during property fee acquisition if the select alternative is not on federally owned property. An environmental site assessment would also be conducted to identify recognized environmental conditions, including the presence or likely presence of any hazardous substances or petroleum products under conditions that indicate an existing release, a past release, or the material threat of a release into structures, the ground, and groundwater or surface waters at any new acquired property. The environmental site assessment would be prepared in accordance with the American Society for Testing and Materials (ASTM 2013) Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process and Engineering Regulation (ER) 1165-2-132, HTRW Guidance for Civil Works Projects. Any required cleanup would have to be completed prior to the U.S. Government acquiring fee title to the property.

Depending on which alternative is selected, proper abatement would be conducted as needed by the demolition contractor prior to building demolition, according to county, state and federal regulations. The contractor would obtain all required permits and release forms prior to demolition work from the Eastern Kern Air Pollution Control District (EKAPCD) and for proper disposal according to Kern County Ordinance Code G-8057, which governs disposal of solid waste at Kern County waste facilities. The Corps has a hazardous material safety program outlined in the current version of Corps Engineering Manual 385-1-1, dated November 30, 2014, which requires staff and contractors to follow BMPs, as detailed in the 2012 DEIS under Section 3.9.4. The proposed alternatives do not present significant new circumstances or information regarding the nature and scope of effects to HTRW that would change the analysis presented in the 2012 FEIS.

3.1.7 Cultural Resources

Several documents guide Corps compliance with relevant Federal laws concerning cultural resources. There is an existing Programmatic Agreement (PA) to guide compliance with Section 106 of the National Historic Preservation Act (54 USC 306108), executed in 2012 (Corps 2012c). The PA also confers full compliance with Section 106, so long as all stipulations are carried out. A tiering Historic Properties Treatment Plan (HPTP) describing mitigation, monitoring, and response plan measures was implemented in 2017 (Corps 2017a). The Corps also executed a project-specific Protocol for the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) to guide responses to finds of human remains and materials subject to NAGPRA on Federal lands within the project area (2017b). All proposed alternatives would have no significant impact to cultural resources given Corps compliance with these documents.

Three of the proposed alternatives (the No Action, Improve Interim Visitor Center, and Auxiliary Dam Recreation Area) are located within the area previously examined for historic properties. No historic properties were identified in the general vicinity of these alternatives; therefore, their selection and construction would have no adverse effects on historic properties. The Corps would use the process in the HPTP to structure responses to any potential historic properties that are discovered during construction. Likewise, if human remains or items subject to NAGPRA are discovered, the Corps would use the process in the NAGPRA Protocol to respond or coordinate a response with the Sequoia National Forest.

Three of the proposed alternatives (Bank of America, Bob Powers Gateway Preserve, and Suhre Street) have not previously been subject to Section 106 compliance activities. The Corps would add these parcels to the project's Area of Potential Effect (APE), identify any historic properties, and assess effects pursuant to the PA stipulations; reporting on these efforts and associated consultation may postdate the publication of this SEA but would occur prior to any construction. Any effects determined to result in adverse effects to historic properties (if they are present) would trigger a mitigation requirement; fulfillment of the mitigation requirement according to PA and HPTP standards would reduce the effect to less than significant under NEPA. SHPO and Tribal consultation would continue throughout the identification and assessment process according to the requirements of the PA. Any human remains or items subject to NAGPRA would be reviewed according to the NAGPRA Protocol if one of these parcels is selected and transferred to Federal ownership. The Corps would ensure that responses to human remains on non-Federal lands would follow California Health & Safety Code Section 7050.5 and public Resources Code Section 5097.98(a).

For all proposed alternatives, Corps Cultural Resources staff would engage with Sequoia National Forest (SQF) counterparts and any interested Native American Tribes to identify architectural or landscape elements that reflect the local history, environment, and peoples; identified elements may be used in the final design and/or construction.

3.1.8 Recreation

The recreation section of the Draft EIS (Section 3.12.2) sufficiently characterizes the regulatory setting for this resource. The DEIS and FEIS assessed the potential effects of the Isabella Lake DSM project on recreation facilities and opportunities as significant to recreational use on a temporary and permanent basis. Since the release of the EIS and draft Recreation Report, the Corps, in coordination with the Office of Management and Budget concluded that sufficient authority from the 1964 MOA exists to allow the Corps to use its appropriated funds to relocate in kind services of USFS facilities impacted by the Isabella Lake DSM project (see Section 1.4 and Section 1.5) as mitigative actions, and an intrinsic part of the Isabella Lake DSM project. With these mitigations, permanent loss of recreational facilities, opportunities or resources would not occur. The SEA for the USDA Forest Service Administration and Recreation Facilities Relocation (Corps 2016) assessed the relocation of the permanent recreational facilities.

The proposed alternatives would not have a significant effect on recreation since they would not cause a permanent loss of recreational opportunities or resources; severely restrict or

eliminate access to recreational opportunities and facilities; cause a substantial disruption in a recreational use or activity; or substantially diminish the quality of the recreational experience. Construction at the Auxiliary Dam Recreation Area alternative site would be conducted during normal daytime hours and would avoid weekends, holidays, or special events.

3.2 Vegetation and Wildlife

The Biological Resources section of the Draft EIS (Section 3.10) and Final EIS (Section 3.8) sufficiently characterizes the general affected environment for this resource, including descriptions of vegetation and habitat found within the proposed action area (Figure 5). A final Fish and Wildlife Coordination Act Report (Appendix C of the Final EIS) provided the U.S. Fish and Wildlife Service (USFWS) recommendations and vegetation compensation needs for wildlife habitats affected by construction of features associated with the Isabella Lake DSM project.

3.2.1 Affected Environment

Isabella Lake is in the California Floristic Province (Hickman and Jepson 1993), which is the largest and most significant geographic unit in California (Hickman and Jepson 1993). Vegetation identified in the proposed project area include oak woodlands (*Quercus wislizeni*), pine woodlands (*Pinus sabiniana*), sagebrush-scrub upland (*Ericameria nauseosa*) and valley grasslands (*Bromus rubens-Schismus*). General cover types in the proposed project area are illustrated in Figure 5. Numerous non-native and invasive plant species are also found in the project area. Riparian woodlands (*Salix gooddingii*, *Populus fremontii*, and *S. laevigata*) are common in the proposed project area upstream of the limnetic zone of Isabella Lake along the North and South Fork Kern Rivers. The riparian woodland cover type is dominated by Goodding's willow (*Salix gooddingii*), Fremont cottonwood (*Populus fremontii*), and red willow (*S. laevigata*). Also common in some areas is Pacific willow (*S. lasiandra*), yellow willow (*S. lutea*), narrowleaf willow (*S. exigua*), shining willow (*S. lucida* ssp.), boxelder (*Acer negundo*), California buckeye (*Aesculus californica*), and white alder (*Alnus rhombifolia*) (Sawyer et al. 2009). Black elderberry (*Sambucus nigra*) is also found in this vegetation type. Tree canopy height can be up to 80 feet and is open to continuous (Sawyer et al. 2009). Common shrubs in the riparian woodlands include mule-fat (*Baccharis salicifolia*), coyote brush (*B. pilularis*), and redosier dogwood (*Cornus sericea*), which also form an open to continuous cover (Sawyer et al. 2009). The herbaceous layer is variable and is often dominated by primary colonizers such as rough cocklebur (*Xanthium strumarium*), stinging nettle (*Urtica dioica*), goosegrass (*Elusine indica*), common rush (*Juncus effusus*), common knotweed (*Polygonum lapathifolium*), common plantain (*Plantago major*), and cress (*Cardamine* sp.) (Sawyer et al. 2009).

The diversity of habitats around Isabella Lake attracts a variety of wildlife species, including many residents and abundant migrants. The extensive riparian areas found in the deltas of the North and South Fork Kern Rivers are the most substantial habitat for wildlife found in the vicinity of Isabella Lake. These areas host expanses of mature riparian woodland growing in braided stream channels, pools, and wetlands. In particular, the South Fork Wildlife Area has been identified as one of the largest intact patches of riparian habitat remaining in California. It is estimated that over 300 species of birds use this area, with most being neotropical migrants

that nest and forage during summer and overwinter in Central and South America (Audubon 2011).

Common birds include passerines such as flycatchers, warblers, kinglets, chickadees, thrushes, jays, blackbirds, sparrows, finches, towhees, wrens, nuthatches, and swallows. Other common birds are hummingbirds, woodpeckers, water birds, waders, and various raptors such as owls, buteos, and smaller accipiters (Audubon 2011). Wildlife species common in this area include mammals such as foxes (*Vulpes* spp.), coyote (*Canis latrans*), bobcat (*Lynx rufus*), striped skunk (*Mephitis mephitis*), spotted skunk (*Spilogale gracilis*), raccoon (*Procyon lotor*), Virginia opossum (*Didelphis virginiana*), bats, and woodrats (*Neotoma* spp.). Reptiles and amphibians that are relatively common include the Pacific chorus frog (*Pseudacris regilla*), western toad (*Anaxyrus boreas*), bullfrog (*Lithobates catesbeianus*), and valley garter snake (*Thamnophis sirtalis fitchi*) (Audubon 2011). Many invertebrates are also common in this area and provide the dietary basis for the high densities seen in some wildlife species.

Much of the upland habitat around Isabella Lake hosts species adapted to arid environments. Common reptiles include side-blotched lizard (*Uta stansburiana*), southern alligator lizard (*Elgaria multicarinata*), western fence lizard (*Sceloporus occidentalis*), California kingsnake (*Lampropeltis californiae*), Pacific gopher snake (Pituophis catenifer catenifer), and Northern Pacific rattlesnake (*Crotalus oreganus*) (Audubon 2011). Common upland bird species include California quail (*Callipepla californica*), scrub jay (*Aphelocoma* spp.), goldfinches (*Spinus* spp.), wrentit (*Chamaea fasciata*), and acorn woodpecker (*Melanerpes formicivorus*). Mammals that are expected to be in the area surrounding Lake Isabella include pocket gophers (*Thomomys* spp.), mice (*Peromyscus* spp.), tree and ground squirrels (*Ostospermophilus* spp.), mule deer (*Odocoileus hemionus*), mountain lion (*Puma concolor*), and a diversity of bats. Isabella Lake and the Kern River host a variety of waterfowl, including migratory and resident waterfowl such as American coot (*Fulica americana*), grebes, cormorants (*Phalacrocorax* spp.), gulls, and waders (Audubon 2011).

3.2.2 Environmental Consequences

Basis of Significance. An alternative would be considered to have a significant effect on vegetation and wildlife if it would permanently remove or disturb sensitive native communities, or significantly reduce the amount of native vegetation and wildlife habitat in the project area.

No Action. Under the No Action Alternative (Alternative 1) the current interim visitor center located adjacent to the USFS relocated fire station on Lake Isabella Boulevard would remain in its current state unless action was taken by the USFS. No effects to vegetation and wildlife would take place because no further updates to the interim visitor center would occur under the Isabella Lake DSM project.

Alternative 2 – Improve Interim Visitor Center. Under this alternative, minor changes would occur indoors to improve the existing interim visitor center and convert it to a more usable long-term visitor center. Some outdoor signage would be added. There would be no effects to vegetation and wildlife.

Alternative 3 – Bank of America. This alternative location is a formerly operated Bank of America located on the corner of Lake Isabella Boulevard and Nugget Avenue in the town of Lake Isabella. There are no known vegetation or wildlife resource issues, other than approximately six ornamental trees/shrubs that are on the perimeter of the property. If it is necessary to remove any vegetation, it would be done during the non-nesting season for bird. If this is not possible, a qualified biologist would conduct bird surveys and monitoring to reduce impacts to birds. Therefore, this alternative would have less than significant effects on vegetation and wildlife.

Alternative 4 – Bob Powers Gateway Preserve. The Bob Powers Gateway Preserve site is located off the intersection of Turner Avenue and Suhre Street in the town of Lake Isabella. This undeveloped site is privately owned and contains a freshwater emergent wetland. The visitor center would be built on approximately 1.25 acres of the 18-acre site.

There are three specific habitat types identified within the Bob Powers Gateway Preserve property, including cottonwood forest (approximately 0.73 acres), grasslands (approximately 0.87 acres), and seasonal wetland (approximately 1.44 acres). Coordination with USFWS would be required under the Fish and Wildlife Coordination Act (FWCA) to determine whether this alternative would require mitigation due to the construction impacts on these three habitats. This alternative would remove approximately 18 trees. In kind mitigation could be very expensive, quickly becoming several hundred thousand dollars, depending on the required mitigation ratios determined by USFWS. FWCA requires that the Corps fund USFWS for this work, adding an additional budgetary cost to the project.

This alternative would adversely affect the best population of alkali mariposa lily (*Calochortus striatus*) in Kern County outside Edwards Airforce Base (CDFW 2021). This species is a USFS species of conservation concern and is discussed further in detail in Section 3.3.1. Alkali mariposa lily occurs along a unique soil moisture gradient at the Preserve (McCormick and Moss 2017). It is not common in the wettest areas of the site, but tends to occupy the transition between these areas and the uplands (KRVHF 2011; McCormick and Moss 2017). The current visitor center design would permanently remove this sensitive native plant community.

Construction of this proposed alternative would permanently remove or disturb sensitive native communities and would therefore have a significant impact on vegetation and wildlife. A FONSI could not be signed if this alternative is selected. A Supplemental EIS would be needed, along with mitigation to reduce impacts to sensitive native habitat. The Corps would need to conduct further coordination under FWCA with the USFWS.

Alternative 5 – Suhre Street. This alternative contains 2 acres of undeveloped land dominated by filarees (*Erodium* spp.), which is routinely mowed. This area can be classified as rural open habitat that is generally disturbed and populated by plant species that tend to colonize disturbed areas. It is dominated by weedy or non-native species, with some natives such as the California poppy (*Eschscholzia californica*) interspersed throughout the site. The visitor center design for this site would incorporate native vegetation that is compatible with the adjacent wetland and the local area. Existing invasive species would be managed. After construction,

about two-thirds of the site would remain as open habitat, which would be planted with native species appropriate to local region. This would improve the existing conditions. Therefore, effects to vegetation and wildlife would be less than significant and would not exceed those described in the 2012 DEIS and FEIS.

Alternative 6 – Auxiliary Dam Recreation Area. This alternative site is undeveloped federally owned land, which used to contain restrooms and parking for recreationists at the Auxiliary Dam Recreation Area (Figure 8). The site currently has several haul roads and is being used as a source of sand for Phase II of the Isabella DSM project. This area used to be dominated by sagebrush-scrub upland habitat that was heavily disturbed by human influence, mostly recreationists at the lake. Effects to this marginal habitat were discussed in the 2012 UFWS Fish and Wildlife Coordination Act Report for the Isabella DSM project. Mitigation for impacts to this habitat is currently ongoing at the project's mitigation site. Under this alternative, there would be no additional effects to vegetation and wildlife beyond those analyzed under the DEIS. Therefore, effects to vegetation and wildlife would be less than significant.

Figure 8. Aerial imagery from September 2020 showing the approximate location for the Auxiliary Dam Recreation Area alternative.

3.2.3 Mitigation

Possible mitigation coupled with the following BMPs would reduce impacts on wildlife and vegetation to less than significant:

- All off-road equipment and vehicles used for construction are required to be weed-free. All equipment and vehicles would be cleaned of all attached mud, dirt, and plant parts prior to arriving to the Project Area. This would be done at a vehicle washing station or steam cleaning facility (power or high-pressure cleaning) before the equipment and vehicles enter the Project Area.
- Weed infestations identified before construction that are within the Project Area would be treated.
- Staging areas for equipment, materials, or crews would not be located in weed infested areas.
- Weed-free equipment, mulches, and seed sources would be used. Salvage topsoil from Project Area for use in onsite revegetation, unless contaminated with noxious weeds.
- The amount of ground and vegetation disturbance in the construction areas would be minimized. Reestablish vegetation on all disturbed bare ground with native forbs and grasses to minimize weed establishment and infestation.
- Down case lighting would be implemented during any potential night work to minimize potential impacts to local wildlife.
- Woody vegetation that would need to be removed within the construction footprint would be removed during the non-nesting season to avoid affecting active bird nests.
- Avoid impacts to migratory birds nesting in trees along the access routes and adjacent to the proposed repair sites by conducting pre-construction surveys for active nests along proposed haul roads, staging areas, and construction sites. This would especially apply if construction begins in spring or early summer. Work activity around active nests would be avoided until the young have fledged. If construction commences during nesting season, a nesting bird survey would be conducted a minimum of a week in advance. Additionally, a survey would be conducted 24 hours in advance of the construction, to ensure no active nests. If active nests are located, USFWS would be contacted for Migratory Bird Treaty Act coordination.
- Avoid future impacts to the site by ensuring that fill materials are free of contaminants, such as invasive weed species or toxic materials.
- Minimize project impacts by reseeding all disturbed areas, including staging areas, at the completion of construction with native forbs and grasses. Reseeding should be conducted just prior to the rainy season to enhance germination and plant establishment. The reseeding mix should include species used by and beneficial for native pollinators.
- Where construction activities result in the removal or disturbance of vegetation or disturbance of soils and are not replaced with landscaping, seed with native grass seed, wood fiber mulch and tackifier per the USFS specified application rates below:
    - Native Grass Seed Type and Application Rates:
        - Three weeks fescue (*Vulpia microstachys*) or equivalent, 8 lbs/acre;
        - Nodding needlegrass (*Nassella cernua*) or equivalent, 7 lbs/acre;

- Pine bluegrass (*Poa secunda*) or equivalent, 6 lbs/acre;
- Desert needlegrass (*Achnatherum speciosa*) or equivalent, 20 lbs/acre;
- Indian ricegrass (*Achnatherum hymenoides*) or equivalent, 4 lbs/acre; and
- Squirreltail (*Elymus elymoides*) or equivalent, 5 lbs/acre.

- Wood Fiber Mulch (EcoFibre® or equivalent), 2,000 lbs/acre.
- Tackifier (PLANTAGO® Binder or equivalent), 200 lbs/acre.

3.3 Special Status Species

The Biological Resources section of the Draft EIS (Section 3.10) and Final EIS (Section 3.8) characterizes the general regulatory setting and existing condition for this resource. The Isabella Lake DSM project was found in full compliance with the Endangered Species Act (ESA), and a USFWS biological opinion (BO) was included in Appendix C of the Final EIS. Changes to the regulatory setting for this resource since release of the Final EIS are described below. Since release of the Final EIS, the affected environment has been updated with focus on the areas directly affected by the actions described in subsequent Supplemental EAs and relevant to the discussions of the affected environment. Updated lists of threatened, endangered and candidate species for the alternative locations are included in Appendix B of this document.

There is no suitable habitat in the immediate vicinity of the proposed action that would support any of the special status species found on the IPaC resource or the CNDDB lists, other than alkali mariposa lily (Appendix B). No critical habitat is located within the proposed project area. No federally listed or candidate species are known to occur, nor were observed during previous site investigations.

3.3.1 Affected Environment

Fisher. The USFWS listed the Southern Sierra Nevada Distinct Population Segment of fisher (*Pekania pennanti*) as endangered on 15 June 2020 (85 FR 29532). Fishers are regarded as habitat specialists in the western United States (Buskirk and Powell 1994), occurring only at mid to lower elevations in mature conifer and mixed conifer/hardwood forests characterized by dense canopies and abundant large trees, snags, and logs (Powell and Zielinski 1994).

The key aspects of fisher habitat are best expressed in forest stands with late-successional characteristics. Fishers use habitat with high canopy closure, large trees and snags, large woody debris, large hardwoods, multiple canopy layers, and avoid areas lacking overhead canopy cover (USFWS 2004). Fishers also occupy and reproduce in some managed forest landscapes and forest stands not classified as late-successional that provide some of the habitat elements important to fisher, such as relatively large trees, high canopy closure, large legacy trees, and large woody debris, in second-growth forest stands (Klug 1997; Simpson Resource Company 2003).

According to CNDDB, the closest fisher occurrence to the Bob Powers Preserve is four miles away in a wooded canyon along Bodfish Creek from tracks spotted in 1955. No sightings within the area have been documented since (CDFW 2021).

Southwestern Willow Flycatcher. On 03 January 2013, USFWS designated revised critical habitat for the southwestern willow flycatcher (*Empidonax traillii extimus*) under the ESA (USFWS 2013b). The revised critical habitat designation for the Kern Management Unit includes a 14.6-mile portion of the South Fork Kern River (including the upper 0.6-mile portion of Isabella Lake) and a 1.0-mile segment of Canebrake Creek in Kern County, California. Along this segment of the South Fork Kern River, two pieces of private land that were woven within this segment, the privately owned and operated Hafenfeld Ranch (0.2-mile of stream on the south side of the river) and Audubon California's Sprague Ranch (2.5-mile of stream on the north side of the river) are excluded from the final designation.

Western Yellow-Billed Cuckoo. On 03 October 2013, USFWS formally proposed that the Western Distinct Population Segment of the yellow-billed cuckoo (*Coccyzus americanus*) be listed as a federally threatened species and protected under the ESA (USFWS 2013a). On 03 October 2014, the proposed rule became effective and finalized the USFWS determination for listing the western yellow-billed cuckoo but not its critical habitat (USFWS 2014). Yellow-billed cuckoos are recognized as state endangered in California.

On 05 August 2014, the USFWS announced a proposal to designate critical habitat for the western distinct population segment of the yellow-billed cuckoo under the ESA. The proposed critical habitat proximity to Isabella Lake is similar to that designated for the southwestern willow flycatcher. The public comment period for this proposed rule was reopened on 12 November 2014 and closed on 12 January 2015. Comments and information received from concerned Federal and State agencies, the scientific community, and other interested parties regarding the proposed critical habitat designation are currently under consideration by USFWS.

Valley Longhorn Elderberry Beetle. On 02 October 2012, the USFWS announced a proposal to remove the valley elderberry longhorn beetle (*Desmocerus californicus*) (VELB) from the federal list of endangered and threatened wildlife under the ESA. The public comment period for this proposed rule was reopened on 23 January 2013 and closed on 22 February 2013.

On 17 September 2014, the USFWS withdrew the proposed rule to remove the VELB from the federal list under the ESA. This withdrawal was based on the determination that the proposed rule did not fully analyze the best available information. This information indicated that the threats to the species and its habitat had not been reduced to the point where the species no longer meets the statutory definition of an endangered or threatened species. However, the information also indicated that the range of the VELB is now considered to be smaller than what was described in the proposed delisting rule. As such, the counties of Kern, King, and Tulare are no longer considered within the range of the species, and projects proposed in those counties would no longer need to consult with the USFWS for VELB conservation.

Alkali mariposa lily. Alkali mariposa lily (*Calochortus striatus*) is a small perennial herb that arises from an underground bulb and flowers in the spring, roughly from April to June. It occurs from 2,000 to 3,700 feet elevation and prefers springs and wet alkaline meadows. It is considered a facultative wetland (FACW) species according to USDA PLANTS database (2021). FACW plant species usually occur in wetlands (estimated probability 67% to 99%), but occasionally are found in non-wetlands.

Alkali mariposa lily is listed as a USFS species of conservation concern (2016). NatureServe ranks this species as a state rare plant (rank of 1B.2), indicating it is fairly endangered in California though not yet listed. Additional global and state rankings of G3 and S3, respectively, indicate it is a plant of vulnerable status (CNPS 2015). It occurs on the north slope of the San Bernardino and San Gabriel Mountains in Los Angeles and San Bernardino counties. This plant also occurs in the vicinity of Lake Isabella, the base of the Piutes, the South Fork of the Kern River, and low elevations of the Scodies (USFS 2002; CDFW 2021). This species also occurs in Nevada in one county (USFS 2002).

The subpopulation of alkali mariposa lily at Bob Powers Gateway Preserve is considered to be part of the second largest (KRVHF 2011) or third largest population of the species, globally (CDFW 2021). Extensive plant surveys were conducted at the Bob Powers Gateway Preserve in 2010, 2015, 2016, and 2017. The surveys counted 472 (KRVHF 2011), 1,255, 2,909, and 1,599 plants, respectively (McCormick and Moss 2017). The Bob Powers Gateway Preserve, under Kern County approval, has also been utilized in the past as an alkali mariposa lily transplant area for mitigation of a private development project. Currently, there has been no documented success in maintaining viability of an entire alkali mariposa lily population by transplant actions (KRVHF 2011; Corps 2016). According to USFS guidelines, planning rules must consider the maintenance of viable populations of species of conservation concern (USFS 2002; 2016).

3.3.2 Environmental Consequences

Basis of Significance. An alternative would be considered to have a significant effect on special status species if it would result in the take of a federally or state-listed threatened or endangered species; adversely affect designated critical habitat, including degradation of its habitat to the degree of jeopardizing the continued existence of the species or critical habitat; substantially affect any other special status species; or if it affected a population of a non-listed species to the point where it became listed or a candidate for listing.

No Action. Under the No Action alternative (Alternative 1) the current interim visitor center located adjacent to the USFS relocated fire station on Lake Isabella Boulevard would remain in its current state unless action was taken by the USFS. No impacts would occur to special status species because no further updates to the interim visitor center would occur under the Isabella Lake DSM project.

Alternative 2 – Improve Interim Visitor Center. Since this alternative location for the visitor center lacks habitat for special status species, there would be no effect to special status species.

Alternative 3 – Bank of America. Since this alternative location for the visitor center lacks habitat for special status species, there would be no effect to special status species.

Alternative 4 – Bob Powers Gateway Preserve. Under USFS guidelines, planning rules must consider the maintenance of viable populations of species of conservation concern. This alternative would result in the partial destruction of the one of the best populations of the alkali

mariposa lily. This would substantially affect this special status species and would be a significant impact. Therefore, a FONSI could not be signed if this alternative is selected. A Supplemental EIS would be needed, along with mitigation to reduce impacts to sensitive native habitat.

Alternative 5 – Suhre Street Site. Since this alternative location for the visitor center lacks habitat for special status species, there would be no effect to special status species.

Alternative 6 – Auxiliary Dam Recreation Area. Since this alternative location for the visitor center lacks habitat for special status species, there would be no effect to special status species.

3.3.3 Mitigation

None of the proposed alternatives would have effects on special status species, except for the Bob Powers Gateway Preserve. This alternative would have significant effects on the alkali mariposa lily. If this alternative is selected, then an SEIS would be required and a detailed mitigation strategy would be developed to reduce the significant impacts to alkali mariposa lily.

3.4 Water Resources and Quality

The Water Resources Section of the Isabella Lake DSM Project DEIS (Section 3.6.1) sufficiently characterizes the regulatory setting and affected environment for this resource. The Corps regulates the discharge of dredged or fill material into all regulated waters of the U.S., including wetlands, under Section 404 of the CWA. The Corps and the EPA both have responsibilities in administering this program and typically issue permits for these regulated activities. Although the Corps does not issue itself permits for its own Civil Works projects, Corps regulations state that the Corps must apply the guidelines and substantive requirements of Section 404 to its activities. This is done through a 404(b)(1) evaluation.

3.4.1 Affected Environment

The Tulare Lake Hydrologic Region covers approximately 10.9 million acres. This region includes all of Kings and Tulare Counties and most of Fresno and Kern Counties. Four main rivers (Kings, Kern, Tule and Kaweah) in the watershed originate from the western flanks of the southern Sierra Nevada, and one substantial creek (Los Gatos) enters from the Coast Range. The Kern River has the largest drainage basin area but produces the second highest runoff after the Kings River. It originates in the Inyo and Sequoia National Forests and Sequoia National Park, and flows southward into Isabella Lake (California DWR 2009). Isabella Lake is in the Kern River Valley basin, which is in the southern Sierra Nevada, at elevations ranging from 2,500 to 4,500 feet. The drainage area of the Kern River at Isabella Dam is 2,074 square miles (Corps 2009). The southern portion of the basin is dominated by Isabella Lake, from which the Kern River flows southwest toward Bakersfield in the San Joaquin Valley. Average annual precipitation ranges from six to 14 inches in the eastern and western portions of the basin, respectively (California DWR 2004). The two principal reaches of the Kern River are the main stem of the Kern River (North Fork) and the South Fork. The North Fork makes up about 85

percent of the total flow into Isabella Lake. Approximately 90 percent of the runoff-producing precipitation falls from November through April. Approximately two-thirds of the annual runoff occurs from April through July when snowmelt dominates the system.

Isabella Lake is roughly Y-shaped, following the two upper forks of the Kern River upstream and the Lower Kern River downstream. The lake is surrounded by several communities, including Lake Isabella, Mountain Mesa, South Lake/Longview, Weldon, Keyesville, Wofford Heights, and Kernville. The Auxiliary Dam Recreation Area alternative is located along the lake's southeastern shore. The other alternatives are located downstream of the auxiliary dam in Hot Springs Valley, which is east of the Lower Kern River. A small ridge runs between the river and the valley, roughly parallel to both. Hot Springs Valley contains the town of Lake Isabella and numerous hot springs and seeps surrounded by wetlands.

3.4.2 Environmental Consequences

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

No Action. Under the No Action alternative (Alternative 1) the current interim visitor center located adjacent to the USFS relocated fire station on Lake Isabella Boulevard would remain in its current state unless action was taken by the USFS. No impacts would occur to water quality because no further updates to the interim visitor center would occur under the Isabella Lake DSM project.

Alternative 2 – Improve Interim Visitor Center. There would be no effects on water resources and quality for this alternative.

Alternative 3 – Bank of America. For this alternative there are no resource issues, other than general construction needs to comply with the CWA (*e.g.*, a storm water pollution prevention plan [SWPPP] and General Construction Permit). No direct impacts would occur to any water resources under this alternative. In addition, the contractor would be required to use standard BMPs as described in Section 3.4.3. Therefore, effects on water resources would be less than significant.

Alternative 4 – Bob Powers Gateway Preserve. This undeveloped site is privately owned and contains a freshwater emergent wetland. The visitor center would be built on approximately 1.25 acres of the 18-acre site. Section 404(b)(1) of the CWA requires the Corps to evaluate the impacts of filling jurisdictional wetlands. This alternative has known wetlands based on a 1988 Corps jurisdictional wetland delineation. That delineation identified wetlands across most of the property on a hand-drawn map (Figure 9). The current visitor center design for this alternative used the 1988 delineation line to avoid wetlands. However, given the inaccuracies of the hand-drawn map with unknown scale, coupled with changes in the watershed over the past 33 years, it is not possible to determine if the current design for the visitor center would impact wetlands

without an updated wetland delineation. The Corps conducted surveys in March 2021 to determine the accuracy of the 1988 wetland delineation. The surveys were performed by a biologist with 14 years of wetland delineation experience in the Corps Regulatory Division and an ecohydrologist with 13 years of wetland delineation experience outside the Corps. The surveyors concluded that the site supports wetland plants and that constructing a visitor center with the current site design would impact wetland species and adjacent wetlands. Yerba mansa (*Anemopsis californica*) occurred adjacent to the proposed location for the visitor center building. This species is a wetland obligate, meaning that it almost always occurs in wetlands under natural conditions (estimated probability > 99%). Based on wetland hydrology indicators and dominance of wetland vegetation, there are wetland pockets that intruded almost halfway into the construction footprint.

Overall, it was not possible to fully delineate the entire wetland boundary across the site due to problematic conditions, such as confounding factors, site disturbance, and evidence of recent irrigation. Construction of Kernville Road to the north and the storage facility to the southeast have altered the natural hydrology of the site. Obligate wetland species and wetland hydrology indicators were found where the entrance road to the site is planned. However, parts of this area also show evidence of irrigation. Without long-term hydrologic monitoring (via shallow wells), it is not possible to determine if this section of the site is truly a wetland. To further confound matters, rabbitbush (*Ericameria* spp.), an upland species, was found scattered throughout the less wet parts of the site, while in another area a single rabbitbush was found surrounded by obligate wetland species. Successive dry years during the 2010s could have allowed this perennial bush to colonize parts of the site since it does not show up in earlier satellite photos. Further botanical surveys conducted over the course of at least one growing season, along with hydrology data from monitoring wells, could help refine the wetland boundary. Additional studies would also be needed to determine whether the wetlands at this alternative fall under the jurisdiction of Section 404(b)(1) of the CWA. If the site is found to have jurisdictional wetlands, then one of the other alternative sites would need to be selected to comply with Section 404(b)(1) of the CWA.

Based on current design plans and the updated wetland surveys, if the USFS selected this alternative, there would be significant impacts to wetlands. It may be possible that a long and narrower updated site design might avoid direct impacts to wetlands. This would require further wetland surveys over one to two growing seasons. A new easement would also have to be acquired to avoid the extensive wetland obligate species near the current design's entrance. However, even this design might still lead to degradation of the adjacent wetlands. Under Section 404(b)(1), the Corps must choose the Least Environmentally Damaging Practicable Alternative. Therefore, if the current design for this alternative necessitates filling jurisdictional wetlands, then either the design would have to be changed to avoid negative effects on wetlands or an alternative site would have to selected. Furthermore, to comply with Executive Order 11990, Protection of Wetlands, federal agencies must avoid new construction in wetlands if alternatives are available.

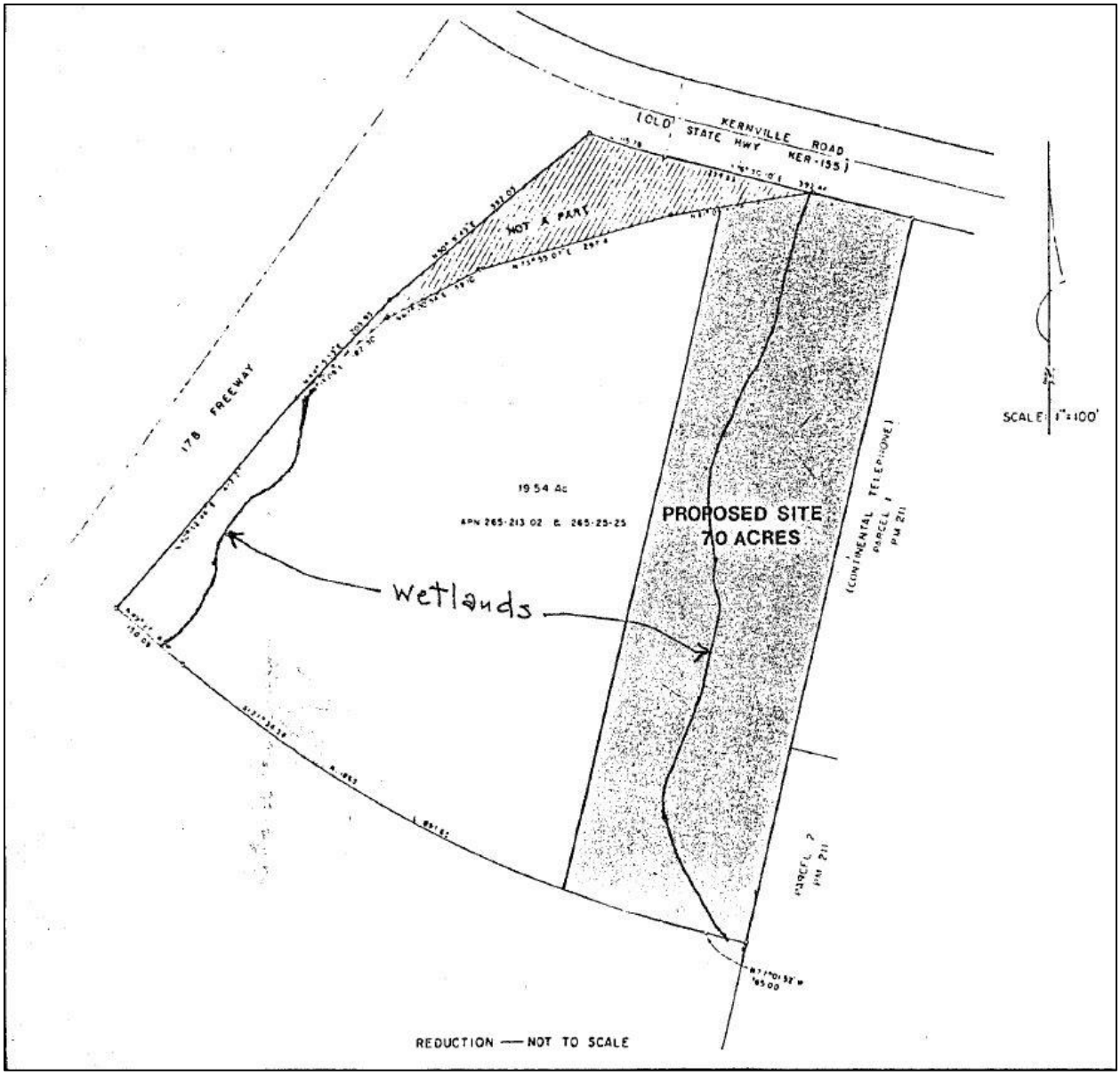

Figure 9. Corps 1988 wetland delineation for the Bob Powers Gateway Preserve.

Alternative 5 – Suhre Street Site. For this alternative there are no resource issues, other than general construction needs to comply with the CWA (*e.g.*, SWPPP and General Construction Permit). Direct impacts would occur to any water resources under this alternative. In addition, the contractor would be required to use standard BMPs as described in Section 3.4.3. Therefore, effects on water resources would be less than significant.

Alternative 6 – Auxiliary Dam Recreation Area. The Auxiliary Dam Recreation site is undeveloped federally owned land where some construction will be occurring as part of the dam safety contract. The site slopes towards the lake at approximately a 10 percent grade. For this alternative there are no resource issues, other than general construction needs to comply with the CWA (*e.g.*, SWPPP and General Construction Permit). No direct impacts would occur to any water resources under this alternative. In addition, the contractor would be required to use

standard BMPs as described in Section 3.4.3. Therefore, effects on water resources would be less than significant.

3.4.3 Mitigation

It is not possible to mitigate the impacts to water quality and resources from the Bob Powers Gateway Preserve alternative to less than significant since there are other practical alternatives available. Mitigation is only permitted under Section 404(b)(1) of the CWA and Executive Order 11990 when no practical alternatives are available.

For the proposed alternatives that would result in the disturbance of more than one acre, the contactor would be required to prepare a National Pollutant Discharge Elimination System (NPDES) storm water permit (Section 402 of the CWA) from the Central Valley Regional Water Quality Control Board (CVRWCB). The Construction NPDES Storm Water Permit covers storm water discharges from construction sites discharging to waters of the United States. A SWPPP is typically required under this permit and would be the responsibility of the contractor. The SWPPP would be designed prior to groundbreaking and include necessary BMPs to prevent potential pollutants from leaving the construction site during a storm event. Fugitive dust control measures are also included as part of the SWPPP. The contractor would be responsible for implementing, maintaining, and monitoring BMPs during demolition.

The following standard BMPs would be expected to be implemented to avoid and minimize the potential effects on water quality, ensuring that construction of the proposed action would have less than significant effects on these resources:

- Appropriate erosion control measures would be incorporated into the SWPPP by the construction contractor to prevent sediment from entering waterways and to minimize temporary turbidity impacts. Examples include but are not limited to: straw bales/wattles, erosion blankets, silt fencing, silt curtains, mulching, revegetation, and temporary covers. Sediment and erosion control measures would always be maintained by the contractor during construction. Control measures would be inspected periodically by the construction contractor, particularly during and after significant rain events.
- The contractor would use a water truck or other appropriate measures to control fugitive dust on haul roads, construction areas, and stockpiles.
- A fuels spill management plan would be developed for the project by the construction contractor and would be implemented by the contractor.
- Construction equipment and vehicles would be fueled and maintained in specified staging areas only, which would be designed to capture potential spills. These areas cannot be near any ditch, stream, or other body of water or feature that may convey water to a nearby body of water.
- Fuels and hazardous materials would not be stored on site. Any spills of hazardous material would be cleaned up immediately by the construction contractor.
- Construction vehicles and equipment would be inspected frequently and appropriately maintained by the construction contractor to help prevent dripping of oil, lubricants, or any other fluids.

- Construction activities would be scheduled by the contractor to avoid as much of the wet season as practicable. Construction personnel would be trained in storm water pollution prevention practices by the construction contractor.
- In areas proposed for revegetation, initiation and completion of revegetation work would be done by the contractor in a timely manner to control erosion.

3.5 Traffic and Circulation

The Traffic and Circulation section of the DEIS (Section 3.7) and the FEIS (Section 3.5) sufficiently characterizes the regulatory setting for this resource.

3.5.1 Affected Environment

All alternative sites are visible and can be accessed by SR 178. Visitors would also use Turner Avenue, Suhre Street, or Lake Isabella Boulevard to enter and leave each of the alternative sites. Annual average daily traffic (AADT) counts are only available for SR 178 and SR 155, which becomes Kernville Road in the town of Isabella (California Department of Transportation). SR 178 has an AADT of 7250 and SR 155 has an AADT of 5600. The Kern County Department of Public Works, in a letter dated September 2017, stated that the maximum capacity for SR 178 is 1500 cars per hour and that about 200 cars per hour were using the road with no foreseen capacity issues. According to the letter, Turner Avenue and Suhre Street are adequate in width and structural capacity for use by a visitor center. Turner Avenue and Suhre Street are approximately 15 feet wide, or about a lane and a half, compared to normal 24-foot wide streets.

3.5.2 Environmental Consequences

Basis of Significance. The project would significantly affect traffic if it would cause an increase in traffic volume that is substantial in relation to the existing load and capacity of a roadway; cause an increase in safety hazards on an area roadway; or cause substantial deterioration of the physical condition of the nearby roadways.

No Action. Under the No Action alternative (Alternative 1) the current interim visitor center located adjacent to the USFS relocated fire station on Lake Isabella Boulevard would remain in its current state unless action was taken by the USFS. No impacts would occur to traffic or circulation because no further updates to the interim visitor center would occur under the Isabella Lake DSM project.

Alternative 2 – Improve Interim Visitor Center. Under the Improve Interim alternative, there would be minimal short-term impacts to local traffic from construction-related vehicles. Since this site already contains the existing visitor center, the improvements would have a less than significant long-term effect on traffic or circulation beyond the No Action alternative.

Alternative 3 – Bank of America. This alternative site is located within the urban center of Lake Isabella, on Lake Isabella Blvd, one of the more heavily trafficked roads in the area. It has access from the passing SR 178. Visitors will enter east on Kernville Road and then cross

Lake Isabella Road to Nugget Avenue. Construction traffic impacts would vary by segment of the project and would be short-term in duration. Based on the AADT for the main highways, construction traffic would increase local traffic by less than one percent. With construction of the visitor center at this location, long-term traffic would increase by approximately 50-75 vehicles per day on the busiest days of the year. This alternative would not increase safety hazards on area roadways. As a result, both short-term and long-term effects on traffic would be less than significant. The contractor would be responsible for preparing a Construction Traffic Management Plan, including placement of appropriate signs, flaggers, barricades, and traffic delineation to minimize disruption and ensure public safety.

Alternative 4 – Bob Powers Gateway Preserve. For the Bob Powers Gateway Preserve alternative, Turner Avenue and Suhre Street are the nearest roads. Turner Avenue leads to a commercial storage facility and the regional bus depot. Suhre Street is sparsely traversed. Typical traffic is either associated with the private residential properties, the few commercial properties, or minor through traffic from vehicles accessing Kernville Road or Lake Isabella Blvd. Construction traffic impacts would vary by segment of the project and would be short-term in duration. Based on the AADT for the main highways, construction traffic would increase local traffic by less than one percent. With construction of the visitor center at this location, long-term traffic would increase by approximately 50-75 vehicles per day on the busiest days of the year. This alternative would not increase safety hazards on area roadways. As a result, both short-term and long-term effects on traffic would be less than significant. The contractor would be responsible for preparing a Construction Traffic Management Plan, including placement of appropriate signs, flaggers, barricades, and traffic delineation to minimize disruption and ensure public safety.

Alternative 5 – Suhre Street Site. The Suhre Street site it is located within the urban center of Lake Isabella, one block west of Lake Isabella Blvd, one of the more heavily trafficked roads in the area. Suhre Street runs along the eastern edge of the property for approximately 1/10th of a mile. This road is sparsely traversed. Typical traffic is either associated with the private residential properties across the street or minor through traffic from vehicles accessing Kernville Road or Lake Isabella Blvd. Construction traffic impacts would vary by segment of the project and would be short-term in duration. Based on the AADT for the main highways, construction traffic would increase local traffic by less than one percent. With construction of the visitor center at this location, long-term traffic would increase by approximately 50-75 vehicles per day on the busiest days of the year. This alternative would not increase safety hazards on area roadways. As a result, both short-term and long-term effects on traffic would be less than significant. The contractor would be responsible for preparing a Construction Traffic Management Plan, including placement of appropriate signs, flaggers, barricades, and traffic delineation to minimize disruption and ensure public safety.

Alternative 6 – Auxiliary Dam Recreation Area. The Auxiliary Dam Recreational Area is located north of the town of Lake Isabella, off SR 178. There is a turn lane for vehicles turning into the recreation area. Construction traffic impacts would vary by segment of the project and would be short-term in duration. Based on the AADT for the main highways, construction traffic would increase local traffic by less than one percent. With construction of the visitor center at this location, long-term traffic would increase by approximately 50-75 vehicles per day on the

busiest days of the year. This alternative would not increase safety hazards on area roadways. As a result, both short-term and long-term effects on traffic would be less than significant. The contractor would be responsible for preparing a Construction Traffic Management Plan, including placement of appropriate signs, flaggers, barricades, and traffic delineation to minimize disruption and ensure public safety.

3.5.3 Mitigation

The contractor would be responsible for preparing a Construction Traffic Management Plan, including placement of appropriate signs, flaggers, barricades, and traffic delineation to minimize disruption and ensure public safety. Though only three to four trucks are expected to haul off-site material, it is recommended that the Traffic Management Plan direct this transport to disposal/recycling eastbound on SR 178 towards Ridgecrest to avoid the more congested westbound SR 178 into Bakersfield. This action would reduce short-term impacts on traffic.

The contractor would be required to obtain all necessary traffic-related permits prior to initiation of construction; these permits would include required terms and conditions during construction, including the preparation of the Construction Traffic Management Plan to avoid effects or reduce any short-term effects on traffic to less than significant and ensure public safety during construction.

3.6 Air Quality

The Air Quality Section of the DEIS (Section 3.5), FEIS (Section 3.3) and the Regulatory Section in the Air Quality analysis (Appendix F of the FEIS) sufficiently characterize the regulatory setting and the general affected environment for the Isabella DSM project. Air quality effects associated with the proposed action in the SEA were evaluated through identification of all potential air emission sources, evaluation of potential emissions, evaluation of existing requirements for their control, and determination of on-site measures to reduce effects to less-than significant levels. It was determined within the 2012 EIS air quality quantitative analysis that emissions related to the project would not cause exceedances of federal, state or local thresholds.

3.6.1 Affected Environment

Air quality in the air basin is regulated at the federal, state, and regional levels. At the federal level, the US Environmental Protection Agency (EPA) is responsible for overseeing implementation of the Federal Clean Air Act. The California Air Resources Board (CARB) is the state agency that regulates mobile sources and oversees the state air quality laws, including the California Clean Air Act. The San Joaquin Valley Air Pollution Control District and the Eastern Kern Air Pollution Control District (EKAPCD) regulate air quality within Kern County. Each of these agencies develops rules, regulations, policies, and/or goals to comply with applicable legislation. Although EPA regulations may not be superseded, both state and local regulations may be more stringent.

Air quality regulations focus on the following air pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), respirable and fine particulate matter (PM_{10} and $PM_{2.5}$), and lead. Because these are the most prevalent air pollutants known to be deleterious to human health and extensive health-effects criteria documents are available, they are commonly referred to as "criteria air pollutants" (Table 3).

Table 3. National Ambient Air Quality Standards from the EPA.

Pollutant		Primary/Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)		primary	8 hours	9 ppm	Not to be exceeded more than once per year
			1 hour	35 ppm	
Lead (Pb)		primary and secondary	Rolling 3 month average	0.15 µg/m3 (1)	Not to be exceeded
Nitrogen Dioxide (NO_2)		primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		primary and secondary	1 year	53 ppb (2)	Annual Mean
Ozone (O_3)		primary and secondary	8 hours	0.070 ppm (3)	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution (PM)	$PM_{2.5}$	primary	1 year	12.0 µg/m3	annual mean, averaged over 3 years
		secondary	1 year	15.0 µg/m3	annual mean, averaged

Pollutant		Primary/Secondary	Averaging Time	Level	Form
					over 3 years
		primary and secondary	24 hours	35 μg/m3	98th percentile, averaged over 3 years
	PM_{10}	primary and secondary	24 hours	150 μg/m3	Not to be exceeded more than once per year on average over 3 years

Locally, the EKAPCD is responsible for ensuring compliance with federal, state, and local air quality regulations. Specifically, EKAPCD issues permits and enforces regulations to protect the public health and environment in accordance with federal and state Clean Air Acts through guidelines developed by federal and state agencies. Kern County is in non-attainment and air quality permits would be required by Eastern Kern Air Pollution Control District. The residents directly across the street from all alternative sites except for the Auxiliary Dam, which has no residences nearby, are sensitive receptors of concern, due to proximity.

Since the release of the Final EIS, the EKAPCD has adopted amendments to Rule 402 (Fugitive Dust) at the District's Regular Board of Directors Meeting held March 12, 2015. Rule 402 will be submitted through EKAPCD to the EPA for incorporation as part of the California State Implementation Plan (SIP) and would constitute a SIP revision. To comply with the Rule 402 threshold of visible dust emissions to 20% opacity with less than 50% porosity, physical measurement of opacity and porosity would be utilized. Appropriate Rule 402 options would be utilized on an individual basis by the contractor to meet threshold compliances. Localized and temporary fugitive dust could be a concern for local sensitive receptors during periods of grading. Measures outlined in the 2012 EIS and EKAPCD Rule 402 would be employed as necessary to maintain dust levels below regulatory thresholds.

3.6.2 Environmental Consequences

Methodology. Air quality effects were evaluated through identification of all potential air emission sources associated with the project, evaluation of potential emissions, evaluation of existing requirements for their control, and determination of onsite measures to reduce them to less-than-significant levels. The RCEM, Version 9.0.0, was used to evaluate air quality effects and to help determine potential mitigation measures.

Basis of Significance. An alternative would be considered to have a significant effect on air quality if it would violate any ambient air quality standard, contribute on a long-term basis to

an existing or projected air quality violation, expose sensitive receptors to substantial pollution concentrations, or not conform to applicable federal, state, and local standards on a long-term basis.

The EKAPCD thresholds of environmental significance for air pollutants per project are stated below. EKAPCD has established thresholds of significance to evaluate the potential impact of a proposed project and has determined that a project would have a significant adverse impact on air quality if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality standard;
- Expose local residences, adjacent residents and sensitive facilities such as schools and libraries (sensitive receptors) to substantial pollutant concentrations;
- Cause the creation of objectionable odors affecting a substantial number of people;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable Federal or state ambient air quality standard; or
- Exceed any of thresholds below:
  - Stationary sources as determined by District Rules: 25 tons per year
  - Operational and Area Sources;
    - Reactive Organic Gases (ROG): 25 tons per year
    - Oxides of Nitrogen (NO_x); 25 tons per year
    - Oxides of Sulfur (SO_x); 27 tons per year
    - Particulate Matter (PM_{10}): 15 tons per year

No Action. Under the No Action Alternative, the current interim visitor center location adjacent to the USFS relocated fire station on Lake Isabella Boulevard would be maintained. No further updates to the interim visitor center would occur under the Isabella DSM project. The facilities would remain in their current state unless further action was taken by the USFS. Effects to air quality would remain consistent and would mostly come from visitors and workers traveling to the interim visitor center and fire station.

Alternatives 2-6. Short-term effects on air quality would occur during the grading and demolition periods of the project. The operation of vehicles and heavy equipment, including large transport trucks, front-end loaders, and water trucks, would produce emissions such as exhaust and PM_{10}. In addition, there would be short-term increases in PM_{10} and $PM_{2.5}$ due to excavation and operation of vehicles and heavy equipment. Off-road equipment to the standards of Tier 3 or 4 equipment would be used for grading of topsoil for new parking lots, recreation site and structure preparation.

Project construction of recreation and administrative facilities would also contribute smaller amounts of emissions by worker vehicles and equipment use in installation of modular

structures at recreation facilities, and construction of concrete asphalt roads. These grading, demolition and construction activities as described within this EA would contribute a negligible fraction of emissions estimated in the 2012 DEIS (Section 2.5.2 – Air Quality Affected Environment). Emission contributions would remain well below the EKAPCD thresholds and would not be considered significant. See Table 4 for results from the RCEM for each alternative. Detailed air quality analyses are available in Appendix C. Localized and temporary fugitive dust would be a concern for local sensitive receptors during the grading period of project implementation. Comprehensive dust control measures would be conducted to prevent fugitive dust issues to any nearby housing. BMPs outlined in the 2012 EIS and EKAPCD Rule 402 would be employed as necessary to maintain dust levels below regulatory thresholds which would help reduce effects to less than significant.

Table 4. Modeled emissions estimates and thresholds by alternative (tons/year).

Alternative	CO	NO_x	ROG	PM_{10}	$PM_{2.5}$	SO_x
Improve Interim	0.00	0.00	0.00	0.00	0.00	0.00
Bank of America	0.67	0.99	0.09	0.08	0.05	0.00
Bob Powers	1.16	1.76	0.16	0.26	0.10	0.00
Suhre Street	0.77	1.14	0.17	0.24	0.08	0.00
Auxiliary Dam	0.92	1.34	0.13	0.15	0.07	0.00
EKAPCD Threshold	100	25	25	15	15	27
Threshold exceeded?	No	No	No	No	No	No
de minimis Threshold	100	50	25	70	100	100
Threshold exceeded?	No	No	No	No	No	No

All values are tons/year; EKAPCD = Eastern Kern Air Pollution Control District

The proposed alternative sites would not conflict with or obstruct implementation of the applicable air quality plan; violate any air quality standard or contribute substantially to an existing or projected air quality standard; expose local residences, adjacent residents and sensitive facilities such as schools and libraries (sensitive receptors) to substantial pollutant concentrations; cause the creation of objectionable odors affecting a substantial number of people; result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable Federal or state ambient air quality standard; or exceed the EKAPCD emissions thresholds. Therefore, impacts to air quality would be less than significant.

3.6.3 Mitigation

Even though impacts to air quality would be less than significant without mitigation, the contractor would implement the following standard BMPs:

- Sufficiently water excavated or graded soil as needed to prevent excessive dust, with disturbed soil areas being completely covered. Water a minimum of twice

daily on unpaved or untreated roads and on disturbed soil areas with active operations.

- Cease all clearing, grading, earth moving, and excavation during periods of winds greater than 20 miles per hour (averaged over one hour), when disturbed material is easily windblown, or when dust plumes of 20 percent or greater opacity impact public roads, occupied structures, or neighboring property.
- Sufficiently water or securely cover all fine material transported off-site to prevent excessive dust.
- Minimize areas disturbed by clearing, earth moving, or excavation.
- Stabilize by watering or other appropriate method stockpiles of soil or other fine loose material to prevent windblown fugitive dust.
- Where acceptable to the fire department, control weeds by mowing instead of discing.
- Once initial leveling has ceased, seed and water until plant growth is evident all inactive soil areas within the construction sites, or treat with a dust palliative, or water twice daily until soil has sufficiently crusted to prevent fugitive dust emissions.
- Sufficiently water at least twice daily all active disturbed soil areas to prevent excessive dust.
- Limit on-site vehicle speed to 15 miles per hour.
- Pave, treat with dust palliatives, or water a minimum of twice daily all areas with vehicle traffic.
- Keep streets next to the project site clean, and frequently remove project-related accumulated silt and debris.
- Access the main project work sites via an apron from adjoining surfaced roadways. Surface or treat the apron with dust palliatives. If equipment is operating on soils that cling to wheels, use a "grizzly" or other such device using rails, pipes, or grates to dislodge mud, dirt, and debris from the tires and undercarriage of vehicles on the road exiting the project site, immediately before the pavement, in order to remove most of the soil from vehicle tires.
- Maintain all equipment as recommended by manufacturers' manuals.
- Shut down equipment when not in use for extended periods.
- Substitute electric equipment whenever possible for diesel- or gasoline-powered equipment.
- Equip all construction vehicles with proper emissions control equipment and keep in good and proper running order to substantially reduce NO_x emissions.
- Use diesel particulate filters on on-road and off-road diesel equipment if they are permitted under manufacturers' guidelines.

3.7 Noise and Vibration

The Noise and Vibration Section for the Draft EIS (Section 3.8) sufficiently characterizes the regulatory setting for this resource. The Kern River Valley Specific Plan Noise Element establishes specific goals, policies, and implementation measures for noise within the Plan area, which includes Isabella Lake and vicinity.

3.7.1 Affected Environment

Noise is defined as unwanted sound that evokes a subjective reaction to the physical characteristics of a physical phenomenon. Major noise sources in the vicinity of the proposed Isabella DSM project are primarily transportation related. Traffic on local roadways is the primary noise source in the project area. Major sources of roadway noise include SRs 155 and 178. In addition to traffic noise on local roadways, occasional overflights from regional airports and the nearby Kern Valley airport contribute to the local noise environment. Other noise sources include commercial and light industrial facilities such as stores, restaurants and a storage facility. Noise-sensitive receptors in or near the project area include residents and wildlife.

In response to the Federal Noise Control Act of 1972, the EPA has identified noise levels requisite to protect public health and welfare against hearing loss, annoyance, and activity interference (EPA 1974; Table 5).

Table 5. Summary of noise levels identified as requisite to protect the public health and welfare with an adequate margin of safety.

Effect	Level dBA[1]	Activity Area
Hearing Loss	70 Leq (24-hour)	All Areas
Outdoor activity interference and annoyance	55 L_{dn}[2] 55 L_{eq} (24-hour)[3]	Outdoors in residential areas and farms and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use. Outdoor areas where people spend limited amounts of time (e.g., school yards, playgrounds).
Indoor activity interference and annoyance	45 L_{dn}[2] 45 L_{eq} (24-hour)[3]	Indoor residential areas. Other indoor areas with human activities (e.g., school yards, playgrounds).

Source: EPA 1974

[1]A-weighted decibel is a measure on a logarithmic scale, which indicates the squared ratio of sound pressure to a reference sound pressure. A-weighted (A) refers to the specific frequency-dependent rating scale that is used to approximate human response.

[2]Day-night level is the energy-average of the A-weighted noise levels during 24 hours with 10 dBA added to the night (10 PM to 7 AM).

[3]Equivalent noise level (Leq is the energy mean (average) noise level. The instantaneous noise levels during a specific period (e.g., 24 hours) in dBA are converted to relative energy values. From the sum of the relative energy values, an average energy value is calculated, which is then converted back to dBA to determine the 24-hour L_{eq}.

The Kern River Valley Specific Plan (KRVSP) Noise Element establishes specific goals, policies, and implementation measures for noise within the Plan area, which includes Isabella Lake and vicinity. The intent of these items is to minimize the impacts of noise on sensitive receptors, while preserving the rural small-town atmosphere of the area.

The KRVSP notes that the community noise environment consists of a variety of sounds, some near and some far, that vary over 24 hours. Correspondingly, the KRVSP uses Ldn for its

noise standard; this conforms to the Kern County General Plan Noise Element, which establishes acceptable noise standards of 65 dB Ldn or less for exterior areas and 45 dB Ldn or less for interior areas.

Construction-related activities would generate noise levels from heavy-duty truck travel on proposed haul routes for material transport and heavy-duty construction equipment at the proposed dam construction, staging, and borrow sites. Construction equipment would likely include scrapers, excavators, bulldozers, compactors, loaders, trucks, crushers, pumps, generators, and other miscellaneous pieces of equipment. Construction-related activities would result in project-generated vibration levels from heavy-duty truck travel on proposed haul routes for material transport and heavy-duty construction equipment at the proposed construction, staging, and borrow sites.

Following completion of the project construction, the office, vehicle maintenance, and other structures that would likely be built to accommodate contractor and Corps personnel during project construction would be removed. The number of personnel serving on-site during construction would be reduced to the number currently serving to operate and maintain the facilities. None of the proposed project alternatives would expose people residing or working in the project area to a significant amount of generated noise levels.

3.7.2 Environmental Consequences

Basis of Significance. Criteria for determining the level of noise impacts associated with the proposed alternatives were based on Federal, State, and local guidance regarding noise and vibration impacts. On that basis, noise impacts would be considered significant if the Alternative would result in the following:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance or applicable standards of other agencies;
- Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels;
- Substantial permanent increase in ambient noise levels in the project vicinity above existing levels, generally defined as 3-5 dB; or
- Substantial temporary or periodic increase in ambient noise levels in the project vicinity above existing levels, generally defined as 3-5 dB.

No Action. Under the No Action Alternative (Alternative 1), there would be no project-related effects to noise. The current interim visitor center location adjacent to the USFS relocated fire station on Lake Isabella Boulevard would be maintained unless further action was taken by the USFS. No further updates to the interim visitor center would occur under the Isabella DSM project. Sources of noise and noise levels would continue to be determined by local activities, development, and natural sounds.

Alternative 2 – Improve Interim Visitor Center. Under Alternative 2, the Corps would add measures to make the interim visitor center into an acceptable permanent solution. This

alternative would involve noise and vibration impacts limited to short-term construction with limits in time and location. BMPs would be used by the contractor and impacts for this site would be less than significant for noise and vibration.

Alternative 3 – Bank of America. Alternative 3, is a current building located in town, at the corner of Lake Isabella Boulevard and Nugget Avenue. The existing building could be reconfigured and modified to serve as the visitor center. This proposed area is surrounded by several commercial properties that would experience the short-term noise and vibration impacts of construction. Any long-term impacts would be beneficial to surrounding properties, because of the increased tourism the VIC would bring to the area. BMPs would be used by the contractor and impacts for this site would be less than significant for noise and vibration.

Alternative 4 – Bob Powers Gateway Preserve. The Bob Powers Gateway Preserve site is located off the intersection of Turner Avenue and Suhre Street in the town of Lake Isabella. The visitor center would be located next to SR 178 and any impacts from construction would be short-term. No suitable or critical habitat is located on this wetland, no concern of noise or vibration levels from construction disturbing local wildlife. BMPs would be used by the contractor and impacts for this site would be less than significant for noise and vibration.

Alternative 5 – Suhre Street Site. Adjacent to the Bob Powers Gateway Preserve is the Suhre Street site. This land is privately owned, developed and unoccupied. Located off Turner Avenue and Suhre Street, the site is accessible from SR 178 via Kernville Road. The site is 2.88 acres with approximately 2 acres undeveloped with dense grass. Demolition of the existing structure and constructing a new building is considered the more suitable option, due to structural integrity of current building. The new structure can be built on top of the existing building footprint. Any disturbance to the surrounding area from construction would be short-term and regulated with BMPs. As a result, impacts for this site would be less than significant for noise and vibration.

Alternative 6 – Auxiliary Dam Recreation Area. The Auxiliary Dam Recreational site is undeveloped federally owned land where some construction will be occurring as part of the dam safety contract. Located in an open area in the recreational boating area adjacent to Lake Isabella. The site is located and visible from SR 178 at the end of Lake Isabella Boulevard in the recreational area of Lake Isabella. There are no residential or commercial properties nearby and any noise impacts would be surpassed by construction ongoing for Isabella Dam Project. BMPs would be used by the contractor and impacts for this site would be less than significant for noise and vibration.

3.7.3 Mitigation

Recommended mitigation measures and BMPs to reduce potential noise impacts are described below. Even with the implementation of these measures and BMPs, it is anticipated that most of the localized noise impacts from short-term construction activities would remain unavoidable but less than significant.

The Corps is continuing to refine alternatives, construction methods, and schedules to avoid or reduce significant adverse noise and vibration impacts on nearby sensitive receptors.

However, it may become necessary to relocate some sensitive receptors if localized noise impacts temporarily or permanently become significant from short-term construction activities.

The following mitigation measures and BMPs are recommended:

- A contractor-prepared *Construction Noise and Vibration Monitoring Plan* (CNVMP) before beginning work on the project. The plan would be prepared by an acoustical consultant recognized by Kern County. The CNVMP would include site-specific noise and vibration attenuation measures to ensure that maximum feasible noise and vibration attenuation is achieved. The CNVMP would include as many of the control strategies listed below as are feasible for this project. Project workers would be trained on the CNVMP before construction begins.
- Monitor construction noise for the project duration. The most potentially affected of the four sensitive receivers at the following locations would be selected: Main Dam construction (one receiver), Auxiliary Dam construction (one receiver), and primary haul routes (two sensitive locations). Summaries of measured noise levels would be provided weekly or more often if noise complaints arise.
- Equip all equipment with noise control devices (*e.g.*, mufflers), in accordance with manufacturers' specifications.
- Inspect all equipment periodically to ensure proper maintenance and presence of noise control devices (*e.g.*, lubrication, mufflers that do not leak, and shrouding).
- Locate all stationary equipment as far as feasible from nearby residences and should be equipped with engine-housing enclosures, as feasible.
- Use portable noise barriers to shield stationary equipment, especially diesel- powered dewatering pumps. Identification and discussion of portable noise barrier type and placement would be included in the CNVMP.
- Use materials for temporary barriers sufficient to last through construction and maintain in good condition.
- Prevent equipment from idling more than five minutes.
- Limit blasting to daytime and employ other measures to limit noise and vibration of blasting, such as burying charges and/or using blasting mats, spacing timing of shots, using appropriate shot size, or other measures determined by a qualified blasting engineer.
- Designate a disturbance coordinator and conspicuously post a 24-hour contact number around the project site, and supply to nearby residents. The disturbance coordinator would receive all public complaints and be responsible for determining the cause of the complaint and implementing any feasible measures to alleviate the problem.
- Provide written notice of construction-related activities to nearby sensitive receptors identifying the type, duration, and frequency of activities and a mechanism to register complaints.
- Prevent trucks and bulldozers from operating within 60 feet of any sensitive structure. If operation of equipment closer than 60 feet is required, vibration monitoring would be conducted to ensure that levels do not exceed the allowable thresholds established in this study.

- Encourage the hauling of material along sensitive routes only from 8 AM to 5 PM (daytime hours).
- Discourage the use of engine braking ("jake brakes") along sensitive routes.
- Encourage truckers to reduce engine noise when shifting in noise sensitive areas and post these areas.
- Conducted all rock blasting under the guidance of a qualified blasting consultant. Charges would be buried with sufficient overburden and shot timing would be included to minimize noise associated with blasting.
- Notify all residences and businesses within 2,500 feet of construction areas prior to conducting blasting.

3.8 Climate Change

In accordance with Executive Order 13653, climate change was comprehensively considered and evaluated in Section 3.5.1 of the DEIS and Section 3.3 of the FEIS.

3.8.1 Affected Environment

Warming of the climate system is now considered to be unequivocal (IPCC 2014). Global average surface temperature has increased approximately 1.4 degrees Fahrenheit (°F) over the last one hundred years, with the most severe warming occurring in the most recent decades (NASA 2018). In the twelve years between 1995 and 2006, eleven years ranked among the warmest years in the instrumental record of global average surface temperature (going back to 1850). Continued warming is projected to increase global average temperature between 2 and 11°F over the next 100 years and delaying mitigation efforts is estimated to substantially increase the difficulty of the shift to low, longer-term emission levels and narrows the range of options consistent with maintaining temperature change below 2ºC relative to pre-industrial levels (IPCC 2014).

The causes of this warming have been identified as both natural processes and as the result of human actions. Increases in greenhouse gas (GHG) concentrations in the Earth's atmosphere are thought to be the main cause of human-induced climate change. GHGs naturally trap heat by impeding the exit of solar radiation that has hit the Earth and is reflected back into space. The six principal GHGs of concern are CO_2, methane, nitrous oxide, sulfur hexafluoride, hydrofluorocarbons, and perfluorocarbons.

On 01 August 2016, the Council on Environmental Quality (CEQ) released final guidance regarding the consideration of GHGs in NEPA documents for Federal actions. The guidance "does not establish any particular quantity of GHG emissions as 'significantly' affecting the quality of the human environment or give greater consideration to the effects of GHG emissions and climate change over other effects on the human environment" (CEQ 2016). However, it recommends "…that, under NEPA, Federal decisionmakers and the public should be informed about a proposal's GHG emissions and climate change implications. Such information can help a decision-maker make an informed choice between alternative actions that will result in different levels of GHG emissions or consider mitigation measures that reduce climate change impacts" (81 FR 51866). CEQ rescinded the guidelines in April 2017 after President Trump

issued an Executive Order. CEQ was asked to reinstate the guidelines in an Executive Order issued by President Biden on 20 January 2021.

3.8.2 Environmental Consequences

Basis of Significance. A proposed alternative would result in significant impacts if it would do any of the following:

- Generate GHG emissions resulting from construction of the proposed alternative that are substantial compared to emissions that major facilities are required to report (that is >25,000 CO_2e per year);
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs; or
- Substantially reduce long-term carbon sequestration potential.

No Action. Under the No Action Alternative, the current interim visitor center location adjacent to the USFS relocated fire station on Lake Isabella Boulevard would be maintained. No further updates to the interim visitor center would occur under the Isabella DSM project. The facilities would remain in their current state unless further action was taken by the USFS. Climate change would be influenced due to local and regional emissions from vehicles, and commercial and industrial land uses.

Alternatives 2-6. Short-term emissions for the alternatives were calculated using the Road Construction Emissions Model (RCEM), Version 9.0.0 (Table 6). During construction, the Bob Powers Gateway Preserve alternative would have the greatest amount of emissions, followed by the Auxiliary Dam, Suhre Street, Bank of America, and Improving Interim alternatives. However, all the alternatives would have less than significant short-term GHG emissions during construction and none would conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

Table 6. Modeled GHG emissions estimates by alternative (tons/year).

Alternative	CO_2	CH_4	N_2O	CO_2e
Improve Interim	0.67	0.00	0.00	0.67
Bank of America	159.43	0.04	0.00	161.57
Bob Powers	353.22	0.08	0.01	359.22
Suhre Street	213.23	0.05	0.01	216.88
Auxiliary Dam	267.74	0.06	0.01	273.13

Long-term emissions from operations would be similar across all sites due to similar building designs. However, removal of native habitat at the Bob Powers Gateway Preserve alternative would result in considerably more long-term GHG emissions compared to the other alternatives. Wetter soils sequester more carbon than drier, upland soils (Nahlik and Fennessy 2016; Green et al. 2019). This can be illustrated by comparing percent carbon in the A-horizon (essentially the topsoil) at the Bob Powers Gateway Preserve alternative to the adjacent Suhre

Street alternative. The mapped soil series at the Bob Powers Gateway Preserve alternative, which has wetter conditions, typically has 5% organic carbon compared to 0.3 to 0.6% organic carbon at the Suhre Street alternative (Soil Survey Staff). Wet meadows in the Sierra Nevada have one of the highest rates of carbon sequestration in the world (Reed et al. 2020). Therefore, the Bob Powers Gateway Preserve alternative would substantially reduce long-term carbon sequestration potential and have a significant impact on climate change. Dryer sites like the Auxiliary Dam and Suhre Street alternatives sequester minimal amounts of carbon (Green et al. 2019) and with new landscaping using native vegetation there would be no net loss in carbon sequestration potential. Both the Bank of America and Improve Interim alternatives would not alter carbon sequestration potential since neither would change existing vegetation cover.

3.8.3 Mitigation

Short-term impacts to climate would be less than significant for all sites, while the Bob Powers Gateway Preserve would be the only alternative with significant long-term impacts to climate change. These measures could be implemented for all proposed alternatives to contribute a lower short-term carbon footprint:

- Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated;
- Use equipment with new technologies (repowered engines, electric drive trains);
- Perform on-site material hauling with trucks equipped with on-road engines (if determined to be less emissive than the off-road engines); and
- Encourage and provide carpools, shuttle vans, transit passes and/or secure bicycle parking for construction worker commutes.

3.9 Summary of Effects

Table 7 summarizes the effects of each proposed alternative on the resources that were evaluated in detail. The Bob Powers Gateway Preserve alternative would have significant effects on several resources. The Improve Interim alternative would have the fewest effects, followed by the Bank of America alternative.

Table 7. Summary of effects for resources considered in detail by alternative.

Alternative	Vegetation and Wildlife	Special Status Species	Water Resources and Quality	Traffic and Circulation	Air Quality	Noise and Vibration	Climate Change
Improve Interim	No effect	No effect	No effect	<Significant	No effect	<Significant	<Significant
Bank of America	No effect	No effect	No effect	<Significant	<Significant	<Significant	<Significant
Bob Powers Gateway Preserve	**Significant**	**Significant**	**Significant**	<Significant	<Significant	<Significant	**Significant**
Suhre Street	<Significant	No effect	<Significant	<Significant	<Significant	<Significant	<Significant
Auxiliary Dam	<Significant	No effect	<Significant	<Significant	<Significant	<Significant	<Significant

4.0 COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

Clean Air Act of 1972, as amended, 42 U.S.C. 7401, et seq. *Full Compliance*. The proposed action is not expected to violate any Federal air quality standards, exceed the EPA's general conformity *de minimis* threshold, or hinder the attainment of air quality objectives in the local air basin. Thus, the Corps has determined that the proposed project would have no significant effects on the future air quality of the area.

Clean Water Act of 1972, as amended, 33 U.S.C. 1251, et seq. *Partial Compliance.* The CWA is the primary Federal law governing water pollution. It established the basic structure for regulating discharges of pollutants into waters of the U.S. and gives the U.S. EPA the authority to implement pollution control programs, such as setting wastewater standards for industries (EPA 2002). In some states, such as California, the EPA has delegated authority to delegate the CWA to state agencies.

Section 401 of the CWA regulates the water quality for any activity that may result in any in-water work or discharge into navigable waters. These actions must not violate Federal water quality standards. The Central Valley Regional Water Quality Control Board (RWQCB) administers Section 401 of the CWA in California, and either issues or denies water quality certifications. Water quality certifications typically include project-specific requirements established by the RWQCB to ensure attainment of water quality standards.

Section 404 of the CWA requires that a permit be obtained from the Corps when an action will result in the discharge of dredged or fill material into jurisdictional wetlands and waters of the U.S. Under Section 404, the Corps regulates such discharges and issues individual and/or general permits for these activities. Before the Corps can issue a permit under Section 404, it must determine that the project is in compliance with the CWA Section 404(b)(1) guidelines. The 404(b)(1) guidelines specify that "no discharge of dredged or fill material shall be permitted if there is a practical alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences" (40 C.F.R. § 230.10[a]).

When conducting its own civil works projects, the Corps does not issue permits to itself. Rather, the Corps complies with the guidelines and substantive requirements of the CWA, including Section 404 and Section 401. There are no jurisdictional wetlands or other waters of the U.S. at the Improve Interim, Bank of America, Suhre Street, or Auxiliary Dam alternative site locations. There are wetlands at the Bob Powers Gateway Preserve. However, their jurisdictional status under the CWA are yet to be determined pending further surveys.

The construction area is greater than one acre for the Bob Powers Gateway Preserve, Suhre Street, and Auxiliary Dam alternative sites. Therefore, if any of these locations are selected, the contractor would be required to obtain a NPDES permit and prepare a Stormwater Pollution Prevention Plan. Full compliance would occur when the contractor has procured their Construction General Permit for NPDES Section 402, as applicable.

Endangered Species Act of 1973, as amended, 16 U.S.C. 1531, et seq. *Full Compliance.* In accordance with Section 7(c), the Corps obtained a list from USFWS and from CNDDB of Federally listed and proposed species likely to occur in the project area on October 2, 2018, via the USFWS website Information for Planning and Consultation. This project would have no effect on the Federally listed southwestern willow flycatcher, valley elderberry longhorn beetle, California condor, Least Bell's vireo, California red-legged frog, and the proposed Western yellow-billed cuckoo.

Executive Order 11990, Protection of Wetlands. *Partial Compliance*. This order directs all federal agencies to provide leadership and take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands in implementing civil works. Each agency, to the extent permitted by law, must avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds: there is no practical alternative to such construction and the proposed action includes all practical measures to minimize harm to wetlands that may result from such use. There are wetlands at the Bob Powers Gateway Preserve and they overlap with the current design footprint. If the USFS selected this alternative, then the project would not be in compliance with this Executive Order. It is possible that compliance could be achieved with re-design of the site plan and further wetland surveys. However, even this re-design might lead to degradation of the adjacent wetlands.

Executive Order 11312, Noxious Weeds. *Full Compliance.* This order directs all federal agencies to prevent the introduction of invasive species; provide for their control; and minimize the economic, ecological, and human health effects of invasive species. Prior to mobilization, all project-related vehicles and equipment will be cleaned of soils, seeds, vegetative matter, or other debris that could contain or hold non-native invasive and noxious weed seeds. During construction, vehicles and equipment will also be cleaned, as needed, as they leave or enter staging areas and work sites. As a result, the project will not be expected to introduce any invasive species into either the staging area or work sites.

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. *Full Compliance*. This order directs all Federal agencies to identify and address adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. Any impacts caused by construction activities would not disproportionately affect minority or low-income populations.

Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks. *Full Compliance.* This order directs all Federal agencies to identify and assess environmental health and safety risks that may disproportionately affect children. There are no schools or other facilities near the project area. The project would not have adverse or disproportionate impacts on children.

Farmland Protection Policy Act, 7 U.S.C. 4201, et seq. *Full Compliance* . This Act requires a Federal agency to consider the effects of its actions and programs on the Nation's farmlands. The proposed action will not result in any effects on prime or other important farmland.

Fish and Wildlife Coordination Act of 1958, as amended, 16 U.S.C. 661, et seq. *Partial Compliance*. The FWCA ensures that fish and wildlife receive consideration equal to that of other project features from projects that are constructed, licensed, or permitted by Federal agencies. The FWCA requires federal agencies that construct water resource development projects to consult with USFWS, NMFS, and the applicable state fish and wildlife agency (CDFW) regarding the project's impacts on fish and wildlife and measures to mitigate those impacts. The USFWS and CDFW have participated in evaluating the Isabella Lake DSM project, of which this proposed action is a subset. Consultation with NMFS and USFWS has been completed for the DSM project, and correspondence regarding special status species is included in Appendix C of the 2012 FEIS. Bob Powers Gateway Preserve has three specific habitat types identified within the proposed visitor center location for this alternative, including cottonwood forest (approximately 0.73 acres), grassland (approximately 0.87 acres), and seasonal wetland (approximately 1.44 acres, pending further wetland delineation). If selected, coordination with USFWS would be required under the Fish and Wildlife Coordination Act to determine whether the proposed action would require mitigation due to the construction impacts on these three habitats. Full compliance would be achieved when the Corps completed coordination with USFWS and complied with all mitigation requirements.

Migratory Bird Treaty Act (15 U.S.C 701-18h). *Full Compliance.* No migratory birds, nests, or habitat are impacted by the Proposed Action. Construction would be timed to avoid physical destruction of active bird nests or young of birds that breed in the area. Corps surveyed for presence of migratory birds and bald and golden eagles in the action area and would do so again prior to construction. If nesting birds are detected, Corps would coordinate with the USFWS to develop appropriate avoidance and minimization measures. With the completion of these surveys and implementation of any required measures, the project is in full compliance with this Act.

National Environmental Policy Act of 1969, as amended, 42 U.S.C. 4321, et seq. *Partial Compliance.* Comments received during the public review period will be incorporated into the final Supplemental EA, as appropriate. This Draft Supplemental EA will be accompanied by a Draft FONSI, if determined appropriate by the District Engineer after consideration of public comments. Finalization of the Supplemental EA and FONSI actions would provide full compliance with this act.

National Historic Preservation Act of 1966, as amended, 54 U.S.C. 306101 et seq. *Full Compliance.* Corps is complying with this Act through the use of a PA, executed in 2012, and an HPTP, executed in 2017. These documents confer full compliance. Completion of activities stipulated by the PA and HPTP may postdate this SEA; however, they will be complete prior to construction.

Wild and Scenic Rivers Act of 1968 (16 U.S.C. 1271 et seq.). *Full Compliance*. This act was enacted to preserve selected rivers or sections of rivers in their free-flowing condition in order to protect the quality of river waters and to fulfill other national conservation purposes. Portions of the Kern River are designated as Wild and/or Scenic. However, the proposed alternatives would have no effect on the river.

5.0 COORDINATION AND REVIEW OF THE DRAFT SEA

This Draft SEA and FONSI will be circulated for 30 days to agencies, organizations, and individuals known to have a special interest in the project. Copies of the Draft SEA are posted on the Corps website and have been made available for viewing at the Kern County public libraries and the FS Interim Visitor Center near Lake Isabella. Additional hard copies will be provided by mail upon request. The Corps has coordinated with all the appropriate federal, state, and local government agencies, including the USFWS and SHPO.

NEPA Lead Agency - U.S. Army Corps of Engineers, Sacramento District
Cooperating Agency - U.S. Forest Service

In Coordination with:

California State Historical Preservation Office
Central Valley Regional Water Quality Control Board
Eastern Kern Air Pollution Control District
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service

A list of agencies, organizations and individuals known to have a special interest will be appended to the Final SEA. A public notice would be distributed from the Corps Public Affairs Office indicating the availability of this document and where it would be located. Copies will be made available at the Kern County Libraries and online at:
http://www.spk.usace.army.mil/Missions/Civil-Works/Isabella-Dam/

A public comment meeting specifically for the Draft SEA will be scheduled for the week of April 19, 2021. Any comments received will be addressed, as appropriate, in the Final SEA and considered by the Corps Sacramento District Commander before deciding whether to sign a FONSI or prepare an SEIS for the proposed action.

6.0 FINDINGS

This Draft SEA evaluated the environmental effects of the proposed alternatives. Potential adverse effects to the following resources were evaluated in detail: vegetation and wildlife, special status species, water resources and quality, traffic and circulation, air quality, noise and vibration, and climate change.

Based on this evaluation, some of the proposed alternatives meet the definition of a FONSI as described in 40 CFR 1508.1(l). However, the Bob Powers Gateway Preserve alternative would not be eligible for a FONSI due to significant impacts to several resources. A FONSI may be prepared when an action would not have a significant effect on the human environment and for which an environmental impact statement would not be prepared. The Corps Sacramento District Commander, following public review and comment period of the Draft EA, would determine whether a FONSI is appropriate.

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APPENDIX A – Site Photos of Proposed Alternatives

Figure A-1. Photo of the interim visitor center/no action alternative (Alternative 1). ©2018 KBAK/KBFX

Figure A-2. Photo of the interim visitor center location (Alternative 2). Fire station is shown on the left, while the Auxiliary Dam undergoing construction is in the background.

Figure A-3. Photo of the modular building that was the original interim visitor center location. Views of the foothills can be seen in the background.

Figure A-4. Photo of the interim visitor center location. Fire station is shown on the left, while the Auxiliary Dam undergoing construction is in the background, along with views of the surrounding foothills.

Figure A-5. Photo of the former Bank of America building (Alternative 3), facing the west side with foothills shown in the background (taken in 2015). ©2021 Google

Figure A-6. Photo of the Bank of America building (Alternative 3), facing the south side (taken in 2019).

Figure A-7. Photo of the Bank of America location (Alternative 3), facing the intersection of Isabella Blvd with Kernville Rd/Nugget Ave.

Figure A-8. Photo of the Bob Powers Gateway Preserve location (Alternative 4), facing SR 178 to the west.

Figure A-9. Photo of the Bob Powers Gateway Preserve location (Alternative 4) taken from Kernville Road. The Suhre Street site (Alternative 5) can be seen on the left.

Figure A-10. Photo of the Bob Powers Gateway Preserve location (Alternative 4), facing roughly east.

Figure A-11. Photo of the Suhre Street location (Alternative 5), facing roughly west. The Bob Powers Gateway Preserve (Alternative 4) is located beyond the fence where the row of cottonwood trees are.

Figure A-12. Photo of the Suhre Street location (Alternative 5), facing roughly north. The building in the background would be demolished and is approximately where the visitor center building would be located.

Figure A-13. Photo of the Suhre Street location (Alternative 5), facing roughly east.

Figure A-14. Photo of the Auxiliary Dam Recreation Area location (Alternative 6), facing northeast and overlooking the Auxiliary Dam Recreation Area.

Figure A-15. Photo of the Auxiliary Dam Recreation Area location (Alternative 6), facing northwest.

Figure A-16. Photo of the Auxiliary Dam Recreation Area location (Alternative 6), facing SR 178.

APPENDIX B – U.S. FISH AND WILDLIFE IPaC AND CALIFORNIA NATURAL DIVERSITY DATABASE LISTS

United States Department of the Interior

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

In Reply Refer To: January 14, 2021
Consultation Code: 08ESMF00-2021-SLI-0730
Event Code: 08ESMF00-2021-E-02119
Project Name: Bob Powers Gateway Preserve Alternative for the Lake Isabella USFS Visitor Center

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

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

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

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

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

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the

Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

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

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

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

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

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

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

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

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

Project Summary

Consultation Code: 08ESMF00-2021-SLI-0730
Event Code: 08ESMF00-2021-E-02119
Project Name: Bob Powers Gateway Preserve Alternative for the Lake Isabella USFS Visitor Center
Project Type: DAM
Project Description: This site is being considered as an alternative location for the permanent USFS Visitor Center for Lake Isabella. The Corps is still going through the earlier stages of NEPA. We already have a FEIS in place, along with several tier Supplemental EAs. We are looking to update our species for our effects analyses.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@35.62596945,-118.47671831449537,14z

Counties: Kern County, California

Endangered Species Act Species

There is a total of 7 threatened, endangered, or candidate species on this species list.

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

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

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

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Fisher *Pekania pennanti* Population: SSN DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3651	Endangered

Birds

NAME	STATUS
California Condor *Gymnogyps californianus* Population: U.S.A. only, except where listed as an experimental population There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8193	Endangered
Least Bell's Vireo *Vireo bellii pusillus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5945	Endangered
Southwestern Willow Flycatcher *Empidonax traillii extimus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6749	Endangered
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **proposed** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii*	Threatened

There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/2891

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus*	Threatened

There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/321

Critical habitats

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

United States Department of the Interior

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

In Reply Refer To: February 17, 2021
Consultation Code: 08ESMF00-2021-SLI-1028
Event Code: 08ESMF00-2021-E-02952
Project Name: Auxiliary Dam Recreation Area Alternative for the Lake Isabella USFS Visitor Center

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

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

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

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

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

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the

Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

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

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

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

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

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

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

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

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

Project Summary

Consultation Code: 08ESMF00-2021-SLI-1028
Event Code: 08ESMF00-2021-E-02952
Project Name: Auxiliary Dam Recreation Area Alternative for the Lake Isabella USFS Visitor Center
Project Type: DAM
Project Description: This area is being considered as an alternative location for the permanent USFS Visitor Center for Lake Isabella. The Corps is still going through the earlier stages of NEPA. We already have a FEIS in place, along with several tier Supplemental EAs. We are looking to update our species for our effects analyses.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@35.64334005,-118.46187482878416,14z

Counties: Kern County, California

Endangered Species Act Species

There is a total of 7 threatened, endangered, or candidate species on this species list.

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

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

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

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Fisher *Pekania pennanti* Population: SSN DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3651	Endangered

Birds

NAME	STATUS
California Condor *Gymnogyps californianus* Population: U.S.A. only, except where listed as an experimental population There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8193	Endangered
Least Bell's Vireo *Vireo bellii pusillus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5945	Endangered
Southwestern Willow Flycatcher *Empidonax traillii extimus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6749	Endangered
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **proposed** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii*	Threatened

There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/2891

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus*	Threatened

There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/321

Critical habitats

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

APPENDIX C – AIR QUALITY ANALYSES

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Isabella VIC - Interim

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	0.01	0.22	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	60.57	0.00	0.00	61.12
Grading/Excavation	0.01	0.22	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	60.57	0.00	0.00	61.12
Drainage/Utilities/Sub-Grade	0.01	0.22	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	60.57	0.00	0.00	61.12
Paving	0.01	0.22	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	60.57	0.00	0.00	61.12
Maximum (pounds/day)	0.01	0.22	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	60.57	0.00	0.00	61.12
Total (tons/construction project)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.67

Notes:

Project Start Year ->	2021
Project Length (months) ->	1
Total Project Area (acres) ->	0
Maximum Area Disturbed/Day (acres) ->	0
Water Truck Used? ->	No

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	80	0
Grading/Excavation	0	0	0	0	80	0
Drainage/Utilities/Sub-Grade	0	0	0	0	80	0
Paving	0	0	0	0	80	0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Isabella VIC - Interim

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.06
Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	0.00	0.24
Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.21
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.09
Maximum (tons/phase)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	0.00	0.24
Total (tons/construction project)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.61

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model Version 9.0.0

Data Entry Worksheet

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

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

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Isabella VIC - Interim	
Construction Start Year	2021	Enter a Year between 2014 and 2040 (inclusive)
Project Type For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data	4	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	1.00	month
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	1	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.00	miles
Total Project Area	0.00	acres
Maximum Area Disturbed/Day	0.00	acres
Water Trucks Used?	2	1. Yes 2. No

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

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

Material Hauling Quantity Input

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

Mitigation Options

On-road Fleet Emissions Mitigation	2010 and Newer On-road Vehicles Fleet	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation	No Mitigation	Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

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

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

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing		0.10		1/1/2021
Grading/Excavation		0.40		1/5/2021
Drainage/Utilities/Sub-Grade		0.35		1/18/2021
Paving		0.15		1/29/2021
Totals (Months)	1			

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

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	30.00			0	0.00
Miles/round trip: Grading/Excavation	30.00			0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade	30.00			0	0.00
Miles/round trip: Paving	30.00			0	0.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grading/Excavation (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Paving (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	30.00			0	0.00
Miles/round trip: Grading/Excavation	30.00			0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade	30.00			0	0.00
Miles/round trip: Paving	30.00			0	0.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grading/Excavation (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Paving (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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

Worker Commute Emissions	User Override of Worker Commute Default Values	Default Values		
User Input				
Miles/ one-way trip	20			
One-way trips/day	2		Calculated Daily Trips	Calculated Daily VMT
No. of employees: Grubbing/Land Clearing	2		4	80.00
No. of employees: Grading/Excavation	2		4	80.00
No. of employees: Drainage/Utilities/Sub-Grade	2		4	80.00
No. of employees: Paving	2		4	80.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.02	1.10	0.10	0.05	0.02	0.00	339.80	0.00	0.01	342.28
Grading/Excavation (grams/mile)	0.02	1.10	0.10	0.05	0.02	0.00	339.80	0.00	0.01	342.28
Draining/Utilities/Sub-Grade (grams/mile)	0.02	1.10	0.10	0.05	0.02	0.00	339.80	0.00	0.01	342.28
Paving (grams/mile)	0.02	1.10	0.10	0.05	0.02	0.00	339.80	0.00	0.01	342.28
Grubbing/Land Clearing (grams/trip)	1.18	2.95	0.34	0.00	0.00	0.00	72.81	0.08	0.04	85.39
Grading/Excavation (grams/trip)	1.18	2.95	0.34	0.00	0.00	0.00	72.81	0.08	0.04	85.39
Draining/Utilities/Sub-Grade (grams/trip)	1.18	2.95	0.34	0.00	0.00	0.00	72.81	0.08	0.04	85.39
Paving (grams/trip)	1.18	2.95	0.34	0.00	0.00	0.00	72.81	0.08	0.04	85.39
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.22	0.02	0.01	0.00	0.00	60.57	0.00	0.00	61.12
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.07
Pounds per day - Grading/Excavation	0.01	0.22	0.02	0.01	0.00	0.00	60.57	0.00	0.00	61.12
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	0.00	0.27
Pounds per day - Drainage/Utilities/Sub-Grade	0.01	0.22	0.02	0.01	0.00	0.00	60.57	0.00	0.00	61.12
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.24
Pounds per day - Paving	0.01	0.22	0.02	0.01	0.00	0.00	60.57	0.00	0.00	61.12
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.10
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.67

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

Water Truck Emissions	User Override of	Program Estimate of	User Override of Truck	Default Values	Calculated	User Override of	Default Values	Calculated
User Input	Default # Water Trucks	Number of Water Trucks	Round Trips/Vehicle/Day	Round Trips/Vehicle/Day	Trips/day	Miles/Round Trip	Miles/Round Trip	Daily VMT
Grubbing/Land Clearing - Exhaust	0		5.00			1.00		0.00
Grading/Excavation - Exhaust	0		5.00			1.00		0.00
Drainage/Utilities/Subgrade	0		5.00			1.00		0.00
Paving	0		5.00			1.00		0.00

2010+ Model Year Mitigation Option Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grading/Excavation (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Paving (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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

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

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

Off-Road Equipment Emissions

Grubbing/Land Clearing

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

User-Defined Off-road Equipment

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

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

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Grubbing/Land Clearing	pounds per day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing	tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grading/Excavation

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

User-Defined Off-road Equipment

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

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

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Grading/Excavation	pounds per day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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

User-Defined Off-road Equipment

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

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

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

Paving

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

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

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

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Paving	pounds per day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Emissions all Phases (tons per construction period) =>		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

N2O	CO2e
pounds/day	pounds/day
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
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
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
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
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
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
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
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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
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
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
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
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
0.00	0.00
0.00	0.00
0.00	0.00
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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
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
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
0.00	0.00

N2O pounds/day	CO2e pounds/day
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
0.00	0.00
0.00	0.00
0.00	0.00
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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
0.00	0.00
0.00	0.00

N2O pounds/day	CO2e pounds/day
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
0.00	0.00
0.00	0.00

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

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

END OF DATA ENTRY SHEET

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Isabella VIC - BofA

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	1.39	8.84	16.86	1.70	0.70	1.00	0.79	0.58	0.21	0.03	3,110.50	0.57	0.16	3,173.29
Grading/Excavation	2.76	18.86	31.96	2.23	1.23	1.00	1.34	1.13	0.21	0.05	4,405.78	1.39	0.04	4,453.60
Drainage/Utilities/Sub-Grade	1.49	11.83	14.65	1.70	0.70	1.00	0.87	0.66	0.21	0.02	2,218.41	0.42	0.02	2,235.56
Paving	1.85	18.26	20.02	0.96	0.96	0.00	0.81	0.81	0.00	0.05	5,156.63	1.03	0.30	5,271.56
Maximum (pounds/day)	2.76	18.86	31.96	2.23	1.23	1.00	1.34	1.13	0.21	0.05	5,156.63	1.39	0.30	5,271.56
Total (tons/construction project)	0.09	0.67	0.99	0.08	0.04	0.04	0.05	0.04	0.01	0.00	159.43	0.04	0.00	161.57

Notes:

Project Start Year ->	2021
Project Length (months) ->	4
Total Project Area (acres) ->	1
Maximum Area Disturbed/Day (acres) ->	0
Water Truck Used? ->	Yes

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	168	0	210	0	680	5
Grading/Excavation	0	0	0	0	80	5
Drainage/Utilities/Sub-Grade	0	0	0	0	80	5
Paving	30	92	90	330	400	5

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Isabella VIC - BofA

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.01	0.04	0.07	0.01	0.00	0.00	0.00	0.00	0.00	0.00	13.69	0.00	0.00	12.67
Grading/Excavation	0.05	0.33	0.56	0.04	0.02	0.02	0.02	0.02	0.00	0.00	77.54	0.02	0.00	71.11
Drainage/Utilities/Sub-Grade	0.02	0.18	0.23	0.03	0.01	0.02	0.01	0.01	0.00	0.00	34.16	0.01	0.00	31.23
Paving	0.01	0.12	0.13	0.01	0.01	0.00	0.01	0.01	0.00	0.00	34.03	0.01	0.00	31.56
Maximum (tons/phase)	0.05	0.33	0.56	0.04	0.02	0.02	0.02	0.02	0.00	0.00	77.54	0.02	0.00	71.11
Total (tons/construction project)	0.09	0.67	0.99	0.08	0.04	0.04	0.05	0.04	0.01	0.00	159.43	0.04	0.00	146.57

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model Version 9.0.0

Data Entry Worksheet

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

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

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Isabella VIC - BofA	
Construction Start Year	2021	Enter a Year between 2014 and 2040 (inclusive)
Project Type For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data	4	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	4.00	months
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	1	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.05	miles
Total Project Area	1.05	acres
Maximum Area Disturbed/Day	0.10	acres
Water Trucks Used?	1	1. Yes 2. No

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

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

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing	26.00		168.00
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving	12.00	30.00	
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving	8.50	92.20	

Mitigation Options

On-road Fleet Emissions Mitigation	2010 and Newer On-road Vehicles Fleet	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation	No Mitigation	Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

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

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

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing		0.40		1/1/2021
Grading/Excavation		1.60		1/14/2021
Drainage/Utilities/Sub-Grade		1.40		3/4/2021
Paving		0.60		4/16/2021
Totals (Months)	4			

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

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	30.00			7	210.00
Miles/round trip: Grading/Excavation	30.00			0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade	30.00			0	0.00
Miles/round trip: Paving	30.00			3	90.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grading/Excavation (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Paving (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.02	0.20	1.47	0.05	0.02	0.01	823.76	0.00	0.13	862.37
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	3.62	0.00	0.00	3.79
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.01	0.08	0.63	0.02	0.01	0.00	353.04	0.00	0.06	369.59
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	2.33	0.00	0.00	2.44
Total tons per construction project	0.00	0.00	0.01	0.00	0.00	0.00	5.95	0.00	0.00	6.23

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

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	30.00			0	0.00
Miles/round trip: Grading/Excavation	30.00			0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade	30.00			0	0.00
Miles/round trip: Paving	30.00			11	330.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grading/Excavation (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Paving (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.03	0.31	2.31	0.08	0.04	0.01	1,294.48	0.00	0.20	1,355.15
Tons per const. Period - Paving	0.00	0.00	0.02	0.00	0.00	0.00	8.54	0.00	0.00	8.94
Total tons per construction project	0.00	0.00	0.02	0.00	0.00	0.00	8.54	0.00	0.00	8.94

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

Worker Commute Emissions	User Override of Worker Commute Default Values	Default Values		
User Input				
Miles/ one-way trip	20			
One-way trips/day	2		Calculated Daily Trips	Calculated Daily VMT
No. of employees: Grubbing/Land Clearing	17		34	680.00
No. of employees: Grading/Excavation	2		4	80.00
No. of employees: Drainage/Utilities/Sub-Grade	2		4	80.00
No. of employees: Paving	10		20	400.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.02	1.10	0.10	0.05	0.02	0.00	339.80	0.00	0.01	342.28
Grading/Excavation (grams/mile)	0.02	1.10	0.10	0.05	0.02	0.00	339.80	0.00	0.01	342.28
Draining/Utilities/Sub-Grade (grams/mile)	0.02	1.10	0.10	0.05	0.02	0.00	339.80	0.00	0.01	342.28
Paving (grams/mile)	0.02	1.10	0.10	0.05	0.02	0.00	339.80	0.00	0.01	342.28
Grubbing/Land Clearing (grams/trip)	1.18	2.95	0.34	0.00	0.00	0.00	72.81	0.08	0.04	85.39
Grading/Excavation (grams/trip)	1.18	2.95	0.34	0.00	0.00	0.00	72.81	0.08	0.04	85.39
Draining/Utilities/Sub-Grade (grams/trip)	1.18	2.95	0.34	0.00	0.00	0.00	72.81	0.08	0.04	85.39
Paving (grams/trip)	1.18	2.95	0.34	0.00	0.00	0.00	72.81	0.08	0.04	85.39
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.12	1.87	0.17	0.07	0.03	0.01	514.86	0.01	0.01	519.53
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.00	0.00	0.00	0.00	2.27	0.00	0.00	2.29
Pounds per day - Grading/Excavation	0.01	0.22	0.02	0.01	0.00	0.00	60.57	0.00	0.00	61.12
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	1.07	0.00	0.00	1.08
Pounds per day - Drainage/Utilities/Sub-Grade	0.01	0.22	0.02	0.01	0.00	0.00	60.57	0.00	0.00	61.12
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.93	0.00	0.00	0.94
Pounds per day - Paving	0.07	1.10	0.10	0.04	0.02	0.00	302.86	0.01	0.01	305.60
Tons per const. Period - Paving	0.00	0.01	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.02
Total tons per construction project	0.00	0.02	0.00	0.00	0.00	0.00	6.26	0.00	0.00	6.32

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

Water Truck Emissions	User Override of	Program Estimate of	User Override of Truck	Default Values	Calculated	User Override of	Default Values	Calculated
User Input	Default # Water Trucks	Number of Water Trucks	Round Trips/Vehicle/Day	Round Trips/Vehicle/Day	Trips/day	Miles/Round Trip	Miles/Round Trip	Daily VMT
Grubbing/Land Clearing - Exhaust	1		5.00			1.00		5.00
Grading/Excavation - Exhaust	1		5.00			1.00		5.00
Drainage/Utilities/Subgrade	1		5.00			1.00		5.00
Paving	1		5.00			1.00		5.00

2010+ Model Year Mitigation Option Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grading/Excavation (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Paving (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.07	0.00	0.00	0.00	19.61	0.00	0.00	20.53
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.09
Pounds per day - Grading/Excavation	0.00	0.00	0.07	0.00	0.00	0.00	19.61	0.00	0.00	20.53
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.00	0.00	0.36
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.07	0.00	0.00	0.00	19.61	0.00	0.00	20.53
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00	0.00	0.32
Pounds per day - Paving	0.00	0.00	0.07	0.00	0.00	0.00	19.61	0.00	0.00	20.53
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.14
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.86	0.00	0.00	0.90

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

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing	0.10		1.00	0.00	0.21	0.00
Fugitive Dust - Grading/Excavation	0.10		1.00	0.02	0.21	0.00
Fugitive Dust - Drainage/Utilities/Subgrade	0.10		1.00	0.02	0.21	0.00

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

Off-Road Equipment Emissions

Grubbing/Land Clearing

Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day
0.00			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Crawler Tractors	0.55	2.44	6.97	0.26	0.24	0.01	760.36	0.25
0.00			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Graders	0.45	1.77	5.92	0.19	0.17	0.01	641.68	0.21
0.00			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01
0.00			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Tractors/Loaders/Backhoes	0.19	2.26	1.90	0.11	0.10	0.00	300.90	0.10
0.00			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment

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

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

Grubbing/Land Clearing	pounds per day	1.25	6.76	15.15	0.58	0.53	0.02	1,752.26	0.56
Grubbing/Land Clearing	tons per phase	0.01	0.03	0.07	0.00	0.00	0.00	7.71	0.00

Grading/Excavation	Default Number of Vehicles	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Crawler Tractors	0.55	2.44	6.97	0.26	0.24	0.01	760.36	0.25
0.00			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Excavators	0.23	3.27	2.15	0.10	0.10	0.01	500.19	0.16
0.00			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Graders	0.45	1.77	5.92	0.19	0.17	0.01	641.68	0.21
0.00			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Rubber Tired Loaders	0.34	1.60	3.86	0.13	0.12	0.01	605.23	0.20
1.00			Model Default Tier	Scrapers	0.93	7.00	10.70	0.42	0.38	0.02	1,467.91	0.47
1.00			Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01
0.00			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Tractors/Loaders/Backhoes	0.19	2.26	1.90	0.11	0.10	0.00	300.90	0.10
0.00			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment

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

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grading/Excavation	pounds per day		2.75	18.64	31.87	1.23	1.13	0.04	4,325.59	1.39
	Grading/Excavation	tons per phase		0.05	0.33	0.56	0.02	0.02	0.00	76.13	0.02

Drainage/Utilities/Subgrade	Default Number of Vehicles	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*				pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Air Compressors	0.29	2.42	2.04	0.13	0.13	0.00	375.26	0.03
0.00			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Forklifts	0.13	1.17	1.18	0.08	0.08	0.00	148.03	0.05
1.00			Model Default Tier	Generator Sets	0.36	3.68	3.17	0.17	0.17	0.01	623.04	0.03
1.00			Model Default Tier	Graders	0.45	1.77	5.92	0.19	0.17	0.01	641.68	0.21
0.00			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01
0.00			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Tractors/Loaders/Backhoes	0.19	2.26	1.90	0.11	0.10	0.00	300.90	0.10
0.00			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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

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

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Drainage/Utilities/Sub-Grade	pounds per day	1.48	11.60	14.56	0.69	0.66	0.02	2,138.23	0.42
Drainage/Utilities/Sub-Grade	tons per phase	0.02	0.18	0.22	0.01	0.01	0.00	32.93	0.01

Paving

Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day
0.00			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Off-Highway Trucks	0.61	3.60	5.26	0.19	0.18	0.01	1,278.52	0.41
0.00			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Pavers	0.25	2.90	2.60	0.13	0.12	0.00	455.06	0.15
1.00			Model Default Tier	Paving Equipment	0.19	2.54	1.94	0.10	0.09	0.00	394.46	0.13
0.00			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Model Default Tier	Rollers	0.38	3.76	3.85	0.24	0.22	0.01	508.18	0.16
0.00			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01
1.00			Model Default Tier	Skid Steer Loaders	0.08	1.39	1.00	0.04	0.04	0.00	200.20	0.06
0.00			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Tractors/Loaders/Backhoes	0.19	2.26	1.90	0.11	0.10	0.00	300.90	0.10
0.00			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment

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

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

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
	Paving	pounds per day	1.74	16.76	16.91	0.82	0.75	0.03	3,186.63	1.02
	Paving	tons per phase	0.01	0.11	0.11	0.01	0.00	0.00	21.03	0.01
Total Emissions all Phases (tons per construction period) =>			0.09	0.65	0.96	0.04	0.04	0.00	137.80	0.04

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.01	768.56
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.01	648.60
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
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	49.56
0.00	0.00
0.00	0.00
0.00	0.00
0.00	304.14
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
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

0.02	1,770.86
0.00	7.79

N2O pounds/day	CO2e pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.01	768.56
0.00	0.00
0.00	505.59
0.00	0.00
0.00	0.00
0.01	648.60
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
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.01	611.76
0.01	1,483.74
0.00	49.56
0.00	0.00
0.00	0.00
0.00	0.00
0.00	304.14
0.00	0.00
0.00	0.00

N2O pounds/day	CO2e pounds/day
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
0.00	0.00
0.00	0.00

0.04	4,371.95
0.00	76.95

N2O pounds/day	CO2e pounds/day
0.00	0.00
0.00	376.75
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	149.63
0.00	625.23
0.01	648.60
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
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	49.56
0.00	0.00
0.00	0.00
0.00	0.00
0.00	304.14
0.00	0.00
0.00	0.00

N2O pounds/day	CO2e pounds/day
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
0.00	0.00
0.00	0.00
0.02	2,153.90
0.00	33.17

N2O pounds/day	CO2e pounds/day
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
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.01	1,292.29
0.00	0.00
0.00	0.00
0.00	0.00
0.00	459.97
0.00	398.71
0.00	0.00
0.00	0.00
0.00	0.00
0.00	513.65
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	49.56
0.00	202.36
0.00	0.00
0.00	0.00
0.00	304.14
0.00	0.00
0.00	0.00

N2O pounds/day	CO2e pounds/day
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
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.03	3,220.69
0.00	21.26
0.00	139.16

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

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

END OF DATA ENTRY SHEET

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Isabella VC - Bob Powers

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	1.38	8.72	16.02	5.67	0.67	5.00	1.61	0.57	1.04	0.03	2,639.78	0.57	0.09	2,680.51
Grading/Excavation	5.99	38.11	65.63	7.58	2.58	5.00	3.35	2.31	1.04	0.12	11,469.00	3.22	0.27	11,630.48
Drainage/Utilities/Sub-Grade	2.55	21.25	23.72	6.18	1.18	5.00	2.07	1.03	1.04	0.06	5,402.44	0.96	0.17	5,477.63
Paving	1.93	19.07	26.12	1.18	1.18	0.00	0.91	0.91	0.00	0.08	8,569.35	1.03	0.84	8,844.24
Maximum (pounds/day)	5.99	38.11	65.63	7.58	2.58	5.00	3.35	2.31	1.04	0.12	11,469.00	3.22	0.84	11,630.48
Total (tons/construction project)	0.16	1.16	1.76	0.26	0.07	0.19	0.10	0.06	0.04	0.00	353.22	0.08	0.01	359.22

Notes:

Project Start Year ->	2021
Project Length (months) ->	4
Total Project Area (acres) ->	2
Maximum Area Disturbed/Day (acres) ->	0
Water Truck Used? ->	Yes

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	36	0	90	0	680	5
Grading/Excavation	166	0	270	0	600	5
Drainage/Utilities/Sub-Grade	65	0	180	0	1,200	5
Paving	277	154	720	570	400	5

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Isabella VC - Bob Powers

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.01	0.04	0.07	0.02	0.00	0.02	0.01	0.00	0.00	0.00	11.62	0.00	0.00	10.70
Grading/Excavation	0.11	0.67	1.16	0.13	0.05	0.09	0.06	0.04	0.02	0.00	201.85	0.06	0.00	185.70
Drainage/Utilities/Sub-Grade	0.04	0.33	0.37	0.10	0.02	0.08	0.03	0.02	0.02	0.00	83.20	0.01	0.00	76.53
Paving	0.01	0.13	0.17	0.01	0.01	0.00	0.01	0.01	0.00	0.00	56.56	0.01	0.01	52.95
Maximum (tons/phase)	0.11	0.67	1.16	0.13	0.05	0.09	0.06	0.04	0.02	0.00	201.85	0.06	0.01	185.70
Total (tons/construction project)	0.16	1.16	1.76	0.26	0.07	0.19	0.10	0.06	0.04	0.00	353.22	0.08	0.01	325.88

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model Version 9.0.0

Data Entry Worksheet

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

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

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Isabella VC - Bob Powers	
Construction Start Year	2021	Enter a Year between 2014 and 2040 (inclusive)
Project Type For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data	4	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	4.00	months
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	1	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.10	miles
Total Project Area	2.17	acres
Maximum Area Disturbed/Day	0.25	acres
Water Trucks Used?	1	1. Yes 2. No

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

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

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing	12.00		36.00
	Grading/Excavation	20.00	101.90	64.55
	Drainage/Utilities/Sub-Grade	12.00		64.90
	Paving	12.00	205.85	70.65
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving	8.50	154.00	

Mitigation Options

On-road Fleet Emissions Mitigation	2010 and Newer On-road Vehicles Fleet	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation	No Mitigation	Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

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

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

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing		0.40		1/1/2021
Grading/Excavation		1.60		1/14/2021
Drainage/Utilities/Sub-Grade		1.40		3/4/2021
Paving		0.60		4/16/2021
Totals (Months)		4		

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

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	30.00			3	90.00
Miles/round trip: Grading/Excavation	30.00			9	270.00
Miles/round trip: Drainage/Utilities/Sub-Grade	30.00			6	180.00
Miles/round trip: Paving	30.00			24	720.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grading/Excavation (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Paving (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.08	0.63	0.02	0.01	0.00	353.04	0.00	0.06	369.59
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	1.55	0.00	0.00	1.63
Pounds per day - Grading/Excavation	0.02	0.25	1.89	0.07	0.03	0.01	1,059.12	0.00	0.17	1,108.76
Tons per const. Period - Grading/Excavation	0.00	0.00	0.03	0.00	0.00	0.00	18.64	0.00	0.00	19.51
Pounds per day - Drainage/Utilities/Sub-Grade	0.02	0.17	1.26	0.04	0.02	0.01	706.08	0.00	0.11	739.17
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.02	0.00	0.00	0.00	10.87	0.00	0.00	11.38
Pounds per day - Paving	0.07	0.67	5.05	0.18	0.08	0.03	2,824.32	0.00	0.44	2,956.70
Tons per const. Period - Paving	0.00	0.00	0.03	0.00	0.00	0.00	18.64	0.00	0.00	19.51
Total tons per construction project	0.00	0.01	0.09	0.00	0.00	0.00	49.71	0.00	0.01	52.04

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

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	30.00			0	0.00
Miles/round trip: Grading/Excavation	30.00			0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade	30.00			0	0.00
Miles/round trip: Paving	30.00			19	570.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grading/Excavation (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Paving (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.05	0.53	4.00	0.14	0.06	0.02	2,235.92	0.00	0.35	2,340.72
Tons per const. Period - Paving	0.00	0.00	0.03	0.00	0.00	0.00	14.76	0.00	0.00	15.45
Total tons per construction project	0.00	0.00	0.03	0.00	0.00	0.00	14.76	0.00	0.00	15.45

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

Worker Commute Emissions	User Override of Worker Commute Default Values	Default Values		
User Input				
Miles/ one-way trip	20			
One-way trips/day	2		Calculated Daily Trips	Calculated Daily VMT
No. of employees: Grubbing/Land Clearing	17		34	680.00
No. of employees: Grading/Excavation	15		30	600.00
No. of employees: Drainage/Utilities/Sub-Grade	30		60	1,200.00
No. of employees: Paving	10		20	400.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.02	1.10	0.10	0.05	0.02	0.00	339.80	0.00	0.01	342.28
Grading/Excavation (grams/mile)	0.02	1.10	0.10	0.05	0.02	0.00	339.80	0.00	0.01	342.28
Draining/Utilities/Sub-Grade (grams/mile)	0.02	1.10	0.10	0.05	0.02	0.00	339.80	0.00	0.01	342.28
Paving (grams/mile)	0.02	1.10	0.10	0.05	0.02	0.00	339.80	0.00	0.01	342.28
Grubbing/Land Clearing (grams/trip)	1.18	2.95	0.34	0.00	0.00	0.00	72.81	0.08	0.04	85.39
Grading/Excavation (grams/trip)	1.18	2.95	0.34	0.00	0.00	0.00	72.81	0.08	0.04	85.39
Draining/Utilities/Sub-Grade (grams/trip)	1.18	2.95	0.34	0.00	0.00	0.00	72.81	0.08	0.04	85.39
Paving (grams/trip)	1.18	2.95	0.34	0.00	0.00	0.00	72.81	0.08	0.04	85.39
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.12	1.87	0.17	0.07	0.03	0.01	514.86	0.01	0.01	519.53
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.00	0.00	0.00	0.00	2.27	0.00	0.00	2.29
Pounds per day - Grading/Excavation	0.10	1.65	0.15	0.06	0.03	0.00	454.29	0.01	0.01	458.41
Tons per const. Period - Grading/Excavation	0.00	0.03	0.00	0.00	0.00	0.00	8.00	0.00	0.00	8.07
Pounds per day - Drainage/Utilities/Sub-Grade	0.21	3.30	0.30	0.12	0.05	0.01	908.58	0.02	0.03	916.81
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.05	0.00	0.00	0.00	0.00	13.99	0.00	0.00	14.12
Pounds per day - Paving	0.07	1.10	0.10	0.04	0.02	0.00	302.86	0.01	0.01	305.60
Tons per const. Period - Paving	0.00	0.01	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.02
Total tons per construction project	0.01	0.10	0.01	0.00	0.00	0.00	26.25	0.00	0.00	26.49

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

Water Truck Emissions	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
User Input								
Grubbing/Land Clearing - Exhaust	1		5.00			1.00		5.00
Grading/Excavation - Exhaust	1		5.00			1.00		5.00
Drainage/Utilities/Subgrade	1		5.00			1.00		5.00
Paving	1		5.00			1.00		5.00

2010+ Model Year Mitigation Option Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grading/Excavation (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Paving (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.07	0.00	0.00	0.00	19.61	0.00	0.00	20.53
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.09
Pounds per day - Grading/Excavation	0.00	0.00	0.07	0.00	0.00	0.00	19.61	0.00	0.00	20.53
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.00	0.00	0.36
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.07	0.00	0.00	0.00	19.61	0.00	0.00	20.53
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00	0.00	0.32
Pounds per day - Paving	0.00	0.00	0.07	0.00	0.00	0.00	19.61	0.00	0.00	20.53
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.14
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.86	0.00	0.00	0.90

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

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing	0.50		5.00	0.02	1.04	0.00
Fugitive Dust - Grading/Excavation	0.50		5.00	0.09	1.04	0.02
Fugitive Dust - Drainage/Utilities/Subgrade	0.50		5.00	0.08	1.04	0.02

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

Off-Road Equipment Emissions

Grubbing/Land Clearing

Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day
0.00			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Crawler Tractors	0.55	2.44	6.97	0.26	0.24	0.01	760.36	0.25
0.00			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Graders	0.45	1.77	5.92	0.19	0.17	0.01	641.68	0.21
0.00			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01
0.00			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Tractors/Loaders/Backhoes	0.19	2.26	1.90	0.11	0.10	0.00	300.90	0.10
0.00			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment

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

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

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Grubbing/Land Clearing	pounds per day	1.25	6.76	15.15	0.58	0.53	0.02	1,752.26	0.56
Grubbing/Land Clearing	tons per phase	0.01	0.03	0.07	0.00	0.00	0.00	7.71	0.00

Grading/Excavation Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day
0.00			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Model Default Tier	Crawler Tractors	1.65	7.31	20.90	0.79	0.72	0.02	2,281.09	0.74
0.00			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Excavators	0.23	3.27	2.15	0.10	0.10	0.01	500.19	0.16
0.00			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Graders	0.45	1.77	5.92	0.19	0.17	0.01	641.68	0.21
0.00			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Model Default Tier	Off-Highway Trucks	1.82	10.81	15.79	0.58	0.53	0.04	3,835.57	1.24
0.00			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Rollers	0.19	1.88	1.92	0.12	0.11	0.00	254.09	0.08
0.00			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Rubber Tired Loaders	0.34	1.60	3.86	0.13	0.12	0.01	605.23	0.20
1.00			Model Default Tier	Scrapers	0.93	7.00	10.70	0.42	0.38	0.02	1,467.91	0.47
1.00			Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01
0.00			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Tractors/Loaders/Backhoes	0.19	2.26	1.90	0.11	0.10	0.00	300.90	0.10
0.00			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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

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

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Grading/Excavation	pounds per day	5.86	36.20	63.52	2.45	2.25	0.10	9,935.98	3.20
Grading/Excavation	tons per phase	0.10	0.64	1.12	0.04	0.04	0.00	174.87	0.06

Drainage/Utilities/Subgrade Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day
0.00			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Air Compressors	0.29	2.42	2.04	0.13	0.13	0.00	375.26	0.03
0.00			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Cement and Mortar Mixers	0.06	0.31	0.37	0.01	0.01	0.00	50.52	0.01
0.00			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Forklifts	0.13	1.17	1.18	0.08	0.08	0.00	148.03	0.05
1.00			Model Default Tier	Generator Sets	0.36	3.68	3.17	0.17	0.17	0.01	623.04	0.03
1.00			Model Default Tier	Graders	0.45	1.77	5.92	0.19	0.17	0.01	641.68	0.21
0.00			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Off-Highway Trucks	0.61	3.60	5.26	0.19	0.18	0.01	1,278.52	0.41
0.00			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01
0.00			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Model Default Tier	Tractors/Loaders/Backhoes	0.37	4.52	3.79	0.22	0.21	0.01	601.80	0.19
0.00			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment

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

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

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Drainage/Utilities/Sub-Grade	pounds per day	2.33	17.78	22.09	1.01	0.95	0.04	3,768.17	0.93
Drainage/Utilities/Sub-Grade	tons per phase	0.04	0.27	0.34	0.02	0.01	0.00	58.03	0.01

Paving	Default	Mitigation Option										
	Number of Vehicles	Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Off-Highway Trucks	0.61	3.60	5.26	0.19	0.18	0.01	1,278.52	0.41
0.00			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Pavers	0.25	2.90	2.60	0.13	0.12	0.00	455.06	0.15
1.00			Model Default Tier	Paving Equipment	0.19	2.54	1.94	0.10	0.09	0.00	394.46	0.13
0.00			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Model Default Tier	Rollers	0.38	3.76	3.85	0.24	0.22	0.01	508.18	0.16
0.00			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01
1.00			Model Default Tier	Skid Steer Loaders	0.08	1.39	1.00	0.04	0.04	0.00	200.20	0.06
0.00			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Tractors/Loaders/Backhoes	0.19	2.26	1.90	0.11	0.10	0.00	300.90	0.10
0.00			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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

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

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
	Paving	pounds per day	1.74	16.76	16.91	0.82	0.75	0.03	3,186.63	1.02
	Paving	tons per phase	0.01	0.11	0.11	0.01	0.00	0.00	21.03	0.01
Total Emissions all Phases (tons per construction period) =>			0.16	1.05	1.64	0.07	0.06	0.00	261.64	0.08

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.01	768.56
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.01	648.60
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
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	49.56
0.00	0.00
0.00	0.00
0.00	0.00
0.00	304.14
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
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

0.02	1,770.86
0.00	7.79

N2O pounds/day	CO2e pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.02	2,305.68
0.00	0.00
0.00	505.59
0.00	0.00
0.00	0.00
0.01	648.60
0.00	0.00
0.03	3,876.88
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
0.00	256.83
0.00	0.00
0.00	0.00
0.01	611.76
0.01	1,483.74
0.00	49.56
0.00	0.00
0.00	0.00
0.00	0.00
0.00	304.14
0.00	0.00
0.00	0.00

N2O pounds/day	CO2e pounds/day
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
0.00	0.00
0.00	0.00

0.09	10,042.78
0.00	176.75

N2O pounds/day	CO2e pounds/day
0.00	0.00
0.00	376.75
0.00	0.00
0.00	50.77
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	149.63
0.00	625.23
0.01	648.60
0.00	0.00
0.01	1,292.29
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
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	49.56
0.00	0.00
0.00	0.00
0.00	0.00
0.01	608.28
0.00	0.00
0.00	0.00

N2O pounds/day	CO2e pounds/day
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
0.00	0.00
0.00	0.00

0.03	3,801.11
0.00	58.54

N2O pounds/day	CO2e pounds/day
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
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.01	1,292.29
0.00	0.00
0.00	0.00
0.00	0.00
0.00	459.97
0.00	398.71
0.00	0.00
0.00	0.00
0.00	0.00
0.00	513.65
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	49.56
0.00	202.36
0.00	0.00
0.00	0.00
0.00	304.14
0.00	0.00
0.00	0.00

N2O pounds/day	CO2e pounds/day
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
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

0.03	3,220.69
0.00	21.26
0.00	264.34

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

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

END OF DATA ENTRY SHEET

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Isabella VC - Preston

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	1.47	9.65	22.96	5.91	0.91	5.00	1.72	0.68	1.04	0.06	6,523.22	0.57	0.70	6,745.96
Grading/Excavation	3.67	25.95	40.54	6.64	1.64	5.00	2.50	1.46	1.04	0.07	7,038.19	1.90	0.18	7,139.18
Drainage/Utilities/Sub-Grade	1.28	10.04	13.02	5.60	0.60	5.00	1.60	0.56	1.04	0.02	1,984.52	0.40	0.02	2,001.26
Paving	1.84	18.12	18.97	0.93	0.93	0.00	0.80	0.80	0.00	0.05	4,568.23	1.03	0.21	4,655.59
Maximum (pounds/day)	3.67	25.95	40.54	6.64	1.64	5.00	2.50	1.46	1.04	0.07	7,038.19	1.90	0.70	7,139.18
Total (tons/construction project)	0.10	0.77	1.14	0.24	0.05	0.19	0.08	0.04	0.04	0.00	213.29	0.05	0.01	216.88

Notes:

Project Start Year ->	2021
Project Length (months) ->	4
Total Project Area (acres) ->	3
Maximum Area Disturbed/Day (acres) ->	0
Water Truck Used? ->	Yes

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	936	0	1,080	0	680	5
Grading/Excavation	106	0	180	0	600	5
Drainage/Utilities/Sub-Grade	0	0	0	0	200	5
Paving	47	35	120	150	400	5

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Isabella VC - Preston

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.01	0.04	0.10	0.03	0.00	0.02	0.01	0.00	0.00	0.00	28.70	0.00	0.00	26.93
Grading/Excavation	0.06	0.46	0.71	0.12	0.03	0.09	0.04	0.03	0.02	0.00	123.87	0.03	0.00	113.99
Drainage/Utilities/Sub-Grade	0.02	0.15	0.20	0.09	0.01	0.08	0.02	0.01	0.02	0.00	30.56	0.01	0.00	27.96
Paving	0.01	0.12	0.13	0.01	0.01	0.00	0.01	0.01	0.00	0.00	30.15	0.01	0.00	27.88
Maximum (tons/phase)	0.06	0.46	0.71	0.12	0.03	0.09	0.04	0.03	0.02	0.00	123.87	0.03	0.00	113.99
Total (tons/construction project)	0.10	0.77	1.14	0.24	0.05	0.19	0.08	0.04	0.04	0.00	213.29	0.05	0.01	196.75

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model Version 9.0.0

Data Entry Worksheet

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

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

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Isabella VC - Preston	
Construction Start Year	2021	Enter a Year between 2014 and 2040 (inclusive)
Project Type For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data	4	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	4.00	months
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	1	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.10	miles
Total Project Area	2.88	acres
Maximum Area Disturbed/Day	0.25	acres
Water Trucks Used?	1	1. Yes 2. No

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

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

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing	26.00		936.00
	Grading/Excavation	20.00	58.88	47.10
	Drainage/Utilities/Sub-Grade			
	Paving	12.00	47.10	
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving	8.50	34.60	

Mitigation Options

On-road Fleet Emissions Mitigation	2010 and Newer On-road Vehicles Fleet	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation	No Mitigation	Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

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

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

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing		0.40		1/1/2021
Grading/Excavation		1.60		1/14/2021
Drainage/Utilities/Sub-Grade		1.40		3/4/2021
Paving		0.60		4/16/2021
Totals (Months)	4			

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

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	30.00			36	1080.00
Miles/round trip: Grading/Excavation	30.00			6	180.00
Miles/round trip: Drainage/Utilities/Sub-Grade	30.00			0	0.00
Miles/round trip: Paving	30.00			4	120.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grading/Excavation (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Paving (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.10	1.01	7.57	0.27	0.12	0.04	4,236.49	0.00	0.67	4,435.04
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.03	0.00	0.00	0.00	18.64	0.00	0.00	19.51
Pounds per day - Grading/Excavation	0.02	0.17	1.26	0.04	0.02	0.01	706.08	0.00	0.11	739.17
Tons per const. Period - Grading/Excavation	0.00	0.00	0.02	0.00	0.00	0.00	12.43	0.00	0.00	13.01
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.01	0.11	0.84	0.03	0.01	0.00	470.72	0.00	0.07	492.78
Tons per const. Period - Paving	0.00	0.00	0.01	0.00	0.00	0.00	3.11	0.00	0.00	3.25
Total tons per construction project	0.00	0.01	0.06	0.00	0.00	0.00	34.17	0.00	0.01	35.78

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

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	30.00			0	0.00
Miles/round trip: Grading/Excavation	30.00			0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade	30.00			0	0.00
Miles/round trip: Paving	30.00			5	150.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grading/Excavation (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Paving (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.01	0.14	1.05	0.04	0.02	0.01	588.40	0.00	0.09	615.98
Tons per const. Period - Paving	0.00	0.00	0.01	0.00	0.00	0.00	3.88	0.00	0.00	4.07
Total tons per construction project	0.00	0.00	0.01	0.00	0.00	0.00	3.88	0.00	0.00	4.07

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

Worker Commute Emissions	User Override of Worker Commute Default Values	Default Values		
User Input				
Miles/ one-way trip	20			
One-way trips/day	2		Calculated Daily Trips	Calculated Daily VMT
No. of employees: Grubbing/Land Clearing	17		34	680.00
No. of employees: Grading/Excavation	15		30	600.00
No. of employees: Drainage/Utilities/Sub-Grade	5		10	200.00
No. of employees: Paving	10		20	400.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.02	1.10	0.10	0.05	0.02	0.00	339.80	0.00	0.01	342.28
Grading/Excavation (grams/mile)	0.02	1.10	0.10	0.05	0.02	0.00	339.80	0.00	0.01	342.28
Draining/Utilities/Sub-Grade (grams/mile)	0.02	1.10	0.10	0.05	0.02	0.00	339.80	0.00	0.01	342.28
Paving (grams/mile)	0.02	1.10	0.10	0.05	0.02	0.00	339.80	0.00	0.01	342.28
Grubbing/Land Clearing (grams/trip)	1.18	2.95	0.34	0.00	0.00	0.00	72.81	0.08	0.04	85.39
Grading/Excavation (grams/trip)	1.18	2.95	0.34	0.00	0.00	0.00	72.81	0.08	0.04	85.39
Draining/Utilities/Sub-Grade (grams/trip)	1.18	2.95	0.34	0.00	0.00	0.00	72.81	0.08	0.04	85.39
Paving (grams/trip)	1.18	2.95	0.34	0.00	0.00	0.00	72.81	0.08	0.04	85.39
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.12	1.87	0.17	0.07	0.03	0.01	514.86	0.01	0.01	519.53
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.00	0.00	0.00	0.00	2.27	0.00	0.00	2.29
Pounds per day - Grading/Excavation	0.10	1.65	0.15	0.06	0.03	0.00	454.29	0.01	0.01	458.41
Tons per const. Period - Grading/Excavation	0.00	0.03	0.00	0.00	0.00	0.00	8.00	0.00	0.00	8.07
Pounds per day - Drainage/Utilities/Sub-Grade	0.03	0.55	0.05	0.02	0.01	0.00	151.43	0.00	0.00	152.80
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.01	0.00	0.00	0.00	0.00	2.33	0.00	0.00	2.35
Pounds per day - Paving	0.07	1.10	0.10	0.04	0.02	0.00	302.86	0.01	0.01	305.60
Tons per const. Period - Paving	0.00	0.01	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.02
Total tons per construction project	0.00	0.05	0.00	0.00	0.00	0.00	14.59	0.00	0.00	14.72

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

Water Truck Emissions	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
User Input								
Grubbing/Land Clearing - Exhaust	1		5.00			1.00		5.00
Grading/Excavation - Exhaust	1		5.00			1.00		5.00
Drainage/Utilities/Subgrade	1		5.00			1.00		5.00
Paving	1		5.00			1.00		5.00

2010+ Model Year Mitigation Option Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grading/Excavation (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Paving (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.07	0.00	0.00	0.00	19.61	0.00	0.00	20.53
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.09
Pounds per day - Grading/Excavation	0.00	0.00	0.07	0.00	0.00	0.00	19.61	0.00	0.00	20.53
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.00	0.00	0.36
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.07	0.00	0.00	0.00	19.61	0.00	0.00	20.53
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00	0.00	0.32
Pounds per day - Paving	0.00	0.00	0.07	0.00	0.00	0.00	19.61	0.00	0.00	20.53
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.14
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.86	0.00	0.00	0.90

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

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing	0.50		5.00	0.02	1.04	0.00
Fugitive Dust - Grading/Excavation	0.50		5.00	0.09	1.04	0.02
Fugitive Dust - Drainage/Utilities/Subgrade	0.50		5.00	0.08	1.04	0.02

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

Off-Road Equipment Emissions

Grubbing/Land Clearing

Override of Default Number of Vehicles	Default Number of Vehicles Program-estimate	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day
0.00			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Crawler Tractors	0.55	2.44	6.97	0.26	0.24	0.01	760.36	0.25
0.00			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Graders	0.45	1.77	5.92	0.19	0.17	0.01	641.68	0.21
0.00			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01
0.00			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Tractors/Loaders/Backhoes	0.19	2.26	1.90	0.11	0.10	0.00	300.90	0.10
0.00			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment

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

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

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Grubbing/Land Clearing	pounds per day	1.25	6.76	15.15	0.58	0.53	0.02	1,752.26	0.56
Grubbing/Land Clearing	tons per phase	0.01	0.03	0.07	0.00	0.00	0.00	7.71	0.00

Grading/Excavation	Default Number of Vehicles	Mitigation Option			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*	Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Crawler Tractors	0.55	2.44	6.97	0.26	0.24	0.01	760.36	0.25
0.00			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Excavators	0.23	3.27	2.15	0.10	0.10	0.01	500.19	0.16
0.00			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Graders	0.45	1.77	5.92	0.19	0.17	0.01	641.68	0.21
0.00			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Off-Highway Trucks	0.61	3.60	5.26	0.19	0.18	0.01	1,278.52	0.41
0.00			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Rollers	0.19	1.88	1.92	0.12	0.11	0.00	254.09	0.08
0.00			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Rubber Tired Loaders	0.34	1.60	3.86	0.13	0.12	0.01	605.23	0.20
1.00			Model Default Tier	Scrapers	0.93	7.00	10.70	0.42	0.38	0.02	1,467.91	0.47
1.00			Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01
0.00			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Tractors/Loaders/Backhoes	0.19	2.26	1.90	0.11	0.10	0.00	300.90	0.10
0.00			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment

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

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

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Grading/Excavation	pounds per day	3.55	24.12	39.06	1.54	1.41	0.06	5,858.21	1.88
Grading/Excavation	tons per phase	0.06	0.42	0.69	0.03	0.02	0.00	103.10	0.03

Drainage/Utilities/Subgrade	Default Number of Vehicles	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Override of Default Number of Vehicles	*Program-estimate*				pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Cement and Mortar Mixers	0.06	0.31	0.37	0.01	0.01	0.00	50.52	0.01
0.00			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Forklifts	0.13	1.17	1.18	0.08	0.08	0.00	148.03	0.05
1.00			Model Default Tier	Generator Sets	0.36	3.68	3.17	0.17	0.17	0.01	623.04	0.03
1.00			Model Default Tier	Graders	0.45	1.77	5.92	0.19	0.17	0.01	641.68	0.21
0.00			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01
0.00			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Tractors/Loaders/Backhoes	0.19	2.26	1.90	0.11	0.10	0.00	300.90	0.10
0.00			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment

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

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

Drainage/Utilities/Sub-Grade	pounds per day	1.24	9.49	12.89	0.58	0.55	0.02	1,813.48	0.39
Drainage/Utilities/Sub-Grade	tons per phase	0.02	0.15	0.20	0.01	0.01	0.00	27.93	0.01

Paving Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day
0.00			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Off-Highway Trucks	0.61	3.60	5.26	0.19	0.18	0.01	1,278.52	0.41
0.00			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Pavers	0.25	2.90	2.60	0.13	0.12	0.00	455.06	0.15
1.00			Model Default Tier	Paving Equipment	0.19	2.54	1.94	0.10	0.09	0.00	394.46	0.13
0.00			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Model Default Tier	Rollers	0.38	3.76	3.85	0.24	0.22	0.01	508.18	0.16
0.00			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01
1.00			Model Default Tier	Skid Steer Loaders	0.08	1.39	1.00	0.04	0.04	0.00	200.20	0.06
0.00			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Tractors/Loaders/Backhoes	0.19	2.26	1.90	0.11	0.10	0.00	300.90	0.10
0.00			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving	pounds per day		1.74	16.76	16.91	0.82	0.75	0.03	3,186.63	1.02
	Paving	tons per phase		0.01	0.11	0.11	0.01	0.00	0.00	21.03	0.01
Total Emissions all Phases (tons per construction period) =>				0.10	0.71	1.06	0.04	0.04	0.00	159.77	0.05

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.01	768.56
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.01	648.60
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
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	49.56
0.00	0.00
0.00	0.00
0.00	0.00
0.00	304.14
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
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

0.02	1,770.86
0.00	7.79

N2O pounds/day	CO2e pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.01	768.56
0.00	0.00
0.00	505.59
0.00	0.00
0.00	0.00
0.01	648.60
0.00	0.00
0.01	1,292.29
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
0.00	0.00
0.00	256.83
0.00	0.00
0.00	0.00
0.01	611.76
0.01	1,483.74
0.00	49.56
0.00	0.00
0.00	0.00
0.00	0.00
0.00	304.14
0.00	0.00
0.00	0.00

N2O pounds/day	CO2e pounds/day
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
0.00	0.00
0.00	0.00
0.05	5,921.07
0.00	104.21

N2O pounds/day	CO2e pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	50.77
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	149.63
0.00	625.23
0.01	648.60
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
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	49.56
0.00	0.00
0.00	0.00
0.00	0.00
0.00	304.14
0.00	0.00
0.00	0.00

N2O pounds/day	CO2e pounds/day
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
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.02	1,827.93
0.00	28.15

N2O pounds/day	CO2e pounds/day
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
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.01	1,292.29
0.00	0.00
0.00	0.00
0.00	0.00
0.00	459.97
0.00	398.71
0.00	0.00
0.00	0.00
0.00	0.00
0.00	513.65
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	49.56
0.00	202.36
0.00	0.00
0.00	0.00
0.00	304.14
0.00	0.00
0.00	0.00

N2O pounds/day	CO2e pounds/day
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
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.03	3,220.69
0.00	21.26
0.00	161.41

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

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

END OF DATA ENTRY SHEET

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Isabella VC - Aux Dam

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	1.38	8.72	16.01	3.17	0.67	2.50	1.09	0.57	0.52	0.03	2,629.97	0.57	0.09	2,670.24
Grading/Excavation	4.90	33.32	52.31	4.57	2.07	2.50	2.35	1.83	0.52	0.11	10,291.51	2.72	0.31	10,452.68
Drainage/Utilities/Sub-Grade	1.35	11.14	13.10	3.14	0.64	2.50	1.09	0.57	0.52	0.02	2,277.58	0.41	0.03	2,296.60
Paving	1.88	18.51	21.90	1.03	1.03	0.00	0.84	0.84	0.00	0.06	6,205.94	1.03	0.46	6,370.06
Maximum (pounds/day)	4.90	33.32	52.31	4.57	2.07	2.50	2.35	1.83	0.52	0.11	10,291.51	2.72	0.46	10,452.68
Total (tons/construction project)	0.13	0.92	1.34	0.15	0.06	0.09	0.07	0.05	0.02	0.00	268.74	0.06	0.01	273.13

Notes:

Project Start Year ->	2021
Project Length (months) ->	4
Total Project Area (acres) ->	2
Maximum Area Disturbed/Day (acres) ->	0
Water Truck Used? ->	Yes

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	25	0	90	0	680	3
Grading/Excavation	225	0	360	0	600	3
Drainage/Utilities/Sub-Grade	0	0	0	0	600	3
Paving	141	92	360	330	400	3

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Isabella VC - Aux Dam

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.01	0.04	0.07	0.01	0.00	0.01	0.00	0.00	0.00	0.00	11.57	0.00	0.00	10.66
Grading/Excavation	0.09	0.59	0.92	0.08	0.04	0.04	0.04	0.03	0.01	0.00	181.13	0.05	0.01	166.89
Drainage/Utilities/Sub-Grade	0.02	0.17	0.20	0.05	0.01	0.04	0.02	0.01	0.01	0.00	35.07	0.01	0.00	32.09
Paving	0.01	0.12	0.14	0.01	0.01	0.00	0.01	0.01	0.00	0.00	40.96	0.01	0.00	38.14
Maximum (tons/phase)	0.09	0.59	0.92	0.08	0.04	0.04	0.04	0.03	0.01	0.00	181.13	0.05	0.01	166.89
Total (tons/construction project)	0.13	0.92	1.34	0.15	0.06	0.09	0.07	0.05	0.02	0.00	268.74	0.06	0.01	247.78

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model Version 9.0.0

Data Entry Worksheet

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

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

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Isabella VC - Aux Dam	
Construction Start Year	2021	Enter a Year between 2014 and 2040 (inclusive)
Project Type For 4: Other Linear Project Type, please provide project specific off-road equipment population and vehicle trip data	4	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	4.00	months
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	1	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.10	miles
Total Project Area	2.35	acres
Maximum Area Disturbed/Day	0.25	acres
Water Trucks Used?	1	1. Yes 2. No

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

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

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing	12.00		25.00
	Grading/Excavation	20.00	100.00	125.00
	Drainage/Utilities/Sub-Grade			
	Paving	12.00	70.65	70.65
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving	8.50	92.20	

Mitigation Options

On-road Fleet Emissions Mitigation	2010 and Newer On-road Vehicles Fleet	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation	No Mitigation	Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

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

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

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing		0.40		1/1/2021
Grading/Excavation		1.60		1/14/2021
Drainage/Utilities/Sub-Grade		1.40		3/4/2021
Paving		0.60		4/16/2021
Totals (Months)	4			

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

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	30.00			3	90.00
Miles/round trip: Grading/Excavation	30.00			12	360.00
Miles/round trip: Drainage/Utilities/Sub-Grade	30.00			0	0.00
Miles/round trip: Paving	30.00			12	360.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grading/Excavation (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Paving (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.08	0.63	0.02	0.01	0.00	353.04	0.00	0.06	369.59
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	1.55	0.00	0.00	1.63
Pounds per day - Grading/Excavation	0.03	0.34	2.52	0.09	0.04	0.01	1,412.16	0.00	0.22	1,478.35
Tons per const. Period - Grading/Excavation	0.00	0.01	0.04	0.00	0.00	0.00	24.85	0.00	0.00	26.02
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.03	0.34	2.52	0.09	0.04	0.01	1,412.16	0.00	0.22	1,478.35
Tons per const. Period - Paving	0.00	0.00	0.02	0.00	0.00	0.00	9.32	0.00	0.00	9.76
Total tons per construction project	0.00	0.01	0.06	0.00	0.00	0.00	35.73	0.00	0.01	37.40

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

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	30.00			0	0.00
Miles/round trip: Grading/Excavation	30.00			0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade	30.00			0	0.00
Miles/round trip: Paving	30.00			11	330.00

2010+ Model Year Mitigation Option Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grading/Excavation (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Paving (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.03	0.31	2.31	0.08	0.04	0.01	1,294.48	0.00	0.20	1,355.15
Tons per const. Period - Paving	0.00	0.00	0.02	0.00	0.00	0.00	8.54	0.00	0.00	8.94
Total tons per construction project	0.00	0.00	0.02	0.00	0.00	0.00	8.54	0.00	0.00	8.94

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

Worker Commute Emissions	User Override of Worker Commute Default Values	Default Values		
User Input				
Miles/ one-way trip	20			
One-way trips/day	2		Calculated Daily Trips	Calculated Daily VMT
No. of employees: Grubbing/Land Clearing	17		34	680.00
No. of employees: Grading/Excavation	15		30	600.00
No. of employees: Drainage/Utilities/Sub-Grade	15		30	600.00
No. of employees: Paving	10		20	400.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.02	1.10	0.10	0.05	0.02	0.00	339.80	0.00	0.01	342.28
Grading/Excavation (grams/mile)	0.02	1.10	0.10	0.05	0.02	0.00	339.80	0.00	0.01	342.28
Draining/Utilities/Sub-Grade (grams/mile)	0.02	1.10	0.10	0.05	0.02	0.00	339.80	0.00	0.01	342.28
Paving (grams/mile)	0.02	1.10	0.10	0.05	0.02	0.00	339.80	0.00	0.01	342.28
Grubbing/Land Clearing (grams/trip)	1.18	2.95	0.34	0.00	0.00	0.00	72.81	0.08	0.04	85.39
Grading/Excavation (grams/trip)	1.18	2.95	0.34	0.00	0.00	0.00	72.81	0.08	0.04	85.39
Draining/Utilities/Sub-Grade (grams/trip)	1.18	2.95	0.34	0.00	0.00	0.00	72.81	0.08	0.04	85.39
Paving (grams/trip)	1.18	2.95	0.34	0.00	0.00	0.00	72.81	0.08	0.04	85.39
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.12	1.87	0.17	0.07	0.03	0.01	514.86	0.01	0.01	519.53
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.00	0.00	0.00	0.00	2.27	0.00	0.00	2.29
Pounds per day - Grading/Excavation	0.10	1.65	0.15	0.06	0.03	0.00	454.29	0.01	0.01	458.41
Tons per const. Period - Grading/Excavation	0.00	0.03	0.00	0.00	0.00	0.00	8.00	0.00	0.00	8.07
Pounds per day - Drainage/Utilities/Sub-Grade	0.10	1.65	0.15	0.06	0.03	0.00	454.29	0.01	0.01	458.41
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.03	0.00	0.00	0.00	0.00	7.00	0.00	0.00	7.06
Pounds per day - Paving	0.07	1.10	0.10	0.04	0.02	0.00	302.86	0.01	0.01	305.60
Tons per const. Period - Paving	0.00	0.01	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.02
Total tons per construction project	0.00	0.07	0.01	0.00	0.00	0.00	19.26	0.00	0.00	19.43

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

Water Truck Emissions	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
User Input								
Grubbing/Land Clearing - Exhaust	1		5.00			0.50		2.50
Grading/Excavation - Exhaust	1		5.00			0.50		2.50
Drainage/Utilities/Subgrade	1		5.00			0.50		2.50
Paving	1		5.00			0.50		2.50

2010+ Model Year Mitigation Option Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grading/Excavation (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Paving (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.06	0.00	0.00	0.00	9.81	0.00	0.00	10.27
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.05
Pounds per day - Grading/Excavation	0.00	0.00	0.06	0.00	0.00	0.00	9.81	0.00	0.00	10.27
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.18
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.06	0.00	0.00	0.00	9.81	0.00	0.00	10.27
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.16
Pounds per day - Paving	0.00	0.00	0.06	0.00	0.00	0.00	9.81	0.00	0.00	10.27
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.07
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.43	0.00	0.00	0.45

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

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing	0.25		2.50	0.01	0.52	0.00
Fugitive Dust - Grading/Excavation	0.25		2.50	0.04	0.52	0.01
Fugitive Dust - Drainage/Utilities/Subgrade	0.25		2.50	0.04	0.52	0.01

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

Off-Road Equipment Emissions

Grubbing/Land Clearing

Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day
0.00			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Crawler Tractors	0.55	2.44	6.97	0.26	0.24	0.01	760.36	0.25
0.00			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Graders	0.45	1.77	5.92	0.19	0.17	0.01	641.68	0.21
0.00			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01
0.00			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Tractors/Loaders/Backhoes	0.19	2.26	1.90	0.11	0.10	0.00	300.90	0.10
0.00			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment

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

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

Grubbing/Land Clearing	pounds per day	1.25	6.76	15.15	0.58	0.53	0.02	1,752.26	0.56
Grubbing/Land Clearing	tons per phase	0.01	0.03	0.07	0.00	0.00	0.00	7.71	0.00

Grading/Excavation

Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day
0.00			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Crawler Tractors	0.55	2.44	6.97	0.26	0.24	0.01	760.36	0.25
0.00			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Excavators	0.23	3.27	2.15	0.10	0.10	0.01	500.19	0.16
0.00			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Graders	0.45	1.77	5.92	0.19	0.17	0.01	641.68	0.21
0.00			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.00			Model Default Tier	Off-Highway Trucks	1.82	10.81	15.79	0.58	0.53	0.04	3,835.57	1.24
0.00			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Rollers	0.19	1.88	1.92	0.12	0.11	0.00	254.09	0.08
0.00			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Rubber Tired Loaders	0.34	1.60	3.86	0.13	0.12	0.01	605.23	0.20
1.00			Model Default Tier	Scrapers	0.93	7.00	10.70	0.42	0.38	0.02	1,467.91	0.47
1.00			Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01
0.00			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Tractors/Loaders/Backhoes	0.19	2.26	1.90	0.11	0.10	0.00	300.90	0.10
0.00			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment

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

Number of Vehicles		Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grading/Excavation		pounds per day		4.76	31.33	49.58	1.92	1.77	0.09	8,415.25	2.71
	Grading/Excavation		tons per phase		0.08	0.55	0.87	0.03	0.03	0.00	148.11	0.05

Drainage/Utilities/Subgrade

Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day
0.00			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Cement and Mortar Mixers	0.06	0.31	0.37	0.01	0.01	0.00	50.52	0.01
0.00			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Forklifts	0.13	1.17	1.18	0.08	0.08	0.00	148.03	0.05
1.00			Model Default Tier	Generator Sets	0.36	3.68	3.17	0.17	0.17	0.01	623.04	0.03
1.00			Model Default Tier	Graders	0.45	1.77	5.92	0.19	0.17	0.01	641.68	0.21
0.00			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01
0.00			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Tractors/Loaders/Backhoes	0.19	2.26	1.90	0.11	0.10	0.00	300.90	0.10
0.00			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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

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

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
Drainage/Utilities/Sub-Grade	pounds per day	1.24	9.49	12.89	0.58	0.55	0.02	1,813.48	0.39
Drainage/Utilities/Sub-Grade	tons per phase	0.02	0.15	0.20	0.01	0.01	0.00	27.93	0.01

Paving Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day
0.00			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Off-Highway Trucks	0.61	3.60	5.26	0.19	0.18	0.01	1,278.52	0.41
0.00			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other General Industrial Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Pavers	0.25	2.90	2.60	0.13	0.12	0.00	455.06	0.15
1.00			Model Default Tier	Paving Equipment	0.19	2.54	1.94	0.10	0.09	0.00	394.46	0.13
0.00			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Model Default Tier	Rollers	0.38	3.76	3.85	0.24	0.22	0.01	508.18	0.16
0.00			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Signal Boards	0.06	0.30	0.36	0.01	0.01	0.00	49.31	0.01
1.00			Model Default Tier	Skid Steer Loaders	0.08	1.39	1.00	0.04	0.04	0.00	200.20	0.06
0.00			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Tractors/Loaders/Backhoes	0.19	2.26	1.90	0.11	0.10	0.00	300.90	0.10
0.00			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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

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

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4
	Paving	pounds per day	1.74	16.76	16.91	0.82	0.75	0.03	3,186.63	1.02
	Paving	tons per phase	0.01	0.11	0.11	0.01	0.00	0.00	21.03	0.01
Total Emissions all Phases (tons per construction period) =>			0.12	0.84	1.25	0.05	0.05	0.00	204.78	0.06

N2O	CO2e
pounds/day	pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.01	768.56
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.01	648.60
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
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	49.56
0.00	0.00
0.00	0.00
0.00	0.00
0.00	304.14
0.00	0.00
0.00	0.00

N2O	CO2e
pounds/day	pounds/day
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

0.02	1,770.86
0.00	7.79

N2O pounds/day	CO2e pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.01	768.56
0.00	0.00
0.00	505.59
0.00	0.00
0.00	0.00
0.01	648.60
0.00	0.00
0.03	3,876.88
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
0.00	256.83
0.00	0.00
0.00	0.00
0.01	611.76
0.01	1,483.74
0.00	49.56
0.00	0.00
0.00	0.00
0.00	0.00
0.00	304.14
0.00	0.00
0.00	0.00

N2O pounds/day	CO2e pounds/day
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
0.00	0.00
0.00	0.00

0.08	8,505.66
0.00	149.70

N2O pounds/day	CO2e pounds/day
0.00	0.00
0.00	0.00
0.00	0.00
0.00	50.77
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	149.63
0.00	625.23
0.01	648.60
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
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	49.56
0.00	0.00
0.00	0.00
0.00	0.00
0.00	304.14
0.00	0.00
0.00	0.00

N2O pounds/day	CO2e pounds/day
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
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.02	1,827.93
0.00	28.15

N2O pounds/day	CO2e pounds/day
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
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.01	1,292.29
0.00	0.00
0.00	0.00
0.00	0.00
0.00	459.97
0.00	398.71
0.00	0.00
0.00	0.00
0.00	0.00
0.00	513.65
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	49.56
0.00	202.36
0.00	0.00
0.00	0.00
0.00	304.14
0.00	0.00
0.00	0.00

N2O pounds/day	CO2e pounds/day
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
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.03	3,220.69
0.00	21.26
0.00	206.90

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

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

END OF DATA ENTRY SHEET