APPENDICES

DRAFT

Initial Study and Mitigated Negative Declaration

NID E. George to Lake Wildwood Backbone Extension Pipeline Project

Lead Agency:

Nevada Irrigation District
1036 West Main Street
Grass Valley, California 95945

June 2019

ECORP Consulting, Inc.
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SECTION 7.0 LIST OF APPENDICES

Appendix A – Air Quality/Climate Change Technical Report

Appendix B – Biological Resources Assessment

Appendix C – Cultural Resources Assessment **(CONFIDENTIAL) – NOT INCLUDED FOR PUBLIC CIRCULATION**

Appendix D – Noise Assessment

APPENDIX A

Air Quality Emission Modeling

E. George to Lake Wildwood Backbone Extension Pipeline Project

Air Quality & Greenhouse Gas Assessment

Nevada County, California

Prepared For:
Nevada Irrigation District
1036 W Main St
Grass Valley, CA 95945
April 2019

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

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CONTENTS

LIST OF TABLES

LIST OF FIGURES

ATTACHMENTS

1.0 INTRODUCTION

This report documents the results of an assessment of both air quality and greenhouse gas (GHG) emissions completed for the E. George to Lake Wildwood Backbone Extension Pipeline Project, which includes the development of a 5.6-mile new water distribution/transmission pipeline in Nevada County. This assessment was prepared using methodologies and assumptions recommended in the rules and regulations of the Northern Sierra Air Quality Management District (NSAQMD). Regional and local existing conditions are presented, along with pertinent emissions standards and regulations. The purpose of this assessment is to estimate Project-generated criteria air pollutants and GHG emissions attributable to the Project and to determine the level of impact the Project would have on the environment.

1.1 Project Location and Description

The Proposed Project is generally located along the Rough and Ready Highway in Nevada County, CA (see **Figure 1**). From its eastern boundary, the Project starts on Rough and Ready Highway at West Drive and ends at the intersection of Lake Wildwood Drive and Chaparral Drive (western boundary). The Project would be constructed within the existing right-of-way of the following roadways: Rough and Ready Highway, Rough and Ready Road, Riffle Box Road, Empty Diggins Lane, Bosa Drive, Minnow Lane, and Lake Wildwood Drive. There are two cross country segments: one at the west end of Riffle Box Road and one just east of Minnow Lane. (See **Figure 2**.)

According to the Nevada County General Plan, land uses surrounding the proposed 5.6-mile alignment are dominated by lands designated Forest and Rural lands. While the Project would take place primarily within existing roadways, the majority of the surrounding lands are designated as Rural.

The total alignment and approximate section lengths of the Proposed Project are as follows:

- Along Rough and Ready Highway from West Drive (eastern most Project boundary) to Rough and Ready Road (approximately 2.5 miles).
- From Rough and Ready Highway, the Project continues west along Rough and Ready Road to Riffle Box Road (approximately 1.75 miles).
- The Project continues approximately 460 feet west along Riffle Box Road. At this point Riffle Box Road then makes a sharp turn north; however, the Project alignment continues east cross country approximately 830 feet where it rejoins Rough and Ready Road.
- The Project then continues west 209 feet where it turns south onto Empty Diggins Lane
- From the intersection of Rough and Ready Road and Empty Diggins Lane, the Project continues southwest along Empty Diggins Road to Bosa Drive (approximately 0.3 miles).
- The Project then turns north on Bosa Drive and continues approximately 0.3 miles to a private driveway.
- The Project follows the private driveway approximately 600 to where it joins Minnow Way. This area has been proposed to be a fire lane by LWW HOA.

- The Project then follows Minnow Way approximately 475 feet west to Lake Wildwood Drive.
- At the intersection of Lake Wildwood and Minnow Way the Project turns north along Lake Wildwood Drive.
- The Project follows Lake Wildwood Drive approximately 0.3 miles north to Chaparral Drive where it ends (western most boundary).

The majority of the Project would be constructed within existing roadways, except where it would cross private property between Riffle Box Road and Rough and Ready Road near Empty Diggins Lane. Another short segment would cross private property just east of Minnow Lane. Appurtenances such as fire hydrants, Air Release Valves (ARV), and service lines and meter boxes would be placed on the shoulder of the road at the adjacent property lines. Stub-outs for future waterline extensions would also be installed.

Some above-ground sections may be identified along the route for potential use. The Nevada Irrigation District uses 25 feet for easement acquisition per their easement guidelines. Excavation depth would be limited to 5-6 feet where appropriate. However, due to site and subsurface conditions, deeper excavation (not to exceed 10 feet) may be needed in areas where the Project crosses underneath existing culverts within the roadway.

Due to the relatively long length of the new pipeline it is not practical to construct in a single dry season. Therefore, the Project would be phased over a 5-year construction period with approximately one mile of pipeline installed per year. Estimates place construction beginning in 2020 and completing in 2025 (and will likely be split between 5-7 phases).

Typical construction equipment would include:

- 1-2 excavators (such as Case CX210)
- 2 crew trucks, loader (such as Volvo L60)
- Dump truck (3-axel, 10 wheel)
- Service lines would be installed with a boring machine or excavator, depending on the terrain.
- Project Boards would be placed at both ends of the Project notifying the public of all closures and work hours
- Traffic control flaggers would be required
- Paving will include a grinder (just for the t-trench not the entire lane width), excavator, loader, paving machine and then restriping machine
- Final paving within the "T" over the trench includes an edge to edge micro resurfacing, requiring restriping

Use of the equipment can be 8-10 hours of day, intermittently with an estimated 8-10 personal (including foreman and operators). Construction hours will be limited to 7 am to 7 pm. In addition to this, flaggers

for traffic control will be used. Project areas are assumed to be held to one lane open with hold times up to 15 minutes. Night work is not anticipated.

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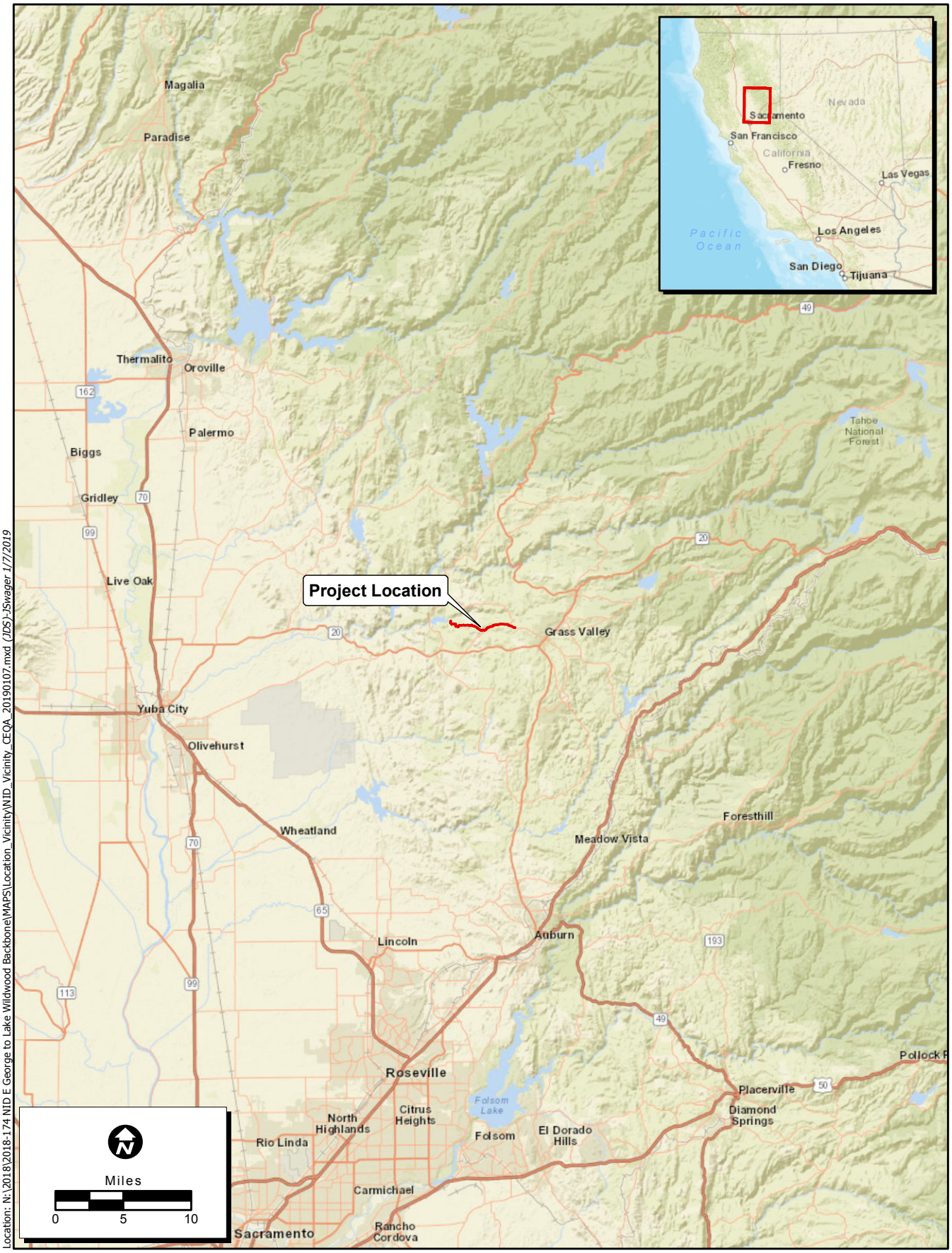

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Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

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Figure 1. Project Location and Vicinity

2018-174 NID - E George to Lake Wildwood Backbone

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Figure 2. Project Alignment

2018-174 NID - E George to Lake Wildwood Backbone

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2.0 AIR QUALITY

2.1 Air Quality Setting

Air quality in a region is determined by its topography, meteorology, and existing air pollutant sources. These factors are discussed below, along with the current regulatory structure that applies to the Nevada County portion of the Mountain Counties Air Basin (MCAB), which encompasses the Project site, pursuant to the regulatory authority of the NSAQMD.

Mountain Counties Air Basin (Nevada County)

The Project site is located in western Nevada County and in the MCAB. The MCAB consists of nine counties or portions of counties stretching from Plumas County on the north to Mariposa County on the south. The NSAQMD is the local agency for air quality planning with authority over air pollutant sources.

Nevada County exhibits large variations in terrain and consequently exhibits large variations in climate, both of which affect air quality. The western portions of the county slope relatively gradually with deep river canyons running from southwest to northeast toward the crest of the Sierra Nevada range. East of the divide, the slope of the Sierra is steeper, but river canyons are relatively shallow. The warmest areas in Nevada County are found at the lower elevations along the county's west side, while the coldest average temperatures are found at the highest elevations (NSAQMD 2005).

The prevailing wind direction over the county is westerly. However, the terrain of the area has a great influence on local winds, so that wide variability in wind direction can be expected. Afternoon winds are generally channeled up-canyon, while nighttime winds generally flow down-canyon. Winds are, in general, stronger in spring and summer and weaker in fall and winter. Periods of calm winds and clear skies in fall and winter often result in strong, ground-based inversions forming in mountain valleys. These layers of very stable air restrict the dispersal of pollutants, trapping these pollutants near the ground, representing the worst conditions for local air pollution occurring in the county (NSAQMD 2005).

Regional airflow patterns have an effect on air quality patterns by directing pollutants downwind of sources. Localized meteorological conditions, such as light winds and shallow vertical mixing, and topographical features, such as surrounding mountain ranges, create areas of high pollutant concentrations by hindering dispersal. An inversion layer is produced when a layer of warm air traps cooler air close to the ground. Such temperature inversions hamper dispersion by stratifying contaminated air near the ground.

Criteria Air Pollutants

Criteria air pollutants are defined as those pollutants for which the federal and state governments have established air quality standards for outdoor or ambient concentrations to protect public health with a determined margin of safety. Ozone (O_3), coarse particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$) are generally considered to be regional pollutants because they or their precursors affect air quality on a regional scale. Pollutants such as carbon monoxide (CO), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2) are considered to be local pollutants because they tend to accumulate in the air locally. PM

is also considered a local pollutant. Health effects commonly associated with criteria pollutants are summarized in **Table 2-1**.

Table 2-1. Criteria Air Pollutants- Summary of Common Sources and Effects

Pollutant	Major Man-Made Sources	Human Health & Welfare Effects
CO	An odorless, colorless gas formed when carbon in fuel is not burned completely; a component of motor vehicle exhaust.	Reduces the ability of blood to deliver oxygen to vital tissues, effecting the cardiovascular and nervous system. Impairs vision, causes dizziness, and can lead to unconsciousness or death.
NO_2	A reddish-brown gas formed during fuel combustion for motor vehicles, energy utilities and industrial sources.	Respiratory irritant; aggravates lung and heart problems. Precursor to ozone and acid rain. Causes brown discoloration of the atmosphere.
O_3	Formed by a chemical reaction between reactive organic gases (ROGs) and nitrous oxides (NOx) in the presence of sunlight. Common sources of these precursor pollutants include motor vehicle exhaust, industrial emissions, solvents, paints and landfills.	Irritates and causes inflammation of the mucous membranes and lung airways; causes wheezing, coughing and pain when inhaling deeply; decreases lung capacity; aggravates lung and heart problems. Damages plants; reduces crop yield.
PM_{10} & $PM_{2.5}$	Power plants, steel mills, chemical plants, unpaved roads and parking lots, wood-burning stoves and fireplaces, automobiles and others.	Increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing; aggravated asthma; development of chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. Impairs visibility (haze).
SO_2	A colorless, nonflammable gas formed when fuel containing sulfur is burned. Examples are refineries, cement manufacturing, and locomotives.	Respiratory irritant. Aggravates lung and heart problems. Can damage crops and natural vegetation. Impairs visibility.

Source: CAPCOA 2013

Toxic Air Contaminants

In addition to the criteria pollutants discussed above, toxic air contaminants (TACs) are another group of pollutants of concern. TACs are considered either carcinogenic or noncarcinogenic based on the nature of the health effects associated with exposure to the pollutant. For regulatory purposes, carcinogenic TACs are assumed to have no safe threshold below which health impacts would not occur, and cancer risk is expressed as excess cancer cases per one million exposed individuals. Noncarcinogenic TACs differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis.

There are many different types of TACs, with varying degrees of toxicity. Sources of TACs include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. Public exposure to TACs can result from emissions from normal operations, as well as from accidental releases of hazardous materials during upset conditions. The health effects of TACs include cancer, birth defects, neurological damage, and death.

Ambient Air Quality

Ambient air quality at the Project site can be inferred from ambient air quality measurements conducted at nearby air quality monitoring stations. CARB maintains over 60 monitoring stations throughout California. The Grass Valley – Litton Building air quality monitoring station, located approximately two miles east of the development site, is the closest station to the site. Ambient emission concentrations will vary due to localized variations in emission sources and climate and should be considered "generally" representative of ambient concentrations in the development area.

Table 2-2 summarizes the published data concerning O_3, $PM_{2.5}$, PM_{10} since 2015 from the Grass Valley – Litton Building monitoring station for each year that the monitoring data is provided. O_3, PM_{10} and $PM_{2.5}$ are the pollutant species most potently affecting the Project region.

Table 2-2. Summary of Ambient Air Quality Data

Pollutant Standards	2015	2016	2017
O_3			
Max 1-hour concentration (ppm)	0.101	0.101	0.108
Max 8-hour concentration (ppm) (state/federal)	30 / 26	46 / 39	85 / 78
Number of days above 1-hour standard (state/federal)	4 / 0	6 / 0	13 / 0
Number of days above 8-hour standard (state/federal)	0.093 / 0.092	0.097 / 0.097	0.099 / 0.099
PM_{10}			
Max 24-hour concentration (µg/m3) (state/federal)	* / *	* / *	* / *
Number of days above 24-hour standard (state/federal)	* / *	* / *	* / *
$PM_{2.5}$			
Max 24-hour concentration (µg/m3) (state/federal)	130.0 / 11.5	19.5 / 11.7	75.4 / 68.1
Number of days above federal 24-hour standard	0.0	0.0	3.0

Source: CARB 2018
$\mu g/m^3$ = micrograms per cubic meter; ppm = parts per million
** = Insufficient data available*

The U.S. Environment Protection Agency (EPA) and CARB designate air basins or portions of air basins and counties as being in "attainment" or "nonattainment" for each of the criteria pollutants. Areas that do not meet the standards are classified as nonattainment areas. The National Ambient Air Quality Standards (NAAQS) (other than O_3, PM_{10}, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. The NAAQS for O_3, PM_{10}, and $PM_{2.5}$ are based on statistical calculations over one- to three-year periods, depending on the pollutant. The California Ambient Air Quality Standards (CAAQS) are not to be exceeded during a three-year period. The attainment status for the western Nevada County portion of the MCAB is included in **Table 2-3.**

The determination of whether an area meets the state and federal standards is based on air quality monitoring data. Some areas are unclassified, which means there is insufficient monitoring data for determining attainment or nonattainment. Unclassified areas are typically treated as being in attainment. Because the attainment/nonattainment designation is pollutant specific, an area may be classified as nonattainment for one pollutant and attainment for another. Similarly, because the state and federal standards differ, an area could be classified as attainment for the federal standards of a pollutant and as nonattainment for the state standards of the same pollutant. The region is designated as a nonattainment area for the federal O_3 standard and is also a nonattainment area for the state standards for O_3 and PM_{10}, (CARB 2017a).

Table 2-3. Attainment Status of Criteria Pollutants in the Nevada County Portion of the MCAB

Pollutant	State Designation	Federal Designation
O_3	Nonattainment	Nonattainment
PM_{10}	Nonattainment	Unclassified
$PM_{2.5}$	Unclassified	Unclassified/Attainment
CO	Unclassified	Unclassified/Attainment
NO_2	Attainment	Unclassified/Attainment
SO_2	Attainment	Unclassified/Attainment

Source: CARB 2017a

2.2 Regulatory Framework

Federal

Clean Air Act

The Clean Air Act (CAA) of 1970 and the CAA Amendments of 1971 required the EPA to establish the NAAQS, with states retaining the option to adopt more stringent standards or to include other specific pollutants. On April 2, 2007, the Supreme Court found that carbon dioxide is an air pollutant covered by the CAA; however, no NAAQS have been established for carbon dioxide.

These standards are the levels of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. They are designed to protect those "sensitive receptors" most susceptible to further respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

The EPA has classified air basins (or portions thereof) as being in attainment, nonattainment, or unclassified for each criteria air pollutant, based on whether or not the NAAQS have been achieved. If an

area is designated unclassified, it is because inadequate air quality data were available as a basis for a nonattainment or attainment designation. **Table 2-3** lists the federal attainment status of the Nevada County portion of the MCAB for the criteria pollutants.

State

California Clean Air Act

The California Clean Air Act (CCAA) allows states to adopt ambient air quality standards and other regulations provided that they are at least as stringent as federal standards. CARB, a part of the California Environmental Protection Agency, is responsible for the coordination and administration of both federal and state air pollution control programs within California, including setting the CAAQS. CARB also conducts research, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. CARB also has primary responsibility for the development of California's State Implementation Plan (SIP), for which it works closely with the federal government and the local air districts.

California State Implementation Plan

The federal Clean Air Act (and its subsequent amendments) requires each state to prepare an air quality control plan referred to as the SIP. The SIP is a living document that is periodically modified to reflect the latest emissions inventories, plans, and rules and regulations of air basins as reported by the agencies with jurisdiction over them. The CAA Amendments dictate that states containing areas violating the national ambient air quality standards revise their SIPs to include extra control measures to reduce air pollution. The SIP includes strategies and control measures to attain the NAAQS by deadlines established by the Clean Air Act. The EPA has the responsibility to review all SIPs to determine if they conform to the requirements of the CAA.

State law makes CARB the lead agency for all purposes related to the SIP. Local air districts and other agencies prepare SIP elements and submit them to CARB for review and approval. CARB then forwards SIP revisions to the EPA for approval and publication in the Federal Register. The *2018 Western Nevada County Planning Area Ozone Attainment Plan* (2018 Ozone Attainment Plan) and the *2018 Reasonably Available Control Technology SIP for Western Nevada County* (2018 RACT SIP) constitute the SIP elements for western Nevada County. These air quality planning documents represent the regional blueprints for achieving air quality standards and healthful air in western Nevada County, focusing on available, proven, and cost-effective alternatives to traditional strategies.

Local

Northern Sierra Air Quality Management District

The NSAQMD is the agency primarily responsible for ensuring that federal and state ambient air quality standards are not exceeded and that air quality conditions are maintained. Responsibilities of NSAQMD

include, but are not limited to, preparing plans for the attainment of ambient air quality standards, adopting and enforcing rules and regulations concerning sources of air pollution, issuing permits for stationary sources of air pollution, inspecting stationary sources of air pollution and responding to citizen complaints, monitoring ambient air quality and meteorological conditions, and implementing programs and regulations required by the federal CAA and the CCAA. The following is a list of noteworthy NSAQMD rules that are required of construction activities associated with the Proposed Project:

- ***Rule 205, Nuisance***. This rule prohibits the discharge of air contaminants or other material from any source which cause injury, detriment, nuisance, or annoyance to any considerable number of persons, or to the public, or which endangers the comfort, repose, health, or safety of any such persons, or the public or which cause to have a natural tendency to cause injury or damage to business or property.
- ***Rule 226, Dust Control***. This rule requires the submittal of a Dust Control Plan to the NSAQMD for approval prior to any surface disturbance, including clearing of vegetation.
- ***Rule 302, Prohibited Open Burning***. In accordance with this rule, no person (except as otherwise authorized in Sections 41801–41805.6, 41807–41809, and 41811–41815 of the Health and Safety Code) shall use open outdoor fires for the purpose of disposal, processing, or burning of any flammable or combustible material as defined in Section 39020 of the Health and Safety Code; or unless issued a permit by NSAQMD and in accordance with other applicable NSAQMD rules and regulations, including, but not limited to, Rule 308, Land Development Clearing, and Rule 312, Burning Permits.

2.3 Air Quality Emissions Impact Assessment

Thresholds of Significance

The impact analysis provided below is based on the following California Environmental Quality Act (CEQA) Guidelines Appendix G thresholds of significance. The Project would result in a significant impact to air quality if it would:

1) Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

2) Conflict with or obstruct implementation of any applicable air quality plan.

3) Expose sensitive receptors to substantial pollutant concentrations.

4) Result in other emissions (such as those leading to odors adversely affecting a substantial number of people).

By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size, by itself, to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions

contribute to existing cumulatively significant adverse air quality impacts. NSAQMD thresholds have also been used to determine air quality impacts in this analysis. If a project's individual emissions exceed its identified significance thresholds, the project would be cumulatively considerable. Projects that do not exceed significance thresholds would not be considered cumulative considerable.

To assist local jurisdictions in the evaluation of air quality impacts, the NSAQMD has published a guidance document for the preparation of the air quality portions of environmental documents that includes thresholds of significance to be used in evaluating land use proposals. Thresholds of significance are based on a source's projected impacts and are a basis from which to apply mitigation measures (NSAQMD 2016). The NSAQMD has developed a tiered approach to significance levels: the NSAQMD considers emissions in excess of Level C thresholds to have a significant air quality impact. In cases when predicted emissions are projected to be below the Level C thresholds but exceeding the Level A thresholds (thereby placing Project-related air quality impacts at Level B), the Project would be considered potentially significant, subject to emission-reducing mitigation measures. Implementation of appropriate mitigation specific to the pollutant species exceeding Level A thresholds would reduce Level B air quality impacts to a less than significant level. The NSAQMD-recommended thresholds are identified in **Table 2-4**.

Table 2-4. NSAQMD Recommended Significance Thresholds – Pounds per Day

Significance Level	Project-Generated Emissions		
	NOX	ROG	PM_{10}
Level A	<24	<24	<79
Level B	25–136	25–136	80–136
Level C	>137	>137	>137

Source: NSAQMD 2016

According to the NSAQMD (2016), these thresholds are recommended for use by lead agencies when preparing initial studies. If, during the preparation of the initial study, the lead agency finds that any of the following thresholds may be exceeded and cannot be mitigated to Level B, then a determination of significant air quality impact must be made and an EIR is required.

Implementation of the Proposed Project would be considered significant if the Project would:

- Exceed NSAQMD-recommended significance thresholds, as identified in **Table 2-4**. In accordance with NSAQMD-recommended thresholds of significance, Project-generated emissions in excess of Level C thresholds for NO_X, reactive organic gases (ROG), or PM_{10} would be considered significant. The NSAQMD has not adopted thresholds of significance for $PM_{2.5}$. However, because $PM_{2.5}$ is a subset of PM_{10}, significant increases in PM_{10} would be considered to also result in significant increases in $PM_{2.5}$. It is important to note that in cases when predicted emissions are projected to be below the Level C thresholds but exceeding the Level A thresholds (thereby placing Project-related air quality impacts at Level B), the Project would be considered potentially significant,

subject to emission-reducing mitigation measures. Implementation of appropriate mitigation specific to the pollutant species exceeding Level A thresholds would reduce Level B air quality impacts to a less than significant level.

- Contribute to localized concentrations of air pollutants at nearby receptors that would exceed applicable ambient air quality standards.

- Result in the frequent exposure of sensitive land uses to odorous emissions.

The NSAQMD has set its CEQA significance thresholds for NOX at 25 tons per year (expressed as 137 pounds per day) based on the Federal Clean Air Act (FCAA), which defines a major stationary source (in federal ozone attainment areas such as the Nevada County portion of the MCAB) as emitting 25 tons per year. The thresholds correlate with the trigger levels for the federal New Source Review (NSR) Program and NSAQMD Rule 522 for new or modified sources. The NSR Program was created by the FCAA to ensure that stationary sources of air pollution are constructed or modified in a manner that is consistent with attainment of health-based federal ambient air quality standards. The federal ambient air quality standards establish the levels of air quality necessary, with an adequate margin of safety, to protect the public health. Therefore, projects that do not exceed the NSAQMD's emissions thresholds would not violate any air quality standards or contribute substantially to an existing or projected air quality violation and would not result in substantial criteria pollutant health impacts.

Methodology

Air quality impacts were assessed in accordance with methodologies recommended by CARB and the NSAQMD. Where criteria air pollutant quantification was required, emissions were modeled using the California Emissions Estimator Model (CalEEMod), version 2016.3.2. CalEEMod is a statewide land use emissions computer model designed to quantify potential criteria pollutant emissions associated with both construction and operations from a variety of land use projects. Project construction-generated air pollutant emissions were primarily calculated using CalEEMod model defaults for Nevada County; however, the length of construction and specific construction equipment is based on estimates provided by the Project applicant. Based on the calculated area of impact (5.6 miles in length x 25 feet in length) and predominate depth of excavation (6 feet deep), coupled with the size of the proposed backbone extension pipe (16-20 inches), it is estimated that the Project would need to export 19,715 cubic yards of soil via haul trucks. All but 830 feet of the proposed alignment would be constructed within existing roadways, and thus Project excavation would generate demolished roadway asphalt that would need to be hauled off-site. Assuming an average depth of six inches of roadway asphalt, the Project would be expected to demolish 4,466 tons of asphalt.

As previously described, due to the relatively long length of the new pipeline it is not practical to construct in a single dry season. Therefore, the Project would be phased over a 5-year construction period with approximately one mile of pipeline installed per year. Estimates place construction beginning in 2020 and completing in 2025. Construction activity would not be continuous of this 5-year period, yet instead would be limited to the dry season months.

Impact Analysis

PROJECT CONSTRUCTION-GENERATED CRITERIA AIR QUALITY EMISSIONS

Construction-generated emissions are temporary and short term but have the potential to represent a significant air quality impact. Three basic sources of short-term emissions will be generated through construction of the Proposed Project: operation of the construction vehicles (i.e., excavators, trenchers, dump trucks), the creation of fugitive dust during excavation activities, and the use of asphalt or other oil-based substances during paving activities. Construction activities such as roadway demolition and excavation operations, construction vehicle traffic, and wind blowing over exposed soils would generate exhaust emissions and fugitive particulate matter emissions that affect local air quality at various times during construction. Effects would be variable depending on the weather, soil conditions, the amount of activity taking place, and the nature of dust control efforts. The dry climate of the area during the summer months creates a high potential for dust generation. Construction activities would be subject to NSAQMD Rule 226, which requires taking reasonable precautions to prevent the emissions of fugitive dust, such as using water or chemicals, where possible, for control of dust during the clearing of land and other construction activities.

Construction-generated emissions associated with the Proposed Project were calculated using the CARB-approved CalEEMod computer program, which is designed to model emissions for land use development projects, based on typical construction requirements. See **Attachment A** for more information regarding the construction assumptions, including construction equipment and duration, used in this analysis.

Predicted maximum daily construction-generated emissions for the Proposed Project are summarized in **Table 2-5**. Construction-generated emissions are short term and of temporary duration, lasting only as long as construction activities occur, but would be considered a significant air quality impact if the volume of pollutants generated exceeds the NSAQMD's Level C thresholds of significance.

Table 2-5. Construction-Related Emissions						
Construction Year	**Pollutant (pounds per day)**					
	ROG	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Construction Year One	5.13	54.34	34.11	0.09	6.51	2.78
Construction Year Two	4.88	50.28	33.60	0.09	6.35	2.62
Construction Year Three	4.20	41.74	32.24	0.09	5.95	2.26
Construction Year Four	3.73	35.23	31.05	0.09	5.66	1.99
Construction Year Five	3.68	33.97	31.02	0.09	5.61	1.94
NSAQMD Level A Significance Threshold	*25*	*25*	-	-	*80*	-
Exceed NSAQMD Level A Threshold?	**No**	**Yes**	**No**	**No**	**No**	**No**
NSAQMD Level C Significance Threshold	*137*	*137*	-	-	*137*	-
Exceed NSAQMD Level C Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

*Source: CalEEMod version 2016.3.2. Refer to **Attachment A** for Model Data Outputs.*

Notes: Building construction, paving, and painting assumed to occur simultaneously. Emission estimates account for the hauling of soil during each year of construction with 1,027 truck trips annually, as well as the hauling of demolished asphalt each year of construction with 333 truck trips annually.

As previously stated, the NSAQMD considers emissions in excess of Level C thresholds to have a significant air quality impact. Accordingly, implementation of NSAQMD-recommended mitigation measures sufficient to reduce emissions to levels below 137 pounds per day are considered adequate to reduce air quality impacts to a less than significant level. NSAQMD-recommended significance thresholds are defined in **Table 2-4** above.

Based on the modeling conducted, estimated short-term daily emissions for all pollutants associated with Project construction are below the NSAQMD-recommended Level C significance threshold of 137 pounds per day. However, NO_x emissions would exceed the Level A significance threshold of 24 pounds day. As previously described, development projects estimated to exceed Level A significance thresholds must apply emission-appropriate mitigation measures. According to the NSAQMD, implementation of emission-appropriate mitigation measures would reduce Level B air quality impacts to a less than significant level. Thus, mitigation measure **AQ-1** is recommended. Mitigation measure **AQ-1** is derived from the NSAQMD's recommended mitigations in order to address generated NO_x emissions.

Mitigation Measure

AQ-1 The following ozone precursor-reduction measures shall be implemented by the Project construction contractor during construction activities:

- All off-road equipment (portable and mobile) shall meet or be cleaner than Tier 2 engine emission specifications. Note that all off-road equipment must meet all applicable state and federal requirements.
- Emissions from on-site construction equipment shall comply with NSAQMD Regulation II, Rule 202, Visible Emissions.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes when not in use (as required by California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturers' specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- Existing power sources (e.g., power poles) or clean fuel generators shall be utilized rather than temporary power generators (i.e. diesel generators), where feasible.

Implementation of mitigation measure **AQ-1** will reduce Level B air quality impacts to a less than significant level.

PROJECT OPERATIONS CRITERIA AIR QUALITY EMISSIONS

The Proposed Project involves the construction of an approximately 5.6-mile-long water pipeline. The Proposed Project will not include the provision of new permanent stationary or mobile sources of emissions, and therefore, by its very nature, will not generate quantifiable air quality emissions from Project operations. The Project does not propose any buildings and therefore no permanent source or stationary source emissions. Once the Project is completed, there will be no resultant increase in automobile trips to the area because the water pipeline will not require daily visits. While it is anticipated that the Project would require intermittent maintenance to be conducted by Nevada Irrigation District staff, such maintenance would be minimal requiring a negligible amount of traffic trips on an annual basis. Impacts in this regard would be less than significant.

CONFLICT WITH REGIONAL AIR QUALITY MANAGEMENT PLANS

As part of its enforcement responsibilities, the EPA requires each state with nonattainment areas to prepare and submit a State Implementation Plan that demonstrates the means to attain the federal standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution in nonattainment areas, using a combination of performance

standards and market-based programs. Similarly, under state law, the California Clean Air Act requires an air quality attainment plan to be prepared for areas designated as nonattainment with regard to the federal and state ambient air quality standards. Air quality attainment plans outline emissions limits and control measures to achieve and maintain these standards by the earliest practical date.

As previously mentioned, the Project site is located within the Nevada County portion of the MCAB, which is under the jurisdiction of the NSAQMD. The NSAQMD is required, pursuant to the federal Clean Air Act, to reduce emissions of criteria pollutants for which Nevada County is in nonattainment. In order to reduce such emissions, the NSAQMD drafted the *2018 Western Nevada County Planning Area Ozone Attainment Plan* (2018 Ozone Attainment Plan) and the *2018 Reasonably Available Control Technology SIP for Western Nevada County* (2018 RACT SIP). These air quality planning documents represent the regional blueprints for achieving air quality standards and healthful air in western Nevada County, focusing on available, proven, and cost-effective alternatives to traditional strategies. The Ozone Attainment Plan and RACT SIP rely on forecasts of ROG and NO_x emissions (ozone precursors) in Nevada County. Criteria for determining consistency with these air quality planning documents are defined by the following indicators:

- Consistency Criterion No. 1: The Proposed Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

- Consistency Criterion No. 2: The Proposed Project would not exceed the population growth assumptions in the air quality plans relied upon to develop pollutant forecasts.

Consistency Criterion No. 1 refers to the California ambient air quality standards and the national ambient air quality standards. As previously described, the Project would not exceed the short-term construction or long-term operational thresholds and thus would not violate any air quality standards, and thus would not result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment. The Project would be consistent with the first criterion.

Concerning Consistency Criterion No. 2, air quality planning documents contains air pollutant reduction strategies and demonstrate that the applicable ambient air quality standards can be achieved within the time frames required under federal law. Growth projections from local general plans adopted by local municipalities are used to develop regional growth forecasts that are used to develop future air quality forecasts for the Ozone Attainment Plan and RACT SIP. In terms of the second criterion, the Project does not include development of new housing or employment centers and would not induce population or employment growth. Rather, the Project seeks enhanced water conveyance. Therefore, the Project would not affect local plans for population growth and the Proposed Project would be considered consistent with the population, housing, and employment growth projections utilized in the preparation of the Ozone Attainment Plan and RACT SIP.

For these reasons, the Proposed Project would not conflict with or obstruct implementation of the Ozone Attainment Plan or RACT SIP.

EXPOSURE OF SENSITIVE RECEPTORS TO TOXIC AIR CONTAMINANTS

Sensitive receptors are defined as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. CARB has identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, athletes, and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis.

Construction-Generated Air Contaminants

Construction-related activities would result in temporary, short-term Project-generated emissions of diesel particulate matter (DPM) from the exhaust of off-road, heavy-duty diesel equipment for site preparation (e.g., excavation); soil hauling truck traffic; paving; and other miscellaneous activities. For construction activity, DPM is the primary TAC of concern. Particulate exhaust emissions from diesel-fueled engines (i.e., DPM) were identified as a TAC by the CARB in 1998. The potential cancer risk from the inhalation of DPM, as discussed below, outweighs the potential for all other health impacts (i.e., non-cancer chronic risk, short-term acute risk) and health impacts from other TACs. Accordingly, DPM is the focus of this discussion.

Based on the emission modeling conducted the maximum construction-related annual emissions of $PM_{2.5}$ exhaust, considered a surrogate for DPM, would be 2.05 pounds per day (see **Attachment A**) during construction activity. $PM_{2.5}$ is considered a surrogate for DPM because more than 90 percent of DPM is less than 1 microgram in diameter and therefore is a subset of particulate matter under 2.5 microns in diameter (i.e., $PM_{2.5}$), according to CARB. Most $PM_{2.5}$ derives from combustion, such as use of gasoline and diesel fuels by motor vehicles. Furthermore, even during the most intense month of construction, emissions of DPM would be generated from different locations on the Project site, rather than a single location, due to the nature of the Project site spanning 5.6 miles along existing rights-of-way.

The dose to which receptors are exposed is the primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards). Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for any exposed receptor. Thus, the risks estimated for an exposed individual are higher if a fixed exposure occurs over a longer period of time. According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 70-, 30-, or 9-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the Proposed Project. Consequently, an important consideration is the fact that construction of the Proposed Project is anticipated to last less than 5 years and thus would not span the minimum duration of exposure from which to calculate health risk. Additionally, day-to-day basis construction activity would span eight to ten hours as opposed to throughout the entire day.

Therefore, considering the relatively low mass of DPM emissions that would be generated during even the most intense season of construction, the fact that construction would not last as long as the minimum duration of exposure from which to calculate health risk, and the relatively short duration that construction activities would occur at a single location along the 5.6-mile long site, construction-related TAC emissions would not expose sensitive receptors to substantial amounts of air toxics.

Operational Air Contaminants

Operation of the Proposed Project would not result in the development of any substantial sources of air toxics. There are no stationary sources associated with the operations of the Project. Nor would the Project attract mobile sources that spend long periods queuing and idling at the site. Therefore, the Project would not be a source of TACs and there would be no impact as a result of the Project during operations.

Carbon Monoxide Hot Spots

It has long been recognized that CO exceedances are caused by vehicular emissions, primarily when idling at intersections. Concentrations of CO are a direct function of the number of vehicles, length of delay, and traffic flow conditions. Under certain meteorological conditions, CO concentrations close to congested intersections that experience high levels of traffic and elevated background concentrations may reach unhealthy levels, affecting nearby sensitive receptors. Given the high traffic volume potential, areas of high CO concentrations, or "hot spots," are typically associated with intersections that are projected to operate at unacceptable levels of service during the peak commute hours. However, transport of this criteria pollutant is extremely limited, and CO disperses rapidly with distance from the source under normal meteorological conditions. Furthermore, vehicle emissions standards have become increasingly more stringent in the last 20 years. Currently, the CO standard in California is a maximum of 3.4 grams per mile for passenger cars (requirements for certain vehicles are more stringent). With the turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology on industrial facilities, CO concentrations in the Project vicinity have steadily declined.

Accordingly, with the steadily decreasing CO emissions from vehicles, even very busy intersections do not result in exceedances of the CO standard. Although not with Nevada County, the analysis prepared for CO attainment in the South Coast Air Quality Management District *1992 Federal Attainment Plan for Carbon Monoxide* (1992 CO Plan) in Los Angeles County can be used to demonstrate the potential for CO exceedances. The South Coast Air Quality Management District CO hot spot analysis was conducted for four busy intersections in Los Angeles County during the peak morning and afternoon time periods. The intersections evaluated included Long Beach Boulevard and Imperial Highway (Lynwood), Wilshire Boulevard and Veteran Avenue (Westwood), Sunset Boulevard and Highland Avenue (Hollywood), and La Cienega Boulevard and Century Boulevard (Inglewood). The busiest intersection evaluated was at Wilshire Boulevard and Veteran Avenue, which has a traffic volume of approximately 100,000 vehicles per day. The Los Angeles County Metropolitan Transportation Authority evaluated the level of service in the vicinity of the Wilshire Boulevard/Veteran Avenue intersection and found it to be level of service (LOS) E at peak morning traffic and LOS F at peak afternoon traffic (LOS E and F are the two least efficient traffic LOS

ratings). Even with the inefficient LOS and volume of traffic, the CO analysis concluded that there was no violation of CO standards (SCAQMD 1992).

The Project is not anticipated to generate any trips. Because the Proposed Project would not increase traffic volumes at any intersection to more than 100,000 vehicles per day, there is no likelihood of the Project traffic exceeding CO values.

ODORS

Typically, odors are regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; in fact, an odor that is offensive to one person (e.g., from a fast-food restaurant) may be perfectly acceptable to another. It is also important to note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

During construction, the Proposed Project presents the potential for generation of objectionable odors in the form of diesel exhaust in the immediate vicinity of the site. However, these emissions are short-term in nature and will rapidly dissipate and be diluted by the atmosphere downwind of the emission sources. Additionally, odors would be localized and generally confined to the construction area.

Implementation of the Proposed Project would not result in the introduction of any new processes that are considered to have a high odor-generation potential.

CUMULATIVE AIR QUALITY IMPACTS

The cumulative setting for air quality includes Nevada County in its entirety and the MCAB. Nevada County is currently designated nonattainment for ozone and PM_{10} standards. Cumulative growth in population, vehicle use, and industrial activity could inhibit efforts to improve regional air quality and attain the ambient air quality standards.

Air pollution is largely a cumulative impact. No single project is sufficient in size, by itself, to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. NSAQMD thresholds have also been used to determine air quality impacts in this analysis. If a project's individual emissions exceed its identified significance thresholds, the Project would be cumulatively considerable. Projects that do not exceed significance thresholds would not be considered cumulative considerable. As previously noted, the Project would not exceed the applicable NSAQMD thresholds. As such, the Project will not result in a cumulatively significant impact.

3.0 GREENHOUSE GAS EMISSIONS

3.1 Greenhouse Gas Setting

Certain gases in the earth's atmosphere, classified as GHGs, play a critical role in determining the earth's surface temperature. Solar radiation enters the earth's atmosphere from space. A portion of the radiation is absorbed by the earth's surface and a smaller portion of this radiation is reflected back toward space. This absorbed radiation is then emitted from the earth as low-frequency infrared radiation. The frequencies at which bodies emit radiation are proportional to temperature. Because the earth has a much lower temperature than the sun, it emits lower-frequency radiation. Most solar radiation passes through GHGs; however, infrared radiation is absorbed by these gases. As a result, radiation that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on earth. Without the greenhouse effect, the earth would not be able to support life as we know it.

Prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Fluorinated gases also make up a small fraction of the GHGs that contribute to climate change. Fluorinated gases include chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride; however, it is noted that these gases are not associated with typical land use development. Human-caused emissions of these GHGs in excess of natural ambient concentrations are believed to be responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. It is "extremely likely" that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in GHG concentrations and other anthropogenic factors together (IPCC 2014).

Table 3-1 describes the primary GHGs attributed to global climate change, including their physical properties, primary sources, and contributions to the greenhouse effect.

Each GHG differs in its ability to absorb heat in the atmosphere based on the lifetime, or persistence, of the gas molecule in the atmosphere. CH_4 traps over 25 times more heat per molecule than CO_2, and N_2O absorbs 298 times more heat per molecule than CO_2 (IPCC 2014). Often, estimates of GHG emissions are presented in carbon dioxide equivalents (CO_2e), which weight each gas by its global warming potential (GWP). Expressing GHG emissions in CO_2e takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO_2 were being emitted.

Climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about one day), GHGs have long atmospheric lifetimes (one to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Although the exact lifetime of any particular GHG molecule is dependent on multiple variables and cannot be pinpointed, it is understood that more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, or other forms. Of the total annual human-caused CO_2 emissions, approximately 55 percent is sequestered through ocean and land uptakes every

year, averaged over the last 50 years, whereas the remaining 45 percent of human-caused CO_2 emissions remains stored in the atmosphere (IPCC 2013).

Table 3-1. Greenhouse Gases

Greenhouse Gas	Description
CO_2	Carbon dioxide is a colorless, odorless gas. CO_2 is emitted in a number of ways, both naturally and through human activities. The largest source of CO_2 emissions globally is the combustion of fossil fuels such as coal, oil, and gas in power plants, automobiles, industrial facilities, and other sources. A number of specialized industrial production processes and product uses such as mineral production, metal production, and the use of petroleum-based products can also lead to CO_2 emissions. The atmospheric lifetime of CO_2 is variable because it is so readily exchanged in the atmosphere.[1]
CH_4	Methane is a colorless, odorless gas and is the major component of natural gas, about 87 percent by volume. It is also formed and released to the atmosphere by biological processes occurring in anaerobic environments. Methane is emitted from a variety of both human-related and natural sources. Human-related sources include fossil fuel production, animal husbandry (intestinal fermentation in livestock and manure management), rice cultivation, biomass burning, and waste management. These activities release significant quantities of CH_4 to the atmosphere. Natural sources of CH_4 include wetlands, gas hydrates, permafrost, termites, oceans, freshwater bodies, non-wetland soils, and other sources such as wildfires. The atmospheric lifetime of CH_4 is about12 years.[2]
N_2O	Nitrous oxide is a clear, colorless gas with a slightly sweet odor. Nitrous oxide is produced by both natural and human-related sources. Primary human-related sources of N_2O are agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuels, adipic acid production, and nitric acid production. N_2O is also produced naturally from a wide variety of biological sources in soil and water, particularly microbial action in wet tropical forests. The atmospheric lifetime of N_2O is approximately 120 years.[3]

Sources: [1] EPA 2016a, [2] EPA 2016b, [3] EPA 2016c

The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; suffice it to say the quantity is enormous, and no single project alone would measurably contribute to a noticeable incremental change in the global average temperature or to global, local, or microclimates. From the standpoint of CEQA, GHG impacts to global climate change are inherently cumulative.

Sources of Greenhouse Gas Emissions

In June 2017, CARB released the 2017 edition of the California GHG inventory covering calendar year 2015 emissions. In 2015, California emitted 440.4 million gross metric tons of CO_2e including from imported electricity. Combustion of fossil fuel in the transportation sector was the single largest source of California's GHG emissions in 2015, accounting for approximately 37 percent of total GHG emissions in the state. This sector was followed by the industrial sector (21 percent) and the electric power sector (including both in-state and out-of-state sources) (19 percent) (CARB 2017b).

Emissions of CO_2 are by-products of fossil fuel combustion. CH_4, a highly potent GHG, primarily results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) and is largely associated with agricultural practices and landfills. N_2O is also largely attributable to agricultural practices and soil management. Carbon dioxide sinks, or reservoirs, include vegetation and the ocean, which absorb CO_2 through sequestration and dissolution (CO_2 dissolving into the water), respectively, two of the most common processes for removing carbon dioxide from the atmosphere.

3.2 Regulatory Framework

State

Executive Order S-3-05

Executive Order (EO) S-3-05, signed by Governor Arnold Schwarzenegger in 2005, proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra Nevada snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the executive order established total GHG emission targets for the state. Specifically, emissions are to be reduced to the 2000 level by 2010, the 1990 level by 2020, and to 80 percent below the 1990 level by 2050.

While dated, this executive order remains relevant because a more recent California Appellate Court decision, *Cleveland National Forest Foundation v. San Diego Association of Governments* (November 24, 2014) 231 Cal.App.4th 1056, examined whether it should be viewed as having the equivalent force of a legislative mandate for specific emissions reductions. While the California Supreme Court ruled that the San Diego Association of Governments did not abuse its discretion by declining "to adopt the 2050 goal as a measure of significance in light of the fact that the Executive Order does not specify any plan or implementation measures to achieve its goal, the decision also recognized that the goal of a 40 percent reduction in 1990 GHG levels by 2030 is "widely acknowledged" as a "necessary interim target to ensure that California meets its longer-range goal of reducing greenhouse gas emissions 80 percent below 1990 levels by the year 2050.

Assembly Bill 32 Climate Change Scoping Plan and Updates

In 2006, the California legislature passed Assembly Bill 32 (Health and Safety Code §38500 et seq., or AB 32), also known as the Global Warming Solutions Act. AB 32 requires CARB to design and implement feasible and cost-effective emission limits, regulations, and other measures, such that statewide GHG emissions are reduced to 1990 levels by 2020 (representing a 25 percent reduction in emissions). AB 32 anticipates that the GHG reduction goals will be met, in part, through local government actions. CARB has identified a GHG reduction target of 15 percent from current levels for local governments and notes that successful implementation relies on local governments' land use planning and urban growth decisions.

Pursuant to AB 32, CARB adopted a Scoping Plan in December 2008, which was re-approved by CARB on August 24, 2011, that outlines measures to meet the 2020 GHG reduction goals. To meet these goals, California must reduce its GHG emissions by 30 percent below projected 2020 business-as-usual emissions levels or about 15 percent from today's levels. The Scoping Plan recommends measures for further study and possible State implementation, such as new fuel regulations. It estimates that a reduction of 174 million metric tons of CO_2e (about 191 million U.S. tons) from the transportation, energy, agriculture, and forestry sectors and other sources could be achieved should the State implement all of the measures in the Scoping Plan.

The Scoping Plan is required by AB 32 to be updated at least every five years. The first update to the AB 32 Scoping Plan was approved on May 22, 2014 by CARB. The 2017 Scoping Plan Update was adopted on December 14, 2017. The Scoping Plan Update addresses the 2030 target established by Senate Bill 32 (SB

32) as discussed below and establishes a proposed framework of action for California to meet a 40 percent reduction in GHG emissions by 2030 compared to 1990 levels. The key programs that the Scoping Plan Update builds on include: increasing the use of renewable energy in the state, the Cap-and-Trade Regulation, the Low Carbon Fuel Standard, and reduction of methane emissions from agricultural and other wastes.

Executive Order B-30-15

On April 20, 2015 Governor Brown signed Executive Order B-30-15 to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. The Governor's executive order aligns California's GHG reduction targets with those of leading international governments such as the 28-nation European Union, which adopted the same target in October 2014. California is on track to meet or exceed the target of reducing GHG emissions to 1990 levels by 2020, as established in the California Global Warming Solutions Act of 2006 (AB 32, discussed above). California's new emission reduction target of 40 percent below 1990 levels by 2030 will make it possible to reach the ultimate goal of reducing emissions 80 percent below 1990 levels by 2050. This is in line with the scientifically established levels needed in the U.S. to limit global warming below 2 degrees Celsius, the warming threshold at which major climate disruptions are projected, such as super droughts and rising sea levels.

Senate Bill 32 and Assembly Bill 197 of 2016

In August 2016, Governor Brown signed SB 32 and AB 197, which serve to extend California's GHG reduction programs beyond 2020. SB 32 amended the Health and Safety Code to include Section 38566, which contains language to authorize CARB to achieve a statewide GHG emission reduction of at least 40 percent below 1990 levels by no later than December 31, 2030. SB 32 codified the targets established by EO B-30-15 for 2030, which set the next interim step in the State's continuing efforts to pursue the long-term target expressed in EOs S-3-05 and B-30-15 of 80 percent below 1990 emissions levels by 2050.

Senate Bill X1-2 of 2011, Senate Bill 350 of 2015, and Senate Bill 100 of 2018

SB X1-2 of 2011 requires all California utilities to generate 33 percent of their electricity from renewables by 2020. SB X1-2 sets a three-stage compliance period requiring all California utilities, including independently-owned utilities, energy service providers, and community choice aggregators, to generate 20 percent of their electricity from renewables by December 31, 2013; 25 percent by December 31, 2016; and 33 percent by December 31, 2020. SB X1-2 also requires the renewable electricity standard to be met increasingly with renewable energy that is supplied to the California grid from sources within, or directly proximate to, California.

In October 2015, SB 350 was signed by Governor Brown, which requires retail sellers and publicly-owned utilities to procure 50 percent of their electricity from renewable resources by 2030. In 2018, SB 100 was signed by Governor Brown, codifying a goal of 60 percent renewable procurement by 2030 and 100 percent by 2045 RPS.

Local

Northern Sierra Air Quality Management District

The NSAQMD regulates air quality according to the standards established in the Clean Air Acts and amendments to those acts. The NSAQMD comprises three contiguous, mountainous, rural counties in northeastern California (Nevada, Sierra, and Plumas counties) and regulates air quality through its permitting authority and through air quality related planning and review activities over most types of stationary emission sources.

The NSAQMD has not yet established significance thresholds for GHG emissions from Project operations.

3.3 Greenhouse Gas Emissions Impact Assessment

Thresholds of Significance

The impact analysis provided below is based on the following CEQA Guidelines Appendix G thresholds of significance. The Project would result in a significant impact to greenhouse gas emissions if it would:

1) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.

2) Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

The NSAQMD does not promulgate thresholds for GHG emissions. Therefore, Project GHG emissions will be compared with the thresholds established in Placer County. As with Nevada County and the Project site, Placer County is located within the MCAB and therefore mass emission thresholds of significance developed in that county are appropriate. The air pollution control officer in Placer County promulgates a construction-related GHG numeric, bright-line threshold of 10,000 metric tons of CO_2e annually and an operations GHG numeric bright-line threshold of 1,100 metric tons of CO_2e annually.

Methodology

GHG-related impacts were assessed in accordance with methodologies recommended by CARB. Where GHG emission quantification was required, emissions were modeled using the California Emissions Estimator Model (CalEEMod), version 2016.3.2. CalEEMod is a statewide land use emissions computer model designed to quantify potential criteria pollutant emissions associated with both construction and operations from a variety of land use projects. Project construction-generated GHG emissions were primarily calculated using CalEEMod model defaults for Nevada County; however, the length of construction and specific construction equipment is based on estimates provided by the Project applicant. Based on the calculated area of impact (5.6 miles in length x 25 feet in length) and predominate depth of excavation (6 feet deep), coupled with the size of the proposed backbone extension pipe (16-20 inches), it is estimated that the Project would need to export 19,715 cubic yards of soil via haul trucks. All but 830 feet of the proposed alignment would be constructed within existing roadways, and thus Project excavation would generate demolished roadway asphalt that would need to be hauled off-site. Assuming an average depth of six inches of roadway asphalt, the Project would be expected to demolish 4,466 tons of asphalt.

As previously described, due to the relatively long length of the new pipeline it is not practical to construct in a single dry season. Therefore, the Project would be phased over a 5-year construction period with approximately one mile of pipeline installed per year. Estimates place construction beginning in 2020 and completing by 2025. Construction activity would not be continuous of this 5-year period, yet instead would be limited to the dry season months.

Impact Analysis

CONTRIBUTION OF GREENHOUSE GAS EMISSIONS

Construction

Construction-related activities that would generate GHG emissions include worker commute trips, haul trucks carrying supplies and materials to and from the Project site, and off-road construction equipment (e.g., dozers, loaders, excavators). **Table 3-2** illustrates the specific construction-generated GHG emissions that would result from construction of the Project.

Table 3-2. Construction-Related Greenhouse Gas Emissions

Emissions Source	CO_2e (Metric Tons/ Year)
Construction Year One	336
Construction Year Two	335
Construction Year Three	335
Construction Year Four	333
Construction Year Five	332
Total Combined Construction	**1,671**
Significance Threshold	*10,000*
Exceed Significance Threshold?	**No**

*Source: CalEEMod version 2016.3.2. Refer to **Attachment B** for Model Data Outputs.*

Notes: Building construction, paving, and painting assumed to occur simultaneously. Emission estimates account for the hauling of soil during each year of construction with 1,027 truck trips annually, as well as the hauling of demolished asphalt each year of construction with 333 truck trips annually.

As shown in **Table 3-2**, Project construction would result in the generation of approximately 1,671 metric tons of CO_2e over the course of construction. GHG emissions would remain below the annual significance threshold during each year of Project construction. Once construction is complete, the generation of these GHG emissions would cease.

Operations

In terms of operational GHG emissions, the Proposed Project involves the construction of an approximately 5.6-mile-long water pipeline. The Proposed Project will not include the provision of new permanent stationary or mobile sources of emissions, and therefore, by its very nature, will not generate

quantifiable GHG emissions from Project operations. The Project does not propose any buildings and therefore no permanent source or stationary source emissions. Once the Project is completed, there will be no resultant increase in automobile trips to the area because the water pipeline will not require daily visits. While it is anticipated that the Project would require intermittent maintenance to be conducted by Nevada Irrigation District staff, such maintenance would be minimal requiring a negligible amount of traffic trips on an annual basis.

CONFLICT WITH ANY APPLICABLE PLAN, POLICY, OR REGULATION OF AN AGENCY ADOPTED FOR THE PURPOSE OF REDUCING THE EMISSIONS OF GREENHOUSE GASES

The County of Nevada does not currently have an applicable plan, policy, or regulation adopted for reducing GHG emissions. The Proposed Project would not conflict with any adopted plans, policies, or regulations adopted for reducing GHG emissions. As identified above, Project-generated GHG emissions would not surpass GHG significance thresholds, which were prepared to comply with California GHG reduction goals. Therefore, the Proposed Project would not conflict with California GHG reduction goals.

CUMULATIVE GHG IMPACTS

Climate change is a global problem. And GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about 1 day), GHGs have much longer atmospheric lifetimes of 1 year to several thousand years that allow them to be dispersed around the globe.

It is generally the case that an individual project of this size and nature is of insufficient magnitude by itself to influence climate change or result in a substantial contribution to the global GHG inventory. GHG impacts are recognized as exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective. The additive effect of Project-related GHGs would not result in a reasonably foreseeable cumulatively considerable contribution to global climate change. In addition, the Proposed Project as well as other cumulative related projects would also be subject to all applicable regulatory requirements, which would further reduce GHG emissions. Therefore, the Project's cumulative contribution of GHG emissions would be less than significant and the Project's cumulative GHG impacts would also be less than cumulatively considerable.

4.0 REFERENCES

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SCAQMD (South Coast Air Quality Management District). 1992. *1992 Federal Attainment Plan for Carbon Monoxide.*

CalEEMod Output Files – Criteria Air Pollutants

E George to Lake Wildwood Backbone Extension Pipeline

Nevada County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	739.20	1000sqft	16.97	739,200.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	80
Climate Zone	1			**Operational Year**	2025
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Construction to occur over 5 years, during dry months. Demolition of asphalt, excavation, and paving assumed to occur simultaneously.

Off-road Equipment - Excavators, dump truck and sign boards per Project applicant. Other equipment per model defaults

Off-road Equipment - Excavation equipment per Project Applicant

Off-road Equipment - Excavator, loader, signal board, and paver per Project Applicant. Paving equipment and rollers per model defaults

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Demolition -

Grading -

Trips and VMT - 10 daily workers on average. Haul trips based on 16 cubic yard haul truck capacity per CalEEMod User's Guide

Table Name	Column Name	Default Value	New Value
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tblOffRoadEquipment	OffRoadEquipmentType		Signal Boards
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tblOffRoadEquipment	OffRoadEquipmentType		Signal Boards
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tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
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tblTripsAndVMT	WorkerTripNumber	20.00	10.00
tblTripsAndVMT	WorkerTripNumber	20.00	10.00
tblTripsAndVMT	WorkerTripNumber	20.00	10.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	5.1352	54.3492	34.1113	0.0918	4.3080	2.2114	6.5194	0.7244	2.0586	2.7830	0.0000	8,956.7050	8,956.7050	2.0149	0.0000	9,007.0777
2021	4.8802	50.2836	33.6059	0.0916	4.3080	2.0421	6.3501	0.7244	1.9006	2.6251	0.0000	8,931.2103	8,931.2103	2.0100	0.0000	8,981.4598
2022	4.2033	41.7475	32.2466	0.0913	4.3079	1.6478	5.9558	0.7244	1.5359	2.2603	0.0000	8,903.3350	8,903.3350	2.0052	0.0000	8,953.4644
2023	3.7391	35.2325	31.0507	0.0908	4.3079	1.3610	5.6689	0.7244	1.2700	1.9944	0.0000	8,851.4147	8,851.4147	1.9835	0.0000	8,901.0027
2024	3.6870	33.9705	31.0295	0.0907	4.3079	1.3041	5.6119	0.7244	1.2161	1.9405	0.0000	8,834.4687	8,834.4687	1.9828	0.0000	8,884.0376
Maximum	**5.1352**	**54.3492**	**34.1113**	**0.0918**	**4.3080**	**2.2114**	**6.5194**	**0.7244**	**2.0586**	**2.7830**	**0.0000**	**8,956.7050**	**8,956.7050**	**2.0149**	**0.0000**	**9,007.0777**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	5.1352	54.3492	34.1113	0.0918	4.3080	2.2114	6.5194	0.7244	2.0586	2.7830	0.0000	8,956.7050	8,956.7050	2.0149	0.0000	9,007.0777
2021	4.8802	50.2836	33.6059	0.0916	4.3080	2.0421	6.3501	0.7244	1.9006	2.6251	0.0000	8,931.2103	8,931.2103	2.0100	0.0000	8,981.4598
2022	4.2033	41.7475	32.2466	0.0913	4.3079	1.6478	5.9558	0.7244	1.5359	2.2603	0.0000	8,903.3349	8,903.3349	2.0052	0.0000	8,953.4644
2023	3.7391	35.2325	31.0507	0.0908	4.3079	1.3610	5.6689	0.7244	1.2700	1.9944	0.0000	8,851.4147	8,851.4147	1.9835	0.0000	8,901.0027
2024	3.6870	33.9705	31.0295	0.0907	4.3079	1.3041	5.6119	0.7244	1.2161	1.9405	0.0000	8,834.4687	8,834.4687	1.9828	0.0000	8,884.0376
Maximum	**5.1352**	**54.3492**	**34.1113**	**0.0918**	**4.3080**	**2.2114**	**6.5194**	**0.7244**	**2.0586**	**2.7830**	**0.0000**	**8,956.7050**	**8,956.7050**	**2.0149**	**0.0000**	**9,007.0777**

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

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.4096	6.8000e-004	0.0753	1.0000e-005		2.7000e-004	2.7000e-004		2.7000e-004	2.7000e-004		0.1618	0.1618	4.2000e-004		0.1723
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.4096**	**6.8000e-004**	**0.0753**	**1.0000e-005**	**0.0000**	**2.7000e-004**	**2.7000e-004**	**0.0000**	**2.7000e-004**	**2.7000e-004**		**0.1618**	**0.1618**	**4.2000e-004**	**0.0000**	**0.1723**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.4096	6.8000e-004	0.0753	1.0000e-005		2.7000e-004	2.7000e-004		2.7000e-004	2.7000e-004		0.1618	0.1618	4.2000e-004		0.1723
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.4096**	**6.8000e-004**	**0.0753**	**1.0000e-005**	**0.0000**	**2.7000e-004**	**2.7000e-004**	**0.0000**	**2.7000e-004**	**2.7000e-004**		**0.1618**	**0.1618**	**4.2000e-004**	**0.0000**	**0.1723**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition 2020	Demolition	4/1/2020	4/28/2020	5	20	
2	Excavation 2020	Site Preparation	4/10/2020	10/1/2020	5	125	
3	Paving 2020	Paving	8/1/2020	10/31/2020	5	65	
4	Demolition 2021	Demolition	4/1/2021	4/28/2021	5	20	
5	Excavation 2021	Site Preparation	4/10/2021	10/1/2021	5	125	
6	Paving 2021	Paving	8/1/2021	10/29/2021	5	65	
7	Demolition 2022	Demolition	4/1/2022	4/28/2022	5	20	
8	Excavation 2022	Site Preparation	4/10/2022	9/30/2022	5	125	
9	Paving 2022	Paving	8/1/2022	10/28/2022	5	65	
10	Demolition 2023	Demolition	4/1/2023	4/28/2023	5	20	
11	Excavation 2023	Site Preparation	4/10/2023	9/29/2023	5	125	
12	Paving 2023	Paving	8/1/2023	10/30/2023	5	65	
13	Demolition 2024	Demolition	4/1/2024	4/26/2024	5	20	
14	Excavation 2024	Site Preparation	4/10/2024	10/1/2024	5	125	
15	Paving 2024	Paving	8/1/2024	10/30/2024	5	65	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 16.97

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition 2020	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition 2020	Rubber Tired Dozers	2	8.00	247	0.40
Demolition 2020	Excavators	2	8.00	158	0.38
Demolition 2023	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition 2024	Concrete/Industrial Saws	1	8.00	81	0.73
Excavation 2023	Rubber Tired Dozers	0	8.00	247	0.40
Demolition 2021	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition 2022	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition 2023	Excavators	2	8.00	158	0.38
Demolition 2024	Excavators	2	8.00	158	0.38
Excavation 2024	Rubber Tired Dozers	0	8.00	247	0.40
Demolition 2021	Excavators	2	8.00	158	0.38
Paving 2020	Pavers	1	8.00	130	0.42
Paving 2020	Rollers	1	8.00	80	0.38
Paving 2020	Paving Equipment	1	8.00	132	0.36
Demolition 2022	Excavators	2	8.00	158	0.38
Paving 2023	Pavers	1	8.00	130	0.42
Paving 2024	Pavers	1	8.00	130	0.42
Excavation 2020	Rubber Tired Dozers	0	8.00	247	0.40
Paving 2021	Pavers	1	8.00	130	0.42
Paving 2022	Pavers	1	8.00	130	0.42
Paving 2023	Paving Equipment	1	8.00	132	0.36

Paving 2024	Paving Equipment	1	8.00	132	0.36
Excavation 2021	Rubber Tired Dozers	0	8.00	247	0.40
Paving 2021	Paving Equipment	1	8.00	132	0.36
Paving 2022	Paving Equipment	1	8.00	132	0.36
Paving 2023	Rollers	1	8.00	80	0.38
Paving 2024	Rollers	1	8.00	80	0.38
Excavation 2022	Rubber Tired Dozers	0	8.00	247	0.40
Paving 2021	Rollers	1	8.00	80	0.38
Paving 2022	Rollers	1	8.00	80	0.38
Demolition 2023	Rubber Tired Dozers	2	8.00	247	0.40
Demolition 2024	Rubber Tired Dozers	2	8.00	247	0.40
Demolition 2021	Rubber Tired Dozers	2	8.00	247	0.40
Demolition 2022	Rubber Tired Dozers	2	8.00	247	0.40
Demolition 2020	Dumpers/Tenders	1	8.00	16	0.38
Demolition 2020	Signal Boards	2	8.00	6	0.82
Excavation 2020	Excavators	2	8.00	158	0.38
Excavation 2020	Off-Highway Trucks	2	4.00	402	0.38
Excavation 2020	Dumpers/Tenders	1	8.00	16	0.38
Excavation 2020	Bore/Drill Rigs	1	7.00	221	0.50
Excavation 2020	Signal Boards	2	8.00	6	0.82
Paving 2020	Excavators	1	8.00	158	0.38
Paving 2020	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving 2020	Signal Boards	2	8.00	6	0.82
Demolition 2021	Dumpers/Tenders	1	8.00	16	0.38
Demolition 2021	Signal Boards	2	8.00	6	0.82
Excavation 2021	Excavators	2	8.00	158	0.38
Excavation 2021	Off-Highway Trucks	2	4.00	402	0.38

Excavation 2021	Dumpers/Tenders	1	8.00	16	0.38
Excavation 2021	Bore/Drill Rigs	1	7.00	221	0.50
Excavation 2021	Signal Boards	2	8.00	6	0.82
Paving 2021	Excavators	1	8.00	158	0.38
Paving 2021	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving 2021	Signal Boards	2	8.00	6	0.82
Demolition 2022	Dumpers/Tenders	1	8.00	16	0.38
Demolition 2022	Signal Boards	2	8.00	6	0.82
Excavation 2022	Excavators	2	8.00	158	0.38
Excavation 2022	Off-Highway Trucks	2	4.00	402	0.38
Excavation 2022	Dumpers/Tenders	1	8.00	16	0.38
Excavation 2022	Bore/Drill Rigs	1	7.00	221	0.50
Excavation 2022	Signal Boards	2	8.00	6	0.82
Paving 2022	Excavators	1	8.00	158	0.38
Paving 2022	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving 2022	Signal Boards	2	8.00	6	0.82
Demolition 2023	Dumpers/Tenders	1	8.00	16	0.38
Demolition 2023	Signal Boards	2	8.00	6	0.82
Excavation 2023	Excavators	2	8.00	158	0.38
Excavation 2023	Off-Highway Trucks	2	4.00	402	0.38
Excavation 2023	Dumpers/Tenders	1	8.00	16	0.38
Excavation 2023	Bore/Drill Rigs	1	7.00	221	0.50
Excavation 2023	Signal Boards	2	8.00	6	0.82
Paving 2023	Excavators	1	8.00	158	0.38
Paving 2023	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving 2023	Signal Boards	2	8.00	6	0.82
Demolition 2024	Dumpers/Tenders	1	8.00	16	0.38

Demolition 2024	Signal Boards	2	8.00	6	0.82
Excavation 2024	Excavators	2	8.00	158	0.38
Excavation 2024	Off-Highway Trucks	2	4.00	402	0.38
Excavation 2024	Dumpers/Tenders	1	8.00	16	0.38
Excavation 2024	Bore/Drill Rigs	1	7.00	221	0.50
Excavation 2024	Signal Boards	2	8.00	6	0.82
Paving 2024	Excavators	1	8.00	158	0.38
Paving 2024	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving 2024	Signal Boards	2	8.00	6	0.82
Excavation 2023	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Excavation 2024	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Excavation 2020	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Excavation 2021	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Excavation 2022	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

E George to Lake Wildwood Backbone Extension Pipeline - Nevada County, Summer

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Excavation 2023	8	10.00	0.00	1,027.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition 2023	8	10.00	0.00	333.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition 2020	8	10.00	0.00	333.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition 2024	8	10.00	0.00	333.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving 2020	7	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition 2021	8	10.00	0.00	333.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition 2022	8	10.00	0.00	333.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving 2023	7	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving 2024	7	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving 2021	7	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving 2022	7	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Excavation 2024	8	10.00	0.00	1,027.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Excavation 2020	8	10.00	0.00	1,027.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Excavation 2021	8	10.00	0.00	1,027.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Excavation 2022	8	10.00	0.00	1,027.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition 2020 - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.7010	0.0000	3.7010	0.5604	0.0000	0.5604			0.0000			0.0000
Off-Road	3.2553	31.9722	19.3383	0.0358		1.5875	1.5875		1.4800	1.4800		3,407.1539	3,407.1539	0.9130		3,429.9784
Total	**3.2553**	**31.9722**	**19.3383**	**0.0358**	**3.7010**	**1.5875**	**5.2884**	**0.5604**	**1.4800**	**2.0403**		**3,407.1539**	**3,407.1539**	**0.9130**		**3,429.9784**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1315	4.6172	0.6862	0.0137	0.2915	0.0163	0.3078	0.0799	0.0156	0.0955		1,440.8845	1,440.8845	0.0566		1,442.2985
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0497	0.0338	0.3645	8.2000e-004	0.0822	5.6000e-004	0.0827	0.0218	5.2000e-004	0.0223		81.5750	81.5750	3.0900e-003		81.6522
Total	**0.1812**	**4.6511**	**1.0507**	**0.0145**	**0.3736**	**0.0168**	**0.3905**	**0.1017**	**0.0161**	**0.1178**		**1,522.4594**	**1,522.4594**	**0.0597**		**1,523.9507**

3.2 Demolition 2020 - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.7010	0.0000	3.7010	0.5604	0.0000	0.5604			0.0000			0.0000
Off-Road	3.2553	31.9722	19.3383	0.0358		1.5875	1.5875		1.4800	1.4800	0.0000	3,407.1539	3,407.1539	0.9130		3,429.9784
Total	**3.2553**	**31.9722**	**19.3383**	**0.0358**	**3.7010**	**1.5875**	**5.2884**	**0.5604**	**1.4800**	**2.0403**	**0.0000**	**3,407.1539**	**3,407.1539**	**0.9130**		**3,429.9784**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1315	4.6172	0.6862	0.0137	0.2915	0.0163	0.3078	0.0799	0.0156	0.0955		1,440.8845	1,440.8845	0.0566		1,442.2985
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0497	0.0338	0.3645	8.2000e-004	0.0822	5.6000e-004	0.0827	0.0218	5.2000e-004	0.0223		81.5750	81.5750	3.0900e-003		81.6522
Total	**0.1812**	**4.6511**	**1.0507**	**0.0145**	**0.3736**	**0.0168**	**0.3905**	**0.1017**	**0.0161**	**0.1178**		**1,522.4594**	**1,522.4594**	**0.0597**		**1,523.9507**

3.3 Excavation 2020 - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.4300e-003	0.0000	7.4300e-003	1.1300e-003	0.0000	1.1300e-003			0.0000			0.0000
Off-Road	1.5841	15.4138	13.0192	0.0339		0.5985	0.5985		0.5543	0.5543		3,234.5073	3,234.5073	1.0113		3,259.7892
Total	**1.5841**	**15.4138**	**13.0192**	**0.0339**	**7.4300e-003**	**0.5985**	**0.6060**	**1.1300e-003**	**0.5543**	**0.5554**		**3,234.5073**	**3,234.5073**	**1.0113**		**3,259.7892**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0649	2.2784	0.3386	6.7700e-003	0.1438	8.0300e-003	0.1519	0.0394	7.6900e-003	0.0471		711.0094	711.0094	0.0279		711.7072
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0497	0.0338	0.3645	8.2000e-004	0.0822	5.6000e-004	0.0827	0.0218	5.2000e-004	0.0223		81.5750	81.5750	3.0900e-003		81.6522
Total	**0.1146**	**2.3122**	**0.7031**	**7.5900e-003**	**0.2260**	**8.5900e-003**	**0.2346**	**0.0612**	**8.2100e-003**	**0.0694**		**792.5844**	**792.5844**	**0.0310**		**793.3594**

3.3 Excavation 2020 - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.4300e-003	0.0000	7.4300e-003	1.1300e-003	0.0000	1.1300e-003			0.0000			0.0000
Off-Road	1.5841	15.4138	13.0192	0.0339		0.5985	0.5985		0.5543	0.5543	0.0000	3,234.5073	3,234.5073	1.0113		3,259.7892
Total	**1.5841**	**15.4138**	**13.0192**	**0.0339**	**7.4300e-003**	**0.5985**	**0.6060**	**1.1300e-003**	**0.5543**	**0.5554**	**0.0000**	**3,234.5073**	**3,234.5073**	**1.0113**		**3,259.7892**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0649	2.2784	0.3386	6.7700e-003	0.1438	8.0300e-003	0.1519	0.0394	7.6900e-003	0.0471		711.0094	711.0094	0.0279		711.7072
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0497	0.0338	0.3645	8.2000e-004	0.0822	5.6000e-004	0.0827	0.0218	5.2000e-004	0.0223		81.5750	81.5750	3.0900e-003		81.6522
Total	**0.1146**	**2.3122**	**0.7031**	**7.5900e-003**	**0.2260**	**8.5900e-003**	**0.2346**	**0.0612**	**8.2100e-003**	**0.0694**		**792.5844**	**792.5844**	**0.0310**		**793.3594**

3.4 Paving 2020 - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2475	12.2694	13.4756	0.0211		0.6543	0.6543		0.6042	0.6042		2,003.3807	2,003.3807	0.6263		2,019.0376
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2475**	**12.2694**	**13.4756**	**0.0211**		**0.6543**	**0.6543**		**0.6042**	**0.6042**		**2,003.3807**	**2,003.3807**	**0.6263**		**2,019.0376**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0497	0.0338	0.3645	8.2000e-004	0.0822	5.6000e-004	0.0827	0.0218	5.2000e-004	0.0223		81.5750	81.5750	3.0900e-003		81.6522
Total	**0.0497**	**0.0338**	**0.3645**	**8.2000e-004**	**0.0822**	**5.6000e-004**	**0.0827**	**0.0218**	**5.2000e-004**	**0.0223**		**81.5750**	**81.5750**	**3.0900e-003**		**81.6522**

3.4 Paving 2020 - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2475	12.2694	13.4756	0.0211		0.6543	0.6543		0.6042	0.6042	0.0000	2,003.3807	2,003.3807	0.6263		2,019.0376
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2475**	**12.2694**	**13.4756**	**0.0211**		**0.6543**	**0.6543**		**0.6042**	**0.6042**	**0.0000**	**2,003.3807**	**2,003.3807**	**0.6263**		**2,019.0376**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0497	0.0338	0.3645	8.2000e-004	0.0822	5.6000e-004	0.0827	0.0218	5.2000e-004	0.0223		81.5750	81.5750	3.0900e-003		81.6522
Total	**0.0497**	**0.0338**	**0.3645**	**8.2000e-004**	**0.0822**	**5.6000e-004**	**0.0827**	**0.0218**	**5.2000e-004**	**0.0223**		**81.5750**	**81.5750**	**3.0900e-003**		**81.6522**

3.5 Demolition 2021 - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.7010	0.0000	3.7010	0.5604	0.0000	0.5604			0.0000			0.0000
Off-Road	3.1241	30.4708	19.1461	0.0358		1.4923	1.4923		1.3904	1.3904		3,407.3204	3,407.3204	0.9099		3,430.0680
Total	**3.1241**	**30.4708**	**19.1461**	**0.0358**	**3.7010**	**1.4923**	**5.1933**	**0.5604**	**1.3904**	**1.9508**		**3,407.3204**	**3,407.3204**	**0.9099**		**3,430.0680**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1236	4.2543	0.6560	0.0136	0.2915	0.0142	0.3057	0.0799	0.0136	0.0935		1,425.7598	1,425.7598	0.0553		1,427.1429
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0466	0.0304	0.3323	7.9000e-004	0.0822	5.4000e-004	0.0827	0.0218	5.0000e-004	0.0223		79.0275	79.0275	2.7600e-003		79.0965
Total	**0.1702**	**4.2847**	**0.9883**	**0.0144**	**0.3736**	**0.0147**	**0.3883**	**0.1017**	**0.0141**	**0.1158**		**1,504.7874**	**1,504.7874**	**0.0581**		**1,506.2394**

3.5 Demolition 2021 - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.7010	0.0000	3.7010	0.5604	0.0000	0.5604			0.0000			0.0000
Off-Road	3.1241	30.4708	19.1461	0.0358		1.4923	1.4923		1.3904	1.3904	0.0000	3,407.3204	3,407.3204	0.9099		3,430.0680
Total	**3.1241**	**30.4708**	**19.1461**	**0.0358**	**3.7010**	**1.4923**	**5.1933**	**0.5604**	**1.3904**	**1.9508**	**0.0000**	**3,407.3204**	**3,407.3204**	**0.9099**		**3,430.0680**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1236	4.2543	0.6560	0.0136	0.2915	0.0142	0.3057	0.0799	0.0136	0.0935		1,425.7598	1,425.7598	0.0553		1,427.1429
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0466	0.0304	0.3323	7.9000e-004	0.0822	5.4000e-004	0.0827	0.0218	5.0000e-004	0.0223		79.0275	79.0275	2.7600e-003		79.0965
Total	**0.1702**	**4.2847**	**0.9883**	**0.0144**	**0.3736**	**0.0147**	**0.3883**	**0.1017**	**0.0141**	**0.1158**		**1,504.7874**	**1,504.7874**	**0.0581**		**1,506.2394**

3.6 Excavation 2021 - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.4300e-003	0.0000	7.4300e-003	1.1300e-003	0.0000	1.1300e-003			0.0000			0.0000
Off-Road	1.4783	13.3986	12.8156	0.0339		0.5275	0.5275		0.4890	0.4890		3,236.5290	3,236.5290	1.0119		3,261.8273
Total	**1.4783**	**13.3986**	**12.8156**	**0.0339**	**7.4300e-003**	**0.5275**	**0.5350**	**1.1300e-003**	**0.4890**	**0.4901**		**3,236.5290**	**3,236.5290**	**1.0119**		**3,261.8273**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0610	2.0993	0.3237	6.7000e-003	0.1438	7.0000e-003	0.1508	0.0394	6.6900e-003	0.0461		703.5461	703.5461	0.0273		704.2286
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0466	0.0304	0.3323	7.9000e-004	0.0822	5.4000e-004	0.0827	0.0218	5.0000e-004	0.0223		79.0275	79.0275	2.7600e-003		79.0965
Total	**0.1076**	**2.1297**	**0.6560**	**7.4900e-003**	**0.2260**	**7.5400e-003**	**0.2335**	**0.0612**	**7.1900e-003**	**0.0684**		**782.5736**	**782.5736**	**0.0301**		**783.3251**

3.6 Excavation 2021 - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.4300e-003	0.0000	7.4300e-003	1.1300e-003	0.0000	1.1300e-003			0.0000			0.0000
Off-Road	1.4783	13.3986	12.8156	0.0339		0.5275	0.5275		0.4890	0.4890	0.0000	3,236.5290	3,236.5290	1.0119		3,261.8273
Total	**1.4783**	**13.3986**	**12.8156**	**0.0339**	**7.4300e-003**	**0.5275**	**0.5350**	**1.1300e-003**	**0.4890**	**0.4901**	**0.0000**	**3,236.5290**	**3,236.5290**	**1.0119**		**3,261.8273**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0610	2.0993	0.3237	6.7000e-003	0.1438	7.0000e-003	0.1508	0.0394	6.6900e-003	0.0461		703.5461	703.5461	0.0273		704.2286
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0466	0.0304	0.3323	7.9000e-004	0.0822	5.4000e-004	0.0827	0.0218	5.0000e-004	0.0223		79.0275	79.0275	2.7600e-003		79.0965
Total	**0.1076**	**2.1297**	**0.6560**	**7.4900e-003**	**0.2260**	**7.5400e-003**	**0.2335**	**0.0612**	**7.1900e-003**	**0.0684**		**782.5736**	**782.5736**	**0.0301**		**783.3251**

3.7 Paving 2021 - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1590	11.2276	13.4607	0.0211		0.5830	0.5830		0.5386	0.5386		2,003.3246	2,003.3246	0.6263		2,018.9810
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1590**	**11.2276**	**13.4607**	**0.0211**		**0.5830**	**0.5830**		**0.5386**	**0.5386**		**2,003.3246**	**2,003.3246**	**0.6263**		**2,018.9810**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0466	0.0304	0.3323	7.9000e-004	0.0822	5.4000e-004	0.0827	0.0218	5.0000e-004	0.0223		79.0275	79.0275	2.7600e-003		79.0965
Total	**0.0466**	**0.0304**	**0.3323**	**7.9000e-004**	**0.0822**	**5.4000e-004**	**0.0827**	**0.0218**	**5.0000e-004**	**0.0223**		**79.0275**	**79.0275**	**2.7600e-003**		**79.0965**

3.7 Paving 2021 - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1590	11.2276	13.4607	0.0211		0.5830	0.5830		0.5386	0.5386	0.0000	2,003.3246	2,003.3246	0.6263		2,018.9810
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1590**	**11.2276**	**13.4607**	**0.0211**		**0.5830**	**0.5830**		**0.5386**	**0.5386**	**0.0000**	**2,003.3246**	**2,003.3246**	**0.6263**		**2,018.9810**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0466	0.0304	0.3323	7.9000e-004	0.0822	5.4000e-004	0.0827	0.0218	5.0000e-004	0.0223		79.0275	79.0275	2.7600e-003		79.0965
Total	**0.0466**	**0.0304**	**0.3323**	**7.9000e-004**	**0.0822**	**5.4000e-004**	**0.0827**	**0.0218**	**5.0000e-004**	**0.0223**		**79.0275**	**79.0275**	**2.7600e-003**		**79.0965**

3.8 Demolition 2022 - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.7010	0.0000	3.7010	0.5604	0.0000	0.5604			0.0000			0.0000
Off-Road	2.6249	25.1258	18.1918	0.0358		1.2021	1.2021		1.1215	1.1215		3,406.3335	3,406.3335	0.9075		3,429.0210
Total	**2.6249**	**25.1258**	**18.1918**	**0.0358**	**3.7010**	**1.2021**	**4.9030**	**0.5604**	**1.1215**	**1.6819**		**3,406.3335**	**3,406.3335**	**0.9075**		**3,429.0210**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1159	3.9056	0.6276	0.0134	0.2914	0.0120	0.3035	0.0799	0.0115	0.0914		1,410.2900	1,410.2900	0.0538		1,411.6347
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0439	0.0274	0.3048	7.7000e-004	0.0822	5.2000e-004	0.0827	0.0218	4.8000e-004	0.0223		76.4249	76.4249	2.4800e-003		76.4869
Total	**0.1598**	**3.9329**	**0.9325**	**0.0142**	**0.3736**	**0.0126**	**0.3862**	**0.1017**	**0.0120**	**0.1137**		**1,486.7149**	**1,486.7149**	**0.0563**		**1,488.1216**

3.8 Demolition 2022 - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.7010	0.0000	3.7010	0.5604	0.0000	0.5604			0.0000			0.0000
Off-Road	2.6249	25.1258	18.1918	0.0358		1.2021	1.2021		1.1215	1.1215	0.0000	3,406.3335	3,406.3335	0.9075		3,429.0210
Total	**2.6249**	**25.1258**	**18.1918**	**0.0358**	**3.7010**	**1.2021**	**4.9030**	**0.5604**	**1.1215**	**1.6819**	**0.0000**	**3,406.3335**	**3,406.3335**	**0.9075**		**3,429.0210**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1159	3.9056	0.6276	0.0134	0.2914	0.0120	0.3035	0.0799	0.0115	0.0914		1,410.2900	1,410.2900	0.0538		1,411.6347
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0439	0.0274	0.3048	7.7000e-004	0.0822	5.2000e-004	0.0827	0.0218	4.8000e-004	0.0223		76.4249	76.4249	2.4800e-003		76.4869
Total	**0.1598**	**3.9329**	**0.9325**	**0.0142**	**0.3736**	**0.0126**	**0.3862**	**0.1017**	**0.0120**	**0.1137**		**1,486.7149**	**1,486.7149**	**0.0563**		**1,488.1216**

3.9 Excavation 2022 - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.4300e-003	0.0000	7.4300e-003	1.1300e-003	0.0000	1.1300e-003			0.0000			0.0000
Off-Road	1.3175	10.7342	12.5079	0.0340		0.4268	0.4268		0.3962	0.3962		3,237.9492	3,237.9492	1.0124		3,263.2589
Total	**1.3175**	**10.7342**	**12.5079**	**0.0340**	**7.4300e-003**	**0.4268**	**0.4342**	**1.1300e-003**	**0.3962**	**0.3974**		**3,237.9492**	**3,237.9492**	**1.0124**		**3,263.2589**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0572	1.9272	0.3097	6.6200e-003	0.1438	5.9400e-003	0.1498	0.0394	5.6800e-003	0.0451		695.9125	695.9125	0.0265		696.5760
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0439	0.0274	0.3048	7.7000e-004	0.0822	5.2000e-004	0.0827	0.0218	4.8000e-004	0.0223		76.4249	76.4249	2.4800e-003		76.4869
Total	**0.1011**	**1.9546**	**0.6145**	**7.3900e-003**	**0.2260**	**6.4600e-003**	**0.2324**	**0.0612**	**6.1600e-003**	**0.0674**		**772.3374**	**772.3374**	**0.0290**		**773.0629**

3.9 Excavation 2022 - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.4300e-003	0.0000	7.4300e-003	1.1300e-003	0.0000	1.1300e-003			0.0000			0.0000
Off-Road	1.3175	10.7342	12.5079	0.0340		0.4268	0.4268		0.3962	0.3962	0.0000	3,237.9492	3,237.9492	1.0124		3,263.2589
Total	**1.3175**	**10.7342**	**12.5079**	**0.0340**	**7.4300e-003**	**0.4268**	**0.4342**	**1.1300e-003**	**0.3962**	**0.3974**	**0.0000**	**3,237.9492**	**3,237.9492**	**1.0124**		**3,263.2589**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0572	1.9272	0.3097	6.6200e-003	0.1438	5.9400e-003	0.1498	0.0394	5.6800e-003	0.0451		695.9125	695.9125	0.0265		696.5760
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0439	0.0274	0.3048	7.7000e-004	0.0822	5.2000e-004	0.0827	0.0218	4.8000e-004	0.0223		76.4249	76.4249	2.4800e-003		76.4869
Total	**0.1011**	**1.9546**	**0.6145**	**7.3900e-003**	**0.2260**	**6.4600e-003**	**0.2324**	**0.0612**	**6.1600e-003**	**0.0674**		**772.3374**	**772.3374**	**0.0290**		**773.0629**

3.10 Paving 2022 - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0333	9.7339	13.3854	0.0211		0.4879	0.4879		0.4511	0.4511		2,003.7116	2,003.7116	0.6264		2,019.3712
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0333**	**9.7339**	**13.3854**	**0.0211**		**0.4879**	**0.4879**		**0.4511**	**0.4511**		**2,003.7116**	**2,003.7116**	**0.6264**		**2,019.3712**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0439	0.0274	0.3048	7.7000e-004	0.0822	5.2000e-004	0.0827	0.0218	4.8000e-004	0.0223		76.4249	76.4249	2.4800e-003		76.4869
Total	**0.0439**	**0.0274**	**0.3048**	**7.7000e-004**	**0.0822**	**5.2000e-004**	**0.0827**	**0.0218**	**4.8000e-004**	**0.0223**		**76.4249**	**76.4249**	**2.4800e-003**		**76.4869**

3.10 Paving 2022 - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0333	9.7339	13.3854	0.0211		0.4879	0.4879		0.4511	0.4511	0.0000	2,003.7116	2,003.7116	0.6264		2,019.3712
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0333**	**9.7339**	**13.3854**	**0.0211**		**0.4879**	**0.4879**		**0.4511**	**0.4511**	**0.0000**	**2,003.7116**	**2,003.7116**	**0.6264**		**2,019.3712**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0439	0.0274	0.3048	7.7000e-004	0.0822	5.2000e-004	0.0827	0.0218	4.8000e-004	0.0223		76.4249	76.4249	2.4800e-003		76.4869
Total	**0.0439**	**0.0274**	**0.3048**	**7.7000e-004**	**0.0822**	**5.2000e-004**	**0.0827**	**0.0218**	**4.8000e-004**	**0.0223**		**76.4249**	**76.4249**	**2.4800e-003**		**76.4869**

3.11 Demolition 2023 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.7010	0.0000	3.7010	0.5604	0.0000	0.5604			0.0000			0.0000
Off-Road	2.2686	21.1192	17.2384	0.0358		0.9670	0.9670		0.9036	0.9036		3,406.4458	3,406.4458	0.9044		3,429.0560
Total	**2.2686**	**21.1192**	**17.2384**	**0.0358**	**3.7010**	**0.9670**	**4.6680**	**0.5604**	**0.9036**	**1.4639**		**3,406.4458**	**3,406.4458**	**0.9044**		**3,429.0560**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0871	2.9669	0.5477	0.0131	0.2914	6.1900e-003	0.2976	0.0799	5.9200e-003	0.0858		1,377.1995	1,377.1995	0.0411		1,378.2274
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0414	0.0247	0.2793	7.4000e-004	0.0822	5.0000e-004	0.0827	0.0218	4.6000e-004	0.0223		73.7703	73.7703	2.2200e-003		73.8258
Total	**0.1285**	**2.9915**	**0.8270**	**0.0139**	**0.3736**	**6.6900e-003**	**0.3803**	**0.1017**	**6.3800e-003**	**0.1081**		**1,450.9698**	**1,450.9698**	**0.0433**		**1,452.0532**

3.11 Demolition 2023 - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.7010	0.0000	3.7010	0.5604	0.0000	0.5604			0.0000			0.0000
Off-Road	2.2686	21.1192	17.2384	0.0358		0.9670	0.9670		0.9036	0.9036	0.0000	3,406.4458	3,406.4458	0.9044		3,429.0560
Total	**2.2686**	**21.1192**	**17.2384**	**0.0358**	**3.7010**	**0.9670**	**4.6680**	**0.5604**	**0.9036**	**1.4639**	**0.0000**	**3,406.4458**	**3,406.4458**	**0.9044**		**3,429.0560**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0871	2.9669	0.5477	0.0131	0.2914	6.1900e-003	0.2976	0.0799	5.9200e-003	0.0858		1,377.1995	1,377.1995	0.0411		1,378.2274
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0414	0.0247	0.2793	7.4000e-004	0.0822	5.0000e-004	0.0827	0.0218	4.6000e-004	0.0223		73.7703	73.7703	2.2200e-003		73.8258
Total	**0.1285**	**2.9915**	**0.8270**	**0.0139**	**0.3736**	**6.6900e-003**	**0.3803**	**0.1017**	**6.3800e-003**	**0.1081**		**1,450.9698**	**1,450.9698**	**0.0433**		**1,452.0532**

3.12 Excavation 2023 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.4300e-003	0.0000	7.4300e-003	1.1300e-003	0.0000	1.1300e-003			0.0000			0.0000
Off-Road	1.2576	9.6331	12.4356	0.0340		0.3837	0.3837		0.3566	0.3566		3,240.6450	3,240.6450	1.0133		3,265.9766
Total	**1.2576**	**9.6331**	**12.4356**	**0.0340**	**7.4300e-003**	**0.3837**	**0.3911**	**1.1300e-003**	**0.3566**	**0.3578**		**3,240.6450**	**3,240.6450**	**1.0133**		**3,265.9766**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0430	1.4640	0.2703	6.4700e-003	0.1438	3.0500e-003	0.1469	0.0394	2.9200e-003	0.0424		679.5838	679.5838	0.0203		680.0911
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0414	0.0247	0.2793	7.4000e-004	0.0822	5.0000e-004	0.0827	0.0218	4.6000e-004	0.0223		73.7703	73.7703	2.2200e-003		73.8258
Total	**0.0844**	**1.4887**	**0.5496**	**7.2100e-003**	**0.2260**	**3.5500e-003**	**0.2295**	**0.0612**	**3.3800e-003**	**0.0646**		**753.3541**	**753.3541**	**0.0225**		**753.9169**

3.12 Excavation 2023 - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.4300e-003	0.0000	7.4300e-003	1.1300e-003	0.0000	1.1300e-003			0.0000			0.0000
Off-Road	1.2576	9.6331	12.4356	0.0340		0.3837	0.3837		0.3566	0.3566	0.0000	3,240.6450	3,240.6450	1.0133		3,265.9766
Total	**1.2576**	**9.6331**	**12.4356**	**0.0340**	**7.4300e-003**	**0.3837**	**0.3911**	**1.1300e-003**	**0.3566**	**0.3578**	**0.0000**	**3,240.6450**	**3,240.6450**	**1.0133**		**3,265.9766**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0430	1.4640	0.2703	6.4700e-003	0.1438	3.0500e-003	0.1469	0.0394	2.9200e-003	0.0424		679.5838	679.5838	0.0203		680.0911
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0414	0.0247	0.2793	7.4000e-004	0.0822	5.0000e-004	0.0827	0.0218	4.6000e-004	0.0223		73.7703	73.7703	2.2200e-003		73.8258
Total	**0.0844**	**1.4887**	**0.5496**	**7.2100e-003**	**0.2260**	**3.5500e-003**	**0.2295**	**0.0612**	**3.3800e-003**	**0.0646**		**753.3541**	**753.3541**	**0.0225**		**753.9169**

3.13 Paving 2023 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9711	8.8990	13.3832	0.0211		0.4347	0.4347		0.4021	0.4021		2,004.1013	2,004.1013	0.6265		2,019.7640
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9711**	**8.8990**	**13.3832**	**0.0211**		**0.4347**	**0.4347**		**0.4021**	**0.4021**		**2,004.1013**	**2,004.1013**	**0.6265**		**2,019.7640**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0414	0.0247	0.2793	7.4000e-004	0.0822	5.0000e-004	0.0827	0.0218	4.6000e-004	0.0223		73.7703	73.7703	2.2200e-003		73.8258
Total	**0.0414**	**0.0247**	**0.2793**	**7.4000e-004**	**0.0822**	**5.0000e-004**	**0.0827**	**0.0218**	**4.6000e-004**	**0.0223**		**73.7703**	**73.7703**	**2.2200e-003**		**73.8258**

3.13 Paving 2023 - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9711	8.8990	13.3832	0.0211		0.4347	0.4347		0.4021	0.4021	0.0000	2,004.1013	2,004.1013	0.6265		2,019.7640
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9711**	**8.8990**	**13.3832**	**0.0211**		**0.4347**	**0.4347**		**0.4021**	**0.4021**	**0.0000**	**2,004.1013**	**2,004.1013**	**0.6265**		**2,019.7640**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0414	0.0247	0.2793	7.4000e-004	0.0822	5.0000e-004	0.0827	0.0218	4.6000e-004	0.0223		73.7703	73.7703	2.2200e-003		73.8258
Total	**0.0414**	**0.0247**	**0.2793**	**7.4000e-004**	**0.0822**	**5.0000e-004**	**0.0827**	**0.0218**	**4.6000e-004**	**0.0223**		**73.7703**	**73.7703**	**2.2200e-003**		**73.8258**

3.14 Demolition 2024 - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.7010	0.0000	3.7010	0.5604	0.0000	0.5604			0.0000			0.0000
Off-Road	2.2517	20.6587	17.2953	0.0358		0.9363	0.9363		0.8738	0.8738		3,406.7248	3,406.7248	0.9035		3,429.3112
Total	**2.2517**	**20.6587**	**17.2953**	**0.0358**	**3.7010**	**0.9363**	**4.6372**	**0.5604**	**0.8738**	**1.4342**		**3,406.7248**	**3,406.7248**	**0.9035**		**3,429.3112**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0852	2.8705	0.5378	0.0130	0.2914	5.8800e-003	0.2973	0.0799	5.6200e-003	0.0855		1,367.5775	1,367.5775	0.0410		1,368.6028
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0391	0.0223	0.2571	7.1000e-004	0.0822	4.9000e-004	0.0826	0.0218	4.5000e-004	0.0222		71.0946	71.0946	1.9900e-003		71.1443
Total	**0.1243**	**2.8928**	**0.7949**	**0.0137**	**0.3736**	**6.3700e-003**	**0.3799**	**0.1017**	**6.0700e-003**	**0.1078**		**1,438.6720**	**1,438.6720**	**0.0430**		**1,439.7471**

3.14 Demolition 2024 - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.7010	0.0000	3.7010	0.5604	0.0000	0.5604			0.0000			0.0000
Off-Road	2.2517	20.6587	17.2953	0.0358		0.9363	0.9363		0.8738	0.8738	0.0000	3,406.7248	3,406.7248	0.9035		3,429.3112
Total	**2.2517**	**20.6587**	**17.2953**	**0.0358**	**3.7010**	**0.9363**	**4.6372**	**0.5604**	**0.8738**	**1.4342**	**0.0000**	**3,406.7248**	**3,406.7248**	**0.9035**		**3,429.3112**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0852	2.8705	0.5378	0.0130	0.2914	5.8800e-003	0.2973	0.0799	5.6200e-003	0.0855		1,367.5775	1,367.5775	0.0410		1,368.6028
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0391	0.0223	0.2571	7.1000e-004	0.0822	4.9000e-004	0.0826	0.0218	4.5000e-004	0.0222		71.0946	71.0946	1.9900e-003		71.1443
Total	**0.1243**	**2.8928**	**0.7949**	**0.0137**	**0.3736**	**6.3700e-003**	**0.3799**	**0.1017**	**6.0700e-003**	**0.1078**		**1,438.6720**	**1,438.6720**	**0.0430**		**1,439.7471**

3.15 Excavation 2024 - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.4300e-003	0.0000	7.4300e-003	1.1300e-003	0.0000	1.1300e-003			0.0000			0.0000
Off-Road	1.2299	8.9803	12.4168	0.0340		0.3580	0.3580		0.3330	0.3330		3,243.1415	3,243.1415	1.0141		3,268.4933
Total	**1.2299**	**8.9803**	**12.4168**	**0.0340**	**7.4300e-003**	**0.3580**	**0.3655**	**1.1300e-003**	**0.3330**	**0.3341**		**3,243.1415**	**3,243.1415**	**1.0141**		**3,268.4933**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0421	1.4165	0.2654	6.4200e-003	0.1438	2.9000e-003	0.1467	0.0394	2.7800e-003	0.0422		674.8358	674.8358	0.0202		675.3418
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0391	0.0223	0.2571	7.1000e-004	0.0822	4.9000e-004	0.0826	0.0218	4.5000e-004	0.0222		71.0946	71.0946	1.9900e-003		71.1443
Total	**0.0811**	**1.4387**	**0.5225**	**7.1300e-003**	**0.2259**	**3.3900e-003**	**0.2293**	**0.0612**	**3.2300e-003**	**0.0644**		**745.9304**	**745.9304**	**0.0222**		**746.4861**

3.15 Excavation 2024 - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.4300e-003	0.0000	7.4300e-003	1.1300e-003	0.0000	1.1300e-003			0.0000			0.0000
Off-Road	1.2299	8.9803	12.4168	0.0340		0.3580	0.3580		0.3330	0.3330	0.0000	3,243.1415	3,243.1415	1.0141		3,268.4933
Total	**1.2299**	**8.9803**	**12.4168**	**0.0340**	**7.4300e-003**	**0.3580**	**0.3655**	**1.1300e-003**	**0.3330**	**0.3341**	**0.0000**	**3,243.1415**	**3,243.1415**	**1.0141**		**3,268.4933**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0421	1.4165	0.2654	6.4200e-003	0.1438	2.9000e-003	0.1467	0.0394	2.7800e-003	0.0422		674.8358	674.8358	0.0202		675.3418
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0391	0.0223	0.2571	7.1000e-004	0.0822	4.9000e-004	0.0826	0.0218	4.5000e-004	0.0222		71.0946	71.0946	1.9900e-003		71.1443
Total	**0.0811**	**1.4387**	**0.5225**	**7.1300e-003**	**0.2259**	**3.3900e-003**	**0.2293**	**0.0612**	**3.2300e-003**	**0.0644**		**745.9304**	**745.9304**	**0.0222**		**746.4861**

3.16 Paving 2024 - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9330	8.3322	13.4156	0.0211		0.3978	0.3978		0.3682	0.3682		2,004.4328	2,004.4328	0.6266		2,020.0982
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9330**	**8.3322**	**13.4156**	**0.0211**		**0.3978**	**0.3978**		**0.3682**	**0.3682**		**2,004.4328**	**2,004.4328**	**0.6266**		**2,020.0982**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0391	0.0223	0.2571	7.1000e-004	0.0822	4.9000e-004	0.0826	0.0218	4.5000e-004	0.0222		71.0946	71.0946	1.9900e-003		71.1443
Total	**0.0391**	**0.0223**	**0.2571**	**7.1000e-004**	**0.0822**	**4.9000e-004**	**0.0826**	**0.0218**	**4.5000e-004**	**0.0222**		**71.0946**	**71.0946**	**1.9900e-003**		**71.1443**

3.16 Paving 2024 - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9330	8.3322	13.4156	0.0211		0.3978	0.3978		0.3682	0.3682	0.0000	2,004.4328	2,004.4328	0.6266		2,020.0982
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9330**	**8.3322**	**13.4156**	**0.0211**		**0.3978**	**0.3978**		**0.3682**	**0.3682**	**0.0000**	**2,004.4328**	**2,004.4328**	**0.6266**		**2,020.0982**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0391	0.0223	0.2571	7.1000e-004	0.0822	4.9000e-004	0.0826	0.0218	4.5000e-004	0.0222		71.0946	71.0946	1.9900e-003		71.1443
Total	**0.0391**	**0.0223**	**0.2571**	**7.1000e-004**	**0.0822**	**4.9000e-004**	**0.0826**	**0.0218**	**4.5000e-004**	**0.0222**		**71.0946**	**71.0946**	**1.9900e-003**		**71.1443**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

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

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.462483	0.036636	0.240615	0.135193	0.026887	0.004981	0.014791	0.068771	0.001838	0.000757	0.005302	0.000576	0.001170

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.4096	6.8000e-004	0.0753	1.0000e-005		2.7000e-004	2.7000e-004		2.7000e-004	2.7000e-004		0.1618	0.1618	4.2000e-004		0.1723
Unmitigated	0.4096	6.8000e-004	0.0753	1.0000e-005		2.7000e-004	2.7000e-004		2.7000e-004	2.7000e-004		0.1618	0.1618	4.2000e-004		0.1723

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1408					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2618					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	6.9300e-003	6.8000e-004	0.0753	1.0000e-005		2.7000e-004	2.7000e-004		2.7000e-004	2.7000e-004		0.1618	0.1618	4.2000e-004		0.1723
Total	**0.4096**	**6.8000e-004**	**0.0753**	**1.0000e-005**		**2.7000e-004**	**2.7000e-004**		**2.7000e-004**	**2.7000e-004**		**0.1618**	**0.1618**	**4.2000e-004**		**0.1723**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1408					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2618					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	6.9300e-003	6.8000e-004	0.0753	1.0000e-005		2.7000e-004	2.7000e-004		2.7000e-004	2.7000e-004		0.1618	0.1618	4.2000e-004		0.1723
Total	**0.4096**	**6.8000e-004**	**0.0753**	**1.0000e-005**		**2.7000e-004**	**2.7000e-004**		**2.7000e-004**	**2.7000e-004**		**0.1618**	**0.1618**	**4.2000e-004**		**0.1723**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

ATTACHMENT B

CalEEMod Output Files – Greenhouse Gas Emissions

E George to Lake Wildwood Backbone Extension Pipeline

Nevada County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	739.20	1000sqft	16.97	739,200.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	80
Climate Zone	1			**Operational Year**	2025
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Construction to occur over 5 years, during dry months. Demolition of asphalt, excavation, and paving assumed to occur simultaneously.

Off-road Equipment - Excavators, dump truck and sign boards per Project applicant. Other equipment per model defaults

Off-road Equipment - Excavation equipment per Project Applicant

Off-road Equipment - Excavator, loader, signal board, and paver per Project Applicant. Paving equipment and rollers per model defaults

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Demolition -

Grading -

Trips and VMT - 10 daily workers on average. Haul trips based on 16 cubic yard haul truck capacity per CalEEMod User's Guide

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tblOffRoadEquipment	OffRoadEquipmentType		Signal Boards
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tblOffRoadEquipment	OffRoadEquipmentType		Excavators
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tblOffRoadEquipment	OffRoadEquipmentType		Bore/Drill Rigs
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tblOffRoadEquipment	OffRoadEquipmentType		Excavators

tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Signal Boards
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2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.1825	1.8790	1.5119	3.8000e-003	0.0571	0.0753	0.1324	0.0110	0.0698	0.0808	0.0000	333.4668	333.4668	0.0866	0.0000	335.6313
2021	0.1710	1.6883	1.4921	3.7900e-003	0.0571	0.0675	0.1246	0.0110	0.0626	0.0736	0.0000	332.7935	332.7935	0.0865	0.0000	334.9563
2022	0.1513	1.4046	1.4567	3.7800e-003	0.0571	0.0551	0.1122	0.0110	0.0512	0.0622	0.0000	332.0711	332.0711	0.0864	0.0000	334.2318
2023	0.1405	1.2288	1.4363	3.7700e-003	0.0571	0.0481	0.1052	0.0110	0.0447	0.0557	0.0000	330.7824	330.7824	0.0859	0.0000	332.9308
2024	0.1371	1.1606	1.4340	3.7600e-003	0.0571	0.0450	0.1021	0.0110	0.0418	0.0528	0.0000	330.3473	330.3473	0.0860	0.0000	332.4960
Maximum	**0.1825**	**1.8790**	**1.5119**	**3.8000e-003**	**0.0571**	**0.0753**	**0.1324**	**0.0110**	**0.0698**	**0.0808**	**0.0000**	**333.4668**	**333.4668**	**0.0866**	**0.0000**	**335.6313**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.1824	1.8790	1.5119	3.8000e-003	0.0571	0.0753	0.1324	0.0110	0.0698	0.0808	0.0000	333.4665	333.4665	0.0866	0.0000	335.6310
2021	0.1710	1.6883	1.4921	3.7900e-003	0.0571	0.0675	0.1246	0.0110	0.0626	0.0736	0.0000	332.7932	332.7932	0.0865	0.0000	334.9559
2022	0.1513	1.4046	1.4567	3.7800e-003	0.0571	0.0551	0.1122	0.0110	0.0512	0.0622	0.0000	332.0707	332.0707	0.0864	0.0000	334.2315
2023	0.1405	1.2288	1.4363	3.7700e-003	0.0571	0.0481	0.1052	0.0110	0.0447	0.0557	0.0000	330.7821	330.7821	0.0859	0.0000	332.9304
2024	0.1371	1.1606	1.4340	3.7600e-003	0.0571	0.0450	0.1021	0.0110	0.0418	0.0528	0.0000	330.3470	330.3470	0.0860	0.0000	332.4956
Maximum	**0.1824**	**1.8790**	**1.5119**	**3.8000e-003**	**0.0571**	**0.0753**	**0.1324**	**0.0110**	**0.0698**	**0.0808**	**0.0000**	**333.4665**	**333.4665**	**0.0866**	**0.0000**	**335.6310**

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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
4	**1-8-2020**	**4-7-2020**	0.1001	0.1001
5	**4-8-2020**	**7-7-2020**	0.9179	0.9179
6	**7-8-2020**	**10-7-2020**	0.9270	0.9270
7	**10-8-2020**	**1-7-2021**	0.1167	0.1167
8	**1-8-2021**	**4-7-2021**	0.0951	0.0951
9	**4-8-2021**	**7-7-2021**	0.8294	0.8294

10	**7-8-2021**	**10-7-2021**	0.8284	0.8284
11	**10-8-2021**	**1-7-2022**	0.0980	0.0980
12	**1-8-2022**	**4-7-2022**	0.0796	0.0796
13	**4-8-2022**	**7-7-2022**	0.6872	0.6872
14	**7-8-2022**	**10-7-2022**	0.6915	0.6915
15	**10-8-2022**	**1-7-2023**	0.0814	0.0814
16	**1-8-2023**	**4-7-2023**	0.0663	0.0663
17	**4-8-2023**	**7-7-2023**	0.5950	0.5950
18	**7-8-2023**	**10-7-2023**	0.6152	0.6152
19	**10-8-2023**	**1-7-2024**	0.0817	0.0817
20	**1-8-2024**	**4-7-2024**	0.0648	0.0648
21	**4-8-2024**	**7-7-2024**	0.5488	0.5488
22	**7-8-2024**	**9-30-2024**	0.5593	0.5593
		Highest	0.9270	0.9270

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0741	6.0000e-005	6.7700e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0132	0.0132	3.0000e-005	0.0000	0.0141
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0741**	**6.0000e-005**	**6.7700e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0132**	**0.0132**	**3.0000e-005**	**0.0000**	**0.0141**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0741	6.0000e-005	6.7700e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0132	0.0132	3.0000e-005	0.0000	0.0141
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0741**	**6.0000e-005**	**6.7700e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0132**	**0.0132**	**3.0000e-005**	**0.0000**	**0.0141**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition 2020	Demolition	4/1/2020	4/28/2020	5	20	
2	Excavation 2020	Site Preparation	4/10/2020	10/1/2020	5	125	
3	Paving 2020	Paving	8/1/2020	10/31/2020	5	65	
4	Demolition 2021	Demolition	4/1/2021	4/28/2021	5	20	
5	Excavation 2021	Site Preparation	4/10/2021	10/1/2021	5	125	
6	Paving 2021	Paving	8/1/2021	10/29/2021	5	65	
7	Demolition 2022	Demolition	4/1/2022	4/28/2022	5	20	
8	Excavation 2022	Site Preparation	4/10/2022	9/30/2022	5	125	
9	Paving 2022	Paving	8/1/2022	10/28/2022	5	65	
10	Demolition 2023	Demolition	4/1/2023	4/28/2023	5	20	
11	Excavation 2023	Site Preparation	4/10/2023	9/29/2023	5	125	
12	Paving 2023	Paving	8/1/2023	10/30/2023	5	65	
13	Demolition 2024	Demolition	4/1/2024	4/26/2024	5	20	
14	Excavation 2024	Site Preparation	4/10/2024	10/1/2024	5	125	
15	Paving 2024	Paving	8/1/2024	10/30/2024	5	65	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 16.97

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition 2020	Concrete/Industrial Saws	1	8.00	81	0.73

Demolition 2020	Rubber Tired Dozers	2	8.00	247	0.40
Demolition 2020	Excavators	2	8.00	158	0.38
Demolition 2023	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition 2024	Concrete/Industrial Saws	1	8.00	81	0.73
Excavation 2023	Rubber Tired Dozers	0	8.00	247	0.40
Demolition 2021	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition 2022	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition 2023	Excavators	2	8.00	158	0.38
Demolition 2024	Excavators	2	8.00	158	0.38
Excavation 2024	Rubber Tired Dozers	0	8.00	247	0.40
Demolition 2021	Excavators	2	8.00	158	0.38
Paving 2020	Pavers	1	8.00	130	0.42
Paving 2020	Rollers	1	8.00	80	0.38
Paving 2020	Paving Equipment	1	8.00	132	0.36
Demolition 2022	Excavators	2	8.00	158	0.38
Paving 2023	Pavers	1	8.00	130	0.42
Paving 2024	Pavers	1	8.00	130	0.42
Excavation 2020	Rubber Tired Dozers	0	8.00	247	0.40
Paving 2021	Pavers	1	8.00	130	0.42
Paving 2022	Pavers	1	8.00	130	0.42
Paving 2023	Paving Equipment	1	8.00	132	0.36
Paving 2024	Paving Equipment	1	8.00	132	0.36
Excavation 2021	Rubber Tired Dozers	0	8.00	247	0.40
Paving 2021	Paving Equipment	1	8.00	132	0.36
Paving 2022	Paving Equipment	1	8.00	132	0.36
Paving 2023	Rollers	1	8.00	80	0.38
Paving 2024	Rollers	1	8.00	80	0.38

Excavation 2022	Rubber Tired Dozers	0	8.00	247	0.40
Paving 2021	Rollers	1	8.00	80	0.38
Paving 2022	Rollers	1	8.00	80	0.38
Demolition 2023	Rubber Tired Dozers	2	8.00	247	0.40
Demolition 2024	Rubber Tired Dozers	2	8.00	247	0.40
Demolition 2021	Rubber Tired Dozers	2	8.00	247	0.40
Demolition 2022	Rubber Tired Dozers	2	8.00	247	0.40
Demolition 2020	Dumpers/Tenders	1	8.00	16	0.38
Demolition 2020	Signal Boards	2	8.00	6	0.82
Excavation 2020	Excavators	2	8.00	158	0.38
Excavation 2020	Off-Highway Trucks	2	4.00	402	0.38
Excavation 2020	Dumpers/Tenders	1	8.00	16	0.38
Excavation 2020	Bore/Drill Rigs	1	7.00	221	0.50
Excavation 2020	Signal Boards	2	8.00	6	0.82
Paving 2020	Excavators	1	8.00	158	0.38
Paving 2020	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving 2020	Signal Boards	2	8.00	6	0.82
Demolition 2021	Dumpers/Tenders	1	8.00	16	0.38
Demolition 2021	Signal Boards	2	8.00	6	0.82
Excavation 2021	Excavators	2	8.00	158	0.38
Excavation 2021	Off-Highway Trucks	2	4.00	402	0.38
Excavation 2021	Dumpers/Tenders	1	8.00	16	0.38
Excavation 2021	Bore/Drill Rigs	1	7.00	221	0.50
Excavation 2021	Signal Boards	2	8.00	6	0.82
Paving 2021	Excavators	1	8.00	158	0.38
Paving 2021	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving 2021	Signal Boards	2	8.00	6	0.82

Demolition 2022	Dumpers/Tenders	1	8.00	16	0.38
Demolition 2022	Signal Boards	2	8.00	6	0.82
Excavation 2022	Excavators	2	8.00	158	0.38
Excavation 2022	Off-Highway Trucks	2	4.00	402	0.38
Excavation 2022	Dumpers/Tenders	1	8.00	16	0.38
Excavation 2022	Bore/Drill Rigs	1	7.00	221	0.50
Excavation 2022	Signal Boards	2	8.00	6	0.82
Paving 2022	Excavators	1	8.00	158	0.38
Paving 2022	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving 2022	Signal Boards	2	8.00	6	0.82
Demolition 2023	Dumpers/Tenders	1	8.00	16	0.38
Demolition 2023	Signal Boards	2	8.00	6	0.82
Excavation 2023	Excavators	2	8.00	158	0.38
Excavation 2023	Off-Highway Trucks	2	4.00	402	0.38
Excavation 2023	Dumpers/Tenders	1	8.00	16	0.38
Excavation 2023	Bore/Drill Rigs	1	7.00	221	0.50
Excavation 2023	Signal Boards	2	8.00	6	0.82
Paving 2023	Excavators	1	8.00	158	0.38
Paving 2023	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving 2023	Signal Boards	2	8.00	6	0.82
Demolition 2024	Dumpers/Tenders	1	8.00	16	0.38
Demolition 2024	Signal Boards	2	8.00	6	0.82
Excavation 2024	Excavators	2	8.00	158	0.38
Excavation 2024	Off-Highway Trucks	2	4.00	402	0.38
Excavation 2024	Dumpers/Tenders	1	8.00	16	0.38
Excavation 2024	Bore/Drill Rigs	1	7.00	221	0.50
Excavation 2024	Signal Boards	2	8.00	6	0.82

Paving 2024	Excavators	1	8.00	158	0.38
Paving 2024	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Paving 2024	Signal Boards	2	8.00	6	0.82
Excavation 2023	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Excavation 2024	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Excavation 2020	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Excavation 2021	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Excavation 2022	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Excavation 2023	8	10.00	0.00	1,027.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition 2023	8	10.00	0.00	333.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition 2020	8	10.00	0.00	333.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition 2024	8	10.00	0.00	333.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving 2020	7	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition 2021	8	10.00	0.00	333.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition 2022	8	10.00	0.00	333.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving 2023	7	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving 2024	7	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving 2021	7	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving 2022	7	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Excavation 2024	8	10.00	0.00	1,027.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Excavation 2020	8	10.00	0.00	1,027.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Excavation 2021	8	10.00	0.00	1,027.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Excavation 2022	8	10.00	0.00	1,027.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition 2020 - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0370	0.0000	0.0370	5.6000e-003	0.0000	5.6000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0326	0.3197	0.1934	3.6000e-004		0.0159	0.0159		0.0148	0.0148	0.0000	30.9092	30.9092	8.2800e-003	0.0000	31.1162
Total	**0.0326**	**0.3197**	**0.1934**	**3.6000e-004**	**0.0370**	**0.0159**	**0.0529**	**5.6000e-003**	**0.0148**	**0.0204**	**0.0000**	**30.9092**	**30.9092**	**8.2800e-003**	**0.0000**	**31.1162**

3.2 Demolition 2020 - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3400e-003	0.0472	7.3200e-003	1.4000e-004	2.7900e-003	1.6000e-004	2.9600e-003	7.7000e-004	1.6000e-004	9.3000e-004	0.0000	12.9382	12.9382	5.4000e-004	0.0000	12.9518
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7000e-004	4.1000e-004	3.5200e-003	1.0000e-005	7.8000e-004	1.0000e-005	7.9000e-004	2.1000e-004	1.0000e-005	2.1000e-004	0.0000	0.6911	0.6911	3.0000e-005	0.0000	0.6918
Total	**1.8100e-003**	**0.0476**	**0.0108**	**1.5000e-004**	**3.5700e-003**	**1.7000e-004**	**3.7500e-003**	**9.8000e-004**	**1.7000e-004**	**1.1400e-003**	**0.0000**	**13.6293**	**13.6293**	**5.7000e-004**	**0.0000**	**13.6436**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0370	0.0000	0.0370	5.6000e-003	0.0000	5.6000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0326	0.3197	0.1934	3.6000e-004		0.0159	0.0159		0.0148	0.0148	0.0000	30.9091	30.9091	8.2800e-003	0.0000	31.1162
Total	**0.0326**	**0.3197**	**0.1934**	**3.6000e-004**	**0.0370**	**0.0159**	**0.0529**	**5.6000e-003**	**0.0148**	**0.0204**	**0.0000**	**30.9091**	**30.9091**	**8.2800e-003**	**0.0000**	**31.1162**

3.2 Demolition 2020 - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3400e-003	0.0472	7.3200e-003	1.4000e-004	2.7900e-003	1.6000e-004	2.9600e-003	7.7000e-004	1.6000e-004	9.3000e-004	0.0000	12.9382	12.9382	5.4000e-004	0.0000	12.9518
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7000e-004	4.1000e-004	3.5200e-003	1.0000e-005	7.8000e-004	1.0000e-005	7.9000e-004	2.1000e-004	1.0000e-005	2.1000e-004	0.0000	0.6911	0.6911	3.0000e-005	0.0000	0.6918
Total	**1.8100e-003**	**0.0476**	**0.0108**	**1.5000e-004**	**3.5700e-003**	**1.7000e-004**	**3.7500e-003**	**9.8000e-004**	**1.7000e-004**	**1.1400e-003**	**0.0000**	**13.6293**	**13.6293**	**5.7000e-004**	**0.0000**	**13.6436**

3.3 Excavation 2020 - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.6000e-004	0.0000	4.6000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0990	0.9634	0.8137	2.1200e-003		0.0374	0.0374		0.0346	0.0346	0.0000	183.3935	183.3935	0.0573	0.0000	184.8269
Total	**0.0990**	**0.9634**	**0.8137**	**2.1200e-003**	**4.6000e-004**	**0.0374**	**0.0379**	**7.0000e-005**	**0.0346**	**0.0347**	**0.0000**	**183.3935**	**183.3935**	**0.0573**	**0.0000**	**184.8269**

3.3 Excavation 2020 - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.1200e-003	0.1457	0.0226	4.2000e-004	8.6200e-003	5.1000e-004	9.1200e-003	2.3700e-003	4.8000e-004	2.8600e-003	0.0000	39.9026	39.9026	1.6700e-003	0.0000	39.9444
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9100e-003	2.5400e-003	0.0220	5.0000e-005	4.8900e-003	4.0000e-005	4.9200e-003	1.3000e-003	3.0000e-005	1.3300e-003	0.0000	4.3194	4.3194	1.7000e-004	0.0000	4.3236
Total	**7.0300e-003**	**0.1482**	**0.0446**	**4.7000e-004**	**0.0135**	**5.5000e-004**	**0.0140**	**3.6700e-003**	**5.1000e-004**	**4.1900e-003**	**0.0000**	**44.2220**	**44.2220**	**1.8400e-003**	**0.0000**	**44.2680**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.6000e-004	0.0000	4.6000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0990	0.9634	0.8137	2.1200e-003		0.0374	0.0374		0.0346	0.0346	0.0000	183.3933	183.3933	0.0573	0.0000	184.8267
Total	**0.0990**	**0.9634**	**0.8137**	**2.1200e-003**	**4.6000e-004**	**0.0374**	**0.0379**	**7.0000e-005**	**0.0346**	**0.0347**	**0.0000**	**183.3933**	**183.3933**	**0.0573**	**0.0000**	**184.8267**

3.3 Excavation 2020 - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.1200e-003	0.1457	0.0226	4.2000e-004	8.6200e-003	5.1000e-004	9.1200e-003	2.3700e-003	4.8000e-004	2.8600e-003	0.0000	39.9026	39.9026	1.6700e-003	0.0000	39.9444
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9100e-003	2.5400e-003	0.0220	5.0000e-005	4.8900e-003	4.0000e-005	4.9200e-003	1.3000e-003	3.0000e-005	1.3300e-003	0.0000	4.3194	4.3194	1.7000e-004	0.0000	4.3236
Total	**7.0300e-003**	**0.1482**	**0.0446**	**4.7000e-004**	**0.0135**	**5.5000e-004**	**0.0140**	**3.6700e-003**	**5.1000e-004**	**4.1900e-003**	**0.0000**	**44.2220**	**44.2220**	**1.8400e-003**	**0.0000**	**44.2680**

3.4 Paving 2020 - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0405	0.3988	0.4380	6.8000e-004		0.0213	0.0213		0.0196	0.0196	0.0000	59.0667	59.0667	0.0185	0.0000	59.5283
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0405**	**0.3988**	**0.4380**	**6.8000e-004**		**0.0213**	**0.0213**		**0.0196**	**0.0196**	**0.0000**	**59.0667**	**59.0667**	**0.0185**	**0.0000**	**59.5283**

3.4 Paving 2020 - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5100e-003	1.3200e-003	0.0115	2.0000e-005	2.5400e-003	2.0000e-005	2.5600e-003	6.8000e-004	2.0000e-005	6.9000e-004	0.0000	2.2461	2.2461	9.0000e-005	0.0000	2.2483
Total	**1.5100e-003**	**1.3200e-003**	**0.0115**	**2.0000e-005**	**2.5400e-003**	**2.0000e-005**	**2.5600e-003**	**6.8000e-004**	**2.0000e-005**	**6.9000e-004**	**0.0000**	**2.2461**	**2.2461**	**9.0000e-005**	**0.0000**	**2.2483**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0405	0.3988	0.4380	6.8000e-004		0.0213	0.0213		0.0196	0.0196	0.0000	59.0666	59.0666	0.0185	0.0000	59.5282
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0405**	**0.3988**	**0.4380**	**6.8000e-004**		**0.0213**	**0.0213**		**0.0196**	**0.0196**	**0.0000**	**59.0666**	**59.0666**	**0.0185**	**0.0000**	**59.5282**

3.4 Paving 2020 - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5100e-003	1.3200e-003	0.0115	2.0000e-005	2.5400e-003	2.0000e-005	2.5600e-003	6.8000e-004	2.0000e-005	6.9000e-004	0.0000	2.2461	2.2461	9.0000e-005	0.0000	2.2483
Total	**1.5100e-003**	**1.3200e-003**	**0.0115**	**2.0000e-005**	**2.5400e-003**	**2.0000e-005**	**2.5600e-003**	**6.8000e-004**	**2.0000e-005**	**6.9000e-004**	**0.0000**	**2.2461**	**2.2461**	**9.0000e-005**	**0.0000**	**2.2483**

3.5 Demolition 2021 - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0370	0.0000	0.0370	5.6000e-003	0.0000	5.6000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0312	0.3047	0.1915	3.6000e-004		0.0149	0.0149		0.0139	0.0139	0.0000	30.9107	30.9107	8.2500e-003	0.0000	31.1171
Total	**0.0312**	**0.3047**	**0.1915**	**3.6000e-004**	**0.0370**	**0.0149**	**0.0519**	**5.6000e-003**	**0.0139**	**0.0195**	**0.0000**	**30.9107**	**30.9107**	**8.2500e-003**	**0.0000**	**31.1171**

3.5 Demolition 2021 - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.2600e-003	0.0435	6.9900e-003	1.3000e-004	2.7900e-003	1.4000e-004	2.9400e-003	7.7000e-004	1.4000e-004	9.1000e-004	0.0000	12.8009	12.8009	5.3000e-004	0.0000	12.8141
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.4000e-004	3.6000e-004	3.2000e-003	1.0000e-005	7.8000e-004	1.0000e-005	7.9000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.6695	0.6695	2.0000e-005	0.0000	0.6701
Total	**1.7000e-003**	**0.0438**	**0.0102**	**1.4000e-004**	**3.5700e-003**	**1.5000e-004**	**3.7300e-003**	**9.8000e-004**	**1.4000e-004**	**1.1200e-003**	**0.0000**	**13.4704**	**13.4704**	**5.5000e-004**	**0.0000**	**13.4842**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0370	0.0000	0.0370	5.6000e-003	0.0000	5.6000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0312	0.3047	0.1915	3.6000e-004		0.0149	0.0149		0.0139	0.0139	0.0000	30.9107	30.9107	8.2500e-003	0.0000	31.1170
Total	**0.0312**	**0.3047**	**0.1915**	**3.6000e-004**	**0.0370**	**0.0149**	**0.0519**	**5.6000e-003**	**0.0139**	**0.0195**	**0.0000**	**30.9107**	**30.9107**	**8.2500e-003**	**0.0000**	**31.1170**

3.5 Demolition 2021 - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.2600e-003	0.0435	6.9900e-003	1.3000e-004	2.7900e-003	1.4000e-004	2.9400e-003	7.7000e-004	1.4000e-004	9.1000e-004	0.0000	12.8009	12.8009	5.3000e-004	0.0000	12.8141
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.4000e-004	3.6000e-004	3.2000e-003	1.0000e-005	7.8000e-004	1.0000e-005	7.9000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.6695	0.6695	2.0000e-005	0.0000	0.6701
Total	**1.7000e-003**	**0.0438**	**0.0102**	**1.4000e-004**	**3.5700e-003**	**1.5000e-004**	**3.7300e-003**	**9.8000e-004**	**1.4000e-004**	**1.1200e-003**	**0.0000**	**13.4704**	**13.4704**	**5.5000e-004**	**0.0000**	**13.4842**

3.6 Excavation 2021 - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.6000e-004	0.0000	4.6000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0924	0.8374	0.8010	2.1200e-003		0.0330	0.0330		0.0306	0.0306	0.0000	183.5081	183.5081	0.0574	0.0000	184.9425
Total	**0.0924**	**0.8374**	**0.8010**	**2.1200e-003**	**4.6000e-004**	**0.0330**	**0.0334**	**7.0000e-005**	**0.0306**	**0.0306**	**0.0000**	**183.5081**	**183.5081**	**0.0574**	**0.0000**	**184.9425**

3.6 Excavation 2021 - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.8800e-003	0.1340	0.0216	4.1000e-004	8.6200e-003	4.4000e-004	9.0600e-003	2.3700e-003	4.2000e-004	2.8000e-003	0.0000	39.4789	39.4789	1.6300e-003	0.0000	39.5198
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.7200e-003	2.2800e-003	0.0200	5.0000e-005	4.8900e-003	3.0000e-005	4.9200e-003	1.3000e-003	3.0000e-005	1.3300e-003	0.0000	4.1845	4.1845	1.5000e-004	0.0000	4.1882
Total	**6.6000e-003**	**0.1363**	**0.0416**	**4.6000e-004**	**0.0135**	**4.7000e-004**	**0.0140**	**3.6700e-003**	**4.5000e-004**	**4.1300e-003**	**0.0000**	**43.6634**	**43.6634**	**1.7800e-003**	**0.0000**	**43.7080**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.6000e-004	0.0000	4.6000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0924	0.8374	0.8010	2.1200e-003		0.0330	0.0330		0.0306	0.0306	0.0000	183.5079	183.5079	0.0574	0.0000	184.9423
Total	**0.0924**	**0.8374**	**0.8010**	**2.1200e-003**	**4.6000e-004**	**0.0330**	**0.0334**	**7.0000e-005**	**0.0306**	**0.0306**	**0.0000**	**183.5079**	**183.5079**	**0.0574**	**0.0000**	**184.9423**

3.6 Excavation 2021 - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.8800e-003	0.1340	0.0216	4.1000e-004	8.6200e-003	4.4000e-004	9.0600e-003	2.3700e-003	4.2000e-004	2.8000e-003	0.0000	39.4789	39.4789	1.6300e-003	0.0000	39.5198
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.7200e-003	2.2800e-003	0.0200	5.0000e-005	4.8900e-003	3.0000e-005	4.9200e-003	1.3000e-003	3.0000e-005	1.3300e-003	0.0000	4.1845	4.1845	1.5000e-004	0.0000	4.1882
Total	**6.6000e-003**	**0.1363**	**0.0416**	**4.6000e-004**	**0.0135**	**4.7000e-004**	**0.0140**	**3.6700e-003**	**4.5000e-004**	**4.1300e-003**	**0.0000**	**43.6634**	**43.6634**	**1.7800e-003**	**0.0000**	**43.7080**

3.7 Paving 2021 - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0377	0.3649	0.4375	6.8000e-004		0.0190	0.0190		0.0175	0.0175	0.0000	59.0650	59.0650	0.0185	0.0000	59.5266
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0377**	**0.3649**	**0.4375**	**6.8000e-004**		**0.0190**	**0.0190**		**0.0175**	**0.0175**	**0.0000**	**59.0650**	**59.0650**	**0.0185**	**0.0000**	**59.5266**

3.7 Paving 2021 - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4200e-003	1.1800e-003	0.0104	2.0000e-005	2.5400e-003	2.0000e-005	2.5600e-003	6.8000e-004	2.0000e-005	6.9000e-004	0.0000	2.1759	2.1759	8.0000e-005	0.0000	2.1779
Total	**1.4200e-003**	**1.1800e-003**	**0.0104**	**2.0000e-005**	**2.5400e-003**	**2.0000e-005**	**2.5600e-003**	**6.8000e-004**	**2.0000e-005**	**6.9000e-004**	**0.0000**	**2.1759**	**2.1759**	**8.0000e-005**	**0.0000**	**2.1779**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0377	0.3649	0.4375	6.8000e-004		0.0190	0.0190		0.0175	0.0175	0.0000	59.0650	59.0650	0.0185	0.0000	59.5266
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0377**	**0.3649**	**0.4375**	**6.8000e-004**		**0.0190**	**0.0190**		**0.0175**	**0.0175**	**0.0000**	**59.0650**	**59.0650**	**0.0185**	**0.0000**	**59.5266**

3.7 Paving 2021 - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4200e-003	1.1800e-003	0.0104	2.0000e-005	2.5400e-003	2.0000e-005	2.5600e-003	6.8000e-004	2.0000e-005	6.9000e-004	0.0000	2.1759	2.1759	8.0000e-005	0.0000	2.1779
Total	**1.4200e-003**	**1.1800e-003**	**0.0104**	**2.0000e-005**	**2.5400e-003**	**2.0000e-005**	**2.5600e-003**	**6.8000e-004**	**2.0000e-005**	**6.9000e-004**	**0.0000**	**2.1759**	**2.1759**	**8.0000e-005**	**0.0000**	**2.1779**

3.8 Demolition 2022 - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0370	0.0000	0.0370	5.6000e-003	0.0000	5.6000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0263	0.2513	0.1819	3.6000e-004		0.0120	0.0120		0.0112	0.0112	0.0000	30.9017	30.9017	8.2300e-003	0.0000	31.1076
Total	**0.0263**	**0.2513**	**0.1819**	**3.6000e-004**	**0.0370**	**0.0120**	**0.0490**	**5.6000e-003**	**0.0112**	**0.0168**	**0.0000**	**30.9017**	**30.9017**	**8.2300e-003**	**0.0000**	**31.1076**

3.8 Demolition 2022 - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.1800e-003	0.0398	6.6800e-003	1.3000e-004	2.7900e-003	1.2000e-004	2.9200e-003	7.7000e-004	1.2000e-004	8.9000e-004	0.0000	12.6603	12.6603	5.2000e-004	0.0000	12.6732
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.1000e-004	3.3000e-004	2.9300e-003	1.0000e-005	7.8000e-004	1.0000e-005	7.9000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.6475	0.6475	2.0000e-005	0.0000	0.6480
Total	**1.5900e-003**	**0.0402**	**9.6100e-003**	**1.4000e-004**	**3.5700e-003**	**1.3000e-004**	**3.7100e-003**	**9.8000e-004**	**1.2000e-004**	**1.1000e-003**	**0.0000**	**13.3078**	**13.3078**	**5.4000e-004**	**0.0000**	**13.3212**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0370	0.0000	0.0370	5.6000e-003	0.0000	5.6000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0263	0.2513	0.1819	3.6000e-004		0.0120	0.0120		0.0112	0.0112	0.0000	30.9017	30.9017	8.2300e-003	0.0000	31.1075
Total	**0.0263**	**0.2513**	**0.1819**	**3.6000e-004**	**0.0370**	**0.0120**	**0.0490**	**5.6000e-003**	**0.0112**	**0.0168**	**0.0000**	**30.9017**	**30.9017**	**8.2300e-003**	**0.0000**	**31.1075**

3.8 Demolition 2022 - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.1800e-003	0.0398	6.6800e-003	1.3000e-004	2.7900e-003	1.2000e-004	2.9200e-003	7.7000e-004	1.2000e-004	8.9000e-004	0.0000	12.6603	12.6603	5.2000e-004	0.0000	12.6732
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.1000e-004	3.3000e-004	2.9300e-003	1.0000e-005	7.8000e-004	1.0000e-005	7.9000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.6475	0.6475	2.0000e-005	0.0000	0.6480
Total	**1.5900e-003**	**0.0402**	**9.6100e-003**	**1.4000e-004**	**3.5700e-003**	**1.3000e-004**	**3.7100e-003**	**9.8000e-004**	**1.2000e-004**	**1.1000e-003**	**0.0000**	**13.3078**	**13.3078**	**5.4000e-004**	**0.0000**	**13.3212**

3.9 Excavation 2022 - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.6000e-004	0.0000	4.6000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0823	0.6709	0.7817	2.1200e-003		0.0267	0.0267		0.0248	0.0248	0.0000	183.5886	183.5886	0.0574	0.0000	185.0237
Total	**0.0823**	**0.6709**	**0.7817**	**2.1200e-003**	**4.6000e-004**	**0.0267**	**0.0271**	**7.0000e-005**	**0.0248**	**0.0248**	**0.0000**	**183.5886**	**183.5886**	**0.0574**	**0.0000**	**185.0237**

3.9 Excavation 2022 - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.6400e-003	0.1229	0.0206	4.1000e-004	8.6200e-003	3.8000e-004	8.9900e-003	2.3700e-003	3.6000e-004	2.7300e-003	0.0000	39.0454	39.0454	1.5900e-003	0.0000	39.0851
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5700e-003	2.0500e-003	0.0183	4.0000e-005	4.8900e-003	3.0000e-005	4.9200e-003	1.3000e-003	3.0000e-005	1.3300e-003	0.0000	4.0467	4.0467	1.3000e-004	0.0000	4.0501
Total	**6.2100e-003**	**0.1249**	**0.0389**	**4.5000e-004**	**0.0135**	**4.1000e-004**	**0.0139**	**3.6700e-003**	**3.9000e-004**	**4.0600e-003**	**0.0000**	**43.0922**	**43.0922**	**1.7200e-003**	**0.0000**	**43.1352**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.6000e-004	0.0000	4.6000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0823	0.6709	0.7817	2.1200e-003		0.0267	0.0267		0.0248	0.0248	0.0000	183.5884	183.5884	0.0574	0.0000	185.0235
Total	**0.0823**	**0.6709**	**0.7817**	**2.1200e-003**	**4.6000e-004**	**0.0267**	**0.0271**	**7.0000e-005**	**0.0248**	**0.0248**	**0.0000**	**183.5884**	**183.5884**	**0.0574**	**0.0000**	**185.0235**

3.9 Excavation 2022 - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.6400e-003	0.1229	0.0206	4.1000e-004	8.6200e-003	3.8000e-004	8.9900e-003	2.3700e-003	3.6000e-004	2.7300e-003	0.0000	39.0454	39.0454	1.5900e-003	0.0000	39.0851
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5700e-003	2.0500e-003	0.0183	4.0000e-005	4.8900e-003	3.0000e-005	4.9200e-003	1.3000e-003	3.0000e-005	1.3300e-003	0.0000	4.0467	4.0467	1.3000e-004	0.0000	4.0501
Total	**6.2100e-003**	**0.1249**	**0.0389**	**4.5000e-004**	**0.0135**	**4.1000e-004**	**0.0139**	**3.6700e-003**	**3.9000e-004**	**4.0600e-003**	**0.0000**	**43.0922**	**43.0922**	**1.7200e-003**	**0.0000**	**43.1352**

3.10 Paving 2022 - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0336	0.3164	0.4350	6.8000e-004		0.0159	0.0159		0.0147	0.0147	0.0000	59.0764	59.0764	0.0185	0.0000	59.5381
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0336**	**0.3164**	**0.4350**	**6.8000e-004**		**0.0159**	**0.0159**		**0.0147**	**0.0147**	**0.0000**	**59.0764**	**59.0764**	**0.0185**	**0.0000**	**59.5381**

3.10 Paving 2022 - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3300e-003	1.0700e-003	9.5200e-003	2.0000e-005	2.5400e-003	2.0000e-005	2.5600e-003	6.8000e-004	2.0000e-005	6.9000e-004	0.0000	2.1043	2.1043	7.0000e-005	0.0000	2.1060
Total	**1.3300e-003**	**1.0700e-003**	**9.5200e-003**	**2.0000e-005**	**2.5400e-003**	**2.0000e-005**	**2.5600e-003**	**6.8000e-004**	**2.0000e-005**	**6.9000e-004**	**0.0000**	**2.1043**	**2.1043**	**7.0000e-005**	**0.0000**	**2.1060**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0336	0.3164	0.4350	6.8000e-004		0.0159	0.0159		0.0147	0.0147	0.0000	59.0764	59.0764	0.0185	0.0000	59.5381
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0336**	**0.3164**	**0.4350**	**6.8000e-004**		**0.0159**	**0.0159**		**0.0147**	**0.0147**	**0.0000**	**59.0764**	**59.0764**	**0.0185**	**0.0000**	**59.5381**

3.10 Paving 2022 - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3300e-003	1.0700e-003	9.5200e-003	2.0000e-005	2.5400e-003	2.0000e-005	2.5600e-003	6.8000e-004	2.0000e-005	6.9000e-004	0.0000	2.1043	2.1043	7.0000e-005	0.0000	2.1060
Total	**1.3300e-003**	**1.0700e-003**	**9.5200e-003**	**2.0000e-005**	**2.5400e-003**	**2.0000e-005**	**2.5600e-003**	**6.8000e-004**	**2.0000e-005**	**6.9000e-004**	**0.0000**	**2.1043**	**2.1043**	**7.0000e-005**	**0.0000**	**2.1060**

3.11 Demolition 2023 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0370	0.0000	0.0370	5.6000e-003	0.0000	5.6000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0227	0.2112	0.1724	3.6000e-004		9.6700e-003	9.6700e-003		9.0400e-003	9.0400e-003	0.0000	30.9028	30.9028	8.2000e-003	0.0000	31.1079
Total	**0.0227**	**0.2112**	**0.1724**	**3.6000e-004**	**0.0370**	**9.6700e-003**	**0.0467**	**5.6000e-003**	**9.0400e-003**	**0.0146**	**0.0000**	**30.9028**	**30.9028**	**8.2000e-003**	**0.0000**	**31.1079**

3.11 Demolition 2023 - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.9000e-004	0.0302	5.7800e-003	1.3000e-004	2.7900e-003	6.0000e-005	2.8600e-003	7.7000e-004	6.0000e-005	8.3000e-004	0.0000	12.3621	12.3621	3.9000e-004	0.0000	12.3719
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-004	3.0000e-004	2.6800e-003	1.0000e-005	7.8000e-004	1.0000e-005	7.9000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.6250	0.6250	2.0000e-005	0.0000	0.6255
Total	**1.2800e-003**	**0.0305**	**8.4600e-003**	**1.4000e-004**	**3.5700e-003**	**7.0000e-005**	**3.6500e-003**	**9.8000e-004**	**6.0000e-005**	**1.0400e-003**	**0.0000**	**12.9871**	**12.9871**	**4.1000e-004**	**0.0000**	**12.9974**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0370	0.0000	0.0370	5.6000e-003	0.0000	5.6000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0227	0.2112	0.1724	3.6000e-004		9.6700e-003	9.6700e-003		9.0400e-003	9.0400e-003	0.0000	30.9027	30.9027	8.2000e-003	0.0000	31.1078
Total	**0.0227**	**0.2112**	**0.1724**	**3.6000e-004**	**0.0370**	**9.6700e-003**	**0.0467**	**5.6000e-003**	**9.0400e-003**	**0.0146**	**0.0000**	**30.9027**	**30.9027**	**8.2000e-003**	**0.0000**	**31.1078**

3.11 Demolition 2023 - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.9000e-004	0.0302	5.7800e-003	1.3000e-004	2.7900e-003	6.0000e-005	2.8600e-003	7.7000e-004	6.0000e-005	8.3000e-004	0.0000	12.3621	12.3621	3.9000e-004	0.0000	12.3719
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9000e-004	3.0000e-004	2.6800e-003	1.0000e-005	7.8000e-004	1.0000e-005	7.9000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.6250	0.6250	2.0000e-005	0.0000	0.6255
Total	**1.2800e-003**	**0.0305**	**8.4600e-003**	**1.4000e-004**	**3.5700e-003**	**7.0000e-005**	**3.6500e-003**	**9.8000e-004**	**6.0000e-005**	**1.0400e-003**	**0.0000**	**12.9871**	**12.9871**	**4.1000e-004**	**0.0000**	**12.9974**

3.12 Excavation 2023 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.6000e-004	0.0000	4.6000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0786	0.6021	0.7772	2.1200e-003		0.0240	0.0240		0.0223	0.0223	0.0000	183.7415	183.7415	0.0575	0.0000	185.1778
Total	**0.0786**	**0.6021**	**0.7772**	**2.1200e-003**	**4.6000e-004**	**0.0240**	**0.0244**	**7.0000e-005**	**0.0223**	**0.0224**	**0.0000**	**183.7415**	**183.7415**	**0.0575**	**0.0000**	**185.1778**

3.12 Excavation 2023 - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.7300e-003	0.0930	0.0178	4.0000e-004	8.6200e-003	1.9000e-004	8.8100e-003	2.3700e-003	1.8000e-004	2.5600e-003	0.0000	38.1257	38.1257	1.2100e-003	0.0000	38.1560
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.4200e-003	1.8500e-003	0.0167	4.0000e-005	4.8900e-003	3.0000e-005	4.9200e-003	1.3000e-003	3.0000e-005	1.3300e-003	0.0000	3.9062	3.9062	1.2000e-004	0.0000	3.9092
Total	**5.1500e-003**	**0.0949**	**0.0346**	**4.4000e-004**	**0.0135**	**2.2000e-004**	**0.0137**	**3.6700e-003**	**2.1000e-004**	**3.8900e-003**	**0.0000**	**42.0319**	**42.0319**	**1.3300e-003**	**0.0000**	**42.0652**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.6000e-004	0.0000	4.6000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0786	0.6021	0.7772	2.1200e-003		0.0240	0.0240		0.0223	0.0223	0.0000	183.7413	183.7413	0.0575	0.0000	185.1775
Total	**0.0786**	**0.6021**	**0.7772**	**2.1200e-003**	**4.6000e-004**	**0.0240**	**0.0244**	**7.0000e-005**	**0.0223**	**0.0224**	**0.0000**	**183.7413**	**183.7413**	**0.0575**	**0.0000**	**185.1775**

3.12 Excavation 2023 - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.7300e-003	0.0930	0.0178	4.0000e-004	8.6200e-003	1.9000e-004	8.8100e-003	2.3700e-003	1.8000e-004	2.5600e-003	0.0000	38.1257	38.1257	1.2100e-003	0.0000	38.1560
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.4200e-003	1.8500e-003	0.0167	4.0000e-005	4.8900e-003	3.0000e-005	4.9200e-003	1.3000e-003	3.0000e-005	1.3300e-003	0.0000	3.9062	3.9062	1.2000e-004	0.0000	3.9092
Total	**5.1500e-003**	**0.0949**	**0.0346**	**4.4000e-004**	**0.0135**	**2.2000e-004**	**0.0137**	**3.6700e-003**	**2.1000e-004**	**3.8900e-003**	**0.0000**	**42.0319**	**42.0319**	**1.3300e-003**	**0.0000**	**42.0652**

3.13 Paving 2023 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0316	0.2892	0.4350	6.8000e-004		0.0141	0.0141		0.0131	0.0131	0.0000	59.0879	59.0879	0.0185	0.0000	59.5497
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0316**	**0.2892**	**0.4350**	**6.8000e-004**		**0.0141**	**0.0141**		**0.0131**	**0.0131**	**0.0000**	**59.0879**	**59.0879**	**0.0185**	**0.0000**	**59.5497**

3.13 Paving 2023 - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2600e-003	9.6000e-004	8.6900e-003	2.0000e-005	2.5400e-003	2.0000e-005	2.5600e-003	6.8000e-004	2.0000e-005	6.9000e-004	0.0000	2.0312	2.0312	6.0000e-005	0.0000	2.0328
Total	**1.2600e-003**	**9.6000e-004**	**8.6900e-003**	**2.0000e-005**	**2.5400e-003**	**2.0000e-005**	**2.5600e-003**	**6.8000e-004**	**2.0000e-005**	**6.9000e-004**	**0.0000**	**2.0312**	**2.0312**	**6.0000e-005**	**0.0000**	**2.0328**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0316	0.2892	0.4350	6.8000e-004		0.0141	0.0141		0.0131	0.0131	0.0000	59.0879	59.0879	0.0185	0.0000	59.5497
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0316**	**0.2892**	**0.4350**	**6.8000e-004**		**0.0141**	**0.0141**		**0.0131**	**0.0131**	**0.0000**	**59.0879**	**59.0879**	**0.0185**	**0.0000**	**59.5497**

3.13 Paving 2023 - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2600e-003	9.6000e-004	8.6900e-003	2.0000e-005	2.5400e-003	2.0000e-005	2.5600e-003	6.8000e-004	2.0000e-005	6.9000e-004	0.0000	2.0312	2.0312	6.0000e-005	0.0000	2.0328
Total	**1.2600e-003**	**9.6000e-004**	**8.6900e-003**	**2.0000e-005**	**2.5400e-003**	**2.0000e-005**	**2.5600e-003**	**6.8000e-004**	**2.0000e-005**	**6.9000e-004**	**0.0000**	**2.0312**	**2.0312**	**6.0000e-005**	**0.0000**	**2.0328**

3.14 Demolition 2024 - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0370	0.0000	0.0370	5.6000e-003	0.0000	5.6000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0225	0.2066	0.1730	3.6000e-004		9.3600e-003	9.3600e-003		8.7400e-003	8.7400e-003	0.0000	30.9053	30.9053	8.2000e-003	0.0000	31.1102
Total	**0.0225**	**0.2066**	**0.1730**	**3.6000e-004**	**0.0370**	**9.3600e-003**	**0.0464**	**5.6000e-003**	**8.7400e-003**	**0.0143**	**0.0000**	**30.9053**	**30.9053**	**8.2000e-003**	**0.0000**	**31.1102**

3.14 Demolition 2024 - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.7000e-004	0.0292	5.6700e-003	1.3000e-004	2.7900e-003	6.0000e-005	2.8500e-003	7.7000e-004	6.0000e-005	8.3000e-004	0.0000	12.2761	12.2761	3.9000e-004	0.0000	12.2859
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	2.7000e-004	2.4600e-003	1.0000e-005	7.8000e-004	0.0000	7.9000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.6023	0.6023	2.0000e-005	0.0000	0.6028
Total	**1.2300e-003**	**0.0294**	**8.1300e-003**	**1.4000e-004**	**3.5700e-003**	**6.0000e-005**	**3.6400e-003**	**9.8000e-004**	**6.0000e-005**	**1.0400e-003**	**0.0000**	**12.8785**	**12.8785**	**4.1000e-004**	**0.0000**	**12.8887**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0370	0.0000	0.0370	5.6000e-003	0.0000	5.6000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0225	0.2066	0.1730	3.6000e-004		9.3600e-003	9.3600e-003		8.7400e-003	8.7400e-003	0.0000	30.9053	30.9053	8.2000e-003	0.0000	31.1102
Total	**0.0225**	**0.2066**	**0.1730**	**3.6000e-004**	**0.0370**	**9.3600e-003**	**0.0464**	**5.6000e-003**	**8.7400e-003**	**0.0143**	**0.0000**	**30.9053**	**30.9053**	**8.2000e-003**	**0.0000**	**31.1102**

3.14 Demolition 2024 - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.7000e-004	0.0292	5.6700e-003	1.3000e-004	2.7900e-003	6.0000e-005	2.8500e-003	7.7000e-004	6.0000e-005	8.3000e-004	0.0000	12.2761	12.2761	3.9000e-004	0.0000	12.2859
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	2.7000e-004	2.4600e-003	1.0000e-005	7.8000e-004	0.0000	7.9000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.6023	0.6023	2.0000e-005	0.0000	0.6028
Total	**1.2300e-003**	**0.0294**	**8.1300e-003**	**1.4000e-004**	**3.5700e-003**	**6.0000e-005**	**3.6400e-003**	**9.8000e-004**	**6.0000e-005**	**1.0400e-003**	**0.0000**	**12.8785**	**12.8785**	**4.1000e-004**	**0.0000**	**12.8887**

3.15 Excavation 2024 - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.6000e-004	0.0000	4.6000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0769	0.5613	0.7761	2.1300e-003		0.0224	0.0224		0.0208	0.0208	0.0000	183.8830	183.8830	0.0575	0.0000	185.3205
Total	**0.0769**	**0.5613**	**0.7761**	**2.1300e-003**	**4.6000e-004**	**0.0224**	**0.0228**	**7.0000e-005**	**0.0208**	**0.0209**	**0.0000**	**183.8830**	**183.8830**	**0.0575**	**0.0000**	**185.3205**

3.15 Excavation 2024 - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.6700e-003	0.0900	0.0175	4.0000e-004	8.6100e-003	1.8000e-004	8.8000e-003	2.3700e-003	1.7000e-004	2.5500e-003	0.0000	37.8606	37.8606	1.2100e-003	0.0000	37.8908
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2800e-003	1.6700e-003	0.0154	4.0000e-005	4.8900e-003	3.0000e-005	4.9200e-003	1.3000e-003	3.0000e-005	1.3300e-003	0.0000	3.7646	3.7646	1.1000e-004	0.0000	3.7673
Total	**4.9500e-003**	**0.0916**	**0.0328**	**4.4000e-004**	**0.0135**	**2.1000e-004**	**0.0137**	**3.6700e-003**	**2.0000e-004**	**3.8800e-003**	**0.0000**	**41.6252**	**41.6252**	**1.3200e-003**	**0.0000**	**41.6581**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.6000e-004	0.0000	4.6000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0769	0.5613	0.7761	2.1300e-003		0.0224	0.0224		0.0208	0.0208	0.0000	183.8828	183.8828	0.0575	0.0000	185.3202
Total	**0.0769**	**0.5613**	**0.7761**	**2.1300e-003**	**4.6000e-004**	**0.0224**	**0.0228**	**7.0000e-005**	**0.0208**	**0.0209**	**0.0000**	**183.8828**	**183.8828**	**0.0575**	**0.0000**	**185.3202**

3.15 Excavation 2024 - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.6700e-003	0.0900	0.0175	4.0000e-004	8.6100e-003	1.8000e-004	8.8000e-003	2.3700e-003	1.7000e-004	2.5500e-003	0.0000	37.8606	37.8606	1.2100e-003	0.0000	37.8908
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2800e-003	1.6700e-003	0.0154	4.0000e-005	4.8900e-003	3.0000e-005	4.9200e-003	1.3000e-003	3.0000e-005	1.3300e-003	0.0000	3.7646	3.7646	1.1000e-004	0.0000	3.7673
Total	**4.9500e-003**	**0.0916**	**0.0328**	**4.4000e-004**	**0.0135**	**2.1000e-004**	**0.0137**	**3.6700e-003**	**2.0000e-004**	**3.8800e-003**	**0.0000**	**41.6252**	**41.6252**	**1.3200e-003**	**0.0000**	**41.6581**

3.16 Paving 2024 - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0303	0.2708	0.4360	6.9000e-004		0.0129	0.0129		0.0120	0.0120	0.0000	59.0977	59.0977	0.0185	0.0000	59.5596
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0303**	**0.2708**	**0.4360**	**6.9000e-004**		**0.0129**	**0.0129**		**0.0120**	**0.0120**	**0.0000**	**59.0977**	**59.0977**	**0.0185**	**0.0000**	**59.5596**

3.16 Paving 2024 - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1900e-003	8.7000e-004	7.9800e-003	2.0000e-005	2.5400e-003	2.0000e-005	2.5600e-003	6.8000e-004	1.0000e-005	6.9000e-004	0.0000	1.9576	1.9576	6.0000e-005	0.0000	1.9590
Total	**1.1900e-003**	**8.7000e-004**	**7.9800e-003**	**2.0000e-005**	**2.5400e-003**	**2.0000e-005**	**2.5600e-003**	**6.8000e-004**	**1.0000e-005**	**6.9000e-004**	**0.0000**	**1.9576**	**1.9576**	**6.0000e-005**	**0.0000**	**1.9590**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0303	0.2708	0.4360	6.9000e-004		0.0129	0.0129		0.0120	0.0120	0.0000	59.0976	59.0976	0.0185	0.0000	59.5595
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0303**	**0.2708**	**0.4360**	**6.9000e-004**		**0.0129**	**0.0129**		**0.0120**	**0.0120**	**0.0000**	**59.0976**	**59.0976**	**0.0185**	**0.0000**	**59.5595**

3.16 Paving 2024 - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1900e-003	8.7000e-004	7.9800e-003	2.0000e-005	2.5400e-003	2.0000e-005	2.5600e-003	6.8000e-004	1.0000e-005	6.9000e-004	0.0000	1.9576	1.9576	6.0000e-005	0.0000	1.9590
Total	**1.1900e-003**	**8.7000e-004**	**7.9800e-003**	**2.0000e-005**	**2.5400e-003**	**2.0000e-005**	**2.5600e-003**	**6.8000e-004**	**1.0000e-005**	**6.9000e-004**	**0.0000**	**1.9576**	**1.9576**	**6.0000e-005**	**0.0000**	**1.9590**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

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

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.462483	0.036636	0.240615	0.135193	0.026887	0.004981	0.014791	0.068771	0.001838	0.000757	0.005302	0.000576	0.001170

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

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

5.3 Energy by Land Use - Electricity

Mitigated

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

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0741	6.0000e-005	6.7700e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0132	0.0132	3.0000e-005	0.0000	0.0141
Unmitigated	0.0741	6.0000e-005	6.7700e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0132	0.0132	3.0000e-005	0.0000	0.0141

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0257					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0478					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	6.2000e-004	6.0000e-005	6.7700e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0132	0.0132	3.0000e-005	0.0000	0.0141
Total	**0.0741**	**6.0000e-005**	**6.7700e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0132**	**0.0132**	**3.0000e-005**	**0.0000**	**0.0141**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0257					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0478					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	6.2000e-004	6.0000e-005	6.7700e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0132	0.0132	3.0000e-005	0.0000	0.0141
Total	**0.0741**	**6.0000e-005**	**6.7700e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0132**	**0.0132**	**3.0000e-005**	**0.0000**	**0.0141**

7.0 Water Detail

7.1 Mitigation Measures Water

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

7.2 Water by Land Use

Unmitigated

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

7.2 Water by Land Use

Mitigated

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

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

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

8.2 Waste by Land Use

Unmitigated

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

Mitigated

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

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Proposed Project
Total Construction-Related Operational
Gasoline Usage

Action	Carbon Dioxide Equivalents (CO_2e) in Metric Tons	Conversion of Metric Tons to Kilograms	Construction Equipment Emission Factor[1]	Total Gallons of Fuel Consumed
Project Construction Year One	**336**	**336000**	**10.15**	**33,103**
Project Construction Year Two	**335**	**335000**	**10.15**	**33,005**
Project Construction Year Three	**336**	**336000**	**10.15**	**33,005**
Project Construction Year Four	**336**	**336000**	**10.15**	**32,808**
Project Construction Year Five	**336**	**336000**	**10.15**	**32,709**
	Per CalEEMod Output Files. See Appendix A	Per Climate Registry Equation 13e	Per Climate Registry Equation 13e	

Total Gallons Consumed During 5 Years of Project Construction: 164,630

Notes:

[1]Fuel used by all construction equipment, including vehicle hauling trucks, assumed to be diesel.

Sources:

Climate Registry. 2016. *General Reporting Protocol for the Voluntary Reporting Program version 2.1.* January 2016. http://www.theclimateregistry.org/wp-content/uploads/2014/11/General-Reporting-Protocol-Version-2.1.pdf

ECORP Consulting. 2019. E.George to Wildwood Backbone Extension Pipeline Project Emissions Assessment

APPENDIX B

Biological Resources Assessment

Biological Resources Assessment

E. George to Wildwood Lake Backbone Project

Nevada County, California

Prepared For:

Nevada Irrigation District

June 2019

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

ECORP Consulting, Inc. has assisted public and private land owners with environmental regulation compliance since 1987. We offer full service capability, from initial baseline environmental studies through environmental planning review, permitting negotiation, liaison to obtain legal agreements, mitigation design, and monitoring and compliance reporting.

Citation: ECORP Consulting, Inc. 2019. Biological Resources Assessment for the E. George to Lake Wildwood Backbone Project, Nevada County, California. June.

CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ATTACHMENTS

LIST OF ACRONYMS AND ABBREVIATIONS

BA	Biological assessment
BO	Biological opinion
BMPs	Best management practices
BRA	Biological resource assessment
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
CT	CESA- or NPPA-listed, Threatened
CWA	Clean Water Act
dbh	Diameter-at-breast-height
ESA	Endangered Species Act
FPT	Formally Proposed for FESA listing as Threatened
HCP	Habitat conservation plan
MBTA	Migratory Bird Treaty Act
MDBM	Mount Diablo Base and Meridian
MSL	Mean sea level
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service

LIST OF ACRONYMS AND ABBREVIATIONS

OHWM	Ordinary high water mark
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
SSC	Species of special concern
U.S.	United States
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Service
WBWG	Western Bat Working Group
WEAP	Worker Environmental Awareness Training
WTP	Water Treatment Plan

1.0 INTRODUCTION

At the request of the Nevada Irrigation District, ECORP Consulting, Inc. has conducted a biological resource assessment (BRA) for the proposed E. George to Lake Wildwood Backbone Project (Project) located in Nevada County, California. The purpose of the assessment was to collect information on the biological resources present within the Project, and to determine any potential biological constraints to Project activities.

1.1 Project Location

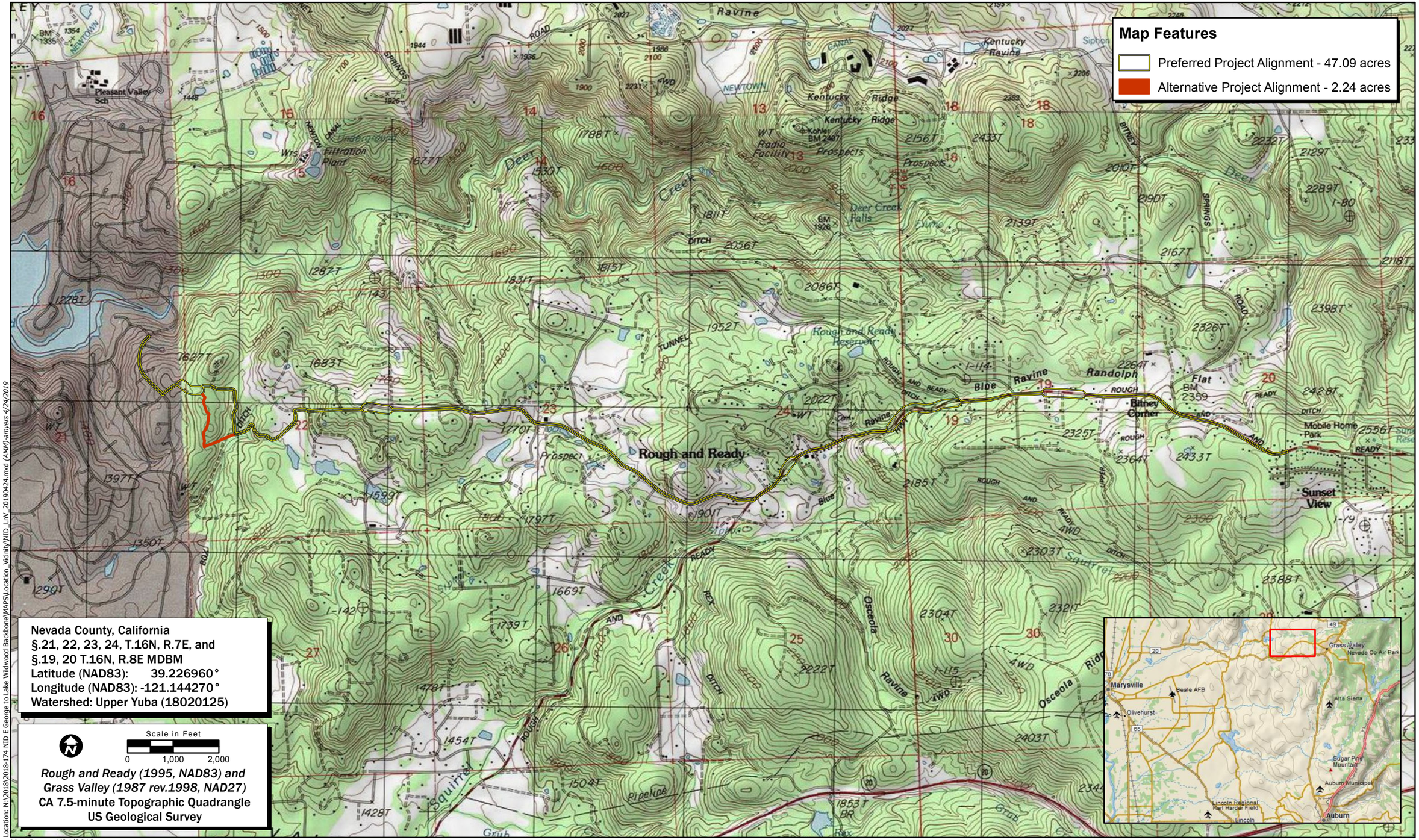
The ±49.33-acre Study Area is located in Nevada County, California. The Project would be constructed within the existing right-of-way of the following roadways: Rough and Ready Highway, Rough and Ready Road, Riffle Box Road, Empty Diggins Lane, Bosa Drive, Minnow Lane, and Lake Wildwood Drive. Two segments of the route are not within road rights-of-way: one at the west end of Riffle Box Road and one just east of Minnow Lane along a road easement (Figure 1. *Study Area Location and Vicinity*). There is a small section along Hilaire Road that is a potential alternative route for a portion of the water pipeline alignment along The Study Area that corresponds to a portion of sections 21, 22, 23, and 24 of Township 16 North, Range 7 East (Mount Diablo Base and Meridian, MDBM) within the "Rough and Ready, California" (U.S. Geological Survey [USGS] 1995) 7.5-minute quadrangle, and Sections 19 and 20 of Township 16 North, Range 8 East (MDBM) within the "Grass Valley, California" 7.5-minute quadrangle (USGS 1998). The approximate center of the Study Area is located at 39.226960° latitude and -121.144270° longitude within the Upper Yuba Watershed (Hydrologic Unit Code # 18020125, Natural Resources Conservation Service [NRCS], USGS, and U.S. Environmental Protection Agency [USEPA] 2019).

1.2 Project Description

The proposed Project entails constructing a new water transmission pipeline primarily within roadways to provide a connection between the Elizabeth George Water Treatment Plant (WTP) located on Banner Mountain and the Lake Wildwood WTP and distribution system. The Project would provide a second and/or alternate source of treated water in the event of a failure or raw water interruption at the Lake Wildwood WTP. The pipeline would bring treated water from the Elizabeth George WTP to the Lake Wildwood community and surrounding areas for both supplemental and emergency needs. This treated water pipeline will supply water for drinking, fire protection, and emergency supplies.

1.3 Biological Setting

The Study Area is located within unincorporated Nevada County, California. The topography of the Study Area is hilly, generally trending upslope from west to east, at elevations ranging from 1,320 to 2,510 feet above mean sea level (MSL). The Study Area is located in the Sierra Nevada Foothill Subregion of the Sierra Nevada floristic region of California (Baldwin et. al. 2012). The average winter low temperature in the vicinity of the Study Area is 33.1˚F and the average summer high temperature is 84.5˚F. Average annual precipitation is approximately 53.7 inches, which falls as rain (National Oceanic and Atmospheric Administration [NOAA] 2019).



Location: N:\2018\2018-174 NID E George to Lake Wildwood Backbone\MAPS\Location_VicinityNID_LnV_20190424.mxd (AMM) amyers 4/24/2019

Map Date: 4/24/2019

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Figure 1. Project Location and Vicinity

2018-174 NID E. George to Lake Wildwood Backbone

1.4 Purpose of this Biological Resources Assessment

The purpose of this BRA is to assess the potential for the occurrence of special-status plant and animal species or their habitat, and sensitive habitats such as wetlands, and the potential constraints associated with these resources on Project development within the Study Area.

For the purposes of this assessment, special-status species are defined as plants or animals that:

- are listed, proposed for listing, or candidates for future listing as threatened or endangered under the federal Endangered Species Act (ESA);
- are listed or candidates for future listing as threatened or endangered under the California ESA;
- meet the definitions of endangered or rare under Section 15380 of the California Environmental Quality Act (CEQA) Guidelines;
- are identified as a species of special concern (SSC) by the California Department of Fish and Wildlife (CDFW);
- are birds identified as birds of conservation concern by the U.S. Fish and Wildlife Service (USFWS);
- are plants considered by the California Native Plant Society (CNPS) to be "rare, threatened, or endangered in California" [California Rare Plant Rank (CRPR) 1, 2];
- are plants listed by CNPS as species about which more information is needed to determine their status (CRPR 3), and plants of limited distribution (CRPR 4);
- are plants listed as rare under the California Native Plant Protection Act (Fish and Game Code of California, Section 1900 et seq.); or
- are fully protected in California in accordance with the California Fish and Game Code, §§ 3511 (birds), 4700 (mammals), 5050 (amphibians and reptiles), and 5515 (fishes).

2.0 REGULATORY SETTING

2.1 Federal Regulations

2.1.1 Federal Endangered Species Act

The ESA protects plants and animals that are listed as endangered or threatened by USFWS and the National Marine Fisheries Service (NMFS). Section 9 of ESA prohibits the taking of listed wildlife, where take is defined as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct” (50 Code of Federal Regulations [CFR] 17.3). For plants, this statute governs removing, possessing, maliciously damaging, or destroying any listed plant on federal land and removing, cutting, digging up, damaging, or destroying any listed plant on non-federal land in knowing violation of state law (16 U.S. Code [USC] 1538). Under Section 7 of ESA, federal agencies are required to consult with USFWS if their actions, including permit approvals or funding, could adversely affect a listed (or proposed) species (including plants) or its critical habitat. Through consultation and the issuance of a biological

opinion (BO), the USFWS may issue an incidental take statement allowing take of the species that is incidental to an otherwise authorized activity provided the activity will not jeopardize the continued existence of the species. Section 10 of ESA provides for issuance of incidental take permits where no other federal actions are necessary provided a habitat conservation plan (HCP) is developed.

Section 7

Section 7 of ESA mandates that all federal agencies consult with USFWS and/or NMFS to ensure that federal agencies' actions do not jeopardize the continued existence of a listed species or adversely modify critical habitat for listed species. If direct and/or indirect effects will occur to critical habitat that appreciably diminish the value of critical habitat for both the survival and recovery of a species, the adverse modifications will require formal consultation with USFWS or NMFS. If adverse effects are likely, the applicant must conduct a biological assessment (BA) for the purpose of analyzing the potential effects of the project on listed species and critical habitat to establish and justify an "effect determination." The federal agency reviews the BA; if it concludes that the project may adversely affect a listed species or its habitat, it prepares a BO. The BO may recommend "reasonable and prudent alternatives" to the project to avoid jeopardizing or adversely modifying habitat.

Section 10

When no discretionary action is being taken by a federal agency but a project may result in the take of listed species, an incidental take permit under Section 10 of the federal ESA is necessary. The purpose of the incidental take permit is to authorize the take of federally listed species that may result from an otherwise lawful activity, not to authorize the activities themselves. In order to obtain an incidental take permit under Section 10, an application must be submitted that includes an HCP. In some instances, applicants, USFWS, and/or NMFS may determine that an HCP is necessary or prudent, even if a discretionary federal action will occur. The purpose of the HCP planning process associated with the permit application is to ensure that adequate minimization and mitigation for impacts to listed species and/or their habitat will occur.

2.1.1.3 Critical Habitat and Essential Habitat

Critical habitat is defined in Section 3 of ESA as:

1. the specific areas within the geographical area occupied by a species, at the time it is listed in accordance with ESA, on which are found those physical or biological features essential to the conservation of the species and that may require special management considerations or protection; and

2. specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

For inclusion in a Critical Habitat designation, habitat within the geographical area occupied by the species at the time it was listed must first have features that are essential to the conservation of the species. Critical habitat designations identify, to the extent known and using the best scientific data available, habitat areas that provide essential life cycle needs of the species (areas on which are found the

primary constituent elements). Primary constituent elements are the physical and biological features that are essential to the conservation of the species and that may require special management considerations or protection. These include but are not limited to the following:

- Space for individual and population growth and for normal behavior;
- Food, water, air, light, minerals, or other nutritional or physiological requirements;
- Cover or shelter;
- Sites for breeding, reproduction, or rearing (or development) of offspring; and
- Habitats that are protected from disturbance or are representative of the historic, geographical, and ecological distributions of a species.

Excluded essential habitat is defined as areas that were found to be essential habitat for the survival of a species and assumed to contain at least one of the primary constituent elements for the species but were excluded from the critical habitat designation. The USFWS has stated that any action within the excluded essential habitat that triggers a federal nexus will be required to undergo the Section 7(a)(1) process, and the species covered under the specific critical habitat designation would be afforded protection under Section 7(a)(2) of ESA.

2.1.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implements international treaties between the United States and other nations devised to protect migratory birds, any of their parts, eggs, and nests from activities such as hunting, pursuing, capturing, killing, selling, and shipping, unless expressly authorized in the regulations or by permit. As authorized by the MBTA, the USFWS issues permits to qualified applicants for the following types of activities: falconry, raptor propagation, scientific collecting, special purposes (rehabilitation, education, migratory game bird propagation, and salvage), take of depredating birds, taxidermy, and waterfowl sale and disposal. The regulations governing migratory bird permits can be found in 50 CFR part 13 General Permit Procedures and 50 CFR part 21 Migratory Bird Permits. The State of California has incorporated the protection of birds of prey in Sections 3800, 3513, and 3503.5 of the California Department of Fish and Game Code.

2.1.3 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act of 1940 (as amended) provides for the protection of bald eagle and golden eagle by prohibiting the take, possession, sale, purchase, barter, offer to sell, purchase or barter, transport, export or import, of any bald or golden eagle, alive or dead, including any part, nest, or egg, unless allowed by permit [16 USC 668(a); 50 CFR 22]. The USFWS may authorize take of bald eagles and golden eagles for activities where the take is associated with, but not the purpose of, the activity and cannot practicably be avoided (50 CFR 22.26).

2.1.4 Federal Clean Water Act

The federal Clean Water Act's (CWA's) purpose is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." Section 404 of the CWA prohibits the discharge of dredged or fill material into Waters of the United States (U.S.) without a permit from the U.S. Army Corps of Engineers (USACE). The definition of Waters of the U.S. includes rivers, streams, estuaries, the territorial seas, ponds, lakes, and wetlands. Wetlands are defined as those areas "that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3 7b). The USEPA also has authority over wetlands and may override a USACE permit.

Substantial impacts to wetlands may require an individual permit. Projects that only minimally affect wetlands may meet the conditions of one of the existing Nationwide Permits. A Water Quality Certification or waiver pursuant to Section 401 of the CWA is required for Section 404 permit actions; this certification or waiver is issued by the Regional Water Quality Control Board (RWQCB).

2.2 State or Local Regulations

2.2.1 California Fish and Game Code

California Endangered Species Act

The California ESA (California Fish and Game Code §§ 2050-2116) generally parallels the main provisions of ESA, but unlike its federal counterpart, the California ESA applies the take prohibitions to species proposed for listing (called "candidates" by the state). Section 2080 of the California Fish and Game Code prohibits the taking, possession, purchase, sale, and import or export of endangered, threatened, or candidate species, unless otherwise authorized by permit or in the regulations. Take is defined in Section 86 of the California Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." The California ESA allows for take incidental to otherwise lawful development projects. State lead agencies are required to consult with CDFW to ensure that any action they undertake is not likely to jeopardize the continued existence of any endangered, threatened or candidate species or result in destruction or adverse modification of essential habitat.

Fully Protected Species

The State of California first began to designate species as "fully protected" prior to the creation of the federal and California ESAs. Lists of fully protected species were initially developed to provide protection to those animals that were rare or faced possible extinction and included fish, amphibians and reptiles, birds, and mammals. Most fully protected species have since been listed as threatened or endangered under the federal and/or California ESAs. The regulations that implement the Fully Protected Species Statute (California Fish and Game Code § 4700 for mammals, § 3511 for birds, § 5050 for reptiles and amphibians, and § 5515 for fish) provide that fully protected species may not be taken or possessed at any time. Furthermore, CDFW prohibits any state agency from issuing incidental take permits for fully protected species. CDFW will issue licenses or permits for take of these species for necessary scientific research or live capture and relocation pursuant to the permit.

Native Plant Protection Act

The Native Plant Protection Act (NPPA) of 1977 was created with the intent to "preserve, protect and enhance rare and endangered plants in this State." The NPPA is administered by CDFW and provided in California Fish and Game Code §§ 1900-1913. The Fish and Wildlife Commission has the authority to designate native plants as "endangered" or "rare" and to protect endangered and rare plants from take. The California ESA of 1984 (California Fish and Game Code §§ 2050-2116) provided further protection for rare and endangered plant species, but the NPPA remains part of the California Fish and Game Code.

Birds of Prey

Sections 3800, 3513, and 3503 of the California Fish and Game Code specifically protect birds of prey. Section 3800 states that it is unlawful to take nongame birds, such as those occurring naturally in California that are not resident game birds, migratory game birds, or fully protected birds, except when in accordance with regulations of the commission or a mitigation plan approved by CDFW for mining operations. Section 3513 specifically prohibits the take or possession of any migratory nongame bird as designated in the MBTA.

Section 3503 of the California Fish and Game Code prohibits the take, possession, or needless destruction of the nest or eggs of any bird. Additionally, subsection 3503.5 prohibits the take, possession, or destruction of any birds and their nests in the orders Strigiformes (owls) or Falconiformes (hawks and eagles). These provisions, along with the federal MBTA, serve to protect nesting native birds.

California Streambed Alteration Notification/Agreement

Section 1602 of the California Fish and Game Code requires that a Streambed Alteration Agreement (SAA) application be submitted to CDFW for "any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake." CDFW reviews the proposed actions and, if necessary, submits proposed measures to protect potentially affected fish and wildlife resources to the applicant. The final proposal that is mutually agreed-upon by CDFW and the applicant is the SAA. Often, projects that require an SAA also require a permit from USACE under Section 404 of the CWA. In these instances, the conditions of the Section 404 permit and the SAA overlap.

2.2.2 Species of Special Concern

SSC are defined by the CDFW as a species, subspecies, or distinct population of an animal native to California that are not legally protected under the federal or California ESAs, or the California Fish and Game Code, but currently satisfies one or more of the following criteria:

- The species has been completely extirpated from the state or, as in the case of birds, it has been extirpated from its primary seasonal or breeding role
- The species is listed as federally (but not state) threatened or endangered, or meets the state definition of threatened or endangered but has not formally been listed

- The species has or is experiencing serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for state threatened or endangered status
- The species has naturally small populations that exhibit high susceptibility to risk from any factor that, if realized, could lead to declines that would qualify it for state threatened or endangered status

SSC are typically associated with habitats that are threatened. Project-related impacts to SSC, state-threatened or endangered species are considered "significant" under CEQA.

2.2.3 California Plant Ranks

The CNPS maintains the *Inventory of Rare and Endangered Plants of California* (CNPS 2019), which provides a list of plant species native to California that are threatened with extinction, have limited distributions, and/or low populations. Plant species meeting one of these criteria are assigned to one of six CRPRs. The rank system was developed in collaboration with government, academia, nongovernmental organizations, and private sector botanists, and is jointly managed by CDFW and the CNPS. The CRPRs are currently recognized in the California Natural Diversity Database (CNDDB). The following are definitions of the CNPS CRPRs:

- Rare Plant Rank 1A – presumed extirpated in California and either rare or extinct elsewhere
- Rare Plant Rank 1B – rare, threatened, or endangered in California and elsewhere
- Rare Plant Rank 2A – presumed extirpated in California, but more common elsewhere
- Rare Plant Rank 2B – rare, threatened, or endangered in California but more common elsewhere
- Rare Plant Rank 3 – a review list of plants about which more information is needed
- Rare Plant Rank 4 – a watch list of plants of limited distribution

Additionally, the CNPS has defined Threat Ranks that are added to the CRPR as an extension. Threat Ranks designate the level of threat on a scale of one to three, with one being the most threatened and three being the least threatened. Threat Ranks are generally present for all plants ranked 1B, 2B, or 4, and for the majority of plants ranked 3. Plant species ranked 1A and 2A (presumed extirpated in California), and some species ranked 3, which lack threat information, do not typically have a Threat Rank extension. The following are definitions of the CNPS Threat Ranks:

- Threat Rank 0.1 – Seriously threatened in California (more than 80 percent of occurrences threatened/high degree and immediacy of threat)
- Threat Rank 0.2 – Moderately threatened in California (20-80 percent occurrences threatened/ moderate degree and immediacy of threat)
- Threat Rank 0.3 – Not very threatened in California (less than 20 percent of occurrences threatened/low degree and immediacy of threat or no current threats known)

Factors such as habitat vulnerability and specificity, distribution, and condition of occurrences, are considered in setting the Threat Rank, and differences in Threat Ranks do not constitute additional or different protection (CNPS 2019). Depending on the policy of the lead agency, substantial impacts to plants ranked 1A, 1B, or 2 are typically considered significant under CEQA Guidelines Section 15380. Significance under CEQA is typically evaluated on a case-by-case basis for plants ranked 3 or 4.

2.2.4 Porter-Cologne Water Quality Act

The RWQCB implements water quality regulations under the federal CWA and the Porter-Cologne Water Quality Act. These regulations require compliance with the National Pollutant Discharge Elimination System (NPDES), including compliance with the California Storm Water NPDES General Construction Permit for discharges of stormwater runoff associated with construction activities. General Construction Permits for projects that disturb one or more acres of land require development and implementation of a Storm Water Pollution Prevention Plan. Under the Porter-Cologne Water Quality Act, the RWQCB regulates actions that would involve "discharging waste, or proposing to discharge waste, with any region that could affect the water of the state" (Water Code 13260(a)). Waters of the State are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state" (Water Code 13050 [e]). The RWQCB regulates all such activities, as well as dredging, filling, or discharging materials into Waters of the State, that are not regulated by the USACE due to a lack of connectivity with a navigable water body. The RWQCB may require issuance of a Waste Discharge Requirements for these activities.

2.2.5 California Environmental Quality Act

In accordance with the CEQA Guidelines' § 15380 a species not protected on a federal or state list may be considered rare or endangered if the species meets certain specified criteria. These criteria follow the definitions in the federal and California ESAs and §§ 1900-1913 of the California Fish and Game Code, which deal with rare or endangered plants or animals. Section 15380 was included in the guidelines primarily to deal with situations where a project under review may have a significant effect on a species that has not yet been listed by either the USFWS or CDFW.

CEQA Significance Criteria

Sections 15063-15065 of the CEQA Guidelines address how an impact is identified as significant, and are particularly relevant to SSCs. Generally, impacts to listed (rare, threatened, or endangered) species are considered significant and require lead agencies to prepare an Environmental Impact Report to thoroughly analyze and evaluate the impacts. Assessment of "impact significance" to populations of non-listed species (i.e., SSCs) usually considers the proportion of the species' range that will be affected by a project, impacts to habitat, and the regional and population level effects.

Specifically, § 15064.7 of the CEQA Guidelines encourages local agencies to develop and publish the thresholds that the agency uses in determining the significance of environmental effects caused by projects under its review. However, agencies may also rely upon the guidance provided by the expanded Initial Study checklist contained in Appendix G of the CEQA Guidelines. Appendix G provides examples of

impacts that would normally be considered significant. Based on these examples, impacts to biological resources would normally be considered significant if the project would:

- have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS;
- have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by CDFW or USFWS;
- have a substantial adverse effect on federally protected Waters of the U.S. including wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means;
- interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; and
- conflict with the provisions of an adopted HCP, Natural Community Conservation Plan, or other approved local, regional or state HCP.

An evaluation of whether or not an impact on biological resources would be substantial must consider both the resource itself and how that resource fits into a regional or local context. Substantial impacts would be those that would diminish, or result in the loss of, an important biological resource, or those that would obviously conflict with local, state, or federal resource conservation plans, goals, or regulations. Impacts are sometimes locally important but not significant according to CEQA. The reason for this is that, although the impacts would result in an adverse alteration of existing conditions, they would not substantially diminish, or result in the permanent loss of an important resource on a population-wide or region-wide basis.

2.2.6 Nevada County Tree Preservation Ordinance

The purposes of the Nevada County Tree Ordinance include minimizing removal of trees, protecting trees during construction activities, providing habitat for native wildlife, and preserving landmark and heritage trees. Development of a Management Plan and approval by the County are required before trees can be removed. The Ordinance requires documentation of native oak trees with a diameter at breast height (dbh) of six inches or greater and requires documentation of landmark trees, landmark groves, heritage trees and groves, and riparian habitat. These terms are defined as follows:

- Landmark Trees: Any oak (*Quercus* species) ≥36 inches dbh, or any tree whose size, visual impact, or association with historically significant structure or event has caused it to be marked for preservation by the county, state, or federal government.

- Landmark Groves: Hardwood tree groves with ≥33 percent canopy closure, or groves whose size, visual impact, or association with a historically significant structure or event has caused it to be marked for preservation by the county, state, or federal government.
- Heritage Trees and Groves: A tree or group of hardwood trees designated by the Board of Supervisors to be of historical or cultural value, outstanding specimens, unusual species, or of significant community benefit due to size, age, or any unique characteristic considered to be in good health.

The Management Plan must evaluate project impacts on defined trees and groves and provide recommended project modifications that avoid or minimize impacts. Mitigation must be provided for defined trees that must be removed, based on an inch-for-inch dbh replacement, and long-term maintenance for replacement trees must be provided. The Ordinance put a specific emphasis on the protection of blue oak (*Quercus douglasii*) and Valley Oak (*Quercus lobata*).

2.2.7 Nevada County Riparian Area Ordinance

The Nevada County Riparian Area Ordinance covers vegetative and wildlife areas that are associated with and adjacent to streams and water bodies, including perennial, intermittent, and seasonal watercourses, and wetlands. Under the Ordinance, Riparian Area is defined as "vegetative and wildlife areas associated with and adjacent to streams and water bodies." If riparian areas cannot be avoided and will be impacted as part of a project, applicants must either prepare a Management Plan that avoids or minimizes impacts on riparian area or implement onsite or offsite creation, restoration, replacement, enhancement, or preservation of riparian areas.

3.0 METHODS

3.1 Literature Review

Prior to conducting the field portion of the assessment, the following species lists were queried to determine the special-status species that had been documented within or in the vicinity of the site:

- CDFW CNDDB for the "Rough and Ready, California", "Grass Valley, California" and the ten surrounding 7.5-minute USGS quadrangles (CDFW 2019).
- USFWS Resource Report List Federal Endangered and Threatened Species that may be affected by work conducted in the Study Area (USFWS 2019).
- CNPS electronic *Inventory of Rare and Endangered Plants of California* for the "Rough and Ready, California", "Grass Valley, California" and the ten surrounding 7.5-minute USGS quadrangles (CNPS 2019).

Additional background information was reviewed regarding the documented or potential occurrence of special-status species within or near the site from the following sources:

- The Status of Rare, Threatened, and Endangered Plants and Animals of California 2000-2004 (California Department of Fish and Game [CDFG] 2005)

- California Bird SSC (Shuford and Gardali 2008)
- Amphibian and Reptile SSC in California (Thompson et al.2016)
- Mammalian SSC in California (Williams 1986)
- California's Wildlife, Volumes I-III (Zeiner, et al. 1988, 1990a, 1990b)
- A Guide to Wildlife Habitats of California (Mayer and Laudenslayer Jr., eds. 1988)

3.2 Site Reconnaissance and Field Survey

On March 13, 2019 ECORP biologists Keith Kwan and Casey Peters conducted a reconnaissance survey the Study Area for biological resources (Attachment A – Statement of Qualifications). The Study Area was surveyed by vehicle and on foot using the mapping program ArcGIS Collector on an iPad paired with an Arrow Global Positioning System unit accurate to less than one meter.

During the general site reconnaissance, special attention was given to those portions of the site with the potential to support special-status species and sensitive habitats. The following biological information was collected:

- Vegetation communities and land cover types;
- Aquatic resources
- Plant and animal species directly observed; and
- Animal evidence.

In addition, soil types were identified using the NRCS Web Soil Survey (NRCS 2019a).

On April 9, 2019 ECORP biologist Casey Peters returned to survey an alternative potential route for a portion of the water pipeline alignment. He collected the same types of biological information as the original survey.

3.3 Special-Status Species Considered for the Project

Based on species occurrence information from the CNDDB, the literature review, and observations in the field, a list of special-status plant and animal species that have the potential to occur within the Study Area was generated (Table 1). Only special-status species as defined in Section 1.4 were included in this analysis. Each of these species' potential to occur onsite was assessed based on the following criteria:

- **Present** - Species was observed during the site visits or is known to occur within the Study Area boundary based on documented occurrences within the CNDDB or other literature.
- **Potential to Occur** - Habitat (including soils and elevation requirements) for the species occurs within the Study Area boundary.
- **Low Potential to Occur** - Marginal or limited amounts of habitat occurs, and/or the species is not known to occur in the vicinity based on CNDDB records and other available documentation.

- **Absent** - No suitable habitat (including soils and elevation requirements) and/or the species is not known to occur in the vicinity based on CNDDB records and other documentation.

4.0 RESULTS

4.1 Vegetation Communities and Land Cover Types

Vegetation communities were identified within the Study Area based on the classification system presented in the *Manual of California Vegetation* (Sawyer et al. 2009). Vegetation communities identified within the Study Area include blue oak woodland, valley oak woodland, interior live oak woodland, foothill pine woodland, and wedgeleaf ceanothus chaparral. In addition to these vegetation communities, several other land cover types occur within the Study Area that do not strictly follow the *Manual of California Vegetation's* nomenclature. These include annual grassland, rural residential, and developed areas. The following sections describe the vegetation communities and land cover types identified in the Study Area. These descriptions include thresholds of absolute and relative cover, as presented in the *Manual of California Vegetation*, which were used to define vegetation community types within the Study Area. Absolute cover is defined as the percentage of the ground covered by a plant species as seen from above. Relative cover is defined as the cover of a species in relation to other species within a defined area or layer of vegetation (Sawyer et al. 2009). Detailed descriptions of vegetation associated with on-site aquatic resources are provided in Section 4.4.

4.1.1 Blue Oak Woodland

Blue oak woodland occurs throughout the Study Area but is most common in the western portions. This vegetation community is characterized by an intermittent tree canopy dominated by blue oak (*Quercus douglasii*). Blue oak is greater than 50 percent relative cover in the tree canopy.

4.1.2 Valley Oak Woodland

Small amounts of valley oak woodland occur within the Study Area, primarily along Rough and Ready Road just east of Riffle Box Road. This vegetation community is characterized by an intermittent tree canopy dominated by valley oak (*Quercus lobata*). Valley oak is greater than 50 percent relative cover in the tree canopy.

4.1.3 Interior Live Oak Woodland

Interior live oak woodland occurs throughout the Study Area. This vegetation community is characterized by a dense to intermittent tree canopy dominated by interior live oak (*Quercus wislizeni*). Interior live oak is greater than 15 percent absolute cover, and 50 percent relative cover in the tree layer.

4.1.4 Foothill Pine Woodland

Foothill pine woodland occurs throughout the Study Area. This vegetation community is characterized areas where foothill pine (*Pinus sabiniana*) is the dominant tree and is greater than 10 percent absolute cover.

4.1.5 Wedge Leaf Ceanothus Chaparral

Wedge leaf ceanothus chaparral occurs at two locations within the Study Area. There is a small area along Bosa Drive, and a larger area along Rough and Ready Highway east of the town of Rough and Ready. This vegetation community is characterized by an intermittent shrub canopy dominated exclusively by wedge leaf ceanothus *(Ceanothus cuneatus*). Wedge leaf ceanothus is greater than 60 percent relative cover in the shrub layer.

4.1.6 Annual Grassland

There is one area dominated by non-native annual grasses located along Bosa Drive. The survey was conducted too early to identify which species are dominant.

4.1.7 Rural Residential

Rural residential land cover is common throughout the Study Area. This land cover is characterized by horticultural landscaping, pastures, and orchards.

4.1.8 Developed

The majority of the Study Area consists of developed land cover, primarily in the form of paved road. Other developed areas consist of driveways, unpaved road, and buildings.

4.2 Wildlife

Wildlife species observed within the Study Area during the 2019, reconnaissance surveys include western gray squirrel (*Sciurus griseus*), striped skunk (*Mephites mephites*), California mule deer (*Odocoileus hemionus californicus*), Anna's hummingbird (*Calypte anna*), double-crested cormorant (*Phalacrocorax auritus*), turkey vulture (*Cathartes aura*), acorn woodpecker (*Melanerpes formicivorus*), black phoebe (*Sayornis nigricans*), California scrub-jay (*Aphelocoma californica*), common raven (*Corvus corax*), oak titmouse (*Baeolophus inornatus*), bushtit (*Psaltriparus minimus*), white-breasted nuthatch (*Sitta carolinensis*), ruby-crowned kinglet (*Regulus calendula*), western bluebird (*Sialia mexicana*), house finch (*Haemorhous mexicanus*), and lesser goldfinch (*Spinus psaltria*),.

4.3 Soils and Topography

According to the Web Soil Survey (NRCS 2019a), 11 soil units, or types, have been mapped within the Study Area (Figure 2. *Natural Resources Conservation Service Soil Types*):

- TuD – Trabuco-Rock outcrop complex, 15 to 20 percent slopes;
- TrC – Trabuco loam, 5 to 15 percent slopes;
- TuE – Trabuco-Rock outcrop complex, 30 to 50 percent slopes;
- BrD – Boomer-Rock outcrop complex, 5 to 30 percent slopes
- ScE – Secca-Rock outcrop complex, 2 to 50 percent slopes
- Ao – Alluvial land, clayey

- Pr – Placer diggings
- AfB – Aiken loam, 2 to 9 percent slopes
- AfC – Aiken loam, 9 to 15 percent slopes
- AfD -Aiken loam, 15 to 30 percent slopes
- AgD – Aiken cobbly loam, 2 to 30 percent slopes

Two of the above soil types contain hydric components: (Ao) Alluvial land, clayey and (Pr) Placer diggings (NRCS 2019b).

4.4 Aquatic Resources

Approximately 0.503 acres of aquatic features occur within the Study Area (Table 1). Wetlands within the Study Area include marsh, seasonal wetland, and seasonal wetland swale. Other waters include creek, ditch, ephemeral drainage, and intermittent drainage (Figure 3. Aquatic Resource Assessment).

Table 1. Aquatic Resources

Type	Acreage[1]
Wetlands	
Marsh	0.044
Seasonal Wetland	0.043
Seasonal Wetland Swale	0.028
Other Waters	
Creek	0.334
Ditch	0.022
Ephemeral Drainage	0.003
Intermittent Drainage	0.028
Total	0.503

[1]Acreages represent a calculated estimation and are subject to modification

4.4.1 Marsh

Marshes are wetlands that are continuously inundated or saturated throughout the year and are dominated by emergent hydrophytic plants. Marshes are wet due to accumulation of incidental rainfall, surface runoff, and/or shallow groundwater. One marsh was mapped in eastern end Study Area. The majority of marshes within the Study Area Emergent vegetation within this marsh is dominated by broadleaf cattail (*Typha latifolia*).

4.4.2 Seasonal Wetland

Seasonal wetlands are ephemerally wet due to accumulation of surface runoff and rainwater within low-lying areas. One seasonal wetland occurs along Empty Diggins Lane on the western end of the Study Area, and one occurs to the north of Rough and Ready Highway in the central portion of the Study Area. The seasonal wetlands are dominated by Himalayan blackberry (*Rubus armeniacus*).

Figure 2.
Natural Resources Conservation Soil Types
Sheet 1 of 3

Map Features

- Preferred Project Alignment - 47.09
- Alternative Project Alignment - 2.24

Series Designation - Series Name

- TrC - Trabuco loam, 5 to 15 percent slopes
- TuD - Trabuco-Rock outcrop complex, 15 to 30 percent slopes
- TuE - Trabuco-Rock outcrop complex, 30 to 50 percent slopes

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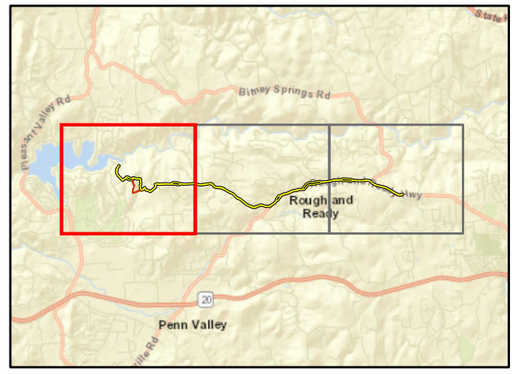

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ENVIRONMENTAL CONSULTANTS

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2018-174 NID - E. George to Lake Wildwood Backbone

Scale in Feet
0 1,000

Photo Source: NAIP 2016

Map Date: 4/24/2019

Figure 2.
Natural Resources Conservation Soil Types
Sheet 2 of 3

Map Features

Preferred Project Alignment - 47.09

Series Designation - Series Name

- BrD - Boomer-Rock outcrop complex, 5 to 30 percent slopes
- Pr - Placer diggings
- ScE - Secca-Rock outcrop complex, 2 to 50 percent slopes
- TrC - Trabuco loam, 5 to 15 percent slopes
- TuD - Trabuco-Rock outcrop complex, 15 to 30 percent slopes

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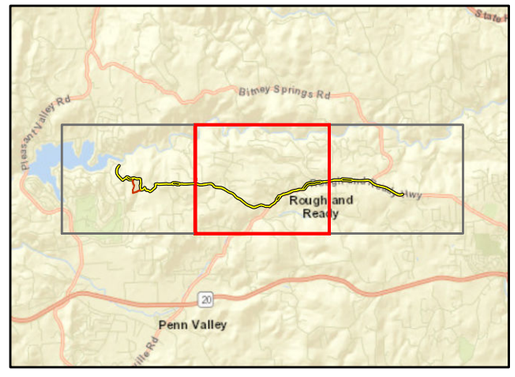

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2018-174 NID - E. George to Lake Wildwood Backbone

Scale in Feet
0 1,000

Photo Source: NAIP 2016

Map Date: 4/24/2019

Location: N:\2018\2018-174 NID E George to Lake Wildwood Backbone\MAPS\Soils_and_Geology\Soils\EGLW_NRCS_20190424.mxd (AMM)-amyers 4/24/2019

Figure 2.
Natural Resources Conservation Soil Types
Sheet 3 of 3

Map Features

Preferred Project Alignment - 47.09

Series Designation - Series Name

- AfB - Aiken loam, 2 to 9 percent
- AfC - Aiken loam, 9 to 15 percent
- AfD - Aiken loam, 15 to 30 percent
- AgD - Aiken cobbly loam, 2 to 30 percent
- Ao - Alluvial land,
- Pr - Placer diggings
- ScE - Secca-Rock outcrop complex, 2 to 50 percent slopes

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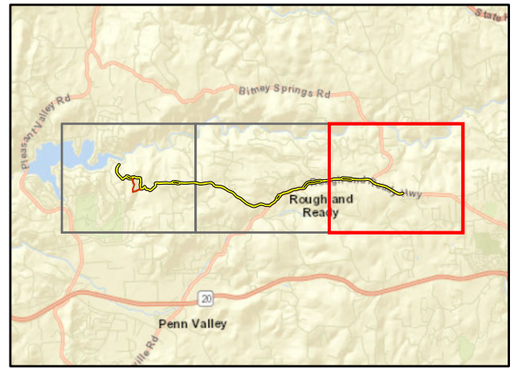

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2018-174 NID - E. George to Lake Wildwood Backbone

Scale in Feet
0
1,000

Photo Source: NAIP 2016

Map Date: 4/24/2019

Location: N:\2018\2018-174 NID E George to Lake Wildwood Backbone\MAPS\Soils_and_Geology\Soils\EGLW_NRCS_20190424.mxd (AMM) amyers 4/24/2019

Figure 3.
Aquatic Resource Assessment
(Sheet 1 of 8)

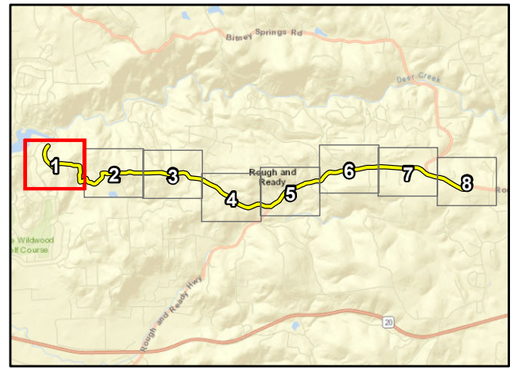
Map Features

- Preferred Project Alignment - 47.09 acres
- Alternative Project Alignment - 2.24 acres

Wetland Type

- Ditch
- Seasonal Wetland Swale

Wetland Type	Total Acres
Creek	0.334
Ditch	0.022
Ephemeral Drainage	0.003
Intermittent Drainage	0.028
Marsh	0.044
Seasonal Wetland	0.043
Seasonal Wetland Swale	0.028
Grand Total	**0.503**



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Driftwood Court
Chaparral Drive
Lake Wildwood Drive
Sunfish Court
Whitefish Court
Minnow Way
Golden Trout Way
Redside Court
Greenbrook Loop
Roadrunner Drive
Oriole Court
Hitch Court
Bosa Drive
Empty Diggins Lane
SWS-1
SWS-2
Ditch-1

2018-174 NID - E George to Lake Wildwood Backbone

Scale in Feet
0
300

Photo Source: 2016, NAIP

Map Date: 4/24/2019

Figure 3.
Aquatic Resource Assessment
(Sheet 2 of 8)

Map Features

Preferred Project Alignment - 47.09 acres

Wetland Type

Intermittent Drainage

Seasonal Wetland

Bow N Arrow Drive

Oak Lane

Riffle Box Road

ID-1

ID-1

SW-1

Empty Diggins Lane

Rough And Ready Road

Rocker Road

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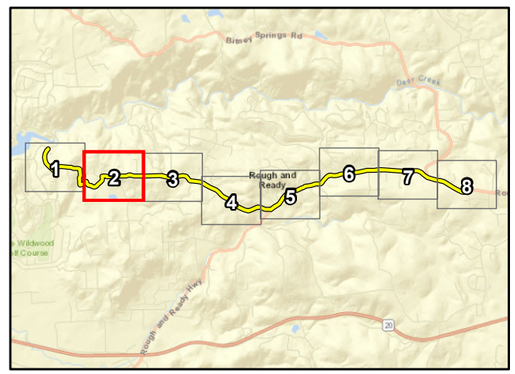

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2018-174 NID - E George to Lake Wildwood Backbone

Scale in Feet

0 300

Photo Source: 2016, NAIP

Map Date: 4/24/2019

Figure 3.
Aquatic Resource Assessment
(Sheet 3 of 8)

Map Features

Preferred Project Alignment - 47.09 acres

Wetland Type

Ditch

Ephemeral Drainage

Deerlick Road

Pioneer Road

Highgrader Road

Burkard Lane

Rough And Ready Road

Ditch-2

ED-1

Hilaire Road

Rocker Road

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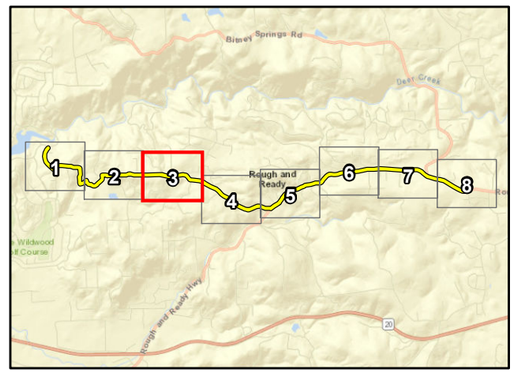

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2018-174 NID - E George to Lake Wildwood Backbone

Scale in Feet

0 300

Photo Source: 2016, NAIP

Map Date: 4/24/2019

Figure 3.
Aquatic Resource Assessment
(Sheet 4 of 8)

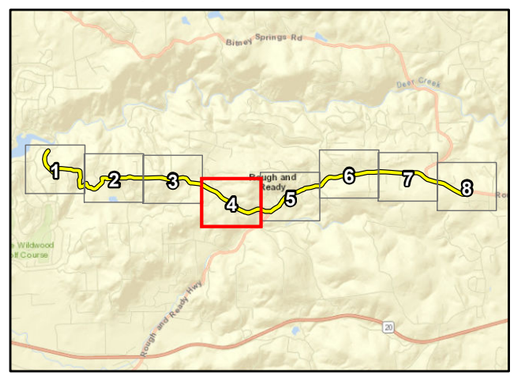
Map Features

Preferred Project Alignment - 47.09 acres

Wetland Type

Ditch

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community



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2018-174 NID - E George to Lake Wildwood Backbone

Scale in Feet
0 300

Photo Source: 2016, NAIP

Map Date: 4/24/2019

Location: N:\2018\2018-174 NID E George to Lake Wildwood Backbone\MAPS\Jurisdictional_DelineationAssessment_Level\Current\v1\EGLW_ARA_Detail_20190326.mxd (JDS/AMM) amyers 4/24/2019

Figure 3.
Aquatic Resource Assessment
(Sheet 5 of 8)

Map Features

Preferred Project Alignment - 47.09 acres

Wetland Type

Creek

Seasonal Wetland

Black Bear Lane
Nugget Lane
Lady Bug Lane
Slave Girl Road
Mountain Rose Road
Chapel Road
Stagecoach Way
Rough And Ready Highway
Creek-2
Ranch Road
Jerome Road
Blue Creek Road
Mystery Lane
Secession Lane
SW-2
Creek-1
Rough And Ready Road
Trauner Lane
Squirrel Creek

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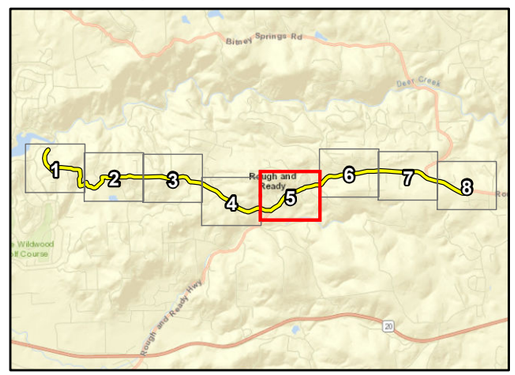

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2018-174 NID - E George to Lake Wildwood Backbone

Scale in Feet
0
300

Photo Source: 2016, NAIP

Map Date: 4/24/2019

Location: N:\2018\2018-174 NID E George to Lake Wildwood Backbone\MAPS\Jurisdictional_Delineation\Assessment_Level\Current\v1\EGLW_ARA_Detail_20190326.mxd (JDS/AMM) amyers 4/24/2019

Figure 3.
Aquatic Resource Assessment
(Sheet 6 of 8)

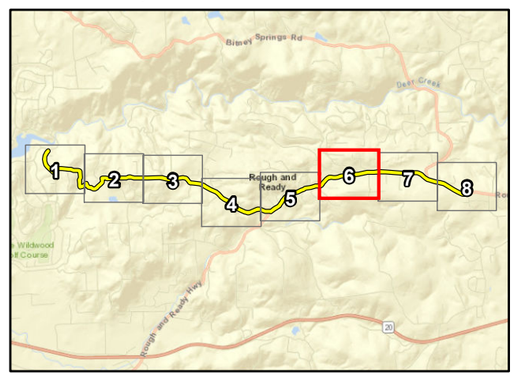
Map Features

Preferred Project Alignment - 47.09 acres

Wetland Type

Creek

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community



ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Location: N:\2018\2018-174 NID E George to Lake Wildwood Backbone\MAPS\Jurisdictional_DelineationAssessment_Level\Current\v1\EGLW_ARA_Detail_20190326.mxd (JDS/AMM)-amyers 4/24/2019

2018-174 NID - E George to Lake Wildwood Backbone

Scale in Feet
0 300

Photo Source: 2016, NAIP

Map Date: 4/24/2019

Figure 3.
Aquatic Resource Assessment
(Sheet 7 of 8)

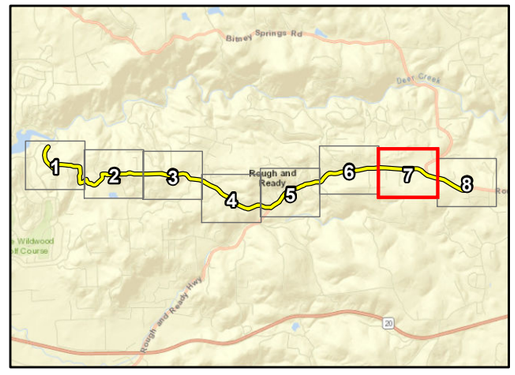
Map Features

- Preferred Project Alignment - 47.09 acres

Wetland Type

- Ditch
- Marsh

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community



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ENVIRONMENTAL CONSULTANTS

Location: N:\2018\2018-174 NID E George to Lake Wildwood Backbone\MAPS\Jurisdictional_Delineation\Assessment_Level\Current\v1\EGLW_ARA_Detail_20190326.mxd (JDS/AMM) amyers 4/24/2019

2018-174 NID - E George to Lake Wildwood Backbone

Scale in Feet
0 300

Photo Source: 2016, NAIP

Map Date: 4/24/2019

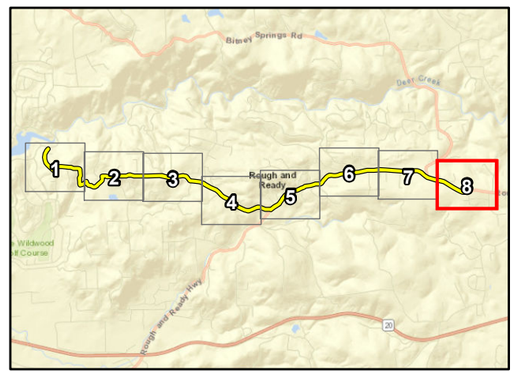
Figure 3.
Aquatic Resource Assessment
(Sheet 8 of 8)

Map Features

Preferred Project Alignment - 47.09 acres

Davis Lane
Brown Stone Street
Skyline Drive
Rough And Ready Highway
West Drive
Sunset Avenue
East Drive
Kootenai Lane
Mountaineer Trail

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community



ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Location: N:\2018\2018-174 NID E George to Lake Wildwood Backbone\MAPS\Jurisdictional_Delineation\Assessment_Level\Current\v1\EGLW_ARA_Detail_20190326.mxd (JDS/AMM) amyers 4/24/2019

2018-174 NID - E George to Lake Wildwood Backbone

Scale in Feet
0
300

Photo Source: 2016, NAIP

Map Date: 4/24/2019

4.4.3 Seasonal Wetland Swale

Seasonal wetland swales are generally linear wetland features that convey precipitation runoff and support a predominance of hydrophytic vegetation, but do not exhibit an ordinary high-water mark (OHWM). These are typically inundated for short periods during and immediately after rain events, but usually maintain soil saturation for longer periods during the wet season. There are two seasonal wetland swales on the western end of the Study Area. One is dominated by iris-leafed rush (*Juncus xiphioides*) and spinyfruit buttercup (*Ranunculus muricatus*). The other is dominated by rush (*Juncus* sp.) and an overstory of arroyo willow (*Salix lasiolepis)*.

4.4.4 Creek

Creeks are linear features that exhibit a bed and bank, OHWM, and flow intermittently or continuously throughout the year. One creek (actually a creek-like portion of the historic Rough and Ready ditch) occurs within the Study Area where is crosses Rough and Ready Highway at several location. The creek also parallels Rough and Ready Highway for a short distance east of the town of Rough and Ready.

4.4.5 Ditch

Ditches are linear, constructed features designed to transport water. There are four ditches that cross the Study Area at various locations. These features roadside drainage ditches and portion of historic irrigation canals. These features were unvegetated within the Study Area.

4.4.6 Intermittent Drainage

Ephemeral drainages are linear features that exhibit a bed and bank and an OHWM. These features are typically seasonal in nature and convey both surface runoff and are fed by ground water. The intermittent drainage on site occurs along Empty Diggins Lane. It is dominated by Himalayan blackberry (*Rubus armeniacus*) and is beneath an overstory of interior live oak.

4.4.7 Ephemeral Drainage

Ephemeral drainages are linear features that exhibit a bed and bank and an OHWM. These features typically convey runoff for short periods of time during and immediately following rain events and are not influenced by groundwater sources at any time during the year. There is one ephemeral drainage that crosses the Study Area. This ephemeral drainage is unvegetated within the Study Area.

4.5 Evaluation of Potentially Occurring Special-Status Species

Table 2 lists all of the plant and wildlife species identified as potentially occurring within the Study Area. Included in this table are the listing status for each species, a brief habitat description, and a determination on the potential to occur in the Study Area. A full table of all species identified by the literature search is included as Attachment B. Following the table is a brief description of each species with potential to occur onsite.

Table 2. Potentially Occurring Special-Status Species

Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA/ NPPA	Other			
Plants						
Sanborn's onion *(Allium sanbornii* var. *sanbornii)*	-	-	4.2	Chaparral, cismontane woodland, and lower montane coniferous forests, usually with gravelly, serpentinite soils (853'–4,954').	May–September	Potential to occur.
True's manzanita *(Arctostaphylos mewukka* ssp. *truei)*	-	-	4.2	Chaparral or lower montane coniferous forest, sometimes on roadsides (1,394'–4,560').	February–July	Potential to occur.
Sierra foothills brodiaea *(Brodiaea sierrae)*	–	–	4.3	Serpentinite or gabbroic soils within chaparral or cismontane woodland (164'–3,215').	May–August	Potential to occur.
Stebbins' morning–glory *(Calystegia stebbinsii)*	FE	CE	1B.1	Gabbroic or serpentine soils in chaparral and cismontane woodland (607'–3,576').	April–July	Potential to occur.
Chaparral sedge *(Carex xerophila)*	–	–	1B.2	Serpentinite or gabbroic soils within chaparral, cismontane woodland, and lower montane coniferous forest (1,444'–2,526').	March–June	Potential to occur.
Brandegee's clarkia *(Clarkia biloba* ssp. *brandegeeae)*	–	–	4.2	Chaparral, cismontane woodlands, and lower montane coniferous forest often along roadcuts (246'–3,002').	May–July	Potential to occur.
Pine Hill flannelbush *(Fremontodendron decumbens)*	FE	CR	1B.2	Serpentine or gabbro rock outcrops in chaparral and cismontane woodland (1,394'–2,493').	April–July	Potential to occur.
Butte County fritillary *(Fritillaria eastwoodiae)*	–	–	3.2	Chaparral, cismontane woodland, and openings in lower montane coniferous forest and occasionally is found on serpentinite soils (164'–4,921').	March–June	Potential to occur.

Table 2. Potentially Occurring Special-Status Species

Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA/ NPPA	Other			
Finger rush *(Juncus digitatus)*	–	–	1B.1	Openings within cismontane woodland and lower montane coniferous forest, as well as xeric vernal pools (2,165'–2,592).	April–June	Potential to occur.
Dubious Pea *(Lathyrus sulphureus* var. *argillaceus)*	–	–	3	Cismontane woodland, lower montane coniferous forest and upper montane coniferous forest. (492'–3,051').	April–May	Potential to occur.
Humboldt Lily *(Lilium humboldtii* ssp. *humboldtii)*	–	–	4.2	Occurs in openings within chaparral, cismontane woodland, and lower montane coniferous forest (295'–4,199').	May–August	Potential to occur.
Bacigalupi's yampah *(Perideridia bacigalupii)*	–	–	4.2	Serpentinite soils of lower montane coniferous forest and chaparral (1,476'–3,396').	June–August	Low potential to occur.
Cedar Crest popcornflower *(Plagiobothrys glyptocarpus* var. *modestus)*	–	–	3	Cismontane woodland and mesic valley and foothill grasslands (108'–2,945).	April–June	Potential to occur.
Brownish beaked–rush *(Rhynchospora capitellata)*	–	–	2B.2	Mesic areas in lower montane coniferous forest, upper montane coniferous forests, meadows, seeps, marshes, and swamps (148'–6,562').	July–August	Low potential to occur.

Table 2. Potentially Occurring Special-Status Species

Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA/ NPPA	Other			
Amphibians						
Foothill yellow-legged frog (*Rana boylii*)	-	Candidate	SSC	Foothill yellow-legged frogs can be active all year in warmer locations, but may become inactive or hibernate in colder climates. At lower elevations, foothill yellow-legged frogs likely spend most of the year in or near streams. Adult frogs, primarily males, will gather along main-stem rivers during spring to breed.	May - October	Low potential to occur.
California red-legged frog (*Rana draytonii*)	FT	-	SSC	Lowlands or foothills at waters with dense shrubby or emergent riparian vegetation. Adults must have aestivation habitat to endure summer dry down.	May 1- November 1	Low potential to occur.
Reptiles						
Northwestern pond turtle (*Actinemys marmorata*)	-	-	SSC	Requires basking sites and upland habitats up to 0.5 km from water for egg laying. Uses ponds, streams, detention basins, and irrigation ditches.	April-September	Potential to occur.

Table 2. Potentially Occurring Special-Status Species

Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA/ NPPA	Other			
Blainville's ("Coast") horned lizard (*Phrynosoma blainvillii*)	-	-	SSC	Formerly a wide-spread horned lizard found in a wide variety of habitats, often in lower elevation areas with sandy washes and scattered low bushes. Also occurs in Sierra Nevada foothills. Requires open areas for basking, but with bushes or grass clumps for cover, patches of loamy soil or sand for burrowing and an abundance of ants (Stebbins and McGinnis 2012). In the northern Sacramento area, this species appears restricted to the foothills between 1000 to 3000 feet from Cameron Park (El Dorado County) north and west to Grass Valley and Nevada City.	Apr-Oct	Potential to occur.
Birds						
Cooper's hawk *(Accipiter cooperii)*	-	-	CDFW WL	Nests in trees in riparian woodlands in deciduous, mixed and evergreen forests, as well as urban landscapes	March-July	Potential to occur.
Nuttall's woodpecker *(Dryobates nuttallii)*	-	-	BCC	Resident from northern California south to Baja California. Nests in tree cavities in oak woodlands and riparian woodlands.	April-July	Potential to occur.

Table 2. Potentially Occurring Special-Status Species

Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA/ NPPA	Other			
Olive-sided flycatcher (*Contopus cooperi)*	-	-	SSC, BCC	Nests in montane and northern coniferous forests, in forest openings, forest edges, semiopen forest stands. In California, nests in coastal forests, Cascade and Sierra Nevada region. Winters in Central to South America.	May-August	Potential to occur.
Yellow-billed magpie (*Pica nuttallii*)	-	-	BCC	Endemic to California; found in the Central Valley and coast range south of San Francisco Bay and north of Los Angeles County; nesting habitat includes oak savannah with large in large expanses of open ground; also found in urban parklike settings.	April-June	Low potential to occur.
Oak titmouse (*Baeolophus inornatus*)			BCC	Nests in tree cavities within dry oak or oak-pine woodland and riparian; where oaks are absent, they nest in juniper woodland, open forests (gray, Jeffrey, Coulter, pinyon pines and Joshua tree)	March-July	Potential to occur.
Yellow-breasted chat (*Icteria virens*)	-	-	SSC	In California, breeds in Klamath Mountains, inner Northern Coast Range south to San Francisco Bay, locally distributed from Santa Clara Co. south to San Diego Co. Sacramento and San Joaquin Valleys, along west slope of Sierra Nevada from the Feather River to Kern River, Mono and Inyo Cos. In the west, nesting habitat includes dense riparian and shrubby.	May-August	Potential to occur.

Table 2. Potentially Occurring Special-Status Species

Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA/ NPPA	Other			
Mammals						
Townsend's big-eared bat *(Corynorhinus townsendii)*	-	-	SSC	Caves, mines, buildings, rock crevices, trees.	April-September	Low potential to occur.
Western red bat (*Lasiurus blossevillii*)	-	-	SSC	Roosts in foliage of trees or shrubs; Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. There may be an association with intact riparian habitat (particularly willows, cottonwoods, and sycamores) (WBWG 2019).	April-September	Potential to occur.
Hoary bat (*Lasiurus cinerus*)	-	-	CNDDB	Dense foliage of medium to large trees; roost primarily in foliage of both coniferous and deciduous trees; Roosts are usually at the edge of a clearing. Some unusual roosting situations have been reported in caves, beneath a rock ledge, in a woodpecker hole, in a grey squirrel nest, under a driftwood plank, and clinging to the side of a building (WBWG 2019).	April-September	Potential to occur
Yuma myotis (*Myotis yumanensis)*	-	-	-	Usually associated with permanent sources of water, typically rivers and streams; occurs in riparian, arid scrublands and deserts, and forests; roosts in bridges, buildings, cliff crevices, caves, mines, and trees (WBWG 2019).	April-September	Low potential to occur.

Table 2. Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA/ NPPA	Other			
Fisher- West Coast DPS *(Pekania pennanti)*	FPT	CT	SSC	Northern coniferous and mixed forests of Canada and northern United States.	Any season	Low potential to occur.

Status Codes:
4.2 - CRPR/Plants of Limited Distribution – A Watch List
1B.1 - CRPR/Rare or Endangered in California and elsewhere
3.2 - CRPR/Plants About Which More Information is Needed – A Review List
2B.2 - Plants rare, threatened, or endangered in California but more common elsewhere
BCC - USFWS Bird of Conservation Concern (USFWS 2002)
CDFW WL - CDFW Watch List
CNDDB - Species that is tracked by CDFG's CNDDB but does not have any of the above special-status designations otherwise
CR - CESA- or NPPA-listed, Rare
CT - CESA- or NPPA-listed, Threatened
FE - FESA listed, Endangered
FPT - Formally Proposed for FESA listing as Threatened
FT - FESA listed, Threatened
SSC - Species of Special Concern

4.5.1 Plants

A total of 34 special-status plant species were identified as having the potential to occur in the Study Area based on the literature review (Table 1). However, upon further analysis and after the 2019 site visits, 20 species were considered to be absent from the site due to the lack of suitable habitat or because the Study Area is outside the known range of the species. No further discussion of these species is provided in this analysis. Brief descriptions of the remaining 14 species that have the potential to occur within the Study Area are presented in the following sections.

Sanborn's Onion

Sanborn's onion (*Allium sanbornii* var. *sanbornii*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.2 species. This species is a bulbiferous, herbaceous perennial that occurs on serpentinite or gravelly soils on chaparral, cismontane woodlands, and lower montane coniferous forest (CNPS 2019). Sanborn's onion blooms from May through September and is known to occur at elevations ranging from 853 to 4,954 feet above MSL (CNPS 2019). The current range of this species in California includes Butte, Calaveras, El Dorado, Nevada, Placer, Plumas, Shasta, Tehama, Tuolumne and Yuba counties (CNPS 2019).

While there are no CBDDB documented occurrences of Sanborn's onion within 10 miles of the Study Area (CDFW 2019), the blue oak woodland, valley oak woodland, interior live oak woodland, foothill pine woodland, and wedge leaf ceanothus chaparral represent suitable habitat for this species within the Study Area.

True's Manzanita

True's manzanita (*Arctostaphylos mewukka* ssp. *truei*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.2 species. This species is an evergreen, perennial shrub that occurs sometimes on roadsides of chaparral and lower montane coniferous forest (CNPS 2019). True's manzanita blooms from February through July and is known to occur at elevations ranging from 1,394 to 4,560 feet above MSL (CNPS 2019). True's manzanita is endemic to California; the current California range of this species include Butte, El Dorado, Nevada, Placer, Plumas and Yuba counties (CNPS 2019).

While there are no CBDDB documented occurrences of True's manzanita within 10 miles of the Study Area (CDFW 2019), the wedge leaf ceanothus chaparral represents suitable habitat for this species within the Study Area.

Sierra Foothills Brodiaea

Sierra foothills brodiaea (*Brodiaea sierrae*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.3 species (CNPS 2019). This species is a perennial bulbiferous herb that occurs usually in serpentinite or gabbroic soils in cismontane woodland or chaparral (CNPS 2019). Sierra foothill brodiaea blooms from May through August and is known to occur at elevations ranging from 164 to 3,215 feet above MSL (CNPS 2019). Sierra foothill brodiaea is endemic to California; the current range of this species includes Butte, Nevada, and Yuba counties (CNPS 2019).

While there are no CBDDB documented occurrences of sierra foothills brodiaea within 10 miles of the Study Area (CDFW 2019), the wedge leaf ceanothus chaparral within the Boomer-Rock outcrop complex, 5 to 30 percent slopes soils represents suitable habitat for this species within the Study Area.

Stebbins' Morning-Glory

Stebbins' morning-glory (*Calystegia stebbinsii*) is listed as endangered pursuant to the federal and California ESAs, and is designated as a CRPR 1B.1 species. This species is a rhizomatous herbaceous perennial that occurs on gabbroic or serpentinite soils in openings of chaparral habitats and cismontane woodlands (CNPS 2019). Stebbins' morning-glory blooms from April through July and is known to occur at elevations ranging from 607 to 3,576 feet above MSL (CNPS 2019). Stebbins' morning-glory is endemic to California; the current range of this species includes El Dorado and Nevada counties (CNPS 2019).

There are seven CNDDB documented occurrences of Stebbins' morning-glory within ten miles of the Study Area (CDFW 2019). The nearest record is 0.8 miles from the Study Area. The wedge leaf ceanothus chaparral within the Boomer-Rock outcrop complex, 5 to 30 percent slopes soils represents suitable habitat for this species within the Study Area.

Chaparral Sedge

Chaparral sedge (*Carex xerophila*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is a perennial herb that occurs on serpentinite or gabbroic soils of lower montane coniferous forest, cismontane woodland, or chaparral (CNPS 2019). Chaparral sedge blooms from March through June and is known to occur at elevations ranging from 1,444 to 2,526

feet above MSL (CNPS 2019). Chaparral sedge is endemic to California; the current range of this species includes Butte, El Dorado, Nevada, and Yuba counties (CNPS 2019).

There are three CNDDB documented occurrences of chaparral sedge within ten miles of the Study Area (CDFW 2019). The nearest record is 1.2 miles from the Study Area. The wedge leaf ceanothus chaparral within the Boomer-Rock outcrop complex, 5 to 30 percent slopes soils represents suitable habitat for this species within the Study Area.

Brandegee's Clarkia

Brandegee's clarkia (*Clarkia biloba* ssp. *brandegeeae*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.2 plant. This species is an herbaceous annual that occurs in chaparral, cismontane woodlands, and lower montane coniferous forest often along roadcuts (CNPS 2019). Brandegee's clarkia blooms from May through July and is known to occur at elevations ranging from 246 to 3,002 feet above MSL. Brandegee's clarkia is endemic to California, and the current range of this species includes Butte, El Dorado, Nevada, Placer, Sacramento, Sierra, and Yuba counties (CNPS 2019).

There are twelve CNDDB documented occurrences of Brandegee's clarkia within ten miles of the Study Area (CDFW 2019). The nearest record is 2.8 miles from the Study Area. The blue oak woodland, valley oak woodland, interior live oak woodland, foothill pine woodland, and wedge leaf ceanothus chaparral represent suitable habitat for this species within the Study Area.

Pine Hill Flannelbush

Pine Hill flannelbush (*Fremontodendron decumbens*) is listed as endangered pursuant to the federal ESA, listed as rare pursuant to the California ESA, and is also designated as a CRPR 1B.2 species. This species is a perennial evergreen shrub that occurs on rocky serpentinite or gabbroic soil in chaparral and cismontane woodland communities (CNPS 2019). Pine Hill flannelbush blooms from April through July and is known to occur at elevations ranging from 1,394 to 2,493 feet above MSL (CNPS 2019). Pine Hill flannelbush is endemic to California; the current range for this species includes El Dorado, Nevada, and Yuba counties (CNPS 2019); distribution or identity is uncertain in Nevada and Yuba counties.

There are three CNDDB documented occurrences of Pine Hill flannelbush within ten miles of the Study Area (CDFW 2019). The nearest record is 2.8 miles from the Study Area. The wedge leaf ceanothus chaparral within the Boomer-Rock outcrop complex, 5 to 30 percent slopes soils represents suitable habitat for this species within the Study Area.

Butte County Fritillary

Butte County fritillary (*Fritillaria eastwoodiae*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 3.2 species. This species is an herbaceous bulbiferous perennial that occurs in chaparral, cismontane woodland, and lower montane coniferous forest and occasionally is found on serpentinite soils (CNPS 2019). Butte County fritillary blooms from March to June and is known to occur at elevations ranging from 164 to 4,921 feet above MSL (CNPS 2019). The current range of this species in California includes Butte, El Dorado, Nevada, Placer, Plumas, Shasta, Tehama, and Yuba counties (CNPS 2019).

There are two CNDDB documented occurrences of Butte County fritillary within ten miles of the Study Area (CDFW 2019). The nearest record is 5.2 miles from the Study Area. The blue oak woodland, valley oak woodland, interior live oak woodland, foothill pine woodland, and wedge leaf ceanothus chaparral represent suitable habitat for this species within the Study Area.

Finger Rush

Finger rush (*Juncus digitatus*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.1 species. This species is an herbaceous annual that occurs in openings within cismontane woodland and lower montane coniferous forest, as well as xeric vernal pools (CNPS 2019). Finger rush blooms from April through June and is known to occur at elevations ranging from 2,165 to 2,592 feet above MSL (CNPS 2019). Finger rush is endemic to California; its current range includes Nevada and Shasta counties (CNPS 2019).

There is one CNDDB documented occurrence of finger rush within ten miles of the Study Area (CDFW 2019). This record is 5.2 miles from the Study Area. Openings within the blue oak woodland, valley oak woodland, interior live oak woodland, and foothill pine woodland represent suitable habitat for this species within the Study Area.

Dubious Pea

Dubious pea (*Lathyrus sulphureus* var. *argillaceus*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 3 species. This species is an herbaceous perennial that occurs in cismontane woodland, lower montane coniferous forest and upper montane coniferous forest (CNPS 2019). Dubious pea blooms from April through May and is known to occur at elevations ranging from 492 to 3,051 feet above MSL (CNPS 2019). Dubious pea is endemic to California; the current range of this species includes Calaveras, El Dorado, Nevada, Placer, Shasta, and Tehama counties; distribution or identity is uncertain in Nevada County (CNPS 2019).

There are three CNDDB documented occurrences of dubious pea within ten miles of the Study Area (CDFW 2019). The nearest record is 1.0 miles from the Study Area. The blue oak woodland, valley oak woodland, interior live oak woodland, and foothill pine woodland represent suitable habitat for this species within the Study Area.

Humboldt Lily

Humboldt lily (*Lilium humboldtii* ssp. *humboldtii*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.2 species. This species is a perennial bulbiferous herb that occurs in openings within chaparral, cismontane woodland, and lower montane coniferous forest (CNPS 2019). Humboldt lily blooms from May through August and is known to occur at elevations ranging from 295 to 4,199 feet above MSL (CNPS 2019). Humboldt lily is endemic to California; the current range of this species includes Amador, Butte, Calaveras, El Dorado, Fresno, Mariposa, Nevada, Placer, Tehama, Tuolumne, and Yuba counties (CNPS 2019).

While there are no CNDDB documented occurrences of Humboldt lily within 10 miles of the Study Area (CDFW 2019), the blue oak woodland, valley oak woodland, interior live oak woodland, foothill pine

woodland, and wedge leaf ceanothus chaparral represent suitable habitat for this species within the Study Area.

Bacigalupi's Yampah

Bacigalupi's yampah (*Perideridia bacigalupii*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.2 species. This species is a perennial herb that occurs usually in serpentinite soils of lower montane coniferous forest and chaparral (CNPS 2019). Bacigalupi's yampah blooms from June through August and is known to occur at elevations ranging from 1,476 to 3,396 feet above MSL (CNPS 2019). Bacigalupi's yampah is endemic to California; the current range of this species includes Amador, Butte, Calaveras, Madera, Mariposa, Nevada, Tuolumne, and Yuba counties (CNPS 2019). It is believed to be extirpated from Madera County.

While there are no CNDDB documented occurrences of Bacigalupi's yampah within 10 miles of the Study Area (CDFW 2019), the wedge leaf ceanothus chaparral within the Boomer-Rock outcrop complex, 5 to 30 percent slopes soils represents marginal habitat for this species within the Study Area.

Cedar Crest Popcornflower

Cedar Crest popcornflower (*Plagiobothrys glyptocarpus* var. *modestus*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 3 species. This species is an annual herb that occurs in cismontane woodland and mesic areas of Valley and foothill grasslands (CNPS 2019). Cedar Crest popcornflower blooms from April through June and is known to occur at elevations from 108 to 2,945 feet above MSL (CNPS 2019). Cedar Crest popcornflower is endemic to California; the current range of this species includes Nevada and Yuba counties, although the distribution or identity in Yuba County is uncertain (CNPS 2019).

While there are no CNDDB documented occurrences of Cedar Crest popcornflower within 10 miles of the Study Area (CDFW 2019), the blue oak woodland, valley oak woodland, interior live oak woodland, foothill pine woodland, and annual grassland represent suitable habitat for this species within the Study Area.

Brownish Beaked-Rush

Brownish beaked-rush (*Rhynchospora capitellata*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 2B.2 species. This species is an herbaceous perennial that occurs in mesic areas in lower montane coniferous forest, meadows, seeps, marshes, swamps, and upper montane coniferous forest (CNPS 2019). Brownish beaked-rush blooms from July through August and is known to occur at elevations ranging from 148 to 6,562 feet above MSL (CNPS 2019). The current range of this species in California includes Butte, El Dorado, Mariposa, Nevada, Plumas, Sonoma, Tehama, Trinity, and Yuba counties; distribution or identity is uncertain in Sonoma County, but it is presumed extirpated if it was once present there.

There are two CNDDB documented occurrences of brownish beaked-rush within ten miles of the Study Area (CDFW 2019). The nearest record is 1.0 miles from the Study Area. The marsh represents marginal habitat for this species within the Study Area.

4.5.2 Invertebrates

A total of two special-status invertebrate species were identified as having potential to occur in the Study Area based on the literature review (Table 1). However, upon further analysis and after the site visit, both species are considered absent. No further discussion of these species is provided within this assessment.

4.5.3 Fish

A total of three special-status fish species were identified as having potential to occur in the Study Area based on the literature review (Table 1). However, upon further analysis and after the site visit, all of the species are considered absent from the Study Area due to the lack of suitable habitat. No further discussion of these species is provided within this assessment.

4.5.4 Amphibians

A total of two special-status amphibians were identified as having potential to occur in the Project based on the literature review (Table 1). A brief description these is presented in the following section.

Foothill Yellow-legged Frog

The foothill yellow-legged frog has been proposed for listing as threatened under California's ESA (California Fish and Game Commission 2017) and is a California species of special concern (SSC). As a State candidate species, it is provided full protection under the California ESA (Fish and Game Code Section 2068). It occurs in the Coast Ranges, from the Oregon border south to the Transverse Mountains in Los Angeles County, west of the Cascade crest in most of northern California, and in the Sierra Nevada foothills south to Kern County, from sea level to 6,000 feet (Stebbins 2003).

Foothill yellow-legged frogs occupy rocky streams in valley-foothill hardwood, valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, coastal scrub, mixed chaparral, and wet meadow plant communities. They are rarely found far from water and will often dive into water to take refuge under rocks or sediment when disturbed (Zeiner et al. 1988).

There are eleven CNDDB documented occurrences of foothill yellow-legged frog within ten miles of the Study Area (CDFW 2019). The nearest record is 0.13 mile from the Study Area. The aquatic resources within the Study Area represent dispersal habitat for this species. The marsh within the Study Area, and several nearby aquatic resources outside of the Study Area, represent potential breeding habitat. Upland areas surrounding these features could contain dispersing individuals.

California Red-legged Frog

The California red-legged frog (*Rana draytonii*) was listed as threatened by the U.S. Fish and Wildlife Service on May 23, 1996 (Federal Register Vol. 61, No. 101:25813) and is a SSC. Critical habitat was designated pursuant to the Endangered Species Act across approximately 1,636,609 acres in 27 counties including Alameda, Butte, Calaveras, Contra Costa, El Dorado, Marin, Napa, Nevada, Placer, Solano, and Yuba counties.

California red-legged frogs occur in different habitats depending on life stage, the season, and weather conditions. Breeding habitat includes coastal lagoons, marshes, springs, permanent and semi-permanent natural ponds, and ponded and backwater portions of streams. California red-legged frogs also breed in artificial impoundments including stock ponds, irrigation ponds, and siltation ponds. Creeks and ponds with dense growths of woody riparian vegetation, especially willows (*Salix* spp.) are used disproportionally (Hayes and Jennings 1988). The absence of vegetation at an aquatic site does not rule out the possibility of occupancy. Adult California red-legged frogs are most often found in areas of dense, shrubby or emergent riparian vegetation near deep [≥ 0.6 to 0.9 m (2 to 3 ft)], still or slow moving water, especially where dense stands of overhanging willow and an intermixed fringe of cattail (*Typha* sp.) occur adjacent to open water. California red-legged frogs breed from November through April (Jennings and Hayes 1994), and larvae generally metamorphose by mid to late summer.

Upland and riparian areas provide important habitat during summer when California red-legged frogs are known to aestivate in dense vegetation, burrows and leaf litter. California red-legged frogs often disperse from breeding habitats to forage and seek upland refugia, and are often found within close proximity to a pond or deep pool in a creek where emergent vegetation, undercut banks, or semi-submerged rootballs afford shelter (USFWS 2005). The diet of California red-legged frogs is highly variable. Larvae probably graze on algae, whereas invertebrates are the most common food items of adult frogs. Vertebrates, such as Sierra chorus frogs (*Pseudacris sierra*) and California mice (*Peromyscus californicus*) are frequently eaten by larger frogs. Juvenile frogs are active both during the day and at night, whereas adult frogs are largely nocturnal.

There is one CNDDB documented occurrence of California red-legged frog within ten miles of the Study Area (CDFW 2019). The nearest record is 9.2 miles from the Study Area. The aquatic resources within the Study Area represent dispersal habitat for this species. The marsh within the Study Area, and several nearby aquatic resources outside of the Study Area, represent potential breeding habitat. Upland areas surrounding these features could contain dispersing individuals.

4.5.5 Reptiles

A total of two special-status reptiles were identified as having potential to occur in the Project based on the literature review (Table 1). A brief description these is presented in the following section.

Northern Western Pond Turtle

The northern western pond turtle is not listed pursuant to either the federal or California ESAs; however, it is designated as an SSC. Northern western pond turtles occur in a variety of fresh and brackish water habitats including marshes, lakes, ponds, and slow-moving streams (Jennings and Hayes 1994). This species is primarily aquatic; however, they typically leave aquatic habitats in the fall to reproduce and to overwinter (Jennings and Hayes 1994). Deep, still water with abundant emergent woody debris, overhanging vegetation, and rock outcrops is optimal for basking and thermoregulation. Although adults are habitat generalists, hatchlings and juveniles and hatchlings require shallow edge water with relatively dense submergent or short emergent vegetation in which to forage.

Northern western pond turtles are typically active between March and November. Mating generally occurs during late April and early May and eggs are deposited between late April and early August (Jennings and Hayes 1994). Eggs are deposited within excavated nests in upland areas, with substrates that typically have high clay or silt fractions (Jennings and Hayes 1994). The majority of nesting sites are located within 650 feet (200m) of the aquatic sites; however, nests have been documented as far as 1,310 feet (400m) from the aquatic habitat.

There are seven CNDDB documented occurrence of northern western pond turtle within ten miles of the Study Area (CDFW 2019). The nearest record is 3.7 miles from the Study Area. The ditches within the Study Area represent potential dispersal habitat, and the marsh represents potential residential habitat. The upland habitat within 650 feet of the marsh represents potential nesting habitat.

Blainville's Horned Lizard

Blainville's horned lizard is considered by CDFW to be a SSC. This species has undergone declines throughout California attributable to fragmentation and habitat destruction, predation by free-ranging pets, the invasion of nonnative ants and their displacement of native harvester ants (Suarez et al. 2000, Suarez and Case 2002), and historic overcollection for pets and as stuffed display items (Jennings 1987). Blainville's horned lizard is found in open microhabitats such as sandy washes with scattered shrubs or firebreaks in chaparral, where they forage for ants, small beetles and other insects (Jennings and Hayes 1994). Horned lizards (*Phrynosoma*) are native ant specialists and daily activities are centered on above ground activity patterns of ants, with lizards active generally in mornings and later in the afternoon in the summer. They generally emerge from hibernation in March or April and are active until September or later. Periods of daily or seasonal inactivity are spent within rodent burrows or underneath the soil or surface objects (California Department of Fish and Game [CDFG] 1988).

There are five CNDDB documented occurrence of Blainville's horned lizard within ten miles of the Study Area (CDFW 2019). The nearest record is 0.147miles from the Study Area. The wedge leaf ceanothus chaparral represents suitable habitat for this species within the Study Area.

4.5.6 Birds

A total of 23 special-status bird species were identified as having the potential to occur within the Study Area based on the literature review (Table 1). However, upon further analysis and after the site visit, 17 of these species were considered to be absent from the Study Area. No further discussion of these species is provided in this analysis. A brief description of the remaining six species that have the potential to occur within the Study Area is presented in the following sections.

Cooper's hawk

The Cooper's hawk (*Accipiter cooperii*) is not listed pursuant to either the federal or California ESAs. However, it is a CDFW "watch list" species and is currently tracked in the CNDDB. Typical nesting and foraging habitats include riparian woodland, dense oak woodland, and other woodlands near water. Cooper's hawk nest throughout California from Siskiyou County to San Diego County, and includes the

Central Valley (Curtis et al. 2006). Breeding occurs from March through July, with a peak from May through July.

The blue oak woodland, valley oak woodland, and interior live oak woodland represent suitable nesting habitat for Cooper's hawk within the Study Area.

Nuttall's woodpecker

The Nuttall's woodpecker (*Picoides nuttallii*) is not listed and protected under either federal or California ESAs, but is designated as a BCC by the USFWS. They are resident from Siskiyou County south to Baja California. Nuttall's woodpeckers nest in tree cavities primarily within oak woodlands, but also can be found in riparian woodlands (Lowther 2000). Breeding occurs during April through July.

The blue oak woodland, valley oak woodland, and interior live oak woodland represent suitable nesting habitat for Nuttall's woodpecker within the Study Area.

Olive-sided Flycatcher

The olive-sided flycatcher (*Contopus cooperi*) is not listed pursuant to either the California or federal Endangered Species Acts but is a CDFW species of special concern and a USFWS bird of conservation concern. In the western United States, olive-sided flycatchers breed from Washington south throughout California, except the Central Valley, eastern deserts, and mountains of southern California (Small 1994). This species breeds in late-successional coniferous forests including Ponderosa pine woodlands, black oak woodlands, mixed coniferous forests, and Jeffrey pine forests, usually at mid to high elevations (Widdowson 2008). They use edges and clearings surrounding dense forests, foraging primarily on bees and wasps. Nesting occurs during May through August.

The foothill pine woodland represents suitable nesting habitat for olive-sided flycatcher within the Study Area.

Yellow-Billed Magpie

The yellow-billed magpie (*Pica nuttalli*) is not listed pursuant to either the federal and California ESAs but is designated as a BCC by the USFWS. This endemic species is a yearlong resident of the Central Valley and Coast Ranges from San Francisco Bay to Santa Barbara County. Yellow-billed magpies build large, bulky nests in trees in a variety of open woodland habitats, typically near grassland, pastures or cropland. Nest building begins in late-January to mid-February, which may take up to 6-8 weeks to complete, with eggs laid during April-May, and fledging during May-June (Koenig and Reynolds 2009). The young leave the nest at about 30 days after hatching (Koenig and Reynolds 2009). Yellow-billed magpies are highly susceptible to West Nile Virus, which may have been the cause of death to thousands of magpies during 2004-2006 (Koenig and Reynolds 2009).

The blue oak woodland, valley oak woodland, and interior live oak, especially near pastures and the annual grassland, represents marginal nesting habitat for yellow-billed magpie within the Study Area.

Oak Titmouse

Oak titmouse (*Baeolophus inornatus*) are not listed pursuant to either the federal and California ESAs, but are designated as a BCC by the USFWS. Oak titmouse breeding range includes southwestern Oregon south through California's Coast, Transverse and Peninsular ranges, western foothills of the Sierra Nevada, into Baja California; they are absent from the humid northwestern coastal region and the San Joaquin Valley (Cicero et al. 2017). They are found in dry oak or oak-pine woodlands, but may also use scrub oaks or other brush near woodlands (Cicero et al. 2017). Nesting occurs during March through July.

The interior live oak woodland and wedge leaf ceanothus chaparral represent suitable nesting habitat for oak titmouse within the Study Area.

Yellow-breasted Chat

Yellow-breasted chat (*Icteria virens*) is a CDFW SSC but has no federal special status. Yellow-breasted chat nest in North America and winter from southern Texas into Mexico and Guatemala (Comrack 2008). In California, the breeding range generally includes northern and northwestern California, the Sierra Nevada foothills south to Kern County, coastal valleys from Santa Clara County south to Baja California, scattered locations east of the Sierran crest, along the Colorado River. Yellow-breasted chat typically nests within early successional riparian habitat with well-developed shrub layers and an open canopy along creeks, streams, sloughs, and rivers (Comrack 2008). Nesting occurs during May through August.

Areas of blue oak woodland, valley oak woodland, and interior live oak woodland that occur near aquatic resources represent potential nesting habitat for yellow-breasted chat within the Study Area.

4.5.7 Mammals

A total of four special-status mammal species were identified as having the potential to occur within the Study Area based on the literature review (Table 1). However, upon further analysis and after the site visit, two of these species were considered to be absent from the Study Area. No further discussion of these species is provided in this analysis. A brief description of the remaining four species that have the potential to occur within the Study Area is presented in the following sections.

Townsend's Big-Eared Bat

The Townsend's big-eared bat (*Corynorhinus townsendii*) is not listed pursuant to either the California or federal Endangered Species Acts; however, this species is considered a species of special concern by CDFW. Townsend's big-eared bat is a fairly large bat with prominent bilateral noes lumps and large "rabbit-like" ears. This species occurs throughout the west and ranges from the southern portion of British Columbia south along the Pacific coast to central Mexico and east into the Great Plains. This species has been reported from a wide variety of habitat types and elevations from sea level to 10,827 feet. Habitats used include coniferous forests, mixed meso-phytic forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat types. Its distribution is strongly associated with the availability of caves and cave-like roosting habitat including abandoned mines, buildings, bridges, rock crevices, and hollow trees. This species is readily detectable when roosting due to their habit of roosting pendant-like on open surfaces. Townsend's big-eared bat is a moth specialist with over 90% of its diet

composed of Lepidopterans. Foraging habitat is generally edge habitats along streams adjacent to and within a variety of wooded habitats. This species often travels long distances when foraging and large home ranges have been documented in California (WBWG 2019).

There is one CNDDB documented occurrence of Townsend's big-eared bat within ten miles of the Study Area (CDFW 2019). It is 3.2 miles from the Study Area. Trees throughout the Study Area represent suitable roosting habitat for this species.

Western Red Bat

The western red bat (*Lasiurus blossevillii*) is not listed pursuant to either the California or federal ESAs; however, this species is considered a SSC by CDFW. The western red bat is easily distinguished from other western bat species by its distinctive red coloration. This species is broadly distributed, its range extending from southern British Columbia in Canada through Argentina and Chile in South America, and including much of the western United States. This solitary species day roosts primarily in the foliage of trees or shrubs in edge habitats bordering streams or open fields, in orchards, and occasionally urban areas. They may be associated with intact riparian habitat, especially with willows, cottonwoods, and sycamores. This species may occasionally utilize caves for roosting as well. They feed on a variety of insects, and generally begin to forage one to two hours after sunset. This species is considered highly migratory, however the timing of migration and the summer ranges of males and females may be different. Winter behavior of this species is poorly understood (WBWG 2019).

There is one CNDDB documented occurrence of western red bat within ten miles of the Study Area (CDFW 2019). It is 6.4 miles from the Study Area. Trees throughout the Study Area represent suitable roosting habitat for this species.

Hoary Bat

The hoary bat (*Lasiurus cinereus*) is not listed pursuant to either the California or federal ESAs; however, this species is currently tracked by the CDFW in the CNDDB (CDFW 2019). Hoary bats can be distinguished from other species by a combination of its large size, frosted fur, and golden coloration around the face. This bat is widespread in California, although distribution is patchy in the southern deserts. Hoary bats are solitary roosters, concealing themselves in the foliage of both coniferous and deciduous trees. Suitable roosting habitat includes woodlands and forests with medium to large-size trees and dense foliage, to elevations up to 13,000 feet. This species is highly migratory, making long migrations to and from warmer winter habitats. Sexes are separated geographically throughout most of the summer range. Hoary bats feed primarily on moths, foraging in open areas or along habitat edges (Zeiner et al. 1990b).

There is one CNDDB documented occurrence of hoary bat within ten miles of the Study Area (CDFW 2019). It is 6.2 miles from the Study Area. Trees throughout the Study Area represent suitable roosting habitat for this species.

Yuma Myotis

The Yuma myotis (*Myotis yumanensis*) is not listed pursuant to either the California or federal ESAs; however, this species is currently tracked by the CDFW in the CNDDB (CDFW 2019). Yuma myotis occurs throughout California in a variety of communities including riparian, arid scrublands and deserts, and forests. This species roosts in bridges, buildings, cliff crevices, caves, mines, and trees (WBWG 2019). Yuma myotis feed primarily on emergent aquatic insects and thus forage mainly over open water or adjacent riparian vegetation (Philpott 1996). This species can form large maternity colonies in late May early June.

While there are no CNDDB documented occurrence of Yuma myotis within ten miles of the Study Area (CDFW 2019), trees throughout the Study Area represent suitable roosting habitat for this species.

4.6 Wildlife Movement/Corridors

According to the California Essential Habitat Connectivity mapped by CDFW, the Study Area does not contain essential connectivity areas (CDFW 2019). The Study Area is primarily surrounded by rural residential development. Wildlife movement across the Study Area is likely high, although the various roadways and fences associated with residential development will pose barriers to movement for some species in some places. The Project activities will not have any long-term impact on wildlife movement.

5.0 RECOMMENDATIONS

This section summarizes possible measures to avoid, minimize, or compensate for potential impacts to biological resources from the proposed Project, including those to Waters of the U.S., special-status plant and wildlife resources, and oak trees. Mitigation recommendations are provided, but many may not be necessary should impacts be determined less than significant in the CEQA analysis.

5.1 Waters of the U.S.

A total of 0.503 acres of aquatic features were identified within the Study Area. It is not anticipated that the Project will result in impacts to any aquatic resources. There are six places where aquatic resources cross the alignment, five within the planned alignment and one within the alternative alignment. In each case the aquatic resource passes through a culvert at a depth sufficient to be unaffected by the installation of the proposed pipeline, with the possible exception of the seasonal wetland swale that crossed the alternative alignment. In this case it may be possible to avoid impacts to this feature by raising the level of the road.

Appropriate measures, such as the installation of silt fencing and straw waddles, should be taken to prevent any sedimentation from entering aquatic resources within or adjacent to areas in which work is occurring.

If, for any reason, it is determined that any Project work will result an impact one or more aquatic features, the following measures are recommended to minimize potential impacts:

- A permit authorization to fill waters under Section 404 of the federal CWA (Section 404 Permit) must be obtained from USACE prior to discharging any dredged or fill materials into any Waters

of the U.S. Mitigation measures will be developed as part of the Section 404 Permit to ensure no net loss of wetland function and values. Mitigation for impacts to waters of the U.S. would be negotiated through the permitting process.

- A Water Quality Certification or waiver pursuant to Section 401 of the CWA must be obtained for Section 404 permit actions.
- If impacts to CDFW-jurisdictional features and riparian habitat is anticipated, a Notification shall be made to CDFW in order to obtain a 1602 Lake or Streambed Alteration Agreement prior to work being conducted in those areas.

5.2 Special-status Species

There is suitable or marginally suitable habitat within the Study Area for fourteen special-status plants, two special-status amphibians, two special-status reptiles, four special-status mammals, and six special-status birds. A brief discussion of recommendations is presented below for each group.

5.2.1 Plants

Fourteen special-status plants have the potential to occur within the Study Area. There is only one portion of the Project alignment (approximately 830 feet between Riffle Box Way and Rough and Ready Road) where impacts to vegetation are anticipated. This portion is comprised of interior live oak woodland which represents suitable habitat for several special-status species. The following measures are recommended for avoiding impacts to special-status plant species within this portion of the Project:

- The Project Applicant shall retain a biologist to perform a special-status plant survey according to USFWS, CDFW, and CNPS protocol. Surveys should be timed according to the blooming period for target species and known reference populations, if available.
- If no special-status plants are found, no further measures pertaining to special-status plants are necessary.
- If special-status plant species are found, avoidance zones may be established around plants to clearly demarcate areas for avoidance. Avoidance measures and buffer distances may vary between species and the specific avoidance zone distance will be determined in coordination with appropriate resource agencies (CDFW and/or USFWS).
- If special-status plant species are found and avoidance of the species is not possible, then additional measures such as seed collection and/or translocation may be developed in consultation with the appropriate agencies.
- The USFWS generally considers plant survey results valid for approximately three years. Therefore, follow-up surveys may be necessary if Project implementation occurs after this three-year window.

No mitigation actions are required in Project areas in which there will be no impact to vegetation.

5.2.2 Amphibians

There is suitable habitat within the Study Area for two special-status amphibians, foothill yellow-legged frog and California red-legged frog. While no direct impacts to these species is anticipated due to construction activities within the road alignment, there is potential for indirect impacts to suitable amphibian habitat within aquatic resources adjacent to the construction.

The following measures are recommended to minimize potential impacts to both species:

- Provide workers with Worker Environmental Awareness Training (WEAP) to familiarize them with the biology of the species and environmental compliance measures related to their protection.
- The Project Applicant shall retain a biologist to conduct a pre-construction survey of mapped aquatic resources within 72 hours the start of construction activities adjacent to those resources. Surveys are only needed for aquatic resources that contain water when construction commences
- If no special-status amphibians are detected during the surveys, no further measures are needed.
- If special-status amphibians are detected, additional measures may be developed in consultation with CDFW to avoid impacts to this species. Measures may include preconstruction surveys and/or monitors present during construction activities in and adjacent to suitable aquatic habitat.

The installation of BMPs to prevent impacts to aquatic resources will also serve as a physical barrier to prevent the movement of these species into the construction area.

The surveys for foothill yellow-legged frog, California red-legged frog, and northern western pond turtle can be conducted concurrently.

5.2.3 Reptiles

Suitable aquatic and upland habitat for two special-status reptile, northern western pond turtle and Blainville's horned lizard, is present within the Study Area.

While no direct impacts to northern western pond turtle is anticipated due to construction activities within the road alignment, there is potential for indirect impacts to suitable habitat within aquatic resources adjacent to the construction.

The following measure is recommended to minimize potential impacts to northern western pond turtle:

- Provide workers with WEAP training to familiarize them with the biology of northern western pond turtle and environmental compliance measures related to their protection.
- The Project Applicant shall retain a biologist to conduct a pre-construction survey of mapped aquatic resources within 72 hours the start of construction activities adjacent to those resources. Surveys are only needed for aquatic resources that contain water when construction commences
- If no special-status amphibians are detected during the surveys, no further measures are needed.

- If special-status amphibians are detected, additional measures may be developed in consultation with CDFW to avoid impacts to this species. Measures may include preconstruction surveys and/or monitors present during construction activities in and adjacent to suitable aquatic habitat.

The installation of best management practices (BMPs) to prevent impacts to aquatic resources will also serve as a physical barrier to the movement of these species into the construction area.

The surveys for foothill yellow-legged frog, California red-legged frog, and northern western pond turtle can be conducted concurrently.

Given the nature of the Project activities, there are no anticipated impacts to Blainville's horned lizard. However, given the low potential for an individual to enter a construction area from adjacent chaparral habitat, it is recommended that workers receive WEAP training to familiarize them with the biology of Blainville's horned lizard and environmental compliance measures related to their protection.

5.2.4 Mammals

Suitable habitat for four special-status mammal species including Townsend's big-eared bat, western red bat, hoary red bat, and Yuma myotis is present within the Study Area.

All potential special-status mammal species are bats. The following mitigation measures are recommended for special-status bat species:

Project construction could result in direct permanent impacts to natural vegetation communities and trees in the Project that provide potentially suitable roosts sites for special-status bats (e.g., trees). To minimize impacts to special-status bats, the following measures are recommended:

- To the extent feasible, potential bat roosting habitat (e.g., tree) removal would occur outside of the maternity season, generally considered 1 March to 30 September.
- Pre-construction bat surveys should be conducted by a qualified wildlife biologist within 30 days of the onset of Project construction to identify potential bat habitat features within the disturbance area and within 100 feet around the disturbance area. The assessment would include identification of the tree size and configuration, or structure (exfoliating bark, crevices, hollows, etc.). If potential bat habitat features are identified, the following surveys specific to habitat type would be implemented: for trees identified as potentially providing roosting habitat, a minimum of one daytime and one evening emergence survey would be conducted no greater than seven days prior to disturbance. A dawn re-entry survey may also be conducted if the qualified biologist deems it necessary, and acoustic recording technology may be utilized for these surveys if feasible and appropriate.
- If evidence of roosting bats is found in any habitat feature that is not deemed to be part of a maternity colony, humane exclusion methods would be developed in coordination with CDFW. These methods could include the installation of one-way doors which would passively allow bats to leave the structure but not reenter it. If a maternity roost is identified, the roost shall remain undisturbed until the project biologist determines that it is safe to conduct humane exclusions.

5.2.5 Special-status Birds and MBTA-Protected Birds

Suitable habitat for six special-status birds is present within the Study Area. These include Cooper's hawk, Nuttall's woodpecker, olive-sided flycatcher, yellow-billed magpie, oak titmouse, and yellow-breasted chat. If present, construction or other work-related activities could result in harassment to nesting individuals and may temporarily disrupt foraging activities.

In addition to the above-listed special-status birds, all native birds, including raptors, are protected under the California Fish and Game Code and the federal MBTA. As such, to ensure that there are no impacts to protected active nests, the following measures are recommended:

- Conduct a pre-construction nesting bird survey of all suitable habitat on the Project within 14 days of the commencement of construction during the nesting season (February 1-August 31). Surveys should be conducted within 300 feet of the Project for nesting raptors, and 100 feet of the Project for nesting songbirds. If active nests are found, a no-disturbance buffer around the nest shall be established. The buffer distance shall be established by a biologist in consultation with CDFW or the CEQA lead agency. The buffer shall be maintained until the fledglings are capable of flight and become independent of the nest tree, to be determined by a qualified biologist. Once the young are independent of the nest, no further measures are necessary. Pre-construction nesting surveys are not required for construction activity outside the nesting season.

5.2.6 Oak Trees

There are woodlands and forest communities that support oak trees throughout the Study Area, but only one portion (approximately 830 feet between Riffle Box Way and Rough and Ready Road) where impacts to vegetation are anticipated. There is potential for impacts to oak tree, including removal, in this portion.

The following measures are recommended to minimize potential impacts to oak trees:

- Pursuant to Senate Bill 1334 (Oak Woodlands Protection Act), the Project should comply with the Nevada County tree ordinance. The Project should avoid impacts to oak trees where feasible. An Oak Tree Mitigation and Restoration Plan should be developed that includes onsite enhancements and potential off-site mitigation alternatives to compensate for loss of oak trees.
- Excavating and/or trenching within the drip-line of trees (or a distance of half the drip-line, outside of the drip-line) should be avoided whenever practicable. However, if unavoidable, any authorized cut or fill occurring within the drip-line of any preserved tree should be supervised by an ISA Certified Arborist.
- Any and all exposed roots should be covered with a protective material during construction.
- Native tree replacement should be used to mitigate the removal of native trees within the area, subject to approval by the County.
- Procedures and protocols for tree preservation and protection should comply with standards established by the County.

- Oak trees required to be planted as a condition of construction would be maintained after completion of construction according to the Project-specific restoration plan.

5.2.7 Impacts to Riparian Areas

There are no anticipated impacts to riparian areas as defined by the Nevada County Riparian Area Ordinance. No mitigation in required.

5.2.8 Wildlife Movement/Corridors

There are no anticipated impacts to wildlife movement/corridors related to this Project.

5.2.9 Potential Staging Areas

Potential staging areas in support of the Project have not yet been identified and were not considered in this report. If future staging areas outside of the Study Area are established, and those areas have the potential to contain sensitive biological resources, we recommend additional biological study.

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LIST OF ATTACHMENTS

ATTACHMENT A

Statement of Qualifications

Attachment A

Statement of Qualifications

Casey Peters

Associate Biologist, ECORP Consulting, Inc.

Casey Peters is a botanist/biologist with experience in general floristic surveys, special-status plant surveys, and restoration planning, implementation, and monitoring. Dr. Peters holds a PhD in Ecology with an emphasis in plant communities and a certificate in conservation management. He has conducted scientific research in plant communities throughout California including annual grassland, oak savannah, mixed-conifer forest, sub-alpine forest, coastal dune, coastal prairie, annual forbland, and desert plant communities. He has also taught courses in California floristics and plant ecology. Dr. Peters has extensive experience conducting special-status plant surveys.

Kieth Kwan

Senior Biologist/Avian Ecologist

Mr. Kwan has over 25 years of experience as a wildlife biologist and wetland ecologist. Mr. Kwan specializes in avian ecology, wetland delineations and wetland ecology, special-status species ecology, environmental impact assessment, regulatory compliance, and project management. He also has expertise in conducting biological resource assessments, bird censuses, special-status species surveys, general biotic inventories, and biodiversity monitoring of created, restored, and existing terrestrial habitats of California.

Mr. Kwan has expertise in delineation of waters of the U.S. and has delineated over a hundred sites throughout California, Nevada, and Colorado. He also has expertise in California's Central Valley annual grassland and oak woodland communities, having conducted hundreds of wetland and biological resource evaluations related to site development, impact assessment, CEQA compliance, CWA 404 compliance, and CDFW 1602 compliance.

Mr. Kwan's expertise in avian ecology includes numerous breeding bird surveys, nest monitoring, and pre-construction clearance surveys in support of various local, state and federal regulations (e.g. CEQA, CDFW 1602). He has developed studies utilizing focal survey and point-count methodologies to assess bird use. He has been an active birdwatcher throughout California and has participated in National Audubon Society Christmas Bird Counts for over 30 years.

He administers Quality Assurance/Quality Control for many of the biological reports produced in the Northern California office, including wetland delineations, special-status species assessment and survey reports, arborist survey reports, biological assessments, Section 404 mitigation and compliance reports. Mr. Kwan also has expertise in identification and field sampling of federally-listed vernal pool branchiopods.

ATTACHMENT B

Full Species Search Results

Attachment B. Full Species Search Results

Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA/ NPPA	Other			
Plants						
Congdon's onion *(Allium sanbornii* var. *congdonii)*	-	-	4.3	Chaparral and cismontane woodland with serpentinite or volcanic soils (984'–4577').	April–July	Absent. Outside known range.
Sanborn's onion *(Allium sanbornii* var. *sanbornii)*	-	-	4.2	Chaparral, cismontane woodland, and lower montane coniferous forests, usually with gravelly, serpentinite soils (853'–4,954').	May–September	Potential to occur.
True's manzanita *(Arctostaphylos mewukka* ssp. *truei)*	-	-	4.2	Chaparral or lower montane coniferous forest, sometimes on roadsides (1,394'–4,560').	February–July	Potential to occur.
Mexican mosquito fern *(Azolla microphylla)*	-	-	4.2	Marshes and swamps, ponds or slow-moving bodies of water (98'–328').	August	Absent. Outside of elevation range of species.
Valley brodiaea (*Brodiaea rosea* ssp. *truei*)	–	–	1B.2	Volcanic soils in broad–leafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland (33'–1,099').	May–July	Absent. Outside of elevation range of species
Sierra foothills brodiaea *(Brodiaea sierrae)*	–	–	4.3	Serpentinite or gabbroic soils within chaparral or cismontane woodland (164'–3,215').	May–August	Potential to occur.
Stebbins' morning–glory *(Calystegia stebbinsii)*	FE	CE	1B.1	Gabbroic or serpentine soils in chaparral and cismontane woodland (607'–3,576').	April–July	Potential to occur.
Chaparral sedge *(Carex xerophila)*	–	–	1B.2	Serpentinite or gabbroic soils within chaparral, cismontane woodland, and lower montane coniferous forest (1,444'–2,526').	March–June	Potential to occur.

Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA/ NPPA	Other			
Red Hills soaproot *(Chlorogalum grandiflorum)*	–	–	1B.2	Serpentinite or gabbroic soils in chaparral, cismontane woodland, and lower montane coniferous forest, occasionally on non–ultramafic soils (804'–5,545').	May–June	Absent. Outside of range.
Brandegee's clarkia *(Clarkia biloba* ssp. *brandegeeae)*	–	–	4.2	Chaparral, cismontane woodlands, and lower montane coniferous forest often along roadcuts (246'–3,002').	May–July	Potential to occur
Streambank spring beauty *(Claytonia parviflora* ssp. *grandiflora)*	–	–	4.2	Occurs in rocky cismontane woodland. (820'–3,937').	February–May	Absent. Outside of range.
California lady's–slipper (*Cypripedium californicum)*	–	–	4.2	Usually within serpentinite seeps and streambanks of bogs and ferns, and lower montane coniferous forest (98'–9,022').	April–August	Absent. Outside of range.
Clustered lady's–slipper *(Cypripedium fasciculatum)*	–	–	4.2	In serpentinite seeps, and streambanks of lower montane coniferous forest, and North Coast coniferous forest (328'–7,989').	March–August	Absent. No suitable habitat onsite
California pitcherplant *(Darlingtonia californica)*	–	–	4.2	Mesic areas in generally serpentinite seeps of bogs and ferns, and meadows and seeps (0'–8,481').	April–August	Absent. No Suitable habitat onsite.
Dwarf downingia *(Downingia pusilla)*	–	–	2B.2	Mesic areas in valley and foothill grassland, and vernal pools. Species appears to have an affinity for slight disturbance (i.e., scraped depressions, ditches, etc.) (Baldwin et al. 2012, CDFW 2018) (3'–1,460').	March–May	Absent. No suitable habitat onsite.
Northern Sierra daisy *(Erigeron petrophilus* var. *sierrensis)*	–	–	4.3	In sometimes serpentinite cismontane woodland, lower montane coniferous forest, and upper montane coniferous forest (984'–6,801').	June–October	Absent. No suitable habitat onsite

Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA/ NPPA	Other			
Jepson's coyote thistle (*Eryngium jepsonii*)	–	–	1B.2	Clay soils of valley and foothill grassland, and vernal pools (10'–984').	April–August	Absent. No suitable habitat onsite.
Pine Hill flannelbush *(Fremontodendron decumbens)*	FE	CR	1B.2	Serpentine or gabbro rock outcrops in chaparral and cismontane woodland (1,394'–2,493').	April–July	Potential to occur.
Stinkbells *(Fritillaria agrestis)*	–	–	4.2	Clay and sometimes serpentinite soils in chaparral, cismontane woodland, Pinyon and juniper woodland, and valley and foothill grassland (33'–5,102').	March–June	Absent. Outside of range.
Butte County fritillary *(Fritillaria eastwoodiae)*	–	–	3.2	Chaparral, cismontane woodland, and openings in lower montane coniferous forest and occasionally is found on serpentinite soils (164'–4,921').	March–June	Potential to occur.
Finger rush *(Juncus digitatus)*	–	–	1B.1	Openings within cismontane woodland and lower montane coniferous forest, as well as xeric vernal pools (2,165'–2,592).	April–June	Potential to occur.
Dubious Pea *(Lathyrus sulphureus* var. *argillaceus)*	–	–	3	Cismontane woodland, lower montane coniferous forest and upper montane coniferous forest. (492'–3,051').	April–May	Potential to occur.
Cantelow's lewisia *(Lewisia cantelovii)*	–	–	1B.2	In granitic or sometimes serpentinite soils within mesic areas of broad–leaved upland forest, chaparral, cismontane woodland, and lower montane coniferous forest (1,083'–4,495').	May–October	Absent. No suitable habitat onsite.
Humboldt Lily *(Lilium humboldtii* ssp. *humboldtii)*	–	–	4.2	Occurs in openings within chaparral, cismontane woodland, and lower montane coniferous forest (295'–4,199').	May–August	Potential to occur.

Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA/ NPPA	Other			
Inundated bog club moss *(Lycopodiella inundata)*	–	–	2B.2	Coastal bogs and fens, mesic areas in lower montaine coniferous forest, and the margins of marshes and swamps.	June–September	Absent. No suitable habitat onsite.
Follett's monardella *(Monardella follettii)*	–	–	1B.2	Rocky serpentinite soil in lower montane coniferous forests (1,969'–6,562').	June–September	Absent. Outside of species range.
Bacigalupi's yampah *(Perideridia bacigalupii)*	–	–	4.2	Serpentinite soils of lower montane coniferous forest and chaparral (1,476'–3,396').	June–August	Low potential to occur.
Cedar Crest popcornflower *(Plagiobothrys glyptocarpus* var. *modestus)*	–	–	3	Cismontane woodland and mesic valley and foothill grasslands (108'–2,945).	April–June	Potential to occur.
Sierra blue grass *(Poa sierrae)*	–	–	1B.3	Lower montane coniferous forest openings (1,198'–4,921').	April–July	Absent. Outside species range.
Brownish beaked–rush *(Rhynchospora capitellata)*	–	–	2B.2	Mesic areas in lower montane coniferous forest, upper montane coniferous forests, meadows, seeps, marshes, and swamps (148'–6,562').	July–August	Low potential to occur.
Giant checkerbloom *(Sidalcea gigantea)*	–	–	4.3	Meadows and seeps within lower and upper montane coniferous forests (2,198'–6,398').	January–June	Absent. No suitable habitat onsite
Scadden Flat checkerbloom *(Sidalcea stipularis)*	–	CE	1B.1	Montane freshwater marshes and swamps (2297'–2,395').	July–August	Absent. No suitable habitat onsite
Long–fruit jewelflower *(Streptanthus longisiliquus)*	–	–	4.3	Openings in cismontane woodland and lower montane coniferous forest (2,346'–4,921').	April–September	Absent. Outside of species range.
Brazilian watermeal *(Wolffia brasiliensis)*	–	–	2B.3	Assorted shallow freshwater marshes and swamps (66'–328').	April–December	Absent. Outside of elevation range of species
Invertebrates						
Vernal pool fairy shrimp (*Branchinecta lynchi*)	FT	-	-	Vernal pools/wetlands.	November-April	Absent. No suitable habitat onsite.

Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	**Status**			**Habitat Description**	**Survey Period**	**Potential To Occur On-Site**
	ESA	**CESA/ NPPA**	**Other**			
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	FT	-	-	Elderberry shrubs.	Any season	Absent. Outside of elevational range of species.
Fish						
Delta smelt (*Hypomesus transpacificus*)	FT	CE	-	Sacramento-San Joaquin delta.	N/A	Absent. Outside of range of species.
Steelhead (CA Central Valley DPS) (*Oncorhynchus mykiss*)	FT	-	-	Undammed rivers, streams, creeks.	N/A	Absent. Populations are known downstream in Deer Creek, but the dam at Lake Wildwood is an impassible barrier.
Chinook salmon (Central Valley spring-run ESU) (*Oncorhynchus tshawytscha*)	FT	CT	-	Undammed rivers, streams, creeks.	N/A	Absent. Populations are known downstream in Deer Creek, but the dam at Lake Wildwood is an impassible barrier.
Amphibians						
Foothill yellow-legged frog (*Rana boylii*)	-	Candidate	SSC	Foothill yellow-legged frogs can be active all year in warmer locations, but may become inactive or hibernate in colder climates. At lower elevations, foothill yellow-legged frogs likely spend most of the year in or near streams. Adult frogs, primarily males, will gather along main-stem rivers during spring to breed.	May - October	Low potential to occur.
California red-legged frog (*Rana draytonii*)	FT	-	SSC	Lowlands or foothills at waters with dense shrubby or emergent riparian vegetation. Adults must have aestivation habitat to endure summer dry down.	May 1- November 1	Low potential to occur.
Reptiles						

Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA/ NPPA	Other			
Northwestern pond turtle (*Actinemys marmorata*)	-	-	SSC	Requires basking sites and upland habitats up to 0.5 km from water for egg laying. Uses ponds, streams, detention basins, and irrigation ditches.	April-September	Potential to occur.
Blainville's ("Coast") horned lizard (*Phrynosoma blainvillii*)	-	-	SSC	Formerly a wide-spread horned lizard found in a wide variety of habitats, often in lower elevation areas with sandy washes and scattered low bushes. Also occurs in Sierra Nevada foothills. Requires open areas for basking, but with bushes or grass clumps for cover, patches of loamy soil or sand for burrowing and an abundance of ants (Stebbins and McGinnis 2012).). In the northern Sacramento area, this species appears restricted to the foothills between 1000 to 3000 feet from Cameron Park (El Dorado County) north and west to Grass Valley and Nevada City.	Apr-Oct	Potential to occur.
Birds						
Clark's grebe *(Aechmophorus clarkii)*	-	-	BCC	Winters on salt or brackish bays, estuaries, sheltered sea coasts, freshwater lakes, and rivers. Breeds on freshwater to brackish marshes, lakes, reservoirs and ponds, with a preference for large stretches of open water fringed with emergent vegetation.	June-August (breeding)	Absent. No suitable habitat onsite.

Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA/ NPPA	Other			
Rufous hummingbird *(Selasphorus rufus)*	-	-	BCC	Breeds in British Columbia and Alaska (does not breed in California). Winters in coastal Southern California south into Mexico. Common migrant during March-April in Sierra Nevada foothills and June-August in Lower Conifer to Alpine zone of Sierra Nevada. Nesting habitat includes secondary succession communities and openings, mature forests, parks and residential area.	April-July	Absent. No suitable habitat onsite.
California black rail (*Laterallus jamaicensis coturniculus*)	-	CT	BCC, CFP	Salt marsh, shallow freshwater marsh, wet meadows, and flooded grassy vegetation. In California, primarily found in coastal and Bay-Delta communities, but also in Sierran foothills (Butte, Yuba, Nevada, Placer counties)	March-September (breeding)	Absent. No suitable habitat onsite.
Great blue heron (*Ardea herodias*)	-	-	CNDDB *	Colonial nester; prefers to nest in vegetation on islands or in swamps but may also be found in upland habitats in trees, bushes, on the ground and on artificial structures. Foraging habitat is widely diverse and includes swamps, coastlines, estuaries, beaches, pastures, cultivated fields, and riparian areas.	February-July	Absent. No suitable habitat onsite.

Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA/ NPPA	Other			
Bald eagle (*Haliaeetus leucocephalus)*	Delisted	CE	CFP, BCC	Typically nests in forested areas near large bodies of water in the northern half of California; nest in trees and rarely on cliffs; wintering habitat includes forest and woodland communities near water bodies (e.g. rivers, lakes), wetlands, flooded agricultural fields, open grasslands	February – September (nesting); October-March (wintering)	Absent. No suitable habitat onsite.
Northern harrier (*Circus hudsonius*)	-	-	SSC	Nests on the ground in open wetlands, marshy meadows, wet/lightly grazed pastures, (rarely) freshwater/brackish marshes, tundra, grasslands, prairies, croplands, desert, shrub-steppe, and (rarely) riparian woodland communities.	April-September	Absent. No suitable habitat onsite.
Cooper's hawk *(Accipiter cooperii)*	-	-	CDFW WL	Nests in trees in riparian woodlands in deciduous, mixed and evergreen forests, as well as urban landscapes	March-July	Potential to occur.
Northern goshawk *(Accipiter gentilis)*	-	-	SSC	Nesting occurs in mature to old-growth forests composed primarily of large trees with high canopy closure. In California, nests are built primarily in conifer trees in the Sierra Nevada, Cascade and northwestern coastal Ranges.	March-August	Absent. Outside of species range.
Long-eared owl *(Asio otus)*	-	-	SSC	Nests in open forests, riparian woodland, conifer forests, dense vegetation adjacent to grasslands, shrublands or other open communities	March-August (breeding); November-March (wintering in Central Valley)	Absent. No suitable habitat onsite.

Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA/ NPPA	Other			
Lewis' woodpecker (*Melanerpes lewis*)	-	-	BCC	In California, breeds in Siskiyou and Modoc Counties, Warmer Mountains, inner coast ranges from Tehama to San Luis Obispo Counties, San Bernardino Mountains, and Big Pine Mountain (Inyo Co.); nesting habitat includes open ponderosa pine forest, open riparian woodland, logged/burned forest, and oak woodlands. Does not breed on the west side of Sierran crest (Beedy and Pandalfino 2013).	April-September (breeding); September-March (winter in Central Valley).	Absent. Only wintering habitat present onsite.
Nuttall's woodpecker *(Dryobates nuttallii)*	-	-	BCC	Resident from northern California south to Baja California. Nests in tree cavities in oak woodlands and riparian woodlands.	April-July	Potential to occur.
Olive-sided flycatcher *(Contopus cooperi)*	-	-	SSC, BCC	Nests in montane and northern coniferous forests, in forest openings, forest edges, semiopen forest stands. In California, nests in coastal forests, Cascade and Sierra Nevada region. Winters in Central to South America.	May-August	Potential to occur.
Willow flycatcher *(Empidonax traillii)*	-	CE	BCC	In California, breeding range includes Cascade-Sierra Nevada region (*brewsteri* subspecies); *extimus* subspecies found in southern California; nesting habitat includes moist, shrubby riparian willow thickets, often with standing or running water. Winters in Central and South America.	May-September	Absent. Outside of species range.

Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA/ NPPA	Other			
Yellow-billed magpie (*Pica nuttallii*)	-	-	BCC	Endemic to California; found in the Central Valley and coast range south of San Francisco Bay and north of Los Angeles County; nesting habitat includes oak savannah with large in large expanses of open ground; also found in urban parklike settings.	April-June	Low potential to occur.
Bank swallow (*Riparia riparia*)	-	CT	-	Nests colonially along coasts, rivers, streams, lakes, reservoirs, and wetlands in vertical banks, cliffs, and bluffs in alluvial, friable soils. May also nest in sand, gravel quarries and road cuts. In California, breeding range includes northern and central California.	May-July	Absent. No suitable habitat onsite.
Oak titmouse (*Baeolophus inornatus*)			BCC	Nests in tree cavities within dry oak or oak-pine woodland and riparian; where oaks are absent, they nest in juniper woodland, open forests (gray, Jeffrey, Coulter, pinyon pines and Joshua tree)	March-July	Potential to occur.
Wrentit (*Chamaea fasciata*)	-	-	BCC	Coastal sage scrub, northern coastal scrub, chaparral, dense understory of riparian woodlands, riparian scrub, coyote brush and blackberry thickets, and dense thickets in suburban parks and gardens.	March-August	Absent. No suitable habitat onsite.
California thrasher (*Toxostoma redivivum*)	-	-	SSC	Resident and endemic to coastal and Sierra Nevada-Cascade foothill areas of California. Nests are usually well hidden in dense shrubs, including scrub oak, California lilac, and chamise.	February-July	Absent. No suitable habitat onsite.

Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA/ NPPA	Other			
Cassin's finch (*Haemorhous cassinii*)	-	-	BCC	Breeds throughout the conifer belts of North America's western interior mountains, from central British Columbia to northern New Mexico and Arizona; mostly between 3,000'-10,000' elevation. Often in mature forests of pine, spruce and aspen; especially open, dry pine forests. Some will breed in open sagebrush shrubland with scattered western junipers.	May-July	Absent. Outside of species range.
Grasshopper sparrow (*Ammodramus savannarum*)	-	-	SSC	In California, breeding range includes most coastal counties south to Baja California; western Sacramento Valley and western edge of Sierra Nevada region. Nests in moderately open grasslands and prairies with patchy bare ground. Avoids grasslands with extensive shrub cover; more likely to occupy large tracts of habitat than small fragments; removal of grass cover by grazing often detrimental.	May-August	Absent. No suitable habitat onsite.
Song sparrow "Modesto" (*Melospiza melodia heermanni*)	-	-	BCC, SSC	Resident in central and southwest California, including Central Valley; nests in marsh, scrub habitat	April-June	Potential to occur.

Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	**Status**			**Habitat Description**	**Survey Period**	**Potential To Occur On-Site**
	ESA	**CESA/ NPPA**	**Other**			
Yellow warbler (*Setophaga petechia*)	-	-	SSC, BCC	Breeding range includes most of California, except Central Valley (isolated breeding locales on Valley floor, Stanislaus, Colusa, and Butte Counties), Sierra Nevada range above tree line, and southeastern deserts. Nesting habitat includes riparian vegetation near streams and meadows. Winters in Mexico south to South America.	May-August	Absent. Outside of species range
Yellow-breasted chat (*Icteria virens*)	-	-	SSC	In California, breeds in Klamath Mountains, inner Northern Coast Range south to San Francisco Bay, locally distributed from Santa Clara Co. south to San Diego Co. Sacramento and San Joaquin Valleys, along west slope of Sierra Nevada from the Feather River to Kern River, Mono and Inyo Cos. In the west, nesting habitat includes dense riparian and shrubby.	May-August	Potential to occur.
Mammals						
Townsend's big-eared bat *(Corynorhinus townsendii)*	-	-	SSC	Caves, mines, buildings, rock crevices, trees.	April-September	Low potential to occur.
Western red bat (*Lasiurus blossevillii*)	-	-	SSC	Roosts in foliage of trees or shrubs; Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. There may be an association with intact riparian habitat (particularly willows, cottonwoods, and sycamores) (WBWG 2017).	April-September	Potential to occur.

Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA/ NPPA	Other			
Hoary bat (*Lasiurus cinerus*)	-	-	CNDDB	Dense foliage of medium to large trees; roost primarily in foliage of both coniferous and deciduous trees; Roosts are usually at the edge of a clearing. Some unusual roosting situations have been reported in caves, beneath a rock ledge, in a woodpecker hole, in a grey squirrel nest, under a driftwood plank, and clinging to the side of a building (WBWG 2015).	April-September	Potential to occur
Fringed myotis *(Myotis thysanodes)*	-	-	-	Desert scrub, mesic coniferous forest, grassland, and sage-grass steppe habitats; roosts in crevices in buildings, underground mines, rocks, cliff faces, and bridges; hibernacula include caves, mines and buildings (WBWG 2017).	April-September	Absent. No suitable habitat onsite.
Yuma myotis (*Myotis yumanensis)*	-	-	-	Usually associated with permanent sources of water, typically rivers and streams; occurs in riparian, arid scrublands and deserts, and forests; roosts in bridges, buildings, cliff crevices, caves, mines, and trees (WBWG 2017).	April-September	Low potential to occur.
Fisher- West Coast DPS *(Pekania pennanti)*	FPT	CT	SSC	Northern coniferous and mixed forests of Canada and northern United States.	Any season	Low potential to occur.

Potentially Occurring Special-Status Species						
Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur On-Site
	ESA	CESA/ NPPA	Other			
Sierra Nevada red fox (*Vulpes vulpes necator*)	FC	CT	-	Found in the Cascades in Siskiyou County, and from Lassen County south to Tulare County, rare in the Sierra Nevada. Sierra Nevada populations may be found in a variety of habitats, including alpine dwarf-shrub, wet meadow subalpine conifer, lodgepole pine, red fir, aspen, montane chaparral, montane riparian, mixed conifer, and ponderosa pine. Most sightings in Sierra Nevada area above 7,000 feet but range from 3,900 to 11,900 feet.		Absent. Outside of species range.

Status Codes:
4.2 - CRPR/Plants of Limited Distribution – A Watch List
1B.1 - CRPR/Rare or Endangered in California and elsewhere
3.2 - CRPR/Plants About Which More Information is Needed – A Review List
2B.2 - Plants rare, threatened, or endangered in California but more common elsewhere
BCC - USFWS Bird of Conservation Concern (USFWS 2002)
CE - CESA or NPPA listed, Endangered
CDFW WL - CDFW Watch List
CFP - California Fish and Game Code Fully Protected Species (§ 3511-birds, § 4700-mammals, §5 050-reptiles/amphibians)
CNDDB - Species that is tracked by CDFG's CNDDB but does not have any of the above special-status designations otherwise
CT - CESA- or NPPA-listed, Threatened
FPT - Formally Proposed for FESA listing as Threatened
FT - FESA listed, Threatened
SSC - Species of Special Concern

APPENDIX C

Cultural Resources Assessment

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APPENDIX D

Noise Assessment

E. George to Lake Wildwood Backbone Extension Pipeline Project

Noise Impact Assessment

Nevada County, California

Prepared For:
Nevada Irrigation District
1036 W Main St
Grass Valley, CA 95945
April 2019

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

ECORP Consulting, Inc. has assisted public and private land owners with environmental regulation compliance since 1987. We offer full service capability, from initial baseline environmental studies through environmental planning review, permitting negotiation, liaison to obtain legal agreements, mitigation design, construction monitoring, and compliance reporting.

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● *Phone: (530) 965-5925* ● *Web: www.ecorpconsulting.com*

CONTENTS

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

This report documents the results of a noise impact assessment completed for the E. George to Lake Wildwood Backbone Extension Pipeline Project, which includes the development of a 5.6-mile new water transmission pipeline in Nevada County. This report was prepared as a comparison of predicted Project noise levels to noise standards promulgated by the County of Nevada. The Purpose of this report is to estimate Project-generated noise and to determine the level of impact the Project would have on the environment.

1.1 Project Description and Location

The Proposed Project is generally located along the Rough and Ready Highway in Nevada County, CA (see **Figure 1**). From its eastern boundary, the Project starts on Rough and Ready Highway at West Drive and ends at the intersection of Lake Wildwood Drive and Chaparral Drive (western boundary). The Project would be constructed within the existing right of way of the following roadways: Rough and Ready Highway, Rough and Ready Road, Riffle Box Road, Empty Diggins Lane, Bosa Drive, Minnow Lane, and Lake Wildwood Drive. There are two cross country segments: one at the west end of Riffle Box Road and one just east of Minnow Lane (along a fire road easement). (See **Figure 2**.)

According to the Nevada County General Plan, land uses surrounding the proposed 5.6-mile alignment are dominated by lands designated Forest and Rural lands. While the Project would take place primarily within existing roadways, the majority of the surrounding lands are designated as Rural.

The total alignment and approximate section lengths of the Proposed Project are as follows:

- Along Rough and Ready Highway from West Drive (eastern most Project boundary) to Rough and Ready Road (approximately 2.5 miles).
- From Rough and Ready Highway, the Project continues west along Rough and Ready Road to Riffle Box Road (approximately 1.75 miles).
- The Project continues approximately 460 feet west along Riffle Box Road. At this point Riffle Box Road then makes a sharp turn north; however, the Project alignment continues east cross country approximately 830 feet where it rejoins Rough and Ready Road.
- The Project then continues west 209 feet where it turns south onto Empty Diggins Lane
- From the intersection of Rough and Ready Road and Empty Diggins Lane, the Project continues southwest along Empty Diggins Road to Bosa Drive (approximately 0.3 miles).
- The Project then turns north on Bosa Drive and continues approximately 0.3 miles to a private driveway.
- The Project follows the private driveway approximately 600 to where it joins Minnow Way. This area is currently a fire lane easement.
- The Project then follows Minnow Way approximately 475 feet west to Lake Wildwood Drive.

- At the intersection of Lake Wildwood and Minnow Way the Project turns north along Lake Wildwood Drive.
- The Project follows Lake Wildwood Drive approximately 0.3 miles north to Chaparral Drive where it ends (western most boundary).

The majority of the Project would be constructed within existing roadways, except where it would cross private property between Riffle Box Road and Rough and Ready Road near Empty Diggins Lane. Another short segment would cross private property just east of Minnow Lane. Appurtenances such as fire hydrants, Air Release Valves (ARV), and service lines and meter boxes would be placed on the shoulder of the road at the adjacent property lines. Stub-outs for future waterline extensions would also be installed.

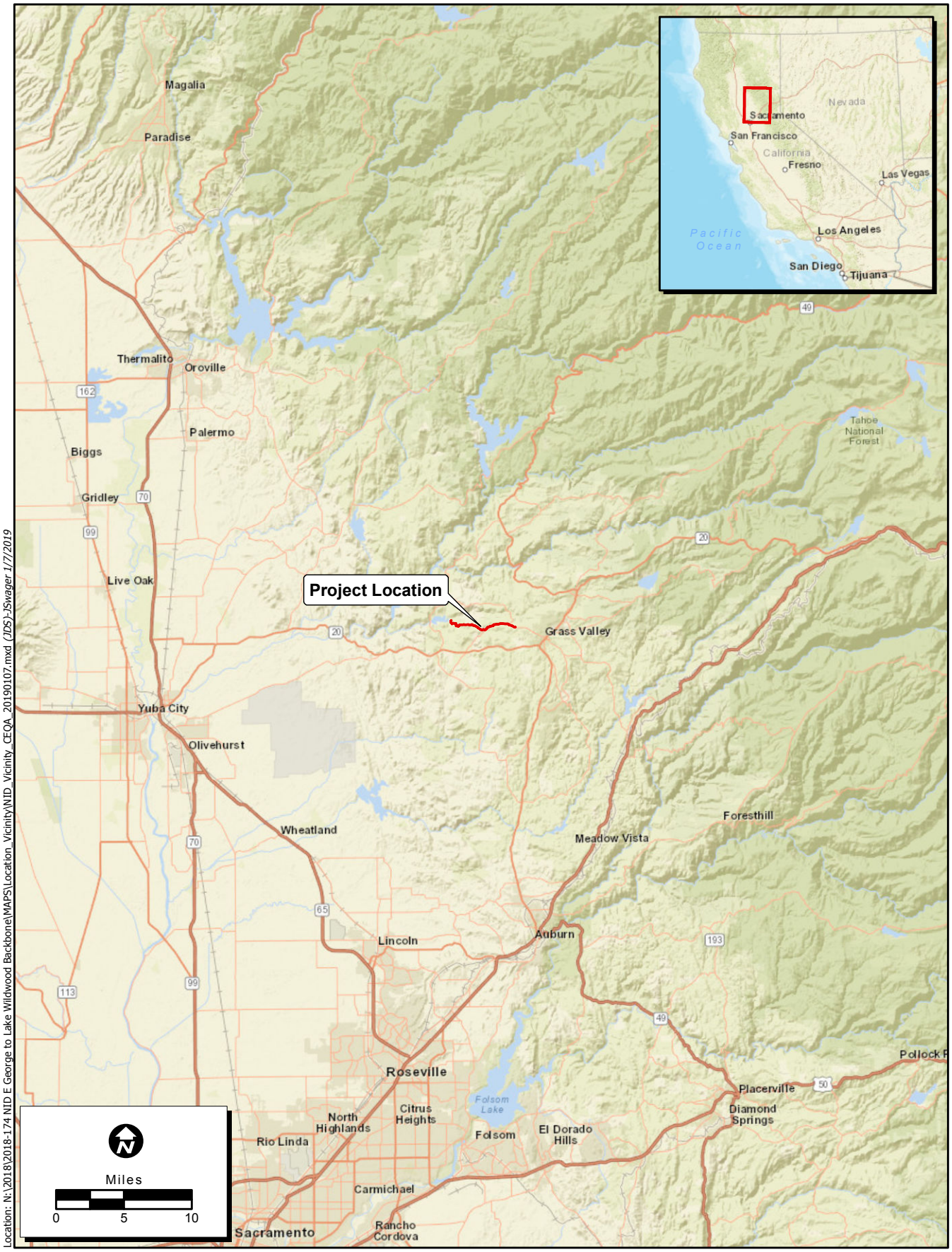
Some above-ground sections may be identified along the route for potential use. The Nevada Irrigation District uses a standard detail of 25 feet for easement acquisition. Excavation depth would be limited to 5-6 feet where appropriate. However, due to site and subsurface conditions, deeper excavation (not to exceed 10 feet) may be needed in areas where the project crosses underneath existing culverts within the roadway.

Due to the relatively long length of the new pipeline it is not practical to construct in a single dry season. Therefore, the Project would be phased over a 5-year construction period with approximately one mile of pipeline installed per year. Estimates place construction beginning in 2020 and completing in 2025 (and will likely be split between 5-7 phases).

Typical construction equipment would include:

- 1-2 excavators (such as Case CX210)
- 2 crew trucks, loader (such as Volvo L60)
- Dump truck (3-axel, 10 wheel)
- Service lines would be installed with a boring machine or excavator, depending on the terrain.
- Project Boards would be placed at both ends of the Project notifying the public of all closures and work hours
- Traffic control flaggers would be required
- Paving will include a grinder (just for the t-trench not the entire lane width), excavator, loader, paving machine and then restriping machine
- Final paving within the "T" over the trench includes an edge to edge micro resurfacing, requiring restriping

Use of the equipment can be 8-10 hours of day, intermittently with an estimated 8-10 personal (including foreman and operators). Construction hours will be limited to 7 am to 7 pm. In addition to this, flaggers for traffic control will be used. Project areas are assumed to be held to one lane open with hold times up to 15 minutes. Night work is not anticipated.



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Map Date: 1/7/2019

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

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Figure 1. Project Location and Vicinity

2018-174 NID - E George to Lake Wildwood Backbone

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Map Date: 2/22/2019
Photo Source: 2016, NAIP

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Figure 2. Project Alignment

2018-174 NID - E George to Lake Wildwood Backbone

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2.0 NOISE BACKGROUND

2.1 Fundamentals of Sound and Environmental Noise

Addition of Decibels

The decibel (dB) scale is logarithmic, not linear, and therefore sound levels cannot be added or subtracted through ordinary arithmetic. Two sound levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted (dBA), an increase of 10 dBA is generally perceived as a doubling in loudness. For example, a 70-dBA sound is half as loud as an 80-dBA sound and twice as loud as a 60-dBA sound. When two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than one source under the same conditions (FTA 2018). For example, a 65-dB source of sound, such as a truck, when joined by another 65 dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by 3 dB). Under the decibel scale, three sources of equal loudness together would produce an increase of 5 dB.

Typical noise levels associated with common noise sources are depicted in **Figure 3**.

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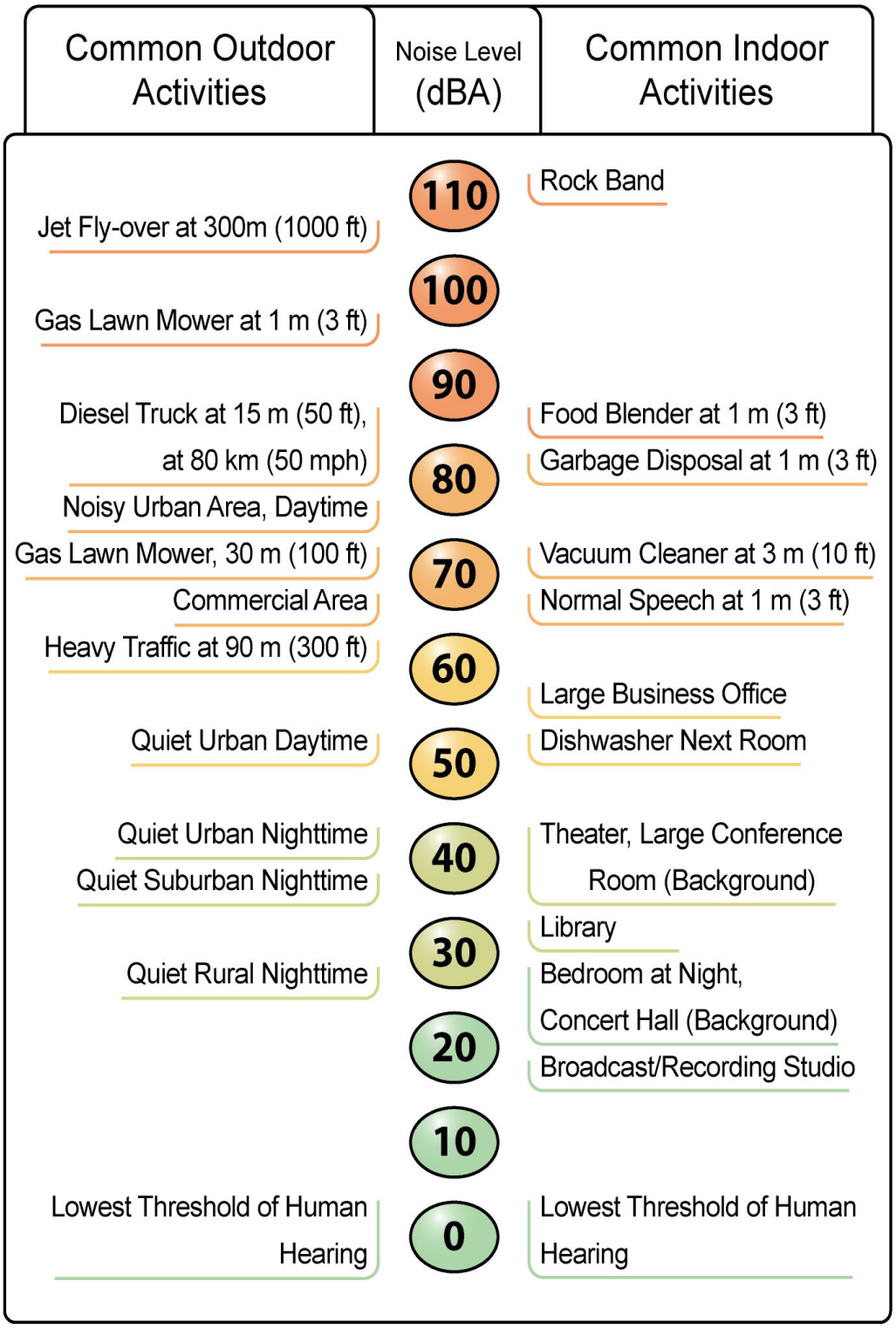

Source: Caltrans 2012

FIGURE 3. COMMON NOISE LEVELS

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Sound Propagation and Attenuation

Noise can be generated by a number of sources, including mobile sources, such as automobiles, trucks and airplanes, and stationary sources, such as construction sites, machinery, and industrial operations. Sound spreads (propagates) uniformly outward in a spherical pattern, and the sound level decreases (attenuates) at a rate of approximately 6 dB for each doubling of distance from a stationary or point source. Sound from a line source, such as a highway, propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of approximately 3 dB for each doubling of distance from a line source, such as a roadway, depending on ground surface characteristics (FHWA 2011). No excess attenuation is assumed for hard surfaces like a parking lot or a body of water. Soft surfaces, such as soft dirt or grass, can absorb sound, so an excess ground-attenuation value of 1.5 dB per doubling of distance is normally assumed.

Noise levels may also be reduced by intervening structures; generally, a single row of detached buildings between the receptor and the noise source reduces the noise level by about 5 dBA (FHWA 2006), while a solid wall or berm generally reduces noise levels by 10 to 20 dBA (FHWA 2011). However, noise barriers or enclosures specifically designed to reduce site-specific construction noise can provide a sound reduction 35 dBA or greater (WEAL 2000). To achieve the most potent noise-reducing effect, a noise enclosure/barrier must physically fit in the available space, must completely break the "line of sight" between the noise source and the receptors, must be free of degrading holes or gaps, and must not be flanked by nearby reflective surfaces. Noise barriers must be sizable enough to cover the entire noise source, and extend length-wise and vertically as far as feasibly possible to be most effective. The limiting factor for a noise barrier is not the component of noise transmitted through the material, but rather the amount of noise flanking around and over the barrier. In general, barriers contribute to decreasing noise levels only when the structure breaks the "line of sight" between the source and the receiver.

The manner in which older homes in California were constructed generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows. The exterior-to-interior reduction of newer residential units is generally 30 dBA or more.

Noise Descriptors

The decibel scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Several rating scales have been developed to analyze the adverse effect of community noise on people. Because environmental noise fluctuates over time, these scales consider that the effect of noise on people is largely dependent on the total acoustical energy content of the noise, as well as the time of day when the noise occurs. The L_{eq} is a measure of ambient noise, while the L_{dn} and CNEL (Community Noise Equivalent Level) are measures of community noise. Each is applicable to this analysis and defined in **Table 1**.

The A weighted decibel sound level scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends on the distance between the receptor and the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

Table 1. Common Acoustical Descriptors

Descriptor	Definition
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micropascals (or 20 micronewtons per square meter), where 1 pascal is the pressure resulting from a force of 1 newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micropascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, L_{eq}	The average acoustic energy content of noise for a stated period of time. Thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.
L_{max}, L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
L01, L10, L50, L90	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day/Night Noise Level, L_{dn} or DNL	A 24-hour average L_{eq} with a 10 dBA "weighting" added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the nighttime. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.4 dBA L_{dn}.
Community Noise Equivalent Level, CNEL	A 24-hour average L_{eq} with a 5 dBA "weighting" during the hours of 7:00 p.m. to 10:00 p.m. and a 10 dBA "weighting" added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the evening and nighttime, respectively. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.7 dBA CNEL.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends on its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.

Human Response to Noise

The human response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities, including sleep, speech, recreation, and tasks that demand concentration or coordination. Hearing loss can occur at the highest noise intensity levels.

Noise environments and consequences of human activities are usually well represented by median noise levels during the day or night or over a 24-hour period. Environmental noise levels are generally considered low when the CNEL is below 60 dBA, moderate in the 60 to 70 dBA range, and high above 70 dBA. Examples of low daytime levels are isolated, natural settings with noise levels as low as 20 dBA and quiet, suburban, residential streets with noise levels around 40 dBA. Noise levels above 45 dBA at night can disrupt sleep. Examples of moderate-level noise environments are urban residential or semi-commercial areas (typically 55 to 60 dBA) and commercial locations (typically 60 dBA). People may consider louder environments adverse, but most will accept the higher levels associated with noisier urban residential or residential-commercial areas (60 to 75 dBA) or dense urban or industrial areas (65 to 80 dBA). Regarding increases in A-weighted noise levels (dBA), the following relationships should be noted in understanding this analysis:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived by humans.
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference.
- A change in level of at least 5 dBA is required before any noticeable change in community response would be expected. An increase of 5 dBA is typically considered substantial.
- A 10-dBA change is subjectively heard as an approximate doubling in loudness and would almost certainly cause an adverse change in community response.

Effects of Noise on People

Hearing Loss

While physical damage to the ear from an intense noise impulse is rare, a degradation of auditory acuity can occur even within a community noise environment. Hearing loss occurs mainly due to chronic exposure to excessive noise but may be due to a single event such as an explosion. Natural hearing loss associated with aging may also be accelerated from chronic exposure to loud noise.

The Occupational Safety and Health Administration (OSHA) has a noise exposure standard that is set at the noise threshold where hearing loss may occur from long-term exposures. The maximum allowable level is 90 dBA averaged over 8 hours. If the noise is above 90 dBA, the allowable exposure time is correspondingly shorter.

Annoyance

Attitude surveys are used for measuring the annoyance felt in a community for noises intruding into homes or affecting outdoor activity areas. In these surveys, it was determined that causes for annoyance include interference with speech, radio and television, house vibrations, and interference with sleep and rest. The L_{dn} as a measure of noise has been found to provide a valid correlation of noise level and the percentage of people annoyed. People have been asked to judge the annoyance caused by aircraft noise and ground transportation noise. There continues to be disagreement about the relative annoyance of these different sources. For ground vehicles, a noise level of about 55 dBA L_{dn} is the threshold at which a substantial percentage of people begin to report annoyance.

2.2 Fundamentals of Environmental Groundborne Vibration

Vibration Sources and Characteristics

Sources of earthborne vibrations include natural phenomena (earthquakes, volcanic eruptions, sea waves, landslides, etc.) or man-made causes (explosions, machinery, traffic, trains, construction equipment, etc.). Vibration sources may be continuous (e.g., factory machinery) or transient (e.g., explosions).

Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several different methods are typically used to quantify vibration amplitude. One is the peak particle velocity (PPV); another is the root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. The RMS velocity is defined as the average of the squared amplitude of the signal. The PPV and RMS vibration velocity amplitudes are used to evaluate human response to vibration.

Vibration Sources and Characteristics

Table 2 displays the reactions of people and the effects on buildings produced by continuous vibration levels. The annoyance levels shown in the table should be interpreted with care since vibration may be found to be annoying at much lower levels than those listed, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors, or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage. In high noise environments, which are more prevalent where groundborne vibration approaches perceptible levels, this rattling phenomenon may also be produced by loud airborne environmental noise causing induced vibration in exterior doors and windows.

Ground vibration can be a concern in instances where buildings shake and substantial rumblings occur. However, it is unusual for vibration from typical urban sources such as buses and heavy trucks to be perceptible. Common sources for groundborne vibration are planes, trains, and construction activities such as earth-moving which requires the use of heavy-duty earth moving equipment.

The County of Nevada does not regulate vibrations associated with construction. However, a discussion of construction vibration is included for full disclosure purposes. A PPV descriptor with units of inches per section (in/sec) is used to evaluate construction-generated vibration for building damage and human complaints, for the purposes of this analysis.

Table 2. Human Reaction and Damage to Buildings for Continuous or Frequent Intermittent Vibration Levels

Peak Particle Velocity (inches/second)	Approximate Vibration Velocity Level (VdB)	Human Reaction	Effect on Buildings
0.006–0.019	64–74	Range of threshold of perception	Vibrations unlikely to cause damage of any type
0.08	87	Vibrations readily perceptible	Recommended upper level to which ruins and ancient monuments should be subjected
0.1	92	Level at which continuous vibrations may begin to annoy people, particularly those involved in vibration sensitive activities	Virtually no risk of architectural damage to normal buildings
0.2	94	Vibrations may begin to annoy people in buildings	Threshold at which there is a risk of architectural damage to normal dwellings
0.4–0.6	98–104	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Architectural damage and possibly minor structural damage

Source: Caltrans 2004

2.3 Existing Environmental Noise Setting

Noise Sensitive Land Uses

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Additional land uses such as parks, historic sites, cemeteries, and recreation areas are considered sensitive to increases in exterior noise levels. Schools, churches, hotels, libraries, and other places where low interior noise levels are essential are also considered noise-sensitive land uses. The nearest sensitive noise receptors to the 5.6-mile long Project site include adjacent residences along either side of the proposed pipeline alignment.

Existing Ambient Noise Environment

The significant sources of community noise within the Project vicinity include traffic on local roadways. The Project site traverses a rural residential area of Nevada County. The existing ambient noise levels experienced along the 5.6-mile long site are typical of a quiet, suburban residential area. As previously described, quiet, suburban, residential noise levels generally range around 40 dBA.

3.0 REGULATORY FRAMEWORK

Federal

Occupational Safety and Health Act of 1970

The Federal Occupational Safety and Health Administration (OSHA) regulates on-site noise levels and protects workers from occupational noise exposure. To protect hearing, worker noise exposure is limited to 90 decibels with A-weighting (dBA) over an 8-hour work shift (29 Code of Regulations [CFR] 1910.95). Employers are required to develop a hearing conservation program when employees are exposed to noise levels exceeding 85 dBA. These programs include provision of hearing protection devices and testing employees for hearing loss on a periodic basis.

State

State of California General Plan Guidelines

The State of California regulates vehicular and freeway noise affecting classrooms, sets standards for sound transmission and occupational noise control, and identifies noise insulation standards and airport noise/land-use compatibility criteria. The State of California General Plan Guidelines (State of California 2003), published by the Governor's Office of Planning and Research (OPR), also provides guidance for the acceptability of projects within specific CNEL/L_{dn} contours. The guidelines also present adjustment factors that may be used in order to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution.

State Office of Planning and Research Noise Element Guidelines

The State Office of Planning and Research Noise Element Guidelines include recommended exterior and interior noise level standards for local jurisdictions to identify and prevent the creation of incompatible land uses due to noise. The Noise Element Guidelines contain a land use compatibility table that describes the compatibility of various land uses with a range of environmental noise levels in terms of the CNEL.

Local

County of Nevada Municipal Code

Noise sources in Nevada County are regulated through the County Municipal Code. Table L-II 4.1.7 of the Nevada County Municipal Code (shown here as **Table 3**) establishes the following noise standards that apply to land use projects.

Table 3. County of Nevada Exterior Noise Limits

Land Use Category	Time Period	Noise Levels, dBA	
		L_{eq}	L_{max}
Rural (AG, TPZ, AE, OS, FR, IDR Zoning Districts)	7am–7pm	55	75
	7pm–10pm	50	65
	10pm–7am	40	55
Residential and Public (RA, R1, R2, R3, P Zoning Districts)	7am–7pm	55	75
	7pm–10pm	50	65
	10pm–7am	45	60
Commercial and Recreation (C1, CH, CS, C2, C3, OP, REC Zoning Districts)	7am–7pm	70	90
	7pm–10pm	65	75
Business Park (BP Zoning Districts)	7am–7pm	65	85
	7pm–10pm	60	70
Industrial (M1, M2 Zoning Districts)	Anytime	80	90

Source: Nevada County 2019

Per Municipal Code Section L-II 4.1.7 (Noise), construction activities are not subject to the noise standards shown in **Table 3**. This is due to the fact that construction noise is temporary, short term, intermittent in nature, and would cease on completion of the Project. Furthermore, construction noise is generally acceptable by people as a reality within the human environment.

Thresholds of Significance

Criteria for determining the significance of noise impacts were developed based on information contained in the CEQA Guidelines Appendix G. According to the guidelines, a project may have a significant effect on the environment if it would result in the following conditions:

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

b) Generation of excessive groundbore vibration or groundborne noise levels.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.

For purposes of this analysis and where applicable, the County of Nevada noise standards were used for evaluation of Project-related noise impacts.

Methodology

This analysis of the existing and future noise environments is based on noise prediction modeling and empirical observations. In order to estimate the worst-case construction noise levels that may occur at the nearest noise-sensitive receptors in the Project vicinity, predicted construction noise levels were calculated utilizing the Federal Highway Administration's Roadway Construction Model (2006). Groundborne vibration levels associated with construction-related activities for the Project were evaluated utilizing typical groundborne vibration levels associated with construction equipment, obtained from the Caltrans guidelines set forth above. Potential groundborne vibration impacts related to structural damage and human annoyance were evaluated, taking into account the distance from construction activities to nearby land uses.

Impact Analysis

PROJECT CONSTRUCTION NOISE

Would the Project Result in Short-Term Construction-Generated Noise in Excess of County Standards?

Construction noise associated with the Proposed Project would be temporary and would vary depending on the nature of the activities being performed. Noise generated would primarily be associated with the operation of off-road equipment for on-site construction activities as well as construction vehicle traffic on area roadways. Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g., building construction, paving). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. Typical

operating cycles for these types of construction equipment may involve 1 or 2 minutes of full power operation followed by 3 to 4 minutes at lower power settings. Other primary sources of acoustical disturbance would be random incidents, which would last less than one minute (such as dropping large pieces of equipment or the hydraulic movement of machinery lifts). During construction, exterior noise levels could negatively affect sensitive receptors in the vicinity of the construction site.

Table 4 indicates the anticipated noise levels of construction equipment expected to be employed during Project construction. The average noise levels presented in **Table 4** are based on the quantity, type, and acoustical use factor for each type of equipment that is anticipated to be used.

Table 4. Maximum Noise Levels Generated by Construction Equipment

Type of Equipment	Maximum Noise (L_{max}) at 50 Feet (dBA)	Maximum 8-Hour Noise (L_{eq}) at 50 Feet (dBA)
Dozer	81.7	77.7
Excavator	80.7	76.7
Generator	80.6	77.6
Boring Machine	83.0	80.0
Paver	77.2	74.2
Paving Machine	89.5	82.5
Roller	80.0	73.0
Tractor	84.0	80.0
Dump Truck	76.5	72.5
Concrete Pump Truck	81.4	74.4
Welder	74.0	70.0

Source: Federal Highway Administration, Roadway Construction Noise Model (FHWA-HEP-05-054), dated January 2006.

Nearby noise-sensitive land uses consist of residences directly adjacent to the 5.6-mile long the Project site boundary. As depicted in **Table 4**, noise levels generated by individual pieces of construction equipment typically range from approximately 70.0 dBA L_{eq} to 82.5 dBA L_{eq} at 50 feet, and thus adjacent residential land uses could be exposed to temporary and intermittent noise levels beyond 82.5 dBA L_{eq} with L_{max} events even louder.

As previously discussed, construction activities in Nevada County are exempt from County noise standards per Municipal Code Section L-II 4.1.7 (Noise). This is because construction noise is temporary, short term, intermittent in nature, and would cease on completion of the Project. Additionally, construction would occur through the Project site and would not be concentrated at one point. Therefore, noise associated with construction activities would not conflict with County noise standards.

PROJECT OPERATIONAL NOISE

Would the Project Result in a Substantial Permanent Increase in Ambient Noise Levels in Excess of County Standards During Operations?

The Proposed Project involves the construction of an approximately 5.6-mile-long water pipeline. The Proposed Project will not include the provision of new permanent stationary or mobile sources. While it is anticipated that the Project would require intermittent maintenance to be conducted by County public works staff, such maintenance would be minimal requiring a negligible amount of traffic trips on an annual basis. Impacts in this regard would be insubstantial.

PROJECT GROUNDBORNE VIBRATION

Would the Project Expose Structures to Substantial Groundborne Vibration During Construction?

Excessive groundborne vibration impacts result from continuously occurring vibration levels. Increases in groundborne vibration levels attributable to the Proposed Project would be associated with short-term construction-related activities. Construction on the Project site would have the potential to result in varying degrees of temporary groundborne vibration, depending on the specific construction equipment used and the operations involved. Ground vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance.

Construction-related ground vibration is normally associated with impact equipment such as pile drivers, jackhammers, and the operation of some heavy-duty construction equipment, such as dozers and trucks. It is noted that pile drivers would not be necessary during Project construction. Vibration decreases rapidly with distance and it is acknowledged that construction activities would occur throughout the Project site and would not be concentrated at a point closest to sensitive receptors. Groundborne vibration levels associated with anticipated Project construction equipment are summarized in **Table 5**.

Table 5. Vibration Source Amplitudes for Construction Equipment

Equipment Type	Peak Particle Velocity at 25 Feet (inches per second)
Loaded Trucks	0.076
Rock Breaker	0.082
Jackhammer	0.035
Small Bulldozer	0.003
Tractor	0.003

Source: FTA 2018; Caltrans 2004

The County does not regulate vibration associated with construction. However, a discussion of construction vibration is included for full disclosure purposes. For comparison purposes, the Caltrans's (2004) recommended standard of 0.2 inches per second peak particle velocity with respect to the prevention of structural damage for older residential buildings is used as a threshold. This is also the level at which vibrations may begin to annoy people in buildings.

It is acknowledged that construction activities would occur throughout the linear Project site and would not be concentrated at any one point. The nearest structures of concern are residences adjacent to the 5.6-mile long the Project site boundary.

Based on the vibration levels presented in **Table 5**, ground vibration generated by heavy-duty equipment would not be anticipated to exceed approximately 0.076 inches per second peak particle velocity at 25 feet. Construction activities would need to employ the use of loaded trucks at 12 feet from an older structure in order to achieve a vibration rate of 0.2 inches per second peak particle velocity. Since construction activities would occur throughout the Project site and would not be concentrated at a point closest to residential structures, it is not expected that equipment would operate within 12 feet of a residential building for a sustained amount of time.

AIRPORT NOISE

Would the Project Expose People Residing or Working in the Project Area to Excessive Airport Noise Levels?

There are no public airports within 2 miles of the Project site. Limberlost Ranch Airport, a private facility, is located approximately 1.6 nautical miles southwest of the site at the closest. Given its distance from the Project site and low level of air traffic, operation of this airport would not expose Project construction workers to excessive noise levels.

CUMULATIVE NOISE IMPACTS

Cumulative Construction Noise

Construction activities associated with the Proposed Project and other construction projects in the area may overlap, resulting in construction noise in the area. However, construction noise impacts primarily affect the areas immediately adjacent to the construction site. Construction noise for the Proposed Project was determined to be less than significant following compliance with the County Municipal Code. Therefore, the Project would not contribute to cumulative impacts during construction.

Cumulative Operational Noise

As previously described, the Project would not contribute to operational noise levels.

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