Appendix "B1"

Air Quality & Greenhouse Gas Assessment

California Renewable Carbon Williams Facility Project

Colusa County, California

Prepared For:

California Renewable Carbon, LLC

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ENVIRONMENTAL CONSULTANTS

CONTENTS

1.0 INTRODUCTION 1
1.1 Project Overview 1
1.2 Project Location and Background 2
1.3 Project Components 2
1.3.1 Biomass Receiving and Sizing 4
1.3.2 Biomass Drying 4
1.3.3 Thermal Conversion 5
1.3.4 Pelletizing 5
1.3.5 Pellet Finishing and Shipping 6
1.3.6 Cogeneration 7
1.3.7 Chemical Storage 8
1.3.8 Administrative Buildings 8
1.3.9 Rail Spur Improvements 8
1.4 Project Construction 8
1.5 Post-Construction Operations 9
1.5.1 Source of Renewable Feedstock 9
1.5.2 Truck Trips 9
1.5.3 Rail Cars per Week 9
1.5.4 Employees 10
1.5.5 Mobile Onsite Equipment 10
1.5.6 Facility Lighting 10
2.0 Air Quality 11
2.1 Air Quality Setting 11
2.1.1 Northern Sacramento Valley Air Basin 11
2.1.2 Criteria Air Pollutants 11
2.1.3 Toxic Air Contaminants 14
2.1.4 Ambient Air Quality 17
2.1.5 Sensitive Receptors 19
2.2 Regulatory Framework 20
2.2.1 Federal 20
2.2.2 State 20
2.2.3 Local 21
2.3 Air Quality Emissions Impact Assessment 24
2.3.1 Thresholds of Significance 24

2.3.2 Construction Emission Estimation Methodology 25
2.3.3 Operational Emission Estimation Methodology 25
2.3.4 Displaced Criteria Pollutant and Greenhouse Gas Emissions 28
2.3.5 Impact Analysis 29
3.0 GREENHOUSE GAS EMISSIONS 42
3.1 Greenhouse Gas Setting 42
3.1.1 Sources of Greenhouse Gas Emissions 43
3.2 Regulatory Framework 44
3.2.1 State 44
3.3 Greenhouse Gas Emissions Impact Assessment 45
3.3.1 Thresholds of Significance 45
3.3.2 Methodology 47
3.3.3 Impact Analysis 49
4.0 REFERENCES 60

LIST OF TABLES

Table 2-1. Criteria Air Pollutants Summary of Common Sources and Effects 12
Table 2-2. Summary of Ambient Air Quality Data 18
Table 2-3. Attainment Status of Criteria Pollutants in the Colusa County Portion of NSVAB 19
Table 2-4. SMAQMD Thresholds of Significance (Pounds per Day [lbs/day]) 25
Table 2-5. Unmitigated Construction-Related Emissions 30
Table 2-6. Mitigated Construction-Related Emissions 31
Table 2-7. Operations-Related Emissions 33
Table 2-8. Proposed Project Displaced Criteria Pollutant Emissions from Displaced Open Burning Emissions (Tons) 35
Table 2-9. Proposed Project Displaced Criteria Pollutant Emissions from Onsite Electricity Generation (Tons) 36
Table 2-10. Cancer Risk Summary at Maximum Point of Exposure at Maximumly Exposed Receptors (Residence to West) 38
Table 2-11. Non-Carcinogenic Health Risk Summary at Maximumly Exposed Receptors (Residence to West) 39
Table 3-1. Greenhouse Gases 43
Table 3-2. Construction-Related Greenhouse Gas Emissions 49
Table 3-3. Operational-Related GHG Emissions 50
Table 3-4. Project Consistency with Scoping Plan GHG Emission Reduction Strategies 52
Table 3-5. Proposed Project Displaced Greenhouse Gas Emissions from Onsite Electricity Generation (Metric Tons) 58

LIST OF FIGURES

Figure 1. Project Location and Vicinity.....3

LIST OF ATTACHMENTS

Attachment A – CalEEMod Output File - Daily Criteria Air Pollutant Emissions

Attachment B – CalEEMod Output File - Annual Greenhouse Gas Emissions

LIST OF ACRONYMS AND ABBREVIATIONS

$\mu g/m^3$	Micrograms per cubic meter
AB	Assembly Bill
AQAP	Air Quality Attainment Plan
BAAQMD	Bay Area Air Quality Management District
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCAPCD	Colusa County Air Pollution Control District
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CH_4	Methane
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalents
County	Colusa County
CRU	Carbon Recovery Unit
DPM	Diesel particulate matter
EMFAC	Emission Factor Model
ESP	Electrostatic Precipitator
GHG	Greenhouse gas
GWP	Global warming potential
HRSG	Heat Recovery Steam Generator
IPCC	Intergovernmental Panel on Climate Change
I-5	Interstate 5
Kv	Kilovolt
lbs	Pounds
LOS	Levels of service
MCC	Motor Control Center
MW	Megawatt
M-2	Heavy Industrial
NAAQS	National Ambient Air Quality Standards
NO_2	Nitrogen dioxide

LIST OF ACRONYMS AND ABBREVIATIONS

N_2O	Nitrous oxide
NO_x	Nitrous oxides
NSVAB	Northern Sacramento Valley Air Basin
O_3	Ozone
PG&E	Pacific Gas and Electric
$PM_{2.5}$	Fine particulate matter
PM_{10}	Coarse particulate matter
ppm	Parts per million
Project	California Renewable Carbon Williams Facility Project
ROGs	Reactive organic gases
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SCR	Selective Catalytic Reduction
SIP	State Implementation Plan
SMAQMD	Sacramento Metropolitan Air Quality Management District
SO_2	Sulfur dioxide
SVAQEEP	Sacramento Valley Air Quality Engineering and Enforcement Professionals
TACs	Toxic air contaminants
UPRR	Union Pacific Railroad
USEPA	U.S. Environmental Protection Agency
VMT	Vehicle miles traveled

1.0 INTRODUCTION

This report documents the results of an assessment of both air quality and greenhouse gas (GHG) emissions completed for the California Renewable Carbon (CRC) Williams Facility Project (Project), which includes the construction and operation of a biocarbon products manufacturing facility in unincorporated Colusa County. 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. Significant stationary and mobile sources were included in the analysis and their quantification methodology described below.

CRC is a leader in environmental technology with more than 185 issued and pending patents around processes and products engineered to improve the environment. CRC proposes to repurpose an existing facility in Colusa County to construct a new renewable biocarbon production facility. The new facility will use CRC's patented non combustion technology to convert sustainably sourced biomass into renewable biocarbon products. The new facility will use self-generated renewable biogas for process energy as well as generate and export renewable electricity to the grid. The new biocarbon process will be net water positive and carbon negative on a lifecycle basis. The facility also will significantly reduce regional air emissions by thousands of tons per year by converting locally sourced biomass such as orchard rotations and trimmings, that otherwise undergo open burning or land disposal, into renewable biocarbon products. CRC's products will be used to displace fossil-based products and reduce environmental impacts from metals production, energy generation, and crop production, and to purify the air and water. CRC will create more than 65 direct clean-tech jobs working toward environmental improvement.

1.1 Project Overview

CRC proposes to install and operate a biocarbon production facility using renewable biomass at 6229 Myers Road in Williams, CA (CRC Williams facility). The purpose of the Project is to use renewable biomass, primarily in the form of orchard rotations and trimmings, to produce a biocarbon product using a net water positive, non-combustion process involving thermal conversion of biomass. The proposed facility would produce up to 250,000 gross tons of renewable biocarbon per year and includes biomass dryers, process heaters, pelletizers, and a heat recovery/cogeneration unit. The process would use self-generated biogas for process energy and would provide up to 10 megawatts (MW) of net electric power (17 MW gross) for export sale to Pacific Gas and Electric (PG&E) through interconnection to either a PG&E 12 kilovolt (kV) distribution line or PG&E's Wadham 60 kV power line to PG&E's Williams Generating Station. The Project would also include improvements to, and extension of, an existing rail spur system on the property which interconnects with the Union Pacific Railroad (UPRR) tracks adjacent to the property.

The Project objectives include the following:

- Produce high performing and highly sustainable biocarbon products that can be utilized in the global market to reduce environmental impacts from metals production, energy generation, and crop production, and to purify air and water;

- Reduce local and global air pollutants, including greenhouse gas emissions, by converting renewable biomass, that otherwise would undergo uncontrolled open burning or disposal at a landfill, into biocarbon products; and

- Utilize self-generated biogas for process energy and to export electricity to the grid.

1.2 Project Location and Background

The Project Site is located at 6229 Myers Road in unincorporated Colusa County, approximately 1.4 miles south of the City of Williams (see Figure 1) at the northeast corner of the intersection of Myers Road and Frontage Road. The 49.2-acre site currently accommodates the existing Olam Tomato Processing facility recently in operation, comprising approximately 161,000 square feet of existing structures and supporting infrastructure including existing buildings, an existing rail spur, and two existing water wells. The site is adjacent to the Wadham Energy Company facility just north of the Project Site with agricultural lands north of the Wadham facility, and agricultural land and residences to the east and south. The Union Pacific Railroad (UPRR) tracks and Frontage Road run west of the site, with Interstate-5 (I-5) further west. Orchard land with a single-family residence on a parcel zoned for Heavy Industrial (M-2) is located between Frontage Road and I-5 approximately 150 feet from the western boundary of the site. The site is located approximately 1,000 feet (0.3 mile) from I-5.

1.3 Project Components

The process at the CRC Williams facility would involve the following components discussed in more detail below:

- Biomass (i.e., feedstock) receiving and sizing

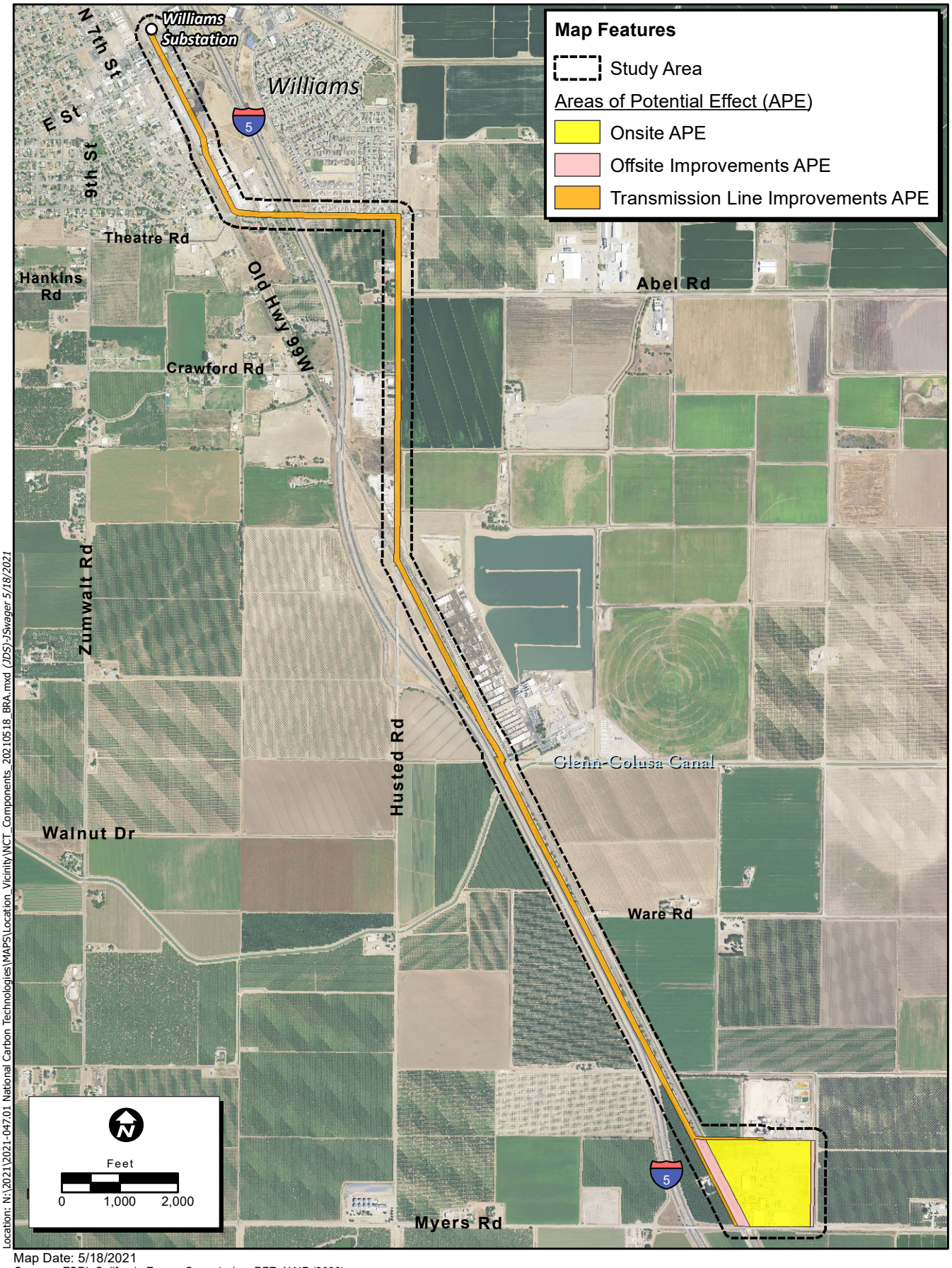
- Biomass drying

- Non-combustion thermal conversion

- Pelletizing

- Pellet finishing and shipping

- Cogeneration



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Map Date: 5/18/2021

Sources: ESRI, California Energy Commission, RFE, NAIP (2020)

Figure 1. Project Location and Vicinity

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1.3.1 Biomass Receiving and Sizing

The biomass receiving and sizing work area will be located in the northern section of the property which is largely undeveloped. Biomass feedstock for the CRC Williams facility would be delivered to the facility via heavy trucks traveling eastbound on Myers Road from the Frontage Road to the shared paved access driveway with the Wadham Energy facility. Trucks would travel to the northeast corner of the property where they would enter the facility. New double-lane paved roads would be added at the north property boundary for the truck entrance/exit, a truck loop, and a truck loadout turnaround to and from the truck dump area (where biomass would be unloaded from trucks using a hydraulic truck dump into a receiving unit). A second smaller area has also been designated for trucks equipped with walking floors to unload biomass.

Upon entry to the facility, trucks would first travel to a Truck Scale/Guard House. Then trucks would drive to two Hydraulic Truck Dumps where trucks would be unloaded into two receiving units. Biomass would be fed onto conveyor belts from the receiving unit and transported via the conveyor belts to a new Screening and Sizing Structure. In this structure, biomass material would be scalped (if necessary), screened, hammer-milled to further reduce size, and processed to remove adhered soil. A baghouse on the Screen and Sizing Structure would control dust emissions. Material from the Screening and Sizing Structure would then travel via conveyor belts to the Raw Material Storage area and would be stockpiled using a radial stacker. Fines removed during sizing would be transferred to a three-sided concrete structure and used as an agriculture soil amendment co-product.

The Raw Material Storage Area would consist of an existing large concrete slab adjacent to the existing product storage building. This area would have an 8-foot high push wall containment along both the eastern and southern boundaries of the stockpile. Sized biomass would then be transferred from the stockpiles using a front-end loader to a reclaimer where material would be loaded into biomass dryer feeder bins for the biomass drying process described below. Approximately 47 belt conveyors powered by electric motors would be used in this step of the process. Also, a new 874-square foot (sf) MCC Building would be constructed in this area.

In summary, the Biomass Receiving and Sizing area would contain the following equipment and stockpile areas:

- One Truck Scale House/Guard Shack (converted from existing produce grading building)
- Two Hydraulic Truck Dumps (Lines 1 and 2)
- An unloading area for trucks with walking floors to unload biomass
- Screen and Sizing Structure
    - Scalping (i.e., Hog)
    - Screen
    - Hammermill
    - Fines removal
- Transfer of material from Screen and Sizing Structure to Raw Material Storage Area using a Radial Stacker
- Raw Material Storage Area

- Material stockpiled and contained in an area with 8-foot push walls along the eastern and southern boundary of the stockpile area
- A front-end loader would move material from stockpiles to a reclaimer
- Conveyor to Biomass Dryer Feed Bins (Lines 1 and 2)

1.3.2 Biomass Drying

The Biomass Drying step represents the beginning of the core process; the process would occur in two identical production lines, Line 1 and Line 2. There are no buildings in this area and all equipment in this area would be located outdoors on existing concrete pads. Biomass would be dried in rotary dryers and then transferred to Process Heater Infeed Airlocks via conveyors.

- Biomass Receiving and Drying Air Receiver (in support of the biomass receiving and biomass drying processes)
  - Air Compressor
  - Instrument Air Dryer
- New MCC Building

In summary, the Biomass Drying area would contain the following equipment and equipment would be located outdoors:

- Dryer Infeed Belts from Biomass Dryer Feed Bins to Dryer Infeed Airlocks (Lines 1 and 2)
- Biomass Dryers (Lines 1 and 2) (i.e., Rotary Dryers)
  - Powered by natural gas during startup or after shutdowns, otherwise, powered by ambient air that is heated through heat exchangers in the cogeneration and process heater systems.
- Dryer Screw Conveyors
- Dryer Product Bins
- Process Heater

1.3.3 Thermal Conversion

In the Thermal Conversion area, the dried biomass undergoes non-combustion thermal conversion, creating a carbon substrate. This process would be located outside and north of the existing can warehouse building.

In summary, the Thermal Conversion area would contain the following equipment:

- Airlock Feeder Screw Conveyors (three per Lines 1 and 2)
- Process Heaters

1.3.4 Pelletizing

In this area, moist carbon substrate is fed through mixers and pellet mills to achieve the target bulk density. Cooled carbon substrate would be fed onto four parallel belt conveyors that feed into four storage bins two each per production line. Material from these bins would then be added to pellet mixers inside the existing can warehouse building that would be converted to a Pelletizing Building.

From the pellet mixers, carbon substrate would be fed to a total of three pellet mills per production line. The pellet mills would take the prepared carbon substrate and compress the material to form biocarbon pellets at the desired bulk density. One baghouse would be utilized for the pellet mills to minimize the amount of carbon dust emitted into the area. Baghouse exhaust would vent to the atmosphere from the Pelletizing Building. Carbon dust collected in the baghouse would be returned to the carbon bins for reintroduction into the process.

Pellets would be conveyed from the pellet mills onto conveyors where ambient air or liquid would be utilized as the cooling medium. The pellet discharge from each production line would travel on a belt conveyor equipped with an ambient air fan to further dry the pellets. The pellets would travel through belt conveyors to the Finished Pellet Storage Buildings (described below).

In summary, the Pelletizing area would contain the following equipment:

- Carbon Bins (Two for each of Lines 1 and 2)
- Pellet Mixer Accumulation Conveyors (one per Lines 1 and 2)
- Pellet Mill Mixer (one per Lines 1 and 2)
- Hopper (one per Lines 1 and 2)
- Feeder (one per Lines 1 and 2)
- Pellet Mills (three per Lines 1 and 2)
- Pellet Coolers r (one per Lines 1 and 2)

Water recovered from the biomass dryer would be used in this step of the process for utility stations, and equipment washdown.

1.3.5 Pellet Finishing and Shipping

This work area includes a series of long conveyors from the Pelletizing Building to the existing building and north warehouse building that would be converted to Finished Pellet Storage Buildings. The conveyor from the existing building to the existing north warehouse building would pass over the rail spur before entering the building. Here the pelletized product would be stored before being loaded into rail cars for transport to the export facility. All product transport would be by rail during normal operations. Trucks would only be used if rail is out of service or due to other extraordinary circumstances. Eight rail cars would be loaded in the course of a normal day's operation.

Pellets would enter the Finished Pellet Storage Buildings through a common chute in the roof of the building and would fall to the floor at various points in the warehouse through the use of a tripper conveyor. From there, an operator would convey the pellets into storage piles within the building. Each warehouse would have capability of storing up to 3.5 days of pellets.

Under normal operations, an operator utilizing a front-end loader and reclaim system would transfer pellets to rail cars in the Rail Car Loadout area. A baghouse on each of the Finished Pellet Storage Buildings would control dust emissions from transfer of material to the Rail Car Loadout. Loadout weight of the pellets would either be measured utilizing belt scales on the loadout conveyors, or through the use of rail car volume scanners.

In summary, the Pellet Finishing and Shipping area would contain the following equipment:

- Conveyors from Pelletizing Building to two Finished Storage Buildings
- Finished Pellet Storage Buildings (containing finished pellet storage piles) (converted from the existing retail building and north warehouse)
- Rail Car Loadout at the rail spur
- Pelletizing Area Air Receiver
    - Air Compressor
    - Instrument Air Dryer

1.3.6 Cogeneration

The process utilized by CRC would generate biogas which can be utilized for power generation in a cogeneration system. The cleaned biogas from the CRU systems would be sent to a Heat Recovery System comprised of a combustion chamber and heat recovery steam generator (HRSG) for the production of steam. Steam from the HRSG would be sent to a turbine generator and surface condenser for the production of electrical power for utilization within the facility, as well as for export sale to the grid.

A selective catalytic reduction (SCR) unit and electrostatic precipitator (ESP) would be used for environmental control of emission products. The cogeneration system would also comprise a cooling tower and a boiler feedwater system.

In summary, the Cogeneration System would contain the following equipment:

- Combustion Chamber and HRSG to SCR and ESP and Stack

  - Combustion Air Fan
  - Fuel Gas Booster Fan
- Turbine Generator
  - Powered by steam from the HRSG
- Cooling Tower
- Recovery of condensate and boiler feedwater

1.3.7 Chemical Storage

A new 18,000-gallon storage tank for 19.5 percent aqueous ammonia would be constructed onsite for use in the SCR. Additives for amines, phosphate, and an oxygen (O_2) scavenger as boiler feedwater additives would all be stored in totes with meters.

1.3.8 Administrative Buildings

The following existing buildings would be converted to administrative buildings for the facility where their existing use would continue: the main office, a guard shack for the employee entrance, another administrative building near the employee entrance labeled the HR Building, the mechanics shop/parts room to the west of the new Finished Pellet Storage Building, and the processing room connected to the main office that would continue to be utilized for maintenance and parts storage.

1.3.9 Rail Spur Improvements

The Project would involve improvements to, and extension of, an existing rail spur system on the property that interconnects to the UPRR tracks that run adjacent to the Project Site and along I-5. Improvements to the existing rail spur may involve improvements to the rail spur track (i.e., new ballast, ties, rail), signal improvements, and/or improvements to utility lines along the rail spur (electrical lines, fiber optic lines, etc.). Extension of the rail spur is also proposed along the western boundary of the CRC Williams facility property. New track, signal facilities, and utility lines would be installed in this area in support of the rail spur. Finally, a new rail spur loadout area would be constructed for the Project.

Improvements to the UPRR tracks may be required by UPRR, including potentially new ballast, ties, rail, and/or signal or utility line improvements on or near the UPRR tracks. All improvements to the existing rail spur system would be coordinated with UPRR. Any improvements within the UPRR right-of-way would be subject to UPRR review and approval. No new public crossings of the UPRR tracks or right-of-way are proposed.

1.4 Project Construction

Construction at the CRC Williams facility, including offsite improvements required for the interconnection to PG&E's electrical system and any improvements to the interconnection to the UPRR tracks, is expected to take 14 months to complete using approximately 42 construction workers. Construction is targeted to start in 2022 with startup in 2023.

Olam is currently removing processing equipment that would not be retained. CRC would refurbish the remainder of the structures for use by CRC. Minor demolition (e.g., of existing concrete pads, pipe racks etc.) may be required to construct the CRC Williams facility.

1.5 Post-Construction Operations

1.5.1 Source of Renewable Feedstock

The CRC Williams facility can process up to 763,000 gross wet tons of renewable biomass (feedstock) per year. The source locations for renewable feedstock would primarily comprise orchards in the region. Material would consist of trimmings and/or full pull outs from orchard rotations primarily from walnut and almond orchards. Source material would either be collected at individual locations or satellite collection locations depending upon individual agreements with growers.

Feedstock is expected to be chipped in the field and would likely include trimmings, large limbs, and trunks. CRC is working with local chipping companies that provide these services to the farms in the area. Trimmings received are expected to be between 1.5-inches to 6-inches in diameter. Feedstock moisture content is assumed to be 26 percent.

Feedstock would be untreated and would not be imported from outside of the State of California. Transport of feedstock would comply with the pest management and pest exclusion requirements of the County Pest Management and Pest Exclusion Programs and the California Department of Food and Agriculture Plant Health and Pest Prevention Services Division Programs.

1.5.2 Truck Trips

Approximately 125 heavy truck trips per day would deliver renewable feedstock to the CRC Williams facility. Source locations for the renewable feedstock are expected to be primarily within 75 miles of the CRC Williams facility. Heavy trucks would utilize local area roadways to access Interstate-5 (I-5), to travel either north or south along I-5 to the CRC Williams facility. Heavy trucks would either utilize the I-5/Husted Road interchange to then travel southbound on the two-lane Frontage Road to the facility or utilize the I-5/Hahn Road interchange to travel northbound on the two-lane Frontage Road to the facility. Some truck trips could occur on eastbound and westbound Myers Road as well. Average truck trips are estimated to be 40 miles on average, with a standard range of 20 to 80 miles.

1.5.3 Rail Cars per Week

Approximately 50 rail cars per week (i.e., UPRR fully enclosed boxcars or intermodal equipment) would be employed to transport biocarbon product in bulk rail cars on UPRR tracks to one or more major ports in California and/or Oregon for ultimate transport of the biocarbon product via ocean vessels (ships). According to UPRR's gross weight maps, the tracks adjacent to the Project site have the capacity to support heavy axle rail cars carrying 315,000 pounds (lbs) (157.5 tons) each for transport to major Ports such as Portland, Oregon, or the Ports of West Sacramento, Oakland, or Richmond in California.

Genessee & Wyoming, Inc. leases or owns the following locally managed freight railroads (i.e., short line railroads) that then lease the UPRR tracks in the region: California Northern Railroad Company CFNR #36 and California Oregon & Pacific Railroad, Inc. CORP #157. California Northern Railroad operates the freight service on the portion of track adjacent to the Project. Other freight services could be utilized depending upon the destination port.

Rail cars would be loaded at the proposed rail car loadout area. A new electric switching locomotive would be utilized on the property to move cars along the rail spur system.

In the event that product occasionally cannot be shipped via rail, product would be shipped by heavy truck via I-5.

1.5.4 Employees

On weekdays (Monday through Friday), a maximum of 50 employees would be present onsite, comprising 10 employees each for four shifts, and 10 administrative staff. On weekends (Saturdays and Sundays), a maximum of 40 employees would be onsite. Operations are proposed on a 24 hour, 7 day a week basis with anticipated 90 percent up time.

1.5.5 Mobile Onsite Equipment

Mobile onsite equipment would include three to four diesel front-end loaders as well as electric forklifts. Tier 4 engines will be used for all diesel equipment.

1.5.6 Facility Lighting

The minimal amount of lighting would be employed for security and safety purposes for the facility. Existing site and building lighting (halide) would be reused where applicable. New LED lighting is proposed to be installed to provide site lighting along the process where required; egress and process area lighting would be installed in the new structures and outdoor process areas.

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 Colusa County portion of the Northern Sacramento Valley Air Basin (NSVAB), which encompasses the Project site.

2.1.1 Northern Sacramento Valley Air Basin

The California Air Resources Board (CARB) divides the state into air basins that share similar meteorological and topographical features. Colusa County lies in the NSVAB, which includes Sutter, Yuba, Colusa, Butte, Glenn, Tehama, and Shasta counties. The NSVAB is bounded on the north and west by the Coastal Mountain Range and on the east by the southern end of the Cascade Mountain Range and the northern end of the Sierra Nevada. These mountain ranges reach heights in excess of 6,000 feet above mean sea level, with individual peaks rising much higher. The mountains form a substantial physical barrier to locally created pollution as well as to pollution transported northward on prevailing winds from the Sacramento metropolitan area (Sacramento Valley Air Quality Engineering and Enforcement Professionals [SVAQEEP] 2018).

The environmental conditions of Colusa County are conducive to potentially adverse air quality conditions. The basin area traps pollutants between two mountain ranges to the east and the west. This problem is exacerbated by a temperature inversion layer that traps air at lower levels below an overlying layer of warmer air. Prevailing winds in the area are generally from the south and southwest. Sea breezes flow over the San Francisco Bay Area and into the Sacramento Valley, transporting pollutants from the large urban areas.

2.1.2 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. O_3, PM_{10}, and $PM_{2.5}$ 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 Manmade 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 (N2O) 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: California Air Pollution Control Officers Association (CAPCOA 2013)

Carbon Monoxide

CO in the urban environment is associated primarily with the incomplete combustion of fossil fuels in motor vehicles. CO combines with hemoglobin in the bloodstream and reduces the amount of oxygen that can be circulated through the body. High CO concentrations can cause headaches, aggravate cardiovascular disease and impair central nervous system functions. CO concentrations can vary greatly over comparatively short distances. Relatively high concentrations of CO are typically found near crowded intersections and along heavy roadways with slow moving traffic. Even under the most severe meteorological and traffic conditions, high concentrations of CO are limited to locations within relatively short distances of the source. Overall CO emissions are decreasing as a result of the Federal Motor Vehicle Control Program, which has mandated increasingly lower emission levels for vehicles manufactured since 1973. CO levels across the entire state are in compliance with the state and federal one- and eight-hour standards.

Nitrogen Oxides

Nitrogen gas comprises about 80 percent of the air and is naturally occurring. At high temperatures and under certain conditions, nitrogen can combine with oxygen to form several different gaseous compounds collectively called nitric oxides (NO_X). Motor vehicle emissions are the main source of NO_X in urban areas. NO_X is very toxic to animals and humans because of its ability to form nitric acid with water in the eyes, lungs, mucus membrane, and skin. In animals, long-term exposure to NO_X increases susceptibility to respiratory infections, and lowering resistance to such diseases as pneumonia and influenza. Laboratory studies show that susceptible humans, such as asthmatics, who are exposed to high concentrations can suffer from lung irritation or possible lung damage. Precursors of NO_X, such as NO and NO_2, attribute to the formation of O_3 and $PM_{2.5}$. Epidemiological studies have also shown associations between NO_2 concentrations and daily mortality from respiratory and cardiovascular causes and with hospital admissions for respiratory conditions.

Ozone

O_3 is a secondary pollutant, meaning it is not directly emitted. It is formed when volatile organic compounds (VOCs) or ROGs and NO_X undergo photochemical reactions that occur only in the presence of sunlight. The primary source of ROG emissions is unburned hydrocarbons in motor vehicle and other internal combustion engine exhaust. NO_X forms as a result of the combustion process, most notably due to the operation of motor vehicles. Sunlight and hot weather cause ground-level O_3 to form. Ground-level O_3 is the primary constituent of smog. Because O_3 formation occurs over extended periods of time, both O_3 and its precursors are transported by wind and high O_3 concentrations can occur in areas well away from sources of its constituent pollutants.

People with lung disease, children, older adults, and people who are active can be affected when O_3 levels exceed ambient air quality standards. Numerous scientific studies have linked ground-level O_3 exposure to a variety of problems including lung irritation, difficult breathing, permanent lung damage to those with repeated exposure, and respiratory illnesses.

Particulate Matter

PM includes both aerosols and solid particulates of a wide range of sizes and composition. Of concern are those particles smaller than or equal to 10 microns in diameter size (PM_{10}) and smaller than or equal to 2.5 microns in diameter ($PM_{2.5}$). Smaller particulates are of greater concern because they can penetrate deeper into the lungs than larger particles. PM_{10} is generally emitted directly as a result of mechanical processes that crush or grind larger particles or form the resuspension of dust, typically through construction activities and vehicular travel. PM_{10} generally settles out of the atmosphere rapidly and is not readily transported over large distances. $PM_{2.5}$ is directly emitted in combustion exhaust and is formed in atmospheric reactions between various gaseous pollutants, including NO_X, sulfur oxides (SOx) and VOCs. $PM_{2.5}$ can remain suspended in the atmosphere for days and/or weeks and can be transported long distances.

The principal health effects of airborne PM are on the respiratory system. Short-term exposure of high $PM_{2.5}$ and PM_{10} levels are associated with premature mortality and increased hospital admissions and emergency room visits. Long-term exposure is associated with premature mortality and chronic respiratory disease. According to the U.S. Environmental Protection Agency (USEPA), some people are much more sensitive than others to breathing PM_{10} and $PM_{2.5}$. People with influenza, chronic respiratory and cardiovascular diseases, and the elderly may suffer worse illnesses; people with bronchitis can expect aggravated symptoms; and children may experience decline in lung function due to breathing in PM_{10} and $PM_{2.5}$. Other groups considered sensitive include smokers and people who cannot breathe well through their noses. Exercising athletes are also considered sensitive because many breathe through their mouths.

2.1.3 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. Additionally, diesel engines emit a complex mixture of air pollutants composed of gaseous and solid material. The solid emissions in diesel exhaust are known as diesel particulate matter (DPM). In 1998, California identified DPM as a TAC based on its potential to cause cancer, premature death, and other health problems (e.g., asthma attacks and other respiratory symptoms). Those most vulnerable are children (whose lungs are still developing) and the elderly (who may have other serious health problems). Overall, diesel engine emissions are responsible for the majority of California's known cancer risk from outdoor air pollutants. Diesel engines also contribute to California's $PM_{2.5}$ air quality problems. 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.

Diesel Exhaust

Most recently, CARB identified DPM as a TAC. DPM differs from other TACs in that it is not a single substance but rather a complex mixture of hundreds of substances. Diesel exhaust is a complex mixture of particles and gases produced when an engine burns diesel fuel. DPM is a concern because it causes lung cancer; many compounds found in diesel exhaust are carcinogenic. DPM includes the particle-phase constituents in diesel exhaust. The chemical composition and particle sizes of DPM vary between different engine types (heavy-duty, light-duty), engine operating conditions (idle, accelerate, decelerate), fuel formulations (high/low sulfur fuel), and the year of the engine (USEPA 2002). Some short-term (acute) effects of diesel exhaust include eye, nose, throat, and lung irritation, and diesel exhaust can cause coughs, headaches, light-headedness, and nausea. DPM poses the greatest health risk among the TACs;

due to their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lung.

Formaldehyde

Formaldehyde is both directly emitted into the atmosphere and formed in the atmosphere as a result of photochemical oxidation. Formaldehyde is a product of incomplete combustion, and one of the primary sources of formaldehyde is vehicular exhaust. Formaldehyde can also be found in many consumer products as an antimicrobial agent and is used in fumigants and soil disinfectants.

Acute formaldehyde inhalation exposure can result in eye, nose, and throat irritation and effects on the nasal cavity. Other effects seen from exposure to high levels of formaldehyde in humans are coughing, wheezing, chest pains, and bronchitis. Chronic inhalation exposure to formaldehyde has been associated with respiratory symptoms and eye, nose, and throat irritation. In California, formaldehyde has been identified as a carcinogen, and occupational studies have shown associations between exposure to formaldehyde and increased incidence of lung and nasopharyngeal cancer.

Ammonia

This colorless, pungent gas is composed of nitrogen and hydrogen. Ammonia serves as a starting material for the production of many commercially important nitrogen compounds. Ammonia (NH_3) is found throughout the environment in the air, soil, and water, and in plants and animals (including humans). Common uses include fertilizer, explosives production, household cleaning solutions, fermentation (nitrogen source), refrigerant, fuel, antimicrobial agent for animal feed and beef products, and is a common component in tobacco smoke.

Ammonia is a corrosive substance with the main toxic effects being restricted to the sites of direct contact causing irritation or damage to skin, eyes, mouth, respiratory and digestive systems. High levels of ammonia inhalation can cause damage to the lungs, severe burning of eyes, skin or throat, leading to permanent blindness, lung disease, or death. Ammonia has not yet been classified for carcinogenic effects by the USEPA.

Methanol

In the natural environment, methanol can be found in vegetation, microbes, and volcanic gases. Being the simplest alcohol, methanol (CH_3OH) is a light, volatile, colorless, and flammable liquid used in industrial solvents, automotive antifreeze, and in the manufacturing of various pharmaceutical drugs, vitamins, and supplements. Because CH_3OH is a biproduct formed during the biological decomposition of biological wastes, sewage, and sludge, the global interest in its various alternative fuel uses has risen. This has led to new technological advances in sequestering and converting this renewable fuel source to convert into useable energy.

Although useful in many ways, the health effects associated with CH_3OH exposure can lead to temporary or even permanent physical damage. Acute exposure by inhalation or ingestion may result in headaches or nausea, blurred vision, and neurological damage, specifically permanent motor dysfunction. The USEPA lists methanol as noncarcinogenic, with a medium confidence on the current information, or lack of data,

regarding reproductive, developmental, or carcinogenic effects on humans. However, birth and developmental defects have been observed in the offspring of rats and mice exposed through inhalation. Chronic exposure to humans through inhalation or ingestion may result in headaches, insomnia, gastric disturbances, visual disturbances and blindness.

Phenol

Phenolic compounds, also known as carbolic acid (C_6H_5OH) are among the chemicals of major concern in regard to human and aquatic life due to their tendencies to persist in water for long periods of time. Naturally occurring phenolic compounds are a biproduct of the decomposition of organic material found in bodies of water. Other sources of phenolic compounds are derived from industrial, agricultural, and domestic waste runoff entering streams, rivers and oceans. The USEPA has listed these chemicals as pollutants of priority concern. The primary use of phenol is in the production of phenolic resins used in plywood, and in the construction, automotive, and appliances industries; as well as consumer products such as mouthwash, throat lozenges, analgesic rubs, lotions, and tobacco.

Short-term exposure of C_6H_5OH through inhalation or dermal contact can cause irritation to the skin, eyes, and mucous membranes. Symptoms of acute toxicity include irregular breathing, muscle weakness and tremors, loss of coordination, convulsions, coma induction, and respiratory arrest at lethal doses. Chronic effects of this noncancerous substance can lead to anorexia, diarrhea, and blood and liver damage. Cardiac arrhythmias have been reported in humans exposed to high concentrations of phenolic compounds.

Formic Acid

Being the simplest carboxylic acid (containing only a single carbon molecule), formic acid (CH_2O_2 or HCOOH) is found naturally in various sources including the venom of bee and ant stings, some fruits and nectars, and is a natural component of honey. Formic acid is a colorless liquid with a penetrating pungent odor. Common uses include dyeing of textiles and leathers, rubber and plastics production, crop protection agents (fungicides and pesticides), and as an intermediate in the chemical and pharmaceutical industries.

Human exposure to formic acid can lead to short-term and even permanent health effects. Acute overexposure to formic acid causes irritation to the eyes, skin, and mucous membrane of the mouth, throat, and esophagus. Acute formic acid inhalation or ingestion may also be associated with complications such as cardiovascular collapse and ischemic (inadequate blood supply to an organ or body part) damage to the heart, liver and kidneys, swelling of the airway, and respiratory distress. Due to the corrosive properties of formic acid, ingestion may cause ulceration of the gastrointestinal tract, resulting in perforation and scarring of the gastrointestinal tract. Long-term exposure to formic acid may cause damage to the kidneys and sensitization dermatitis when coming into contact with the skin over extended periods of time.

Ethylene Oxide

Ethylene oxide (EtO), is a volatile (does not persist for long periods of time in the natural environment) colorless gas at room temperature, with a sweet odor. The major use of EtO is as a chemical intermediate

in the manufacturing of ethylene glycol used in antifreeze formulations. Common sources of EtO include uncontrolled emissions or venting in industrial settings, as a sterilizer for surgical equipment, detergents, adhesives, as a sterilant for food spices, tobacco smoke, and cosmetics. In small amounts, EtO can be uses in certain pesticide applications.

The primary routes of human exposure to ethylene oxide include inhalation and ingestion. Acute inhalation exposure to high levels of EtO has resulted in nausea, vomiting, neurological disorders, bronchitis, pulmonary edema, and emphysema. Chronic exposure of small amounts of EtO can cause irritation of the eyes, skin, and damage to the brain, respiratory passages and effects to the nervous system. There is some evidence linking EtO exposure and damage to the reproductive organs. EtO has been shown to cause lymphoid cancer and tumors of the brain, lung, connective tissue, uterus, and mammary glands in animals. The USEPA has concluded that EtO is carcinogenic to humans through inhalation, with lymphoma, leukemia, stomach and breast cancers being the most frequently reported cancers to be associated with EtO exposure.

2.1.4 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 more than 60 monitoring stations throughout California. The Colusa-Sunrise Boulevard (100 Sunrise Boulevard, Colusa, California) air quality monitoring station, located approximately 8.2 miles northeast of the Project site, is the closest station to the site. The Colusa-Sunrise Boulevard monitoring station monitors ambient concentrations of O_3 and concentrations of $PM_{2.5}$ and PM_{10}. 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, $PM_{2.5}$, and PM_{10} since 2017 from the Colusa-Sunrise Boulevard 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	2017	2018	2019
O_3 (Colusa-Sunrise Boulevard Air Quality Monitoring Station)			
Max 1-hour concentration (ppm)	0.075	0.073	0.062
Max 8-hour concentration (ppm) (state/federal)	0.068 / 0.068	0.063 / 0.062	0.055 / 0.055
Number of days above one-hour standard (state/federal)	0 / 0	0 / 0	0 / 0
Number of days above eight-hour standard (state/federal)	0 / 0	0 / 0	0 / 0
PM_{10} Colusa-Sunrise Boulevard Air Quality Monitoring Station –			
Max 24-hour concentration (µg/m^3) (state/federal)	148.1 / 144.7	274.6 / 257.5**	119.9 / 118.1
Number of days above 24-hour standard (state/federal)	* / 0	* / *	* / 0
$PM_{2.5}$ (Colusa-Sunrise Boulevard Air Quality Monitoring Station)			
Max 24-hour concentration (µg/m^3) (federal)	44.8	113.2**	19.6
Number of days above federal 24-hour standard	1	3	0

Source: CARB 2020a
µg/m^3 = micrograms per cubic meter; ppm = parts per million
* Insufficient data available / Measurements FEM BAM Sensor
** Many exceedances during 2018 were during wildfire events

The USEPA 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} and $PM_{2.5}$ 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 Colusa County portion of the NSVAB is included in Table 2-3.

Table 2-3. Attainment Status of Criteria Pollutants in the Colusa County Portion of NSVAB

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

Source: CARB 2019

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 State standard for PM_{10} (CARB 2019).

2.1.5 Sensitive Receptors

Sensitive receptors are defined as facilities or land uses that include members of the population who 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. The nearest sensitive receptor to the Project site is a residence located across Frontage Road approximately 150 feet west of the Project's western boundary. There is another residence, fronting Myers Road on the west side of I-5, located approximately 1,740 feet west of the Project site. The next-nearest residence sits approximately 2,150 feet east of the Project site on Myers Road. The nearest sensitive receptor to the north of the Project site includes a single-family residence located approximately 3,265 feet distant.

2.2 Regulatory Framework

2.2.1 Federal

Clean Air Act

The Clean Air Act (CAA) of 1970 and the CAA Amendments of 1971 required the USEPA 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 (CO_2) is an air pollutant covered by the CAA; however, no NAAQS have been established for CO_2.

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 USEPA 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 Colusa County portion of the NSVAB for criteria pollutants.

2.2.2 State

California Clean Air Act

The California Clean Air Act (CCAA) allows the state 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 CAA (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 NAAQS

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 CAA. The USEPA 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 USEPA for approval and publication in the Federal Register.

The Colusa County Air Pollution Control District (CCAPCD) is the agency primarily responsible for ensuring that NAAQS and CAAQS are not exceeded and that air quality conditions are maintained in the Colusa County portion of the NSVAB. In an attempt to achieve NAAQS and CAAQS and maintain air quality, the air district, in coordination with the other air districts of the NSVAB, has completed several air quality attainment plans and reports, which together constitute the SIP for the NSVAB. Specifically, all of the air districts in the NSVAB including the CCAPCD, prepared an air quality attainment plan for O_3 in 1994. Updated every three years since adoption, the current *Northern Sacramento Valley Planning Area 2018 Triennial Air Quality Attainment Plan* (2018 AQAP) includes forecast ROG and NO_x emissions (O_3 precursors) for the entire NSVAB through the year 2020. The 2018 AQAP provides local guidance for air basins to achieve attainment of the California ambient air quality O_3 standard.

Tanner Air Toxics Act & Air Toxics "Hot Spots" Information and Assessment Act

CARB's Statewide comprehensive air toxics program was established in 1983 with Assembly Bill (AB) 1807, the Toxic Air Contaminant Identification and Control Act (Tanner Air Toxics Act of 1983). AB 1807 created California's program to reduce exposure to air toxics and sets forth a formal procedure for CARB to designate substances as TACs. Once a TAC is identified, CARB adopts an airborne toxics control measure (ATCM) for sources that emit designated TACs. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate toxics best available control technology to minimize emissions.

CARB also administers the state's mobile source emissions control program and oversees air quality programs established by state statute, such as AB 2588, the Air Toxics "Hot Spots" Information and Assessment Act of 1987. Under AB 2588, TAC emissions from individual facilities are quantified and prioritized by the air quality management district or air pollution control district. High priority facilities are required to perform a health risk assessment (HRA) and, if specific thresholds are exceeded, required to communicate the results to the public in the form of notices and public meetings. In September 1992, the "Hot Spots" Act was amended by Senate Bill (SB) 1731, which required facilities that pose a significant health risk to the community to reduce their risk through a risk management plan.

2.2.3 Local

Colusa County Air Pollution Control District

In Colusa County, the air quality regulating authority is the CCAPCD, which adopts and enforces controls on stationary sources of air pollutants through its permit and inspection programs. The district also regulates agricultural burning. Other responsibilities include monitoring air quality, preparing clean air

plans, and responding to citizen complaints concerning air quality. The CCAPCD develops regulations to improve air quality and protect the health and welfare of Colusa County residents and their environment.

The following is a list of noteworthy CCAPCD rules and regulations that are required of activities associated with the proposed Project:

- **Rule 200 (Nuisance)** – This rule prohibits the discharge from any non-vehicular source such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety of any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property.
- **Rule 201 (Visible Emissions)** – As provided by Section 41701 of the California Health and Safety Code, a person shall not discharge into the atmosphere from any single source of emissions whatsoever any air contaminants for a period or periods aggregating more than three minutes in any one hour which is as dark or darker in shade as that designated as No. 2 on the Ringelmann Chart as published by the U.S. Bureau of Mines.
- **Rule 230 (Architectural Coatings)** – This rule requires manufacturers, distributors, and users of architectural and industrial maintenance coatings to reduce VOC emissions from the use of these coatings by placing limits on the VOC content of various coating categories.
- **Rule 231 (Cutback and Emulsified Asphalt)** –The purpose of this Rule is to limit emissions of volatile organic compounds (VOCs) from the use of cutback and emulsified asphalt in paving, construction, or maintenance of parking lots, driveways, streets, and highways. This rule prohibits the use or application for paving, construction or maintenance of parking lots, driveways, streets, or highways any rapid or medium cure cutback asphalt or slow cure cutback asphalt containing more than 0.5 percent by volume of VOCs which evaporate at 260°C (500°F) or less. This rule also prohibits any emulsified asphalt material containing more than 3.0 percent by volume of VOCs which evaporate at 260°C (500°F) or less.
- **Rule 251 (Determination of Reasonably Available Control Technology for the Control of Oxides of Nitrogen from Stationary Gas Turbines)** – In order to limit the emissions of NOx to the atmosphere from the operation of stationary gas turbines, all existing stationary gas turbines rated by the manufacturer as 0.3 megawatt (MW) power output and larger are subject to NOx emissions concentration limits established by the CCAPCD.
- **Rule 252 (Stationary Internal Combustion Engines)** – To limit emissions of NOx and CO from stationary internal combustion engines any gaseous, diesel, or any other liquid-fueled stationary internal combustion engine within Colusa County shall not be operated in a manner that results in emissions exceeding limits established by the CCAPCD.
- **Rule 430 (New Source Review)** – The CCAPCD has established pre-construction review requirements for new and modified stationary sources of air pollution in order to analyze air quality impacts and insure that the operation of such sources does not interfere with the attainment or maintenance of ambient air quality standards. This rule applies to all new and

modified stationary sources which are subject to CCAPCD permit requirements and, after construction, emit or may emit any affected pollutants. Rule 430 provides for no net increase in emissions, pursuant to Section 40918 of the California Health & Safety Code (HSC), from new or modified stationary sources which emit, or have the potential to emit, 25 tons per year or more of any non-attainment pollutant or its precursors.

- **Rule 431 (Emission Reduction Credits and Banking) –** This rule provides a mechanism for permitted and non-permitted emission sources to deposit, transfer, and use Emission Reduction Credits (ERCs) as offsets as allowed by applicable laws and regulations. All uses of emission reductions that are required under the CCAPCD's Rule 430 shall be processed in accordance with this Rule. The provisions of this rule apply to the deposit, transfer, and use of ERCs from stationary sources and open biomass burning sources of air pollution emissions.

Colusa County General Plan

The following objectives and policies of the 2030 Colusa County General Plan (County of Colusa 2012) are applicable to the Project:

Objective CON-2B: *Minimize Air Pollutant Emissions and Improve Air Quality to Protect Public Health.*

Policy CON 2-15*:* Improve air quality through continuing to require a compact development pattern that focuses growth in and around existing communities, locating new housing near places of employment, encouraging alternative modes of transportation, and requiring projects to mitigate significant air quality impacts to the extent feasible.

Policy CON 2-16*:* Cooperate with the CCAPCD to monitor air pollution within the County, enforce CCAPCD, state, and federal air quality rules, and require mitigation of significant impacts to the maximum extent feasible.

Policy CON 2-17*:* Require new sources of toxic air pollutants to prepare a Health Risk Assessment as required by Section 44300 of the California Health and Safety Code. The Health Risk Assessment shall be used to establish appropriate land use buffer zones around those areas posing substantial health risks based upon the California Air Resources Board's guidance provided in the Air Quality Land Use Handbook.

Policy CON 2-18*:* Ensure that any proposed new sources of toxic air contaminants or odors comply with applicable health standards and provide adequate maintained and managed buffers, including setbacks and screening, to protect sensitive receptors.

Policy CON 2-19*:* Require that discretionary projects involving sensitive receptors such as children, the elderly or people with illnesses proposed within 500 feet of the Interstate 5 corridor include an analysis of mobile source toxic air contaminant health risks. Project review should, if necessary, identify design mitigation measures to reduce health risks to acceptable levels.

Policy CON 2-20: Ensure that agricultural burning and fuel management burning is conducted in a manner that does not pose significant public health risks.

Policy CON 2-21: Encourage public transit, ridesharing and van pooling, shortened and combined motor vehicle trips to work and services, use of bicycles, and walking. Minimize single passenger motor vehicle use.

Action CON 2-E: Refer development, infrastructure, and planning projects to the CCAPCD for review. Require project applicants to prepare air quality analyses to address CCAPCD and General Plan requirements, which include analysis and identification of: A) Air pollutant emissions associated with the project during construction, project operation, and cumulative conditions. B) Significant air quality impacts associated with the project for construction, project operation, and cumulative conditions. C) Mitigation measures to reduce significant impacts to less than significant or the maximum extent feasible where impacts cannot be mitigated to less than significant.

2.3 Air Quality Emissions Impact Assessment

2.3.1 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) Conflict with or obstruct implementation of any applicable air quality plan;
2) 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 O_3 precursors;
3) Expose sensitive receptors to substantial pollution concentrations; or
4) Result in other emissions such as those leading to odors adversely affecting a substantial number of people.

Implementations of the proposed Project could result in air quality impacts during construction and operations. Neither the County of Colusa or the CCAPCD have established air pollution thresholds under CEQA for the assessment of air quality impacts. Therefore, the Project emissions will be compared with the thresholds established in Sacramento County. As with Colusa County and the Proposed Project site, Sacramento County is located within the Sacramento Valley and thus possesses similar air circulation patterns and temperature inversion layers. Therefore, air quality thresholds of significance developed in that county are appropriate. While air quality standards established in Sacramento County are not binding on Colusa County, they are instructive for comparison purposes. The air quality standards established in Sacramento County are promulgated by the Sacramento Metropolitan Air Quality Management District (SMAQMD) and are consistent with the CCAA. The thresholds of significance are summarized in Table 2-4.

Table 2-4. SMAQMD Thresholds of Significance (Pounds per Day [lbs/day])

Emission	Construction (lbs/day)		Operations (lbs/day)	
Reactive Organic Gas	-		65 pounds/day	
Nitrogen Oxide	85 pounds/day		65 pounds/day	
Carbon Monoxide	-		-	
Sulfur Oxide	-		-	
Coarse Particulate Matter	80 pounds/day (If all feasible BACT/BMP applied)	14.6 tons/year	80 pounds/day (If all feasible BACT/BMP applied)	14.6 tons/year
Fine Particulate Matter	82 pounds/day (If all feasible BACT/BMP applied)	15 tons/year	82 pounds/day (If all feasible BACT/BMP applied)	15 tons/year

Source: SMAQMD 2019
Notes: BACT = best available control technology; BMP = best management practices

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. 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.

2.3.2 Construction Emission Estimation Methodology

Air quality impacts were assessed utilizing regulatory emission factors, process knowledge, and conservative throughput assumptions. Onsite construction-related (including worker commutes and vendors) emissions were modeled using the California Emissions Estimator Model (CalEEMod), version 2016.3.2 for the Proposed Project. 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. Construction-generated air pollutant emissions for the Proposed Project, including offsite improvements required for the interconnection to PG&E's electrical system and any improvements to the interconnection to the UPRR tracks, were primarily calculated using CalEEMod model defaults for Colusa County.

2.3.3 Operational Emission Estimation Methodology

Mobile Source Emissions

Employee Trips

Employee trips were estimated at 200 daily. The Project would maintain weekday staffing levels of 50 employees, assuming each employee arrives in their own vehicle and takes lunch offsite, 50 employees

would generate approximately 200 daily traffic trips [50 workers x 4 trips = 200 daily trips]). Operational emissions associated with worker commutes have been calculated with the CalEEMod modeling software.

Heavy Duty Truck Trips

Biomass feedstock would be delivered to the site in heavy diesel trucks traveling eastbound on Myers Road from the Frontage Road to the shared paved access driveway with the Wadham Energy facility. Additionally, heavy diesel trucks would be employed by Project vendors delivering various supplies and materials necessary for facility operations and would be used to transport wastes from the Project facility. The Project is anticipated to generate approximately 125 heavy-duty truck trips daily.

Operational emission factors from Project-related heavy-duty truck trips were generated using the 2021 version of the EMission FACtor model (EMFAC) developed by CARB. EMFAC 2021 is a mathematical model that was developed to calculate emission rates from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by CARB to estimate changes in future emissions from on-road mobile sources. The most recent USEPA approved version of this model, EMFAC 2021, incorporates regional motor vehicle data, information and estimates regarding the distribution of vehicle miles traveled by speed, and number of starts per day.

Average truck trip distances were estimated for the Sacramento Valley, Northeast Plateau and Mountain Counties areas/basins. EMFAC emission factors generated using default factors for Colusa County, calendar year 2023 model year, speed, and model year aggregations. The majority of biomass gathering, and delivery will take place in the Sacramento Valley air basin. Onsite idling was assumed to be eight minutes per truck to account for any unintended exceedances of the five-minute idling rule. All assumptions, factors, and methodologies for estimating emissions from Project-related heavy-duty truck trips are included in Appendix A Tables 3 through 11.

Operational Locomotive

Approximately 50 rail cars per week (i.e., UPRR fully enclosed boxcars or intermodal equipment) would be employed to transport biocarbon product in bulk rail cars on UPRR tracks to one or more major ports in California and/or Oregon for ultimate transport of the biocarbon product via Handymax class ocean vessels. Rail cars would be loaded at the proposed rail car loadout area and electric single-engine switching locomotive would be used on the property to move cars along the rail spur system.

The locomotive-generated emissions produced as a result of transporting Project-manufactured biocarbon product are calculated using CARB's Vision Access Data Base (CARB 2017) factors and estimated distances traveled in the NSVAB, Northeast Plateau Air Basin (NEPAB), and San Francisco Bay Air Basin (SFBAB).

Operational Mobile Off-road Equipment Emissions

Mobile onsite equipment would include four diesel front-end loaders as well as forklifts powered by propane. Emission factors associated with this equipment are calculated with CARB's OFFROAD 2017 version 1.0.1 model. OFFROAD 2017 is a software package used to generate emissions inventory data for off-road mobile sources (see Attachment A Tables 17 through 20).

Stationary Source Emissions

Emissions from all significant stationary emissions were calculated for Project operations using conservative "worst case" assumptions, process knowledge, and emission factors from regulatory sources. Criteria pollutant emissions from diesel storage, building heating and miscellaneous chemical storage are considered insignificant and subsequently not included in this analysis.

Initial Biomass Processing

Initial biomass processing is to be conducted primarily in the Screen and Sizing Structure. Processing activities conducted in the screen and sizing structure resulting in PM emissions would be scalping (i.e., Hog), screening, and sizing using the Hammermill. Emissions for initial biomass processing in the screen and sizing structure have been estimated using the exiting grain rate of the building controls, a size distribution derived from process knowledge, instrument flow, and maximum uptime. Assumptions, emission factors and methodologies used for PM controls are found in Attachment A Tables 21 through 23.

Emissions resulting from biomass handling outside of the Screen and Sizing Structure are estimated using the AP-42 "Drop Point" methodology (EPA, 2006) as showing in Attachment A tables 24 through 26.

Biomass Storage

Outdoor biomass storage will occur during project operations, biomass stored will nearly always have a high moisture content while in storage. Emissions form wind erosion during biomass storage were included in this analysis using AP-42 Aggregate Handling Section (EPA, 2006) equations and factors and maximum pile size. Storage pile emissions assume the largest pile size for the entire year. All factors and methodologies used to estimate biomass storage can be found in Attachment A Tables 27 through 29.

Biomass Dryer Loading

Fugitive dust emissions from Biomass loading were calculated using the AP-42 emission factors and procedures for unpaved surfaces. Operations were estimated using the total miles traveled. All factors and methodologies used to calculate fugitive dust emissions on unpaved surfaces can be found in Attachment A Tables 36 and 37.

Pellet Milling Operations

Pellet milling will be conducted on the cooled biomass after thermal processing in the pellet milling building. Pellet milling emissions were estimated using the same particulate controls-based methodology explained above for initial biomass processing. Calculations for pellet milling emissions can be found in Attachment A of this document.

Pellet Storage

Pellets will be stored in two buildings adjacent to the pellet loaders. Particulate emissions will result from operations inside the pellet storage building. Emissions from pellet storage were estimated using the particulate control methodology described above and in Attachment A of this document.

Pellet Loading

Pellet loading onto trains will be conducted at the rail spur which is directly adjacent to the pellet storage. Emissions generated from pellet loading are estimated using the drop point methodology and the physical characteristics of the pellets derived from process knowledge. Drop point calculations and factors used for this source can be found in Attachment A of this document.

Cogeneration Unit

Emissions associated with the operation of the cogeneration unit were calculated separately for combustion gases, particulates, and VOCs and PM from the cooling tower. Combustion gas emissions were calculated using BACT derived emission factors for similar processes and the total amount of combustion biproducts as presented in Attachment A Tables 42 through 52. Emissions for both natural gas and process gas were takin into account for a 'worst case' daily emissions scenario. PM emissions were calculated using the controls-method described above and an assumed electrostatic precipitator grain rate. Emissions from the cooling tower were calculated using SCAQMD annual emission reporting guidance for cooling towers (SCAQMD, 2018) as presented in Attachment A Tables 30 through 35.

Fugitive Process Gas Emissions

Fugitive emissions during transportation and collection of the process gas were calculated using emission factors and calculation methodologies as identified in SCAQMD Guidelines for Reporting VOC Emissions from Component Leaks (SCAQMD, 2015). Minimal leaks during operations are likely due to the nature of the process and a proprietary leak identification plan will always be implemented. Most leaks will not are likely to occur in areas without high VOC concentrations and were calculated as 95% of the total leaks. 5% of leaks were assumed to occur at high VOC areas during the process to be conservative but are unlikely to occur during normal operations. Emission calculations can be found in Attachment A Tables 54 through 57.

2.3.4 Displaced Criteria Pollutant and Greenhouse Gas Emissions

Displaced Open Burning Emissions

The Proposed Project would result in the conversion of orchard biomass to a biocarbon product using a non-combustion process involving thermal conversion of biomass. Once operational, the Project would be able to process up to 763,000 gross wet tons of renewable biomass (feedstock) per year. The majority of the biomass used for this process would be disposed of via open burning if not for the Project. Emissions displaced from redirecting orchard biomass from open burning are calculated using emission factors from

CARB (see Attachment A). For the purposes of this analysis, it is assumed that 50 percent of the redirected orchard biomass would be disposed of via open burning if not for the Project.

Displaced Fossil Fuel Energy Generation Emissions

The Proposed Project would result in the generation of 10 MW of net electric power (17 MW gross) for export sale to PG&E. Emissions displaced by the generation of clean, renewable energy that would otherwise be produced by existing business-as-usual power generation resources (including natural gas and coal) are calculated using USEPA's AP-42 Fifth Edition Compilation of Air Emissions Factors (1995; 2015) (see Attachment A).

Health Risk Assessment

The Project proposes a manufacturing facility would therefore be a source of TACs. As such, a health risk assessment (HRA) was prepared to evaluate the potential health-related effects Project TACs would have on residential receptors in the vicinity. Project TACs would include DPM from the visiting haul trucks, and ammonia, formaldehyde, methanol, phenol, formic acid, and ethylene oxide from proposed biocarbon product processing.

The Health Risk Assessment was prepared in accordance with the guidance from the Office of Environmental Health Hazard Assessment's (OEHHA's) *Guidance Manual for Preparation of Health Risk Assessments* in order to determine if health risks are likely to occur from the Proposed Project. Project-generated DPM, ammonia, formaldehyde, methanol, phenol, formic acid, and ethylene oxide concentrations and associated dispersion were modeled using the HARP2 modeling program provided by CARB, with regulatory default settings, to perform the dispersion and health risk modeling for this analysis. HARP2 implements the latest regulatory guidance to develop inputs to the U.S. EPA AERMOD dispersion model for dispersion and as the inputs for calculations for the various health risk levels. AERMOD is a steady-state plume model that incorporates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of both surface and elevated sources, and both simple and complex terrain.

2.3.5 Impact Analysis

Implementation of the Proposed Project could result in air quality impacts during construction and operations. As previously discussed, the CCAPCD has not established air pollution emission thresholds under CEQA for the assessment of air quality impacts. As such, the Proposed Project will be compared to the significance threshold established by the SMAQMD presented in Table 2-4.

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 clearing and grading, and the use of asphalt or other

oil-based substances during paving activities. Construction associated with the Proposed Project would generate short-term emissions of criteria air pollutants, including ROG, CO, NO_X, PM_{10}, and $PM_{2.5}$. The largest amount of ROG, CO, and NO_X emissions would occur during the earthwork phase. PM_{10} and $PM_{2.5}$ emissions would occur from fugitive dust (due to earthwork and excavation) and from construction equipment exhaust. Exhaust emissions from construction activities include emissions associated with the transport of machinery and supplies to and from the Project Site, emissions produced onsite as the equipment is used, and emissions from trucks transporting materials to and from the site. Construction-generated emissions are short term and of temporary duration, lasting only as long as construction activities occur, but have the potential to represent a significant air quality impact.

Construction-generated emissions associated with the Proposed Project were calculated using CalEEMod. Predicted maximum daily construction-generated emissions of criteria air pollutants for the Proposed Project are summarized in Table 2-5.

Table 2-5. Unmitigated Construction-Related Emissions

Construction Activity	Maximum Pollutants (lbs/day)		
	NO_x	**PM_{10}**	**$PM_{2.5}$**
Project Site Construction (year one)	102.78	14.15	7.44
Project Site Construction (year two)	89.63	13.99	7.13
Potentially Significant Impact Threshold	*85 lbs/day*	*80 lbs/day (If all feasible BACT/BMP applied)*	*82 lbs/day (If all feasible BACT/BMP applied)*
Exceed Threshold?	**Yes**	**No**	**No**

Source: CalEEMod version 2016.3.2. Refer to Attachment A for Model Data Outputs.
Notes: Daily construction emissions taken from the season (summer or winter) with the highest output.

As shown in Table 2-5, emissions of the O_3 precursor, NO_x, on the peak day(s) of construction would exceed the significance threshold during construction activities. Therefore, mitigation measure AQ-1 is required in order to reduce NO_x emissions to levels below the regional significance threshold. Mitigation measure AQ-1 would mandate the use of cranes, excavators, and dozers with Tier 4 Certified engines during construction activities.

The first federal standards (Tier 1) for new off-road diesel engines were adopted in 1994 for engines over 50 horsepower and were phased in from 1996 to 2000. In 1996, a Statement of Principles pertaining to off-road diesel engines was signed between the USEPA, CARB, and engine makers (including Caterpillar, Cummins, Deere, Detroit Diesel, Deutz, Isuzu, Komatsu, Kubota, Mitsubishi, Navistar, New Holland, Wis-Con, and Yanmar). On August 27, 1998, the USEPA signed the final rule reflecting the provisions of the Statement of Principles. The 1998 regulation introduced Tier 1 standards for equipment under 50 horsepower and increasingly more stringent Tier 2, Tier 3, and Tier 4 standards for all equipment with phase-in schedules from 2000 to 2015. As a result, all off-road, diesel-fueled construction equipment manufactured from 2006 to 2015 has been manufactured to Tier 3 standards. The Tier 3 standards can reduce NO_x emissions by as much as 64 percent and PM emissions by as much as 39 percent. On May 11,

2004, the USEPA signed the final rule introducing Tier 4 emission standards, which are currently phased-in over the period of 2008-2015. The Tier 4 standards require that NO_x emissions be further reduced by about 90 percent. All off-road, diesel-fueled construction equipment manufactured in 2015 or later have been manufactured to Tier 4 standards.

The following mitigation is recommended.

AQ-1: Prior to issuance of a grading permit, the Project applicant shall submit a grading plan for review and approval by the County of Colusa Planning Department ensuring that all Project cranes, excavators, and dozers used during construction activities shall be California Air Resources Board (CARB) Tier 4 Certified, as set forth in Section 2423 of Title 13 of the California Code of Regulations, and Part 89 of Title 40 of the Code of Federal Regulations.

Table 2-6 shows Project construction emissions with imposition of mitigation measure AQ-1.

Table 2-6. Mitigated Construction-Related Emissions

Construction Activity	Maximum Pollutants (lbs/day)		
	NO_x	PM_{10}	$PM_{2.5}$
Project Site Construction (year one)	77.14	8.59	4.22
Project Site Construction (year two)	67.90	8.63	4.09
Potentially Significant Impact Threshold	*85 lbs/day*	*80 lbs/day (If all feasible BACT/BMP applied)*	*82 lbs/day (If all feasible BACT/BMP applied)*
Exceed Threshold?	**No**	**No**	**No**

Source: CalEEMod version 2016.3.2. Refer to Attachment A for Model Data Outputs.
Notes: Daily construction emissions taken from the season (summer or winter) with the highest output.

As shown in Table 2-6, implementation of mitigation measure AQ-1 would reduce NO_x emissions during construction activities to levels below the significance threshold. It is noted that the SMAQMD states that projects generating less than 80 pounds of PM_{10} and less than 82 pounds of $PM_{2.5}$ daily while also implementing SMAQMD's Basic Construction Emission Control Practices, known as Best Management Practices (BMPs) are considered less than significant. In addition to reducing NO_x emissions approximately 25 percent, adherence to mitigation measure AQ-1 would reduce PM_{10} emissions by approximately 39 percent and $PM_{2.5}$ emissions by 42.9 percent compared with the unmitigated construction scenario. Therefore, implementation of mitigation measure AQ-1 and its requirement that all Project cranes, excavators, and dozers by equipped with Tier 4 Certified engines, in addition to reducing NO_x emissions below the significance threshold, is considered an adequate BMP to control PM emissions.

With implementation of mitigation measure AQ-1, criteria pollutant emissions generated during Project construction 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, and no health effects from Project criteria pollutants would occur.

Project Operations Criteria Air Quality Emissions

Implementation of the Project would result in long-term operational emissions of criteria air pollutants such as PM_{10}, $PM_{2.5}$, CO, and SO_2 as well as ozone precursors such as ROGs and NO_X. Project-generated increases in emissions would be predominantly associated with onsite stationary sources and motor vehicle use.

Long-terms operational emissions attributable to the Project are identified in Table 2-7 and compared to the operational significance thresholds promulgated by the SMAQMD.

Table 2-7. Operations-Related Emissions

Emission Source	Daily Emissions (lbs/day)					
	CO	NOx	SO2	VOC	PM10	PM2.5
Mobile Emissions						
Onsite Trucks (Idling)	1.28	1.05	0.00	0.09	0.0005	0.0005
Offsite Trucks	2.73	22.64	0.15	0.31	0.35	0.34
Trains	4.38	7.48	3.42	0.27	0.12	0.11
Employee Trips	4.22	0.65	0.01	0.39	1.24	0.33
Onsite Off-road Equipment	13.68	1.58	0.01	0.74	0.05	0.05
Stationary Emissions						
Material Handling	-	-	-	-	0.04	0.01
Screening/Ash Removal and Hammermills	-	-	-	-	5.76	0.29
Wet Biomass Storage	-	-	-	-	3.34	0.48
Biomass Heater Loading	-	-	-	-	5.39	0.54
Cogeneration Unit – Natural Gas	13.41	7.98	0.10	0.88	1.21	1.21
Cogeneration Unit – Process Gas	22.90	18.81	0.08	18.03	27.35	9.57
Pelletizer Stack	-	-	-	-	13.17	5.27
Process Gas Fugitive Emissions	-	-	-	10.62	-	-
Emergency Natural Gas Generator	1.46	3.90	0.00	0.54	0.05	0.05
Cooling Tower	-	-	-	30.24	12.61	4.41
Pellet Storage	-	-	-	-	5.76	0.29
Pellet Loading	-	-	-	-	1.93	0.29
Project Emissions Total	**64.06**	**64.09**	**3.77**	**62.11**	**78.37**	**23.23**
Potentially Significant Impact Threshold	*65 pounds/day*	*65 pounds/day*	-	-	*80 pounds/day*	*82 pounds/day*
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

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

As shown in Table 2-7, daily Project emissions would not exceed any significance threshold during operations.

Conflict with an Applicable Air Quality Attainment Plan

The CAA requires an air quality attainment plan to be prepared for areas designated as nonattainment with regard to federal 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 stated, the Colusa County portion of the NSVAB, which encompasses the Project site, is classified

attainment for all federal standards. As such, Colusa County is not subject to an air quality plan under the CAA.

The CCAPCD attains and maintains air quality conditions in Colusa County through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. In an attempt to achieve and maintain air quality standards, the air district has participated in the preparation of air quality attainment plans and reports. Specifically, all of the air districts in the NSVAB including the CCAPCD, prepared an air quality attainment plan for O_3 in 1994. Updated every three years since adoption, the current *Northern Sacramento Valley Planning Area 2018 Triennial Air Quality Attainment Plan* (2018 AQAP) includes forecast ROG and NO_x emissions (O_3 precursors) for the entire NSVAB through the year 2020. The 2018 AQAP provides local guidance for air basins to achieve and maintain attainment of the California O_3 standard. Pollutant control strategies are based on the latest scientific and technical information and planning assumptions, and updated emission inventory methodologies for various source categories.

The determination of AQAP consistency is primarily concerned with the long-term influence of a project on air quality. A project conforms with regional attainment plans if it complies with all applicable district rules and regulations and is consistent with the growth forecasts in the applicable plan(s) (or is directly included in the applicable plan). A project is nonconforming if it conflicts with or delays implementation of any applicable attainment or maintenance plan.

Implementation of the Project would not surpass any of the applicable significance thresholds for individual pollutants, as show in Table 2-6 and 2-7 above, and therefore would not delay implementation of achieving attainment for all pollutants. Additionally, the Project is consistent with the growth forecasts used to inventory air pollutant emissions in the NSVAB. The growth forecasts contained in the 2018 AQAP were defined in consultation with local governments and with reference to local general plans. The Project is consistent with the Colusa County General Plan land use designation for the site. Therefore, the Project would not increase population beyond that already considered and planned for in the unincorporated County.

The Proposed Project would result in the conversion of orchard biomass to a biocarbon product using a non-combustion process involving thermal conversion of biomass (the biocarbon product would then be used in place of fossil fuels in energy and steel production). The majority of the biomass used for this process would be disposed of via open burning if not for the Project. Accounting for the emissions displaced from disposing orchard biomass through the Project process as opposed to disposing it via open burning would result in a net reduction in all criteria air pollutants. Emissions for open burning were calculated using the emission factors found in the CARB Emission Factor document (2006) found in academic research. Table 2-8 shows the emissions that would potentially be displaced by the Proposed Project.

Table 2-8. Proposed Project Displaced Criteria Pollutant Emissions from Displaced Open Burning Emissions (Tons)

Emission Source	Displaced Emissions (tons)					
	ROG/VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
Emissions Displaced Annually						
Displaced Open Burning Emissions	1,202	992	12,590	19	1,488	1,393

Source: ECORP 2021. Refer to Attachment A for Model Data Outputs.
Notes: Once operational, the Project would be able to process up to 763,000 gross wet tons of renewable biomass (feedstock) per year. For the purposes of this analysis, it is assumed that 50 percent of the redirected orchard biomass (381,500 tons) would be disposed of via open burning if not for the Project.

As shown in Table 2-8, Project conversion of orchard biomass to a biocarbon product would potentially displace up to 1,202 tons of ROG, 992 tons of NO_x, 1,488 tons of PM_{10}, and 1,393 tons of $PM_{2.5}$, annually (this equates to 7,174 pounds of ROG, 5,922 pounds of NO_x, 8,883 pounds of PM_{10}, and 8,313 pounds of $PM_{2.5}$, daily). Thus, the Project would result in a beneficial impact in terms of eliminating emissions that would otherwise be generated.

As previously described, the Project would use self-generated biogas for the process energy and would provide up to 10 MW of net electric power (17 MW gross) for export sale to PG&E. Thus, the operation of the Project would create renewable energy over its planned lifetime and decrease the need for energy from fossil fuel–based power plants in the state, which is considered a beneficial impact to statewide air quality. The energy produced by the Project would displace the criteria pollutant emissions which would otherwise be produced by existing business-as-usual power generation resources (including natural gas and coal).

Table 2-9 shows the emissions that would potentially be displaced by the Proposed Project. Note that this estimate only includes that associated with the combustion of fossil fuels; it does not include the vehicle trips associated with the Project's operations, and it similarly does not include operational employee trips associated with natural gas or coal combustion nor the emissions associated with extracting and transporting those power sources. In addition, this estimate only includes the displacement of that portion of the California market that comes from fossil fuels and does not include the approximate 50 percent of the California electricity generated by non-combustion sources (wind, solar, nuclear, hydro-electric) (California Energy Commission [CEC] 2019a). Displacement of fossil fuel emissions has a direct beneficial effect on human health for those receptors downwind of the location of the fossil fuel power plants.

Table 2-9. Proposed Project Displaced Criteria Pollutant Emissions from Onsite Electricity Generation (Tons)

Emission Source	Displaced Emissions (tons)					
	ROG/VOC	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
Emissions Displaced Annually						
Displaced Natural Gas-Source Emissions	0.0	0.4	0.1	0.3	0.4	0.2
Displaced Coal-Source Emissions	0.0	3.0	0.1	0.1	0.0	0.0
Total	**0.0**	**3.4**	**0.2**	**0.4**	**0.4**	**0.2**
Emissions Displaced over 30 Years (tons)						
Displaced Natural Gas-Source Emissions	0.0	12.0	4.8	8.7	12.0	4.8
Displaced Coal-Source Emissions	0.0	88.7	3.8	4.2	0.6	0.4
Total	**0.0**	**101.3**	**7.5**	**12.9**	**12.6**	**5.3**

Source: Displaced emissions calculated by ECORP using USEPA's AP-42 Fifth Edition Compilation of Air Emissions Factors 1995; 2015. Refer to Attachment A for Model Data Outputs.

Notes: In order to provide a conservative analysis, the Proposed Project is assumed to generate electricity 50 percent of the time available (4,380 hours annually). Heat Rate indicates the energy generator efficiency of existing fossil-fuel based energy generators. The heat rate of a power plant measures the amount of fuel used to generate one unit of electricity. Power plants with lower heat rates are more efficient than plants with higher heat rates. The CEC's "Updated Thermal Power Plant Efficiency Measures and Operational Characteristics for Production Cost Modeling" (2019b) estimates heat rates and operating ranges for thermal power plants supplying energy to California. The average heat rate of power plants types are as follows:

**Steam Boiler fueled by coal: 10,800 heat rate **Steam Boiler fueled by natural gas: 10,200 heat rate **Gas Turbine: 10,100 heat rate **Combined natural gas Boiler and Turbine: 7,640 heat rate.

By omitting steam boilers fueled by coal since so little of California's energy is derived from coal, the average heat rate = 9,313 [(10,100 + 10,200 + 7,640) ÷ 3 = 9,313]. 10 MW (43,800,000 annual kWH) x 9,313 heat rate = 407,909,400,000 Btu displaced from fossil fuel production. Fossil fuel-based energy consumption in California is predominately derived from natural gas (34.23 percent). Coal constitutes 2.96 percent of all fossil fuel-based energy. Therefore, 169,568,000,000 of the displaced Btu is displaced natural gas consumption and 11,829,000,000 is displaced Btu is displaced coal. The heat content of coal is assumed at 24 million Btu per ton of coal burned. At a rate of 24 million Btu per ton of coal burned, the Project would displace 493 tons of burned coal annually.

As shown, the Project would potentially displace just under 101.3 tons of NO_x, 7.5 tons of CO, 12.9 tons of SO_2, 12.6 tons of PM_{10}, and 5.3 tons of $PM_{2.5}$ over the course of 30 years.

As demonstrated in Table 2-6 and Table 2-7, the Project would not exceed the applicable significance thresholds for construction or operational-source emissions. Additionally, the Project is consistent with the growth forecasts used to inventory air pollutant emissions in the NSVAB. As shown in Table 2-7, Project conversion of orchard biomass to a biocarbon product would displace criteria air pollutants that would otherwise be emitted without the Project. Finally, as shown in Tables 2-8 and 2-9 the Project would potentially displace a substantial amount of pollutants due to disposing orchard biomass through the Project process as opposed to disposing it via open burning as well as the export sale of 10 MW of electricity. For these reasons, the Project would be consistent with the emission-reduction goals of the 2018 AQAP.

Exposure of Sensitive Receptors to TACs

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 The nearest sensitive receptor to the Project site is a residence located across Frontage Road approximately 150 feet west of the Project's western boundary. There is another residence, fronting Myers Road on the west side of I-5, located approximately 1,740 feet west of the Project site. The next-nearest residence sits approximately 2,150 feet east of the Project site on Myers Road. The nearest sensitive receptor to the north of the Project site includes a single-family residence located approximately 3,265 feet distant.

Construction-Generated Air Contaminants

Construction of the Project would result in temporary, short-term Project-generated emissions of DPM, ROG, NO_x, CO, and PM_{10} from the exhaust of off-road, heavy-duty diesel equipment for Project site preparation and construction. As previously identified, the portion of the NSVAB which encompasses the Project area is designated as a nonattainment area for state standards for PM_{10} (CARB 2019). Thus, existing PM_{10} levels in the Colusa County portion of the NSVAB are at unhealthy levels during certain periods. However, as shown in Table 2-6, the Project would not exceed the applicable significance thresholds for construction emissions with the imposition of mitigation measure AQ-1.

The health effects associated with O_3 are generally associated with reduced lung function. Because the Project would not involve construction activities that would result in O_3 precursor emissions (ROG or NO_x) in excess of the significance thresholds, with the imposition of mitigation measure AQ-1, the Project is not anticipated to substantially contribute to regional O_3 concentrations and the associated health impacts.

PM_{10} and $PM_{2.5}$ contain microscopic solids or liquid droplets that are so small that they can get deep into the lungs and cause serious health problems. PM exposure has been linked to a variety of problems, including premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms such as irritation of the airways, coughing, or difficulty breathing. For construction-type activity, DPM is the primary TAC of concern. Based on the emission modeling conducted, the maximum onsite construction-related daily emissions of exhaust PM_{10}, considered a surrogate for DPM and includes emissions of exhaust $PM_{2.5}$, would be 1.82 pounds per day for construction activities associated with the Proposed Project (see Attachment A). PM_{10} exhaust is considered a surrogate for DPM as all diesel exhaust is considered to be DPM. As with O_3 and NO_x, the Project would not generate emissions of PM_{10} at levels that would exceed the applicable thresholds with imposition of mitigation measure AQ-1, nor would it generate any significant emissions of $PM_{2.5}$. Accordingly, the Project's PM_{10} and $PM_{2.5}$ emissions are not expected to cause any increase in related regional health effects for these pollutants.

In summary, Project construction would not result in a potentially significant contribution to regional concentrations of nonattainment pollutants and would not result in a significant contribution to the adverse health impacts associated with those pollutants.

Operational Air Contaminants

Operation of the Proposed Project would result in the development of substantial sources of the air toxins, DPM, ammonia, formaldehyde, methanol, phenol, formic acid, and ethylene oxide. An operational HRA has been prepared for this Project (ECORP 2021). The following discussion is based on this HRA.

Cancer Risk

Cancer risk calculations for existing residential receptors are based on a 70-year exposure periods to for operations. The calculated cancer risk accounts for 350 days per year of exposure to existing residential receptors. While the average American spends 87 percent of their life indoors (USEPA 2001), neither the pollutant dispersion modeling nor the health risk calculations account for the reduced exposure structures provide. Instead health risk calculations account for the equivalent exposure of continual outdoor living. The calculated carcinogenic risk at Project vicinity receptors is depicted in Table 2-10.

Table 2-10. Cancer Risk Summary at Maximum Point of Exposure at Maximumly Exposed Receptors (Residence to West)

Exposure Scenario	Total Risk
Project Operations	
70-Year Exposure Residence	**9.21**
25-Year Exposure Worker	**1.06**
Potentially Significant Impact Threshold	*10*
Exceed Threshold?	**No**

Source: ECORP Consulting 2021. Refer to Attachment A for Model Data Outputs.

As shown, impacts related to cancer risk for all modeled scenarios would be below the 10 in one million threshold for Project operations.

Non-Carcinogenic Hazards

In addition to cancer risk, the significance thresholds for TAC exposure requires an evaluation of non-cancer risk stated in terms of a hazard index. Non-cancer chronic impacts are calculated by dividing the annual average concentration by the REL for that substance. The REL is defined as the concentration at which no adverse non-cancer health effects are anticipated. The potential for acute non-cancer hazards is evaluated by comparing the maximum short-term exposure level to an acute REL. RELs are designed to protect sensitive individuals within the population. As mentioned above no acute risk was analyzed for this report as DPM has no identified acute risk.

A chronic hazard index of 1.0 is considered individually significant. The hazard index is calculated by dividing the acute or chronic exposure by the REL. The highest maximum chronic hazard indexes for sensitive receptors as a result of Project operations as a result of TAC exposure is shown in Table 2-11.

Table 2-11. Non-Carcinogenic Health Risk Summary at Maximumly Exposed Receptors (Residence to West)

Exposure Scenario	Maximum Acute Hazard	Maximum Chronic Hazard
Residential Receptor	**0.074**	**0.005**
Potentially Significant Impact Threshold	*1*	*1*
Exceed Threshold?	**No**	**No**

Source: ECORP Consulting 2021. Refer to Attachment A for Model Data Outputs.

As shown in Table 2-11, impacts related to non-cancer risk (chronic hazard index) as a result of the Project site would not surpass significance thresholds.

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. It has long been recognized that CO hotspots are caused by vehicular emissions, primarily when idling at congested intersections. 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 allowable CO emissions standard in California is a maximum of 3.4 grams/mile for passenger cars (there are requirements for certain vehicles that are more stringent). With the turnover of older vehicles, introduction of cleaner fuels, and implementation of increasingly sophisticated and efficient emissions control technologies, CO concentration in the NSVAB is designated unclassified for the state and federal standards. Detailed modeling of Project-specific CO "hot spots" is not necessary and thus this potential impact is addressed qualitatively.

A CO "hot spot" would occur if an exceedance of the state one-hour standard of 20 parts per million (ppm) or the eight-hour standard of 9 ppm were to occur. The analysis prepared for CO attainment in the South Coast Air Quality Management District's (SCAQMD's) *1992 Federal Attainment Plan for Carbon Monoxide* in Los Angeles County and a Modeling and Attainment Demonstration prepared by the

SCAQMD as part of the 2003 Air Quality Management Plan can be used to demonstrate the potential for CO exceedances of these standards. The SCAQMD is the air pollution control officer for much of southern California. The SCAQMD conducted a CO hot spot analysis as part of the 1992 CO Federal Attainment Plan at 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. Despite this level of traffic, the CO analysis concluded that there was no violation of CO standards (SCAQMD 1992). In order to establish a more accurate record of baseline CO concentrations affecting the Los Angeles, a CO "hot spot" analysis was conducted in 2003 at the same four busy intersections in Los Angeles at the peak morning and afternoon time periods. This "hot spot" analysis did not predict any violation of CO standards. The highest one-hour concentration was measured at 4.6 ppm at Wilshire Boulevard and Veteran Avenue and the highest eight-hour concentration was measured at 8.4 ppm at Long Beach Boulevard and Imperial Highway. Thus, there was no violation of CO standards.

Similar considerations are also employed by other air districts when evaluating potential CO concentration impacts. More specifically, the Bay Area Air Quality Management District (BAAQMD), the air pollution control officer for the San Francisco Bay Area, concludes that under existing and future vehicle emission rates, a given project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour or 24,000 vehicles per hour where vertical and/or horizontal air does not mix—in order to generate a significant CO impact.

The Proposed Project is anticipated to result in an average of 325 weekday traffic trips. Thus, the Project would not generate traffic volumes at any intersection of more than 100,000 vehicles per day (or 44,000 vehicles per day) and 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. Therefore, construction odors would result in a less than significant impact related to odor emissions.

Land uses commonly considered to be potential sources of obnoxious odorous emissions include agriculture (farming and livestock), wastewater treatment plants, food processing plants, chemical plants, composting facilities, refineries, landfills, dairies, and fiberglass molding. The Proposed Project does not include any of these uses.

As previously described, the ability to detect odors varies considerably among the population and is inherently subjective in nature. For instance, Project operations could be considered a source of unpleasant odors by some given its proposed as a manufacturing facility. However, the Proposed Project would also be required to comply with CCAPCD Rule 200 to prevent occurrences of public nuisances. Rule 402 prohibits the discharge from any source that causes nuisance, annoyance, or discomfort to a considerable number of persons.

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 CO_2, methane (CH_4), and 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 (Intergovernmental Panel on Climate Change [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. 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 TACs, 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	CO_2 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	CH_4 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. CH_4 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	N_2O 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] USEPA 2016a, [2] USEPA 2016b, [3] USEPA 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.

3.1.1 Sources of Greenhouse Gas Emissions

In 2020, CARB released the 2020 edition of the California GHG inventory covering calendar year 2018 emissions. In 2018, California emitted 425.3 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 2018, accounting for approximately 30 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 (15 percent) (CARB 2020b). Emissions of CO_2 are

byproducts 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. CO_2 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 CO_2 from the atmosphere.

3.2 Regulatory Framework

3.2.1 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 EO 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.

Assembly Bill 32 Climate Change Scoping Plan and Updates

In 2006, the California legislature passed AB 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). Pursuant to AB 32, CARB adopted a Scoping Plan in December 2008, which outlines measures to meet the 2020 GHG reduction goals. California is on track to meet or exceed the target of reducing GHG emissions to 1990 levels by the end of 2020.

The Scoping Plan is required by AB 32 to be updated at least every five years. The latest update, the 2017 Scoping Plan Update, addresses the 2030 target established by 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.

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 § 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 Executive Order (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 100 of 2018

In 2018, SB 100 was signed by Governor Brown, codifying a goal of 60 percent renewable procurement by 2030 and 100 percent by 2045 Renewables Portfolio Standard.

2019 Building Energy Efficiency Standards for Residential and Nonresidential Buildings

The Building and Efficiency Standards (Energy Standards) were first adopted and put into effect in 1978 and have been updated periodically in the intervening years. These standards are a unique California asset that have placed the State on the forefront of energy efficiency, sustainability, energy independence and climate change issues. The 2019 Building Energy Efficiency Standards improve upon the 2016 Energy Standards for new construction of, and additions and alterations to, residential and nonresidential buildings. The 2019 update to the Building Energy Efficiency Standards focuses on several key areas to improve the energy efficiency of newly constructed buildings and additions and alterations to existing buildings. The 2019 standards are a major step toward meeting Zero Net Energy. The most significant efficiency improvement to the residential Standards include the introduction of photovoltaic into the perspective package, improvements for attics, walls, water heating and lighting. Buildings permitted on or after January 1, 2020, must comply with the 2019 Standards.

In 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Part 11 of Title 24) is commonly referred to as CalGreen Building Standard (CalGreen), and establishes voluntary and mandatory standards pertaining to the planning and design of sustainable site development, energy efficiency, water conservation, material conservation, and interior air quality. Like Part 6 of Title 24, the CalGreen standards are periodically updated, with increasing energy savings and efficiencies associated with each code update. CalGreen contains voluntary "Tier 1" and "Tier 2" standards that are not mandatory statewide but could be required by a City or County. These are 'reach' standards that can be adopted by local jurisdictions and may be incorporated as mandatory standards in future code cycles.

3.3 Greenhouse Gas Emissions Impact Assessment

3.3.1 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, or

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

The Appendix G thresholds for GHG's do not prescribe specific methodologies for performing an assessment, do not establish specific thresholds of significance, and do not mandate specific mitigation measures. Rather, the CEQA Guidelines emphasize the lead agency's discretion to determine the appropriate methodologies and thresholds of significance consistent with the manner in which other impact areas are handled in CEQA. With respect to GHG emissions, the CEQA Guidelines § 15064.4(a) states that lead agencies "shall make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate" GHG emissions resulting from a project. The CEQA Guidelines note that an agency has the discretion to either quantify a project's GHG emissions or rely on a "qualitative analysis or other performance-based standards." (14 California Code of Regulations [CCR] 15064.4(b)). A lead agency may use a "model or methodology" to estimate GHG emissions and has the discretion to select the model or methodology it considers "most appropriate to enable decision makers to intelligently take into account the project's incremental contribution to climate change." (14 CCR 15064.4(c)). Section 15064.4(b) provides that the lead agency should consider the following when determining the significance of impacts from GHG emissions on the environment:

1. The extent a project may increase or reduce GHG emissions as compared to the existing environmental setting.

2. Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.

3. The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4(b)).

In addition, Section 15064.7(c) of the CEQA Guidelines specifies that "[w]hen adopting or using thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence" (14 CCR 15064.7(c)). The CEQA Guidelines also clarify that the effects of GHG emissions are cumulative and should be analyzed in the context of CEQA's requirements for cumulative impact analysis (see CEQA Guidelines § 15130(f)). As a note, the CEQA Guidelines were amended in response to SB 97. In particular, the CEQA Guidelines were amended to specify that compliance with a GHG emissions reduction plan renders a cumulative impact insignificant.

Per CEQA Guidelines § 15064(h)(3), a project's incremental contribution to a cumulative impact can be found not cumulatively considerable if the project would comply with an approved plan or mitigation program that provides specific requirements that would avoid or substantially lessen the cumulative problem within the geographic area of the project. To qualify, such plans or programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency. Examples of such programs include a "water quality control plan, air quality attainment or maintenance plan, integrated waste management plan, habitat conservation plan, natural community conservation plans [and] plans or regulations for the reduction of greenhouse gas emissions." Put another

way, CEQA Guidelines § 15064(h)(3) allows a lead agency to make a finding of less than significant for GHG emissions if a project complies with adopted programs, plans, policies and/or other regulatory strategies to reduce GHG emissions.

The significance of the Project's GHG emissions is evaluated consistent with CEQA Guidelines Section 15064.4(b)(2) by considering whether the Project complies with applicable plans, policies, regulations, and requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. Specifically, the Project will be assessed for consistency with regulations or requirements adopted by the 2008 Climate Change Scoping Plan and subsequent updates.

3.3.2 Methodology

Construction Emissions

GHG emission-related impacts were assessed utilizing regulatory emission factors, process knowledge, and conservative throughput assumptions. Onsite construction-related (including worker commutes and vendors) emissions were modeled using CalEEMod, version 2016.3.2 for the Proposed Project. CalEEMod is a statewide land use emissions computer model designed to quantify potential GHG emissions associated with both construction and operations from a variety of land use projects. Construction-generated GHG emissions for the Proposed Project, including offsite improvements required for the interconnection to PG&E's electrical system and any improvements to the interconnection to the UPRR tracks, were primarily calculated using CalEEMod model defaults for Colusa County.

Operational Emissions

Operational Mobile Emissions

The Project would accommodate approximately 200 employee trips daily (the Project would maintain weekday staffing levels of 50 employees. Assuming each employee arrives in their own vehicle and takes lunch offsite, 50 employees would generate approximately 200 daily traffic trips [50 workers x 4 trips = 200 daily trips]). Operational emissions associated with worker commutes have been calculated with the CalEEMod modeling software.

Biomass feedstock would be delivered to the site in heavy diesel trucks traveling eastbound on Myers Road from the Frontage Road to the shared paved access driveway with the Wadham Energy facility. Additionally, heavy diesel trucks would be employed by Project vendors delivering various supplies and materials necessary for facility operations and would be used to transport wastes from the Project facility. The Project is anticipated to generate approximately 125 heavy-duty truck trips daily. Operational GHG emissions from the heavy-duty trucks visiting the Project are calculated with the 2021 version of the EMFAC model developed by CARB. EMFAC 2021 is a mathematical model that was developed to calculate emission rates from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by CARB to estimate changes in future emissions from on-road mobile sources. The most recent USEPA approved version of this model, EMFAC 2021, incorporates regional motor vehicle

data, information and estimates regarding the distribution of vehicle miles traveled by speed, and number of starts per day.

Operational Locomotive Emissions

Approximately 50 rail cars per week (i.e., UPRR fully enclosed boxcars or intermodal equipment) would be employed to transport biocarbon product in bulk rail cars on UPRR tracks to one or more major ports in California and/or Oregon for ultimate transport of the biocarbon product via Handymax class ocean vessels. Rail cars would be loaded at the proposed rail car loadout area and a new USEPA-certified Tier 4 single-engine switching locomotive would be used on the property to move cars along the rail spur system. The locomotive-generated emissions produced as a result of transporting Project-manufactured biocarbon product are calculated using USEPA's AP-42 Fifth Edition Compilation of Air Emissions Factors 1995; 2015 (see Attachment B).

Operational Mobile Onsite Equipment (Frontloaders) Emissions

Mobile onsite equipment would include three to four diesel front-end loaders as well as forklifts powered by propane. Emissions associated with this equipment are calculated with CARB's OFFROAD 2017 version 1.0.1 model. OFFROAD 2017 is a software package used to generate emissions inventory data for off-road mobile sources (see Attachment A).

Stationary Source Emissions

Stationary sources of green-house gasses include natural gas fired emergency generator and the cogeneration unit. Due to the nature of the operations, natural gas usage for other sources such as comfort heating will be minimal and not included in this analysis. All other stationary equipment will be electrical.

Displaced Open Burning Emissions

The Proposed Project would result in the conversion of orchard biomass to a biocarbon product using a non-combustion process involving thermal conversion of biomass. Once operational, the Project would be able to process up to 763,000 gross wet tons of renewable biomass (feedstock) per year. The majority of the biomass used for this process would be disposed of via open burning if not for the Project. GHG emissions displaced from redirecting orchard biomass from open burning are calculated using emission factors from CARB (see Attachment B). For the purposes of this analysis, it is assumed that 50 percent of the redirected orchard biomass would be disposed of via open burning if not for the Project.

Displaced Fossil Fuel Energy Generation Emissions

The Proposed Project would result in the generation of 10 MW of net electric power (14 MW gross) for export sale to PG&E. GHG emissions displaced by the generation of clean, renewable energy that would otherwise be produced by existing business-as-usual power generation resources (including natural gas and coal) are calculated using USEPA's AP-42 Fifth Edition Compilation of Air Emissions Factors 1995; 2015 (see Attachment B).

3.3.3 Impact Analysis

Generation of Greenhouse Gas Emissions that Conflict with any Applicable Plan, Policy, or Regulation of an Agency Adopted for the Purpose of Reducing the Emissions of Greenhouse Gases

GHG emissions associated with the Project would occur over the short term from construction activities, consisting primarily of emissions from equipment exhaust. There would also be long-term regional emissions associated with new vehicular trips and indirect source emissions, such as electricity usage for lighting.

Table 3-2 illustrates the specific construction generated GHG emissions that would result from construction of the Project. As shown in Table 3-2, Project construction would result in the generation of approximately 533 metric tons of CO_2e over the course of construction. Once construction is complete, the generation of these GHG emissions would cease.

Table 3-2. Construction-Related Greenhouse Gas Emissions

Emissions Source	CO_2e (Metric Tons/Year)
Project Site Construction (year one)	2,490
Project Site Construction (year two)	694
Total Construction	**3,184**

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

Long-term operational GHG emissions attributable to the Project are identified in Table 3-3.

Table 3-3. Operational-Related GHG Emissions

Emissions Source	CO_2e (Metric Tons/Year)
Mobile Emissions	
Onsite Trucks (Idling)	34
Offsite Trucks	2,766
Trains	281
Employee Trips	186
Onsite Off-road Equipment	164
Stationary Emissions	
Natural Gas from Start-Ups	1,839
Cogeneration Unit	424,635
Emergency Natural Gas Generator	13
Project Emissions Subtotal	***429,918***
Displaced Open Burning Emissions	
Open Burning Emissions	*-715,579*
Project Emissions Total	**-285,661**

Source: CalEEMod version 2016.3.2. Refer to Attachment B for Model Data Outputs.
Notes: Once operational, the Project would be able to process up to 763,000 gross wet tons of renewable biomass (feedstock) per year. For the purposes of this analysis, it is assumed that 60 percent of the redirected orchard biomass (381,500 tons) would be disposed of via open burning if not for the Project.

As shown in Table 3-3, Project operations would result in the net reduction of approximately 285,661 metric tons of CO_2e annually.

As previously described, the significance of the Project's GHG emissions is evaluated consistent with CEQA Guidelines Section 15064.4(b)(2) by considering whether the Project complies with applicable plans, policies, regulations, and requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. Specifically, the Project is assessed for consistency with regulations or requirements adopted by the 2008 Climate Change Scoping Plan and subsequent updates.

Consistency with CARB's Scoping Plan

The Scoping Plan (approved by CARB in 2008 and updated in 2014 and 2017) provides a framework for actions to reduce California's GHG emissions and requires CARB and other State agencies to adopt regulations and other initiatives to reduce GHGs. The Scoping Plan is not directly applicable to specific projects, nor is it intended to be used for project-level evaluations. It does not provide recommendations for lead agencies to develop evidence-based numeric thresholds consistent with the Scoping Plan, the State's long-term GHG goals, and climate change science. Under the Scoping Plan, however, there are

several State regulatory measures aimed at the identification and reduction of GHG emissions. CARB and other State agencies have adopted many of the measures identified in the Scoping Plan. Most of these measures focus on area source emissions (e.g., energy usage, high-global warming potential (GWP) GHGs in consumer products) and changes to the vehicle fleet (i.e., hybrid, electric, and more fuel-efficient vehicles) and associated fuels (e.g., Low Carbon Fuel Standard), among others.

The Scoping Plan recommends strategies for implementation at the statewide level to meet statewide GHG reduction goals and establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. Table 3-4 highlights measures that have been, or will be, developed under the Scoping Plan and presents the Project's consistency with Scoping Plan measures. The Project would comply with all regulations adopted in furtherance of the Scoping Plan to the extent required by law and to the extent that they are applicable to the Project.

Table 3-4. Project Consistency with Scoping Plan GHG Emission Reduction Strategies

Scoping Plan Measure	Measure Number	Proposed Project Consistency
Transportation Sector		
Advanced Clean Cars	T-1	*Consistent*. The Project's employees and customers would purchase vehicles in compliance with CARB vehicle standards that are in effect at the time of vehicle purchase.
Low Carbon Fuel Standard	T-2	*Consistent*. Motor vehicles driven by the Project's employees and customers would use compliant fuels. The proposed gas station component would sale compliant fuels.
Regional Transportation-Related GHG Targets	T-3	*Not applicable*. The Project would not prevent CARB from implementing this measure.
Advanced Clean Transit	N/A	*Not applicable*. The Project would not prevent CARB from implementing this measure.
Last-Mile Delivery	N/A	*Not applicable*. The Project would not prevent CARB from implementing this measure.
Reduction in vehicle miles traveled (VMT)	N/A	*Consistent*. The Proposed Project would provide a local job opportunities for the rural residents of Colusa County. The site currently accommodates the existing, nonoperational Olam Tomato Processing facility and the Project is proposing to redevelop and repurpose the site. The increases in local job opportunities in the Project area would reduce vehicle trips and VMT by encouraging shortened automobile trips, which would result in corresponding reductions in transportation-related emissions.
Vehicle Efficiency Measure 1. Tire Pressure 2. Fuel Efficiency Tire Program 3. Low-Friction Oil 4. Solar-Reflective Automotive Paint and Window Glazing	T-4	*Not applicable*. The Project would not prevent CARB from implementing this measure.
Ship Electrification at Ports (Shore Power)	T-5	*Not applicable*. The Project would not prevent CARB from implementing this measure.
Goods Movement Efficiency Measures 1. Port Drayage Trucks 2. Transport Refrigeration Units Cold Storage Prohibition 3. Cargo Handling Equipment, Anti-Idling, Hybrid, Electrification 4. Goods Movement Systemwide Efficiency Improvements 5. Commercial Harbor Craft Maintenance and Design Efficiency	T-6	*Consistent*. The Project proposes to transport all manufactured product from the facility by rail during normal operations. Trucks would only be used if rail is out of service or other extraordinary circumstances. Railways consume up to 5 ½ times less fuel per ton per mile traveled than trucks (Freightera 2019).

Table 3-4. Project Consistency with Scoping Plan GHG Emission Reduction Strategies

Scoping Plan Measure	Measure Number	Proposed Project Consistency
6. Clean Ships 7. Vessel Speed Reduction		
Heavy-Duty Vehicle GHG Emission Reduction Tractor-Trailer GHG Regulation Heavy-Duty GHG Standards for New Vehicle and Engines (Phase I)	T-7	*Consistent*. The Project's haul trucks would be in compliance with CARB vehicle standards that are in effect at the time of vehicle purchase.
Medium- and Heavy-Duty Vehicle Hybridization Voucher Incentive Proposed Project	T-8	*Not applicable*. The Project would not prevent CARB from implementing this measure.
Medium and Heavy-Duty GHG Phase 2	N/A	*Not applicable*. The Project would not prevent CARB from implementing this measure.
High-Speed Rail	T-9	*Not applicable*. The Project would not prevent CARB from implementing this measure.
Electricity and Natural Gas Sector		
Energy Efficiency Measures (Electricity)	E-1	*Consistent*. The Project would be constructed in accordance with CALGreen and Title 24 building standards.
Energy Efficiency Measures (Natural Gas)	CR-1	*Consistent*. The Project would be constructed in accordance with CALGreen and Title 24 building standards.
Solar Water Heating (California Solar Initiative Thermal Program)	CR-2	*Not applicable*. The Project would not prevent CARB from implementing this measure.
Combined Heat and Power	E-2	*Not applicable*. The Project would not prevent CARB from implementing this measure.
Renewables Portfolio Standard (33 percent by 2020)	E-3	*Consistent*. The Project would use self-generated biogas for the process energy and would provide up to 10 MW of net electric power (17 MW gross) for export sale to PG&E. Thus, the operation of the Project would create renewable energy over its planned lifetime and decrease the need for energy from fossil fuel–based power plants in the state, which is considered a beneficial impact to statewide air quality. The energy produced by the Project would displace the criteria pollutant emissions which would otherwise be produced by existing business-as-usual power generation resources (including natural gas and coal).
Renewables Portfolio Standard (60 percent by 2030)	N/A	*Consistent*. The Project would use self-generated biogas for the process energy and would provide up to 10 MW of net electric power (17 MW gross) for export sale to PG&E. Thus, the operation of the Project would create renewable energy over its planned lifetime and decrease the need for energy from fossil fuel–based power plants in the state, which is considered a beneficial impact to statewide air quality. The energy produced by the Project would displace the criteria

Table 3-4. Project Consistency with Scoping Plan GHG Emission Reduction Strategies

Scoping Plan Measure	Measure Number	Proposed Project Consistency
		pollutant emissions which would otherwise be produced by existing business-as-usual power generation resources (including natural gas and coal).
SB 1 Million Solar Roofs (California Solar Initiative, New Solar Home Partnership, Public Utility Programs) and Earlier Solar Programs	E-4	*Not applicable*. The Project would not prevent CARB from implementing this measure.
Water Sector		
Water Use Efficiency	W-1	*Consistent.* The Project would be constructed in accordance with CALGreen and Title 24 building standards.
Water Recycling	W-2	*Consistent*. The CRC Williams facility is designed to recycle and reuse water utilized for the process to the maximum extent feasible.
Water System Energy Efficiency	W-3	*Not applicable*. The Project would not prevent CARB from implementing this measure
Reuse Urban Runoff	W-4	*Consistent*. The CRC Williams facility is designed to recycle and reuse water utilized for the process to the maximum extent feasible.
Renewable Energy Production	W-5	*Consistent*. The Project would use self-generated biogas for the process energy and would provide up to 10 MW of net electric power (17 MW gross) for export sale to PG&E.
Green Buildings		
State Green Building Initiative: Leading the Way with State Buildings (Greening New and Existing State Buildings)	GB-1	*Not applicable*. The Project would not prevent CARB from implementing this measure
Green Building Standards Code (Greening New Public Schools, Residential and Commercial Buildings)	GB-1	*Consistent.* The Project would be constructed in accordance with CALGreen and Title 24 building standards.
Beyond Code: Voluntary Programs at the Local Level (Greening New Public Schools, Residential, and Commercial Buildings	GB-1	*Consistent.* The Project would be constructed in accordance with CALGreen and Title 24 building standards. Additionally, the state is to increase the use of green building practices. The Proposed Project would implement required green building strategies through existing regulation that requires the Proposed Project to comply with various CALGreen requirements.
Greening Existing Buildings (Greening Existing Homes and Commercial Buildings)	GB-1	*Not applicable*. The Project would not prevent CARB from implementing this measure.
Industry Sector		
Energy Efficiency and Co-Benefits Audits for Large Industrial Sources	I-1	*Not applicable*. The Project would not prevent CARB from implementing this measure

Table 3-4. Project Consistency with Scoping Plan GHG Emission Reduction Strategies

Scoping Plan Measure	Measure Number	Proposed Project Consistency
Oil and Gas Extraction GHG Emissions Reduction	I-2	*Consistent*. The Proposed Project would result in the conversion of orchard biomass to a biocarbon product using a non-combustion process involving thermal conversion of biomass (the biocarbon product would then be used in place of fossil fuels in energy and steel production).
Reduce GHG Emissions by 20% in Oil Refinery Sector	N/A	*Not applicable*. The Project would not prevent CARB from implementing this measure.
GHG Emissions Reduction from Natural Gas Transmission and Distribution	I-3	*Not applicable*. The Project would not prevent CARB from implementing this measure.
Refinery Flare Recovery Process Improvements	I-4	*Not applicable*. The Project would not prevent CARB from implementing this measure.
Work with the Local Air Districts to Evaluate Amendments to Their Existing Leak Detection and Repair Rules for Industrial Facilities to Include Methane Leaks	I-5	*Not applicable*. The Project would not prevent CARB from implementing this measure.
Recycling and Waste Management Sector		
Landfill Methane Control Measure	RW-1	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Increasing the Efficiency of Landfill Methane Capture	RW-2	*Not applicable*. The Project would not prevent CARB from implementing this measure.
Mandatory Commercial Recycling	RW-3	*Consistent.* The Project would include recycling during both construction and operation consistent with the requirements of the Title 24 Building Standards.
Increase Production and Markets for Compost and Other Organics	RW-3	*Not applicable*. The Project would not prevent CARB from implementing this measure.
Anaerobic/Aerobic Digestion	RW-3	*Not applicable*. The Project would not prevent CARB from implementing this measure.
Extended Producer Responsibility	RW-3	*Not applicable*. The Project would not prevent CARB from implementing this measure.
Environmentally Preferable Purchasing	RW-3	*Not applicable*. The Project would not prevent CARB from implementing this measure.
Forests Sector		
Sustainable Forest Target	F-1	*Not applicable*. The Project would not prevent CARB from implementing this measure.
Motor Vehicle Air Condition Systems: Reduction of Refrigerant Emissions from Non-Professional Servicing	H-1	*Not applicable*. The Project would not prevent CARB from implementing this measure.

Table 3-4. Project Consistency with Scoping Plan GHG Emission Reduction Strategies

Scoping Plan Measure	Measure Number	Proposed Project Consistency
SF_6 Limits in Non-Utility and Non-Semiconductor Applications	H-2	*Not applicable*. The Project would not prevent CARB from implementing this measure.
Reduction of Perfluorocarbons in Semiconductor Manufacturing	H-3	*Not applicable*. The Project would not prevent CARB from implementing this measure.
Limit High GWP Use in Consumer Products	H-4	*Not applicable*. The Project would not prevent CARB from implementing this measure.
Air Conditioning Refrigerant Leak Test During Vehicle Smog Check	H-5	*Not applicable*. The Project would not prevent CARB from implementing this measure.
Stationary Equipment Refrigerant Management Program – Refrigerant Tracking/Reporting/Repair Program	H-6	*Not applicable*. The Project would not prevent CARB from implementing this measure.
Stationary Equipment Refrigerant Management Program – Specifications for Commercial and Industrial Refrigeration	H-6	*Not applicable*. The Project would not prevent CARB from implementing this measure.
SF_6 Leak Reduction Gas Insulated Switchgear	H-6	*Not applicable*. The Project would not prevent CARB from implementing this measure.
40 Percent Reduction in Methane and Hydrofluorocarbon Emissions	N/A	*Not applicable*. The Project would not prevent CARB from implementing this measure.
50 Percent Reduction in Black Carbon Emissions	N/A	*Not applicable*. The Project would not prevent CARB from implementing this measure.
Agriculture Sector		
Methane Capture at Large Dairies	A-1	*Not applicable*. The Project would not prevent CARB from implementing this measure

Based on the analysis in Table 3-4, the Project would be consistent with the applicable strategies and measures in the Scoping Plan.

The Project would not impede the attainment of the GHG reduction goals for 2030 or 2050 identified in EO S-03-05 and SB 32. EO S-03-05 establishes the following goals: GHG emissions should be reduced to 2000 levels by 2010, to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050. SB 32 establishes for a statewide GHG emissions reduction target whereby CARB, in adopting rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emissions reductions, shall ensure that statewide GHG emissions are reduced to at least 40 percent below 1990 levels by December 31, 2030. While there are no established protocols or thresholds of significance for that future year analysis, CARB forecasts that compliance with the current Scoping Plan puts the state on a trajectory toward meeting these long-term GHG goals, although the specific path to compliance is unknown.

To begin, CARB has expressed optimism with regard to both the 2030 and 2050 goals. It states in the First Update to the Climate Change Scoping Plan that "California is on track to meet the near-term 2020 GHG

emissions limit and is well positioned to maintain and continue reductions beyond 2020 as required by AB 32" (CARB 2014). With regard to the 2050 target for reducing GHG emissions to 80 percent below 1990 levels, the First Update to the Climate Change Scoping Plan states the following (CARB 2014):

> This level of reduction is achievable in California. In fact, if California realizes the expected benefits of existing policy goals (such as 12,000 megawatts of renewable distributed generation by 2020, net zero energy homes after 2020, existing building retrofits under AB 758, and others) it could reduce emissions by 2030 to levels squarely in line with those needed in the developed world and to stay on track to reduce emissions to 80 percent below 1990 levels by 2050. Additional measures, including locally driven measures and those necessary to meet federal air quality standards in 2032, could lead to even greater emission reductions.

In other words, CARB believes that the state is on a trajectory to meet the 2030 and 2050 GHG reduction targets set forth in SB 32 and EO S-03-05. This is confirmed in the Second Update, which states (CARB 2017):

> The Proposed Plan builds upon the successful framework established by the Initial Scoping Plan and First Update, while also identifying new, technologically feasibility and cost-effective strategies to ensure that California meets its GHG reduction targets in a way that promotes and rewards innovation, continues to foster economic growth, and delivers improvements to the environment and public health, including in disadvantaged communities. The Proposed Plan is developed to be consistent with requirements set forth in AB 32, SB 32, and AB 197.

The Project is consistent with the GHG emission reduction measures in the Scoping Plan and would not conflict with the state's trajectory toward future GHG reductions. For instance, the Proposed Project would result in the conversion of orchard biomass to a biocarbon product using a non-combustion process involving thermal conversion of biomass (the biocarbon product would then be used in place of fossil fuels in energy and steel production). The majority of the biomass used for this process would be disposed of via open burning if not for the Project. As shown in Table 3-3, Project conversion of orchard biomass to a biocarbon product would potentially displace up to 715,579 metric tons of CO_2e annually, for a total net reduction of 279,895 metric tons of CO_2e annually when considering Project operational emission sources). Thus, the Project would result in a beneficial impact in terms of eliminating GHG emissions that would otherwise be generated.

As previously described, the Project would use self-generated biogas for the process energy and would provide up to 10 MW of net electric power (17 MW gross) for export sale to PG&E. Thus, the operation of the Project would create renewable energy over its planned lifetime and decrease the need for energy from fossil fuel–based power plants in the state, which is considered a beneficial impact to the state's efforts to substantially reduce GHG emissions. The energy produced by the Project would displace the GHG emissions which would otherwise be produced by existing business-as-usual power generation resources (including natural gas and coal).

Table 3-5 shows the emissions that would potentially be displaced by the Proposed Project. Note that this estimate only includes that associated with the combustion of fossil fuels; it does not include the vehicle trips associated with the Project's operations, and it similarly does not include operational employee trips

associated with natural gas or coal combustion nor the emissions associated with extracting and transporting those power sources. In addition, this estimate only includes the displacement of that portion of the California market that comes from fossil fuels and does not include the approximate 50 percent of the California electricity generated by non-combustion sources (wind, solar, nuclear, hydro-electric) (California Energy Commission [CEC] 2019a).

Table 3-5. Proposed Project Displaced Greenhouse Gas Emissions from Onsite Electricity Generation (Metric Tons)

Emission Source	Displaced Emissions (metric tons)			
	CO_2	CH_4	N_2O	CO_2e
Emissions Displaced Annually				
Displaced Natural Gas-Source Emissions	7,461	0.00	0.00	7,461
Displaced Coal-Source Emissions	1,191	0.01	0.01	1,193
Total	**8,652**	**0.01**	**0.01**	**8,654**
Emissions Displaced over 30 Years (tons)				
Displaced Natural Gas-Source Emissions	223,830	0.00	0.00	223,830
Displaced Coal-Source Emissions	35,725	0.24	0.18	35,783
Total	**363,376**	**0.33**	**0.25**	**259,613**

Source: Displaced emissions calculated by ECORP using USEPA's AP-42 Fifth Edition Compilation of Air Emissions Factors 1995; 2015.

Notes: In order to provide a conservative analysis, the Proposed Project is assumed to generate electricity 50 percent of the time available (4,380 hours annually). Heat Rate indicates the energy generator efficiency of existing fossil-fuel based energy generators. The heat rate of a power plant measures the amount of fuel used to generate one unit of electricity. Power plants with lower heat rates are more efficient than plants with higher heat rates. The CEC's "Updated Thermal Power Plant Efficiency Measures and Operational Characteristics for Production Cost Modeling" (2019b) estimates heat rates and operating ranges for thermal power plants supplying energy to California. The average heat rate of power plants types are as follows:

**Steam Boiler fueled by coal: 10,800 heat rate **Steam Boiler fueled by natural gas: 10,200 heat rate **Gas Turbine: 10,100 heat rate **Combined natural gas Boiler and Turbine: 7,640 heat rate.

By omitting steam boilers fueled by coal since so little of California's energy is derived from coal, the average heat rate = 9,313 [(10,100 + 10,200 + 7,640) ÷ 3 = 9,313]. 10 MW (61,320,000 annual kWH) x 9,313 heat rate = 571,073,160,000 Btu displaced from fossil fuel production. Fossil fuel-based energy consumption in California is predominately derived from natural gas (34.23 percent). Coal constitutes 2.96 percent of all fossil fuel-based energy. Therefore, 237,395,000,000 of the displaced Btu is displaced natural gas consumption and 16,561,121,640 is displaced Btu is displaced coal. The heat content of coal is assumed at 24 million Btu per ton of coal burned. At a rate of 24 million Btu per ton of coal burned, the Project would displace 690 tons of burned coal annually.

As shown, the Project would potentially displace approximately 8,654 metric tons of CO_2e per year, and approximately 259,613 metric tons of CO_2e over the course of 30 years.

While the Project would emit some GHG emissions during construction and operations, the contribution of renewable resource energy production, to meet the goals of the Renewable Portfolio Standard (Scoping Plan Measure E-3), would result in a net cumulative reduction of GHG emissions, a key environmental benefit. (Scoping Plan Measure E-3, Renewable Portfolio Standard, of the Climate Change Scoping Plan requires that all investor-owned utility companies generate 60 percent of their energy demand from renewable sources by year 2030.) Therefore, the short-term minor generation of GHG emissions during construction which is necessary to create this new, low-GHG-emitting power-generating

facility, as well as the amount generated during ongoing maintenance operations, would very likely be more than offset by GHG emission reductions associated with Project-generated energy during operation.

Increasing sources of renewable energy is one of the measures identified under the Scoping Plan to reduce statewide GHG emissions. The Proposed Project would reduce GHG emissions in a manner consistent with SB 32 and other California GHG-reducing legislation by creating a new source of renewable energy to replace the current use of fossil-fuel power and reduce GHG emissions power generation and use.

The Project would not interfere with implementation of any of the previously described GHG reduction goals for 2030 or 2050 or impede the state's trajectory toward the previously described statewide GHG reduction goals for 2030 or 2050.

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ATTACHMENT A

Daily Criteria Air Pollutant Emissions

PROJECT CONSTRUCTION EMISSIONS

National Carbon Technologies Williams Production Facility Project

Colusa County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	20.00	1000sqft	0.46	20,000.00	0
Parking Lot	260.00	Space	2.34	104,000.00	0
Other Non-Asphalt Surfaces	201.60	1000sqft	4.63	201,595.00	0
Other Non-Asphalt Surfaces	41.82	Acre	41.82	1,821,679.20	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	56
Climate Zone	3			**Operational Year**	2023
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 - Uses account for 20,000 square feet of buildings, tanks, and other structures, 260 parking spaces, 201.595 square feet of hardscape, and 41.82 acres of additional ground disturbance

Construction Phase - Construction duration = 14 months spanning 2022-2023

Off-road Equipment - Equipment per Project Proponent

Off-road Equipment - Equipment per Project Proponent

Off-road Equipment - Equipment per Project Proponent

Off-road Equipment -

Grading -

Trips and VMT - 42 construction workers anticipated. Assumed to make 4 trips daily.

Vehicle Trips - Construction Model only

Area Coating - Construction Model only

Energy Use - Construction Model only

Water And Wastewater - Construction Model only

Solid Waste - Construction Model only

Construction Off-road Equipment Mitigation - Tier 4 Mitigation - Excavators, Cranes & Dozer

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	10000	0
tblAreaCoating	Area_Nonresidential_Interior	30000	0
tblAreaCoating	Area_Parking	127637	0
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	740.00	280.00

tblConstructionPhase	NumDays	55.00	280.00
tblConstructionPhase	NumDays	30.00	280.00
tblConstructionPhase	PhaseEndDate	2/11/2025	5/16/2023
tblConstructionPhase	PhaseEndDate	9/10/2024	3/27/2023
tblConstructionPhase	PhaseEndDate	11/26/2024	3/27/2023
tblConstructionPhase	PhaseEndDate	7/27/2021	3/27/2023
tblConstructionPhase	PhaseStartDate	11/27/2024	3/1/2023
tblConstructionPhase	PhaseStartDate	11/10/2021	3/1/2022
tblConstructionPhase	PhaseStartDate	9/11/2024	3/1/2022
tblConstructionPhase	PhaseStartDate	6/16/2021	3/1/2022
tblEnergyUse	LightingElect	2.70	0.00
tblEnergyUse	LightingElect	0.35	0.00
tblEnergyUse	NT24E	4.16	0.00
tblEnergyUse	NT24NG	3.84	0.00
tblEnergyUse	T24E	1.96	0.00
tblEnergyUse	T24NG	17.03	0.00
tblGrading	MaterialExported	0.00	12,509.00
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentType		Sweepers/Scrubbers
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	9.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblSolidWaste	SolidWasteGenerationRate	24.80	0.00
tblTripsAndVMT	WorkerTripNumber	48.00	0.00
tblTripsAndVMT	WorkerTripNumber	902.00	168.00
tblTripsAndVMT	WorkerTripNumber	3.00	0.00
tblTripsAndVMT	WorkerTripNumber	180.00	0.00
tblVehicleTrips	ST_TR	1.50	0.00
tblVehicleTrips	SU_TR	1.50	0.00
tblVehicleTrips	WD_TR	1.50	0.00
tblWater	IndoorWaterUseRate	4,625,000.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	8.8740	102.7853	85.8922	0.2520	10.9732	3.1801	14.1533	4.5109	2.9309	7.4418	0.0000	25,233.8664	25,233.8664	4.7487	0.0000	25,352.5834
2023	43.4817	89.6337	84.8974	0.2528	11.2178	2.7808	13.9986	4.5709	2.5669	7.1378	0.0000	25,283.4810	25,283.4810	4.5867	0.0000	25,398.1475
Maximum	**43.4817**	**102.7853**	**85.8922**	**0.2528**	**11.2178**	**3.1801**	**14.1533**	**4.5709**	**2.9309**	**7.4418**	**0.0000**	**25,283.4810**	**25,283.4810**	**4.7487**	**0.0000**	**25,398.1475**

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					
2022	6.6406	77.1482	92.0212	0.2520	6.6497	1.9471	8.5968	2.4213	1.8037	4.2251	0.0000	25,233.8664	25,233.8664	4.7487	0.0000	25,352.5834
2023	41.5347	67.9069	91.5850	0.2528	6.8944	1.7402	8.6345	2.4814	1.6167	4.0981	0.0000	25,283.4810	25,283.4810	4.5867	0.0000	25,398.1475
Maximum	**41.5347**	**77.1482**	**92.0212**	**0.2528**	**6.8944**	**1.9471**	**8.6345**	**2.4814**	**1.8037**	**4.2251**	**0.0000**	**25,283.4810**	**25,283.4810**	**4.7487**	**0.0000**	**25,398.1475**

	ROG	NOx	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	**7.98**	**24.61**	**-7.50**	**0.00**	**38.97**	**38.14**	**38.79**	**46.02**	**37.79**	**42.91**	**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	1.1864	4.9000e-004	0.0534	0.0000		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004		0.1146	0.1146	3.0000e-004		0.1221
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	**1.1864**	**4.9000e-004**	**0.0534**	**0.0000**	**0.0000**	**1.9000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**1.9000e-004**		**0.1146**	**0.1146**	**3.0000e-004**	**0.0000**	**0.1221**

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	1.1864	4.9000e-004	0.0534	0.0000		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004		0.1146	0.1146	3.0000e-004		0.1221
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	**1.1864**	**4.9000e-004**	**0.0534**	**0.0000**	**0.0000**	**1.9000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**1.9000e-004**		**0.1146**	**0.1146**	**3.0000e-004**	**0.0000**	**0.1221**

	ROG	NOx	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	Site Preparation	Site Preparation	3/1/2022	3/27/2023	5	280	
2	Building Construction	Building Construction	3/1/2022	3/27/2023	5	280	
3	Paving	Paving	3/1/2022	3/27/2023	5	280	
4	Architectural Coating	Architectural Coating	3/1/2023	5/16/2023	5	55	

Acres of Grading (Site Preparation Phase): 280

Acres of Grading (Grading Phase): 0

Acres of Paving: 48.79

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 30,000; Non-Residential Outdoor: 10,000; Striped Parking Area: 127,636 (Architectural Coating – sqft)

OffRoad Equipment

National Carbon Technologies Williams Production Facility Project - Colusa County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Site Preparation	Excavators	7	8.00	158	0.38
Site Preparation	Scrapers	1	8.00	367	0.48
Site Preparation	Dumpers/Tenders	1	8.00	16	0.38
Building Construction	Cranes	2	7.00	231	0.29
Building Construction	Forklifts	0	8.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	0	8.00	80	0.38
Building Construction	Off-Highway Trucks	5	2.00	402	0.38
Building Construction	Aerial Lifts	6	3.00	63	0.31
Building Construction	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Building Construction	Sweepers/Scrubbers	1	4.00	64	0.46
Building Construction	Other Construction Equipment	1	8.00	172	0.42
Paving	Paving Equipment	0	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	9	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Welders	0	8.00	46	0.45

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
Site Preparation	19	0.00	0.00	1,564.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	15	168.00	352.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	1	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - 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					7.0876	0.0000	7.0876	3.4255	0.0000	3.4255			0.0000			0.0000
Off-Road	4.6291	45.7213	53.1361	0.0886		2.1963	2.1963		2.0220	2.0220		8,569.5270	8,569.5270	2.7584		8,638.4868
Total	**4.6291**	**45.7213**	**53.1361**	**0.0886**	**7.0876**	**2.1963**	**9.2840**	**3.4255**	**2.0220**	**5.4475**		**8,569.5270**	**8,569.5270**	**2.7584**		**8,638.4868**

3.2 Site Preparation - 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	lb/day										lb/day					
Hauling	0.0396	1.2679	0.2087	4.4600e-003	0.1185	4.3500e-003	0.1229	0.0319	4.1600e-003	0.0361		467.7821	467.7821	0.0178		468.2277
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0396**	**1.2679**	**0.2087**	**4.4600e-003**	**0.1185**	**4.3500e-003**	**0.1229**	**0.0319**	**4.1600e-003**	**0.0361**		**467.7821**	**467.7821**	**0.0178**		**468.2277**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.7642	0.0000	2.7642	1.3360	0.0000	1.3360			0.0000			0.0000
Off-Road	2.9244	26.8691	58.0278	0.0886		1.2508	1.2508		1.1580	1.1580	0.0000	8,569.5270	8,569.5270	2.7584		8,638.4868
Total	**2.9244**	**26.8691**	**58.0278**	**0.0886**	**2.7642**	**1.2508**	**4.0150**	**1.3360**	**1.1580**	**2.4939**	**0.0000**	**8,569.5270**	**8,569.5270**	**2.7584**		**8,638.4868**

3.2 Site Preparation - 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	lb/day										lb/day					
Hauling	0.0396	1.2679	0.2087	4.4600e-003	0.1185	4.3500e-003	0.1229	0.0319	4.1600e-003	0.0361		467.7821	467.7821	0.0178		468.2277
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0396**	**1.2679**	**0.2087**	**4.4600e-003**	**0.1185**	**4.3500e-003**	**0.1229**	**0.0319**	**4.1600e-003**	**0.0361**		**467.7821**	**467.7821**	**0.0178**		**468.2277**

3.2 Site Preparation - 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					7.0876	0.0000	7.0876	3.4255	0.0000	3.4255			0.0000			0.0000
Off-Road	4.2279	40.5366	52.3804	0.0887		1.8760	1.8760		1.7273	1.7273		8,572.9977	8,572.9977	2.7595		8,641.9856
Total	**4.2279**	**40.5366**	**52.3804**	**0.0887**	**7.0876**	**1.8760**	**8.9637**	**3.4255**	**1.7273**	**5.1528**		**8,572.9977**	**8,572.9977**	**2.7595**		**8,641.9856**

3.2 Site Preparation - 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	lb/day										lb/day					
Hauling	0.0289	0.9555	0.1802	4.3600e-003	0.3631	1.9600e-003	0.3651	0.0920	1.8800e-003	0.0938		457.0524	457.0524	0.0126		457.3662
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0289**	**0.9555**	**0.1802**	**4.3600e-003**	**0.3631**	**1.9600e-003**	**0.3651**	**0.0920**	**1.8800e-003**	**0.0938**		**457.0524**	**457.0524**	**0.0126**		**457.3662**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.7642	0.0000	2.7642	1.3360	0.0000	1.3360			0.0000			0.0000
Off-Road	2.7718	24.9494	57.7294	0.0887		1.0977	1.0977		1.0172	1.0172	0.0000	8,572.9977	8,572.9977	2.7595		8,641.9855
Total	**2.7718**	**24.9494**	**57.7294**	**0.0887**	**2.7642**	**1.0977**	**3.8619**	**1.3360**	**1.0172**	**2.3531**	**0.0000**	**8,572.9977**	**8,572.9977**	**2.7595**		**8,641.9855**

3.2 Site Preparation - 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	lb/day										lb/day					
Hauling	0.0289	0.9555	0.1802	4.3600e-003	0.3631	1.9600e-003	0.3651	0.0920	1.8800e-003	0.0938		457.0524	457.0524	0.0126		457.3662
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0289**	**0.9555**	**0.1802**	**4.3600e-003**	**0.3631**	**1.9600e-003**	**0.3651**	**0.0920**	**1.8800e-003**	**0.0938**		**457.0524**	**457.0524**	**0.0126**		**457.3662**

3.3 Building Construction - 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	1.8671	18.3168	14.9502	0.0379		0.7692	0.7692		0.7076	0.7076		3,663.9988	3,663.9988	1.1850		3,693.6241
Total	**1.8671**	**18.3168**	**14.9502**	**0.0379**		**0.7692**	**0.7692**		**0.7076**	**0.7076**		**3,663.9988**	**3,663.9988**	**1.1850**		**3,693.6241**

3.3 Building Construction - 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	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	1.4333	34.9764	9.7249	0.1032	2.3869	0.1019	2.4888	0.6874	0.0974	0.7848		10,758.3345	10,758.3345	0.6012		10,773.3645
Worker	0.6761	0.4040	4.9885	0.0133	1.3801	8.6000e-003	1.3887	0.3661	7.9300e-003	0.3740		1,318.9661	1,318.9661	0.0390		1,319.9413
Total	**2.1095**	**35.3804**	**14.7133**	**0.1164**	**3.7670**	**0.1105**	**3.8775**	**1.0535**	**0.1054**	**1.1588**		**12,077.3005**	**12,077.3005**	**0.6402**		**12,093.3058**

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	1.3384	11.5319	16.1874	0.0379		0.4817	0.4817		0.4445	0.4445	0.0000	3,663.9988	3,663.9988	1.1850		3,693.6241
Total	**1.3384**	**11.5319**	**16.1874**	**0.0379**		**0.4817**	**0.4817**		**0.4445**	**0.4445**	**0.0000**	**3,663.9988**	**3,663.9988**	**1.1850**		**3,693.6241**

3.3 Building Construction - 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	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	1.4333	34.9764	9.7249	0.1032	2.3869	0.1019	2.4888	0.6874	0.0974	0.7848		10,758.3345	10,758.3345	0.6012		10,773.3645
Worker	0.6761	0.4040	4.9885	0.0133	1.3801	8.6000e-003	1.3887	0.3661	7.9300e-003	0.3740		1,318.9661	1,318.9661	0.0390		1,319.9413
Total	**2.1095**	**35.3804**	**14.7133**	**0.1164**	**3.7670**	**0.1105**	**3.8775**	**1.0535**	**0.1054**	**1.1588**		**12,077.3005**	**12,077.3005**	**0.6402**		**12,093.3058**

3.3 Building Construction - 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	1.7621	16.6275	14.7398	0.0379		0.6942	0.6942		0.6387	0.6387		3,665.0388	3,665.0388	1.1854		3,694.6725
Total	**1.7621**	**16.6275**	**14.7398**	**0.0379**		**0.6942**	**0.6942**		**0.6387**	**0.6387**		**3,665.0388**	**3,665.0388**	**1.1854**		**3,694.6725**

3.3 Building Construction - 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	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	1.1116	27.9663	8.3487	0.1015	2.3870	0.0408	2.4278	0.6874	0.0390	0.7264		10,582.3484	10,582.3484	0.4305		10,593.1105
Worker	0.6279	0.3620	4.5541	0.0127	1.3801	8.3600e-003	1.3884	0.3661	7.7000e-003	0.3738		1,269.3783	1,269.3783	0.0347		1,270.2456
Total	**1.7394**	**28.3283**	**12.9028**	**0.1142**	**3.7671**	**0.0492**	**3.8163**	**1.0535**	**0.0467**	**1.1002**		**11,851.7267**	**11,851.7267**	**0.4652**		**11,863.3562**

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	1.2712	10.4880	16.0783	0.0379		0.4319	0.4319		0.3987	0.3987	0.0000	3,665.0388	3,665.0388	1.1854		3,694.6725
Total	**1.2712**	**10.4880**	**16.0783**	**0.0379**		**0.4319**	**0.4319**		**0.3987**	**0.3987**	**0.0000**	**3,665.0388**	**3,665.0388**	**1.1854**		**3,694.6725**

3.3 Building Construction - 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	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	1.1116	27.9663	8.3487	0.1015	2.3870	0.0408	2.4278	0.6874	0.0390	0.7264		10,582.3484	10,582.3484	0.4305		10,593.1105
Worker	0.6279	0.3620	4.5541	0.0127	1.3801	8.3600e-003	1.3884	0.3661	7.7000e-003	0.3738		1,269.3783	1,269.3783	0.0347		1,270.2456
Total	**1.7394**	**28.3283**	**12.9028**	**0.1142**	**3.7671**	**0.0492**	**3.8163**	**1.0535**	**0.0467**	**1.1002**		**11,851.7267**	**11,851.7267**	**0.4652**		**11,863.3562**

3.4 Paving - 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	0.2069	2.0989	2.8839	4.7000e-003		0.0997	0.0997		0.0917	0.0917		455.2579	455.2579	0.1472		458.9389
Paving	0.0219					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.2288**	**2.0989**	**2.8839**	**4.7000e-003**		**0.0997**	**0.0997**		**0.0917**	**0.0917**		**455.2579**	**455.2579**	**0.1472**		**458.9389**

3.4 Paving - 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	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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2069	2.0989	2.8839	4.7000e-003		0.0997	0.0997		0.0917	0.0917	0.0000	455.2579	455.2579	0.1472		458.9389
Paving	0.0219					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.2288**	**2.0989**	**2.8839**	**4.7000e-003**		**0.0997**	**0.0997**		**0.0917**	**0.0917**	**0.0000**	**455.2579**	**455.2579**	**0.1472**		**458.9389**

3.4 Paving - 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	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	0.0000	0.0000	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**

3.4 Paving - 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	0.1919	1.8828	2.8831	4.7000e-003		0.0886	0.0886		0.0815	0.0815		455.2174	455.2174	0.1472		458.8980
Paving	0.0219					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.2138**	**1.8828**	**2.8831**	**4.7000e-003**		**0.0886**	**0.0886**		**0.0815**	**0.0815**		**455.2174**	**455.2174**	**0.1472**		**458.8980**

3.4 Paving - 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	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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1919	1.8828	2.8831	4.7000e-003		0.0886	0.0886		0.0815	0.0815	0.0000	455.2174	455.2174	0.1472		458.8980
Paving	0.0219					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.2138**	**1.8828**	**2.8831**	**4.7000e-003**		**0.0886**	**0.0886**		**0.0815**	**0.0815**	**0.0000**	**455.2174**	**455.2174**	**0.1472**		**458.8980**

3.4 Paving - 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	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	0.0000	0.0000	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**

3.5 Architectural Coating - 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					
Archit. Coating	35.3179					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**35.5095**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.5 Architectural Coating - 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	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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	35.3179					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**35.5095**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.5 Architectural Coating - 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	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	0.0000	0.0000	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**

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
General Heavy Industry	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
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
General Heavy Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
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
General Heavy Industry	0.549541	0.035137	0.184333	0.118970	0.022952	0.006099	0.007374	0.066992	0.000932	0.001485	0.004850	0.000547	0.000787
Other Non-Asphalt Surfaces	0.549541	0.035137	0.184333	0.118970	0.022952	0.006099	0.007374	0.066992	0.000932	0.001485	0.004850	0.000547	0.000787
Parking Lot	0.549541	0.035137	0.184333	0.118970	0.022952	0.006099	0.007374	0.066992	0.000932	0.001485	0.004850	0.000547	0.000787

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					
General Heavy Industry	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
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
Parking Lot	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**

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	lb/day										lb/day					
General Heavy Industry	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
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
Parking Lot	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	1.1864	4.9000e-004	0.0534	0.0000		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004		0.1146	0.1146	3.0000e-004		0.1221
Unmitigated	1.1864	4.9000e-004	0.0534	0.0000		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004		0.1146	0.1146	3.0000e-004		0.1221

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.1815					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.9500e-003	4.9000e-004	0.0534	0.0000		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004		0.1146	0.1146	3.0000e-004		0.1221
Total	**1.1864**	**4.9000e-004**	**0.0534**	**0.0000**		**1.9000e-004**	**1.9000e-004**		**1.9000e-004**	**1.9000e-004**		**0.1146**	**0.1146**	**3.0000e-004**		**0.1221**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.1815					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.9500e-003	4.9000e-004	0.0534	0.0000		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004		0.1146	0.1146	3.0000e-004		0.1221
Total	**1.1864**	**4.9000e-004**	**0.0534**	**0.0000**		**1.9000e-004**	**1.9000e-004**		**1.9000e-004**	**1.9000e-004**		**0.1146**	**0.1146**	**3.0000e-004**		**0.1221**

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

National Carbon Technologies Williams Production Facility Project

Colusa County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	20.00	1000sqft	0.46	20,000.00	0
Parking Lot	260.00	Space	2.34	104,000.00	0
Other Non-Asphalt Surfaces	201.60	1000sqft	4.63	201,595.00	0
Other Non-Asphalt Surfaces	41.82	Acre	41.82	1,821,679.20	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	56
Climate Zone	3			**Operational Year**	2023
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 - Uses account for 20,000 square feet of buildings, tanks, and other structures, 260 parking spaces, 201.595 square feet of hardscape, and 41.82 acres of additional ground disturbance

Construction Phase - Construction duration = 14 months spanning 2022-2023

Off-road Equipment - Equipment per Project Proponent

Off-road Equipment - Equipment per Project Proponent

Off-road Equipment - Equipment per Project Proponent

Off-road Equipment -

Grading -

Trips and VMT - 42 construction workers anticipated. Assumed to make 4 trips daily.

Vehicle Trips - Construction Model only

Area Coating - Construction Model only

Energy Use - Construction Model only

Water And Wastewater - Construction Model only

Solid Waste - Construction Model only

Construction Off-road Equipment Mitigation - Tier 4 Mitigation - Excavators, Cranes & Dozer

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	10000	0
tblAreaCoating	Area_Nonresidential_Interior	30000	0
tblAreaCoating	Area_Parking	127637	0
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	740.00	280.00

tblConstructionPhase	NumDays	55.00	280.00
tblConstructionPhase	NumDays	30.00	280.00
tblConstructionPhase	PhaseEndDate	2/11/2025	5/16/2023
tblConstructionPhase	PhaseEndDate	9/10/2024	3/27/2023
tblConstructionPhase	PhaseEndDate	11/26/2024	3/27/2023
tblConstructionPhase	PhaseEndDate	7/27/2021	3/27/2023
tblConstructionPhase	PhaseStartDate	11/27/2024	3/1/2023
tblConstructionPhase	PhaseStartDate	11/10/2021	3/1/2022
tblConstructionPhase	PhaseStartDate	9/11/2024	3/1/2022
tblConstructionPhase	PhaseStartDate	6/16/2021	3/1/2022
tblEnergyUse	LightingElect	2.70	0.00
tblEnergyUse	LightingElect	0.35	0.00
tblEnergyUse	NT24E	4.16	0.00
tblEnergyUse	NT24NG	3.84	0.00
tblEnergyUse	T24E	1.96	0.00
tblEnergyUse	T24NG	17.03	0.00
tblGrading	MaterialExported	0.00	12,509.00
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentType		Sweepers/Scrubbers
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	9.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblSolidWaste	SolidWasteGenerationRate	24.80	0.00
tblTripsAndVMT	WorkerTripNumber	48.00	0.00
tblTripsAndVMT	WorkerTripNumber	902.00	168.00
tblTripsAndVMT	WorkerTripNumber	3.00	0.00
tblTripsAndVMT	WorkerTripNumber	180.00	0.00
tblVehicleTrips	ST_TR	1.50	0.00
tblVehicleTrips	SU_TR	1.50	0.00
tblVehicleTrips	WD_TR	1.50	0.00
tblWater	IndoorWaterUseRate	4,625,000.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	8.8981	103.4865	86.8555	0.2467	10.9732	3.1851	14.1583	4.5109	2.9357	7.4466	0.0000	24,683.1016	24,683.1016	4.8215	0.0000	24,803.6385
2023	43.4939	90.0884	85.5673	0.2476	11.2178	2.7818	13.9996	4.5709	2.5679	7.1388	0.0000	24,743.2055	24,743.2055	4.6378	0.0000	24,859.1509
Maximum	**43.4939**	**103.4865**	**86.8555**	**0.2476**	**11.2178**	**3.1851**	**14.1583**	**4.5709**	**2.9357**	**7.4466**	**0.0000**	**24,743.2055**	**24,743.2055**	**4.8215**	**0.0000**	**24,859.1509**

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					
2022	6.6647	77.8494	92.9845	0.2467	6.6497	1.9521	8.6018	2.4213	1.8085	4.2299	0.0000	24,683.1016	24,683.1016	4.8215	0.0000	24,803.6385
2023	41.5469	68.3616	92.2549	0.2476	6.8944	1.7412	8.6356	2.4814	1.6177	4.0991	0.0000	24,743.2054	24,743.2054	4.6378	0.0000	24,859.1509
Maximum	**41.5469**	**77.8494**	**92.9845**	**0.2476**	**6.8944**	**1.9521**	**8.6356**	**2.4814**	**1.8085**	**4.2299**	**0.0000**	**24,743.2054**	**24,743.2054**	**4.8215**	**0.0000**	**24,859.1509**

	ROG	NOx	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	**7.98**	**24.47**	**-7.43**	**0.00**	**38.97**	**38.10**	**38.78**	**46.02**	**37.75**	**42.90**	**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	1.1864	4.9000e-004	0.0534	0.0000		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004		0.1146	0.1146	3.0000e-004		0.1221
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	**1.1864**	**4.9000e-004**	**0.0534**	**0.0000**	**0.0000**	**1.9000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**1.9000e-004**		**0.1146**	**0.1146**	**3.0000e-004**	**0.0000**	**0.1221**

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	1.1864	4.9000e-004	0.0534	0.0000		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004		0.1146	0.1146	3.0000e-004		0.1221
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	**1.1864**	**4.9000e-004**	**0.0534**	**0.0000**	**0.0000**	**1.9000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**1.9000e-004**		**0.1146**	**0.1146**	**3.0000e-004**	**0.0000**	**0.1221**

	ROG	NOx	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	Site Preparation	Site Preparation	3/1/2022	3/27/2023	5	280	
2	Building Construction	Building Construction	3/1/2022	3/27/2023	5	280	
3	Paving	Paving	3/1/2022	3/27/2023	5	280	
4	Architectural Coating	Architectural Coating	3/1/2023	5/16/2023	5	55	

Acres of Grading (Site Preparation Phase): 280

Acres of Grading (Grading Phase): 0

Acres of Paving: 48.79

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 30,000; Non-Residential Outdoor: 10,000; Striped Parking Area: 127,636 (Architectural Coating – sqft)

OffRoad Equipment

National Carbon Technologies Williams Production Facility Project - Colusa County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Site Preparation	Excavators	7	8.00	158	0.38
Site Preparation	Scrapers	1	8.00	367	0.48
Site Preparation	Dumpers/Tenders	1	8.00	16	0.38
Building Construction	Cranes	2	7.00	231	0.29
Building Construction	Forklifts	0	8.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	0	8.00	80	0.38
Building Construction	Off-Highway Trucks	5	2.00	402	0.38
Building Construction	Aerial Lifts	6	3.00	63	0.31
Building Construction	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Building Construction	Sweepers/Scrubbers	1	4.00	64	0.46
Building Construction	Other Construction Equipment	1	8.00	172	0.42
Paving	Paving Equipment	0	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	9	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Welders	0	8.00	46	0.45

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
Site Preparation	19	0.00	0.00	1,564.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	15	168.00	352.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	1	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - 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					7.0876	0.0000	7.0876	3.4255	0.0000	3.4255			0.0000			0.0000
Off-Road	4.6291	45.7213	53.1361	0.0886		2.1963	2.1963		2.0220	2.0220		8,569.5270	8,569.5270	2.7584		8,638.4868
Total	**4.6291**	**45.7213**	**53.1361**	**0.0886**	**7.0876**	**2.1963**	**9.2840**	**3.4255**	**2.0220**	**5.4475**		**8,569.5270**	**8,569.5270**	**2.7584**		**8,638.4868**

3.2 Site Preparation - 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	lb/day										lb/day					
Hauling	0.0412	1.3037	0.2377	4.3500e-003	0.1185	4.4900e-003	0.1230	0.0319	4.2900e-003	0.0362		456.2426	456.2426	0.0202		456.7465
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0412**	**1.3037**	**0.2377**	**4.3500e-003**	**0.1185**	**4.4900e-003**	**0.1230**	**0.0319**	**4.2900e-003**	**0.0362**		**456.2426**	**456.2426**	**0.0202**		**456.7465**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.7642	0.0000	2.7642	1.3360	0.0000	1.3360			0.0000			0.0000
Off-Road	2.9244	26.8691	58.0278	0.0886		1.2508	1.2508		1.1580	1.1580	0.0000	8,569.5270	8,569.5270	2.7584		8,638.4868
Total	**2.9244**	**26.8691**	**58.0278**	**0.0886**	**2.7642**	**1.2508**	**4.0150**	**1.3360**	**1.1580**	**2.4939**	**0.0000**	**8,569.5270**	**8,569.5270**	**2.7584**		**8,638.4868**

3.2 Site Preparation - 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	lb/day										lb/day					
Hauling	0.0412	1.3037	0.2377	4.3500e-003	0.1185	4.4900e-003	0.1230	0.0319	4.2900e-003	0.0362		456.2426	456.2426	0.0202		456.7465
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0412**	**1.3037**	**0.2377**	**4.3500e-003**	**0.1185**	**4.4900e-003**	**0.1230**	**0.0319**	**4.2900e-003**	**0.0362**		**456.2426**	**456.2426**	**0.0202**		**456.7465**

3.2 Site Preparation - 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					7.0876	0.0000	7.0876	3.4255	0.0000	3.4255			0.0000			0.0000
Off-Road	4.2279	40.5366	52.3804	0.0887		1.8760	1.8760		1.7273	1.7273		8,572.9977	8,572.9977	2.7595		8,641.9856
Total	**4.2279**	**40.5366**	**52.3804**	**0.0887**	**7.0876**	**1.8760**	**8.9637**	**3.4255**	**1.7273**	**5.1528**		**8,572.9977**	**8,572.9977**	**2.7595**		**8,641.9856**

3.2 Site Preparation - 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	lb/day										lb/day					
Hauling	0.0300	0.9768	0.2008	4.2500e-003	0.3631	1.9900e-003	0.3651	0.0920	1.9100e-003	0.0939		445.6310	445.6310	0.0142		445.9859
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0300**	**0.9768**	**0.2008**	**4.2500e-003**	**0.3631**	**1.9900e-003**	**0.3651**	**0.0920**	**1.9100e-003**	**0.0939**		**445.6310**	**445.6310**	**0.0142**		**445.9859**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.7642	0.0000	2.7642	1.3360	0.0000	1.3360			0.0000			0.0000
Off-Road	2.7718	24.9494	57.7294	0.0887		1.0977	1.0977		1.0172	1.0172	0.0000	8,572.9977	8,572.9977	2.7595		8,641.9855
Total	**2.7718**	**24.9494**	**57.7294**	**0.0887**	**2.7642**	**1.0977**	**3.8619**	**1.3360**	**1.0172**	**2.3531**	**0.0000**	**8,572.9977**	**8,572.9977**	**2.7595**		**8,641.9855**

3.2 Site Preparation - 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	lb/day										lb/day					
Hauling	0.0300	0.9768	0.2008	4.2500e-003	0.3631	1.9900e-003	0.3651	0.0920	1.9100e-003	0.0939		445.6310	445.6310	0.0142		445.9859
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0300**	**0.9768**	**0.2008**	**4.2500e-003**	**0.3631**	**1.9900e-003**	**0.3651**	**0.0920**	**1.9100e-003**	**0.0939**		**445.6310**	**445.6310**	**0.0142**		**445.9859**

3.3 Building Construction - 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	1.8671	18.3168	14.9502	0.0379		0.7692	0.7692		0.7076	0.7076		3,663.9988	3,663.9988	1.1850		3,693.6241
Total	**1.8671**	**18.3168**	**14.9502**	**0.0379**		**0.7692**	**0.7692**		**0.7076**	**0.7076**		**3,663.9988**	**3,663.9988**	**1.1850**		**3,693.6241**

3.3 Building Construction - 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	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	1.5196	35.5543	11.4461	0.0997	2.3869	0.1068	2.4937	0.6874	0.1021	0.7895		10,389.2177	10,389.2177	0.6769		10,406.1404
Worker	0.6123	0.4915	4.2015	0.0115	1.3801	8.6000e-003	1.3887	0.3661	7.9300e-003	0.3740		1,148.8575	1,148.8575	0.0338		1,149.7017
Total	**2.1319**	**36.0458**	**15.6476**	**0.1112**	**3.7670**	**0.1154**	**3.8824**	**1.0535**	**0.1100**	**1.1635**		**11,538.0752**	**11,538.0752**	**0.7107**		**11,555.8421**

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	1.3384	11.5319	16.1874	0.0379		0.4817	0.4817		0.4445	0.4445	0.0000	3,663.9988	3,663.9988	1.1850		3,693.6241
Total	**1.3384**	**11.5319**	**16.1874**	**0.0379**		**0.4817**	**0.4817**		**0.4445**	**0.4445**	**0.0000**	**3,663.9988**	**3,663.9988**	**1.1850**		**3,693.6241**

3.3 Building Construction - 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	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	1.5196	35.5543	11.4461	0.0997	2.3869	0.1068	2.4937	0.6874	0.1021	0.7895		10,389.2177	10,389.2177	0.6769		10,406.1404
Worker	0.6123	0.4915	4.2015	0.0115	1.3801	8.6000e-003	1.3887	0.3661	7.9300e-003	0.3740		1,148.8575	1,148.8575	0.0338		1,149.7017
Total	**2.1319**	**36.0458**	**15.6476**	**0.1112**	**3.7670**	**0.1154**	**3.8824**	**1.0535**	**0.1100**	**1.1635**		**11,538.0752**	**11,538.0752**	**0.7107**		**11,555.8421**

3.3 Building Construction - 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	1.7621	16.6275	14.7398	0.0379		0.6942	0.6942		0.6387	0.6387		3,665.0388	3,665.0388	1.1854		3,694.6725
Total	**1.7621**	**16.6275**	**14.7398**	**0.0379**		**0.6942**	**0.6942**		**0.6387**	**0.6387**		**3,665.0388**	**3,665.0388**	**1.1854**		**3,694.6725**

3.3 Building Construction - 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	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	1.1807	28.3216	9.7345	0.0980	2.3870	0.0419	2.4289	0.6874	0.0400	0.7274		10,217.1175	10,217.1175	0.4847		10,229.2353
Worker	0.5699	0.4401	3.8175	0.0111	1.3801	8.3600e-003	1.3884	0.3661	7.7000e-003	0.3738		1,105.7550	1,105.7550	0.0300		1,106.5046
Total	**1.7506**	**28.7617**	**13.5521**	**0.1091**	**3.7671**	**0.0502**	**3.8173**	**1.0535**	**0.0477**	**1.1012**		**11,322.8725**	**11,322.8725**	**0.5147**		**11,335.7399**

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	1.2712	10.4880	16.0783	0.0379		0.4319	0.4319		0.3987	0.3987	0.0000	3,665.0388	3,665.0388	1.1854		3,694.6725
Total	**1.2712**	**10.4880**	**16.0783**	**0.0379**		**0.4319**	**0.4319**		**0.3987**	**0.3987**	**0.0000**	**3,665.0388**	**3,665.0388**	**1.1854**		**3,694.6725**

3.3 Building Construction - 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	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	1.1807	28.3216	9.7345	0.0980	2.3870	0.0419	2.4289	0.6874	0.0400	0.7274		10,217.1175	10,217.1175	0.4847		10,229.2353
Worker	0.5699	0.4401	3.8175	0.0111	1.3801	8.3600e-003	1.3884	0.3661	7.7000e-003	0.3738		1,105.7550	1,105.7550	0.0300		1,106.5046
Total	**1.7506**	**28.7617**	**13.5521**	**0.1091**	**3.7671**	**0.0502**	**3.8173**	**1.0535**	**0.0477**	**1.1012**		**11,322.8725**	**11,322.8725**	**0.5147**		**11,335.7399**

3.4 Paving - 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	0.2069	2.0989	2.8839	4.7000e-003		0.0997	0.0997		0.0917	0.0917		455.2579	455.2579	0.1472		458.9389
Paving	0.0219					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.2288**	**2.0989**	**2.8839**	**4.7000e-003**		**0.0997**	**0.0997**		**0.0917**	**0.0917**		**455.2579**	**455.2579**	**0.1472**		**458.9389**

3.4 Paving - 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	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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2069	2.0989	2.8839	4.7000e-003		0.0997	0.0997		0.0917	0.0917	0.0000	455.2579	455.2579	0.1472		458.9389
Paving	0.0219					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.2288**	**2.0989**	**2.8839**	**4.7000e-003**		**0.0997**	**0.0997**		**0.0917**	**0.0917**	**0.0000**	**455.2579**	**455.2579**	**0.1472**		**458.9389**

3.4 Paving - 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	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	0.0000	0.0000	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**

3.4 Paving - 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	0.1919	1.8828	2.8831	4.7000e-003		0.0886	0.0886		0.0815	0.0815		455.2174	455.2174	0.1472		458.8980
Paving	0.0219					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.2138**	**1.8828**	**2.8831**	**4.7000e-003**		**0.0886**	**0.0886**		**0.0815**	**0.0815**		**455.2174**	**455.2174**	**0.1472**		**458.8980**

3.4 Paving - 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	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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1919	1.8828	2.8831	4.7000e-003		0.0886	0.0886		0.0815	0.0815	0.0000	455.2174	455.2174	0.1472		458.8980
Paving	0.0219					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.2138**	**1.8828**	**2.8831**	**4.7000e-003**		**0.0886**	**0.0886**		**0.0815**	**0.0815**	**0.0000**	**455.2174**	**455.2174**	**0.1472**		**458.8980**

3.4 Paving - 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	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	0.0000	0.0000	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**

3.5 Architectural Coating - 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					
Archit. Coating	35.3179					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**35.5095**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.5 Architectural Coating - 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	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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	35.3179					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**35.5095**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.5 Architectural Coating - 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	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	0.0000	0.0000	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**

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
General Heavy Industry	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
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
General Heavy Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
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
General Heavy Industry	0.549541	0.035137	0.184333	0.118970	0.022952	0.006099	0.007374	0.066992	0.000932	0.001485	0.004850	0.000547	0.000787
Other Non-Asphalt Surfaces	0.549541	0.035137	0.184333	0.118970	0.022952	0.006099	0.007374	0.066992	0.000932	0.001485	0.004850	0.000547	0.000787
Parking Lot	0.549541	0.035137	0.184333	0.118970	0.022952	0.006099	0.007374	0.066992	0.000932	0.001485	0.004850	0.000547	0.000787

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					
General Heavy Industry	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
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
Parking Lot	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**

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	lb/day										lb/day					
General Heavy Industry	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
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
Parking Lot	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	1.1864	4.9000e-004	0.0534	0.0000		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004		0.1146	0.1146	3.0000e-004		0.1221
Unmitigated	1.1864	4.9000e-004	0.0534	0.0000		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004		0.1146	0.1146	3.0000e-004		0.1221

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.1815					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.9500e-003	4.9000e-004	0.0534	0.0000		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004		0.1146	0.1146	3.0000e-004		0.1221
Total	**1.1864**	**4.9000e-004**	**0.0534**	**0.0000**		**1.9000e-004**	**1.9000e-004**		**1.9000e-004**	**1.9000e-004**		**0.1146**	**0.1146**	**3.0000e-004**		**0.1221**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.1815					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.9500e-003	4.9000e-004	0.0534	0.0000		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004		0.1146	0.1146	3.0000e-004		0.1221
Total	**1.1864**	**4.9000e-004**	**0.0534**	**0.0000**		**1.9000e-004**	**1.9000e-004**		**1.9000e-004**	**1.9000e-004**		**0.1146**	**0.1146**	**3.0000e-004**		**0.1221**

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

PROJECT STATIONARY & MOBILE TRUCK EMISSIONS

National Carbon Technologies Williams
Emissions Summary

Appendix "B1"

Table A-1. Maximum Daily Criteria Pollutant Emissions							
	Daily Emissions (lbs/day)						
Emissions Activity	**CO**	**NOx**	**SO_2**	**VOC**	**PM_{10}**	**$PM_{2.5}$**	**CO_2e**
Mobile Emissions							
Onsite Trucks (Idling)	1.28	1.05	0.00	0.09	0.00	0.00	204
Offsite Trucks	2.73	22.64	0.15	0.31	0.35	0.34	16,239
Trains	4.38	7.48	3.42	0.27	0.12	0.11	1,679
Employee Trips	4.22	0.65	0.01	0.39	1.24	0.33	1,237
Onsite Off-road Equipment	13.68	1.58	0.01	0.74	0.05	0.05	979.63
Stationary Emissions							
Material Handling	-	-	-	-	0.03	0.01	-
Screening/Ash Removal and Hammermills	-	-	-	-	1.44	0.07	-
Wet Biomass Storage	-	-	-	-	3.34	0.48	-
Biomass Heater Loading	-	-	-	-	11.70	2.87	-
Natural Gas Startups	13.41	7.98	0.10	0.88	1.21	1.21	19,152
Thermal Oxidizer/ Electrostatic Precipitator	22.90	18.81	0.08	18.03	27.35	9.57	2,535,134
Pelletizer Stack	-	-	-	-	6.58	2.63	-
Process Gas Fugitive Emissions	-	-	-	10.62	-	-	-
Emergency Natural Gas Generator	1.46	3.90	0.00	0.54	0.05	0.05	507
Cooling Tower	-	-	-	28.80	12.01	4.20	-
Pellet Storage	-	-	-	-	2.88	0.14	-
Pellet Loading	-	-	-	-	1.90	0.29	-
Project Total	**64.06**	**64.09**	**3.77**	**60.67**	**70.25**	**22.36**	**2,575,132**
SMAQMD Thresholds	**-**	**65**	**-**	**65**	**80**	**82**	**-**

Table A-2. Annual Criteria Pollutant Emissions							
	Annual Potential Emissions (tpy)						
Emissions Activity	**CO**	**NOx**	**SO_2**	**VOC**	**PM_{10}**	**$PM_{2.5}$**	**CO_2e**
Mobile Emissions							
Onsite Trucks (Idling)	0.21	0.18	0.00	0.01	0.00	0.00	34
Offsite Trucks	0.47	3.86	0.03	0.05	0.06	0.06	2,766
Trains	0.73	1.25	0.57	0.05	0.02	0.02	281
Employee Trips	0.66	0.12	0.002	0.05	0.21	0.05	186
Onsite Off-road Equipment	2.29	0.26	0.00	0.12	0.01	0.01	164
Stationary Emissions							
Material Handling	-	-	-	-	0.03	0.01	-
Screening/Ash Removal and Hammermills	-	-	-	-	0.24	0.01	-
Wet Biomass Storage	-	-	-	-	0.58	0.09	-
Biomass Heater Loading	-	-	-	-	0.02	0.00	-
Natural Gas Startups	1.29	0.77	0.01	0.08	0.12	0.12	1,839
Thermal Oxidizer/ Electrostatic Precipitator	4.80	3.94	0.02	3.77	4.58	1.60	424,635
Pelletizer Stack	-	-	-	-	1.10	0.44	-
Process Gas Fugitive Emissions	-	-	-	10.62	-	-	-
Emergency Natural Gas Generator	0.04	0.10	0.0001	0.01	0.001	0.001	13
Cooling Tower	-	-	-	5.20	0.76	0.11	-
Pellet Storage	-	-	-	-	0.24	0.01	-
Pellet Loading	-	-	-	-	0.27	0.04	-
Project Total	**10.48**	**10.47**	**0.63**	**19.98**	**8.24**	**2.57**	**429,918**
SMAQMD Thresholds	**-**	**-**	**-**	**-**	**15**	**15**	**-**

National Carbon Technologies Williams *Appendix "B1"*

Truck (Trips) Criteria Pollutant Emissions Calculations

Table A-3. Modeled Round Trip Dimensions		
Air Basin	**RT Length (miles)**	**Percent Trips**
Sacramento Valley	45	100%
Northeast Plateau	25	20%
Mountain Counties	10	20%

Table A-4. Total Haul Trip Information	
Trip Type	**Trips/Day**
Raw Material to Site	125

Equations:

1. Daily Emissions (lb/day) = RT Length (mi) * Average Daily Trips / 453 (g/lb)
2. Annual Emissions (tpy) = Daily Emissions (lb/day) * 335 (dpy) / 2,000 (lb/ton)

Table A-5. EMFAC Composite Emission Factors For 2023							
	Emission Factors (g/mi)						
Source Type	**CO**	**NO_X**	**SO_2**	**ROG**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
HHDT	0.22	1.83	0.01	0.02	0.03	0.03	1,310

Table A-6. Estimated annual Emissions							
	Daily Emissions (lbs/day)						
Air Basin	**CO**	**NO_X**	**SO_2**	**ROG**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
Sacramento Valley	2.73	22.64	0.15	0.31	0.35	0.34	16,239
Northeast Plateau	0.30	2.52	0.02	0.03	0.04	0.04	1,807
Mountain Counties	0.12	1.01	0.01	0.01	0.02	0.02	723

Table A-7. Estimated annual Emissions							
	Annual Emissions (tpy)						
Air Basin	**CO**	**NO_X**	**SO_2**	**VOC**	**PM_{10}**	**$PM_{2.5}$**	**CO2**
Sacramento Valley	0.47	3.86	0.03	0.05	0.06	0.06	2,766
Northeast Plateau	0.05	0.43	0.00	0.01	0.01	0.01	307
Mountain Counties	0.02	0.17	0.00	0.00	0.00	0.00	123

Acronyms

CO	carbon monoxide	NOx	nitrogen oxide
CO_2	carbon dioxide	PM	particulate matter
dpy	days per year	PM_{10}	PM less than 10 microns in diameter
g	grams	$PM_{2.5}$	PM less than 2.5 microns in diameter
g/mi	grams per mile	RT	round trip
HHDT	heavy heavy duty truck	SO_2	sulfur dioxide
lb	pounds	tpy	tons per year
mi	mile	VOC	volatile organic compounds

National Carbon Technologies Williams
Truck (Onsite Idling) Criteria Pollutant Emissions Calculations

Table A-8. Total Truck Trips Information			
Trip Type	**Trips/Day**	**Minute/Trip**	**Days/Year**
Biomass Haul Trucks	125	8	335

Table A-9. EMFAC Heavy Duty Truck Idling Rates							
	Emission Rates (g/hr)						
Vehicle Type	**CO**	**NO_X**	**SO_2**	**ROG**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
2023 Emission Rates							
HHDT	34.69	28.50	0.05	2.37	0.01	0.01	5,546

Equations:

1. Daily Emissions (lb/day) = Idling Time (g/min) * Average Daily Trips / 453 (g/lb) / 60 min/hr
2. Annual Emissions (tpy) = Daily Emissions (lb/day) * 335 (dpy) / 2,000 (lb/ton)

Table A-10. EMFAC Heavy Duty Truck Idling Rates							
	Daily Emissions (lb/day)						
Vehicle Type	**CO**	**NO_X**	**SO_2**	**ROG**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
Trip Types							
HHDT	1.28	1.05	0.002	0.09	0.00	0.00	204.04

Table A-11. EMFAC Heavy Duty Truck Idling Rates							
	Annual Emissions (tpy)						
Vehicle Type	**CO**	**NO_X**	**SO_2**	**ROG**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
2025 Emission Rates							
HHDT	0.21	0.18	0.0003	0.01	0.00	0.00	34.18

Acronyms

CO	carbon monoxide	NOx	nitrogen oxide
CO_2	carbon dioxide	PM	particulate matter
g	grams	PM_{10}	PM less than 10 microns in diameter
g/mi	grams per mile	$PM_{2.5}$	PM less than 2.5 microns in diameter
HHDT	heavy duty diesel truck	SO_2	sulfur dioxide
lb	pounds	tpy	tons per year
mi	mile	VOC	volatile organic compounds

Train Pellet Delivery Criteria Pollutant Emissions Calculations

Table A-12. Operational Assumptions			
Description	**Value**	**Units**	**Source**
Avg Distance in SVAB	40	miles	GIS Measurement
Avg Distance in NEPAB	20	miles	GIS Measurement
Avg Distance in SFBAB	20	miles	GIS Measurement
Ton-mile per Gallon	400	ton-mi/gal	EPA
Daily Mass Transferred	746	tons/day	Process Information

Table A-13. Calculated Daily Ton Miles of Carbon Product		
	Train Trips	
Air Basin	**ton-mile / day**	**ton-mile / year**
Avg Distance in SVAB	29,851	10,000,000
Avg Distance in NEPAB	14,925	5,000,000
Avg Distance in SFBAB	14,925	5,000,000

Table A-14. Emission Factors from CARB Vision Access Database							
	grams per gallon						
Source Type	**CO**	**NO_X**	**SO_2**	**ROG**	**PM_{10}**	**$PM_{2.5}$**	**CO2**
Tier 2r	26.62	102.96	20.77	5.41	1.66	1.53	10,206
Tier 3	26.62	102.96	20.77	2.70	1.66	1.53	10,206
Tier 4	26.62	20.80	20.77	0.83	0.31	0.29	10,206
Composite[1]	**26.62**	**45.45**	**20.77**	**1.66**	**0.72**	**0.66**	**10,206**

Equations:

1. Emissions (lb/day) = Operation Weight (tons/day) * Trip Distance (mi) * Horsepower / (ton-miles/gallon) / 453 (g/lb)
2. Annual Emissions (tpy) = Daily Emissions (lb/day) * 335 (dpy) / 2,000 (lb/ton)

Table A-15. Daily Emissions							
	Pounds Per Day						
Air Basin	**CO**	**NO_X**	**SO_2**	**ROG**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
SVAB	4.38	7.48	3.42	0.27	0.12	0.11	1,679.10
NEPAB	2.19	3.74	1.71	0.14	0.06	0.05	839.55
SFBAB	2.19	3.74	1.71	0.14	0.06	0.05	839.55

Table A-16. Daily Emissions							
	Tons per Year						
Air Basin	**CO**	**NO_X**	**SO_2**	**ROG**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
SVAB	0.73	1.25	0.57	0.05	0.02	0.02	281.25
NEPAB	0.37	0.63	0.29	0.02	0.01	0.01	140.63
SFBAB	0.37	0.63	0.29	0.02	0.01	0.01	140.63

National Carbon Technologies Williams

Train Pellet Delivery Criteria Pollutant Emissions Calculations

Notes and Acronyms

Notes

(1) Aggregate train emissions include 80% Tier 4, 15% Tier 3, and 5% Tier 2

Acronyms

CO	carbon monoxide	NOx	nitrogen oxide
CO_2	carbon dioxide	PM_{10}	particulate matter less than 10 microns in diameter
dpy	days per year	$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
g	grams	RT	round trip
g/mi	grams per mile	SO_2	sulfur dioxide
HHDT	heavy heavy duty truck	tpy	tons per year
lb	pounds	VOC	volatile organic compounds
mi	mile		

Diesel Fired Mobile Material Handling Equipment Pollutant Emissions Calculations

Table A-17. Equipment Information						
Description	**Number**	**Horsepower**	**Load Factor**	**Fuel Type**	**Hours per Day**	**Days per Year**
Front End Loader	4	250	0.4	Diesel	6	335

Table A-18. Emission Factors by Fuel Type							
	Emission Rate (g/bhp-hr)						
Fuel Type	**CO**	**NO_X**	**SO_2**	**ROG**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
Diesel (Tier 4)	2.6	0.3	0.001	0.14	0.01	0.01	186

Equations:

1. Daily Emissions (lb/day) = Operation Time (hr/day) * Horsepower * load factor (%) / 453 (g/lb)
2. Annual Emissions (tpy) = Daily Emissions (lb/day) * 335 (dpy) / 2,000 (lb/ton)

Table A-19. Daily Material Handling Equipment Emissions							
	Emission Rate (lb/day)						
Equipment	**CO**	**NO_X**	**SO_2**	**ROG**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
Front End Loader	13.68	1.58	0.01	0.74	0.05	0.05	980

Table A-20. Annual Material Handling Equipment Emissions							
	Emission Rate (tpy)						
Equipment	**CO**	**NO_X**	**SO_2**	**ROG**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
Front End Loader	2.29	0.26	0.001	0.12	0.01	0.01	164

Acronyms

CO	carbon monoxide	PM	particulate matter
CO_2	carbon dioxide	PM_{10}	PM less than 10 microns in diameter
N_2O	nitrous oxide	$PM_{2.5}$	PM less than 2.5 microns in diameter
NOx	nitrogen oxide	g/bhp-hr	grams per break horsepower hour

National Carbon Technologies Williams
Particulate Controls Emissions Calculations

Table A-21. Controls Equipment Information

Description	Exiting Grain Rate[1]	Flow (cfm)	Particle Size PM_{10} (% PM)	Particle Size $PM_{2.5}$ (% PM)
Screen Building Baghouse	0.004	5,000	35%	5%
Cogeneration (ESP)[2]	0.001	166,161	80%	35%
#1 Pellet Mill Area Baghouse	0.004	5,000	80%	40%
#2 Pellet Mill Area Baghouse	0.004	5,000	80%	40%
Pellet Storage Dust Collector #1	0.004	5,000	35%	5%
Pellet Storage Dust Collector #2	0.004	5,000	35%	5%

Table A-22. Particulate Loading Factors

Description	Value	Units	Source
Density of Exhaust Gas	0.03	lbs/ft^3	Process
Annual Uptime	335	dpy	Uptime
Grains to Pound	7,000	gr/lb	NA

Equations:

1. $$EF\ (lb/hr) = k \times GR\ (ppm) \times F\ (cfm) \times 60(min/hr) \div 7,000(gr/lb)$$

Table A-23. Calculated Potential Emissions

Description	Daily (lb/day) PM	Daily (lb/day) PM_{10}	Daily (lb/day) $PM_{2.5}$	Annual (tpy) PM_{10}	Annual (tpy) $PM_{2.5}$
Screen Building Baghouse	4.11	1.44	0.07	0.24	0.01
Cogeneration (ESP)	34.18	27.35	9.57	4.58	1.60
#1 Pellet Mill Area Baghouse	4.11	3.29	1.32	0.55	0.22
#2 Pellet Mill Area Baghouse	4.11	3.29	1.32	0.55	0.22
Pellet Storage Dust Collector #1	4.11	1.44	0.07	0.24	0.01
Pellet Storage Dust Collector #2	4.11	1.44	0.07	0.24	0.01
Total	**54.75**	**38.25**	**12.42**	**6.41**	**2.08**

Notes and Acronyms

Notes

Equation 1 Symbols: EF = emission factor; k = particle size percent; GR = grain rate; f = flow

(1) Grain rates are estimated utalizing process knowladge and rates used on simular projects.

(2) Cogeneration Unit flow assumes 0.04 lb/cuft density and 181,267 kg/hr flow through ESP.

Acronyms

cfm	cubic feet per minute	lbs/ft^3	pounds per cubic foot
dpy	days per year	PM	particulate matter
ESP	electrostatic precipitator	PM_{10}	PM less than 10 microns in diameter
$grains/ft^3$	grains per cubic foot	$PM_{2.5}$	PM less than 2.5 microns in diameter

National Carbon Technologies Williams
Stationary Material Handling Particulate Matter Emissions Calculations

Table A-24. Material Transfer Operational Data			
Parameter/Type	**Value**	**Units**	**Data Source/Assumption Justification**
Daily Throughput by Material Stage			
Woody Biomass	750,000	tpy	Maximum Annual Throughput
Ash/Sand	8,844	tpy	Process Knowladge
Washed Wood Chips	780,191	tpy	Process Design
Dried Wood Chips	575,212	tpy	Process Design Derived Ratio
Processed Biomass	250,000	tpy	Process Design Derived Ratio
Moisture Content by Material Stage			
Woody Biomass	26	%	Domain knowledge
Ash/Sand	5	%	Domain knowledge
Washed Wood Chips	30	%	Domain knowledge
Dried Wood Chips	5	%	Conservative Process Value
Processed Biomass	23	%	Conservative Process Value
Number of Drops by Material Stage			
Woody Biomass	2	each	Process Design
Ash/Sand	1	each	Process Design
Washed Wood Chips	1	each	Process Design
Dried Wood Chips	2	each	Process Design
Processed Biomass	2	each	Process Design
Other Operational Parameters			
Wind Speed	6.8	mph	AERMET Processed SacIAP Wind Data

Table A-25. AP-42 Particle Size Multipliers			
Parameter	**Value**	**Units**	**Reference**
PM_{10} Particle Size Multiplier	0.35	unitless	AP-42 Section 13.2.4.3
$PM_{2.5}$ Particle Size Multiplier	0.053	unitless	AP-42 Section 13.2.4.3

Equations:

1. $$EF\left(\frac{lb}{ton}\right) = particle\ size\ multiplier \times 0.0032 \times \frac{\left(\frac{wind\ speed(mph)}{5}\right)^{1.3}}{\left(\frac{moisture\ content(\%)}{2}\right)^{1.4}}$$

Table A-26. Calculated Emissions						
	Emission Factor (lb/ton)		**Daily Emissions (lb/day)**		**Annual Emissions (tpy)**	
Description	**PM_{10}**	**$PM_{2.5}$**	**PM_{10}**	**$PM_{2.5}$**	**PM_{10}**	**$PM_{2.5}$**
Woody Biomass	4.61E-05	6.97E-06	0.21	0.03	0.03	0.01
Washed Wood Chips	4.63E-04	7.01E-05	0.01	0.00	0.00	0.00
Dried Wood Chips	3.77E-05	5.71E-06	0.09	0.01	0.01	0.00
Processed Biomass	4.63E-04	7.01E-05	1.59	0.24	0.27	0.04
Total			**1.90**	**0.29**	**0.32**	**0.05**

Notes and Acronyms

Notes

Formula 1 Source - AP-42 Section 13.2.4.3 Equation 1.

Acronyms

tpy	tons per year	PM_{10}	PM less than 10 microns in diameter
mph	miles per hour	$PM_{2.5}$	PM less than 2.5 microns in diameter
lb/ton	pound per ton	lb/hr	pounds per hour
PM	particulate matter		

National Carbon Technologies Williams

Wind Erosion Particulate Emissions Calculations

Table A-27. Large Aggregate Piles Operational Data			
Parameter/Type	**Value**	**Units**	**Data Source/Assumption Justification**
Aggregate Pile Dimensions			
Biomass Pile Volume	1.37	MM ft^3	Scope 5.12.2021
Biomass Pile Area	90,000	ft^2	200 ft x 300 ft per 100-SK
Average Height of Pile	15	ft^2	APSEN April 6, 2021
Other Operational Parameters			
Silt Content	3	(%)	ASPEN
Rainfall Days over 1"	205	days	AP-42 Figure 13.2.1-2
Time Wind Exceeds 12 mph	20	(%)	SacIAP Weather Data
Calculated Surface Area	90,267	ft^2	(L*H*2 + W*H*2 + L*W)*1.2
Wind Speed	6.8	mph	AERMET Processed SacIAP Wind Data

Table A-28. AP-42 Particle Size Multipliers			
Parameter	**Value**	**Units**	**Reference**
PM_{10} Particle Size Multiplier	0.50	unitless	U.S. EPA Control of Open Fugitive Dust Sources
$PM_{2.5}$ Particle Size Multiplier	0.075	unitless	U.S. EPA Control of Open Fugitive Dust Sources

Equations:

1. $$\mathbf{EF = 1.7\left(\frac{s}{1.5}\right)\left(\frac{365-p}{235}\right)\left(\frac{f}{15}\right)(daily\ lb/acre)}$$

Table A-29. Calculated Emissions						
	EF (daily lb/acre)		**Daily Emissions (lb/day)**		**Annual Emissions (tpy)**	
Description	**PM_{10}**	**$PM_{2.5}$**	**PM_{10}**	**$PM_{2.5}$**	**PM_{10}**	**$PM_{2.5}$**
Biomass Pile Volume	1.54E+00	2.31E-01	3.33	0.48	0.58	0.09
Total			**3.33**	**0.48**	**0.58**	**0.09**

Notes and Acronyms:

Notes

Equation 1 Symbols: s = silt content; p = days per year with 0.01 inches or more rain; f = time wind exceeds 12 mph

Equation 1 Source: AP-42 Section 13.2.4.3, Equation 1

Acronyms

EF	emission factor	mph	miles per hour
ft^2	square foot	PM	particulate matter
ft^3	cubic feet	PM_{10}	PM less than 10 microns in diameter
lb/acre	pounds per acre	$PM_{2.5}$	PM less than 2.5 microns in diameter
lb/hr	pounds per hour	tpy	tons per year
mm	million		

Cooling Tower Emissions Criteria Pollutant Emissions Calculations

Table A-30. Cooling Tower Process Information

Location	Drift Rate (%)	Total Dissolved Solids[1] (ppm)	Flow (GPM)	Flow (mmgal)
Cogen Surface Condenser	0.0005%	10,000	20,000	10,512

Table A-31. Particulate Loading Factors

Description	Value	Units	Source
PM_{10} Fraction of PM	0.35		AP-42, Section 5.1, Table 5.1-2
$PM_{2.5}$ Fraction of PM	0.053		AP-42, Section 5.1, Table 5.1-2
VOC EF	0.70	lbs/mmgal	AP-42, Section 5.1, Table 5.1-2
Density of Water	8.34	lbs/gallon	conversion
Annual Uptime	8670	hrs/yr	

Equations:

1. $EF = TDS \times \eta_{Drift}/100 \times \rho_{H_2O}$

Table A-32. Calculated Emission Factors

Description	Emission Factors (lb/MMGal)			
	VOC	PM	PM_{10}	$PM_{2.5}$
Cogen Surface Condenser	0.70	0.42	0.15	0.02

Table A-33. Calculated Hourly Emissions

Description	Hourly Emissions (lb/hr)			
	VOC	PM	PM_{10}	$PM_{2.5}$
Cogen Surface Condenser	1.20E+00	0.50	0.175	0.027

Table A-34. Annual Emissions

Description	Daily Emissions (lbs/day)			
	VOC	PM	PM_{10}	$PM_{2.5}$
Cogen Surface Condenser	2.88E+01	12.01	4.20	0.64
Total	**2.88E+01**	**12.01**	**4.20**	**0.637**

Table A-35. Annual Emissions

Description	Annual Emissions (tpy)			
	VOC	PM	PM_{10}	$PM_{2.5}$
Cogen Surface Condenser	5.20E+00	2.17	0.76	0.115
Total	**5.20E+00**	**2.17**	**0.76**	**0.115**

Notes and Acronyms:

Notes

Equation 1 Symbols: ηDrift = Drift loss (%); $\rho(H_2O)$ = Density of Water

Equation 1 Source: SCAQMD Alternative PM Emission Factor Method
(http://www.aqmd.gov/docs/default-source/planning/annual-emission-reporting/guidecalcemiscooltowerdec13.pdf)

Acronyms

ppm	parts per million	PM	particulate matter
GPM	grams per minute	PM_{10}	PM less than 10 microns in diameter
mmgal	million gallons	$PM_{2.5}$	PM less than 2.5 microns in diameter
PM	particulate matter	lb/MMGal	pounds per million gallon
lbs/gallon	pounds per gallon	EF	emission factor
hrs/yr	hours per year	WHB	waste heat boiler
VOC	volatile organic compounds	tpy	tons per year

National Carbon Technologies Williams
Surfaces Criteria Pollutant Emissions Calculations

Table A-36. Surfaces Operational Data			
Parameter/Type	**Value**	**Units**	**Data Source/Assumption Justification**
Daily Throughput by Material Stage			
Trucks Travel Distance	20,988	mi/yr	Five mile RT 115*0.5*365
Trucks Weight	40	tons	Domain knowledge
Off-road Miles Traveled	25,000	mi/yr	Estimate
Off-road Weight	5	tons	Estimate
Silt Loading	2	grams/m^2	AP-42 Section 13.2.1, Table 13.2.1-2
PM_{10} Particle Size Multiplier	0.00220	lb/VMT	AP-42 Section 13.2.1, Table 13.2.1-1
$PM_{2.5}$ Particle Size Multiplier	0.00054	lb/VMT	AP-42 Section 13.2.1, Table 13.2.1-1

Equations:

1. $$E = k(sL)^{0.91} \times W^{1.02}$$

Table A-37. Surfaces Calculated Emissions						
	Emission Factor (lb/mi)		**Hourly Emissions[1] (lb/hr)**		**Annual Emissions (tpy)**	
Description	**PM_{10}**	**$PM_{2.5}$**	**PM_{10}**	**$PM_{2.5}$**	**PM_{10}**	**$PM_{2.5}$**
Trucks	1.78E-01	4.37E-02	10.24	2.51	1.87	0.46
Off-road	2.13E-02	5.24E-03	1.46	0.36	0.27	0.07
Total			**11.70**	**2.87**	**2.13**	**0.52**

Notes and Acronyms:

Notes

(1) Hourly emissions assume deliveries are evenly spread out over 12 hours per day.

Formula 1 Source - AP-42 Section 13.2.4.3 Equation 1.

Acronyms

grams/m^2	grams per square meter	PM	particulate matter
lb/hr	pounds per hour	PM_{10}	PM less than 10 microns in diameter
lb/mi	pounds per mile	$PM_{2.5}$	PM less than 2.5 microns in diameter
lb/VMT	pounds per vehicle mile traveled	RT	round trip
mi/yr	mile per year	tpy	tons per year

National Carbon Technologies Williams
Cogeneration Unit Process Gas Emissions Calculations

Table A-48. Biogas TO Combustion Data			
Parameter	**Value**	**Units**	**Source/Justification**
RTO Flow	166,800	lbs/hr	
BACT ROG	2.0	ppm	https://ww2.arb.ca.gov/BACT-Tool
BACT RTO CO	4.0	ppm	https://ww2.arb.ca.gov/BACT-Tool
BACT NOx	2.0	ppm	https://ww2.arb.ca.gov/BACT-Tool
Propane Molecular Weight	44.10	grams/mol	Periodic Table
Carbon Monoxide Molecular Weight	28.01	g/mol	Periodic Table
Nitrogen Dioxide Molecular Weight	46.01	g/mol	Periodic Table
Pound / cuft to miligram/cubic meter	1.60E+07	NA	Conversion Factor
Density	0.04	lbs/cuft	
Air Molecular Weight	28.97	grams/mol	
Biogas Heating Content	130	Btu/ft^3	

Equations:

1. EF (lb/mmcuft) = ppm * MW * 0.0409 * CF (lb/cuft / mg/m3) / 1,000,000

Table A-50 Emission Factors				
	Emission factors in lb/million cuft			
EF Source Description	**CO**	**NOx**	**SO2**	**VOC[1]**
Thermal Oxidizer BACT	0.29	0.23	0.001	0.23

Table A-51 Daily Emissions					
	lb/day				
EF Source Description	**CO**	**NOx**	**SO2**	**VOC**	**CO2**
Thermal Oxidizer BACT	28.63	23.51	0.10	22.54	2,535,134
Thermal Oxidizer BACT (20 hours)	**22.90**	**18.81**	**0.08**	**18.03**	**2,028,107**

Table A-52 Annual Emissions					
	tpy				
EF Source Description	**CO**	**NOx**	**SO2**	**VOC**	**CO2**
Thermal Oxidizer BACT	4.80	3.94	0.02	3.77	424,635

National Carbon Technologies Williams
Cogeneration Unit Process Gas Emissions Calculations

Notes and Acronyms

Notes

(1) VOC emissions calculated as propane

Acronyms

BACT	best available control technologies	lb/MMBtu	pound per million British thermal unit
Btu/ft^3	British thermal unit per cubic foot	lbs/hr	pounds per hour
CO	carbon monoxide	NH_3	ammonia
CO_2	carbon dioxide	ppm	parts per million
EF	emissions factor	SO_2	sulfur dioxide
grams/mol	grams per mol	tpy	tons per year
HAPS	hazardous air pollutants	VOC	volatile organic compounds

National Carbon Technologies Williams
Natural Gas Emergency Generator Emissions Calculations

Table A-38. Emergency Generator Operational Data

Parameter	Value	Units	Source/Justification
Operational Schedule	200	hours/year	Regulatory Limit
Generator Size	750	kW	
Load Percentage	45%		Conservative Estimate
Natural Gas Heading Value	1,200	Btu/ft^3	
kW to MMBtu	293.07	kWh/MMBtu	

Table A-39. AP-42 Emission Factors for Natural Gas Engines

		Emission Factor (lb/MMBtu)						
Description	AP-42 Tbl	CO	NOx	SO_2	VOC	PM_{10}	$PM_{2.5}$	CO_2
Natural Gas 4-Stroke Engine	Table 3.2-2	3.17E-01	8.47E-01	5.88E-04	1.18E-01	9.91E-03	9.91E-03	1.10E+02

Equations:

1. Emissions (lb/hr) = Size (kW) * Load Factor (%) / Conversion Factor (kWh/MMBtu) * Emission Factor (lb/MMBtu)

Table A-40 AP-42 Hourly Emissions from Natural Gas Engines

	Emission Factor (lb/hr)						
Description	CO	NOx	SO_2	VOC	PM_{10}	$PM_{2.5}$	CO_2
Natural Gas Generator	0.37	0.98	0.0007	0.14	0.01	0.01	126.68

Table A-41 Annual Emissions from Natural Gas Engines

	Daily Emissions (lbs/day)[1]						
Description	CO	NOx	SO2	VOC	PM_{10}	$PM_{2.5}$	CO_2
Natural Gas	1.46	3.90	0.00	0.54	0.05	0.05	506.70

Table A-42 Annual Emissions from Natural Gas Engines

	Emissions (tpy)						
Description	CO	NOx	SO2	VOC	PM_{10}	$PM_{2.5}$	CO_2
Natural Gas	0.04	0.10	0.0001	0.01	0.0011	0.0011	12.67

National Carbon Technologies Williams
Natural Gas Emergency Generator Emissions Calculations

Appendix "B1"

Notes and Acronyms:

Notes

(1) Maximum daily run time of generator is conservativly estimated at four hours

Acronyms

Btu/ft^3	British thermal unit per cubic foot	NOx	nitrogen oxide
CO	carbon monoxide	PM_{10}	particulate matter less than 10 microns in diameter
CO_2	carbon dioxide	$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
kW	kilowatt	SO_2	sulfur dioxide
kWh/MMBtu	kilowatt hour per million British thermal unit	VOC	volatile organic compounds

National Carbon Technologies Williams
Cogeneration Unit Natural Gas Startup Emissions Calculations

Table A-43. Combustion Operational Data

Parameter	Value	Units	Source/Justification
WHB Size	95	MMBtu	Darren's LCA
Natural Gas Heating Content	1,200	Btu/ft^3	AP-42 Section 1.4
Natural Gas Density	0.0416	lb/f^3	NA
Cogeneration (SCR)	35%		
Daily Hours	4		
Large Boiler Annual Uptime	192	hpy	Hours per year

Table A-44. AP-42 Emission Factors for Natural Gas Combustion

	Emission Factor ($lb/10^6\ ft^3$)						
Description	**CO**	**NOx**	**SO_2**	**VOC**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
Large Wall-Fired Boilers	84	50	0.6	5.5	7.6	7.6	120,000

Table A-45 AP-42 Emission Factors for Natural Gas Fired Wood Driers

	Emission Factor (lb/MMBtu)						
Description	**CO**	**NOx**	**SO_2**	**VOC**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
Large Wall-Fired Boilers	0.10	0.06	0.00	0.007	0.009	0.009	144

Table A-46 Hourly Emissions

	Emissions (lbs/day)[1]						
Description	**CO**	**NOx**	**SO_2**	**VOC**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
Waste Heat Boiler	13.41	7.98	0.10	0.88	1.21	1.21	19,152.00

Table A-47 Annual Emissions

	Emissions (tons/year)						
Description	**CO**	**NOx**	**SO_2**	**VOC**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
Waste Heat Boiler	1.29	0.77	0.01	0.08	0.12	0.12	1,838.59
Total	**1.29**	**0.77**	**0.01**	**0.08**	**0.12**	**0.12**	**1,838.59**

National Carbon Technologies Williams

Cogeneration Unit Natural Gas Startup Emissions Calculations

Appendix "B1"

Acronyms

Btu/ft^3	British thermal unit per cubic foot	lbs/hr	pounds per hour
CO	carbon monoxide	MMBtu	million British thermal unit
CO_2	carbon dioxide	NOx	nitrogen oxide
hpy	hours per year	PM_{10}	particulate matter less than 10 microns in diameter
lb/f^3	pound per cubic foot	SO_2	sulfur dioxide
lb/MMBtu	pound per million British thermal unit	VOC	volatile organic compounds

Table A-54. Biogas Valves and Fittings Data			
Parameter	**Value**	**Units**	**Source/Justification**
Number of Flanges (> 10,000 ppmv)	6	#	2.5% over 1% VOC
Number of Flanges (< 10,000 ppmv)	230	#	97.5% under 1% VOC
THC Emission Factor (> 10,000 ppmv)	7.5.E-02	lb/hr	CAPCOA/ARB
THC Emission Factor (< 10,000 ppmv)	1.3.E-05	lb/hr	CAPCOA/ARB

Table A-55 ASPEN VOC Speciation Pre-Combustion				
Formula	**Name**	**Cas Number**	**Flow Rate (lb/hr)**	**Percent Total VOC**
C3H8	Propane	74-98-6	356.77	6.10%
CH2O	Formaldehyde	50-00-0	111.00	1.90%
CH4O	Methanol	67-56-1	111.00	1.90%
CH2O2	Formic Acid	64-18-6	388.68	6.65%
C2H4O	Ethylene Oxide	75-21-8	115.20	1.97%
C2H4O2	Glycolaldehyde	107-31-3	337.75	5.77%
C2H6O	Ethanol	64-17-5	1,677.39	28.68%
C3H6O	Acetone	67-64-1	560.33	9.58%
C5H5N	Pyridine	110-86-1	9.23	0.16%
C6H6O	Phenol	108-95-2	1.26	0.02%
C8H14O	Sulcatone	502-49-8	2,180.12	37.28%

Equations:

1. Emissions (lb/hr) = EF (lbs VOC / connector) * Throuput (lb/hr) * VOC Content (%)

Table A-56 Hourly Emissions		
	lb/day	
EF Source Description	**VOC**	**HAPs**
Valves (> 10,000 ppmv)	0.00	0.00
Flanges (> 10,000 ppmv)	10.62	27.07
Flanges (< 10,000 ppmv)	2.99E-03	3.18E-04
Total	**10.62**	**27.07**

Table A-57 Annual Emissions

	tpy	
EF Source Description	**VOC**	**HAPs**
Valves (> 10,000 ppmv)	0.00	0.00
Flanges (> 10,000 ppmv)	1.78	4.53
Flanges (< 10,000 ppmv)	5.01E-04	1.39E-03
Total	**1.78**	**4.54**

Acronyms

HAPs	hazardous air pollutants	THC	Total Hydrocarbon
lb/hr	pounds per hour	tpy	tons per year
ppm	parts per million volume	VOC	volatile organic compounds

PROJECT OPERATIONAL WORKER COMMUTE EMISSIONS

National Carbon Technologies Williams Production Facility Project - Operational Worker Commutes

Colusa County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	20.00	1000sqft	0.46	20,000.00	0
Other Non-Asphalt Surfaces	201.59	1000sqft	4.63	201,595.00	0
Other Non-Asphalt Surfaces	41.82	Acre	41.82	1,821,679.20	0
Parking Lot	260.00	Space	2.34	104,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	56
Climate Zone	3			**Operational Year**	2023
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

National Carbon Technologies Williams Production Facility Project - Operational Worker Commutes - Colusa County, Summer

Project Characteristics -

Land Use - Uses account for 20,000 square feet of buildings, tanks, and other structures, 260 parking spaces, 201.595 square feet of hardscape, and 41.82 acres of additional ground disturbance

Construction Phase - No construction this model

Off-road Equipment -

Off-road Equipment - Equipment per Project Proponent

Trips and VMT - Operational Worker Commute model only

Grading -

Vehicle Trips - Worker commutes

Area Coating - Construction Model only

Energy Use - Worker commute Model only

Water And Wastewater - Worker Commute Model only

Solid Waste - Worker Commute Model only

Construction Off-road Equipment Mitigation -

Fleet Mix - Heavy-duty truck emissions calculated separately

Consumer Products - Worker commute model only

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	10000	0
tblAreaCoating	Area_Nonresidential_Interior	30000	0
tblAreaCoating	Area_Parking	127637	0
tblConstructionPhase	NumDays	55.00	0.00
tblConstructionPhase	PhaseEndDate	8/31/2021	6/15/2021
tblConsumerProducts	ROG_EF	2.14E-05	0
tblConsumerProducts	ROG_EF_Degreaser	3.542E-07	0
tblEnergyUse	LightingElect	2.70	0.00
tblEnergyUse	LightingElect	0.35	0.00
tblEnergyUse	NT24E	4.16	0.00
tblEnergyUse	NT24NG	3.84	0.00
tblEnergyUse	T24E	1.96	0.00
tblEnergyUse	T24NG	17.03	0.00
tblFleetMix	HHD	0.07	0.00
tblFleetMix	LDA	0.55	0.62
tblLandUse	LandUseSquareFeet	201,590.00	201,595.00
tblSolidWaste	SolidWasteGenerationRate	24.80	0.00
tblTripsAndVMT	WorkerTripNumber	180.00	0.00
tblVehicleTrips	ST_TR	1.50	10.00
tblVehicleTrips	SU_TR	1.50	10.00
tblVehicleTrips	WD_TR	1.50	10.00
tblWater	IndoorWaterUseRate	4,625,000.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0941	0.0000	0.0000	0.0941	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0941**	**0.0000**	**0.0000**	**0.0941**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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					
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0941	0.0000	0.0000	0.0941	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0941**	**0.0000**	**0.0000**	**0.0941**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**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	4.9500e-003	4.9000e-004	0.0534	0.0000		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004		0.1146	0.1146	3.0000e-004		0.1221
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	0.3909	0.6523	4.1678	0.0124	1.2299	0.0103	1.2402	0.3278	9.6100e-003	0.3374		1,235.6451	1,235.6451	0.0373		1,236.5778
Total	**0.3959**	**0.6528**	**4.2212**	**0.0124**	**1.2299**	**0.0105**	**1.2404**	**0.3278**	**9.8000e-003**	**0.3376**		**1,235.7597**	**1,235.7597**	**0.0376**	**0.0000**	**1,236.6999**

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	4.9500e-003	4.9000e-004	0.0534	0.0000		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004		0.1146	0.1146	3.0000e-004		0.1221
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	0.3909	0.6523	4.1678	0.0124	1.2299	0.0103	1.2402	0.3278	9.6100e-003	0.3374		1,235.6451	1,235.6451	0.0373		1,236.5778
Total	**0.3959**	**0.6528**	**4.2212**	**0.0124**	**1.2299**	**0.0105**	**1.2404**	**0.3278**	**9.8000e-003**	**0.3376**		**1,235.7597**	**1,235.7597**	**0.0376**	**0.0000**	**1,236.6999**

	ROG	NOx	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	Architectural Coating	Architectural Coating	6/16/2021	6/15/2021	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 48.79

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 30,000; Non-Residential Outdoor: 10,000; Striped Parking Area: 127,636 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48

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
Architectural Coating	1	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Architectural Coating - 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					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

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

3.2 Architectural Coating - 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					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

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

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	0.3909	0.6523	4.1678	0.0124	1.2299	0.0103	1.2402	0.3278	9.6100e-003	0.3374		1,235.6451	1,235.6451	0.0373		1,236.5778
Unmitigated	0.3909	0.6523	4.1678	0.0124	1.2299	0.0103	1.2402	0.3278	9.6100e-003	0.3374		1,235.6451	1,235.6451	0.0373		1,236.5778

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	200.00	200.00	200.00	583,902	583,902
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	200.00	200.00	200.00	583,902	583,902

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
General Heavy Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	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
General Heavy Industry	0.616533	0.035137	0.184333	0.118970	0.022952	0.006099	0.007374	0.000000	0.000932	0.001485	0.004850	0.000547	0.000787
Other Non-Asphalt Surfaces	0.549541	0.035137	0.184333	0.118970	0.022952	0.006099	0.007374	0.066992	0.000932	0.001485	0.004850	0.000547	0.000787
Parking Lot	0.549541	0.035137	0.184333	0.118970	0.022952	0.006099	0.007374	0.066992	0.000932	0.001485	0.004850	0.000547	0.000787

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					
General Heavy Industry	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
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
Parking Lot	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**

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	lb/day										lb/day					
General Heavy Industry	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
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
Parking Lot	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	4.9500e-003	4.9000e-004	0.0534	0.0000		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004		0.1146	0.1146	3.0000e-004		0.1221
Unmitigated	4.9500e-003	4.9000e-004	0.0534	0.0000		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004		0.1146	0.1146	3.0000e-004		0.1221

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.9500e-003	4.9000e-004	0.0534	0.0000		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004		0.1146	0.1146	3.0000e-004		0.1221
Total	**4.9500e-003**	**4.9000e-004**	**0.0534**	**0.0000**		**1.9000e-004**	**1.9000e-004**		**1.9000e-004**	**1.9000e-004**		**0.1146**	**0.1146**	**3.0000e-004**		**0.1221**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.9500e-003	4.9000e-004	0.0534	0.0000		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004		0.1146	0.1146	3.0000e-004		0.1221
Total	**4.9500e-003**	**4.9000e-004**	**0.0534**	**0.0000**		**1.9000e-004**	**1.9000e-004**		**1.9000e-004**	**1.9000e-004**		**0.1146**	**0.1146**	**3.0000e-004**		**0.1221**

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

National Carbon Technologies Williams Production Facility Project - Operational Worker Commutes

Colusa County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	20.00	1000sqft	0.46	20,000.00	0
Other Non-Asphalt Surfaces	201.59	1000sqft	4.63	201,595.00	0
Other Non-Asphalt Surfaces	41.82	Acre	41.82	1,821,679.20	0
Parking Lot	260.00	Space	2.34	104,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	56
Climate Zone	3			**Operational Year**	2023
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

National Carbon Technologies Williams Production Facility Project - Operational Worker Commutes - Colusa County, Winter

Project Characteristics -

Land Use - Uses account for 20,000 square feet of buildings, tanks, and other structures, 260 parking spaces, 201.595 square feet of hardscape, and 41.82 acres of additional ground disturbance

Construction Phase - No construction this model

Off-road Equipment -

Off-road Equipment - Equipment per Project Proponent

Trips and VMT - Operational Worker Commute model only

Grading -

Vehicle Trips - Worker commutes

Area Coating - Construction Model only

Energy Use - Worker commute Model only

Water And Wastewater - Worker Commute Model only

Solid Waste - Worker Commute Model only

Construction Off-road Equipment Mitigation -

Fleet Mix - Heavy-duty truck emissions calculated separately

Consumer Products - Worker commute model only

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	10000	0
tblAreaCoating	Area_Nonresidential_Interior	30000	0
tblAreaCoating	Area_Parking	127637	0
tblConstructionPhase	NumDays	55.00	0.00
tblConstructionPhase	PhaseEndDate	8/31/2021	6/15/2021
tblConsumerProducts	ROG_EF	2.14E-05	0
tblConsumerProducts	ROG_EF_Degreaser	3.542E-07	0
tblEnergyUse	LightingElect	2.70	0.00
tblEnergyUse	LightingElect	0.35	0.00
tblEnergyUse	NT24E	4.16	0.00
tblEnergyUse	NT24NG	3.84	0.00
tblEnergyUse	T24E	1.96	0.00
tblEnergyUse	T24NG	17.03	0.00
tblFleetMix	HHD	0.07	0.00
tblFleetMix	LDA	0.55	0.62
tblLandUse	LandUseSquareFeet	201,590.00	201,595.00
tblSolidWaste	SolidWasteGenerationRate	24.80	0.00
tblTripsAndVMT	WorkerTripNumber	180.00	0.00
tblVehicleTrips	ST_TR	1.50	10.00
tblVehicleTrips	SU_TR	1.50	10.00
tblVehicleTrips	WD_TR	1.50	10.00
tblWater	IndoorWaterUseRate	4,625,000.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0941	0.0000	0.0000	0.0941	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0941**	**0.0000**	**0.0000**	**0.0941**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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					
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0941	0.0000	0.0000	0.0941	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0941**	**0.0000**	**0.0000**	**0.0941**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**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	4.9500e-003	4.9000e-004	0.0534	0.0000		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004		0.1146	0.1146	3.0000e-004		0.1221
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	0.2810	0.7490	3.7165	0.0109	1.2299	0.0103	1.2402	0.3278	9.6100e-003	0.3374		1,093.4111	1,093.4111	0.0347		1,094.2794
Total	**0.2859**	**0.7495**	**3.7699**	**0.0109**	**1.2299**	**0.0105**	**1.2404**	**0.3278**	**9.8000e-003**	**0.3376**		**1,093.5256**	**1,093.5256**	**0.0350**	**0.0000**	**1,094.4014**

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	4.9500e-003	4.9000e-004	0.0534	0.0000		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004		0.1146	0.1146	3.0000e-004		0.1221
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	0.2810	0.7490	3.7165	0.0109	1.2299	0.0103	1.2402	0.3278	9.6100e-003	0.3374		1,093.4111	1,093.4111	0.0347		1,094.2794
Total	**0.2859**	**0.7495**	**3.7699**	**0.0109**	**1.2299**	**0.0105**	**1.2404**	**0.3278**	**9.8000e-003**	**0.3376**		**1,093.5256**	**1,093.5256**	**0.0350**	**0.0000**	**1,094.4014**

	ROG	NOx	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	Architectural Coating	Architectural Coating	6/16/2021	6/15/2021	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 48.79

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 30,000; Non-Residential Outdoor: 10,000; Striped Parking Area: 127,636 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48

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
Architectural Coating	1	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Architectural Coating - 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					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

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

3.2 Architectural Coating - 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					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

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

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	0.2810	0.7490	3.7165	0.0109	1.2299	0.0103	1.2402	0.3278	9.6100e-003	0.3374		1,093.4111	1,093.4111	0.0347		1,094.2794
Unmitigated	0.2810	0.7490	3.7165	0.0109	1.2299	0.0103	1.2402	0.3278	9.6100e-003	0.3374		1,093.4111	1,093.4111	0.0347		1,094.2794

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	200.00	200.00	200.00	583,902	583,902
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	200.00	200.00	200.00	583,902	583,902

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
General Heavy Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	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
General Heavy Industry	0.616533	0.035137	0.184333	0.118970	0.022952	0.006099	0.007374	0.000000	0.000932	0.001485	0.004850	0.000547	0.000787
Other Non-Asphalt Surfaces	0.549541	0.035137	0.184333	0.118970	0.022952	0.006099	0.007374	0.066992	0.000932	0.001485	0.004850	0.000547	0.000787
Parking Lot	0.549541	0.035137	0.184333	0.118970	0.022952	0.006099	0.007374	0.066992	0.000932	0.001485	0.004850	0.000547	0.000787

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					
General Heavy Industry	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
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
Parking Lot	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**

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	lb/day										lb/day					
General Heavy Industry	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
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
Parking Lot	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	4.9500e-003	4.9000e-004	0.0534	0.0000		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004		0.1146	0.1146	3.0000e-004		0.1221
Unmitigated	4.9500e-003	4.9000e-004	0.0534	0.0000		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004		0.1146	0.1146	3.0000e-004		0.1221

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.9500e-003	4.9000e-004	0.0534	0.0000		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004		0.1146	0.1146	3.0000e-004		0.1221
Total	**4.9500e-003**	**4.9000e-004**	**0.0534**	**0.0000**		**1.9000e-004**	**1.9000e-004**		**1.9000e-004**	**1.9000e-004**		**0.1146**	**0.1146**	**3.0000e-004**		**0.1221**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.9500e-003	4.9000e-004	0.0534	0.0000		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004		0.1146	0.1146	3.0000e-004		0.1221
Total	**4.9500e-003**	**4.9000e-004**	**0.0534**	**0.0000**		**1.9000e-004**	**1.9000e-004**		**1.9000e-004**	**1.9000e-004**		**0.1146**	**0.1146**	**3.0000e-004**		**0.1221**

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

PROJECT RENEWABLE ENERGY DISPLACEMENT EMISSIONS

Project Fossil Fuel Displacement

Megawatt Project[1]	Operational Time[2]	Annual Hours of Generation[2]	Annual Kilowatt Hours	Heat Rate[3]	Btu Displaced[4]
10.0 MW	50 Percent	4,380 Hours	43,800,000 Kilowatt Hours	9,313	407,909,400,000

[1] *The Project is anticipated to generate 10 megawatts for export.*

[2] *The Project is assumed to generate electricity 50 percent of the time available (2,190 hours annually).*

[3] *Heat Rate indicates the energy generator efficiency of existing fossil-fuel based energy generators. The heat rate of a power plant measures the amount of fuel used to generate one unit of electricity. Power plants with lower heat rates are more efficient than plants with higher heat rates. The CEC's "Updated Thermal Power Plant Efficiency Measures and Operational Characteristics for Production Cost Modeling" (2019) estimates heat rates and operating ranges for thermal power plants supplying energy to California. The average heat rate of power plants types are as follows:*
***Steam Boiler fueled by coal: 10,800 heat rate. **Steam Boiler fueled by natural gas: 10,200 heat rate. **Gas Turbine: 10,100 heat rate. **Combined natural gas Boiler and Turbine: 7,640 heat rate.*
Omitting steam boilers fueled by coal since so little of California's energy is derived from coal, the average heat rate = 9,313 [(10,100 + 10,200 + 7,640) ÷ 3 = 9,313]

[4] *61,320,000 anuual kilowatt hours x 9,313 average heat rate of existing fossil fuel generators = 571,073,160,000 Btu displaced from fossil fuel production.*
Energy consumption in California is predominately derived from natural gas (34.23%). Coal constitutes 2.96% of all energy-based energy consumption in California. Renewable sources (not including hydroelectric generators) account for 31.70% and nuclear power accounts for 8.98%. 7.34% of the state's energy comes from unspecificed nonrenewable sources and this percentage is added to the natural gas total for the purpose of this analysis. CEC. 2020. "2019 Total System Electric Generation". https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data

237,395,000,000 of the displaced BTU is displaced natural gas consumption and 16,561,121,640 of the displaced BTU is displaced coal.

The heat content of coal is assumed at 24 million Btu per ton of coal burned. At a rate of 24 million Btu per ton of coal burned, the Project would displace 690 tons of burned coal annually.

Fossil Fuel Emissions Displacement by Project[5]

Emissions from Natural Gas Generation

169,567,937,580 Displaced Btu

Tons Annually (Metric Tons for GHGs)

NOx	CO	PM10	PM2.5	SO2	CO2	CH4	N2O
419680.65	127175.95	398484.65	161089.54	288265.49	7,460,989,253.52		

Emissions from Coal Generation

493 Displaced tons of burned coal

Tons Annually (Metric Tons for GHGs)

NOx	CO	PM10	PM2.5	SO2	CO2	CH4	N2O	
2.96	0.12	0.02	0.01	0.14	1,190.82	0.01	0.01	1,193

Total Emssions Displaced - Tons Annually (Metric Tons for GHGs)

NOx	CO	PM10	PM2.5	SO2	CO2	CH4	N2O	
419683.60	127176.08	398484.67	161089.56	288265.63	7460990444.34	0.01	0.01	7,460,990,446

Emissions Over 30 years (Metric Tons)

Emissions from Natural Gas Generation

NOx	CO	PM10	PM2.5	SO2	CO2	CH4	N2O
12590419.37	3815278.60	11954539.6	4832686.22	8647964.82	223,829,677,606	0.00	0.00

Emissions from Coal Generation

NOx	CO	PM10	PM2.5	SO2	CO2	CH4	N2O	
88.72	3.70	0.62	0.44	4.21	35,725	0.24	0.18	35,783

Total Emissions Displaced Over 30 Years (Metric Tons)

NOx	CO	PM10	PM2.5	SO2	CO2	CH4	N2O	
12590508.09	3815282.29	11954540.22	4832686.66	8647969.03	223829713330.31	0.24	0.18	223,829,713,389

[5] *Source: Displaced emissions calculated by ECORP Consulting using U.S. EPA's AP-42 Fifth Edition Compilation of Air Emissions Factors 1995; 2015.*

PROJECT OPEN BURNING DISPLACEMENT EMISSIONS

Open Burning Operational Assumption

Description	Value	Units	Source
Tons Biomass per Year	750,000	tpy	Project Description
Days per Year Operation	335	dpy	Project Description
Tons Biomass per Day	2,239	tpd	Project Description
Biomass Burn Percentage	60%	NA	Engineering Estimate

CARB Emission Factors for Orchard Burning[1]

	Emission Factors (lb/ton)						
Refuse Category	**PM10**	**$PM_{2.5}$**	**NOx**	**SO2**	**VOC**	**CO**	**CO_2[2]**
Unspecified	**7.8**	**7.3**	**5.2**	**0.1**	**6.3**	**66.0**	**3,180**

Calculated Daily Open Burning Emissions

	Daily Emissions (lb/day)						
Emissions (Unspecified)	**PM10**	**$PM_{2.5}$**	**NOx**	**SO2**	**VOC**	**CO**	**CO_2**
Unspecified	10,478	9,806	6,985	134.3	8,463	88,657	4,272,115

Calculated Annual Open Burning Emissions

	Annual Emissions (tpy)						
Emissions (Unspecified)	**PM10**	**$PM_{2.5}$**	**NOx**	**SO2**	**VOC**	**CO**	**CO_2**
Unspecified	1,755.0	1,642.5	1,170.0	22.5	1,417.5	14,850.0	715,579

Notes:

(1) CARB - Waste Burning Emission Factors

(2) CARB MRR CO2 emission rate for "Wood and Wood Residuals" is 10,000 MT per 6,932 short ton material

ATTACHMENT B

Annual Greenhouse Gas Emissions

PROJECT CONSTRUCTION EMISSIONS

National Carbon Technologies Williams Production Facility Project

Colusa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	20.00	1000sqft	0.46	20,000.00	0
Parking Lot	260.00	Space	2.34	104,000.00	0
Other Non-Asphalt Surfaces	201.60	1000sqft	4.63	201,595.00	0
Other Non-Asphalt Surfaces	41.82	Acre	41.82	1,821,679.20	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	56
Climate Zone	3			**Operational Year**	2023
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 - Uses account for 20,000 square feet of buildings, tanks, and other structures, 260 parking spaces, 201.595 square feet of hardscape, and 41.82 acres of additional ground disturbance

Construction Phase - Construction duration = 14 months spanning 2022-2023

Off-road Equipment - Equipment per Project Proponent

Off-road Equipment - Equipment per Project Proponent

Off-road Equipment - Equipment per Project Proponent

Off-road Equipment -

Grading -

Trips and VMT - 42 construction workers anticipated. Assumed to make 4 trips daily.

Vehicle Trips - Construction Model only

Area Coating - Construction Model only

Energy Use - Construction Model only

Water And Wastewater - Construction Model only

Solid Waste - Construction Model only

Construction Off-road Equipment Mitigation - Tier 4 Mitigation - Excavators, Cranes & Dozer

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	10000	0
tblAreaCoating	Area_Nonresidential_Interior	30000	0
tblAreaCoating	Area_Parking	127637	0
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	740.00	280.00

tblConstructionPhase	NumDays	55.00	280.00
tblConstructionPhase	NumDays	30.00	280.00
tblConstructionPhase	PhaseEndDate	2/11/2025	5/16/2023
tblConstructionPhase	PhaseEndDate	9/10/2024	3/27/2023
tblConstructionPhase	PhaseEndDate	11/26/2024	3/27/2023
tblConstructionPhase	PhaseEndDate	7/27/2021	3/27/2023
tblConstructionPhase	PhaseStartDate	11/27/2024	3/1/2023
tblConstructionPhase	PhaseStartDate	11/10/2021	3/1/2022
tblConstructionPhase	PhaseStartDate	9/11/2024	3/1/2022
tblConstructionPhase	PhaseStartDate	6/16/2021	3/1/2022
tblEnergyUse	LightingElect	2.70	0.00
tblEnergyUse	LightingElect	0.35	0.00
tblEnergyUse	NT24E	4.16	0.00
tblEnergyUse	NT24NG	3.84	0.00
tblEnergyUse	T24E	1.96	0.00
tblEnergyUse	T24NG	17.03	0.00
tblGrading	MaterialExported	0.00	12,509.00
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentType		Sweepers/Scrubbers
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	9.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblSolidWaste	SolidWasteGenerationRate	24.80	0.00
tblTripsAndVMT	WorkerTripNumber	48.00	0.00
tblTripsAndVMT	WorkerTripNumber	902.00	168.00
tblTripsAndVMT	WorkerTripNumber	3.00	0.00
tblTripsAndVMT	WorkerTripNumber	180.00	0.00
tblVehicleTrips	ST_TR	1.50	0.00
tblVehicleTrips	SU_TR	1.50	0.00
tblVehicleTrips	WD_TR	1.50	0.00
tblWater	IndoorWaterUseRate	4,625,000.00	0.00

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					
2022	0.9632	11.3354	9.3969	0.0273	1.2215	0.3485	1.5699	0.4944	0.3212	0.8155	0.0000	2,477.6921	2,477.6921	0.4745	0.0000	2,489.5551
2023	1.2174	2.7449	2.5793	7.6200e-003	0.4550	0.0846	0.5397	0.1511	0.0781	0.2292	0.0000	690.9255	690.9255	0.1274	0.0000	694.1106
Maximum	**1.2174**	**11.3354**	**9.3969**	**0.0273**	**1.2215**	**0.3485**	**1.5699**	**0.4944**	**0.3212**	**0.8155**	**0.0000**	**2,477.6921**	**2,477.6921**	**0.4745**	**0.0000**	**2,489.5551**

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					
2022	0.7186	8.5282	10.0680	0.0273	0.7283	0.2134	0.9417	0.2634	0.1977	0.4612	0.0000	2,477.6906	2,477.6906	0.4745	0.0000	2,489.5536
2023	1.1580	2.0822	2.7832	7.6200e-003	0.2520	0.0529	0.3049	0.0797	0.0491	0.1288	0.0000	690.9251	690.9251	0.1274	0.0000	694.1102
Maximum	**1.1580**	**8.5282**	**10.0680**	**0.0273**	**0.7283**	**0.2134**	**0.9417**	**0.2634**	**0.1977**	**0.4612**	**0.0000**	**2,477.6906**	**2,477.6906**	**0.4745**	**0.0000**	**2,489.5536**

	ROG	NOx	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	**13.94**	**24.64**	**-7.31**	**0.00**	**41.53**	**38.51**	**40.91**	**46.85**	**38.17**	**43.53**	**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)
3	**12-16-2021**	**3-15-2022**	0.6021	0.4528
4	**3-16-2022**	**6-15-2022**	3.6729	2.7572
5	**6-16-2022**	**9-15-2022**	3.6688	2.7531
6	**9-16-2022**	**12-15-2022**	3.6486	2.7428
7	**12-16-2022**	**3-15-2023**	3.3969	2.6120
8	**3-16-2023**	**6-15-2023**	1.2299	1.1284
		Highest	3.6729	2.7572

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	0.2161	4.0000e-005	4.8100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.3500e-003	9.3500e-003	2.0000e-005	0.0000	9.9700e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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	**0.2161**	**4.0000e-005**	**4.8100e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**9.3500e-003**	**9.3500e-003**	**2.0000e-005**	**0.0000**	**9.9700e-003**

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	0.2161	4.0000e-005	4.8100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.3500e-003	9.3500e-003	2.0000e-005	0.0000	9.9700e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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	**0.2161**	**4.0000e-005**	**4.8100e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**9.3500e-003**	**9.3500e-003**	**2.0000e-005**	**0.0000**	**9.9700e-003**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	3/1/2022	3/27/2023	5	280	
2	Building Construction	Building Construction	3/1/2022	3/27/2023	5	280	
3	Paving	Paving	3/1/2022	3/27/2023	5	280	
4	Architectural Coating	Architectural Coating	3/1/2023	5/16/2023	5	55	

Acres of Grading (Site Preparation Phase): 280

Acres of Grading (Grading Phase): 0

Acres of Paving: 48.79

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 30,000; Non-Residential Outdoor: 10,000; Striped Parking Area: 127,636 (Architectural Coating – sqft)

OffRoad Equipment

National Carbon Technologies Williams Production Facility Project - Colusa County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Site Preparation	Excavators	7	8.00	158	0.38
Site Preparation	Scrapers	1	8.00	367	0.48
Site Preparation	Dumpers/Tenders	1	8.00	16	0.38
Building Construction	Cranes	2	7.00	231	0.29
Building Construction	Forklifts	0	8.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	0	8.00	80	0.38
Building Construction	Off-Highway Trucks	5	2.00	402	0.38
Building Construction	Aerial Lifts	6	3.00	63	0.31
Building Construction	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Building Construction	Sweepers/Scrubbers	1	4.00	64	0.46
Building Construction	Other Construction Equipment	1	8.00	172	0.42
Paving	Paving Equipment	0	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	9	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Welders	0	8.00	46	0.45

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
Site Preparation	19	0.00	0.00	1,564.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	15	168.00	352.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	1	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - 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					0.8086	0.0000	0.8086	0.3786	0.0000	0.3786	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.5069	5.0065	5.8184	9.7100e-003		0.2405	0.2405		0.2214	0.2214	0.0000	851.2688	851.2688	0.2740	0.0000	858.1190
Total	**0.5069**	**5.0065**	**5.8184**	**9.7100e-003**	**0.8086**	**0.2405**	**1.0491**	**0.3786**	**0.2214**	**0.6000**	**0.0000**	**851.2688**	**851.2688**	**0.2740**	**0.0000**	**858.1190**

3.2 Site Preparation - 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	4.4100e-003	0.1427	0.0242	4.8000e-004	0.0126	4.8000e-004	0.0131	3.4000e-003	4.6000e-004	3.8600e-003	0.0000	45.9865	45.9865	1.8700e-003	0.0000	46.0332
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.4100e-003**	**0.1427**	**0.0242**	**4.8000e-004**	**0.0126**	**4.8000e-004**	**0.0131**	**3.4000e-003**	**4.6000e-004**	**3.8600e-003**	**0.0000**	**45.9865**	**45.9865**	**1.8700e-003**	**0.0000**	**46.0332**

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					0.3154	0.0000	0.3154	0.1477	0.0000	0.1477	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3202	2.9422	6.3540	9.7100e-003		0.1370	0.1370		0.1268	0.1268	0.0000	851.2678	851.2678	0.2740	0.0000	858.1180
Total	**0.3202**	**2.9422**	**6.3540**	**9.7100e-003**	**0.3154**	**0.1370**	**0.4523**	**0.1477**	**0.1268**	**0.2745**	**0.0000**	**851.2678**	**851.2678**	**0.2740**	**0.0000**	**858.1180**

3.2 Site Preparation - 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	4.4100e-003	0.1427	0.0242	4.8000e-004	0.0126	4.8000e-004	0.0131	3.4000e-003	4.6000e-004	3.8600e-003	0.0000	45.9865	45.9865	1.8700e-003	0.0000	46.0332
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.4100e-003**	**0.1427**	**0.0242**	**4.8000e-004**	**0.0126**	**4.8000e-004**	**0.0131**	**3.4000e-003**	**4.6000e-004**	**3.8600e-003**	**0.0000**	**45.9865**	**45.9865**	**1.8700e-003**	**0.0000**	**46.0332**

3.2 Site Preparation - 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					0.3329	0.0000	0.3329	0.1171	0.0000	0.1171	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1290	1.2364	1.5976	2.7000e-003		0.0572	0.0572		0.0527	0.0527	0.0000	237.2074	237.2074	0.0764	0.0000	239.1163
Total	**0.1290**	**1.2364**	**1.5976**	**2.7000e-003**	**0.3329**	**0.0572**	**0.3901**	**0.1171**	**0.0527**	**0.1698**	**0.0000**	**237.2074**	**237.2074**	**0.0764**	**0.0000**	**239.1163**

3.2 Site Preparation - 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	9.0000e-004	0.0298	5.7600e-003	1.3000e-004	0.0107	6.0000e-005	0.0107	2.7100e-003	6.0000e-005	2.7600e-003	0.0000	12.5135	12.5135	3.7000e-004	0.0000	12.5227
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.0000e-004**	**0.0298**	**5.7600e-003**	**1.3000e-004**	**0.0107**	**6.0000e-005**	**0.0107**	**2.7100e-003**	**6.0000e-005**	**2.7600e-003**	**0.0000**	**12.5135**	**12.5135**	**3.7000e-004**	**0.0000**	**12.5227**

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					0.1298	0.0000	0.1298	0.0457	0.0000	0.0457	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0845	0.7610	1.7608	2.7000e-003		0.0335	0.0335		0.0310	0.0310	0.0000	237.2072	237.2072	0.0764	0.0000	239.1160
Total	**0.0845**	**0.7610**	**1.7608**	**2.7000e-003**	**0.1298**	**0.0335**	**0.1633**	**0.0457**	**0.0310**	**0.0767**	**0.0000**	**237.2072**	**237.2072**	**0.0764**	**0.0000**	**239.1160**

3.2 Site Preparation - 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	9.0000e-004	0.0298	5.7600e-003	1.3000e-004	0.0107	6.0000e-005	0.0107	2.7100e-003	6.0000e-005	2.7600e-003	0.0000	12.5135	12.5135	3.7000e-004	0.0000	12.5227
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.0000e-004**	**0.0298**	**5.7600e-003**	**1.3000e-004**	**0.0107**	**6.0000e-005**	**0.0107**	**2.7100e-003**	**6.0000e-005**	**2.7600e-003**	**0.0000**	**12.5135**	**12.5135**	**3.7000e-004**	**0.0000**	**12.5227**

3.3 Building Construction - 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	0.2044	2.0057	1.6371	4.1400e-003		0.0842	0.0842		0.0775	0.0775	0.0000	363.9697	363.9697	0.1177	0.0000	366.9125
Total	**0.2044**	**2.0057**	**1.6371**	**4.1400e-003**		**0.0842**	**0.0842**		**0.0775**	**0.0775**	**0.0000**	**363.9697**	**363.9697**	**0.1177**	**0.0000**	**366.9125**

3.3 Building Construction - 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	0.1591	3.9025	1.1430	0.0111	0.2542	0.0114	0.2656	0.0735	0.0109	0.0844	0.0000	1,053.2899	1,053.2899	0.0629	0.0000	1,054.8619
Worker	0.0633	0.0482	0.4585	1.3100e-003	0.1461	9.4000e-004	0.1470	0.0389	8.7000e-004	0.0397	0.0000	117.9534	117.9534	3.4200e-003	0.0000	118.0389
Total	**0.2224**	**3.9507**	**1.6015**	**0.0124**	**0.4003**	**0.0123**	**0.4126**	**0.1124**	**0.0118**	**0.1241**	**0.0000**	**1,171.2433**	**1,171.2433**	**0.0663**	**0.0000**	**1,172.9008**

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	0.1466	1.2627	1.7725	4.1400e-003		0.0527	0.0527		0.0487	0.0487	0.0000	363.9692	363.9692	0.1177	0.0000	366.9121
Total	**0.1466**	**1.2627**	**1.7725**	**4.1400e-003**		**0.0527**	**0.0527**		**0.0487**	**0.0487**	**0.0000**	**363.9692**	**363.9692**	**0.1177**	**0.0000**	**366.9121**

3.3 Building Construction - 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	0.1591	3.9025	1.1430	0.0111	0.2542	0.0114	0.2656	0.0735	0.0109	0.0844	0.0000	1,053.2899	1,053.2899	0.0629	0.0000	1,054.8619
Worker	0.0633	0.0482	0.4585	1.3100e-003	0.1461	9.4000e-004	0.1470	0.0389	8.7000e-004	0.0397	0.0000	117.9534	117.9534	3.4200e-003	0.0000	118.0389
Total	**0.2224**	**3.9507**	**1.6015**	**0.0124**	**0.4003**	**0.0123**	**0.4126**	**0.1124**	**0.0118**	**0.1241**	**0.0000**	**1,171.2433**	**1,171.2433**	**0.0663**	**0.0000**	**1,172.9008**

3.3 Building Construction - 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	0.0538	0.5071	0.4496	1.1500e-003		0.0212	0.0212		0.0195	0.0195	0.0000	101.4085	101.4085	0.0328	0.0000	102.2284
Total	**0.0538**	**0.5071**	**0.4496**	**1.1500e-003**		**0.0212**	**0.0212**		**0.0195**	**0.0195**	**0.0000**	**101.4085**	**101.4085**	**0.0328**	**0.0000**	**102.2284**

3.3 Building Construction - 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	0.0343	0.8662	0.2722	3.0500e-003	0.0708	1.2600e-003	0.0721	0.0205	1.2000e-003	0.0217	0.0000	288.5579	288.5579	0.0125	0.0000	288.8715
Worker	0.0164	0.0120	0.1163	3.5000e-004	0.0407	2.5000e-004	0.0409	0.0108	2.3000e-004	0.0111	0.0000	31.6213	31.6213	8.5000e-004	0.0000	31.6425
Total	**0.0507**	**0.8783**	**0.3886**	**3.4000e-003**	**0.1115**	**1.5100e-003**	**0.1130**	**0.0313**	**1.4300e-003**	**0.0327**	**0.0000**	**320.1792**	**320.1792**	**0.0134**	**0.0000**	**320.5140**

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	0.0388	0.3199	0.4904	1.1500e-003		0.0132	0.0132		0.0122	0.0122	0.0000	101.4083	101.4083	0.0328	0.0000	102.2283
Total	**0.0388**	**0.3199**	**0.4904**	**1.1500e-003**		**0.0132**	**0.0132**		**0.0122**	**0.0122**	**0.0000**	**101.4083**	**101.4083**	**0.0328**	**0.0000**	**102.2283**

3.3 Building Construction - 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	0.0343	0.8662	0.2722	3.0500e-003	0.0708	1.2600e-003	0.0721	0.0205	1.2000e-003	0.0217	0.0000	288.5579	288.5579	0.0125	0.0000	288.8715
Worker	0.0164	0.0120	0.1163	3.5000e-004	0.0407	2.5000e-004	0.0409	0.0108	2.3000e-004	0.0111	0.0000	31.6213	31.6213	8.5000e-004	0.0000	31.6425
Total	**0.0507**	**0.8783**	**0.3886**	**3.4000e-003**	**0.1115**	**1.5100e-003**	**0.1130**	**0.0313**	**1.4300e-003**	**0.0327**	**0.0000**	**320.1792**	**320.1792**	**0.0134**	**0.0000**	**320.5140**

3.4 Paving - 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	0.0227	0.2298	0.3158	5.1000e-004		0.0109	0.0109		0.0101	0.0101	0.0000	45.2238	45.2238	0.0146	0.0000	45.5895
Paving	2.4000e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0251**	**0.2298**	**0.3158**	**5.1000e-004**		**0.0109**	**0.0109**		**0.0101**	**0.0101**	**0.0000**	**45.2238**	**45.2238**	**0.0146**	**0.0000**	**45.5895**

3.4 Paving - 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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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	0.0227	0.2298	0.3158	5.1000e-004		0.0109	0.0109		0.0101	0.0101	0.0000	45.2238	45.2238	0.0146	0.0000	45.5894
Paving	2.4000e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0251**	**0.2298**	**0.3158**	**5.1000e-004**		**0.0109**	**0.0109**		**0.0101**	**0.0101**	**0.0000**	**45.2238**	**45.2238**	**0.0146**	**0.0000**	**45.5894**

3.4 Paving - 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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.4 Paving - 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	5.8500e-003	0.0574	0.0879	1.4000e-004		2.7000e-003	2.7000e-003		2.4900e-003	2.4900e-003	0.0000	12.5955	12.5955	4.0700e-003	0.0000	12.6973
Paving	6.7000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.5200e-003**	**0.0574**	**0.0879**	**1.4000e-004**		**2.7000e-003**	**2.7000e-003**		**2.4900e-003**	**2.4900e-003**	**0.0000**	**12.5955**	**12.5955**	**4.0700e-003**	**0.0000**	**12.6973**

3.4 Paving - 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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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	5.8500e-003	0.0574	0.0879	1.4000e-004		2.7000e-003	2.7000e-003		2.4900e-003	2.4900e-003	0.0000	12.5955	12.5955	4.0700e-003	0.0000	12.6973
Paving	6.7000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.5200e-003**	**0.0574**	**0.0879**	**1.4000e-004**		**2.7000e-003**	**2.7000e-003**		**2.4900e-003**	**2.4900e-003**	**0.0000**	**12.5955**	**12.5955**	**4.0700e-003**	**0.0000**	**12.6973**

3.4 Paving - 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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

3.5 Architectural Coating - 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					
Archit. Coating	0.9712					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.2700e-003	0.0358	0.0498	8.0000e-005		1.9500e-003	1.9500e-003		1.9500e-003	1.9500e-003	0.0000	7.0215	7.0215	4.2000e-004	0.0000	7.0320
Total	**0.9765**	**0.0358**	**0.0498**	**8.0000e-005**		**1.9500e-003**	**1.9500e-003**		**1.9500e-003**	**1.9500e-003**	**0.0000**	**7.0215**	**7.0215**	**4.2000e-004**	**0.0000**	**7.0320**

3.5 Architectural Coating - 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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.9712					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.2700e-003	0.0358	0.0498	8.0000e-005		1.9500e-003	1.9500e-003		1.9500e-003	1.9500e-003	0.0000	7.0214	7.0214	4.2000e-004	0.0000	7.0319
Total	**0.9765**	**0.0358**	**0.0498**	**8.0000e-005**		**1.9500e-003**	**1.9500e-003**		**1.9500e-003**	**1.9500e-003**	**0.0000**	**7.0214**	**7.0214**	**4.2000e-004**	**0.0000**	**7.0319**

3.5 Architectural Coating - 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	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

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
General Heavy Industry	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
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
General Heavy Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
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
General Heavy Industry	0.549541	0.035137	0.184333	0.118970	0.022952	0.006099	0.007374	0.066992	0.000932	0.001485	0.004850	0.000547	0.000787
Other Non-Asphalt Surfaces	0.549541	0.035137	0.184333	0.118970	0.022952	0.006099	0.007374	0.066992	0.000932	0.001485	0.004850	0.000547	0.000787
Parking Lot	0.549541	0.035137	0.184333	0.118970	0.022952	0.006099	0.007374	0.066992	0.000932	0.001485	0.004850	0.000547	0.000787

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					
General Heavy Industry	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
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
Parking Lot	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					
General Heavy Industry	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
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
Parking Lot	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			
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	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			
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	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	0.2161	4.0000e-005	4.8100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.3500e-003	9.3500e-003	2.0000e-005	0.0000	9.9700e-003
Unmitigated	0.2161	4.0000e-005	4.8100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.3500e-003	9.3500e-003	2.0000e-005	0.0000	9.9700e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2156					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.5000e-004	4.0000e-005	4.8100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.3500e-003	9.3500e-003	2.0000e-005	0.0000	9.9700e-003
Total	**0.2161**	**4.0000e-005**	**4.8100e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**9.3500e-003**	**9.3500e-003**	**2.0000e-005**	**0.0000**	**9.9700e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2156					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.5000e-004	4.0000e-005	4.8100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.3500e-003	9.3500e-003	2.0000e-005	0.0000	9.9700e-003
Total	**0.2161**	**4.0000e-005**	**4.8100e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**9.3500e-003**	**9.3500e-003**	**2.0000e-005**	**0.0000**	**9.9700e-003**

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			
General Heavy Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	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			
General Heavy Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	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			
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	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

PROJECT STATIONARY & MOBILE TRUCK EMISSIONS

National Carbon Technologies Williams
Emissions Summary

Appendix "B1"

Table A-1. Maximum Daily Criteria Pollutant Emissions							
	Daily Emissions (lbs/day)						
Emissions Activity	CO	NOx	SO_2	VOC	PM_{10}	$PM_{2.5}$	CO_2e
Mobile Emissions							
Onsite Trucks (Idling)	1.28	1.05	0.00	0.09	0.00	0.00	204
Offsite Trucks	2.73	22.64	0.15	0.31	0.35	0.34	16,239
Trains	4.38	7.48	3.42	0.27	0.12	0.11	1,679
Employee Trips	4.22	0.65	0.01	0.39	1.24	0.33	1,237
Onsite Off-road Equipment	13.68	1.58	0.01	0.74	0.05	0.05	979.63
Stationary Emissions							
Material Handling	-	-	-	-	0.03	0.01	-
Screening/Ash Removal and Hammermills	-	-	-	-	1.44	0.07	-
Wet Biomass Storage	-	-	-	-	3.34	0.48	-
Biomass Heater Loading	-	-	-	-	11.70	2.87	-
Natural Gas Startups	13.41	7.98	0.10	0.88	1.21	1.21	19,152
Thermal Oxidizer/ Electrostatic Precipitator	22.90	18.81	0.08	18.03	27.35	9.57	2,535,134
Pelletizer Stack	-	-	-	-	6.58	2.63	-
Process Gas Fugitive Emissions	-	-	-	10.62	-	-	-
Emergency Natural Gas Generator	1.46	3.90	0.00	0.54	0.05	0.05	507
Cooling Tower	-	-	-	28.80	12.01	4.20	-
Pellet Storage	-	-	-	-	2.88	0.14	-
Pellet Loading	-	-	-	-	1.90	0.29	-
Project Total	**64.06**	**64.09**	**3.77**	**60.67**	**70.25**	**22.36**	**2,575,132**
SMAQMD Thresholds	**-**	**65**	**-**	**65**	**80**	**82**	**-**

Table A-2. Annual Criteria Pollutant Emissions							
	Annual Potential Emissions (tpy)						
Emissions Activity	CO	NOx	SO_2	VOC	PM_{10}	$PM_{2.5}$	CO_2e
Mobile Emissions							
Onsite Trucks (Idling)	0.21	0.18	0.00	0.01	0.00	0.00	34
Offsite Trucks	0.47	3.86	0.03	0.05	0.06	0.06	2,766
Trains	0.73	1.25	0.57	0.05	0.02	0.02	281
Employee Trips	0.66	0.12	0.002	0.05	0.21	0.05	186
Onsite Off-road Equipment	2.29	0.26	0.00	0.12	0.01	0.01	164
Stationary Emissions							
Material Handling	-	-	-	-	0.03	0.01	-
Screening/Ash Removal and Hammermills	-	-	-	-	0.24	0.01	-
Wet Biomass Storage	-	-	-	-	0.58	0.09	-
Biomass Heater Loading	-	-	-	-	0.02	0.00	-
Natural Gas Startups	1.29	0.77	0.01	0.08	0.12	0.12	1,839
Thermal Oxidizer/ Electrostatic Precipitator	4.80	3.94	0.02	3.77	4.58	1.60	424,635
Pelletizer Stack	-	-	-	-	1.10	0.44	-
Process Gas Fugitive Emissions	-	-	-	10.62	-	-	-
Emergency Natural Gas Generator	0.04	0.10	0.0001	0.01	0.001	0.001	13
Cooling Tower	-	-	-	5.20	0.76	0.11	-
Pellet Storage	-	-	-	-	0.24	0.01	-
Pellet Loading	-	-	-	-	0.27	0.04	-
Project Total	**10.48**	**10.47**	**0.63**	**19.98**	**8.24**	**2.57**	**429,918**
SMAQMD Thresholds	**-**	**-**	**-**	**-**	**15**	**15**	**-**

National Carbon Technologies Williams
Truck (Trips) Criteria Pollutant Emissions Calculations

Table A-3. Modeled Round Trip Dimensions		
Air Basin	RT Length (miles)	Percent Trips
Sacramento Valley	45	100%
Northeast Plateau	25	20%
Mountain Counties	10	20%

Table A-4. Total Haul Trip Information	
Trip Type	Trips/Day
Raw Material to Site	125

Equations:

1. Daily Emissions (lb/day) = RT Length (mi) * Average Daily Trips / 453 (g/lb)
2. Annual Emissions (tpy) = Daily Emissions (lb/day) * 335 (dpy) / 2,000 (lb/ton)

Table A-5. EMFAC Composite Emission Factors For 2023							
	Emission Factors (g/mi)						
Source Type	CO	NO_X	SO_2	ROG	PM_{10}	$PM_{2.5}$	CO_2
HHDT	0.22	1.83	0.01	0.02	0.03	0.03	1,310

Table A-6. Estimated annual Emissions							
	Daily Emissions (lbs/day)						
Air Basin	CO	NO_X	SO_2	ROG	PM_{10}	$PM_{2.5}$	CO_2
Sacramento Valley	2.73	22.64	0.15	0.31	0.35	0.34	16,239
Northeast Plateau	0.30	2.52	0.02	0.03	0.04	0.04	1,807
Mountain Counties	0.12	1.01	0.01	0.01	0.02	0.02	723

Table A-7. Estimated annual Emissions							
	Annual Emissions (tpy)						
Air Basin	CO	NO_X	SO_2	VOC	PM_{10}	$PM_{2.5}$	CO2
Sacramento Valley	0.47	3.86	0.03	0.05	0.06	0.06	2,766
Northeast Plateau	0.05	0.43	0.00	0.01	0.01	0.01	307
Mountain Counties	0.02	0.17	0.00	0.00	0.00	0.00	123

Acronyms

CO	carbon monoxide	NOx	nitrogen oxide
CO_2	carbon dioxide	PM	particulate matter
dpy	days per year	PM_{10}	PM less than 10 microns in diameter
g	grams	$PM_{2.5}$	PM less than 2.5 microns in diameter
g/mi	grams per mile	RT	round trip
HHDT	heavy heavy duty truck	SO_2	sulfur dioxide
lb	pounds	tpy	tons per year
mi	mile	VOC	volatile organic compounds

National Carbon Technologies Williams
Truck (Onsite Idling) Criteria Pollutant Emissions Calculations

Table A-8. Total Truck Trips Information			
Trip Type	**Trips/Day**	**Minute/Trip**	**Days/Year**
Biomass Haul Trucks	125	8	335

Table A-9. EMFAC Heavy Duty Truck Idling Rates							
	Emission Rates (g/hr)						
Vehicle Type	**CO**	**NO_X**	**SO_2**	**ROG**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
2023 Emission Rates							
HHDT	34.69	28.50	0.05	2.37	0.01	0.01	5,546

Equations:

1. Daily Emissions (lb/day) = Idling Time (g/min) * Average Daily Trips / 453 (g/lb) / 60 min/hr
2. Annual Emissions (tpy) = Daily Emissions (lb/day) * 335 (dpy) / 2,000 (lb/ton)

Table A-10. EMFAC Heavy Duty Truck Idling Rates							
	Daily Emissions (lb/day)						
Vehicle Type	**CO**	**NO_X**	**SO_2**	**ROG**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
Trip Types							
HHDT	1.28	1.05	0.002	0.09	0.00	0.00	204.04

Table A-11. EMFAC Heavy Duty Truck Idling Rates							
	Annual Emissions (tpy)						
Vehicle Type	**CO**	**NO_X**	**SO_2**	**ROG**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
2025 Emission Rates							
HHDT	0.21	0.18	0.0003	0.01	0.00	0.00	34.18

Acronyms

CO	carbon monoxide	NOx	nitrogen oxide
CO_2	carbon dioxide	PM	particulate matter
g	grams	PM_{10}	PM less than 10 microns in diameter
g/mi	grams per mile	$PM_{2.5}$	PM less than 2.5 microns in diameter
HHDT	heavy duty diesel truck	SO_2	sulfur dioxide
lb	pounds	tpy	tons per year
mi	mile	VOC	volatile organic compounds

National Carbon Technologies Williams

Train Pellet Delivery Criteria Pollutant Emissions Calculations

Table A-12. Operational Assumptions			
Description	**Value**	**Units**	**Source**
Avg Distance in SVAB	40	miles	GIS Measurement
Avg Distance in NEPAB	20	miles	GIS Measurement
Avg Distance in SFBAB	20	miles	GIS Measurement
Ton-mile per Gallon	400	ton-mi/gal	EPA
Daily Mass Transferred	746	tons/day	Process Information

Table A-13. Calculated Daily Ton Miles of Carbon Product		
	Train Trips	
Air Basin	**ton-mile / day**	**ton-mile / year**
Avg Distance in SVAB	29,851	10,000,000
Avg Distance in NEPAB	14,925	5,000,000
Avg Distance in SFBAB	14,925	5,000,000

Table A-14. Emission Factors from CARB Vision Access Database							
	grams per gallon						
Source Type	**CO**	**NO_X**	**SO_2**	**ROG**	**PM_{10}**	**$PM_{2.5}$**	**CO2**
Tier 2r	26.62	102.96	20.77	5.41	1.66	1.53	10,206
Tier 3	26.62	102.96	20.77	2.70	1.66	1.53	10,206
Tier 4	26.62	20.80	20.77	0.83	0.31	0.29	10,206
Composite[1]	**26.62**	**45.45**	**20.77**	**1.66**	**0.72**	**0.66**	**10,206**

Equations:

1. Emissions (lb/day) = Operation Weight (tons/day) * Trip Distance (mi) * Horsepower / (ton-miles/gallon) / 453 (g/lb)
2. Annual Emissions (tpy) = Daily Emissions (lb/day) * 335 (dpy) / 2,000 (lb/ton)

Table A-15. Daily Emissions							
	Pounds Per Day						
Air Basin	**CO**	**NO_X**	**SO_2**	**ROG**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
SVAB	4.38	7.48	3.42	0.27	0.12	0.11	1,679.10
NEPAB	2.19	3.74	1.71	0.14	0.06	0.05	839.55
SFBAB	2.19	3.74	1.71	0.14	0.06	0.05	839.55

Table A-16. Daily Emissions							
	Tons per Year						
Air Basin	**CO**	**NO_X**	**SO_2**	**ROG**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
SVAB	0.73	1.25	0.57	0.05	0.02	0.02	281.25
NEPAB	0.37	0.63	0.29	0.02	0.01	0.01	140.63
SFBAB	0.37	0.63	0.29	0.02	0.01	0.01	140.63

Notes and Acronyms

Notes

(1) Aggregate train emissions include 80% Tier 4, 15% Tier 3, and 5% Tier 2

Acronyms

CO	carbon monoxide	NOx	nitrogen oxide
CO_2	carbon dioxide	PM_{10}	particulate matter less than 10 microns in diameter
dpy	days per year	$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
g	grams	RT	round trip
g/mi	grams per mile	SO_2	sulfur dioxide
HHDT	heavy heavy duty truck	tpy	tons per year
lb	pounds	VOC	volatile organic compounds
mi	mile		

Diesel Fired Mobile Material Handling Equipment Pollutant Emissions Calculations

Table A-17. Equipment Information

Description	Number	Horsepower	Load Factor	Fuel Type	Hours per Day	Days per Year
Front End Loader	4	250	0.4	Diesel	6	335

Table A-18. Emission Factors by Fuel Type

Fuel Type	Emission Rate (g/bhp-hr)						
	CO	NO_X	SO_2	ROG	PM_{10}	$PM_{2.5}$	CO_2
Diesel (Tier 4)	2.6	0.3	0.001	0.14	0.01	0.01	186

Equations:

1. Daily Emissions (lb/day) = Operation Time (hr/day) * Horsepower * load factor (%) / 453 (g/lb)
2. Annual Emissions (tpy) = Daily Emissions (lb/day) * 335 (dpy) / 2,000 (lb/ton)

Table A-19. Daily Material Handling Equipment Emissions

Equipment	Emission Rate (lb/day)						
	CO	NO_X	SO_2	ROG	PM_{10}	$PM_{2.5}$	CO_2
Front End Loader	13.68	1.58	0.01	0.74	0.05	0.05	980

Table A-20. Annual Material Handling Equipment Emissions

Equipment	Emission Rate (tpy)						
	CO	NO_X	SO_2	ROG	PM_{10}	$PM_{2.5}$	CO_2
Front End Loader	2.29	0.26	0.001	0.12	0.01	0.01	164

Acronyms

CO	carbon monoxide	PM	particulate matter
CO_2	carbon dioxide	PM_{10}	PM less than 10 microns in diameter
N_2O	nitrous oxide	$PM_{2.5}$	PM less than 2.5 microns in diameter
NOx	nitrogen oxide	g/bhp-hr	grams per break horsepower hour

National Carbon Technologies Williams
Particulate Controls Emissions Calculations

Table A-21. Controls Equipment Information

Description	Exiting Grain Rate[1]	Flow (cfm)	Particle Size PM_{10} (% PM)	Particle Size $PM_{2.5}$ (% PM)
Screen Building Baghouse	0.004	5,000	35%	5%
Cogeneration (ESP)[2]	0.001	166,161	80%	35%
#1 Pellet Mill Area Baghouse	0.004	5,000	80%	40%
#2 Pellet Mill Area Baghouse	0.004	5,000	80%	40%
Pellet Storage Dust Collector #1	0.004	5,000	35%	5%
Pellet Storage Dust Collector #2	0.004	5,000	35%	5%

Table A-22. Particulate Loading Factors

Description	Value	Units	Source
Density of Exhaust Gas	0.03	lbs/ft^3	Process
Annual Uptime	335	dpy	Uptime
Grains to Pound	7,000	gr/lb	NA

Equations:

1. $$EF\ (lb/hr) = k \times GR\ (ppm) \times F\ (cfm) \times 60(min/hr) \div 7,000(gr/lb)$$

Table A-23. Calculated Potential Emissions

Description	Daily (lb/day) PM	Daily (lb/day) PM_{10}	Daily (lb/day) $PM_{2.5}$	Annual (tpy) PM_{10}	Annual (tpy) $PM_{2.5}$
Screen Building Baghouse	4.11	1.44	0.07	0.24	0.01
Cogeneration (ESP)	34.18	27.35	9.57	4.58	1.60
#1 Pellet Mill Area Baghouse	4.11	3.29	1.32	0.55	0.22
#2 Pellet Mill Area Baghouse	4.11	3.29	1.32	0.55	0.22
Pellet Storage Dust Collector #1	4.11	1.44	0.07	0.24	0.01
Pellet Storage Dust Collector #2	4.11	1.44	0.07	0.24	0.01
Total	**54.75**	**38.25**	**12.42**	**6.41**	**2.08**

Notes and Acronyms

Notes

Equation 1 Symbols: EF = emission factor; k = particle size percent; GR = grain rate; f = flow

(1) Grain rates are estimated utalizing process knowladge and rates used on simular projects.

(2) Cogeneration Unit flow assumes 0.04 lb/cuft density and 181,267 kg/hr flow through ESP.

Acronyms

cfm	cubic feet per minute	lbs/ft^3	pounds per cubic foot
dpy	days per year	PM	particulate matter
ESP	electrostatic precipitator	PM_{10}	PM less than 10 microns in diameter
$grains/ft^3$	grains per cubic foot	$PM_{2.5}$	PM less than 2.5 microns in diameter

Stationary Material Handling Particulate Matter Emissions Calculations

Table A-24. Material Transfer Operational Data			
Parameter/Type	**Value**	**Units**	**Data Source/Assumption Justification**
Daily Throughput by Material Stage			
Woody Biomass	750,000	tpy	Maximum Annual Throughput
Ash/Sand	8,844	tpy	Process Knowladge
Washed Wood Chips	780,191	tpy	Process Design
Dried Wood Chips	575,212	tpy	Process Design Derived Ratio
Processed Biomass	250,000	tpy	Process Design Derived Ratio
Moisture Content by Material Stage			
Woody Biomass	26	%	Domain knowledge
Ash/Sand	5	%	Domain knowledge
Washed Wood Chips	30	%	Domain knowledge
Dried Wood Chips	5	%	Conservative Process Value
Processed Biomass	23	%	Conservative Process Value
Number of Drops by Material Stage			
Woody Biomass	2	each	Process Design
Ash/Sand	1	each	Process Design
Washed Wood Chips	1	each	Process Design
Dried Wood Chips	2	each	Process Design
Processed Biomass	2	each	Process Design
Other Operational Parameters			
Wind Speed	6.8	mph	AERMET Processed SacIAP Wind Data

Table A-25. AP-42 Particle Size Multipliers			
Parameter	**Value**	**Units**	**Reference**
PM_{10} Particle Size Multiplier	0.35	unitless	AP-42 Section 13.2.4.3
$PM_{2.5}$ Particle Size Multiplier	0.053	unitless	AP-42 Section 13.2.4.3

Equations:

1. $$EF\left(\frac{lb}{ton}\right) = particle\ size\ multiplier \times 0.0032 \times \frac{\left(\frac{wind\ speed(mph)}{5}\right)^{1.3}}{\left(\frac{moisture\ content(\%)}{2}\right)^{1.4}}$$

Table A-26. Calculated Emissions						
	Emission Factor (lb/ton)		**Daily Emissions (lb/day)**		**Annual Emissions (tpy)**	
Description	**PM_{10}**	**$PM_{2.5}$**	**PM_{10}**	**$PM_{2.5}$**	**PM_{10}**	**$PM_{2.5}$**
Woody Biomass	4.61E-05	6.97E-06	0.21	0.03	0.03	0.01
Washed Wood Chips	4.63E-04	7.01E-05	0.01	0.00	0.00	0.00
Dried Wood Chips	3.77E-05	5.71E-06	0.09	0.01	0.01	0.00
Processed Biomass	4.63E-04	7.01E-05	1.59	0.24	0.27	0.04
Total			**1.90**	**0.29**	**0.32**	**0.05**

Notes and Acronyms

Notes

Formula 1 Source - AP-42 Section 13.2.4.3 Equation 1.

Acronyms

tpy	tons per year	PM_{10}	PM less than 10 microns in diameter
mph	miles per hour	$PM_{2.5}$	PM less than 2.5 microns in diameter
lb/ton	pound per ton	lb/hr	pounds per hour
PM	particulate matter		

National Carbon Technologies Williams
Wind Erosion Particulate Emissions Calculations

Table A-27. Large Aggregate Piles Operational Data			
Parameter/Type	**Value**	**Units**	**Data Source/Assumption Justification**
Aggregate Pile Dimensions			
Biomass Pile Volume	1.37	MM ft^3	Scope 5.12.2021
Biomass Pile Area	90,000	ft^2	200 ft x 300 ft per 100-SK
Average Height of Pile	15	ft^2	APSEN April 6, 2021
Other Operational Parameters			
Silt Content	3	(%)	ASPEN
Rainfall Days over 1"	205	days	AP-42 Figure 13.2.1-2
Time Wind Exceeds 12 mph	20	(%)	SacIAP Weather Data
Calculated Surface Area	90,267	ft^2	(L*H*2 + W*H*2 + L*W)*1.2
Wind Speed	6.8	mph	AERMET Processed SacIAP Wind Data

Table A-28. AP-42 Particle Size Multipliers			
Parameter	**Value**	**Units**	**Reference**
PM_{10} Particle Size Multiplier	0.50	unitless	U.S. EPA Control of Open Fugitive Dust Sources
$PM_{2.5}$ Particle Size Multiplier	0.075	unitless	U.S. EPA Control of Open Fugitive Dust Sources

Equations:

1. $$\mathbf{EF = 1.7\left(\frac{s}{1.5}\right)\left(\frac{365-p}{235}\right)\left(\frac{f}{15}\right)(daily\ lb/acre)}$$

Table A-29. Calculated Emissions						
	EF (daily lb/acre)		**Daily Emissions (lb/day)**		**Annual Emissions (tpy)**	
Description	**PM_{10}**	**$PM_{2.5}$**	**PM_{10}**	**$PM_{2.5}$**	**PM_{10}**	**$PM_{2.5}$**
Biomass Pile Volume	1.54E+00	2.31E-01	3.33	0.48	0.58	0.09
Total			**3.33**	**0.48**	**0.58**	**0.09**

Notes and Acronyms:

Notes

Equation 1 Symbols: s = silt content; p = days per year with 0.01 inches or more rain; f = time wind exceeds 12 mph

Equation 1 Source: AP-42 Section 13.2.4.3, Equation 1

Acronyms

EF	emission factor	mph	miles per hour
ft^2	square foot	PM	particulate matter
ft^3	cubic feet	PM_{10}	PM less than 10 microns in diameter
lb/acre	pounds per acre	$PM_{2.5}$	PM less than 2.5 microns in diameter
lb/hr	pounds per hour	tpy	tons per year
mm	million		

Cooling Tower Emissions Criteria Pollutant Emissions Calculations

Table A-30. Cooling Tower Process Information

Location	Drift Rate (%)	Total Dissolved Solids[1] (ppm)	Flow (GPM)	Flow (mmgal)
Cogen Surface Condenser	0.0005%	10,000	20,000	10,512

Table A-31. Particulate Loading Factors

Description	Value	Units	Source
PM_{10} Fraction of PM	0.35		AP-42, Section 5.1, Table 5.1-2
$PM_{2.5}$ Fraction of PM	0.053		AP-42, Section 5.1, Table 5.1-2
VOC EF	0.70	lbs/mmgal	AP-42, Section 5.1, Table 5.1-2
Density of Water	8.34	lbs/gallon	conversion
Annual Uptime	8670	hrs/yr	

Equations:

1. $EF = TDS \times \eta_{Drift}/100 \times \rho_{H_2O}$

Table A-32. Calculated Emission Factors

Description	Emission Factors (lb/MMGal)			
	VOC	PM	PM_{10}	$PM_{2.5}$
Cogen Surface Condenser	0.70	0.42	0.15	0.02

Table A-33. Calculated Hourly Emissions

Description	Hourly Emissions (lb/hr)			
	VOC	PM	PM_{10}	$PM_{2.5}$
Cogen Surface Condenser	1.20E+00	0.50	0.175	0.027

Table A-34. Annual Emissions

Description	Daily Emissions (lbs/day)			
	VOC	PM	PM_{10}	$PM_{2.5}$
Cogen Surface Condenser	2.88E+01	12.01	4.20	0.64
Total	**2.88E+01**	**12.01**	**4.20**	**0.637**

Table A-35. Annual Emissions

Description	Annual Emissions (tpy)			
	VOC	PM	PM_{10}	$PM_{2.5}$
Cogen Surface Condenser	5.20E+00	2.17	0.76	0.115
Total	**5.20E+00**	**2.17**	**0.76**	**0.115**

Notes and Acronyms:

Notes

Equation 1 Symbols: ηDrift = Drift loss (%); $\rho(H_2O)$ = Density of Water

Equation 1 Source: SCAQMD Alternative PM Emission Factor Method
(http://www.aqmd.gov/docs/default-source/planning/annual-emission-reporting/guidecalcemiscooltowerdec13.pdf)

Acronyms

ppm	parts per million	PM	particulate matter
GPM	grams per minute	PM_{10}	PM less than 10 microns in diameter
mmgal	million gallons	$PM_{2.5}$	PM less than 2.5 microns in diameter
PM	particulate matter	lb/MMGal	pounds per million gallon
lbs/gallon	pounds per gallon	EF	emission factor
hrs/yr	hours per year	WHB	waste heat boiler
VOC	volatile organic compounds	tpy	tons per year

National Carbon Technologies Williams
Surfaces Criteria Pollutant Emissions Calculations

Table A-36. Surfaces Operational Data			
Parameter/Type	**Value**	**Units**	**Data Source/Assumption Justification**
Daily Throughput by Material Stage			
Trucks Travel Distance	20,988	mi/yr	Five mile RT 115*0.5*365
Trucks Weight	40	tons	Domain knowledge
Off-road Miles Traveled	25,000	mi/yr	Estimate
Off-road Weight	5	tons	Estimate
Silt Loading	2	grams/m^2	AP-42 Section 13.2.1, Table 13.2.1-2
PM_{10} Particle Size Multiplier	0.00220	lb/VMT	AP-42 Section 13.2.1, Table 13.2.1-1
$PM_{2.5}$ Particle Size Multiplier	0.00054	lb/VMT	AP-42 Section 13.2.1, Table 13.2.1-1

Equations:

1. $$E = k(sL)^{0.91} \times W^{1.02}$$

Table A-37. Surfaces Calculated Emissions						
	Emission Factor (lb/mi)		**Hourly Emissions[1] (lb/hr)**		**Annual Emissions (tpy)**	
Description	**PM_{10}**	**$PM_{2.5}$**	**PM_{10}**	**$PM_{2.5}$**	**PM_{10}**	**$PM_{2.5}$**
Trucks	1.78E-01	4.37E-02	10.24	2.51	1.87	0.46
Off-road	2.13E-02	5.24E-03	1.46	0.36	0.27	0.07
Total			**11.70**	**2.87**	**2.13**	**0.52**

Notes and Acronyms:

Notes

(1) Hourly emissions assume deliveries are evenly spread out over 12 hours per day.

Formula 1 Source - AP-42 Section 13.2.4.3 Equation 1.

Acronyms

grams/m^2	grams per square meter	PM	particulate matter
lb/hr	pounds per hour	PM_{10}	PM less than 10 microns in diameter
lb/mi	pounds per mile	$PM_{2.5}$	PM less than 2.5 microns in diameter
lb/VMT	pounds per vehicle mile traveled	RT	round trip
mi/yr	mile per year	tpy	tons per year

National Carbon Technologies Williams
Cogeneration Unit Process Gas Emissions Calculations

Table A-48. Biogas TO Combustion Data			
Parameter	**Value**	**Units**	**Source/Justification**
RTO Flow	166,800	lbs/hr	
BACT ROG	2.0	ppm	https://ww2.arb.ca.gov/BACT-Tool
BACT RTO CO	4.0	ppm	https://ww2.arb.ca.gov/BACT-Tool
BACT NOx	2.0	ppm	https://ww2.arb.ca.gov/BACT-Tool
Propane Molecular Weight	44.10	grams/mol	Periodic Table
Carbon Monoxide Molecular Weight	28.01	g/mol	Periodic Table
Nitrogen Dioxide Molecular Weight	46.01	g/mol	Periodic Table
Pound / cuft to miligram/cubic meter	1.60E+07	NA	Conversion Factor
Density	0.04	lbs/cuft	
Air Molecular Weight	28.97	grams/mol	
Biogas Heating Content	130	Btu/ft^3	

Equations:

1. EF (lb/mmcuft) = ppm * MW * 0.0409 * CF (lb/cuft / mg/m3) / 1,000,000

Table A-50 Emission Factors				
	Emission factors in lb/million cuft			
EF Source Description	**CO**	**NOx**	**SO2**	**VOC[1]**
Thermal Oxidizer BACT	0.29	0.23	0.001	0.23

Table A-51 Daily Emissions					
	lb/day				
EF Source Description	**CO**	**NOx**	**SO2**	**VOC**	**CO2**
Thermal Oxidizer BACT	28.63	23.51	0.10	22.54	2,535,134
Thermal Oxidizer BACT (20 hours)	**22.90**	**18.81**	**0.08**	**18.03**	**2,028,107**

Table A-52 Annual Emissions					
	tpy				
EF Source Description	**CO**	**NOx**	**SO2**	**VOC**	**CO2**
Thermal Oxidizer BACT	4.80	3.94	0.02	3.77	424,635

National Carbon Technologies Williams
Cogeneration Unit Process Gas Emissions Calculations

Notes and Acronyms

Notes

(1) VOC emissions calculated as propane

Acronyms

BACT	best available control technologies	lb/MMBtu	pound per million British thermal unit
Btu/ft^3	British thermal unit per cubic foot	lbs/hr	pounds per hour
CO	carbon monoxide	NH_3	ammonia
CO_2	carbon dioxide	ppm	parts per million
EF	emissions factor	SO_2	sulfur dioxide
grams/mol	grams per mol	tpy	tons per year
HAPS	hazardous air pollutants	VOC	volatile organic compounds

National Carbon Technologies Williams
Natural Gas Emergency Generator Emissions Calculations

Table A-38. Emergency Generator Operational Data

Parameter	Value	Units	Source/Justification
Operational Schedule	200	hours/year	Regulatory Limit
Generator Size	750	kW	
Load Percentage	45%		Conservative Estimate
Natural Gas Heading Value	1,200	Btu/ft^3	
kW to MMBtu	293.07	kWh/MMBtu	

Table A-39. AP-42 Emission Factors for Natural Gas Engines

		Emission Factor (lb/MMBtu)						
Description	AP-42 Tbl	CO	NOx	SO_2	VOC	PM_{10}	$PM_{2.5}$	CO_2
Natural Gas 4-Stroke Engine	Table 3.2-2	3.17E-01	8.47E-01	5.88E-04	1.18E-01	9.91E-03	9.91E-03	1.10E+02

Equations:

1. Emissions (lb/hr) = Size (kW) * Load Factor (%) / Conversion Factor (kWh/MMBtu) * Emission Factor (lb/MMBtu)

Table A-40 AP-42 Hourly Emissions from Natural Gas Engines

	Emission Factor (lb/hr)						
Description	CO	NOx	SO_2	VOC	PM_{10}	$PM_{2.5}$	CO_2
Natural Gas Generator	0.37	0.98	0.0007	0.14	0.01	0.01	126.68

Table A-41 Annual Emissions from Natural Gas Engines

	Daily Emissions (lbs/day)[1]						
Description	CO	NOx	SO2	VOC	PM_{10}	$PM_{2.5}$	CO_2
Natural Gas	1.46	3.90	0.00	0.54	0.05	0.05	506.70

Table A-42 Annual Emissions from Natural Gas Engines

	Emissions (tpy)						
Description	CO	NOx	SO2	VOC	PM_{10}	$PM_{2.5}$	CO_2
Natural Gas	0.04	0.10	0.0001	0.01	0.0011	0.0011	12.67

National Carbon Technologies Williams
Natural Gas Emergency Generator Emissions Calculations

Appendix "B1"

Notes and Acronyms:

Notes

(1) Maximum daily run time of generator is conservativly estimated at four hours

Acronyms

Btu/ft^3	British thermal unit per cubic foot	NOx	nitrogen oxide
CO	carbon monoxide	PM_{10}	particulate matter less than 10 microns in diameter
CO_2	carbon dioxide	$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
kW	kilowatt	SO_2	sulfur dioxide
kWh/MMBtu	kilowatt hour per million British thermal unit	VOC	volatile organic compounds

National Carbon Technologies Williams
Cogeneration Unit Natural Gas Startup Emissions Calculations

Table A-43. Combustion Operational Data

Parameter	Value	Units	Source/Justification
WHB Size	95	MMBtu	Darren's LCA
Natural Gas Heating Content	1,200	Btu/ft^3	AP-42 Section 1.4
Natural Gas Density	0.0416	lb/f^3	NA
Cogeneration (SCR)	35%		
Daily Hours	4		
Large Boiler Annual Uptime	192	hpy	Hours per year

Table A-44. AP-42 Emission Factors for Natural Gas Combustion

	Emission Factor ($lb/10^6\ ft^3$)						
Description	**CO**	**NOx**	**SO_2**	**VOC**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
Large Wall-Fired Boilers	84	50	0.6	5.5	7.6	7.6	120,000

Table A-45 AP-42 Emission Factors for Natural Gas Fired Wood Driers

	Emission Factor (lb/MMBtu)						
Description	**CO**	**NOx**	**SO_2**	**VOC**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
Large Wall-Fired Boilers	0.10	0.06	0.00	0.007	0.009	0.009	144

Table A-46 Hourly Emissions

	Emissions (lbs/day)[1]						
Description	**CO**	**NOx**	**SO_2**	**VOC**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
Waste Heat Boiler	13.41	7.98	0.10	0.88	1.21	1.21	19,152.00

Table A-47 Annual Emissions

	Emissions (tons/year)						
Description	**CO**	**NOx**	**SO_2**	**VOC**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
Waste Heat Boiler	1.29	0.77	0.01	0.08	0.12	0.12	1,838.59
Total	**1.29**	**0.77**	**0.01**	**0.08**	**0.12**	**0.12**	**1,838.59**

National Carbon Technologies Williams

Cogeneration Unit Natural Gas Startup Emissions Calculations

Appendix "B1"

Acronyms

Btu/ft^3	British thermal unit per cubic foot	lbs/hr	pounds per hour
CO	carbon monoxide	MMBtu	million British thermal unit
CO_2	carbon dioxide	NOx	nitrogen oxide
hpy	hours per year	PM_{10}	particulate matter less than 10 microns in diameter
lb/f^3	pound per cubic foot	SO_2	sulfur dioxide
lb/MMBtu	pound per million British thermal unit	VOC	volatile organic compounds

Table A-54. Biogas Valves and Fittings Data			
Parameter	**Value**	**Units**	**Source/Justification**
Number of Flanges (> 10,000 ppmv)	6	#	2.5% over 1% VOC
Number of Flanges (< 10,000 ppmv)	230	#	97.5% under 1% VOC
THC Emission Factor (> 10,000 ppmv)	7.5.E-02	lb/hr	CAPCOA/ARB
THC Emission Factor (< 10,000 ppmv)	1.3.E-05	lb/hr	CAPCOA/ARB

Table A-55 ASPEN VOC Speciation Pre-Combustion				
Formula	**Name**	**Cas Number**	**Flow Rate (lb/hr)**	**Percent Total VOC**
C3H8	Propane	74-98-6	356.77	6.10%
CH2O	Formaldehyde	50-00-0	111.00	1.90%
CH4O	Methanol	67-56-1	111.00	1.90%
CH2O2	Formic Acid	64-18-6	388.68	6.65%
C2H4O	Ethylene Oxide	75-21-8	115.20	1.97%
C2H4O2	Glycolaldehyde	107-31-3	337.75	5.77%
C2H6O	Ethanol	64-17-5	1,677.39	28.68%
C3H6O	Acetone	67-64-1	560.33	9.58%
C5H5N	Pyridine	110-86-1	9.23	0.16%
C6H6O	Phenol	108-95-2	1.26	0.02%
C8H14O	Sulcatone	502-49-8	2,180.12	37.28%

Equations:

1. Emissions (lb/hr) = EF (lbs VOC / connector) * Throuput (lb/hr) * VOC Content (%)

Table A-56 Hourly Emissions		
	lb/day	
EF Source Description	**VOC**	**HAPs**
Valves (> 10,000 ppmv)	0.00	0.00
Flanges (> 10,000 ppmv)	10.62	27.07
Flanges (< 10,000 ppmv)	2.99E-03	3.18E-04
Total	**10.62**	**27.07**

Table A-57 Annual Emissions

	tpy	
EF Source Description	**VOC**	**HAPs**
Valves (> 10,000 ppmv)	0.00	0.00
Flanges (> 10,000 ppmv)	1.78	4.53
Flanges (< 10,000 ppmv)	5.01E-04	1.39E-03
Total	**1.78**	**4.54**

Acronyms

HAPs	hazardous air pollutants	THC	Total Hydrocarbon
lb/hr	pounds per hour	tpy	tons per year
ppm	parts per million volume	VOC	volatile organic compounds

PROJECT OPERATIONAL WORKER COMMUTE EMISSIONS

National Carbon Technologies Williams Production Facility Project - Operational Worker Commutes

Colusa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	20.00	1000sqft	0.46	20,000.00	0
Other Non-Asphalt Surfaces	201.59	1000sqft	4.63	201,595.00	0
Other Non-Asphalt Surfaces	41.82	Acre	41.82	1,821,679.20	0
Parking Lot	260.00	Space	2.34	104,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	56
Climate Zone	3			**Operational Year**	2023
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 - Uses account for 20,000 square feet of buildings, tanks, and other structures, 260 parking spaces, 201.595 square feet of hardscape, and 41.82 acres of additional ground disturbance

Construction Phase - No construction this model

Off-road Equipment -

Off-road Equipment - Equipment per Project Proponent

Trips and VMT - Operational Worker Commute model only

Grading -

Vehicle Trips - Worker commutes

Area Coating - Construction Model only

Energy Use - Worker commute Model only

Water And Wastewater - Worker Commute Model only

Solid Waste - Worker Commute Model only

Construction Off-road Equipment Mitigation -

Fleet Mix - Heavy-duty truck emissions calculated separately

Consumer Products - Worker commute model only

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	10000	0
tblAreaCoating	Area_Nonresidential_Interior	30000	0
tblAreaCoating	Area_Parking	127637	0
tblConstructionPhase	NumDays	55.00	0.00
tblConstructionPhase	PhaseEndDate	8/31/2021	6/15/2021
tblConsumerProducts	ROG_EF	2.14E-05	0
tblConsumerProducts	ROG_EF_Degreaser	3.542E-07	0
tblEnergyUse	LightingElect	2.70	0.00
tblEnergyUse	LightingElect	0.35	0.00
tblEnergyUse	NT24E	4.16	0.00
tblEnergyUse	NT24NG	3.84	0.00
tblEnergyUse	T24E	1.96	0.00
tblEnergyUse	T24NG	17.03	0.00
tblFleetMix	HHD	0.07	0.00
tblFleetMix	LDA	0.55	0.62
tblLandUse	LandUseSquareFeet	201,590.00	201,595.00
tblSolidWaste	SolidWasteGenerationRate	24.80	0.00
tblTripsAndVMT	WorkerTripNumber	180.00	0.00
tblVehicleTrips	ST_TR	1.50	10.00
tblVehicleTrips	SU_TR	1.50	10.00
tblVehicleTrips	WD_TR	1.50	10.00
tblWater	IndoorWaterUseRate	4,625,000.00	0.00

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					
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	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					
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**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)
		Highest		

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	4.5000e-004	4.0000e-005	4.8100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.3500e-003	9.3500e-003	2.0000e-005	0.0000	9.9700e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0550	0.1276	0.6599	2.0500e-003	0.2164	1.8700e-003	0.2183	0.0578	1.7500e-003	0.0596	0.0000	185.6360	185.6360	5.7200e-003	0.0000	185.7789
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	**0.0554**	**0.1277**	**0.6648**	**2.0500e-003**	**0.2164**	**1.8900e-003**	**0.2183**	**0.0578**	**1.7700e-003**	**0.0596**	**0.0000**	**185.6453**	**185.6453**	**5.7400e-003**	**0.0000**	**185.7888**

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	4.5000e-004	4.0000e-005	4.8100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.3500e-003	9.3500e-003	2.0000e-005	0.0000	9.9700e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0550	0.1276	0.6599	2.0500e-003	0.2164	1.8700e-003	0.2183	0.0578	1.7500e-003	0.0596	0.0000	185.6360	185.6360	5.7200e-003	0.0000	185.7789
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	**0.0554**	**0.1277**	**0.6648**	**2.0500e-003**	**0.2164**	**1.8900e-003**	**0.2183**	**0.0578**	**1.7700e-003**	**0.0596**	**0.0000**	**185.6453**	**185.6453**	**5.7400e-003**	**0.0000**	**185.7888**

	ROG	NOx	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	Architectural Coating	Architectural Coating	6/16/2021	6/15/2021	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 48.79

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 30,000; Non-Residential Outdoor: 10,000; Striped Parking Area: 127,636 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48

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
Architectural Coating	1	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Architectural Coating - 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					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

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

3.2 Architectural Coating - 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	tons/yr										MT/yr					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

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

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	0.0550	0.1276	0.6599	2.0500e-003	0.2164	1.8700e-003	0.2183	0.0578	1.7500e-003	0.0596	0.0000	185.6360	185.6360	5.7200e-003	0.0000	185.7789
Unmitigated	0.0550	0.1276	0.6599	2.0500e-003	0.2164	1.8700e-003	0.2183	0.0578	1.7500e-003	0.0596	0.0000	185.6360	185.6360	5.7200e-003	0.0000	185.7789

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	200.00	200.00	200.00	583,902	583,902
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	200.00	200.00	200.00	583,902	583,902

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
General Heavy Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	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
General Heavy Industry	0.616533	0.035137	0.184333	0.118970	0.022952	0.006099	0.007374	0.000000	0.000932	0.001485	0.004850	0.000547	0.000787
Other Non-Asphalt Surfaces	0.549541	0.035137	0.184333	0.118970	0.022952	0.006099	0.007374	0.066992	0.000932	0.001485	0.004850	0.000547	0.000787
Parking Lot	0.549541	0.035137	0.184333	0.118970	0.022952	0.006099	0.007374	0.066992	0.000932	0.001485	0.004850	0.000547	0.000787

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					
General Heavy Industry	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
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
Parking Lot	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					
General Heavy Industry	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
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
Parking Lot	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			
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	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			
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	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	4.5000e-004	4.0000e-005	4.8100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.3500e-003	9.3500e-003	2.0000e-005	0.0000	9.9700e-003
Unmitigated	4.5000e-004	4.0000e-005	4.8100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.3500e-003	9.3500e-003	2.0000e-005	0.0000	9.9700e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.5000e-004	4.0000e-005	4.8100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.3500e-003	9.3500e-003	2.0000e-005	0.0000	9.9700e-003
Total	**4.5000e-004**	**4.0000e-005**	**4.8100e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**9.3500e-003**	**9.3500e-003**	**2.0000e-005**	**0.0000**	**9.9700e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.5000e-004	4.0000e-005	4.8100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.3500e-003	9.3500e-003	2.0000e-005	0.0000	9.9700e-003
Total	**4.5000e-004**	**4.0000e-005**	**4.8100e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**9.3500e-003**	**9.3500e-003**	**2.0000e-005**	**0.0000**	**9.9700e-003**

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			
General Heavy Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	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			
General Heavy Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	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			
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	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

PROJECT RENEWABLE ENERGY DISPLACEMENT EMISSIONS

Project Fossil Fuel Displacement

Megawatt Project[1]	Operational Time[2]	Annual Hours of Generation[2]	Annual Kilowatt Hours	Heat Rate[3]	Btu Displaced[4]
10.0 MW	50 Percent	4,380 Hours	43,800,000 Kilowatt Hours	9,313	407,909,400,000

[1] *The Project is anticipated to generate 10 megawatts for export.*

[2] *The Project is assumed to generate electricity 50 percent of the time available (2,190 hours annually).*

[3] *Heat Rate indicates the energy generator efficiency of existing fossil-fuel based energy generators. The heat rate of a power plant measures the amount of fuel used to generate one unit of electricity. Power plants with lower heat rates are more efficient than plants with higher heat rates. The CEC's "Updated Thermal Power Plant Efficiency Measures and Operational Characteristics for Production Cost Modeling" (2019) estimates heat rates and operating ranges for thermal power plants supplying energy to California. The average heat rate of power plants types are as follows:*
***Steam Boiler fueled by coal: 10,800 heat rate. **Steam Boiler fueled by natural gas: 10,200 heat rate. **Gas Turbine: 10,100 heat rate. **Combined natural gas Boiler and Turbine: 7,640 heat rate.*
Omitting steam boilers fueled by coal since so little of California's energy is derived from coal, the average heat rate = 9,313 [(10,100 + 10,200 + 7,640) ÷ 3 = 9,313]

[4] *61,320,000 anuual kilowatt hours x 9,313 average heat rate of existing fossil fuel generators = 571,073,160,000 Btu displaced from fossil fuel production.*
Energy consumption in California is predominately derived from natural gas (34.23%). Coal constitutes 2.96% of all energy-based energy consumption in California. Renewable sources (not including hydroelectric generators) account for 31.70% and nuclear power accounts for 8.98%. 7.34% of the state's energy comes from unspecificed nonrenewable sources and this percentage is added to the natural gas total for the purpose of this analysis. CEC. 2020. "2019 Total System Electric Generation". https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data

237,395,000,000 of the displaced BTU is displaced natural gas consumption and 16,561,121,640 of the displaced BTU is displaced coal.

The heat content of coal is assumed at 24 million Btu per ton of coal burned. At a rate of 24 million Btu per ton of coal burned, the Project would displace 690 tons of burned coal annually.

Fossil Fuel Emissions Displacement by Project[5]

Emissions from Natural Gas Generation

169,567,937,580 Displaced Btu

Tons Annually (Metric Tons for GHGs)

NOx	CO	PM10	PM2.5	SO2	CO2	CH4	N2O
419680.65	127175.95	398484.65	161089.54	288265.49	7,460,989,253.52		

Emissions from Coal Generation

493 Displaced tons of burned coal

Tons Annually (Metric Tons for GHGs)

NOx	CO	PM10	PM2.5	SO2	CO2	CH4	N2O	
2.96	0.12	0.02	0.01	0.14	1,190.82	0.01	0.01	1,193

Total Emssions Displaced - Tons Annually (Metric Tons for GHGs)

NOx	CO	PM10	PM2.5	SO2	CO2	CH4	N2O	
419683.60	127176.08	398484.67	161089.56	288265.63	7460990444.34	0.01	0.01	7,460,990,446

Emissions Over 30 years (Metric Tons)

Emissions from Natural Gas Generation

NOx	CO	PM10	PM2.5	SO2	CO2	CH4	N2O
12590419.37	3815278.60	11954539.6	4832686.22	8647964.82	223,829,677,606	0.00	0.00

Emissions from Coal Generation

NOx	CO	PM10	PM2.5	SO2	CO2	CH4	N2O	
88.72	3.70	0.62	0.44	4.21	35,725	0.24	0.18	35,783

Total Emissions Displaced Over 30 Years (Metric Tons)

NOx	CO	PM10	PM2.5	SO2	CO2	CH4	N2O	
12590508.09	3815282.29	11954540.22	4832686.66	8647969.03	223829713330.31	0.24	0.18	223,829,713,389

[5] *Source: Displaced emissions calculated by ECORP Consulting using U.S. EPA's AP-42 Fifth Edition Compilation of Air Emissions Factors 1995; 2015.*

PROJECT OPEN BURNING DISPLACEMENT EMISSIONS

Open Burning Operational Assumption

Description	Value	Units	Source
Tons Biomass per Year	750,000	tpy	Project Description
Days per Year Operation	335	dpy	Project Description
Tons Biomass per Day	2,239	tpd	Project Description
Biomass Burn Percentage	60%	NA	Engineering Estimate

CARB Emission Factors for Orchard Burning[1]

	Emission Factors (lb/ton)						
Refuse Category	**PM10**	**$PM_{2.5}$**	**NOx**	**SO2**	**VOC**	**CO**	**CO_2[2]**
Unspecified	**7.8**	**7.3**	**5.2**	**0.1**	**6.3**	**66.0**	**3,180**

Calculated Daily Open Burning Emissions

	Daily Emissions (lb/day)						
Emissions (Unspecified)	**PM10**	**$PM_{2.5}$**	**NOx**	**SO2**	**VOC**	**CO**	**CO_2**
Unspecified	10,478	9,806	6,985	134.3	8,463	88,657	4,272,115

Calculated Annual Open Burning Emissions

	Annual Emissions (tpy)						
Emissions (Unspecified)	**PM10**	**$PM_{2.5}$**	**NOx**	**SO2**	**VOC**	**CO**	**CO_2**
Unspecified	1,755.0	1,642.5	1,170.0	22.5	1,417.5	14,850.0	715,579

Notes:

(1) CARB - Waste Burning Emission Factors

(2) CARB MRR CO2 emission rate for "Wood and Wood Residuals" is 10,000 MT per 6,932 short ton material

Appendix "B2"

Health Risk Assessment

California Renewable Carbon Williams Facility Project

Colusa County, California

Prepared For:

California Renewable Carbon, LLC (CRC)

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ECORP Consulting, Inc.
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CONTENTS

1 INTRODUCTION 1
1.1 Project Overview 1
1.2 Project Location and Background 2
1.3 Project Components 2
1.3.1 Biomass Receiving and Sizing 4
1.3.2 Biomass Drying 5
1.3.3 Thermal Conversion 6
1.3.4 Pelletizing 6
1.3.5 Pellet Finishing and Shipping 7
1.3.6 Cogeneration 7
1.3.7 Chemical Storage 8
1.3.8 Administrative Buildings 8
1.3.9 Rail Spur Improvements 8
1.4 Project Construction 9
1.5 Post-Construction Operations 9
1.5.1 Source of Renewable Feedstock 9
1.5.2 Truck Trips 9
1.5.3 Rail Cars per Week 10
1.5.4 Employees 10
1.5.5 Mobile Onsite Equipment 10
1.5.6 Facility Lighting 10
2 Setting 11
2.1 Environmental Setting 11
2.1.1 Topography and Meteorology 11
2.1.2 Toxic Air Contaminants 11
2.1.3 Sensitive Receptors 15
2.2 Regulatory Setting 15
2.2.1 Federal - Clean Air Act 15
2.2.2 State - California Air Resources Board 16
2.2.3 Local – Colusa County Air Pollution Control District 17
3 Impact Analysis 17
3.1 Thresholds of Significance 17

3.2 Methodology 18
3.3 Emissions Estimation 19
3.4 Health Risk Estimation 20
3.5 Carcinogenic Risk 22
3.6 Non-Carcinogenic Risk 23
4 Refferences 24

LIST OF TABLES

Table 1. Cancer Risk Summary at Maximumly Exposed Receptors (Residence to West) 22
Table 2. Non-Carcinogenic Health Risk Summary at Maximumly Exposed Receptors (Residence to West) 23

APPENDICES

Appendix A - Figures
Appendix B - Emissions Calculations
Appendix C – AERMOD and HARP2 Model Inputs and Outputs

LIST OF ACRONYMS AND ABBREVIATIONS

ASF	Age Sensitivity Factor
ATCM	Airborne Toxics Control Measure
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCAPCD	Colusa County Air Pollution Control District
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
County	Colusa County
DPM	Diesel particulate matter
EMFAC	Emission Factor Model
ESP	Electrostatic Precipitator
EV	Electric Vehicle
FAH	Fraction of Time at Home
GLCs	Ground Level Concentrations
HAP	Hazardous Air Pollutant
HRSG	Heat Recovery Steam Generator
I-5	Interstate 5
Kv	Kilovolt
lbs	Pounds
MCC	Motor Control Center
MEIR	Maximumly Exposed Individual Resident
MEIW	Maximumly Exposed Individual Worker
MSAT	Mobile Source Air Toxic
MW	Megawatt
M-2	Heavy Industrial
NAAQS	National Ambient Air Quality Standards
NSVAB	Northern Sacramento Valley Air Basin
OEHHA	Office of Environmental Health Hazard Assessment
PG&E	Pacific Gas and Electric
$PM_{2.5}$	Particulate Matter under 2.5 microns
PM_{10}	Particulate Matter under 10 microns
ppm	Parts per million
Project	National Carbon Technologies Williams Facility Project
REL	Reference Exposure Level
ROGs	Reactive Organic Gases
SCAQMD	South Coast Air Quality Management District
SCR	Selective Catalytic Reduction
SF	Square Foot
TACs	Toxic Air Contaminants
T-BACT	Toxics Best Available Control Technology
UPRR	Union Pacific Railroad
USEPA	U.S. Environmental Protection Agency

1 INTRODUCTION

This report evaluates the potential health risks associated with operations of the California Renewable Carbon (CRC) Williams Biomass Processing Project (Project). The Project is located in Colusa County (County), California. The purpose of this Health Risk Assessment (HRA) is to evaluate potential health risks associated with process emissions from the facility that would include the toxic air contaminants (TACs), formaldehyde, ammonia, and methanol as well as diesel particulate matter (DPM) generated by vehicular traffic exiting and entering Interstate 5 (I-5), local roadways and at the Project site and onsite off-road equipment. This HRA was prepared in accordance with the requirements of the Office of Environmental Health Hazard Assessment (OEHHA) to determine if health risks are likely to occur to existing sensitive receptors in the Proposed Project vicinity. Technical data is included as Appendix A, B, and C.

CRC is a leader in environmental technology with more than 185 issued and pending patents around processes and products engineered to improve the environment. CRC proposes to repurpose an existing facility in Colusa County to construct a new renewable biocarbon production facility. The new facility will use CRC's patented non combustion technology to convert sustainably sourced biomass into renewable biocarbon products. The new facility will use self-generated renewable biogas for process energy as well as generate and export renewable electricity to the grid. The new biocarbon process will be net water positive and carbon negative on a lifecycle basis. The facility also will significantly reduce regional air emissions by thousands of tons per year by converting locally sourced biomass such as orchard rotations and trimmings, that otherwise undergo open burning or land disposal, into renewable biocarbon products. CRC's products will be used to displace fossil-based products and reduce environmental impacts from metals production, energy generation, and crop production, and to purify the air and water. CRC will create more than 65 direct clean-tech jobs working toward environmental improvement.

1.1 Project Overview

CRC proposes to install and operate a biocarbon production facility using renewable biomass at 6229 Myers Road in Williams, CA (CRC Williams facility). The purpose of the Project is to use renewable biomass, primarily in the form of orchard rotations and trimmings, to produce a biocarbon product using a net water positive, non-combustion process involving thermal conversion of biomass. The proposed facility would produce up to 250,000 gross tons of renewable biocarbon per year and includes biomass dryers, process heaters, pelletizers, and a heat recovery/cogeneration unit. The process would use self-generated biogas for process energy and would provide up to 10 megawatts (MW) of net electric power (17 MW gross) for export sale to Pacific Gas and Electric (PG&E) through interconnection to either a PG&E 12 kilovolt (kV) distribution line or PG&E's Wadham 60 kV power line to PG&E's Williams Generating Station. The Project would also include improvements to, and extension of, an existing rail spur system on the property which interconnects with the Union Pacific Railroad (UPRR) tracks adjacent to the property.

The Project objectives include the following:

- Produce high performing and highly sustainable biocarbon products that can be utilized in the global market to reduce environmental impacts from metals production, energy generation, and crop production, and to purify air and water;

- Reduce local and global air pollutants, including greenhouse gas emissions, by converting renewable biomass, that otherwise would undergo uncontrolled open burning or disposal at a landfill, into biocarbon products; and

- Utilize self-generated biogas for process energy and to export renewable electricity to the grid.

1.2 Project Location and Background

The Project Site is located at 6229 Myers Road in unincorporated Colusa County, approximately 1.4 miles south of the City of Williams (see Figure 1) at the northeast corner of the intersection of Myers Road and Frontage Road. The 49.2-acre site currently accommodates the existing Olam Tomato Processing facility recently in operation, comprising approximately 161,000 square feet of existing structures and infrastructure including existing buildings, an existing rail spur, and two existing water wells. The site is adjacent to the Wadham Energy Company facility just north of the Project Site with agricultural lands north of the Wadham facility, and agricultural land and residences to the east and south. The Union Pacific Railroad (UPRR) tracks and Frontage Road run west of the site, with Interstate-5 (I-5) further west. Orchard land with a single-family residence on a parcel zoned for Heavy Industrial (M-2) is located between Frontage Road and I-5 approximately 150 feet from the western boundary of the site. The site is located approximately 1,000 feet (0.3 mile) from I-5.

1.3 Project Components

The process at the CRC Williams facility would involve the following components discussed in more detail below:

- Biomass (i.e., feedstock) receiving and sizing;

- Biomass drying;

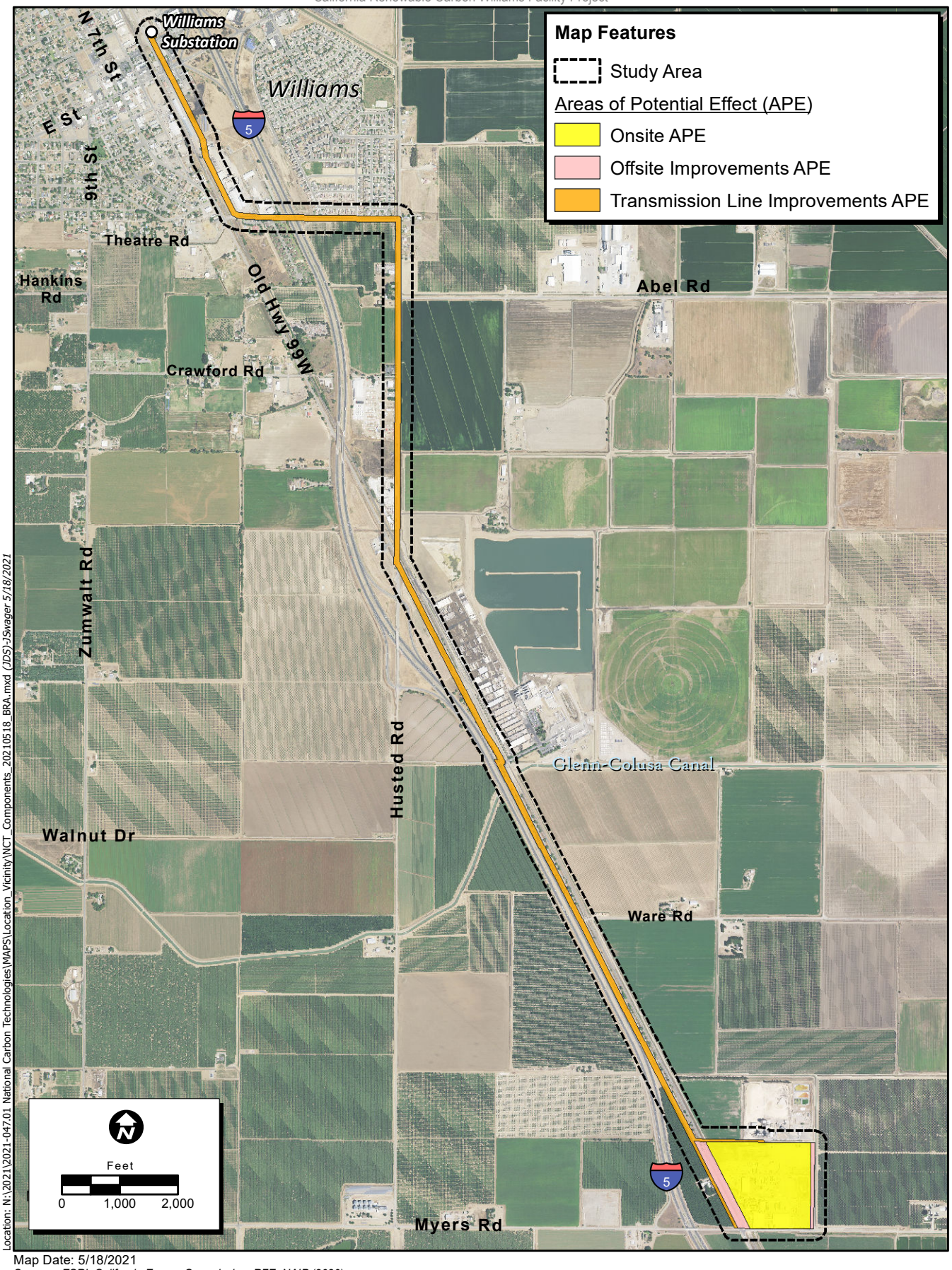
- Non-combustion thermal conversion;

- Pelletizing;

- Pellet finishing and shipping; and

- Cogeneration.

Appendix "B2"



Location: N:\2021\2021-047.01 National Carbon Technologies\MAPS\Location_Vicinity\NCT_Components_20210518_BRA.mxd (JDS)-JSwager 5/18/2021

Map Date: 5/18/2021
Sources: ESRI, California Energy Commission, RFE, NAIP (2020)

Figure 1. Project Location and Vicinity

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1.3.1 Biomass Receiving and Sizing

The biomass receiving and sizing work would be located in the northern section of the property which is largely undeveloped. Biomass feedstock for the CRC Williams facility would be delivered to the facility via heavy trucks traveling eastbound on Myers Road from the Frontage Road to the shared paved access driveway with the Wadham Energy facility. Trucks would travel to the northeast corner of the property where they would enter the facility. New double-lane paved roads would be added at the north property boundary for the truck entrance/exit, a truck loop, and a truck loadout turnaround to and from the truck dump area (where biomass would be unloaded from trucks using a hydraulic truck dump into a receiving unit). A second smaller area has also been designated for trucks equipped with walking floors to unload biomass.

Upon entry to the facility, trucks would first travel to a Truck Scale/Guard House. Then trucks would drive to two Hydraulic Truck Dumps where trucks would be unloaded into two receiving units. Biomass would be fed onto conveyor belts from the receiving unit and transported via the conveyor belts to a new Screening and Sizing Structure. In this structure, biomass material would be scalped (if necessary), screened, hammer-milled to further reduce size, and processed to remove adhered soil. A baghouse on the Screen and Sizing Structure would control dust emissions. Material from the Screening and Sizing Structure would then travel via conveyor belts to the Raw Material Storage area and would be stockpiled using a radial stacker. Fines removed during sizing would be transferred to a three-sided concrete structure and used as an agriculture soil amendment co-product.

The Raw Material Storage Area would consist of an existing large concrete slab adjacent to the existing product storage building. This area would have an 8-foot high push wall containment along both the eastern and southern boundaries of the stockpile. Sized biomass would then be transferred from the stockpiles using a front-end loader to a reclaimer where material would be loaded into biomass dryer feeder bins for the biomass drying process described below. Approximately 47 belt conveyors powered by electric motors would be used in this step of the process. Also, a new 874-square foot (sf) MCC Building would be constructed in this area.

In summary, the Biomass Receiving and Sizing area would contain the following equipment and stockpile areas:

- One Truck Scale House/Guard Shack (converted from existing produce grading building)
- Two Hydraulic Truck Dumps (Lines 1 and 2)
- An unloading area for trucks with walking floors to unload biomass
- Screen and Sizing Structure
    - Scalping (i.e., Hog)
    - Screen
    - Hammermill
    - Fines removal
- Transfer of material from Screen and Sizing Structure to Raw Material Storage Area using a Radial Stacker
- Raw Material Storage Area

  - Material stockpiled and contained in an area with 8-foot push walls along the eastern and southern boundary of the stockpile area
  - A front-end loader would move material from stockpiles to a reclaimer
  - Conveyor to Biomass Dryer Feed Bins (Lines 1 and 2)
- Biomass Receiving and Drying Air Receiver (in support of the biomass receiving and biomass drying processes)
  - Air Compressor
  - Instrument Air Dryer
- New MCC Building

1.3.2 Biomass Drying

The Biomass Drying step represents the beginning of the core process; the process would occur in two identical production lines, Line 1 and Line 2. There are no buildings in this area and all equipment in this area would be located outdoors on existing concrete pads.

In summary, the Biomass Drying area would contain the following equipment and equipment would be located outdoors:

- Dryer Infeed Belts from Biomass Dryer Feed Bins to Dryer Infeed Airlocks (Lines 1 and 2)
- Biomass Dryers (Lines 1 and 2) (i.e., Rotary Dryers)
  - Powered by ambient air that is heated through heat exchangers in the cogeneration and process heater systems with natural gas used during startup or after shutdowns.
- Dryer Screw Conveyors
- Dryer Product Storage Bins
- Process Heater

1.3.3 Thermal Conversion

In the Thermal Conversion area, the dried biomass undergoes non-combustion thermal conversion creating a carbon substrate. This process would be located outside and north of the existing can warehouse building.

In summary, the Thermal Conversion area would contain the following equipment:

- Airlock Feeder Screw Conveyors (three per Lines 1 and 2)
- Process Heaters

  - Material to Pellet Mill Mixer (one per Lines 1 and 2)

1.3.4 Pelletizing

In this area, moist carbon substrate is fed through mixers and pellet mills to achieve the target bulk density. Cooled carbon substrate would be fed onto four parallel belt conveyors that feed into four storage bins; two for each production line. Material from these bins would then be added to pellet mixers inside the existing warehouse building that would be converted to a Pelletizing Building.

From the pellet mixers, carbon substrate would be fed to a total of three pellet mills per production line. The pellet mills would take the prepared carbon substrate and compress the material to form biocarbon pellets at the desired bulk density. One baghouse would be utilized for the pellet mills to minimize the amount of carbon dust emitted into the area. Baghouse exhaust would vent to the atmosphere from the Pelletizing Building. Carbon dust collected in the baghouse would be returned to the carbon bins for reintroduction into the process.

Pellets would be conveyed from the pellet mills onto conveyors and rotary drums where ambient air or liquid would be utilized as the cooling medium. The discharge from each production line's pellet coolerr would travel on a belt conveyor equipped with an ambient air fan to dry the pellets. The pellets would travel through belt conveyors to the Finished Pellet Storage Buildings (described below).

In summary, the Pelletizing area would contain the following equipment:

- Carbon Bins (two per Lines 1 and 2)
- Pellet Mixer Accumulation Conveyors (one per Lines 1 and 2)
- Pellet Mill Mixer (one per Lines 1 and 2)
- Hopper (one per Lines 1 and 2)
- Feeder (one per Lines 1 and 2)
- Pellet Mills (three per Lines 1 and 2)
- Pellet Coolers (one per Lines 1 and 2)
    - Pellet Cooler Drying Fan (one per Lines 1 and 2)

Water recovered from the biomass dryer would be used in this step of the process for utility stations and equipment washdown.

1.3.5 Pellet Finishing and Shipping

This work area includes a series of long conveyors from the Pelletizing Building to the existing retail building and north warehouse building that would be converted to Finished Pellet Storage Buildings. The conveyor from the existing retail building to the existing north warehouse building would pass over the rail spur before entering the building. Here the pelletized product would be stored before being loaded into rail cars for transport to the export facility. All product transport would be by rail during normal operations. Trucks would only be used if rail is out of service or due to other extraordinary circumstances. Eight rail cars would be loaded in the course of a normal day's operation.

Pellets would enter the Finished Pellet Storage Buildings through a common chute in the roof of the building and would fall to the floor at various points in the warehouse through the use of a tripper conveyor. From there, an operator would convey the pellets into storage piles within the building. Each warehouse would have capability of storing up to 3.5 days of pellets.

Under normal operations, an operator utilizing a front-end loader and reclaim system would transfer pellets to rail cars in the Rail Car Loadout area. A baghouse on each of the Finished Pellet Storage Buildings would control dust emissions from transfer of material to the Rail Car Loadout. Loadout weight of the pellets would either be measured utilizing belt scales on the loadout conveyors, or through the use of rail car volume scanners.

In summary, the Pellet Finishing and Shipping area would contain the following equipment:

- Conveyors from Pelletizing Building to two Finished Storage Buildings
- Finished Pellet Storage Buildings (containing finished pellet storage piles) (converted from the existing retail building and north warehouse)
- Rail Car Loadout at the rail spur
- Pelletizing Area Air Receiver
    - Air Compressor
    - Instrument Air Dryer

1.3.6 Cogeneration

The process utilized by CRC would generate an excess of biogas which can be utilized for power generation in a cogeneration system. The cleaned biogas from the CRU systems would be sent to a Heat

Recovery System comprised of a combustion chamber and heat recovery steam generator (HRSG) for the production of steam. Steam from the HRSG would be sent to a turbine generator and surface condenser for the production of electrical power for utilization within the facility, as well as for export sale to the grid.

A selective catalytic reduction (SCR) unit and electrostatic precipitator (ESP) would be used for environmental control of emission products. The cogeneration system would also comprise a cooling tower and a boiler feedwater system.

In summary, the Cogeneration System would contain the following equipment:

- Combustion Chamber and HRSG to SCR and ESP and Stack
  - Combustion Air Fan
  - Fuel Gas Booster Fan
- Turbine Generator
  - Powered by steam from the HRSG
- Cooling Tower
- Recovery of condensate and boiler feedwater

1.3.7 Chemical Storage

A new 18,000-gallon storage tank for 19.5 percent aqueous ammonia would be constructed onsite for use in the SCR. Additives for amines, phosphate, and an oxygen (O_2) scavenger as boiler feedwater additives would all be stored in totes with meters.

1.3.8 Administrative Buildings

The following existing buildings would be converted to administrative buildings for the facility where their existing use would continue: the main office, a guard shack for the employee entrance, another administrative building near the employee entrance labeled the HR Building, the mechanics shop/parts room to the west of the new Finished Pellet Storage Building, and the processing room connected to the main office that would continue to be utilized for maintenance and parts storage.

1.3.9 Rail Spur Improvements

The Project would involve improvements to, and extension of, an existing rail spur system on the property that interconnects to the UPRR tracks that run adjacent to the Project Site and along I-5. Improvements to the existing rail spur may involve improvements to the rail spur track (i.e., new ballast, ties, rail), signal improvements, and/or improvements to utility lines along the rail spur (electrical lines, fiber optic lines, etc.). Extension of the rail spur is also proposed along the western boundary of the CRC Williams facility property. New track, signal facilities, and utility lines would be installed in this area in support of the rail spur. Finally, a new rail spur loadout area would be constructed for the Project.

Improvements to the UPRR tracks may be required by UPRR, including potentially new ballast, ties, rail, and/or signal or utility line improvements on or near the UPRR tracks. All improvements to the existing rail spur system would be coordinated with UPRR. Any improvements within the UPRR right-of-way would be

subject to UPRR review and approval. No new public crossings of the UPRR tracks or right-of-way are proposed.

1.4 Project Construction

Construction at the CRC Williams facility, including offsite improvements required for the interconnection to PG&E's electrical system and any improvements to the interconnection to the UPRR tracks, is expected to take 14 months to complete using approximately 42 construction workers. Construction is targeted to start in 2022 with startup in 2023.

Olam is currently removing processing equipment that would not be retained. CRC would refurbish the remainder of the structures for use by CRC. Minor demolition (e.g., of existing concrete pads, pipe racks etc.) may be required to construct the CRC Williams facility.

1.5 Post-Construction Operations

1.5.1 Source of Renewable Feedstock

The CRC Williams facility can process up to 763,000 gross wet tons of renewable biomass (feedstock) per year. The source locations for renewable feedstock would primarily comprise orchards in the region, and primarily within Colusa County. Material would consist of trimmings and/or full pull outs from orchard rotations primarily from walnut and almond orchards. Source material would either be collected at individual locations or satellite collection locations depending upon individual agreements with growers.

Feedstock is expected to be chipped in the field and would likely include trimmings, large limbs, trunks, and root balls. CRC is working with local chipping companies that provide these services to the farms in the area. Trimmings received are expected to be between 1.5-inches to 6-inches in diameter. Feedstock moisture content is assumed to be 26 percent.

Feedstock would be untreated and would not be imported from outside of the State of California. Transport of feedstock would comply with the pest management and pest exclusion requirements of the County Pest Management and Pest Exclusion Programs and the California Department of Food and Agriculture Plant Health and Pest Prevention Services Division Programs.

1.5.2 Truck Trips

Approximately 125 heavy truck trips per day would deliver renewable feedstock to the CRC Williams facility. Source locations for the renewable feedstock are expected to be primarily within 75 miles of the CRC Williams facility. Heavy trucks would utilize local area roadways to access Interstate-5 (I-5), to travel either north or south along I-5 to the CRC Williams facility. Heavy trucks would either utilize the I-5/Husted Road interchange to then travel southbound on the two-lane Frontage Road to the facility or utilize the I-5/Hahn Road interchange to travel northbound on the two-lane Frontage Road to the facility. Some truck trips could occur on eastbound and westbound Myers Road as well. Average truck trips are estimated to be 40 miles on average, with a standard range of 20 to 80 miles.

1.5.3 Rail Cars per Week

Approximately 50 rail cars per week (i.e., UPRR fully enclosed boxcars or intermodal equipment) would be employed to transport biocarbon product in bulk rail cars on UPRR tracks to one or more major ports in California and/or Oregon for ultimate transport of the biocarbon product via Handymax class ocean vessels (ships). According to UPRR's gross weight maps, the tracks adjacent to the Project site have the capacity to support heavy axle rail cars carrying 315,000 pounds (lbs) (157.5 tons) each for transport to major Ports such as Portland, Oregon, or the Ports of West Sacramento, Oakland, or Richmond in California.

Genessee & Wyoming, Inc. leases or owns the following locally managed freight railroads (i.e., short line railroads) that then lease the UPRR tracks in the region: California Northern Railroad Company CFNR #36 and California Oregon & Pacific Railroad, Inc. CORP #157. California Northern Railroad operates the freight service on the portion of track adjacent to the Project. Other freight services could be utilized depending upon the destination port.

Rail cars would be loaded at the proposed rail car loadout area. A new electric switching locomotive would be utilized on the property to move cars along the rail spur system.

In the event that product occasionally cannot be shipped via rail, product would be shipped by heavy truck via I-5.

1.5.4 Employees

On weekdays (Monday through Friday), a maximum of 50 employees would be present onsite, comprising 10 employees each for four shifts, and 10 administrative staff. On weekends (Saturdays and Sundays), a maximum of 40 employees would be onsite. Operations are proposed on a 24 hour, 7 day a week basis with anticipated 90 percent up time.

1.5.5 Mobile Onsite Equipment

Mobile onsite equipment would include three to four diesel front-end loaders as well as electric forklifts. Tier 4 engines will be used for all diesel equipment.

1.5.6 Facility Lighting

The minimal amount of lighting would be employed for security and safety purposes for the facility. Existing site and building lighting (halide) would be reused where applicable. New LED lighting is proposed to be installed to provide site lighting along the process where required; egress and process area lighting would be installed in the new structures and outdoor process areas.

2 SETTING

2.1 Environmental Setting

2.1.1 Topography and Meteorology

The California Air Resources Board (CARB) divides the state into air basins that share similar meteorological and topographical features. Colusa County lies in the NSVAB, which includes Sutter, Yuba, Colusa, Butte, Glenn, Tehama, and Shasta counties. The NSVAB is bounded on the north and west by the Coastal Mountain Range and on the east by the southern end of the Cascade Mountain Range and the northern end of the Sierra Nevada. These mountain ranges reach heights in excess of 6,000 feet above mean sea level, with individual peaks rising much higher. The mountains form a substantial physical barrier to locally created pollution as well as to pollution transported northward on prevailing winds from the Sacramento metropolitan area.

The environmental conditions of Colusa County are conducive to potentially adverse air quality conditions. The basin area traps pollutants between two mountain ranges to the east and the west. This problem is exacerbated by a temperature inversion layer that traps air at lower levels below an overlying layer of warmer air. Prevailing winds in the area are generally from the south and southwest. Sea breezes flow over the San Francisco Bay Area and into the Sacramento Valley, transporting pollutants from the large urban areas.

2.1.2 Toxic Air Contaminants

Toxic Air Contaminants (TACs) are airborne substances that are capable of causing short-term (acute) and/or long-term (chronic or carcinogenic, i.e., cancer causing) adverse human health effects (i.e., injury or illness). TACs include both organic and inorganic chemical substances. They may be emitted from a variety of common sources including gasoline stations, automobiles, dry cleaners, industrial operations, and painting operations. The current California list of TACs includes approximately 200 compounds.

Hazardous Air Pollutants (HAPs) is a term used by the federal Clean Air Act (CAA) that includes a variety of pollutants generated or emitted by industrial production activities. HAPs are identified as TACs under the California CAA and 10 have been singled out through ambient air quality data as being the most substantial health risk in California. Direct exposure to these pollutants has been shown to cause cancer, birth defects, damage to the brain and nervous system, and respiratory disorders. CARB provides emission inventories for only the larger air basins.

TACs do not have ambient air quality standards because safe levels of TACs cannot be determined. Instead, TAC impacts are evaluated by calculating the health risks associated with a given exposure. The requirements of the Air Toxic "Hot Spots" Information and Assessment Act (Assembly Bill [AB] 2588) apply to facilities that use, produce, or emit toxic chemicals. Facilities subject to the toxic emission inventory requirements of the act must prepare and submit toxic emission inventory plans and reports, and periodically update those reports.

Toxic contaminants often result from fuel storage and transfer activities and from leaking valves and pipes. For example, the electronics industry, including semiconductor manufacturing, uses highly toxic chlorinated solvents in semiconductor production processes. Sources of air toxics go beyond industry, however. Automobile exhaust also contains TACs.

Diesel Particulate Matter

Diesel particulate matter (DPM) is emitted from both mobile and stationary sources. In California, on-road diesel-fueled engines contribute approximately 24 percent of the statewide total, with an additional 71 percent attributed to other mobile sources such as construction and mining equipment, agricultural equipment, and transport refrigeration units. Stationary sources contribute about five percent of total DPM. It should be noted that CARB has developed several plans and programs to reduce diesel emissions such as the Diesel Risk Reduction Plan, the Statewide Portable Equipment Registration Program, and the Diesel Off-Road Reporting System.

Diesel exhaust and many individual substances contained in it (including arsenic, benzene, formaldehyde, and nickel) have the potential to contribute to mutations in cells that can lead to cancer. Long-term exposure to diesel exhaust particles poses the highest cancer risk of any TAC evaluated by OEHHA. CARB estimates that about 70 percent of the cancer risk that the average Californian faces from breathing toxic air pollutants stems from diesel exhaust particles.

In its comprehensive assessment of diesel exhaust, OEHHA analyzed more than 30 studies of people who worked around diesel equipment, including truck drivers, railroad workers, and equipment operators. The studies showed these workers were more likely to develop lung cancer than workers who were not exposed to diesel emissions. These studies provide strong evidence that long-term occupational exposure to diesel exhaust increases the risk of lung cancer. Using information from OEHHA's assessment, CARB estimates that diesel particle levels measured in California's air in the year 2000 could cause 540 "excess" cancers in a population of one million people over a 70-year lifetime. Other researchers and scientific organizations, including the National Institute for Occupational Safety and Health, have calculated cancer risks from diesel exhaust similar to those developed by OEHHA and CARB.

Exposure to diesel exhaust can have immediate health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs, and it can cause coughs, headaches, lightheadedness, and nausea. In studies with human volunteers, diesel exhaust particles made people with allergies more susceptible to the materials to which they are allergic, such as dust and pollen. Exposure to diesel exhaust also causes inflammation in the lungs, which may aggravate chronic respiratory symptoms and increase the frequency or intensity of asthma attacks.

Diesel engines are a major source of fine particulate pollution. The elderly and people with emphysema, asthma, and chronic heart and lung disease are especially sensitive to fine-particulate pollution. Numerous studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems. Because children's lungs and respiratory systems are still developing, they are also more susceptible than healthy adults to fine particles. Exposure to fine particles is associated with increased

frequency of childhood illnesses and can also reduce lung function in children. In California, diesel exhaust particles have been identified as a carcinogen.

Formaldehyde

Formaldehyde is both directly emitted into the atmosphere and formed in the atmosphere as a result of photochemical oxidation. Formaldehyde is a product of incomplete combustion, and one of the primary sources of formaldehyde is vehicular exhaust. Formaldehyde can also be found in many consumer products as an antimicrobial agent and is used in fumigants and soil disinfectants.

Acute formaldehyde inhalation exposure can result in eye, nose, and throat irritation and effects on the nasal cavity. Other effects seen from exposure to high levels of formaldehyde in humans are coughing, wheezing, chest pains, and bronchitis. Chronic inhalation exposure to formaldehyde has been associated with respiratory symptoms and eye, nose, and throat irritation. In California, formaldehyde has been identified as a carcinogen, and occupational studies have shown associations between exposure to formaldehyde and increased incidence of lung and nasopharyngeal cancer.

Ammonia

This colorless, pungent gas is composed of nitrogen and hydrogen. Ammonia serves as a starting material for the production of many commercially important nitrogen compounds. Ammonia (NH_3) is found throughout the environment in the air, soil, and water, and in plants and animals (including humans). Common uses include fertilizer, explosives production, household cleaning solutions, fermentation (nitrogen source), refrigerant, fuel, antimicrobial agent for animal feed and beef products, and is a common component in tobacco smoke.

Ammonia is a corrosive substance with the main toxic effects being restricted to the sites of direct contact causing irritation or damage to skin, eyes, mouth, respiratory and digestive systems. High levels of ammonia inhalation can cause damage to the lungs, severe burning of eyes, skin or throat, leading to permanent blindness, lung disease, or death. Ammonia has not yet been classified for carcinogenic effects by the USEPA.

Methanol

In the natural environment, methanol can be found in vegetation, microbes, and volcanic gases. Being the simplest alcohol, methanol (CH_3OH) is a light, volatile, colorless, and flammable liquid used in industrial solvents, automotive antifreeze, and in the manufacturing of various pharmaceutical drugs, vitamins, and supplements. Because CH_3OH is a biproduct formed during the biological decomposition of biological wastes, sewage, and sludge, the global interest in its various alternative fuel uses has risen. This has led to new technological advances in sequestering and converting this renewable fuel source to convert into useable energy.

Although useful in many ways, the health effects associated with CH_3OH exposure can lead to temporary or even permanent physical damage. Acute exposure by inhalation or ingestion may result in headaches or nausea, blurred vision, and neurological damage, specifically permanent motor dysfunction. The USEPA

lists methanol as noncarcinogenic, with a medium confidence on the current information, or lack of data, regarding reproductive, developmental, or carcinogenic effects on humans. However, birth and developmental defects have been observed in the offspring of rats and mice exposed through inhalation. Chronic exposure to humans through inhalation or ingestion may result in headaches, insomnia, gastric disturbances, visual disturbances and blindness.

Phenol

Phenolic compounds, also known as carbolic acid (C_6H_5OH) are among the chemicals of major concern in regard to human and aquatic life due to their tendencies to persist in water for long periods of time. Naturally occurring phenolic compounds are a biproduct of the decomposition of organic material found in bodies of water. Other sources of phenolic compounds are derived from industrial, agricultural, and domestic waste runoff entering streams, rivers and oceans. The USEPA has listed these chemicals as pollutants of priority concern. The primary use of phenol is in the production of phenolic resins used in plywood, and in the construction, automotive, and appliances industries; as well as consumer products such as mouthwash, throat lozenges, analgesic rubs, lotions, and tobacco.

Short-term exposure of C_6H_5OH through inhalation or dermal contact can cause irritation to the skin, eyes, and mucous membranes. Symptoms of acute toxicity include irregular breathing, muscle weakness and tremors, loss of coordination, convulsions, coma induction, and respiratory arrest at lethal doses. Chronic effects of this noncancerous substance can lead to anorexia, diarrhea, and blood and liver damage. Cardiac arrhythmias have been reported in humans exposed to high concentrations of phenolic compounds.

Formic Acid

Being the simplest carboxylic acid (containing only a single carbon molecule), formic acid (CH_2O_2 or HCOOH) is found naturally in various sources including the venom of bee and ant stings, some fruits and nectars, and is a natural component of honey. Formic acid is a colorless liquid with a penetrating pungent odor. Common uses include dyeing of textiles and leathers, rubber and plastics production, crop protection agents (fungicides and pesticides), and as an intermediate in the chemical and pharmaceutical industries.

Human exposure to formic acid can lead to short-term and even permanent health effects. Acute overexposure to formic acid causes irritation to the eyes, skin, and mucous membrane of the mouth, throat, and esophagus. Acute formic acid inhalation or ingestion may also be associated with complications such as cardiovascular collapse and ischemic (inadequate blood supply to an organ or body part) damage to the heart, liver and kidneys, swelling of the airway, and respiratory distress. Due to the corrosive properties of formic acid, ingestion may cause ulceration of the gastrointestinal tract, resulting in perforation and scarring of the gastrointestinal tract. Long-term exposure to formic acid may cause damage to the kidneys and sensitization dermatitis when coming into contact with the skin over extended periods of time.

Ethylene Oxide

Ethylene oxide (EtO), is a volatile (does not persist for long periods of time in the natural environment) colorless gas at room temperature, with a sweet odor. The major use of EtO is as a chemical intermediate in the manufacturing of ethylene glycol used in antifreeze formulations. Common sources of EtO include uncontrolled emissions or venting in industrial settings, as a sterilizer for surgical equipment, detergents, adhesives, as a sterilant for food spices, tobacco smoke, and cosmetics. In small amounts, EtO can be uses in certain pesticide applications.

The primary routes of human exposure to ethylene oxide include inhalation and ingestion. Acute inhalation exposure to high levels of EtO has resulted in nausea, vomiting, neurological disorders, bronchitis, pulmonary edema, and emphysema. Chronic exposure of small amounts of EtO can cause irritation of the eyes, skin, and damage to the brain, respiratory passages and effects to the nervous system. There is some evidence linking EtO exposure and damage to the reproductive organs. EtO has been shown to cause lymphoid cancer and tumors of the brain, lung, connective tissue, uterus, and mammary glands in animals. The USEPA has concluded that EtO is carcinogenic to humans through inhalation, with lymphoma, leukemia, stomach and breast cancers being the most frequently reported cancers to be associated with EtO exposure.

2.1.3 Sensitive Receptors

Sensitive receptors are defined as facilities or land uses that include members of the population who 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. The nearest sensitive receptor to the Project site is a residence located across Frontage Road approximately 150 feet west of the Project's western boundary. There is another residence, fronting Myers Road on the west side of I-5, located approximately 1,740 feet west of the Project site. The next-nearest residence sits approximately 2,150 feet east of the Project site on Myers Road. The nearest sensitive receptor to the north of the Project site includes a single-family residence located approximately 3,265 feet distant.

2.2 Regulatory Setting

2.2.1 Federal - Clean Air Act

The Federal Clean Air Act (CAA) was amended in 1990 to address a large number of air pollutants that are known to cause or may reasonably be anticipated to cause adverse effects to human health or adverse environmental effects. 188 specific pollutants and chemical groups were initially identified as HAPs, and the list has been modified over time. The CAA Amendments included new regulatory programs to control acid deposition and for the issuance of stationary source operating permits.

In 2001, the U.S. Environmental Protection Agency (USEPA) issued its first Mobile Source Air Toxics Rule, which identified 21 mobile source air toxic (MSAT) compounds as being HAPs that required regulation. A

subset of six of these MSAT compounds were identified as having the greatest influence on health and included benzene, 1,3-butadiene, formaldehyde, acrolein, acetaldehyde, and diesel particulate matter. More recently, the USEPA issued a second MSAT Rule in February 2007, which generally supported the findings in the first rule and provided additional recommendations of compounds having the greatest impact on health. The rule also identified several engine emission certification standards that must be implemented. Unlike the criteria pollutants, toxics do not have National Ambient Air Quality Standards (NAAQS) making evaluation of their impacts more subjective.

National Emissions Standards for Hazardous Air Pollutants (NESHAPs) were incorporated into a greatly expanded program for controlling toxic air pollutants. The provisions for attainment and maintenance of the NAAQS were substantially modified and expanded. Other revisions included provisions regarding stratospheric ozone protection, increased enforcement authority, and expanded research programs.

Section 112 of the CAA Amendments governs the federal control program for HAPs. NESHAPs are issued to limit the release of specified HAPs from specific industrial sectors. These standards are technology-based, meaning that they represent the best available control technology an industrial sector could afford. The level of emissions controls required by NESHAPs are not based on health risk considerations because allowable releases and resulting concentrations have not been determined to be safe for the general public. The CAA does not establish air quality standards for HAPs that define legally acceptable concentrations of these pollutants in ambient air.

2.2.2 State - California Air Resources Board

CARB's statewide comprehensive air toxics program was established in 1983 with AB 1807 the Toxic Air Contaminant Identification and Control Act (Tanner Air Toxics Act of 1983). AB 1807 created California's program to reduce exposure to air toxics and sets forth a formal procedure for CARB to designate substances as TACs. Once a TAC is identified, CARB adopts an airborne toxics control measure (ATCM) for sources that emit designated TACs. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate toxics best available control technology (T-BACT) to minimize emissions.

CARB also administers the state's mobile source emissions control program and oversees air quality programs established by state statute, such as AB 2588, the Air Toxics "Hot Spots" Information and Assessment Act of 1987. Under AB 2588, TAC emissions from individual facilities are quantified and prioritized by the air quality management district or air pollution control district. High priority facilities are required to perform a health risk assessment and, if specific thresholds are exceeded, required to communicate the results to the public in the form of notices and public meetings. In September 1992, the "Hot Spots" Act was amended by Senate Bill (SB) 1731 which required facilities that pose a significant health risk to the community to reduce their risk through a risk management plan.

Truck and Bus Regulation Reducing Emissions from Existing Diesel Vehicles

On December 12, 2008, CARB approved the Truck and Bus Regulation to significantly reduce particulate matter (PM) and oxides of nitrogen emissions from existing diesel vehicles operating in California. The regulation requires diesel trucks and buses that operate in California to be upgraded to reduce emissions. Heavier trucks must be retrofitted with PM filters beginning January 1, 2012, and older trucks must be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses would need to have 2010 model year engines or equivalent.

The regulation applies to nearly all privately and federally owned diesel fueled trucks and buses and to privately and publicly owned school buses with a gross vehicle weight rating greater than 14,000 pounds. Small fleets with three or fewer diesel trucks can delay compliance for heavier trucks by reporting and there are a number of extensions for low-mileage construction trucks, early PM filter retrofits, adding cleaner vehicles, and other situations. Privately and publicly owned school buses have different requirements.

Airborne Toxic Control Measure for In-Use Diesel-Fired Transport Refrigeration Units

On February 26, 2004 CARB approved an ATCM for transport refrigeration units (TRUs) with amendments in 2010 and 2011. This regulation was put in place to address DPM emitted from TRUs. The latest update to this measure can be found in the Final Regulation Order California Code of Regulations (CCR), Title 13, Division 3, Chapter 9, Article 8, Section 2477. Table 4 of Section 2477 sets forth emission limits on in-use TRUs over 25 hp. The Tier 4 limits in this table go into effect in 2025.

2.2.3 Local – Colusa County Air Pollution Control District

The Colusa County Air Pollution Control District (CCAPCD) is the air pollution control agency with jurisdiction over the Project site. The agency's primary responsibility is ensuring that the federal and state ambient air quality standards are attained and maintained. The CCAPCD is also responsible for adopting and enforcing rules and regulations concerning air pollutant sources, issuing permits for stationary sources of air pollutants, inspecting stationary sources of air pollutants, responding to citizen complaints, monitoring ambient air quality and meteorological conditions, awarding grants to reduce motor vehicle emissions, and conducting public education campaigns, as well as many other activities.

3 IMPACT ANALYSIS

3.1 Thresholds of Significance

The CCAPCD thresholds for what constitute an exposure of substantial air toxics are as follows.

- Cancer Risk: Emit carcinogenic or toxic contaminants that exceed the maximum individual cancer risk of 10 in one million.
- Non-Cancer Risk: Emit toxic contaminants that exceed the maximum hazard quotient of 1 in one million.

Cancer risk is expressed in terms of expected incremental incidence per million population. The CCAPCD has established an incidence rate of 10 persons per million as the maximum acceptable incremental cancer risk due to TAC exposure. This threshold serves to determine whether or not a given project has a potentially significant development-specific and cumulative impact. The 10-in-one-million standard is a very health-protective significance threshold. A risk level of 10 in one million implies a likelihood that up to 10 persons out of one million equally exposed people would contract cancer if exposed continuously (24 hours per day) to the levels of TACs over a specified duration of time. This risk would be an excess cancer that is in addition to any cancer risk borne by a person not exposed to these air toxics. To put this risk in perspective, the risk of dying from accidental drowning is 1,000 in a million, which is 100 times more than the CCAPCD's threshold of 10 in one million.

The CCAPCD has also established non-carcinogenic risk parameters for use in HRAs. Noncarcinogenic risks are quantified by calculating a "hazard index," expressed as the ratio between the ambient pollutant concentration and its toxicity or Reference Exposure Level (REL). An REL is a concentration at or below which health effects are not likely to occur. A hazard index less of than one (1.0) means that adverse health effects are not expected. Within this analysis, non-carcinogenic exposures of less than 1.0 are considered less than significant.

3.2 Methodology

This HRA evaluates the potential exposure of sensitive receptors within a half mile radius of the Project site to TACs generated by the vehicular traffic and Project facility operations. HARP2 provided by CARB with regulatory default settings was used to perform the dispersion and health risk modeling for this analysis. HARP2 implements the latest regulatory guidance to develop inputs to AERMOD for dispersion and as the inputs for calculations for the various health risk levels. Conservative estimates and information from the traffic impact analysis memorandum (TIAM) were used to model project operations.

Project related traffic source locations include the on and off ramps of the I-5 North and South, and Project traffic on Frontage and Myers roads and can be viewed in Figure A-1 of Appendix A.

The air dispersion modeling for the HRA was performed using the USEPA AERMOD Version 19121 dispersion model. AERMOD is a steady-state, multiple-source, Gaussian dispersion model designed for use with emission sources situated in terrain where ground elevations can exceed the stack heights of the emission sources. The alberhill30m.dem file found at CARB's website for HARP Digital Elevation Model Files was used for elevation data for all sources and receptors in the Project domain. All regulatory defaults were used for dispersion modeling as configured in the latest version of HARP2.

AERMOD requires hourly meteorological data consisting of wind vector, wind speed, temperature, stability class, and mixing height. Pre-processed meteorological data files provided by CARB for the Sacramento International Airport were selected as being the most representative meteorology based on proximity (CARB 2021a). CARB utilized the closest available Upper Air and AERMET to process the data. A wind rose and the location of the Sacramento International Airport wind sensor can be found in Figures A-1 and A-2, respectively in Appendix A of this report.

The unit emission rate of one gram per second was utilized in AERMOD to output plot files which established source receptor relationships later to be combined in HARP with the emissions inventory to calculate the ground level concentrations (GLCs) related to project operations. All AERMOD inputs and output file can be found in Appendix B and the AERMOD plot and AERMET files can be found in the supplemental data package submitted with this report.

3.3 Emissions Estimation

Emissions were calculated for max hourly and annual time periods. All significant emissions of TACs were calculated for stationary VOC and Ammonia sources. TAC emissions for the natural gas generator were considered insignificant as operation of this sources is expected to be infrequent. Only DPM emissions for mobile sources were quantified as ROG risk from gasoline vehicles is generally orders of magnitude less than that associated with diesel operations. Emissions sources included in this analysis are describes below and detailed calculations can be found in Appendix B and Appendix C of this document.

Heavy Duty Diesel Trucks

Project related onsite and offsite roadway sources all have distances relative to the projected onsite roadways and the existing surface streets. Roadway sources all have a width of 7.4 meters using standard line sizing and an estimated two lanes. Onsite idling at the material drop point was modeled as a single line sources with widths of 35 meters. A map of all operational sources is presented as Figure A-4 in Appendix A of this document.

The Project is anticipated to generate approximately 125 heavy-duty truck trips daily. The estimated ratio of trips on each roadway link along with the daily trips were combined with an estimated operational schedule of seven days a week for 52 weeks a year to estimate the annual emissions from each link.

Emission factors for PM_{10} exhaust emissions were generated using EMFAC2021 for idling; and 5, 15, and 45 miles per hour which were used to create composite emission factors for average onsite and offsite truck traffic. These emission factors where then multiplied by the annual trips by link with the distance for each roadway link and idle time to calculate emissions from traffic and idling related to the Project, respectively. Idling was estimated at 10 minutes per trip conservatively to account for any trucks that go over the California state five-minute idling rule put in place. EMFAC2021 emission factors for 2025 were utilized to calculate annual emissions used for modeling for the various risk scenarios.

Diesel Fired Off-road Equipment

Three to four 250 horsepower Tier 4 front end loaders will be utilized to load the biomass into the dryers. As the biomass is stored in two designated areas, emissions from the off-road equipment was modeled as two volume sources. Tier 4 engine regulatory data was used to obtain a DPM emission factor and the usage data was conservatively estimated. Emission calculations for off-road equipment can be found in Appendix B of this document.

Diesel Fired Locomotives

An electric switching engine will be used to connect the rail cars to the long-haul train. One long-haul locomotive per day was conservatively assumed to estimate risk. The additional risk due to train loading in

the Project vicinity was estimated using an hourly emission factor for locomotives like those used for the project. Emission factor estimations were developed using information found on the CARB *Railyard Health Risk Assessments and Mitigation Measures* web page (CARB, 2021).

Ammonia Storage Tanks

Ammonia used in the SCR process will loaded by delivery truck into a "main" ammonia tank set back approximately 200 feet from the property boundary, then transferred to a day tank for use in the cogeneration unit. Emissions from ammonia storage tanks were estimated using SCAQMD guidance for calculating emissions form organic chemical emissions from storage tanks which includes ammonia (SCAQMD, 2015).

Cogeneration Unit

TAC emissions were estimated for VOC emission from the cogeneration unit. BACT for similar sources was used to calculate total VOC emissions. Then worst-case TAC/VOC ratios were applied to the VOC emissions to estimate TAC emissions.

Fugitive Process Leaks

Fugitive emissions during transportation and collection of the biogas were calculated using emission factors and calculation methodologies as identified in SCAQMD Guidelines for Reporting VOC Emissions from Component Leaks (SCAQMD, 2015). Minimal leaks during operations are likely due to the nature of the process and a proprietary leak identification plan will always be implemented. Most leaks will not are likely to occur in areas without high VOC concentrations and were calculated as 95% of the total leaks. 5% of leaks were assumed to occur at high VOC areas during the process to be conservative but are unlikely to occur during normal operations. Emission calculations can be found in Appendix B of this document.

3.4 Health Risk Estimation

A health risk computation was performed to determine the risk of developing an excess cancer and chronic non-cancer risk calculated for 70-year and 25-year exposure scenarios for operational emissions. Per OEHHA guidance, the 25-year scenario was used to model the health risk for workers at business locations and the 70-year scenario was used for residents. The chronic and carcinogenic health risk calculations are based on the standardized equations contained in the OEHHA Guidance Manual (2015) as implemented in CARB's HARP2 program (CARB 2019). No acute health risk was analyzed as DPM does not have associated acute risk (OEHHA 2015) The risk associated with traffic emissions related to Project operations was assessed as risk associated with future Project operations.

Based on the OEHHA methodology, the residential inhalation cancer risk from the annual average TAC concentrations are calculated by multiplying the daily inhalation or oral dose, by a cancer potency factor, the age sensitivity factor (ASF), the frequency of time spent at home, and the exposure duration divided by averaging time, to yield the excess cancer risk. These factors are discussed in more detail below. Cancer risk must be separately calculated for specified age groups, because of age differences in sensitivity to carcinogens and age differences in intake rates (per kg body weight). Separate risk estimates

for these age groups provide a health-protective estimate of cancer risk by accounting for greater susceptibility in early life, including both age-related sensitivity and amount of exposure.

Exposure through inhalation (Dose-air) is a function the breathing rate, the exposure frequency, and the concentration of a substance in the air. For residential exposure, the breathing rates are determined for specific age groups, so Dose-air is calculated for each of these age groups, 3rd trimester, 0<2, 2<9, 2<16, 16<30 and 16-70 years. To estimate cancer risk, the dose was estimated by applying the following formula to each ground-level concentration:

$$\textbf{Dose-air} = (C_{air} * \{BR/BW\} * A * EF * 10^{-6})$$

Where:

Dose-air = dose through inhalation (mg/kg/day)

C_{air} = air concentration (µg/m^3) from air dispersion model

{BR/BW} = daily breathing rate normalized to body weight (L/kg body weight – day) (361 L\kg BW-day for 3rd Trimester, 1,090 L/kg BW-day for 0<2 years, 861 L/kg BW-day for 2<9 years, 745 L/kg BW-day for 2<16 years, 335 L/kg BW-day for 16<30 years, and 290 L/kg BW-day 16<70 years)

A = Inhalation absorption factor (unitless [1])

EF = exposure frequency (unitless), days/365 days (0.96 [approximately 350 days per year])

10^{-6} = conversion factor (micrograms to milligrams, liters to cubic meters)

OEHHA developed ASFs to take into account the increased sensitivity to carcinogens during early-in-life exposure. In the absence of chemical-specific data, OEHHA recommends a default ASF of 10 for the third trimester to age 2 years, an ASF of 3 for ages 2 through 15 years to account for potential increased sensitivity to carcinogens during childhood and an ASF of 1 for ages 16 through 70 years.

Fraction of time at home (FAH) during the day is used to adjust exposure duration and cancer risk from a specific facility's emissions, based on the assumption that exposure to the facility's emissions are not occurring away from home. OEHHA recommends the following FAH values: from the third trimester to age <2 years, 85 percent of time is spent at home; from age 2 through <16 years, 72 percent of time is spent at home; from age 16 years and greater, 73 percent of time is spent at home.

To estimate the cancer risk, the dose is multiplied by the cancer potency factor, the ASF, the exposure duration divided by averaging time, and the frequency of time spent at home (for residents only):

$$\textbf{Risk}_{inh\text{-}res} = (\textbf{Dose}_{air} * CPH * ASF * ED/AT * FAH)$$

Where:

$Risk_{inh\text{-}res}$ = residential inhalation cancer risk (potential chances per million)

$Dose_{air}$	=	daily dose through inhalation (mg/kg-day)
CPF	=	inhalation cancer potency factor (mg/kg-day^{-1})
ASF	=	age sensitivity factor for a specified age group (unitless)
ED	=	exposure duration (in years) for a specified age group (0.25 years for 3rd trimester, 2 years for 0<2, 7 years for 2<9, 14 years for 2<16, 14 years for 16<30, 54 years for 16-70)
AT	=	averaging time of lifetime cancer risk (years)
FAH	=	fraction of time spent at home (unitless)

Chronic Non-Cancer Hazard

Non-cancer chronic impacts are calculated by dividing the annual average concentration by the Reference Exposure Level (REL) for that substance. The REL is defined as the concentration at which no adverse non-cancer health effects are anticipated. The following equation was used to determine the non-cancer risk:

Hazard Quotient = Ci/RELi

Where:

Ci	=	Concentration in the air of substance i (annual average concentration in µg/m^3)
RELi	=	Chronic noncancer Reference Exposure Level for substance in (µg/m^3)

3.5 Carcinogenic Risk

Cancer risk calculations for existing residential receptors are based on 70- and 25-year exposure periods to for operations. As described above, the calculated cancer risk accounts for 335 days per year of exposure to existing residential receptors. While the average American spends 87 percent of their life indoors (USEPA 2001), neither the pollutant dispersion modeling nor the health risk calculations account for the reduced exposure structures provide. Instead health risk calculations account for the equivalent exposure of continual outdoor living. The calculated carcinogenic risk at Project vicinity receptors is depicted in Table 1.

Table 1. Cancer Risk Summary at Maximumly Exposed Receptors (Residence to West)

Exposure Scenario	Total Risk
Operation	
70-Year Exposure Residence	**9.21**
25-Year Exposure Worker	**1.06**

Exposure Scenario	Total Risk
Significance Threshold	*10*

Source: ECORP Consulting 2021. Refer to Appendix C for Model Data Outputs

As shown, impacts related to cancer risk for all modeled scenarios would be below the 10 in one million threshold. These calculations do not account for any pollutant-reducing remedial components inherent to the Project or the Project site.

For operational emissions the Maximumly Exposed Individual Resident (MEIR) receptor is located 150 feet west of the site has a 70-year cancer risk of 7.91 related to the Project. The Maximumly Exposed Individual Worker (MEIW) is located at the Wadham Energy Company facility which borders the Project site directly to the north and has a 25-year cancer risk of 1.13 in one million. The locations of cancer and non-cancer chronic risk MEIR and MEIW can be seen in Figure A-7 found in Appendix A of this document. Detailed cancer risk results for all modeled receptors can be found in Appendix B of this document.

3.6 Non-Carcinogenic Risk

In addition to cancer risk, the significance thresholds for TAC exposure requires an evaluation of non-cancer risk stated in terms of a hazard index. Non-cancer chronic impacts are calculated by dividing the annual average concentration by the REL for that substance. The REL is defined as the concentration at which no adverse non-cancer health effects are anticipated. The potential for acute non-cancer hazards is evaluated by comparing the maximum short-term exposure level to an acute REL. RELs are designed to protect sensitive individuals within the population.

A chronic hazard index and/or an acute risk of 1.0 is considered individually significant. The hazard index is calculated by dividing the acute or chronic exposure by the REL. The highest offsite chronic hazard as a result of the Proposed Project operations as a result of TAC exposure is shown in Table 2.

Table 2. Non-Carcinogenic Health Risk Summary at Maximumly Exposed Receptors (Residence to West)

Exposure Scenario	Maximum Acute Hazard	Maximum Chronic Hazard
Offsite Receptor	0.074	0.005
Significance Threshold	*1*	*1*

Source: ECORP Consulting 2021. Refer to Appendix C for Model Data Outputs.

As shown in Table 2, impacts related to non-cancer risk (chronic and acute hazard index) as a result of the Project site would not surpass significance thresholds.

4 REFFERENCES

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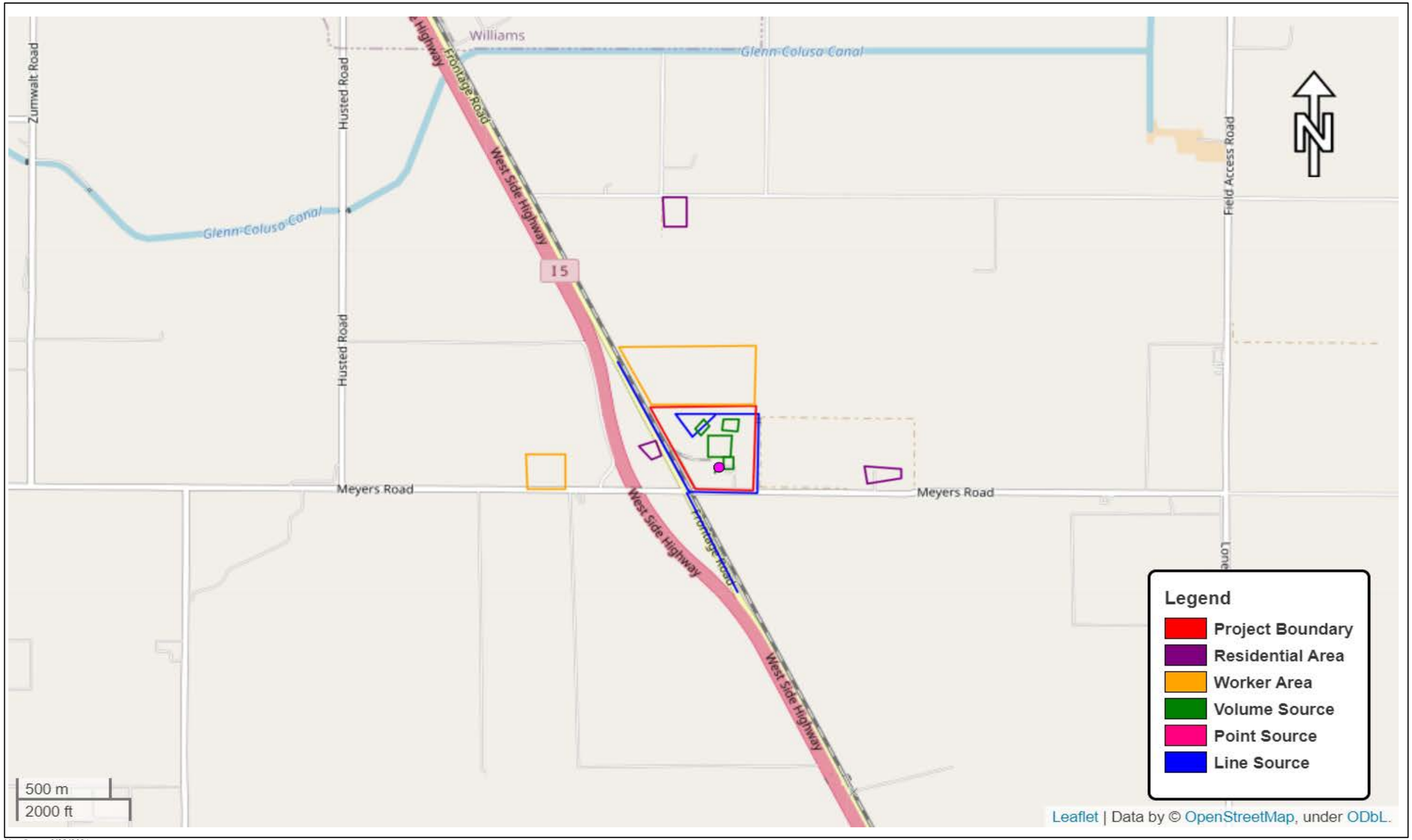
OEHHA (California Environmental Protection Agency's Office of Environmental Health Hazard Assessment). 2015. Guidance Manual for Preparation of Health Risk Assessments.

USEPA (U.S. Environmental Protection Agency). 2001. National Human Activity Pattern Survey.

APPENDIX A

Location and Wind Figures



Map Date: *6/23/2021*
Photo (or Base) Source: *ArcGIS Online 2021*

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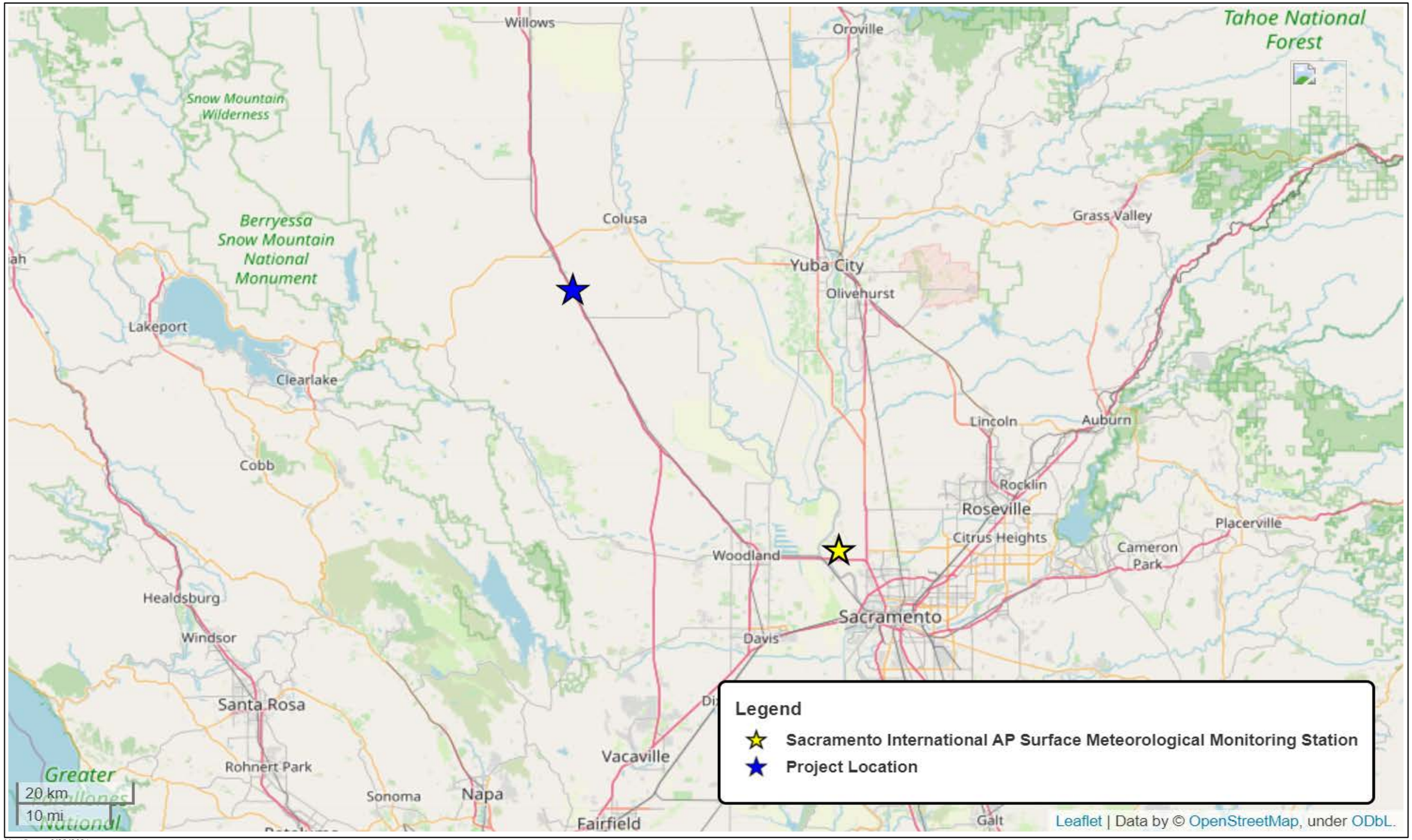
Figure A1. Source and Receptors

2021-047.02 California Renewable Carbon



Map Date: *6/23/2021*
Photo (or Base) Source: *ArcGIS Online 2021*

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Figure A2. Meteorological Station

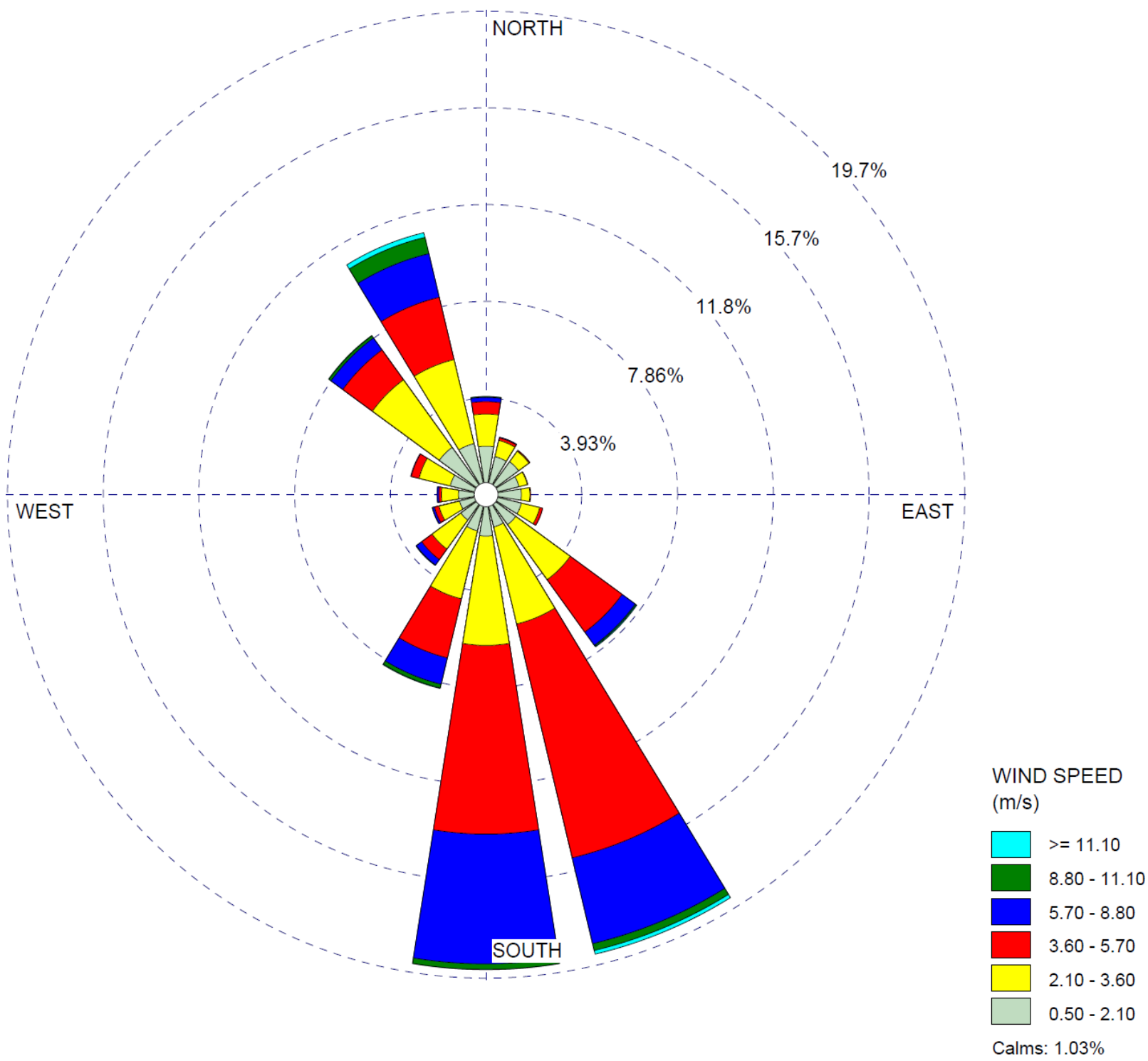
2021-047.02 California Renewable Carbon

WIND ROSE PLOT:

Sacramento IAP
Processed AERMET Surface (.SFC) File

DISPLAY:

Wind Speed
Direction (blowing from)



COMMENTS:	DATA PERIOD:	COMPANY NAME:	
SMAQMD Processed AERMET data	**Start Date: 1/1/2014 - 00:00** **End Date: 12/25/2018 - 23:59**		
		MODELER:	
	CALM WINDS: **1.03%**	TOTAL COUNT: **43513 hrs.**	
	AVG. WIND SPEED: **3.64 m/s**	DATE: **5/5/2021**	PROJECT NO.:

WRPLOT View - Lakes Environmental Software

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Figure A3. Project Region Wind Rose

APPENDIX B

Operation Emissions Calculations

Appendix "B2"

Table B-1. Hourly TAC Emissions

	Hourly Potential Emissions (lb/hr)					
Emissions Activity	**DPM**	**CH_2O**	**CH_4O**	**C_2H_4O**	**C_6H_6O**	**NH_3**
Trucks (Line Volume)	5.37E-04	-	-	-	-	-
Trucks Idle (Volume)	4.10E-05	-	-	-	-	-
Offroad (Volume)	0.004	-	-	-	-	-
Trains (Line Volume)	0.018	-	-	-	-	-
Cogeneration Unit (Point)	-	0.009	0.009	0.009	9.84E-05	0.48
Process Gas Fugitive Emissions (Volume)	-	0.017	0.017	0.017	1.92E-04	-
Ammonia Tanks (Volume)	-	-	-	-	-	2.19E-03
Project Total	**0.02**	**0.03**	**0.03**	**0.03**	**2.90E-04**	**0.49**

Table B-2. Annual TAC Emissions

	Annual Potential Emissions (lb/yr)					
Emissions Activity	**DPM**	**CH_2O**	**CH_4O**	**C_2H_4O**	**C_6H_6O**	**NH_3**
Trucks (Line Volume)	4.23E+00	-	-	-	-	-
Trucks Idle (Volume)	3.28E-04	-	-	-	-	-
Offroad (Volume)	7.09	-	-	-	-	-
Trains (Line Volume)	6.15	-	-	-	-	-
Cogeneration Unit (Point)	-	69.48	69.48	72.12	0.79	3,887
Process Gas Fugitive Emissions (Volume)	-	135.48	135.48	0.02	0.00	-
Ammonia Tanks (Volume)	-	-	-	-	-	17.29
Project Total	**17.47**	**204.97**	**204.97**	**72.13**	**0.79**	**3,904.71**

Notes and Acronyms:

Acronyms

CO	carbon monoxide
NOx	nitrogen oxide
SO_2	sulfur dioxide
VOCs	volatile organic compounds
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
HAPS	hazardous air pollutants
NH_3	ammonia
CO_2e	carbon dioxide
lb/hr	pounds per hour
typ	tons per year
TACs	toxic air contaminants
VOC	volatile organic compounds

California Renewable Carbon Williams
Truck Emissions Calculations

Table B-3. Modeled Roadway Dimensions				
Roadway Link Description	**AERMOD ID**	**Length (miles)**	**Width (m)**	**Area (m^2)**
Southbound Frontage Road	Sline1	0.56	7.4	6,708
Northbound Frontage Road	Sline2	0.49	7.4	5,845
Frontage to Dropoff	Sline3	0.94	7.4	11,247
Drop Off - Idle Zone	Idle1			1,600
Pile Loading - Idle Zone	Idle2			2,500

Table B-4. Total Truck Trips Information	
Trip Type	**Trips/Day**
Biomass Haul Trucks + Other	125

Table B-5. Modeled Roadway Trip Information			
	Truck Trips		
Roadway Link	**Percentage Total Trips**	**Max Hourly[1]**	**Average Daily**
Southbound Frontage Road	50%	7.8	62.5
Northbound Frontage Road	50%	7.8	62.5
Frontage to Dropoff	100%	15.6	125
Drop Off - Idle Zone	100%	15.6	125
Pile Loading - Idle Zone	10%	1.6	12.5

Table B-6. Onroad DPM Emission Rates						
	DPM Emission Rates[2] (g/mi)					
Vehicle Type	**Idle[2]**	**5 mph**	**15 mph**	**45 mph**	**Onsite Composite[3]**	**Offsite Composite[4]**
2023 Emission Rates						
HHDT	0.0130	0.011	0.007	0.013	0.011	0.014

Table B-7. Modeled Roadway Emission Rates		
	2023 DPM Emissions[5]	
Roadway Link	Peak Hourly (lbs/hr)	Annual (lbs/yr)
Southbound Frontage Road	1.03E-04	0.81
Northbound Frontage Road	8.95E-05	0.71
Frontage to Dropoff	3.44E-04	2.72
Drop Off - Idle Zone	3.73E-05	2.99E-04
Pile Loading - Idle Zone	3.73E-06	2.99E-05
Total Driving	5.37E-04	4.23
Total Onsite Idle	4.10E-05	3.28E-04

Notes and Acronyms

Notes

(1) Peak Hourly Emissions = DPM Emission Rate (g/mi) * Peak Hourly Trips * Link Length (mi) / 453.6 (g/lb)
(2) DPM Emission Rates conservativly represented using EMFAC2021 PM10 Exhaust emission factors for 2023.
(2) EMFAC2021 Idle emission rates in grams per hour. 10 minutes per trip assumed for idling duration.
(3) Onsite Composite factor is 85% @ 15 mph + 15% @ 5 mph
(4) Offsite Composite factor is 60% @ 45 mph + 30% @ 15 mph + 10% @ 5 mph + 0.5 minute idle per mile
(5) Annual Emissions = (DPM Emission Rate (g/mi) * Daily Trips * Link Length (mi) / 453.6 (g/lb) + TRU emissions) * (5 (days/week) * 50 (weeks/yr))

Acronyms

g/mi	gram per mile	lbs/yr	pounds per year
HHDT	heavy heavy duty truck	mph	mile per hour
lbs/hr	pounds per hour		

California Renewable Carbon Williams
Offroad Emissions Calculations

Table B-8. Offroad Equipment Activity Dimentions

Roadway Link Description	Model Year	Horsepower	Count	Load Factor	Hours/Day	Days/Year	BSFC (lb/hp-hr)
Biomass Loaders	2020	250	4	0.4	6	335	0.408

Table B-9. Offroad Tier 4 Emission Factors

Trip Type	DPM (g/hp-hr)
Biomass Loaders	0.008

Table B-10.

Trip Type	Time in Area (%)	Max Hourly (lb/hr)	Annual (lb/yr)
North Pile	50%	0.0035	7.09
South Pile	50%	0.0035	7.09
Total		**0.007**	**14.18**

Acronyms

BSFC	brake-specific fuel consumption	lb/hr	pound per hour
DPM	diesel particulate matter	lb/yr	pound per year
g/hp-hr	gram per horsepower-hour		

California Renewable Carbon Williams
Offroad Emissions Calculations

Table B-11. Train Activity Equipment Activity Dimensions			
Parameter	**Value**	**Units**	**Source**
Time per Trip in Project Vicinity	10	min	Engineering Estimate
Trips per Day	1	trip	Process Knowledge
Operational Schedule	335	day/yr	Process Knowledge

Table B-12. Diesel Exhaust Emission Factors	
Emission Factor	**DPM[1] (g/hr)**
Long-Haul Aggregated (low throttle)	50

Table B-13.		
Trip Type	**Max Hourly (lb/hr)**	**Annual (lb/yr)**
Train Operations in Project Vacinity	0.0184	6.15

Acronyms

BSFC	brake-specific fuel consumption	lb/hr	pound per hour
DPM	diesel particulate matter	lb/yr	pound per year
g/hr	gram per hour	min	minutes

Table B-14. Biogas Cogeneration Unit Combustion Data			
Parameter	**Value**	**Units**	**Source/Justification**
Cogeneration Flow	166,800	lbs/hr	Process Knowledge
BACT RTO ROG	2	ppm	https://ww2.arb.ca.gov/BACT-Tool
BACT RTO NH3 Slip	2	ppm	https://ww2.arb.ca.gov/BACT-Tool
Methane Molecular Weight	16.04	g/mol	Periodic Table
Molecular Weight Ammonia	17	g/mol	Periodic Table
BACT VOC by lb/MMBtu	0.030	lb/MMBtu	https://ww2.arb.ca.gov/BACT-Tool
Pound / cuft to miligram/cubic meter	1.60E+07	NA	Conversion Factor
Density	0.03	lbs/cuft	Process Knowledge
Air Molecular Weight	28.97	grams/mol	Scientific Consensus
Biogas Heating Content	130	Btu/ft^3	Process Knowledge

Equations:

1. EF (lb/mmcuft) = ppm * MW * 0.0409 * CF (lb/cuft / mg/m^3) / 1,000,000

Table B-15 Emission Factors		
	Emission factor in lb/million cuft	
EF Source Description	**VOC**	**NH3**
Cogeneration BACT	0.08	0.09

Table B-16 Estimated VOC Pre-Combustion Speciation					
Formula	**Name**	**Cas Number**	**Flow Rate (lb/hr)**	**Percent Total VOC**	**TAC/HAP**
C_3H_8	Propane	74-98-6	356.77	6.10%	
CH_2O	Formaldehyde	50-00-0	111.00	1.90%	x
CH_4O	Methanol	67-56-1	111.00	1.90%	x
CH_2O_2	Formic Acid	64-18-6	388.68	6.65%	
C_2H_4O	Ethylene Oxide	75-21-8	115.20	1.97%	x
$C_2H_4O_2$	Glycolaldehyde	107-31-3	337.75	5.77%	
C_2H_6O	Ethanol	64-17-5	1,677.39	28.68%	
C_3H_6O	Acetone	67-64-1	560.33	9.58%	
C_5H_5N	Pyridine	110-86-1	9.23	0.16%	
C_6H_6O	Phenol	108-95-2	1.26	0.02%	x
$C_8H_{14}O$	Sulcatone	502-49-8	2,180.12	37.28%	

Table B-17 Hourly Emissions					
	lb/hr				
EF Source Description	**CH_2O**	**CH_4O**	**C_2H_4O**	**C_6H_6O**	**NH_3**
Cogeneration BACT	0.009	0.009	0.009	0.000	0.5

Table B-18 Annual Emissions					
	lb/yr				
EF Source Description	**CH_2O**	**CH_4O**	**C_2H_4O**	**C_6H_6O**	**NH_3**
Cogeneration BACT	69.484	69.484	72.115	0.791	3,887.4

Notes and Acronyms:

Acronyms

lbs/hr	pounds per hour
ppm	parts per million
lb/MMBtu	pound per million British thermal unit
lbs/cuft	pounds per cubic feet
grams/mol	grams per mol
Btu/ft^3	British thermal unit per cubic foot
VOC	volatile organic compounds
EF	emissions factor
BACT	best available control technologies
CO	carbon monoxide
NOx	nitrogen oxide
SO_2	sulfur dioxide
HAPS	hazardous air pollutants
NH_3	ammonia
CO_2	carbon dioxide
tpy	tons per year

Notes

(1) Equation 1. source - CHSR Technology Briefs (cfpub.epa.gov)

Table B-19. Biogas Valves and Fittings Data			
Parameter	**Value**	**Units**	**Source/Justification**
Number of Valves	-	#	
Number of Flanges (> 10,000 ppmv)	12	#	5% over 1% VOC
Number of Flanges (< 10,000 ppmv)	224	#	95% over 1% VOC
THC Emission Factor (> 10,000 ppmv)	7.5.E-02	lb/hr	CAPCOA/ARB
THC Emission Factor (< 10,000 ppmv)	1.3.E-05	lb/hr	CAPCOA/ARB

Equations:

1. Emissions = EF * Pieces (#) * Speciation Percentage (%)

Table B-20 Process Stream VOC Speciation Pre-Combustion							
Formula	**Name**	**Cas Number**	**Flow Rate (lb/hr)**	**Percent Total VOC**	**TAC/HAP**	**Hourly Emissions (lb/hr)**	**Annual Emissions (lb/yr)**
C3H8	Propane	74-98-6	356.77	6.10%			
CH2O	Formaldehyde	50-00-0	111.00	1.90%	x	0.02	135.48
CH4O	Methanol	67-56-1	111.00	1.90%	x	0.02	135.48
CH2O2	Formic Acid	64-18-6	388.68	6.65%			
C2H4O	Ethylene Oxide	75-21-8	115.20	1.97%	x	0.02	140.61
C2H4O2	Glycolaldehyde	107-31-3	337.75	5.77%			
C2H6O	Ethanol	64-17-5	1,677.39	28.68%			
C3H6O	Acetone	67-64-1	560.33	9.58%			
C5H5N	Pyridine	110-86-1	9.23	0.16%			
C6H6O	Phenol	108-95-2	1.26	0.02%	x	0.00019	1.5421
C8H14O	Sulcatone	502-49-8	2,180.12	37.28%			

Acronyms

C_2H_4O	Ethylene Oxide	CH_2O	Formaldehyde
$C_2H_4O_2$	Glycolaldehyde	CH_2O_2	Formic Acid
C_2H_6O	Ethanol	CH_4O	Methanol
C_3H_6O	Acetone	HAPs	hazardous air pollutants
C_3H_8	Propane	lb/hr	pounds per hour
C_5H_5N	Pyridine	ppm	parts per million volume
C_6H_6O	Phenol	tpy	tons per year
$C_8H_{14}O$	Sulcatone	VOC	volatile organic compounds

California Renewable Carbon Williams
Tank Emissions Calculations

Table B-21. Chemical Storage Tanks Operational Information					
Tank Location	Volume (gal)	Lenth (ft)	Diameter (ft)	Throughput (gal/yr)	Turnovers (#/yr)
Main Ammonia Tank	12,000	24.00	9	4,015,000	335
Day Tank #1	2,000	5.13	12	2,007,500	1,004

Table B-22. Aqueous Ammonia Operational Parameters				
Parameter	Symbol	Value	Units	Guidance Document Source[1]
Molecular Weight	M_V	17.03	lb/lb-mole	Equation 7
Ammonia Percentage	C_{pct}	19.5%	NA	Process Data
True Vapor Pressure	P_{VA}	8.99408	psia	Appendix 1
Working Loss Products	K_P	1.0	NA	Equation
Vapor Space Volume	V_V	54.8	cuft	Equation 10-a
Vapor Space Expension Factor	K_E	0.535	NA	Appendix 1
Vented Vapor Saturation Factor	K_S	0.14	NA	Equation 11
Vapor Density	W_V	0.02719	lb/cuft	Appendix 1
Liquid Density	W_L	7.49	lb	Appendix 1
Turnover Factor	K_N	0.26	NA	Equation 8
Vapor Saturation Factor A	S_A	0.238	NA	Appendix 1
Vapor Saturation Factor B	S_B	0.033	NA	Appendix 1

Equations

1. Total Loss (lbs/yr) = Working Loss (lbs/yr) + Standing Loss (lbs/yr) + Loss from Process Upset (lbs/yr)
2. Working Loss (lbs/yr) = $0.024 * M_V * P_A * Q * K_N * K_P$
3. Standing Loss (lbs/yr) = $U * V_V * W_V * K_E * K_S$

Table B-23. Hourly Emissions			
Tank Location	Working Loss (lb/hr)	Standing Loss (lb/hr)	Total Loss (lb/hr)
Main Ammonia Tank	9.36E-05	1.03E-03	1.12E-03
Day Tank #1	4.68E-05	1.03E-03	1.07E-03

Table B-21. Annual Emissions			
Tank Location	Working Loss (lb/yr)	Standing Loss (lb/yr)	Total Loss (lb/yr)
Main Ammonia Tank	0.74	8.09	8.83
Day Tank #1	0.37	8.09	8.46

Acronyms

#/yr	number per year	lb/cuft	pound per cubic foot
cuft	cubic foot	lb/hr	pound per hour
ft	foot	lb/lb-mole	pound per pound-mole
gal	gallon	lb/yr	pound per year
gal/yr	gallon per year	psia	pound-force per square inch
lb	pound		

Notes

(1) SCAQMD - supplemental-instructions-for-liquid-organic-storage-tanks.pdf

APPENDIX C

AERMOD and HARP2 Files

```
↑ *** AERMOD - VERSION  19191 ***   *** C:\Users\agne\Desktop\Lakes AERMOD
Outputs\NCT\NCT.isc               ***        06/28/21
 *** AERMET - VERSION  19191 ***   ***
                       ***        11:38:15

                                  PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                            ***     MODEL SETUP OPTIONS SUMMARY
  ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses RURAL Dispersion Only.

 **Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.

 **Other Options Specified:
        ADJ_U*   - Use ADJ_U* option for SBL in AERMET
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  UNITIZED

 **Model Calculates  1 Short Term Average(s) of:   1-HR
     and Calculates ANNUAL Averages

 **This Run Includes:    227 Source(s);      10 Source Group(s); and     754
Receptor(s)

                with:      1 POINT(s), including
                           0 POINTCAP(s) and      0 POINTHOR(s)
                 and:    226 VOLUME source(s)
                 and:      0 AREA type source(s)
                 and:      0 LINE source(s)
```

```
                and:      0 RLINE/RLINEXT source(s)
                and:      0 OPENPIT source(s)
                and:      0 BUOYANT LINE source(s) with      0 line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  19191

 **Output Options Selected:
          Model Outputs Tables of ANNUAL Averages by Receptor
          Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE
Keyword)
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)
          Model Outputs Separate Summary File of High Ranked Values (SUMMFILE
Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                 m for Missing
Hours
                                                                 b for Both Calm
and Missing Hours

 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =     0.00 ;  Decay
Coef. =    0.000     ;  Rot. Angle =     0.0
                  Emission Units = GRAMS/SEC                                ;
Emission Rate Unit Factor =   0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =      4.0 MB of RAM.

 **Input Runstream File:          aermod.inp

 **Output Print File:             aermod.out


 **Detailed Error/Message File:   NCT.err

 **File for Summary of Results:   NCT.sum

 *** AERMOD - VERSION  19191 ***   *** C:\Users\agne\Desktop\Lakes AERMOD
Outputs\NCT\NCT.isc               ***        06/28/21
 *** AERMET - VERSION  19191 ***   ***
                       ***        11:38:15

                                  PAGE   2
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                          *** METEOROLOGICAL DAYS SELECTED FOR
```

```
PROCESSING ***
                                                                    (1=YES; 0=NO)

           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

```
 *** AERMOD - VERSION  19191 ***   *** C:\Users\agne\Desktop\Lakes AERMOD
Outputs\NCT\NCT.isc               ***        06/28/21
 *** AERMET - VERSION  19191 ***   ***
                       ***        11:38:15

                                  PAGE   3
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*
```

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

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   Surface file:   ..\a-Met Data\Sac International Airport\14-18.SFC
                 Met Version:  19191
   Profile file:   ..\a-Met Data\Sac International Airport\14-18.PFL

   Surface format: FREE

   Profile format: FREE

   Surface station no.:    93225                  Upper air station no.:    23230
```

```
                  Name: UNKNOWN                                     Name:
OAKLAND/WSO_AP
                  Year:   2014                                      Year:   2014

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN
ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - -
 14 01 01   1 01  -15.5  0.166 -9.000 -9.000 -999.  162.     30.3  0.05   0.69
1.00    2.36  211.   10.1  275.4    2.0
 14 01 01   1 02   -3.4  0.079 -9.000 -9.000 -999.   56.     13.1  0.06   0.69
1.00    1.06  188.   10.1  273.8    2.0
 14 01 01   1 03  -12.2  0.146 -9.000 -9.000 -999.  134.     23.5  0.05   0.69
1.00    2.10  136.   10.1  275.9    2.0
 14 01 01   1 04  -23.3  0.226 -9.000 -9.000 -999.  257.     56.0  0.05   0.69
1.00    3.15  142.   10.1  277.0    2.0
 14 01 01   1 05  -16.2  0.171 -9.000 -9.000 -999.  170.     32.2  0.06   0.69
1.00    2.33  186.   10.1  274.9    2.0
 14 01 01   1 06   -3.0  0.076 -9.000 -9.000 -999.   55.     12.9  0.06   0.69
1.00    0.99  204.   10.1  273.1    2.0
 14 01 01   1 07   -4.8  0.092 -9.000 -9.000 -999.   67.     14.7  0.07   0.69
1.00    1.28  171.   10.1  272.0    2.0
 14 01 01   1 08   -1.8  0.065 -9.000 -9.000 -999.   40.     14.3  0.06   0.69
1.00    0.67  183.   10.1  273.1    2.0
 14 01 01   1 09   -0.3  0.062 -9.000 -9.000 -999.   37.     75.4  0.06   0.69
0.41    0.82  181.   10.1  278.1    2.0
 14 01 01   1 10   36.6  0.151  0.431  0.020   80.  141.     -8.6  0.05   0.69
0.28    1.55  141.   10.1  280.4    2.0
 14 01 01   1 11   65.9  0.162  0.666  0.019  163.  157.     -5.9  0.07   0.69
0.24    1.48  161.   10.1  283.1    2.0
 14 01 01   1 12   82.5  0.174  0.784  0.017  212.  175.     -5.8  0.07   0.69
0.22    1.59  152.   10.1  285.9    2.0
 14 01 01   1 13   86.0  0.219  0.835  0.015  246.  246.    -11.1  0.07   0.69
0.22    2.18  154.   10.1  288.1    2.0
 14 01 01   1 14   74.8  0.234  0.838  0.014  286.  272.    -15.6  0.05   0.69
0.23    2.56  229.   10.1  288.1    2.0
 14 01 01   1 15   42.8  0.198  0.714  0.013  308.  212.    -16.5  0.06   0.69
0.26    2.08  180.   10.1  288.8    2.0
 14 01 01   1 16   15.1  0.151  0.507  0.013  315.  141.    -20.7  0.06   0.69
0.35    1.62  194.   10.1  288.1    2.0
 14 01 01   1 17   -9.6  0.137 -9.000 -9.000 -999.  122.     24.4  0.05   0.69
0.61    1.96  223.   10.1  286.4    2.0
 14 01 01   1 18   -1.5  0.061 -9.000 -9.000 -999.   38.     13.6  0.04   0.69
1.00    0.65  251.   10.1  283.8    2.0
 14 01 01   1 19   -1.5  0.058 -9.000 -9.000 -999.   34.     12.1  0.02   0.69
1.00    0.72   47.   10.1  280.9    2.0
 14 01 01   1 20   -3.4  0.076 -9.000 -9.000 -999.   50.     11.8  0.03   0.69
1.00    1.20   81.   10.1  278.8    2.0
 14 01 01   1 21   -2.2  0.065 -9.000 -9.000 -999.   40.     11.5  0.03   0.69
```

```
1.00    0.91   73.   10.1  278.8    2.0
 14 01 01   1 22   -1.6  0.059 -9.000 -9.000 -999.   35.     12.0  0.02   0.69
1.00    0.74   22.   10.1  279.2    2.0
 14 01 01   1 23   -1.9  0.063 -9.000 -9.000 -999.   38.     11.9  0.03   0.69
1.00    0.82   60.   10.1  277.0    2.0
 14 01 01   1 24   -5.1  0.090 -9.000 -9.000 -999.   65.     13.1  0.02   0.69
1.00    1.57   34.   10.1  276.4    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 14 01 01 01   10.1 1  211.    2.36   275.4   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
 *** AERMOD - VERSION  19191 ***   *** C:\Users\agne\Desktop\Lakes AERMOD
Outputs\NCT\NCT.isc               ***        06/28/21
 *** AERMET - VERSION  19191 ***   ***
                       ***        11:38:15

                                  PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                  *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS
AVERAGED OVER   4 YEARS ***


                                   ** CONC OF UNITIZED IN MICROGRAMS/M**3
                **


                        NETWORK
GROUP ID                      AVERAGE CONC                RECEPTOR  (XR, YR,
ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - -

SLINE1    1ST HIGHEST VALUE IS     185.70712 AT (  576548.51,  4328877.54,
28.20,    28.20,    0.00)  GC  UCART1
          2ND HIGHEST VALUE IS     181.01843 AT (  576698.51,  4328577.54,
29.70,    29.70,    0.00)  GC  UCART1
          3RD HIGHEST VALUE IS     169.99565 AT (  576498.51,  4328977.54,
28.20,    28.20,    0.00)  GC  UCART1
          4TH HIGHEST VALUE IS     167.08999 AT (  576598.51,  4328727.54,
28.50,    28.50,    0.00)  GC  UCART1
          5TH HIGHEST VALUE IS     161.66161 AT (  576598.51,  4328777.54,
28.30,    28.30,    0.00)  GC  UCART1
          6TH HIGHEST VALUE IS     152.46483 AT (  576448.51,  4329077.54,
28.20,    28.20,    0.00)  GC  UCART1
          7TH HIGHEST VALUE IS     142.35135 AT (  576498.51,  4328927.54,
28.20,    28.20,    0.00)  GC  UCART1
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          8TH HIGHEST VALUE IS     140.86467 AT (  576698.51,  4328527.54,
29.70,    29.70,    0.00)  GC  UCART1
          9TH HIGHEST VALUE IS     139.16790 AT (  576448.51,  4329027.54,
28.20,    28.20,    0.00)  GC  UCART1
         10TH HIGHEST VALUE IS     136.11752 AT (  576748.51,  4328477.54,
29.20,    29.20,    0.00)  GC  UCART1

SLINE2    1ST HIGHEST VALUE IS     188.77615 AT (  577098.51,  4327827.54,
28.20,    28.20,    0.00)  GC  UCART1
          2ND HIGHEST VALUE IS     167.09124 AT (  576998.51,  4328027.54,
28.20,    28.20,    0.00)  GC  UCART1
          3RD HIGHEST VALUE IS     159.00182 AT (  576898.51,  4328177.54,
28.20,    28.20,    0.00)  GC  UCART1
          4TH HIGHEST VALUE IS     148.96760 AT (  576948.51,  4328077.54,
28.20,    28.20,    0.00)  GC  UCART1
          5TH HIGHEST VALUE IS     147.85850 AT (  576848.51,  4328277.54,
28.20,    28.20,    0.00)  GC  UCART1
          6TH HIGHEST VALUE IS     137.20011 AT (  576948.51,  4328127.54,
28.20,    28.20,    0.00)  GC  UCART1
          7TH HIGHEST VALUE IS     136.32908 AT (  576998.51,  4327977.54,
28.20,    28.20,    0.00)  GC  UCART1
          8TH HIGHEST VALUE IS     136.10323 AT (  577048.51,  4327927.54,
28.20,    28.20,    0.00)  GC  UCART1
          9TH HIGHEST VALUE IS     130.12416 AT (  577098.51,  4327777.54,
28.20,    28.20,    0.00)  GC  UCART1
         10TH HIGHEST VALUE IS     122.32428 AT (  576848.51,  4328227.54,
28.20,    28.20,    0.00)  GC  UCART1

SLINE3    1ST HIGHEST VALUE IS     114.79068 AT (  576798.51,  4328727.54,
28.40,    28.40,    0.00)  GC  UCART1
          2ND HIGHEST VALUE IS     110.57596 AT (  576998.51,  4328727.54,
28.70,    28.70,    0.00)  GC  UCART1
          3RD HIGHEST VALUE IS      95.08195 AT (  577148.51,  4328727.54,
28.20,    28.20,    0.00)  GC  UCART1
          4TH HIGHEST VALUE IS      86.77159 AT (  576948.51,  4328677.54,
28.90,    28.90,    0.00)  GC  UCART1
          5TH HIGHEST VALUE IS      83.43707 AT (  576998.51,  4328677.54,
28.60,    28.60,    0.00)  GC  UCART1
          6TH HIGHEST VALUE IS      81.92982 AT (  577148.51,  4328677.54,
28.10,    28.10,    0.00)  GC  UCART1
          7TH HIGHEST VALUE IS      80.79927 AT (  577098.51,  4328727.54,
28.30,    28.30,    0.00)  GC  UCART1
          8TH HIGHEST VALUE IS      79.91907 AT (  576948.51,  4328727.54,
28.80,    28.80,    0.00)  GC  UCART1
          9TH HIGHEST VALUE IS      79.24036 AT (  576898.51,  4328677.54,
29.20,    29.20,    0.00)  GC  UCART1
         10TH HIGHEST VALUE IS      75.85907 AT (  576848.51,  4328677.54,
29.40,    29.40,    0.00)  GC  UCART1

STCK1     1ST HIGHEST VALUE IS       0.10622 AT (  576948.51,  4329077.54,
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27.20,    27.20,    0.00)  GC  UCART1
          2ND HIGHEST VALUE IS       0.10593 AT (  576948.51,  4329127.54,
27.00,    27.00,    0.00)  GC  UCART1
          3RD HIGHEST VALUE IS       0.10474 AT (  576948.51,  4329027.54,
27.40,    27.40,    0.00)  GC  UCART1
          4TH HIGHEST VALUE IS       0.10442 AT (  576948.51,  4329177.54,
26.90,    26.90,    0.00)  GC  UCART1
          5TH HIGHEST VALUE IS       0.10303 AT (  576898.51,  4329127.54,
27.10,    27.10,    0.00)  GC  UCART1
          6TH HIGHEST VALUE IS       0.10246 AT (  576898.51,  4329077.54,
27.20,    27.20,    0.00)  GC  UCART1
          7TH HIGHEST VALUE IS       0.10210 AT (  576998.51,  4329127.54,
27.00,    27.00,    0.00)  GC  UCART1
          8TH HIGHEST VALUE IS       0.10202 AT (  576898.51,  4329177.54,
26.90,    26.90,    0.00)  GC  UCART1
          9TH HIGHEST VALUE IS       0.10199 AT (  576998.51,  4329077.54,
27.10,    27.10,    0.00)  GC  UCART1
         10TH HIGHEST VALUE IS       0.10089 AT (  576948.51,  4328977.54,
27.60,    27.60,    0.00)  GC  UCART1
 *** AERMOD - VERSION  19191 ***   *** C:\Users\agne\Desktop\Lakes AERMOD
Outputs\NCT\NCT.isc               ***        06/28/21
 *** AERMET - VERSION  19191 ***   ***
                       ***        11:38:15

                                  PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                  *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS
AVERAGED OVER   4 YEARS ***


                                   ** CONC OF UNITIZED IN MICROGRAMS/M**3
                **


                        NETWORK
GROUP ID                      AVERAGE CONC                RECEPTOR  (XR, YR,
ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - -

VOL1      1ST HIGHEST VALUE IS     337.41951 AT (  576898.51,  4328627.54,
29.20,    29.20,    0.00)  GC  UCART1
          2ND HIGHEST VALUE IS     275.05827 AT (  576948.51,  4328577.54,
28.50,    28.50,    0.00)  GC  UCART1
          3RD HIGHEST VALUE IS     189.18312 AT (  576898.51,  4328677.54,
29.20,    29.20,    0.00)  GC  UCART1
          4TH HIGHEST VALUE IS     185.00285 AT (  576948.51,  4328627.54,
28.80,    28.80,    0.00)  GC  UCART1
          5TH HIGHEST VALUE IS     165.91132 AT (  576898.51,  4328577.54,
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29.00,    29.00,    0.00)  GC  UCART1
          6TH HIGHEST VALUE IS     113.65018 AT (  576948.51,  4328677.54,
28.90,    28.90,    0.00)  GC  UCART1
          7TH HIGHEST VALUE IS     112.20194 AT (  576948.51,  4328527.54,
28.30,    28.30,    0.00)  GC  UCART1
          8TH HIGHEST VALUE IS      90.36950 AT (  576898.51,  4328727.54,
29.00,    29.00,    0.00)  GC  UCART1
          9TH HIGHEST VALUE IS      83.03831 AT (  576848.51,  4328677.54,
29.40,    29.40,    0.00)  GC  UCART1
         10TH HIGHEST VALUE IS      78.57464 AT (  576998.51,  4328527.54,
28.10,    28.10,    0.00)  GC  UCART1

VOL2      1ST HIGHEST VALUE IS     480.76807 AT (  577048.51,  4328727.54,
28.50,    28.50,    0.00)  GC  UCART1
          2ND HIGHEST VALUE IS     207.18385 AT (  577048.51,  4328627.54,
28.20,    28.20,    0.00)  GC  UCART1
          3RD HIGHEST VALUE IS     196.61072 AT (  576998.51,  4328727.54,
28.70,    28.70,    0.00)  GC  UCART1
          4TH HIGHEST VALUE IS     189.50218 AT (  577098.51,  4328677.54,
28.20,    28.20,    0.00)  GC  UCART1
          5TH HIGHEST VALUE IS     178.79937 AT (  577098.51,  4328627.54,
28.10,    28.10,    0.00)  GC  UCART1
          6TH HIGHEST VALUE IS     167.16153 AT (  576998.51,  4328677.54,
28.60,    28.60,    0.00)  GC  UCART1
          7TH HIGHEST VALUE IS     149.13511 AT (  577048.51,  4328777.54,
28.60,    28.60,    0.00)  GC  UCART1
          8TH HIGHEST VALUE IS     126.90356 AT (  576998.51,  4328777.54,
28.60,    28.60,    0.00)  GC  UCART1
          9TH HIGHEST VALUE IS     117.39527 AT (  577098.51,  4328727.54,
28.30,    28.30,    0.00)  GC  UCART1
         10TH HIGHEST VALUE IS      89.34577 AT (  576998.51,  4328627.54,
28.40,    28.40,    0.00)  GC  UCART1

VOL3      1ST HIGHEST VALUE IS     347.49664 AT (  576998.51,  4328577.54,
28.30,    28.30,    0.00)  GC  UCART1
          2ND HIGHEST VALUE IS     287.96484 AT (  576998.51,  4328477.54,
28.10,    28.10,    0.00)  GC  UCART1
          3RD HIGHEST VALUE IS     226.87537 AT (  577048.51,  4328477.54,
28.00,    28.00,    0.00)  GC  UCART1
          4TH HIGHEST VALUE IS     187.98424 AT (  577048.51,  4328527.54,
28.10,    28.10,    0.00)  GC  UCART1
          5TH HIGHEST VALUE IS     161.83851 AT (  576948.51,  4328577.54,
28.50,    28.50,    0.00)  GC  UCART1
          6TH HIGHEST VALUE IS     156.20977 AT (  576948.51,  4328527.54,
28.30,    28.30,    0.00)  GC  UCART1
          7TH HIGHEST VALUE IS     122.63485 AT (  576998.51,  4328627.54,
28.40,    28.40,    0.00)  GC  UCART1
          8TH HIGHEST VALUE IS     113.24678 AT (  577048.51,  4328577.54,
28.10,    28.10,    0.00)  GC  UCART1
          9TH HIGHEST VALUE IS     108.62064 AT (  577048.51,  4328427.54,
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27.90,    27.90,    0.00)  GC  UCART1
         10TH HIGHEST VALUE IS     105.07709 AT (  576948.51,  4328627.54,
28.80,    28.80,    0.00)  GC  UCART1

VOL4      1ST HIGHEST VALUE IS     302.94038 AT (  577048.51,  4328577.54,
28.10,    28.10,    0.00)  GC  UCART1
          2ND HIGHEST VALUE IS     192.00501 AT (  576998.51,  4328677.54,
28.60,    28.60,    0.00)  GC  UCART1
          3RD HIGHEST VALUE IS     191.98551 AT (  577048.51,  4328627.54,
28.20,    28.20,    0.00)  GC  UCART1
          4TH HIGHEST VALUE IS     158.40016 AT (  577048.51,  4328527.54,
28.10,    28.10,    0.00)  GC  UCART1
          5TH HIGHEST VALUE IS     129.72524 AT (  576948.51,  4328627.54,
28.80,    28.80,    0.00)  GC  UCART1
          6TH HIGHEST VALUE IS     117.25470 AT (  576998.51,  4328527.54,
28.10,    28.10,    0.00)  GC  UCART1
          7TH HIGHEST VALUE IS     113.25508 AT (  576948.51,  4328677.54,
28.90,    28.90,    0.00)  GC  UCART1
          8TH HIGHEST VALUE IS      98.83309 AT (  577048.51,  4328677.54,
28.30,    28.30,    0.00)  GC  UCART1
          9TH HIGHEST VALUE IS      98.61352 AT (  576948.51,  4328577.54,
28.50,    28.50,    0.00)  GC  UCART1
         10TH HIGHEST VALUE IS      85.96840 AT (  576998.51,  4328727.54,
28.70,    28.70,    0.00)  GC  UCART1
↑ *** AERMOD - VERSION  19191 ***   *** C:\Users\agne\Desktop\Lakes AERMOD
Outputs\NCT\NCT.isc               ***        06/28/21
 *** AERMET - VERSION  19191 ***   ***
                       ***        11:38:15

                                  PAGE   6
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                  *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS
AVERAGED OVER   4 YEARS ***


                                   ** CONC OF UNITIZED IN MICROGRAMS/M**3
               **


                         NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR,
ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - -

VOL5      1ST HIGHEST VALUE IS    2711.72175 AT (  576948.51,  4328577.54,
28.50,    28.50,    0.00)  GC  UCART1
          2ND HIGHEST VALUE IS     975.92741 AT (  576948.51,  4328527.54,
28.30,    28.30,    0.00)  GC  UCART1
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          3RD HIGHEST VALUE IS     553.92905 AT (  576948.51,  4328627.54,
28.80,    28.80,    0.00)  GC  UCART1
          4TH HIGHEST VALUE IS     541.52207 AT (  576898.51,  4328577.54,
29.00,    29.00,    0.00)  GC  UCART1
          5TH HIGHEST VALUE IS     465.84262 AT (  576898.51,  4328627.54,
29.20,    29.20,    0.00)  GC  UCART1
          6TH HIGHEST VALUE IS     341.12921 AT (  576998.51,  4328527.54,
28.10,    28.10,    0.00)  GC  UCART1
          7TH HIGHEST VALUE IS     313.74443 AT (  576898.51,  4328527.54,
28.70,    28.70,    0.00)  GC  UCART1
          8TH HIGHEST VALUE IS     242.07141 AT (  576998.51,  4328477.54,
28.10,    28.10,    0.00)  GC  UCART1
          9TH HIGHEST VALUE IS     235.34263 AT (  576898.51,  4328677.54,
29.20,    29.20,    0.00)  GC  UCART1
         10TH HIGHEST VALUE IS     233.29659 AT (  576998.51,  4328577.54,
28.30,    28.30,    0.00)  GC  UCART1

VOL6      1ST HIGHEST VALUE IS     648.25857 AT (  576898.51,  4328527.54,
28.70,    28.70,    0.00)  GC  UCART1
          2ND HIGHEST VALUE IS     490.24703 AT (  576948.51,  4328477.54,
28.10,    28.10,    0.00)  GC  UCART1
          3RD HIGHEST VALUE IS     376.61274 AT (  576948.51,  4328527.54,
28.30,    28.30,    0.00)  GC  UCART1
          4TH HIGHEST VALUE IS     327.45036 AT (  576898.51,  4328577.54,
29.00,    29.00,    0.00)  GC  UCART1
          5TH HIGHEST VALUE IS     244.48441 AT (  576898.51,  4328477.54,
28.30,    28.30,    0.00)  GC  UCART1
          6TH HIGHEST VALUE IS     176.47340 AT (  576948.51,  4328577.54,
28.50,    28.50,    0.00)  GC  UCART1
          7TH HIGHEST VALUE IS     126.40600 AT (  576948.51,  4328427.54,
28.10,    28.10,    0.00)  GC  UCART1
          8TH HIGHEST VALUE IS     124.04140 AT (  576898.51,  4328627.54,
29.20,    29.20,    0.00)  GC  UCART1
          9TH HIGHEST VALUE IS     105.39106 AT (  576848.51,  4328527.54,
29.20,    29.20,    0.00)  GC  UCART1
         10TH HIGHEST VALUE IS     104.37586 AT (  576848.51,  4328577.54,
29.60,    29.60,    0.00)  GC  UCART1


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
 *** AERMOD - VERSION  19191 ***   *** C:\Users\agne\Desktop\Lakes AERMOD
Outputs\NCT\NCT.isc               ***        06/28/21
 *** AERMET - VERSION  19191 ***   ***
                        ***        11:38:15

                                   PAGE   7
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*
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                                                    *** THE SUMMARY OF HIGHEST  1-HR
RESULTS ***


                                      ** CONC OF UNITIZED IN MICROGRAMS/M**3
                **

                                                              DATE
                                                NETWORK
GROUP ID                            AVERAGE CONC     (YYMMDDHH)             RECEPTOR
(XR, YR, ZELEV, ZHILL, ZFLAG)     OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - -

SLINE1   HIGH   1ST HIGH VALUE IS    2295.16788  ON 16121719: AT (  576798.51,
4328377.54,    28.40,    28.40,    0.00)  GC  UCART1

SLINE2   HIGH   1ST HIGH VALUE IS    2535.82550  ON 16121719: AT (  577148.51,
4327727.54,    28.20,    28.20,    0.00)  GC  UCART1

SLINE3   HIGH   1ST HIGH VALUE IS    1266.28662  ON 17022308: AT (  576748.51,
4328727.54,    28.20,    28.20,    0.00)  GC  UCART1

STCK1    HIGH   1ST HIGH VALUE IS       2.48416  ON 14071407: AT (  576298.51,
4329177.54,    28.70,    28.70,    0.00)  GC  UCART1

VOL1     HIGH   1ST HIGH VALUE IS    4394.40452  ON 14012209: AT (  576898.51,
4328577.54,    29.00,    29.00,    0.00)  GC  UCART1

VOL2     HIGH   1ST HIGH VALUE IS    4749.16312  ON 14011309: AT (  577048.51,
4328727.54,    28.50,    28.50,    0.00)  GC  UCART1

VOL3     HIGH   1ST HIGH VALUE IS    5442.37264  ON 15120120: AT (  576998.51,
4328477.54,    28.10,    28.10,    0.00)  GC  UCART1

VOL4     HIGH   1ST HIGH VALUE IS    4592.39037  ON 14120821: AT (  577048.51,
4328577.54,    28.10,    28.10,    0.00)  GC  UCART1

VOL5     HIGH   1ST HIGH VALUE IS   54606.97497  ON 15091921: AT (  576948.51,
4328577.54,    28.50,    28.50,    0.00)  GC  UCART1

VOL6     HIGH   1ST HIGH VALUE IS   20986.77454  ON 15013009: AT (  576898.51,
4328527.54,    28.70,    28.70,    0.00)  GC  UCART1


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
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↑ *** AERMOD - VERSION  19191 ***   *** C:\Users\agne\Desktop\Lakes AERMOD
Outputs\NCT\NCT.isc               ***        06/28/21
 *** AERMET - VERSION  19191 ***   ***
                       ***        11:38:15

                                  PAGE   8
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            3 Warning Message(s)
 A Total of          996 Informational Message(s)

 A Total of        43680 Hours Were Processed

 A Total of          452 Calm Hours Identified

 A Total of          544 Missing Hours Identified (  1.25 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 ME W186     618       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
      0.50
 ME W187     618       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET

 MX W481   43681         MAIN: Data Remaining After End of Year. Number of Hours=
      8616
```

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↑ *** AERMOD - VERSION  19191 ***   *** C:\Users\agne\Desktop\Lakes AERMOD
Outputs\nct_train_source\nct_trai ***        06/29/21
 *** AERMET - VERSION  19191 ***   ***
                       ***       17:19:00

                                 PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                            ***     MODEL SETUP OPTIONS SUMMARY
  ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses RURAL Dispersion Only.

 **Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.

 **Other Options Specified:
        ADJ_U*   - Use ADJ_U* option for SBL in AERMET
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  UNITIZED

 **Model Calculates  1 Short Term Average(s) of:   1-HR
     and Calculates ANNUAL Averages

 **This Run Includes:     53 Source(s);       1 Source Group(s); and     754
Receptor(s)

                with:      0 POINT(s), including
                           0 POINTCAP(s) and      0 POINTHOR(s)
                 and:     53 VOLUME source(s)
                 and:      0 AREA type source(s)
                 and:      0 LINE source(s)
```

```
                and:      0 RLINE/RLINEXT source(s)
                and:      0 OPENPIT source(s)
                and:      0 BUOYANT LINE source(s) with      0 line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  19191

 **Output Options Selected:
          Model Outputs Tables of ANNUAL Averages by Receptor
          Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE
Keyword)
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)
          Model Outputs Separate Summary File of High Ranked Values (SUMMFILE
Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                 m for Missing
Hours
                                                                 b for Both Calm
and Missing Hours

 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =     0.00 ;  Decay
Coef. =    0.000     ;  Rot. Angle =     0.0
                  Emission Units = GRAMS/SEC                                ;
Emission Rate Unit Factor =   0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =      3.6 MB of RAM.

 **Input Runstream File:          aermod.inp

 **Output Print File:             aermod.out


 **Detailed Error/Message File:   nct_train_source.err

 **File for Summary of Results:   nct_train_source.sum

 *** AERMOD - VERSION  19191 ***   *** C:\Users\agne\Desktop\Lakes AERMOD
Outputs\nct_train_source\nct_trai ***        06/29/21
 *** AERMET - VERSION  19191 ***   ***
                       ***        17:19:00

                                  PAGE   2
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                             *** METEOROLOGICAL DAYS SELECTED FOR
```

```
PROCESSING ***
                                                                    (1=YES; 0=NO)

           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

```
*** AERMOD - VERSION  19191 ***   *** C:\Users\agne\Desktop\Lakes AERMOD
Outputs\nct_train_source\nct_trai ***        06/29/21
 *** AERMET - VERSION  19191 ***   ***
                       ***        17:19:00

                                  PAGE   3
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*
```

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

```
   Surface file:   ..\a-Met Data\Sac International Airport\14-18.SFC
                 Met Version:  19191
   Profile file:   ..\a-Met Data\Sac International Airport\14-18.PFL

   Surface format: FREE

   Profile format: FREE

   Surface station no.:    93225                  Upper air station no.:    23230
```

```
                  Name: UNKNOWN                                     Name:
OAKLAND/WSO_AP
                  Year:   2014                                      Year:   2014

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN
ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - -
 14 01 01   1 01  -15.5  0.166 -9.000 -9.000 -999.  162.     30.3  0.05   0.69
1.00    2.36  211.   10.1  275.4    2.0
 14 01 01   1 02   -3.4  0.079 -9.000 -9.000 -999.   56.     13.1  0.06   0.69
1.00    1.06  188.   10.1  273.8    2.0
 14 01 01   1 03  -12.2  0.146 -9.000 -9.000 -999.  134.     23.5  0.05   0.69
1.00    2.10  136.   10.1  275.9    2.0
 14 01 01   1 04  -23.3  0.226 -9.000 -9.000 -999.  257.     56.0  0.05   0.69
1.00    3.15  142.   10.1  277.0    2.0
 14 01 01   1 05  -16.2  0.171 -9.000 -9.000 -999.  170.     32.2  0.06   0.69
1.00    2.33  186.   10.1  274.9    2.0
 14 01 01   1 06   -3.0  0.076 -9.000 -9.000 -999.   55.     12.9  0.06   0.69
1.00    0.99  204.   10.1  273.1    2.0
 14 01 01   1 07   -4.8  0.092 -9.000 -9.000 -999.   67.     14.7  0.07   0.69
1.00    1.28  171.   10.1  272.0    2.0
 14 01 01   1 08   -1.8  0.065 -9.000 -9.000 -999.   40.     14.3  0.06   0.69
1.00    0.67  183.   10.1  273.1    2.0
 14 01 01   1 09   -0.3  0.062 -9.000 -9.000 -999.   37.     75.4  0.06   0.69
0.41    0.82  181.   10.1  278.1    2.0
 14 01 01   1 10   36.6  0.151  0.431  0.020   80.  141.     -8.6  0.05   0.69
0.28    1.55  141.   10.1  280.4    2.0
 14 01 01   1 11   65.9  0.162  0.666  0.019  163.  157.     -5.9  0.07   0.69
0.24    1.48  161.   10.1  283.1    2.0
 14 01 01   1 12   82.5  0.174  0.784  0.017  212.  175.     -5.8  0.07   0.69
0.22    1.59  152.   10.1  285.9    2.0
 14 01 01   1 13   86.0  0.219  0.835  0.015  246.  246.    -11.1  0.07   0.69
0.22    2.18  154.   10.1  288.1    2.0
 14 01 01   1 14   74.8  0.234  0.838  0.014  286.  272.    -15.6  0.05   0.69
0.23    2.56  229.   10.1  288.1    2.0
 14 01 01   1 15   42.8  0.198  0.714  0.013  308.  212.    -16.5  0.06   0.69
0.26    2.08  180.   10.1  288.8    2.0
 14 01 01   1 16   15.1  0.151  0.507  0.013  315.  141.    -20.7  0.06   0.69
0.35    1.62  194.   10.1  288.1    2.0
 14 01 01   1 17   -9.6  0.137 -9.000 -9.000 -999.  122.     24.4  0.05   0.69
0.61    1.96  223.   10.1  286.4    2.0
 14 01 01   1 18   -1.5  0.061 -9.000 -9.000 -999.   38.     13.6  0.04   0.69
1.00    0.65  251.   10.1  283.8    2.0
 14 01 01   1 19   -1.5  0.058 -9.000 -9.000 -999.   34.     12.1  0.02   0.69
1.00    0.72   47.   10.1  280.9    2.0
 14 01 01   1 20   -3.4  0.076 -9.000 -9.000 -999.   50.     11.8  0.03   0.69
1.00    1.20   81.   10.1  278.8    2.0
 14 01 01   1 21   -2.2  0.065 -9.000 -9.000 -999.   40.     11.5  0.03   0.69
```

```
1.00    0.91   73.   10.1  278.8    2.0
 14 01 01   1 22   -1.6  0.059 -9.000 -9.000 -999.   35.     12.0  0.02   0.69
1.00    0.74   22.   10.1  279.2    2.0
 14 01 01   1 23   -1.9  0.063 -9.000 -9.000 -999.   38.     11.9  0.03   0.69
1.00    0.82   60.   10.1  277.0    2.0
 14 01 01   1 24   -5.1  0.090 -9.000 -9.000 -999.   65.     13.1  0.02   0.69
1.00    1.57   34.   10.1  276.4    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 14 01 01 01   10.1 1  211.    2.36   275.4   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
 *** AERMOD - VERSION  19191 ***   *** C:\Users\agne\Desktop\Lakes AERMOD
Outputs\nct_train_source\nct_trai ***        06/29/21
 *** AERMET - VERSION  19191 ***   ***
                       ***        17:19:00

                                  PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                  *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS
AVERAGED OVER   4 YEARS ***


                                   ** CONC OF UNITIZED IN MICROGRAMS/M**3
                **


                        NETWORK
GROUP ID                      AVERAGE CONC                RECEPTOR  (XR, YR,
ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - -

11        1ST HIGHEST VALUE IS      91.60784 AT (  576598.51,  4328827.54,
28.20,    28.20,    0.00)  GC  UCART1
          2ND HIGHEST VALUE IS      87.27851 AT (  576948.51,  4328177.54,
28.20,    28.20,    0.00)  GC  UCART1
          3RD HIGHEST VALUE IS      85.69391 AT (  576548.51,  4328927.54,
28.20,    28.20,    0.00)  GC  UCART1
          4TH HIGHEST VALUE IS      80.59637 AT (  576748.51,  4328577.54,
29.80,    29.80,    0.00)  GC  UCART1
          5TH HIGHEST VALUE IS      80.03958 AT (  576601.06,  4328802.64,
28.22,    28.22,    0.00)  DC
          6TH HIGHEST VALUE IS      74.66376 AT (  576818.55,  4328402.25,
28.30,    28.30,    0.00)  DC
          7TH HIGHEST VALUE IS      73.62741 AT (  576798.51,  4328477.54,
28.90,    28.90,    0.00)  GC  UCART1
```

```
          8TH HIGHEST VALUE IS      73.20588 AT (  576798.51,  4328427.54,
28.50,    28.50,    0.00)  GC  UCART1
          9TH HIGHEST VALUE IS      72.91493 AT (  576698.51,  4328627.54,
29.70,    29.70,    0.00)  GC  UCART1
         10TH HIGHEST VALUE IS      72.79547 AT (  576648.51,  4328727.54,
28.20,    28.20,    0.00)  GC  UCART1


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
 *** AERMOD - VERSION  19191 ***   *** C:\Users\agne\Desktop\Lakes AERMOD
Outputs\nct_train_source\nct_trai ***        06/29/21
 *** AERMET - VERSION  19191 ***   ***
                        ***        17:19:00

                                   PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                                *** THE SUMMARY OF HIGHEST  1-HR
RESULTS ***


                                    ** CONC OF UNITIZED IN MICROGRAMS/M**3
                **

                                                          DATE
                                            NETWORK
GROUP ID                           AVERAGE CONC     (YYMMDDHH)            RECEPTOR
(XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - -

11       HIGH   1ST HIGH VALUE IS    1447.36011  ON 16021108: AT (  576898.51,
4328227.54,    28.20,    28.20,    0.00)  GC  UCART1


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
 *** AERMOD - VERSION  19191 ***   *** C:\Users\agne\Desktop\Lakes AERMOD
Outputs\nct_train_source\nct_trai ***        06/29/21
 *** AERMET - VERSION  19191 ***   ***
                        ***        17:19:00

                                   PAGE   6
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*
```

```
*** Message Summary : AERMOD Model Execution ***

 --------- Summary of Total Messages --------

A Total of            0 Fatal Error Message(s)
A Total of            3 Warning Message(s)
A Total of          996 Informational Message(s)

A Total of        43680 Hours Were Processed

A Total of          452 Calm Hours Identified

A Total of          544 Missing Hours Identified (  1.25 Percent)


   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
ME W186     190       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
     0.50
ME W187     190       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET

MX W481   43681         MAIN: Data Remaining After End of Year. Number of Hours=
     8616
```

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO	INH_RISK
1	ALL	UCART1	576248.51	4327727.54	6.13E-08	25YrCancerDerived_InhSoilDerm	6.13E-08
2	ALL	UCART1	576298.51	4327727.54	6.48E-08	25YrCancerDerived_InhSoilDerm	6.48E-08
3	ALL	UCART1	576348.51	4327727.54	6.84E-08	25YrCancerDerived_InhSoilDerm	6.84E-08
4	ALL	UCART1	576398.51	4327727.54	7.19E-08	25YrCancerDerived_InhSoilDerm	7.19E-08
5	ALL	UCART1	576448.51	4327727.54	7.54E-08	25YrCancerDerived_InhSoilDerm	7.54E-08
6	ALL	UCART1	576498.51	4327727.54	7.94E-08	25YrCancerDerived_InhSoilDerm	7.94E-08
7	ALL	UCART1	576548.51	4327727.54	8.42E-08	25YrCancerDerived_InhSoilDerm	8.42E-08
8	ALL	UCART1	576598.51	4327727.54	8.98E-08	25YrCancerDerived_InhSoilDerm	8.98E-08
9	ALL	UCART1	576648.51	4327727.54	9.55E-08	25YrCancerDerived_InhSoilDerm	9.55E-08
10	ALL	UCART1	576698.51	4327727.54	1.01E-07	25YrCancerDerived_InhSoilDerm	1.01E-07
11	ALL	UCART1	576748.51	4327727.54	1.06E-07	25YrCancerDerived_InhSoilDerm	1.06E-07
12	ALL	UCART1	576798.51	4327727.54	1.10E-07	25YrCancerDerived_InhSoilDerm	1.10E-07
13	ALL	UCART1	576848.51	4327727.54	1.16E-07	25YrCancerDerived_InhSoilDerm	1.16E-07
14	ALL	UCART1	576898.51	4327727.54	1.24E-07	25YrCancerDerived_InhSoilDerm	1.24E-07
15	ALL	UCART1	576948.51	4327727.54	1.30E-07	25YrCancerDerived_InhSoilDerm	1.30E-07
16	ALL	UCART1	576998.51	4327727.54	1.35E-07	25YrCancerDerived_InhSoilDerm	1.35E-07
17	ALL	UCART1	577048.51	4327727.54	1.43E-07	25YrCancerDerived_InhSoilDerm	1.43E-07
18	ALL	UCART1	577098.51	4327727.54	1.64E-07	25YrCancerDerived_InhSoilDerm	1.64E-07
19	ALL	UCART1	577148.51	4327727.54	2.16E-07	25YrCancerDerived_InhSoilDerm	2.16E-07
20	ALL	UCART1	577198.51	4327727.54	1.68E-07	25YrCancerDerived_InhSoilDerm	1.68E-07
21	ALL	UCART1	577248.51	4327727.54	1.61E-07	25YrCancerDerived_InhSoilDerm	1.61E-07
22	ALL	UCART1	577298.51	4327727.54	1.61E-07	25YrCancerDerived_InhSoilDerm	1.61E-07
23	ALL	UCART1	577348.51	4327727.54	1.60E-07	25YrCancerDerived_InhSoilDerm	1.60E-07
24	ALL	UCART1	577398.51	4327727.54	1.59E-07	25YrCancerDerived_InhSoilDerm	1.59E-07
25	ALL	UCART1	577448.51	4327727.54	1.57E-07	25YrCancerDerived_InhSoilDerm	1.57E-07
26	ALL	UCART1	576248.51	4327777.54	6.47E-08	25YrCancerDerived_InhSoilDerm	6.47E-08
27	ALL	UCART1	576298.51	4327777.54	6.85E-08	25YrCancerDerived_InhSoilDerm	6.85E-08
28	ALL	UCART1	576348.51	4327777.54	7.26E-08	25YrCancerDerived_InhSoilDerm	7.26E-08
29	ALL	UCART1	576398.51	4327777.54	7.69E-08	25YrCancerDerived_InhSoilDerm	7.69E-08
30	ALL	UCART1	576448.51	4327777.54	8.10E-08	25YrCancerDerived_InhSoilDerm	8.10E-08
31	ALL	UCART1	576498.51	4327777.54	8.54E-08	25YrCancerDerived_InhSoilDerm	8.54E-08
32	ALL	UCART1	576548.51	4327777.54	9.06E-08	25YrCancerDerived_InhSoilDerm	9.06E-08
33	ALL	UCART1	576598.51	4327777.54	9.68E-08	25YrCancerDerived_InhSoilDerm	9.68E-08
34	ALL	UCART1	576648.51	4327777.54	1.04E-07	25YrCancerDerived_InhSoilDerm	1.04E-07
35	ALL	UCART1	576698.51	4327777.54	1.10E-07	25YrCancerDerived_InhSoilDerm	1.10E-07
36	ALL	UCART1	576748.51	4327777.54	1.16E-07	25YrCancerDerived_InhSoilDerm	1.16E-07
37	ALL	UCART1	576798.51	4327777.54	1.22E-07	25YrCancerDerived_InhSoilDerm	1.22E-07
38	ALL	UCART1	576848.51	4327777.54	1.29E-07	25YrCancerDerived_InhSoilDerm	1.29E-07
39	ALL	UCART1	576898.51	4327777.54	1.38E-07	25YrCancerDerived_InhSoilDerm	1.38E-07
40	ALL	UCART1	576948.51	4327777.54	1.46E-07	25YrCancerDerived_InhSoilDerm	1.46E-07
41	ALL	UCART1	576998.51	4327777.54	1.54E-07	25YrCancerDerived_InhSoilDerm	1.54E-07
42	ALL	UCART1	577048.51	4327777.54	1.67E-07	25YrCancerDerived_InhSoilDerm	1.67E-07
43	ALL	UCART1	577098.51	4327777.54	2.32E-07	25YrCancerDerived_InhSoilDerm	2.32E-07
44	ALL	UCART1	577148.51	4327777.54	2.16E-07	25YrCancerDerived_InhSoilDerm	2.16E-07
45	ALL	UCART1	577198.51	4327777.54	1.83E-07	25YrCancerDerived_InhSoilDerm	1.83E-07
46	ALL	UCART1	577248.51	4327777.54	1.79E-07	25YrCancerDerived_InhSoilDerm	1.79E-07
47	ALL	UCART1	577298.51	4327777.54	1.78E-07	25YrCancerDerived_InhSoilDerm	1.78E-07
48	ALL	UCART1	577348.51	4327777.54	1.77E-07	25YrCancerDerived_InhSoilDerm	1.77E-07
49	ALL	UCART1	577398.51	4327777.54	1.75E-07	25YrCancerDerived_InhSoilDerm	1.75E-07
50	ALL	UCART1	577448.51	4327777.54	1.72E-07	25YrCancerDerived_InhSoilDerm	1.72E-07
51	ALL	UCART1	576248.51	4327827.54	6.83E-08	25YrCancerDerived_InhSoilDerm	6.83E-08
52	ALL	UCART1	576298.51	4327827.54	7.25E-08	25YrCancerDerived_InhSoilDerm	7.25E-08
53	ALL	UCART1	576348.51	4327827.54	7.71E-08	25YrCancerDerived_InhSoilDerm	7.71E-08
54	ALL	UCART1	576398.51	4327827.54	8.21E-08	25YrCancerDerived_InhSoilDerm	8.21E-08

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO	INH_RISK
55	ALL	UCART1	576448.51	4327827.54	8.72E-08	25YrCancerDerived_InhSoilDerm	8.72E-08
56	ALL	UCART1	576498.51	4327827.54	9.24E-08	25YrCancerDerived_InhSoilDerm	9.24E-08
57	ALL	UCART1	576548.51	4327827.54	9.80E-08	25YrCancerDerived_InhSoilDerm	9.80E-08
58	ALL	UCART1	576598.51	4327827.54	1.05E-07	25YrCancerDerived_InhSoilDerm	1.05E-07
59	ALL	UCART1	576648.51	4327827.54	1.13E-07	25YrCancerDerived_InhSoilDerm	1.13E-07
60	ALL	UCART1	576698.51	4327827.54	1.21E-07	25YrCancerDerived_InhSoilDerm	1.21E-07
61	ALL	UCART1	576748.51	4327827.54	1.29E-07	25YrCancerDerived_InhSoilDerm	1.29E-07
62	ALL	UCART1	576798.51	4327827.54	1.36E-07	25YrCancerDerived_InhSoilDerm	1.36E-07
63	ALL	UCART1	576848.51	4327827.54	1.45E-07	25YrCancerDerived_InhSoilDerm	1.45E-07
64	ALL	UCART1	576898.51	4327827.54	1.55E-07	25YrCancerDerived_InhSoilDerm	1.55E-07
65	ALL	UCART1	576948.51	4327827.54	1.67E-07	25YrCancerDerived_InhSoilDerm	1.67E-07
66	ALL	UCART1	576998.51	4327827.54	1.78E-07	25YrCancerDerived_InhSoilDerm	1.78E-07
67	ALL	UCART1	577048.51	4327827.54	2.04E-07	25YrCancerDerived_InhSoilDerm	2.04E-07
68	ALL	UCART1	577098.51	4327827.54	2.90E-07	25YrCancerDerived_InhSoilDerm	2.90E-07
69	ALL	UCART1	577148.51	4327827.54	2.13E-07	25YrCancerDerived_InhSoilDerm	2.13E-07
70	ALL	UCART1	577198.51	4327827.54	2.02E-07	25YrCancerDerived_InhSoilDerm	2.02E-07
71	ALL	UCART1	577248.51	4327827.54	2.00E-07	25YrCancerDerived_InhSoilDerm	2.00E-07
72	ALL	UCART1	577298.51	4327827.54	1.99E-07	25YrCancerDerived_InhSoilDerm	1.99E-07
73	ALL	UCART1	577348.51	4327827.54	1.97E-07	25YrCancerDerived_InhSoilDerm	1.97E-07
74	ALL	UCART1	577398.51	4327827.54	1.94E-07	25YrCancerDerived_InhSoilDerm	1.94E-07
75	ALL	UCART1	577448.51	4327827.54	1.88E-07	25YrCancerDerived_InhSoilDerm	1.88E-07
76	ALL	UCART1	576248.51	4327877.54	7.20E-08	25YrCancerDerived_InhSoilDerm	7.20E-08
77	ALL	UCART1	576298.51	4327877.54	7.69E-08	25YrCancerDerived_InhSoilDerm	7.69E-08
78	ALL	UCART1	576348.51	4327877.54	8.20E-08	25YrCancerDerived_InhSoilDerm	8.20E-08
79	ALL	UCART1	576398.51	4327877.54	8.77E-08	25YrCancerDerived_InhSoilDerm	8.77E-08
80	ALL	UCART1	576448.51	4327877.54	9.37E-08	25YrCancerDerived_InhSoilDerm	9.37E-08
81	ALL	UCART1	576498.51	4327877.54	1.00E-07	25YrCancerDerived_InhSoilDerm	1.00E-07
82	ALL	UCART1	576548.51	4327877.54	1.07E-07	25YrCancerDerived_InhSoilDerm	1.07E-07
83	ALL	UCART1	576598.51	4327877.54	1.14E-07	25YrCancerDerived_InhSoilDerm	1.14E-07
84	ALL	UCART1	576648.51	4327877.54	1.23E-07	25YrCancerDerived_InhSoilDerm	1.23E-07
85	ALL	UCART1	576698.51	4327877.54	1.33E-07	25YrCancerDerived_InhSoilDerm	1.33E-07
86	ALL	UCART1	576748.51	4327877.54	1.43E-07	25YrCancerDerived_InhSoilDerm	1.43E-07
87	ALL	UCART1	576798.51	4327877.54	1.53E-07	25YrCancerDerived_InhSoilDerm	1.53E-07
88	ALL	UCART1	576848.51	4327877.54	1.63E-07	25YrCancerDerived_InhSoilDerm	1.63E-07
89	ALL	UCART1	576898.51	4327877.54	1.77E-07	25YrCancerDerived_InhSoilDerm	1.77E-07
90	ALL	UCART1	576948.51	4327877.54	1.92E-07	25YrCancerDerived_InhSoilDerm	1.92E-07
91	ALL	UCART1	576998.51	4327877.54	2.10E-07	25YrCancerDerived_InhSoilDerm	2.10E-07
92	ALL	UCART1	577048.51	4327877.54	2.59E-07	25YrCancerDerived_InhSoilDerm	2.59E-07
93	ALL	UCART1	577098.51	4327877.54	2.56E-07	25YrCancerDerived_InhSoilDerm	2.56E-07
94	ALL	UCART1	577148.51	4327877.54	2.30E-07	25YrCancerDerived_InhSoilDerm	2.30E-07
95	ALL	UCART1	577198.51	4327877.54	2.26E-07	25YrCancerDerived_InhSoilDerm	2.26E-07
96	ALL	UCART1	577248.51	4327877.54	2.25E-07	25YrCancerDerived_InhSoilDerm	2.25E-07
97	ALL	UCART1	577298.51	4327877.54	2.23E-07	25YrCancerDerived_InhSoilDerm	2.23E-07
98	ALL	UCART1	577348.51	4327877.54	2.20E-07	25YrCancerDerived_InhSoilDerm	2.20E-07
99	ALL	UCART1	577398.51	4327877.54	2.14E-07	25YrCancerDerived_InhSoilDerm	2.14E-07
100	ALL	UCART1	577448.51	4327877.54	2.05E-07	25YrCancerDerived_InhSoilDerm	2.05E-07
101	ALL	UCART1	576248.51	4327927.54	7.55E-08	25YrCancerDerived_InhSoilDerm	7.55E-08
102	ALL	UCART1	576298.51	4327927.54	8.13E-08	25YrCancerDerived_InhSoilDerm	8.13E-08
103	ALL	UCART1	576348.51	4327927.54	8.73E-08	25YrCancerDerived_InhSoilDerm	8.73E-08
104	ALL	UCART1	576398.51	4327927.54	9.37E-08	25YrCancerDerived_InhSoilDerm	9.37E-08
105	ALL	UCART1	576448.51	4327927.54	1.01E-07	25YrCancerDerived_InhSoilDerm	1.01E-07
106	ALL	UCART1	576498.51	4327927.54	1.08E-07	25YrCancerDerived_InhSoilDerm	1.08E-07
107	ALL	UCART1	576548.51	4327927.54	1.16E-07	25YrCancerDerived_InhSoilDerm	1.16E-07
108	ALL	UCART1	576598.51	4327927.54	1.25E-07	25YrCancerDerived_InhSoilDerm	1.25E-07

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO	INH_RISK
109	ALL	UCART1	576648.51	4327927.54	1.35E-07	25YrCancerDerived_InhSoilDerm	1.35E-07
110	ALL	UCART1	576698.51	4327927.54	1.47E-07	25YrCancerDerived_InhSoilDerm	1.47E-07
111	ALL	UCART1	576748.51	4327927.54	1.60E-07	25YrCancerDerived_InhSoilDerm	1.60E-07
112	ALL	UCART1	576798.51	4327927.54	1.73E-07	25YrCancerDerived_InhSoilDerm	1.73E-07
113	ALL	UCART1	576848.51	4327927.54	1.86E-07	25YrCancerDerived_InhSoilDerm	1.86E-07
114	ALL	UCART1	576898.51	4327927.54	2.04E-07	25YrCancerDerived_InhSoilDerm	2.04E-07
115	ALL	UCART1	576948.51	4327927.54	2.26E-07	25YrCancerDerived_InhSoilDerm	2.26E-07
116	ALL	UCART1	576998.51	4327927.54	2.62E-07	25YrCancerDerived_InhSoilDerm	2.62E-07
117	ALL	UCART1	577048.51	4327927.54	3.08E-07	25YrCancerDerived_InhSoilDerm	3.08E-07
118	ALL	UCART1	577098.51	4327927.54	2.66E-07	25YrCancerDerived_InhSoilDerm	2.66E-07
119	ALL	UCART1	577148.51	4327927.54	2.57E-07	25YrCancerDerived_InhSoilDerm	2.57E-07
120	ALL	UCART1	577198.51	4327927.54	2.55E-07	25YrCancerDerived_InhSoilDerm	2.55E-07
121	ALL	UCART1	577248.51	4327927.54	2.55E-07	25YrCancerDerived_InhSoilDerm	2.55E-07
122	ALL	UCART1	577298.51	4327927.54	2.53E-07	25YrCancerDerived_InhSoilDerm	2.53E-07
123	ALL	UCART1	577348.51	4327927.54	2.47E-07	25YrCancerDerived_InhSoilDerm	2.47E-07
124	ALL	UCART1	577398.51	4327927.54	2.37E-07	25YrCancerDerived_InhSoilDerm	2.37E-07
125	ALL	UCART1	577448.51	4327927.54	2.24E-07	25YrCancerDerived_InhSoilDerm	2.24E-07
126	ALL	UCART1	576248.51	4327977.54	7.87E-08	25YrCancerDerived_InhSoilDerm	7.87E-08
127	ALL	UCART1	576298.51	4327977.54	8.54E-08	25YrCancerDerived_InhSoilDerm	8.54E-08
128	ALL	UCART1	576348.51	4327977.54	9.26E-08	25YrCancerDerived_InhSoilDerm	9.26E-08
129	ALL	UCART1	576398.51	4327977.54	1.00E-07	25YrCancerDerived_InhSoilDerm	1.00E-07
130	ALL	UCART1	576448.51	4327977.54	1.08E-07	25YrCancerDerived_InhSoilDerm	1.08E-07
131	ALL	UCART1	576498.51	4327977.54	1.17E-07	25YrCancerDerived_InhSoilDerm	1.17E-07
132	ALL	UCART1	576548.51	4327977.54	1.27E-07	25YrCancerDerived_InhSoilDerm	1.27E-07
133	ALL	UCART1	576598.51	4327977.54	1.38E-07	25YrCancerDerived_InhSoilDerm	1.38E-07
134	ALL	UCART1	576648.51	4327977.54	1.49E-07	25YrCancerDerived_InhSoilDerm	1.49E-07
135	ALL	UCART1	576698.51	4327977.54	1.63E-07	25YrCancerDerived_InhSoilDerm	1.63E-07
136	ALL	UCART1	576748.51	4327977.54	1.80E-07	25YrCancerDerived_InhSoilDerm	1.80E-07
137	ALL	UCART1	576798.51	4327977.54	1.97E-07	25YrCancerDerived_InhSoilDerm	1.97E-07
138	ALL	UCART1	576848.51	4327977.54	2.16E-07	25YrCancerDerived_InhSoilDerm	2.16E-07
139	ALL	UCART1	576898.51	4327977.54	2.40E-07	25YrCancerDerived_InhSoilDerm	2.40E-07
140	ALL	UCART1	576948.51	4327977.54	2.74E-07	25YrCancerDerived_InhSoilDerm	2.74E-07
141	ALL	UCART1	576998.51	4327977.54	3.44E-07	25YrCancerDerived_InhSoilDerm	3.44E-07
142	ALL	UCART1	577048.51	4327977.54	3.22E-07	25YrCancerDerived_InhSoilDerm	3.22E-07
143	ALL	UCART1	577098.51	4327977.54	2.97E-07	25YrCancerDerived_InhSoilDerm	2.97E-07
144	ALL	UCART1	577148.51	4327977.54	2.92E-07	25YrCancerDerived_InhSoilDerm	2.92E-07
145	ALL	UCART1	577198.51	4327977.54	2.92E-07	25YrCancerDerived_InhSoilDerm	2.92E-07
146	ALL	UCART1	577248.51	4327977.54	2.92E-07	25YrCancerDerived_InhSoilDerm	2.92E-07
147	ALL	UCART1	577298.51	4327977.54	2.87E-07	25YrCancerDerived_InhSoilDerm	2.87E-07
148	ALL	UCART1	577348.51	4327977.54	2.77E-07	25YrCancerDerived_InhSoilDerm	2.77E-07
149	ALL	UCART1	577398.51	4327977.54	2.62E-07	25YrCancerDerived_InhSoilDerm	2.62E-07
150	ALL	UCART1	577448.51	4327977.54	2.42E-07	25YrCancerDerived_InhSoilDerm	2.42E-07
151	ALL	UCART1	576248.51	4328027.54	8.16E-08	25YrCancerDerived_InhSoilDerm	8.16E-08
152	ALL	UCART1	576298.51	4328027.54	8.92E-08	25YrCancerDerived_InhSoilDerm	8.92E-08
153	ALL	UCART1	576348.51	4328027.54	9.76E-08	25YrCancerDerived_InhSoilDerm	9.76E-08
154	ALL	UCART1	576398.51	4328027.54	1.07E-07	25YrCancerDerived_InhSoilDerm	1.07E-07
155	ALL	UCART1	576448.51	4328027.54	1.16E-07	25YrCancerDerived_InhSoilDerm	1.16E-07
156	ALL	UCART1	576498.51	4328027.54	1.27E-07	25YrCancerDerived_InhSoilDerm	1.27E-07
157	ALL	UCART1	576548.51	4328027.54	1.39E-07	25YrCancerDerived_InhSoilDerm	1.39E-07
158	ALL	UCART1	576598.51	4328027.54	1.52E-07	25YrCancerDerived_InhSoilDerm	1.52E-07
159	ALL	UCART1	576648.51	4328027.54	1.66E-07	25YrCancerDerived_InhSoilDerm	1.66E-07
160	ALL	UCART1	576698.51	4328027.54	1.83E-07	25YrCancerDerived_InhSoilDerm	1.83E-07
161	ALL	UCART1	576748.51	4328027.54	2.03E-07	25YrCancerDerived_InhSoilDerm	2.03E-07
162	ALL	UCART1	576798.51	4328027.54	2.27E-07	25YrCancerDerived_InhSoilDerm	2.27E-07

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO	INH_RISK
163	ALL	UCART1	576848.51	4328027.54	2.54E-07	25YrCancerDerived_InhSoilDerm	2.54E-07
164	ALL	UCART1	576898.51	4328027.54	2.90E-07	25YrCancerDerived_InhSoilDerm	2.90E-07
165	ALL	UCART1	576948.51	4328027.54	3.60E-07	25YrCancerDerived_InhSoilDerm	3.60E-07
166	ALL	UCART1	576998.51	4328027.54	4.45E-07	25YrCancerDerived_InhSoilDerm	4.45E-07
167	ALL	UCART1	577048.51	4328027.54	3.64E-07	25YrCancerDerived_InhSoilDerm	3.64E-07
168	ALL	UCART1	577098.51	4328027.54	3.39E-07	25YrCancerDerived_InhSoilDerm	3.39E-07
169	ALL	UCART1	577148.51	4328027.54	3.37E-07	25YrCancerDerived_InhSoilDerm	3.37E-07
170	ALL	UCART1	577198.51	4328027.54	3.39E-07	25YrCancerDerived_InhSoilDerm	3.39E-07
171	ALL	UCART1	577248.51	4328027.54	3.38E-07	25YrCancerDerived_InhSoilDerm	3.38E-07
172	ALL	UCART1	577298.51	4328027.54	3.28E-07	25YrCancerDerived_InhSoilDerm	3.28E-07
173	ALL	UCART1	577348.51	4328027.54	3.11E-07	25YrCancerDerived_InhSoilDerm	3.11E-07
174	ALL	UCART1	577398.51	4328027.54	2.87E-07	25YrCancerDerived_InhSoilDerm	2.87E-07
175	ALL	UCART1	577448.51	4328027.54	2.58E-07	25YrCancerDerived_InhSoilDerm	2.58E-07
176	ALL	UCART1	576248.51	4328077.54	8.42E-08	25YrCancerDerived_InhSoilDerm	8.42E-08
177	ALL	UCART1	576298.51	4328077.54	9.27E-08	25YrCancerDerived_InhSoilDerm	9.27E-08
178	ALL	UCART1	576348.51	4328077.54	1.02E-07	25YrCancerDerived_InhSoilDerm	1.02E-07
179	ALL	UCART1	576398.51	4328077.54	1.13E-07	25YrCancerDerived_InhSoilDerm	1.13E-07
180	ALL	UCART1	576448.51	4328077.54	1.25E-07	25YrCancerDerived_InhSoilDerm	1.25E-07
181	ALL	UCART1	576498.51	4328077.54	1.37E-07	25YrCancerDerived_InhSoilDerm	1.37E-07
182	ALL	UCART1	576548.51	4328077.54	1.52E-07	25YrCancerDerived_InhSoilDerm	1.52E-07
183	ALL	UCART1	576598.51	4328077.54	1.68E-07	25YrCancerDerived_InhSoilDerm	1.68E-07
184	ALL	UCART1	576648.51	4328077.54	1.86E-07	25YrCancerDerived_InhSoilDerm	1.86E-07
185	ALL	UCART1	576698.51	4328077.54	2.06E-07	25YrCancerDerived_InhSoilDerm	2.06E-07
186	ALL	UCART1	576748.51	4328077.54	2.32E-07	25YrCancerDerived_InhSoilDerm	2.32E-07
187	ALL	UCART1	576798.51	4328077.54	2.63E-07	25YrCancerDerived_InhSoilDerm	2.63E-07
188	ALL	UCART1	576848.51	4328077.54	3.03E-07	25YrCancerDerived_InhSoilDerm	3.03E-07
189	ALL	UCART1	576898.51	4328077.54	3.66E-07	25YrCancerDerived_InhSoilDerm	3.66E-07
190	ALL	UCART1	576948.51	4328077.54	5.26E-07	25YrCancerDerived_InhSoilDerm	5.26E-07
191	ALL	UCART1	576998.51	4328077.54	5.02E-07	25YrCancerDerived_InhSoilDerm	5.02E-07
192	ALL	UCART1	577048.51	4328077.54	4.12E-07	25YrCancerDerived_InhSoilDerm	4.12E-07
193	ALL	UCART1	577098.51	4328077.54	3.92E-07	25YrCancerDerived_InhSoilDerm	3.92E-07
194	ALL	UCART1	577148.51	4328077.54	3.97E-07	25YrCancerDerived_InhSoilDerm	3.97E-07
195	ALL	UCART1	577198.51	4328077.54	4.01E-07	25YrCancerDerived_InhSoilDerm	4.01E-07
196	ALL	UCART1	577248.51	4328077.54	3.94E-07	25YrCancerDerived_InhSoilDerm	3.94E-07
197	ALL	UCART1	577298.51	4328077.54	3.76E-07	25YrCancerDerived_InhSoilDerm	3.76E-07
198	ALL	UCART1	577348.51	4328077.54	3.47E-07	25YrCancerDerived_InhSoilDerm	3.47E-07
199	ALL	UCART1	577398.51	4328077.54	3.10E-07	25YrCancerDerived_InhSoilDerm	3.10E-07
200	ALL	UCART1	577448.51	4328077.54	2.71E-07	25YrCancerDerived_InhSoilDerm	2.71E-07
201	ALL	UCART1	576248.51	4328127.54	8.67E-08	25YrCancerDerived_InhSoilDerm	8.67E-08
202	ALL	UCART1	576298.51	4328127.54	9.57E-08	25YrCancerDerived_InhSoilDerm	9.57E-08
203	ALL	UCART1	576348.51	4328127.54	1.06E-07	25YrCancerDerived_InhSoilDerm	1.06E-07
204	ALL	UCART1	576398.51	4328127.54	1.18E-07	25YrCancerDerived_InhSoilDerm	1.18E-07
205	ALL	UCART1	576448.51	4328127.54	1.32E-07	25YrCancerDerived_InhSoilDerm	1.32E-07
206	ALL	UCART1	576498.51	4328127.54	1.48E-07	25YrCancerDerived_InhSoilDerm	1.48E-07
207	ALL	UCART1	576548.51	4328127.54	1.66E-07	25YrCancerDerived_InhSoilDerm	1.66E-07
208	ALL	UCART1	576598.51	4328127.54	1.85E-07	25YrCancerDerived_InhSoilDerm	1.85E-07
209	ALL	UCART1	576648.51	4328127.54	2.08E-07	25YrCancerDerived_InhSoilDerm	2.08E-07
210	ALL	UCART1	576698.51	4328127.54	2.35E-07	25YrCancerDerived_InhSoilDerm	2.35E-07
211	ALL	UCART1	576748.51	4328127.54	2.67E-07	25YrCancerDerived_InhSoilDerm	2.67E-07
212	ALL	UCART1	576798.51	4328127.54	3.10E-07	25YrCancerDerived_InhSoilDerm	3.10E-07
213	ALL	UCART1	576848.51	4328127.54	3.71E-07	25YrCancerDerived_InhSoilDerm	3.71E-07
214	ALL	UCART1	576898.51	4328127.54	4.98E-07	25YrCancerDerived_InhSoilDerm	4.98E-07
215	ALL	UCART1	576948.51	4328127.54	6.71E-07	25YrCancerDerived_InhSoilDerm	6.71E-07
216	ALL	UCART1	576998.51	4328127.54	6.29E-07	25YrCancerDerived_InhSoilDerm	6.29E-07

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO	INH_RISK
217	ALL	UCART1	577048.51	4328127.54	4.69E-07	25YrCancerDerived_InhSoilDerm	4.69E-07
218	ALL	UCART1	577098.51	4328127.54	4.66E-07	25YrCancerDerived_InhSoilDerm	4.66E-07
219	ALL	UCART1	577148.51	4328127.54	4.80E-07	25YrCancerDerived_InhSoilDerm	4.80E-07
220	ALL	UCART1	577198.51	4328127.54	4.81E-07	25YrCancerDerived_InhSoilDerm	4.81E-07
221	ALL	UCART1	577248.51	4328127.54	4.64E-07	25YrCancerDerived_InhSoilDerm	4.64E-07
222	ALL	UCART1	577298.51	4328127.54	4.29E-07	25YrCancerDerived_InhSoilDerm	4.29E-07
223	ALL	UCART1	577348.51	4328127.54	3.81E-07	25YrCancerDerived_InhSoilDerm	3.81E-07
224	ALL	UCART1	577398.51	4328127.54	3.28E-07	25YrCancerDerived_InhSoilDerm	3.28E-07
225	ALL	UCART1	577448.51	4328127.54	2.79E-07	25YrCancerDerived_InhSoilDerm	2.79E-07
226	ALL	UCART1	576248.51	4328177.54	8.98E-08	25YrCancerDerived_InhSoilDerm	8.98E-08
227	ALL	UCART1	576298.51	4328177.54	9.92E-08	25YrCancerDerived_InhSoilDerm	9.92E-08
228	ALL	UCART1	576348.51	4328177.54	1.10E-07	25YrCancerDerived_InhSoilDerm	1.10E-07
229	ALL	UCART1	576398.51	4328177.54	1.23E-07	25YrCancerDerived_InhSoilDerm	1.23E-07
230	ALL	UCART1	576448.51	4328177.54	1.39E-07	25YrCancerDerived_InhSoilDerm	1.39E-07
231	ALL	UCART1	576498.51	4328177.54	1.58E-07	25YrCancerDerived_InhSoilDerm	1.58E-07
232	ALL	UCART1	576548.51	4328177.54	1.80E-07	25YrCancerDerived_InhSoilDerm	1.80E-07
233	ALL	UCART1	576598.51	4328177.54	2.05E-07	25YrCancerDerived_InhSoilDerm	2.05E-07
234	ALL	UCART1	576648.51	4328177.54	2.34E-07	25YrCancerDerived_InhSoilDerm	2.34E-07
235	ALL	UCART1	576698.51	4328177.54	2.69E-07	25YrCancerDerived_InhSoilDerm	2.69E-07
236	ALL	UCART1	576748.51	4328177.54	3.12E-07	25YrCancerDerived_InhSoilDerm	3.12E-07
237	ALL	UCART1	576798.51	4328177.54	3.71E-07	25YrCancerDerived_InhSoilDerm	3.71E-07
238	ALL	UCART1	576848.51	4328177.54	4.68E-07	25YrCancerDerived_InhSoilDerm	4.68E-07
239	ALL	UCART1	576898.51	4328177.54	7.17E-07	25YrCancerDerived_InhSoilDerm	7.17E-07
240	ALL	UCART1	576948.51	4328177.54	9.24E-07	25YrCancerDerived_InhSoilDerm	9.24E-07
241	ALL	UCART1	576998.51	4328177.54	6.13E-07	25YrCancerDerived_InhSoilDerm	6.13E-07
242	ALL	UCART1	577048.51	4328177.54	5.55E-07	25YrCancerDerived_InhSoilDerm	5.55E-07
243	ALL	UCART1	577098.51	4328177.54	5.77E-07	25YrCancerDerived_InhSoilDerm	5.77E-07
244	ALL	UCART1	577148.51	4328177.54	5.97E-07	25YrCancerDerived_InhSoilDerm	5.97E-07
245	ALL	UCART1	577198.51	4328177.54	5.88E-07	25YrCancerDerived_InhSoilDerm	5.88E-07
246	ALL	UCART1	577248.51	4328177.54	5.46E-07	25YrCancerDerived_InhSoilDerm	5.46E-07
247	ALL	UCART1	577298.51	4328177.54	4.82E-07	25YrCancerDerived_InhSoilDerm	4.82E-07
248	ALL	UCART1	577348.51	4328177.54	4.08E-07	25YrCancerDerived_InhSoilDerm	4.08E-07
249	ALL	UCART1	577398.51	4328177.54	3.41E-07	25YrCancerDerived_InhSoilDerm	3.41E-07
250	ALL	UCART1	577448.51	4328177.54	2.85E-07	25YrCancerDerived_InhSoilDerm	2.85E-07
251	ALL	UCART1	576248.51	4328227.54	9.39E-08	25YrCancerDerived_InhSoilDerm	9.39E-08
252	ALL	UCART1	576298.51	4328227.54	1.04E-07	25YrCancerDerived_InhSoilDerm	1.04E-07
253	ALL	UCART1	576348.51	4328227.54	1.15E-07	25YrCancerDerived_InhSoilDerm	1.15E-07
254	ALL	UCART1	576398.51	4328227.54	1.29E-07	25YrCancerDerived_InhSoilDerm	1.29E-07
255	ALL	UCART1	576448.51	4328227.54	1.46E-07	25YrCancerDerived_InhSoilDerm	1.46E-07
256	ALL	UCART1	576498.51	4328227.54	1.67E-07	25YrCancerDerived_InhSoilDerm	1.67E-07
257	ALL	UCART1	576548.51	4328227.54	1.92E-07	25YrCancerDerived_InhSoilDerm	1.92E-07
258	ALL	UCART1	576598.51	4328227.54	2.24E-07	25YrCancerDerived_InhSoilDerm	2.24E-07
259	ALL	UCART1	576648.51	4328227.54	2.62E-07	25YrCancerDerived_InhSoilDerm	2.62E-07
260	ALL	UCART1	576698.51	4328227.54	3.08E-07	25YrCancerDerived_InhSoilDerm	3.08E-07
261	ALL	UCART1	576748.51	4328227.54	3.67E-07	25YrCancerDerived_InhSoilDerm	3.67E-07
262	ALL	UCART1	576798.51	4328227.54	4.53E-07	25YrCancerDerived_InhSoilDerm	4.53E-07
263	ALL	UCART1	576848.51	4328227.54	6.35E-07	25YrCancerDerived_InhSoilDerm	6.35E-07
264	ALL	UCART1	576898.51	4328227.54	8.57E-07	25YrCancerDerived_InhSoilDerm	8.57E-07
265	ALL	UCART1	576948.51	4328227.54	8.40E-07	25YrCancerDerived_InhSoilDerm	8.40E-07
266	ALL	UCART1	576998.51	4328227.54	6.96E-07	25YrCancerDerived_InhSoilDerm	6.96E-07
267	ALL	UCART1	577048.51	4328227.54	6.96E-07	25YrCancerDerived_InhSoilDerm	6.96E-07
268	ALL	UCART1	577098.51	4328227.54	7.47E-07	25YrCancerDerived_InhSoilDerm	7.47E-07
269	ALL	UCART1	577148.51	4328227.54	7.66E-07	25YrCancerDerived_InhSoilDerm	7.66E-07
270	ALL	UCART1	577198.51	4328227.54	7.23E-07	25YrCancerDerived_InhSoilDerm	7.23E-07

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO	INH_RISK
271	ALL	UCART1	577248.51	4328227.54	6.34E-07	25YrCancerDerived_InhSoilDerm	6.34E-07
272	ALL	UCART1	577298.51	4328227.54	5.26E-07	25YrCancerDerived_InhSoilDerm	5.26E-07
273	ALL	UCART1	577348.51	4328227.54	4.28E-07	25YrCancerDerived_InhSoilDerm	4.28E-07
274	ALL	UCART1	577398.51	4328227.54	3.49E-07	25YrCancerDerived_InhSoilDerm	3.49E-07
275	ALL	UCART1	577448.51	4328227.54	2.86E-07	25YrCancerDerived_InhSoilDerm	2.86E-07
276	ALL	UCART1	576248.51	4328277.54	9.81E-08	25YrCancerDerived_InhSoilDerm	9.81E-08
277	ALL	UCART1	576298.51	4328277.54	1.09E-07	25YrCancerDerived_InhSoilDerm	1.09E-07
278	ALL	UCART1	576348.51	4328277.54	1.21E-07	25YrCancerDerived_InhSoilDerm	1.21E-07
279	ALL	UCART1	576398.51	4328277.54	1.36E-07	25YrCancerDerived_InhSoilDerm	1.36E-07
280	ALL	UCART1	576448.51	4328277.54	1.54E-07	25YrCancerDerived_InhSoilDerm	1.54E-07
281	ALL	UCART1	576498.51	4328277.54	1.76E-07	25YrCancerDerived_InhSoilDerm	1.76E-07
282	ALL	UCART1	576548.51	4328277.54	2.04E-07	25YrCancerDerived_InhSoilDerm	2.04E-07
283	ALL	UCART1	576598.51	4328277.54	2.41E-07	25YrCancerDerived_InhSoilDerm	2.41E-07
284	ALL	UCART1	576648.51	4328277.54	2.89E-07	25YrCancerDerived_InhSoilDerm	2.89E-07
285	ALL	UCART1	576698.51	4328277.54	3.52E-07	25YrCancerDerived_InhSoilDerm	3.52E-07
286	ALL	UCART1	576748.51	4328277.54	4.36E-07	25YrCancerDerived_InhSoilDerm	4.36E-07
287	ALL	UCART1	576798.51	4328277.54	5.72E-07	25YrCancerDerived_InhSoilDerm	5.72E-07
288	ALL	UCART1	576848.51	4328277.54	8.93E-07	25YrCancerDerived_InhSoilDerm	8.93E-07
289	ALL	UCART1	576898.51	4328277.54	9.66E-07	25YrCancerDerived_InhSoilDerm	9.66E-07
290	ALL	UCART1	576948.51	4328277.54	8.79E-07	25YrCancerDerived_InhSoilDerm	8.79E-07
291	ALL	UCART1	576998.51	4328277.54	8.73E-07	25YrCancerDerived_InhSoilDerm	8.73E-07
292	ALL	UCART1	577048.51	4328277.54	9.35E-07	25YrCancerDerived_InhSoilDerm	9.35E-07
293	ALL	UCART1	577098.51	4328277.54	1.02E-06	25YrCancerDerived_InhSoilDerm	1.02E-06
294	ALL	UCART1	577148.51	4328277.54	1.01E-06	25YrCancerDerived_InhSoilDerm	1.01E-06
295	ALL	UCART1	577198.51	4328277.54	8.81E-07	25YrCancerDerived_InhSoilDerm	8.81E-07
296	ALL	UCART1	577248.51	4328277.54	7.11E-07	25YrCancerDerived_InhSoilDerm	7.11E-07
297	ALL	UCART1	577298.51	4328277.54	5.56E-07	25YrCancerDerived_InhSoilDerm	5.56E-07
298	ALL	UCART1	577348.51	4328277.54	4.37E-07	25YrCancerDerived_InhSoilDerm	4.37E-07
299	ALL	UCART1	577398.51	4328277.54	3.46E-07	25YrCancerDerived_InhSoilDerm	3.46E-07
300	ALL	UCART1	577448.51	4328277.54	2.77E-07	25YrCancerDerived_InhSoilDerm	2.77E-07
301	ALL	UCART1	576248.51	4328327.54	1.02E-07	25YrCancerDerived_InhSoilDerm	1.02E-07
302	ALL	UCART1	576298.51	4328327.54	1.13E-07	25YrCancerDerived_InhSoilDerm	1.13E-07
303	ALL	UCART1	576348.51	4328327.54	1.27E-07	25YrCancerDerived_InhSoilDerm	1.27E-07
304	ALL	UCART1	576398.51	4328327.54	1.43E-07	25YrCancerDerived_InhSoilDerm	1.43E-07
305	ALL	UCART1	576448.51	4328327.54	1.63E-07	25YrCancerDerived_InhSoilDerm	1.63E-07
306	ALL	UCART1	576498.51	4328327.54	1.88E-07	25YrCancerDerived_InhSoilDerm	1.88E-07
307	ALL	UCART1	576548.51	4328327.54	2.19E-07	25YrCancerDerived_InhSoilDerm	2.19E-07
308	ALL	UCART1	576598.51	4328327.54	2.59E-07	25YrCancerDerived_InhSoilDerm	2.59E-07
309	ALL	UCART1	576648.51	4328327.54	3.15E-07	25YrCancerDerived_InhSoilDerm	3.15E-07
310	ALL	UCART1	576698.51	4328327.54	3.95E-07	25YrCancerDerived_InhSoilDerm	3.95E-07
311	ALL	UCART1	576748.51	4328327.54	5.19E-07	25YrCancerDerived_InhSoilDerm	5.19E-07
312	ALL	UCART1	576798.51	4328327.54	7.48E-07	25YrCancerDerived_InhSoilDerm	7.48E-07
313	ALL	UCART1	576848.51	4328327.54	1.06E-06	25YrCancerDerived_InhSoilDerm	1.06E-06
314	ALL	UCART1	576898.51	4328327.54	1.10E-06	25YrCancerDerived_InhSoilDerm	1.10E-06
315	ALL	UCART1	576948.51	4328327.54	1.10E-06	25YrCancerDerived_InhSoilDerm	1.10E-06
316	ALL	UCART1	576998.51	4328327.54	1.22E-06	25YrCancerDerived_InhSoilDerm	1.22E-06
317	ALL	UCART1	577048.51	4328327.54	1.39E-06	25YrCancerDerived_InhSoilDerm	1.39E-06
318	ALL	UCART1	577098.51	4328327.54	1.50E-06	25YrCancerDerived_InhSoilDerm	1.50E-06
319	ALL	UCART1	577148.51	4328327.54	1.34E-06	25YrCancerDerived_InhSoilDerm	1.34E-06
320	ALL	UCART1	577198.51	4328327.54	1.04E-06	25YrCancerDerived_InhSoilDerm	1.04E-06
321	ALL	UCART1	577248.51	4328327.54	7.64E-07	25YrCancerDerived_InhSoilDerm	7.64E-07
322	ALL	UCART1	577298.51	4328327.54	5.65E-07	25YrCancerDerived_InhSoilDerm	5.65E-07
323	ALL	UCART1	577348.51	4328327.54	4.28E-07	25YrCancerDerived_InhSoilDerm	4.28E-07
324	ALL	UCART1	577398.51	4328327.54	3.32E-07	25YrCancerDerived_InhSoilDerm	3.32E-07

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO	INH_RISK
325	ALL	UCART1	577448.51	4328327.54	2.65E-07	25YrCancerDerived_InhSoilDerm	2.65E-07
326	ALL	UCART1	576248.51	4328377.54	1.05E-07	25YrCancerDerived_InhSoilDerm	1.05E-07
327	ALL	UCART1	576298.51	4328377.54	1.18E-07	25YrCancerDerived_InhSoilDerm	1.18E-07
328	ALL	UCART1	576348.51	4328377.54	1.32E-07	25YrCancerDerived_InhSoilDerm	1.32E-07
329	ALL	UCART1	576398.51	4328377.54	1.50E-07	25YrCancerDerived_InhSoilDerm	1.50E-07
330	ALL	UCART1	576448.51	4328377.54	1.72E-07	25YrCancerDerived_InhSoilDerm	1.72E-07
331	ALL	UCART1	576498.51	4328377.54	2.00E-07	25YrCancerDerived_InhSoilDerm	2.00E-07
332	ALL	UCART1	576548.51	4328377.54	2.35E-07	25YrCancerDerived_InhSoilDerm	2.35E-07
333	ALL	UCART1	576598.51	4328377.54	2.82E-07	25YrCancerDerived_InhSoilDerm	2.82E-07
334	ALL	UCART1	576648.51	4328377.54	3.47E-07	25YrCancerDerived_InhSoilDerm	3.47E-07
335	ALL	UCART1	576698.51	4328377.54	4.45E-07	25YrCancerDerived_InhSoilDerm	4.45E-07
336	ALL	UCART1	576748.51	4328377.54	6.20E-07	25YrCancerDerived_InhSoilDerm	6.20E-07
337	ALL	UCART1	576798.51	4328377.54	1.07E-06	25YrCancerDerived_InhSoilDerm	1.07E-06
338	ALL	UCART1	576848.51	4328377.54	1.19E-06	25YrCancerDerived_InhSoilDerm	1.19E-06
339	ALL	UCART1	576898.51	4328377.54	1.27E-06	25YrCancerDerived_InhSoilDerm	1.27E-06
340	ALL	UCART1	576948.51	4328377.54	1.52E-06	25YrCancerDerived_InhSoilDerm	1.52E-06
341	ALL	UCART1	576998.51	4328377.54	1.85E-06	25YrCancerDerived_InhSoilDerm	1.85E-06
342	ALL	UCART1	577048.51	4328377.54	2.30E-06	25YrCancerDerived_InhSoilDerm	2.30E-06
343	ALL	UCART1	577098.51	4328377.54	2.24E-06	25YrCancerDerived_InhSoilDerm	2.24E-06
344	ALL	UCART1	577148.51	4328377.54	1.66E-06	25YrCancerDerived_InhSoilDerm	1.66E-06
345	ALL	UCART1	577198.51	4328377.54	1.16E-06	25YrCancerDerived_InhSoilDerm	1.16E-06
346	ALL	UCART1	577248.51	4328377.54	7.68E-07	25YrCancerDerived_InhSoilDerm	7.68E-07
347	ALL	UCART1	577298.51	4328377.54	5.47E-07	25YrCancerDerived_InhSoilDerm	5.47E-07
348	ALL	UCART1	577348.51	4328377.54	4.09E-07	25YrCancerDerived_InhSoilDerm	4.09E-07
349	ALL	UCART1	577398.51	4328377.54	3.16E-07	25YrCancerDerived_InhSoilDerm	3.16E-07
350	ALL	UCART1	577448.51	4328377.54	2.52E-07	25YrCancerDerived_InhSoilDerm	2.52E-07
351	ALL	UCART1	576248.51	4328427.54	1.10E-07	25YrCancerDerived_InhSoilDerm	1.10E-07
352	ALL	UCART1	576298.51	4328427.54	1.23E-07	25YrCancerDerived_InhSoilDerm	1.23E-07
353	ALL	UCART1	576348.51	4328427.54	1.38E-07	25YrCancerDerived_InhSoilDerm	1.38E-07
354	ALL	UCART1	576398.51	4328427.54	1.58E-07	25YrCancerDerived_InhSoilDerm	1.58E-07
355	ALL	UCART1	576448.51	4328427.54	1.81E-07	25YrCancerDerived_InhSoilDerm	1.81E-07
356	ALL	UCART1	576498.51	4328427.54	2.12E-07	25YrCancerDerived_InhSoilDerm	2.12E-07
357	ALL	UCART1	576548.51	4328427.54	2.52E-07	25YrCancerDerived_InhSoilDerm	2.52E-07
358	ALL	UCART1	576598.51	4328427.54	3.07E-07	25YrCancerDerived_InhSoilDerm	3.07E-07
359	ALL	UCART1	576648.51	4328427.54	3.85E-07	25YrCancerDerived_InhSoilDerm	3.85E-07
360	ALL	UCART1	576698.51	4328427.54	5.11E-07	25YrCancerDerived_InhSoilDerm	5.11E-07
361	ALL	UCART1	576748.51	4328427.54	7.90E-07	25YrCancerDerived_InhSoilDerm	7.90E-07
362	ALL	UCART1	576798.51	4328427.54	1.13E-06	25YrCancerDerived_InhSoilDerm	1.13E-06
363	ALL	UCART1	576848.51	4328427.54	1.26E-06	25YrCancerDerived_InhSoilDerm	1.26E-06
364	ALL	UCART1	576898.51	4328427.54	1.60E-06	25YrCancerDerived_InhSoilDerm	1.60E-06
365	ALL	UCART1	576948.51	4328427.54	2.36E-06	25YrCancerDerived_InhSoilDerm	2.36E-06
366	ALL	UCART1	576998.51	4328427.54	3.56E-06	25YrCancerDerived_InhSoilDerm	3.56E-06
367	ALL	UCART1	577048.51	4328427.54	4.55E-06	25YrCancerDerived_InhSoilDerm	4.55E-06
368	ALL	UCART1	577098.51	4328427.54	3.09E-06	25YrCancerDerived_InhSoilDerm	3.09E-06
369	ALL	UCART1	577148.51	4328427.54	1.79E-06	25YrCancerDerived_InhSoilDerm	1.79E-06
370	ALL	UCART1	577198.51	4328427.54	1.19E-06	25YrCancerDerived_InhSoilDerm	1.19E-06
371	ALL	UCART1	577248.51	4328427.54	7.35E-07	25YrCancerDerived_InhSoilDerm	7.35E-07
372	ALL	UCART1	577298.51	4328427.54	5.19E-07	25YrCancerDerived_InhSoilDerm	5.19E-07
373	ALL	UCART1	577348.51	4328427.54	3.85E-07	25YrCancerDerived_InhSoilDerm	3.85E-07
374	ALL	UCART1	577398.51	4328427.54	2.96E-07	25YrCancerDerived_InhSoilDerm	2.96E-07
375	ALL	UCART1	577448.51	4328427.54	2.35E-07	25YrCancerDerived_InhSoilDerm	2.35E-07
376	ALL	UCART1	576248.51	4328477.54	1.14E-07	25YrCancerDerived_InhSoilDerm	1.14E-07
377	ALL	UCART1	576298.51	4328477.54	1.28E-07	25YrCancerDerived_InhSoilDerm	1.28E-07
378	ALL	UCART1	576348.51	4328477.54	1.45E-07	25YrCancerDerived_InhSoilDerm	1.45E-07

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO	INH_RISK
379	ALL	UCART1	576398.51	4328477.54	1.66E-07	25YrCancerDerived_InhSoilDerm	1.66E-07
380	ALL	UCART1	576448.51	4328477.54	1.92E-07	25YrCancerDerived_InhSoilDerm	1.92E-07
381	ALL	UCART1	576498.51	4328477.54	2.26E-07	25YrCancerDerived_InhSoilDerm	2.26E-07
382	ALL	UCART1	576548.51	4328477.54	2.71E-07	25YrCancerDerived_InhSoilDerm	2.71E-07
383	ALL	UCART1	576598.51	4328477.54	3.34E-07	25YrCancerDerived_InhSoilDerm	3.34E-07
384	ALL	UCART1	576648.51	4328477.54	4.29E-07	25YrCancerDerived_InhSoilDerm	4.29E-07
385	ALL	UCART1	576698.51	4328477.54	6.01E-07	25YrCancerDerived_InhSoilDerm	6.01E-07
386	ALL	UCART1	576748.51	4328477.54	9.76E-07	25YrCancerDerived_InhSoilDerm	9.76E-07
387	ALL	UCART1	576798.51	4328477.54	1.18E-06	25YrCancerDerived_InhSoilDerm	1.18E-06
388	ALL	UCART1	576848.51	4328477.54	1.31E-06	25YrCancerDerived_InhSoilDerm	1.31E-06
389	ALL	UCART1	576898.51	4328477.54	1.99E-06	25YrCancerDerived_InhSoilDerm	1.99E-06
390	ALL	UCART1	576948.51	4328477.54	4.09E-06	25YrCancerDerived_InhSoilDerm	4.09E-06
391	ALL	UCART1	576998.51	4328477.54	1.14E-05	25YrCancerDerived_InhSoilDerm	1.14E-05
392	ALL	UCART1	577048.51	4328477.54	9.21E-06	25YrCancerDerived_InhSoilDerm	9.21E-06
393	ALL	UCART1	577098.51	4328477.54	3.18E-06	25YrCancerDerived_InhSoilDerm	3.18E-06
394	ALL	UCART1	577148.51	4328477.54	1.66E-06	25YrCancerDerived_InhSoilDerm	1.66E-06
395	ALL	UCART1	577198.51	4328477.54	1.10E-06	25YrCancerDerived_InhSoilDerm	1.10E-06
396	ALL	UCART1	577248.51	4328477.54	6.81E-07	25YrCancerDerived_InhSoilDerm	6.81E-07
397	ALL	UCART1	577298.51	4328477.54	4.76E-07	25YrCancerDerived_InhSoilDerm	4.76E-07
398	ALL	UCART1	577348.51	4328477.54	3.53E-07	25YrCancerDerived_InhSoilDerm	3.53E-07
399	ALL	UCART1	577398.51	4328477.54	2.72E-07	25YrCancerDerived_InhSoilDerm	2.72E-07
400	ALL	UCART1	577448.51	4328477.54	2.17E-07	25YrCancerDerived_InhSoilDerm	2.17E-07
401	ALL	UCART1	576248.51	4328527.54	1.19E-07	25YrCancerDerived_InhSoilDerm	1.19E-07
402	ALL	UCART1	576298.51	4328527.54	1.34E-07	25YrCancerDerived_InhSoilDerm	1.34E-07
403	ALL	UCART1	576348.51	4328527.54	1.53E-07	25YrCancerDerived_InhSoilDerm	1.53E-07
404	ALL	UCART1	576398.51	4328527.54	1.75E-07	25YrCancerDerived_InhSoilDerm	1.75E-07
405	ALL	UCART1	576448.51	4328527.54	2.04E-07	25YrCancerDerived_InhSoilDerm	2.04E-07
406	ALL	UCART1	576498.51	4328527.54	2.42E-07	25YrCancerDerived_InhSoilDerm	2.42E-07
407	ALL	UCART1	576548.51	4328527.54	2.94E-07	25YrCancerDerived_InhSoilDerm	2.94E-07
408	ALL	UCART1	576598.51	4328527.54	3.68E-07	25YrCancerDerived_InhSoilDerm	3.68E-07
409	ALL	UCART1	576648.51	4328527.54	4.88E-07	25YrCancerDerived_InhSoilDerm	4.88E-07
410	ALL	UCART1	576698.51	4328527.54	7.73E-07	25YrCancerDerived_InhSoilDerm	7.73E-07
411	ALL	UCART1	576748.51	4328527.54	9.49E-07	25YrCancerDerived_InhSoilDerm	9.49E-07
412	ALL	UCART1	576798.51	4328527.54	1.11E-06	25YrCancerDerived_InhSoilDerm	1.11E-06
413	ALL	UCART1	576848.51	4328527.54	1.44E-06	25YrCancerDerived_InhSoilDerm	1.44E-06
414	ALL	UCART1	576898.51	4328527.54	2.46E-06	25YrCancerDerived_InhSoilDerm	2.46E-06
415	ALL	UCART1	576948.51	4328527.54	6.52E-06	25YrCancerDerived_InhSoilDerm	6.52E-06
416	ALL	UCART1	576998.51	4328527.54	1.04E-06	25YrCancerDerived_InhSoilDerm	1.04E-06
417	ALL	UCART1	577048.51	4328527.54	8.40E-06	25YrCancerDerived_InhSoilDerm	8.40E-06
418	ALL	UCART1	577098.51	4328527.54	2.79E-06	25YrCancerDerived_InhSoilDerm	2.79E-06
419	ALL	UCART1	577148.51	4328527.54	1.57E-06	25YrCancerDerived_InhSoilDerm	1.57E-06
420	ALL	UCART1	577198.51	4328527.54	1.03E-06	25YrCancerDerived_InhSoilDerm	1.03E-06
421	ALL	UCART1	577248.51	4328527.54	6.38E-07	25YrCancerDerived_InhSoilDerm	6.38E-07
422	ALL	UCART1	577298.51	4328527.54	4.44E-07	25YrCancerDerived_InhSoilDerm	4.44E-07
423	ALL	UCART1	577348.51	4328527.54	3.29E-07	25YrCancerDerived_InhSoilDerm	3.29E-07
424	ALL	UCART1	577398.51	4328527.54	2.55E-07	25YrCancerDerived_InhSoilDerm	2.55E-07
425	ALL	UCART1	577448.51	4328527.54	2.04E-07	25YrCancerDerived_InhSoilDerm	2.04E-07
426	ALL	UCART1	576248.51	4328577.54	1.24E-07	25YrCancerDerived_InhSoilDerm	1.24E-07
427	ALL	UCART1	576298.51	4328577.54	1.41E-07	25YrCancerDerived_InhSoilDerm	1.41E-07
428	ALL	UCART1	576348.51	4328577.54	1.61E-07	25YrCancerDerived_InhSoilDerm	1.61E-07
429	ALL	UCART1	576398.51	4328577.54	1.86E-07	25YrCancerDerived_InhSoilDerm	1.86E-07
430	ALL	UCART1	576448.51	4328577.54	2.18E-07	25YrCancerDerived_InhSoilDerm	2.18E-07
431	ALL	UCART1	576498.51	4328577.54	2.61E-07	25YrCancerDerived_InhSoilDerm	2.61E-07
432	ALL	UCART1	576548.51	4328577.54	3.20E-07	25YrCancerDerived_InhSoilDerm	3.20E-07

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO	INH_RISK
433	ALL	UCART1	576598.51	4328577.54	4.10E-07	25YrCancerDerived_InhSoilDerm	4.10E-07
434	ALL	UCART1	576648.51	4328577.54	5.78E-07	25YrCancerDerived_InhSoilDerm	5.78E-07
435	ALL	UCART1	576698.51	4328577.54	9.92E-07	25YrCancerDerived_InhSoilDerm	9.92E-07
436	ALL	UCART1	576748.51	4328577.54	1.11E-06	25YrCancerDerived_InhSoilDerm	1.11E-06
437	ALL	UCART1	576798.51	4328577.54	1.08E-06	25YrCancerDerived_InhSoilDerm	1.08E-06
438	ALL	UCART1	576848.51	4328577.54	1.50E-06	25YrCancerDerived_InhSoilDerm	1.50E-06
439	ALL	UCART1	576898.51	4328577.54	2.66E-06	25YrCancerDerived_InhSoilDerm	2.66E-06
440	ALL	UCART1	576948.51	4328577.54	7.06E-06	25YrCancerDerived_InhSoilDerm	7.06E-06
441	ALL	UCART1	576998.51	4328577.54	1.35E-05	25YrCancerDerived_InhSoilDerm	1.35E-05
442	ALL	UCART1	577048.51	4328577.54	6.72E-06	25YrCancerDerived_InhSoilDerm	6.72E-06
443	ALL	UCART1	577098.51	4328577.54	2.58E-06	25YrCancerDerived_InhSoilDerm	2.58E-06
444	ALL	UCART1	577148.51	4328577.54	1.56E-06	25YrCancerDerived_InhSoilDerm	1.56E-06
445	ALL	UCART1	577198.51	4328577.54	9.90E-07	25YrCancerDerived_InhSoilDerm	9.90E-07
446	ALL	UCART1	577248.51	4328577.54	6.13E-07	25YrCancerDerived_InhSoilDerm	6.13E-07
447	ALL	UCART1	577298.51	4328577.54	4.28E-07	25YrCancerDerived_InhSoilDerm	4.28E-07
448	ALL	UCART1	577348.51	4328577.54	3.19E-07	25YrCancerDerived_InhSoilDerm	3.19E-07
449	ALL	UCART1	577398.51	4328577.54	2.49E-07	25YrCancerDerived_InhSoilDerm	2.49E-07
450	ALL	UCART1	577448.51	4328577.54	2.00E-07	25YrCancerDerived_InhSoilDerm	2.00E-07
451	ALL	UCART1	576248.51	4328627.54	1.30E-07	25YrCancerDerived_InhSoilDerm	1.30E-07
452	ALL	UCART1	576298.51	4328627.54	1.48E-07	25YrCancerDerived_InhSoilDerm	1.48E-07
453	ALL	UCART1	576348.51	4328627.54	1.70E-07	25YrCancerDerived_InhSoilDerm	1.70E-07
454	ALL	UCART1	576398.51	4328627.54	1.97E-07	25YrCancerDerived_InhSoilDerm	1.97E-07
455	ALL	UCART1	576448.51	4328627.54	2.32E-07	25YrCancerDerived_InhSoilDerm	2.32E-07
456	ALL	UCART1	576498.51	4328627.54	2.79E-07	25YrCancerDerived_InhSoilDerm	2.79E-07
457	ALL	UCART1	576548.51	4328627.54	3.47E-07	25YrCancerDerived_InhSoilDerm	3.47E-07
458	ALL	UCART1	576598.51	4328627.54	4.57E-07	25YrCancerDerived_InhSoilDerm	4.57E-07
459	ALL	UCART1	576648.51	4328627.54	7.15E-07	25YrCancerDerived_InhSoilDerm	7.15E-07
460	ALL	UCART1	576698.51	4328627.54	9.39E-07	25YrCancerDerived_InhSoilDerm	9.39E-07
461	ALL	UCART1	576748.51	4328627.54	9.03E-07	25YrCancerDerived_InhSoilDerm	9.03E-07
462	ALL	UCART1	576798.51	4328627.54	1.05E-06	25YrCancerDerived_InhSoilDerm	1.05E-06
463	ALL	UCART1	576848.51	4328627.54	1.53E-06	25YrCancerDerived_InhSoilDerm	1.53E-06
464	ALL	UCART1	576898.51	4328627.54	2.70E-06	25YrCancerDerived_InhSoilDerm	2.70E-06
465	ALL	UCART1	576948.51	4328627.54	5.23E-06	25YrCancerDerived_InhSoilDerm	5.23E-06
466	ALL	UCART1	576998.51	4328627.54	5.33E-06	25YrCancerDerived_InhSoilDerm	5.33E-06
467	ALL	UCART1	577048.51	4328627.54	5.16E-06	25YrCancerDerived_InhSoilDerm	5.16E-06
468	ALL	UCART1	577098.51	4328627.54	2.72E-06	25YrCancerDerived_InhSoilDerm	2.72E-06
469	ALL	UCART1	577148.51	4328627.54	1.42E-06	25YrCancerDerived_InhSoilDerm	1.42E-06
470	ALL	UCART1	577198.51	4328627.54	8.66E-07	25YrCancerDerived_InhSoilDerm	8.66E-07
471	ALL	UCART1	577248.51	4328627.54	5.53E-07	25YrCancerDerived_InhSoilDerm	5.53E-07
472	ALL	UCART1	577298.51	4328627.54	3.99E-07	25YrCancerDerived_InhSoilDerm	3.99E-07
473	ALL	UCART1	577348.51	4328627.54	3.05E-07	25YrCancerDerived_InhSoilDerm	3.05E-07
474	ALL	UCART1	577398.51	4328627.54	2.42E-07	25YrCancerDerived_InhSoilDerm	2.42E-07
475	ALL	UCART1	577448.51	4328627.54	1.97E-07	25YrCancerDerived_InhSoilDerm	1.97E-07
476	ALL	UCART1	576248.51	4328677.54	1.36E-07	25YrCancerDerived_InhSoilDerm	1.36E-07
477	ALL	UCART1	576298.51	4328677.54	1.54E-07	25YrCancerDerived_InhSoilDerm	1.54E-07
478	ALL	UCART1	576348.51	4328677.54	1.77E-07	25YrCancerDerived_InhSoilDerm	1.77E-07
479	ALL	UCART1	576398.51	4328677.54	2.05E-07	25YrCancerDerived_InhSoilDerm	2.05E-07
480	ALL	UCART1	576448.51	4328677.54	2.42E-07	25YrCancerDerived_InhSoilDerm	2.42E-07
481	ALL	UCART1	576498.51	4328677.54	2.93E-07	25YrCancerDerived_InhSoilDerm	2.93E-07
482	ALL	UCART1	576548.51	4328677.54	3.71E-07	25YrCancerDerived_InhSoilDerm	3.71E-07
483	ALL	UCART1	576598.51	4328677.54	5.25E-07	25YrCancerDerived_InhSoilDerm	5.25E-07
484	ALL	UCART1	576648.51	4328677.54	7.88E-07	25YrCancerDerived_InhSoilDerm	7.88E-07
485	ALL	UCART1	576698.51	4328677.54	9.03E-07	25YrCancerDerived_InhSoilDerm	9.03E-07
486	ALL	UCART1	576748.51	4328677.54	8.40E-07	25YrCancerDerived_InhSoilDerm	8.40E-07

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO	INH_RISK
487	ALL	UCART1	576798.51	4328677.54	1.10E-06	25YrCancerDerived_InhSoilDerm	1.10E-06
488	ALL	UCART1	576848.51	4328677.54	1.56E-06	25YrCancerDerived_InhSoilDerm	1.56E-06
489	ALL	UCART1	576898.51	4328677.54	2.39E-06	25YrCancerDerived_InhSoilDerm	2.39E-06
490	ALL	UCART1	576948.51	4328677.54	3.69E-06	25YrCancerDerived_InhSoilDerm	3.69E-06
491	ALL	UCART1	576998.51	4328677.54	4.84E-06	25YrCancerDerived_InhSoilDerm	4.84E-06
492	ALL	UCART1	577048.51	4328677.54	2.35E-06	25YrCancerDerived_InhSoilDerm	2.35E-06
493	ALL	UCART1	577098.51	4328677.54	2.48E-06	25YrCancerDerived_InhSoilDerm	2.48E-06
494	ALL	UCART1	577148.51	4328677.54	1.22E-06	25YrCancerDerived_InhSoilDerm	1.22E-06
495	ALL	UCART1	577198.51	4328677.54	7.44E-07	25YrCancerDerived_InhSoilDerm	7.44E-07
496	ALL	UCART1	577248.51	4328677.54	4.79E-07	25YrCancerDerived_InhSoilDerm	4.79E-07
497	ALL	UCART1	577298.51	4328677.54	3.54E-07	25YrCancerDerived_InhSoilDerm	3.54E-07
498	ALL	UCART1	577348.51	4328677.54	2.79E-07	25YrCancerDerived_InhSoilDerm	2.79E-07
499	ALL	UCART1	577398.51	4328677.54	2.27E-07	25YrCancerDerived_InhSoilDerm	2.27E-07
500	ALL	UCART1	577448.51	4328677.54	1.88E-07	25YrCancerDerived_InhSoilDerm	1.88E-07
501	ALL	UCART1	576248.51	4328727.54	1.38E-07	25YrCancerDerived_InhSoilDerm	1.38E-07
502	ALL	UCART1	576298.51	4328727.54	1.57E-07	25YrCancerDerived_InhSoilDerm	1.57E-07
503	ALL	UCART1	576348.51	4328727.54	1.80E-07	25YrCancerDerived_InhSoilDerm	1.80E-07
504	ALL	UCART1	576398.51	4328727.54	2.09E-07	25YrCancerDerived_InhSoilDerm	2.09E-07
505	ALL	UCART1	576448.51	4328727.54	2.49E-07	25YrCancerDerived_InhSoilDerm	2.49E-07
506	ALL	UCART1	576498.51	4328727.54	3.07E-07	25YrCancerDerived_InhSoilDerm	3.07E-07
507	ALL	UCART1	576548.51	4328727.54	4.06E-07	25YrCancerDerived_InhSoilDerm	4.06E-07
508	ALL	UCART1	576598.51	4328727.54	6.98E-07	25YrCancerDerived_InhSoilDerm	6.98E-07
509	ALL	UCART1	576648.51	4328727.54	8.26E-07	25YrCancerDerived_InhSoilDerm	8.26E-07
510	ALL	UCART1	576698.51	4328727.54	7.30E-07	25YrCancerDerived_InhSoilDerm	7.30E-07
511	ALL	UCART1	576748.51	4328727.54	8.26E-07	25YrCancerDerived_InhSoilDerm	8.26E-07
512	ALL	UCART1	576798.51	4328727.54	1.19E-06	25YrCancerDerived_InhSoilDerm	1.19E-06
513	ALL	UCART1	576848.51	4328727.54	1.43E-06	25YrCancerDerived_InhSoilDerm	1.43E-06
514	ALL	UCART1	576898.51	4328727.54	1.98E-06	25YrCancerDerived_InhSoilDerm	1.98E-06
515	ALL	UCART1	576948.51	4328727.54	2.62E-06	25YrCancerDerived_InhSoilDerm	2.62E-06
516	ALL	UCART1	576998.51	4328727.54	3.51E-06	25YrCancerDerived_InhSoilDerm	3.51E-06
517	ALL	UCART1	577048.51	4328727.54	4.65E-06	25YrCancerDerived_InhSoilDerm	4.65E-06
518	ALL	UCART1	577098.51	4328727.54	1.87E-06	25YrCancerDerived_InhSoilDerm	1.87E-06
519	ALL	UCART1	577148.51	4328727.54	1.08E-06	25YrCancerDerived_InhSoilDerm	1.08E-06
520	ALL	UCART1	577198.51	4328727.54	6.39E-07	25YrCancerDerived_InhSoilDerm	6.39E-07
521	ALL	UCART1	577248.51	4328727.54	4.29E-07	25YrCancerDerived_InhSoilDerm	4.29E-07
522	ALL	UCART1	577298.51	4328727.54	3.21E-07	25YrCancerDerived_InhSoilDerm	3.21E-07
523	ALL	UCART1	577348.51	4328727.54	2.54E-07	25YrCancerDerived_InhSoilDerm	2.54E-07
524	ALL	UCART1	577398.51	4328727.54	2.09E-07	25YrCancerDerived_InhSoilDerm	2.09E-07
525	ALL	UCART1	577448.51	4328727.54	1.76E-07	25YrCancerDerived_InhSoilDerm	1.76E-07
526	ALL	UCART1	576248.51	4328777.54	1.39E-07	25YrCancerDerived_InhSoilDerm	1.39E-07
527	ALL	UCART1	576298.51	4328777.54	1.58E-07	25YrCancerDerived_InhSoilDerm	1.58E-07
528	ALL	UCART1	576348.51	4328777.54	1.82E-07	25YrCancerDerived_InhSoilDerm	1.82E-07
529	ALL	UCART1	576398.51	4328777.54	2.14E-07	25YrCancerDerived_InhSoilDerm	2.14E-07
530	ALL	UCART1	576448.51	4328777.54	2.58E-07	25YrCancerDerived_InhSoilDerm	2.58E-07
531	ALL	UCART1	576498.51	4328777.54	3.29E-07	25YrCancerDerived_InhSoilDerm	3.29E-07
532	ALL	UCART1	576548.51	4328777.54	4.80E-07	25YrCancerDerived_InhSoilDerm	4.80E-07
533	ALL	UCART1	576598.51	4328777.54	7.68E-07	25YrCancerDerived_InhSoilDerm	7.68E-07
534	ALL	UCART1	576648.51	4328777.54	7.48E-07	25YrCancerDerived_InhSoilDerm	7.48E-07
535	ALL	UCART1	576698.51	4328777.54	6.52E-07	25YrCancerDerived_InhSoilDerm	6.52E-07
536	ALL	UCART1	576748.51	4328777.54	8.03E-07	25YrCancerDerived_InhSoilDerm	8.03E-07
537	ALL	UCART1	576798.51	4328777.54	9.95E-07	25YrCancerDerived_InhSoilDerm	9.95E-07
538	ALL	UCART1	576848.51	4328777.54	1.25E-06	25YrCancerDerived_InhSoilDerm	1.25E-06
539	ALL	UCART1	576898.51	4328777.54	1.58E-06	25YrCancerDerived_InhSoilDerm	1.58E-06
540	ALL	UCART1	576948.51	4328777.54	1.92E-06	25YrCancerDerived_InhSoilDerm	1.92E-06

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO	INH_RISK
541	ALL	UCART1	576998.51	4328777.54	2.27E-06	25YrCancerDerived_InhSoilDerm	2.27E-06
542	ALL	UCART1	577048.51	4328777.54	2.11E-06	25YrCancerDerived_InhSoilDerm	2.11E-06
543	ALL	UCART1	577098.51	4328777.54	1.33E-06	25YrCancerDerived_InhSoilDerm	1.33E-06
544	ALL	UCART1	577148.51	4328777.54	8.47E-07	25YrCancerDerived_InhSoilDerm	8.47E-07
545	ALL	UCART1	577198.51	4328777.54	5.35E-07	25YrCancerDerived_InhSoilDerm	5.35E-07
546	ALL	UCART1	577248.51	4328777.54	3.84E-07	25YrCancerDerived_InhSoilDerm	3.84E-07
547	ALL	UCART1	577298.51	4328777.54	2.94E-07	25YrCancerDerived_InhSoilDerm	2.94E-07
548	ALL	UCART1	577348.51	4328777.54	2.34E-07	25YrCancerDerived_InhSoilDerm	2.34E-07
549	ALL	UCART1	577398.51	4328777.54	1.93E-07	25YrCancerDerived_InhSoilDerm	1.93E-07
550	ALL	UCART1	577448.51	4328777.54	1.63E-07	25YrCancerDerived_InhSoilDerm	1.63E-07
551	ALL	UCART1	576248.51	4328827.54	1.39E-07	25YrCancerDerived_InhSoilDerm	1.39E-07
552	ALL	UCART1	576298.51	4328827.54	1.59E-07	25YrCancerDerived_InhSoilDerm	1.59E-07
553	ALL	UCART1	576348.51	4328827.54	1.85E-07	25YrCancerDerived_InhSoilDerm	1.85E-07
554	ALL	UCART1	576398.51	4328827.54	2.21E-07	25YrCancerDerived_InhSoilDerm	2.21E-07
555	ALL	UCART1	576448.51	4328827.54	2.73E-07	25YrCancerDerived_InhSoilDerm	2.73E-07
556	ALL	UCART1	576498.51	4328827.54	3.68E-07	25YrCancerDerived_InhSoilDerm	3.68E-07
557	ALL	UCART1	576548.51	4328827.54	6.47E-07	25YrCancerDerived_InhSoilDerm	6.47E-07
558	ALL	UCART1	576598.51	4328827.54	8.49E-07	25YrCancerDerived_InhSoilDerm	8.49E-07
559	ALL	UCART1	576648.51	4328827.54	5.91E-07	25YrCancerDerived_InhSoilDerm	5.91E-07
560	ALL	UCART1	576698.51	4328827.54	5.92E-07	25YrCancerDerived_InhSoilDerm	5.92E-07
561	ALL	UCART1	576748.51	4328827.54	6.92E-07	25YrCancerDerived_InhSoilDerm	6.92E-07
562	ALL	UCART1	576798.51	4328827.54	8.41E-07	25YrCancerDerived_InhSoilDerm	8.41E-07
563	ALL	UCART1	576848.51	4328827.54	1.03E-06	25YrCancerDerived_InhSoilDerm	1.03E-06
564	ALL	UCART1	576898.51	4328827.54	1.23E-06	25YrCancerDerived_InhSoilDerm	1.23E-06
565	ALL	UCART1	576948.51	4328827.54	1.40E-06	25YrCancerDerived_InhSoilDerm	1.40E-06
566	ALL	UCART1	576998.51	4328827.54	1.47E-06	25YrCancerDerived_InhSoilDerm	1.47E-06
567	ALL	UCART1	577048.51	4328827.54	1.29E-06	25YrCancerDerived_InhSoilDerm	1.29E-06
568	ALL	UCART1	577098.51	4328827.54	9.48E-07	25YrCancerDerived_InhSoilDerm	9.48E-07
569	ALL	UCART1	577148.51	4328827.54	6.58E-07	25YrCancerDerived_InhSoilDerm	6.58E-07
570	ALL	UCART1	577198.51	4328827.54	4.60E-07	25YrCancerDerived_InhSoilDerm	4.60E-07
571	ALL	UCART1	577248.51	4328827.54	3.41E-07	25YrCancerDerived_InhSoilDerm	3.41E-07
572	ALL	UCART1	577298.51	4328827.54	2.67E-07	25YrCancerDerived_InhSoilDerm	2.67E-07
573	ALL	UCART1	577348.51	4328827.54	2.16E-07	25YrCancerDerived_InhSoilDerm	2.16E-07
574	ALL	UCART1	577398.51	4328827.54	1.79E-07	25YrCancerDerived_InhSoilDerm	1.79E-07
575	ALL	UCART1	577448.51	4328827.54	1.52E-07	25YrCancerDerived_InhSoilDerm	1.52E-07
576	ALL	UCART1	576248.51	4328877.54	1.40E-07	25YrCancerDerived_InhSoilDerm	1.40E-07
577	ALL	UCART1	576298.51	4328877.54	1.61E-07	25YrCancerDerived_InhSoilDerm	1.61E-07
578	ALL	UCART1	576348.51	4328877.54	1.90E-07	25YrCancerDerived_InhSoilDerm	1.90E-07
579	ALL	UCART1	576398.51	4328877.54	2.30E-07	25YrCancerDerived_InhSoilDerm	2.30E-07
580	ALL	UCART1	576448.51	4328877.54	2.97E-07	25YrCancerDerived_InhSoilDerm	2.97E-07
581	ALL	UCART1	576498.51	4328877.54	4.49E-07	25YrCancerDerived_InhSoilDerm	4.49E-07
582	ALL	UCART1	576548.51	4328877.54	7.51E-07	25YrCancerDerived_InhSoilDerm	7.51E-07
583	ALL	UCART1	576598.51	4328877.54	6.28E-07	25YrCancerDerived_InhSoilDerm	6.28E-07
584	ALL	UCART1	576648.51	4328877.54	5.11E-07	25YrCancerDerived_InhSoilDerm	5.11E-07
585	ALL	UCART1	576698.51	4328877.54	5.38E-07	25YrCancerDerived_InhSoilDerm	5.38E-07
586	ALL	UCART1	576748.51	4328877.54	6.20E-07	25YrCancerDerived_InhSoilDerm	6.20E-07
587	ALL	UCART1	576798.51	4328877.54	7.33E-07	25YrCancerDerived_InhSoilDerm	7.33E-07
588	ALL	UCART1	576848.51	4328877.54	8.58E-07	25YrCancerDerived_InhSoilDerm	8.58E-07
589	ALL	UCART1	576898.51	4328877.54	9.76E-07	25YrCancerDerived_InhSoilDerm	9.76E-07
590	ALL	UCART1	576948.51	4328877.54	1.06E-06	25YrCancerDerived_InhSoilDerm	1.06E-06
591	ALL	UCART1	576998.51	4328877.54	1.04E-06	25YrCancerDerived_InhSoilDerm	1.04E-06
592	ALL	UCART1	577048.51	4328877.54	9.07E-07	25YrCancerDerived_InhSoilDerm	9.07E-07
593	ALL	UCART1	577098.51	4328877.54	7.21E-07	25YrCancerDerived_InhSoilDerm	7.21E-07
594	ALL	UCART1	577148.51	4328877.54	5.43E-07	25YrCancerDerived_InhSoilDerm	5.43E-07

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO	INH_RISK
595	ALL	UCART1	577198.51	4328877.54	4.02E-07	25YrCancerDerived_InhSoilDerm	4.02E-07
596	ALL	UCART1	577248.51	4328877.54	3.07E-07	25YrCancerDerived_InhSoilDerm	3.07E-07
597	ALL	UCART1	577298.51	4328877.54	2.44E-07	25YrCancerDerived_InhSoilDerm	2.44E-07
598	ALL	UCART1	577348.51	4328877.54	2.00E-07	25YrCancerDerived_InhSoilDerm	2.00E-07
599	ALL	UCART1	577398.51	4328877.54	1.67E-07	25YrCancerDerived_InhSoilDerm	1.67E-07
600	ALL	UCART1	577448.51	4328877.54	1.42E-07	25YrCancerDerived_InhSoilDerm	1.42E-07
601	ALL	UCART1	576248.51	4328927.54	1.40E-07	25YrCancerDerived_InhSoilDerm	1.40E-07
602	ALL	UCART1	576298.51	4328927.54	1.64E-07	25YrCancerDerived_InhSoilDerm	1.64E-07
603	ALL	UCART1	576348.51	4328927.54	1.96E-07	25YrCancerDerived_InhSoilDerm	1.96E-07
604	ALL	UCART1	576398.51	4328927.54	2.46E-07	25YrCancerDerived_InhSoilDerm	2.46E-07
605	ALL	UCART1	576448.51	4328927.54	3.38E-07	25YrCancerDerived_InhSoilDerm	3.38E-07
606	ALL	UCART1	576498.51	4328927.54	6.52E-07	25YrCancerDerived_InhSoilDerm	6.52E-07
607	ALL	UCART1	576548.51	4328927.54	7.55E-07	25YrCancerDerived_InhSoilDerm	7.55E-07
608	ALL	UCART1	576598.51	4328927.54	4.89E-07	25YrCancerDerived_InhSoilDerm	4.89E-07
609	ALL	UCART1	576648.51	4328927.54	4.57E-07	25YrCancerDerived_InhSoilDerm	4.57E-07
610	ALL	UCART1	576698.51	4328927.54	4.91E-07	25YrCancerDerived_InhSoilDerm	4.91E-07
611	ALL	UCART1	576748.51	4328927.54	5.58E-07	25YrCancerDerived_InhSoilDerm	5.58E-07
612	ALL	UCART1	576798.51	4328927.54	6.40E-07	25YrCancerDerived_InhSoilDerm	6.40E-07
613	ALL	UCART1	576848.51	4328927.54	7.22E-07	25YrCancerDerived_InhSoilDerm	7.22E-07
614	ALL	UCART1	576898.51	4328927.54	7.89E-07	25YrCancerDerived_InhSoilDerm	7.89E-07
615	ALL	UCART1	576948.51	4328927.54	8.18E-07	25YrCancerDerived_InhSoilDerm	8.18E-07
616	ALL	UCART1	576998.51	4328927.54	7.83E-07	25YrCancerDerived_InhSoilDerm	7.83E-07
617	ALL	UCART1	577048.51	4328927.54	6.88E-07	25YrCancerDerived_InhSoilDerm	6.88E-07
618	ALL	UCART1	577098.51	4328927.54	5.71E-07	25YrCancerDerived_InhSoilDerm	5.71E-07
619	ALL	UCART1	577148.51	4328927.54	4.57E-07	25YrCancerDerived_InhSoilDerm	4.57E-07
620	ALL	UCART1	577198.51	4328927.54	3.55E-07	25YrCancerDerived_InhSoilDerm	3.55E-07
621	ALL	UCART1	577248.51	4328927.54	2.78E-07	25YrCancerDerived_InhSoilDerm	2.78E-07
622	ALL	UCART1	577298.51	4328927.54	2.24E-07	25YrCancerDerived_InhSoilDerm	2.24E-07
623	ALL	UCART1	577348.51	4328927.54	1.85E-07	25YrCancerDerived_InhSoilDerm	1.85E-07
624	ALL	UCART1	577398.51	4328927.54	1.56E-07	25YrCancerDerived_InhSoilDerm	1.56E-07
625	ALL	UCART1	577448.51	4328927.54	1.34E-07	25YrCancerDerived_InhSoilDerm	1.34E-07
626	ALL	UCART1	576248.51	4328977.54	1.42E-07	25YrCancerDerived_InhSoilDerm	1.42E-07
627	ALL	UCART1	576298.51	4328977.54	1.68E-07	25YrCancerDerived_InhSoilDerm	1.68E-07
628	ALL	UCART1	576348.51	4328977.54	2.06E-07	25YrCancerDerived_InhSoilDerm	2.06E-07
629	ALL	UCART1	576398.51	4328977.54	2.69E-07	25YrCancerDerived_InhSoilDerm	2.69E-07
630	ALL	UCART1	576448.51	4328977.54	4.24E-07	25YrCancerDerived_InhSoilDerm	4.24E-07
631	ALL	UCART1	576498.51	4328977.54	6.89E-07	25YrCancerDerived_InhSoilDerm	6.89E-07
632	ALL	UCART1	576548.51	4328977.54	5.33E-07	25YrCancerDerived_InhSoilDerm	5.33E-07
633	ALL	UCART1	576598.51	4328977.54	4.17E-07	25YrCancerDerived_InhSoilDerm	4.17E-07
634	ALL	UCART1	576648.51	4328977.54	4.14E-07	25YrCancerDerived_InhSoilDerm	4.14E-07
635	ALL	UCART1	576698.51	4328977.54	4.49E-07	25YrCancerDerived_InhSoilDerm	4.49E-07
636	ALL	UCART1	576748.51	4328977.54	5.01E-07	25YrCancerDerived_InhSoilDerm	5.01E-07
637	ALL	UCART1	576798.51	4328977.54	5.58E-07	25YrCancerDerived_InhSoilDerm	5.58E-07
638	ALL	UCART1	576848.51	4328977.54	6.10E-07	25YrCancerDerived_InhSoilDerm	6.10E-07
639	ALL	UCART1	576898.51	4328977.54	6.46E-07	25YrCancerDerived_InhSoilDerm	6.46E-07
640	ALL	UCART1	576948.51	4328977.54	6.51E-07	25YrCancerDerived_InhSoilDerm	6.51E-07
641	ALL	UCART1	576998.51	4328977.54	6.15E-07	25YrCancerDerived_InhSoilDerm	6.15E-07
642	ALL	UCART1	577048.51	4328977.54	5.46E-07	25YrCancerDerived_InhSoilDerm	5.46E-07
643	ALL	UCART1	577098.51	4328977.54	4.66E-07	25YrCancerDerived_InhSoilDerm	4.66E-07
644	ALL	UCART1	577148.51	4328977.54	3.88E-07	25YrCancerDerived_InhSoilDerm	3.88E-07
645	ALL	UCART1	577198.51	4328977.54	3.15E-07	25YrCancerDerived_InhSoilDerm	3.15E-07
646	ALL	UCART1	577248.51	4328977.54	2.53E-07	25YrCancerDerived_InhSoilDerm	2.53E-07
647	ALL	UCART1	577298.51	4328977.54	2.06E-07	25YrCancerDerived_InhSoilDerm	2.06E-07
648	ALL	UCART1	577348.51	4328977.54	1.72E-07	25YrCancerDerived_InhSoilDerm	1.72E-07

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO	INH_RISK
649	ALL	UCART1	577398.51	4328977.54	1.46E-07	25YrCancerDerived_InhSoilDerm	1.46E-07
650	ALL	UCART1	577448.51	4328977.54	1.26E-07	25YrCancerDerived_InhSoilDerm	1.26E-07
651	ALL	UCART1	576248.51	4329027.54	1.44E-07	25YrCancerDerived_InhSoilDerm	1.44E-07
652	ALL	UCART1	576298.51	4329027.54	1.73E-07	25YrCancerDerived_InhSoilDerm	1.73E-07
653	ALL	UCART1	576348.51	4329027.54	2.18E-07	25YrCancerDerived_InhSoilDerm	2.18E-07
654	ALL	UCART1	576398.51	4329027.54	3.08E-07	25YrCancerDerived_InhSoilDerm	3.08E-07
655	ALL	UCART1	576448.51	4329027.54	6.62E-07	25YrCancerDerived_InhSoilDerm	6.62E-07
656	ALL	UCART1	576498.51	4329027.54	5.58E-07	25YrCancerDerived_InhSoilDerm	5.58E-07
657	ALL	UCART1	576548.51	4329027.54	4.10E-07	25YrCancerDerived_InhSoilDerm	4.10E-07
658	ALL	UCART1	576598.51	4329027.54	3.68E-07	25YrCancerDerived_InhSoilDerm	3.68E-07
659	ALL	UCART1	576648.51	4329027.54	3.78E-07	25YrCancerDerived_InhSoilDerm	3.78E-07
660	ALL	UCART1	576698.51	4329027.54	4.08E-07	25YrCancerDerived_InhSoilDerm	4.08E-07
661	ALL	UCART1	576748.51	4329027.54	4.48E-07	25YrCancerDerived_InhSoilDerm	4.48E-07
662	ALL	UCART1	576798.51	4329027.54	4.87E-07	25YrCancerDerived_InhSoilDerm	4.87E-07
663	ALL	UCART1	576848.51	4329027.54	5.20E-07	25YrCancerDerived_InhSoilDerm	5.20E-07
664	ALL	UCART1	576898.51	4329027.54	5.37E-07	25YrCancerDerived_InhSoilDerm	5.37E-07
665	ALL	UCART1	576948.51	4329027.54	5.31E-07	25YrCancerDerived_InhSoilDerm	5.31E-07
666	ALL	UCART1	576998.51	4329027.54	4.99E-07	25YrCancerDerived_InhSoilDerm	4.99E-07
667	ALL	UCART1	577048.51	4329027.54	4.47E-07	25YrCancerDerived_InhSoilDerm	4.47E-07
668	ALL	UCART1	577098.51	4329027.54	3.89E-07	25YrCancerDerived_InhSoilDerm	3.89E-07
669	ALL	UCART1	577148.51	4329027.54	3.34E-07	25YrCancerDerived_InhSoilDerm	3.34E-07
670	ALL	UCART1	577198.51	4329027.54	2.80E-07	25YrCancerDerived_InhSoilDerm	2.80E-07
671	ALL	UCART1	577248.51	4329027.54	2.31E-07	25YrCancerDerived_InhSoilDerm	2.31E-07
672	ALL	UCART1	577298.51	4329027.54	1.91E-07	25YrCancerDerived_InhSoilDerm	1.91E-07
673	ALL	UCART1	577348.51	4329027.54	1.60E-07	25YrCancerDerived_InhSoilDerm	1.60E-07
674	ALL	UCART1	577398.51	4329027.54	1.37E-07	25YrCancerDerived_InhSoilDerm	1.37E-07
675	ALL	UCART1	577448.51	4329027.54	1.19E-07	25YrCancerDerived_InhSoilDerm	1.19E-07
676	ALL	UCART1	576248.51	4329077.54	1.46E-07	25YrCancerDerived_InhSoilDerm	1.46E-07
677	ALL	UCART1	576298.51	4329077.54	1.78E-07	25YrCancerDerived_InhSoilDerm	1.78E-07
678	ALL	UCART1	576348.51	4329077.54	2.35E-07	25YrCancerDerived_InhSoilDerm	2.35E-07
679	ALL	UCART1	576398.51	4329077.54	3.94E-07	25YrCancerDerived_InhSoilDerm	3.94E-07
680	ALL	UCART1	576448.51	4329077.54	6.42E-07	25YrCancerDerived_InhSoilDerm	6.42E-07
681	ALL	UCART1	576498.51	4329077.54	4.48E-07	25YrCancerDerived_InhSoilDerm	4.48E-07
682	ALL	UCART1	576548.51	4329077.54	3.44E-07	25YrCancerDerived_InhSoilDerm	3.44E-07
683	ALL	UCART1	576598.51	4329077.54	3.32E-07	25YrCancerDerived_InhSoilDerm	3.32E-07
684	ALL	UCART1	576648.51	4329077.54	3.46E-07	25YrCancerDerived_InhSoilDerm	3.46E-07
685	ALL	UCART1	576698.51	4329077.54	3.71E-07	25YrCancerDerived_InhSoilDerm	3.71E-07
686	ALL	UCART1	576748.51	4329077.54	4.00E-07	25YrCancerDerived_InhSoilDerm	4.00E-07
687	ALL	UCART1	576798.51	4329077.54	4.26E-07	25YrCancerDerived_InhSoilDerm	4.26E-07
688	ALL	UCART1	576848.51	4329077.54	4.46E-07	25YrCancerDerived_InhSoilDerm	4.46E-07
689	ALL	UCART1	576898.51	4329077.54	4.53E-07	25YrCancerDerived_InhSoilDerm	4.53E-07
690	ALL	UCART1	576948.51	4329077.54	4.43E-07	25YrCancerDerived_InhSoilDerm	4.43E-07
691	ALL	UCART1	576998.51	4329077.54	4.15E-07	25YrCancerDerived_InhSoilDerm	4.15E-07
692	ALL	UCART1	577048.51	4329077.54	3.74E-07	25YrCancerDerived_InhSoilDerm	3.74E-07
693	ALL	UCART1	577098.51	4329077.54	3.31E-07	25YrCancerDerived_InhSoilDerm	3.31E-07
694	ALL	UCART1	577148.51	4329077.54	2.90E-07	25YrCancerDerived_InhSoilDerm	2.90E-07
695	ALL	UCART1	577198.51	4329077.54	2.49E-07	25YrCancerDerived_InhSoilDerm	2.49E-07
696	ALL	UCART1	577248.51	4329077.54	2.11E-07	25YrCancerDerived_InhSoilDerm	2.11E-07
697	ALL	UCART1	577298.51	4329077.54	1.77E-07	25YrCancerDerived_InhSoilDerm	1.77E-07
698	ALL	UCART1	577348.51	4329077.54	1.50E-07	25YrCancerDerived_InhSoilDerm	1.50E-07
699	ALL	UCART1	577398.51	4329077.54	1.29E-07	25YrCancerDerived_InhSoilDerm	1.29E-07
700	ALL	UCART1	577448.51	4329077.54	1.12E-07	25YrCancerDerived_InhSoilDerm	1.12E-07
701	ALL	UCART1	576248.51	4329127.54	1.46E-07	25YrCancerDerived_InhSoilDerm	1.46E-07
702	ALL	UCART1	576298.51	4329127.54	1.81E-07	25YrCancerDerived_InhSoilDerm	1.81E-07

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO	INH_RISK
703	ALL	UCART1	576348.51	4329127.54	2.59E-07	25YrCancerDerived_InhSoilDerm	2.59E-07
704	ALL	UCART1	576398.51	4329127.54	5.36E-07	25YrCancerDerived_InhSoilDerm	5.36E-07
705	ALL	UCART1	576448.51	4329127.54	5.99E-07	25YrCancerDerived_InhSoilDerm	5.99E-07
706	ALL	UCART1	576498.51	4329127.54	3.39E-07	25YrCancerDerived_InhSoilDerm	3.39E-07
707	ALL	UCART1	576548.51	4329127.54	3.01E-07	25YrCancerDerived_InhSoilDerm	3.01E-07
708	ALL	UCART1	576598.51	4329127.54	3.02E-07	25YrCancerDerived_InhSoilDerm	3.02E-07
709	ALL	UCART1	576648.51	4329127.54	3.16E-07	25YrCancerDerived_InhSoilDerm	3.16E-07
710	ALL	UCART1	576698.51	4329127.54	3.36E-07	25YrCancerDerived_InhSoilDerm	3.36E-07
711	ALL	UCART1	576748.51	4329127.54	3.57E-07	25YrCancerDerived_InhSoilDerm	3.57E-07
712	ALL	UCART1	576798.51	4329127.54	3.75E-07	25YrCancerDerived_InhSoilDerm	3.75E-07
713	ALL	UCART1	576848.51	4329127.54	3.85E-07	25YrCancerDerived_InhSoilDerm	3.85E-07
714	ALL	UCART1	576898.51	4329127.54	3.87E-07	25YrCancerDerived_InhSoilDerm	3.87E-07
715	ALL	UCART1	576948.51	4329127.54	3.75E-07	25YrCancerDerived_InhSoilDerm	3.75E-07
716	ALL	UCART1	576998.51	4329127.54	3.52E-07	25YrCancerDerived_InhSoilDerm	3.52E-07
717	ALL	UCART1	577048.51	4329127.54	3.19E-07	25YrCancerDerived_InhSoilDerm	3.19E-07
718	ALL	UCART1	577098.51	4329127.54	2.86E-07	25YrCancerDerived_InhSoilDerm	2.86E-07
719	ALL	UCART1	577148.51	4329127.54	2.54E-07	25YrCancerDerived_InhSoilDerm	2.54E-07
720	ALL	UCART1	577198.51	4329127.54	2.23E-07	25YrCancerDerived_InhSoilDerm	2.23E-07
721	ALL	UCART1	577248.51	4329127.54	1.92E-07	25YrCancerDerived_InhSoilDerm	1.92E-07
722	ALL	UCART1	577298.51	4329127.54	1.64E-07	25YrCancerDerived_InhSoilDerm	1.64E-07
723	ALL	UCART1	577348.51	4329127.54	1.41E-07	25YrCancerDerived_InhSoilDerm	1.41E-07
724	ALL	UCART1	577398.51	4329127.54	1.21E-07	25YrCancerDerived_InhSoilDerm	1.21E-07
725	ALL	UCART1	577448.51	4329127.54	1.06E-07	25YrCancerDerived_InhSoilDerm	1.06E-07
726	ALL	UCART1	576248.51	4329177.54	1.46E-07	25YrCancerDerived_InhSoilDerm	1.46E-07
727	ALL	UCART1	576298.51	4329177.54	1.82E-07	25YrCancerDerived_InhSoilDerm	1.82E-07
728	ALL	UCART1	576348.51	4329177.54	2.84E-07	25YrCancerDerived_InhSoilDerm	2.84E-07
729	ALL	UCART1	576398.51	4329177.54	5.41E-07	25YrCancerDerived_InhSoilDerm	5.41E-07
730	ALL	UCART1	576448.51	4329177.54	3.50E-07	25YrCancerDerived_InhSoilDerm	3.50E-07
731	ALL	UCART1	576498.51	4329177.54	2.82E-07	25YrCancerDerived_InhSoilDerm	2.82E-07
732	ALL	UCART1	576548.51	4329177.54	2.70E-07	25YrCancerDerived_InhSoilDerm	2.70E-07
733	ALL	UCART1	576598.51	4329177.54	2.76E-07	25YrCancerDerived_InhSoilDerm	2.76E-07
734	ALL	UCART1	576648.51	4329177.54	2.89E-07	25YrCancerDerived_InhSoilDerm	2.89E-07
735	ALL	UCART1	576698.51	4329177.54	3.05E-07	25YrCancerDerived_InhSoilDerm	3.05E-07
736	ALL	UCART1	576748.51	4329177.54	3.20E-07	25YrCancerDerived_InhSoilDerm	3.20E-07
737	ALL	UCART1	576798.51	4329177.54	3.31E-07	25YrCancerDerived_InhSoilDerm	3.31E-07
738	ALL	UCART1	576848.51	4329177.54	3.36E-07	25YrCancerDerived_InhSoilDerm	3.36E-07
739	ALL	UCART1	576898.51	4329177.54	3.34E-07	25YrCancerDerived_InhSoilDerm	3.34E-07
740	ALL	UCART1	576948.51	4329177.54	3.23E-07	25YrCancerDerived_InhSoilDerm	3.23E-07
741	ALL	UCART1	576998.51	4329177.54	3.03E-07	25YrCancerDerived_InhSoilDerm	3.03E-07
742	ALL	UCART1	577048.51	4329177.54	2.77E-07	25YrCancerDerived_InhSoilDerm	2.77E-07
743	ALL	UCART1	577098.51	4329177.54	2.50E-07	25YrCancerDerived_InhSoilDerm	2.50E-07
744	ALL	UCART1	577148.51	4329177.54	2.24E-07	25YrCancerDerived_InhSoilDerm	2.24E-07
745	ALL	UCART1	577198.51	4329177.54	2.00E-07	25YrCancerDerived_InhSoilDerm	2.00E-07
746	ALL	UCART1	577248.51	4329177.54	1.76E-07	25YrCancerDerived_InhSoilDerm	1.76E-07
747	ALL	UCART1	577298.51	4329177.54	1.53E-07	25YrCancerDerived_InhSoilDerm	1.53E-07
748	ALL	UCART1	577348.51	4329177.54	1.32E-07	25YrCancerDerived_InhSoilDerm	1.32E-07
749	ALL	UCART1	577398.51	4329177.54	1.15E-07	25YrCancerDerived_InhSoilDerm	1.15E-07
750	ALL	UCART1	577448.51	4329177.54	1.01E-07	25YrCancerDerived_InhSoilDerm	1.01E-07
751	ALL		576601.06	4328802.64	8.08E-07	25YrCancerDerived_InhSoilDerm	8.08E-07
752	ALL		577169.5	4328802.64	6.18E-07	25YrCancerDerived_InhSoilDerm	6.18E-07
753	ALL		577174.45	4328402.25	1.44E-06	25YrCancerDerived_InhSoilDerm	1.44E-06
754	ALL		576818.55	4328402.25	1.21E-06	25YrCancerDerived_InhSoilDerm	1.21E-06

Appendix "B2"

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE\	RESP	SKIN	EYE	MAXHI
1	ALL	UCART1	576248.5	4327728	NonCancer	0	1.87E-05	0	0	0	0	7.49E-05	0	0.009611	0.009611
2	ALL	UCART1	576298.5	4327728	NonCancer	0	1.93E-05	0	0	0	0	7.48E-05	0	0.009917	0.009917
3	ALL	UCART1	576348.5	4327728	NonCancer	0	2.06E-05	0	0	0	0	7.54E-05	0	0.010538	0.010538
4	ALL	UCART1	576398.5	4327728	NonCancer	0	2.22E-05	0	0	0	0	7.62E-05	0	0.011385	0.011385
5	ALL	UCART1	576448.5	4327728	NonCancer	0	2.31E-05	0	0	0	0	7.51E-05	0	0.01183	0.01183
6	ALL	UCART1	576498.5	4327728	NonCancer	0	2.31E-05	0	0	0	0	7.56E-05	0	0.011828	0.011828
7	ALL	UCART1	576548.5	4327728	NonCancer	0	2.37E-05	0	0	0	0	7.98E-05	0	0.012142	0.012142
8	ALL	UCART1	576598.5	4327728	NonCancer	0	2.54E-05	0	0	0	0	7.44E-05	0	0.013001	0.013001
9	ALL	UCART1	576648.5	4327728	NonCancer	0	2.82E-05	0	0	0	0	7.95E-05	0	0.01443	0.01443
10	ALL	UCART1	576698.5	4327728	NonCancer	0	2.61E-05	0	0	0	0	8.15E-05	0	0.01336	0.01336
11	ALL	UCART1	576748.5	4327728	NonCancer	0	2.69E-05	0	0	0	0	8.35E-05	0	0.01376	0.01376
12	ALL	UCART1	576798.5	4327728	NonCancer	0	2.73E-05	0	0	0	0	8.35E-05	0	0.014006	0.014006
13	ALL	UCART1	576848.5	4327728	NonCancer	0	2.79E-05	0	0	0	0	8.03E-05	0	0.014306	0.014306
14	ALL	UCART1	576898.5	4327728	NonCancer	0	2.84E-05	0	0	0	0	7.55E-05	0	0.014512	0.014512
15	ALL	UCART1	576948.5	4327728	NonCancer	0	2.86E-05	0	0	0	0	7.80E-05	0	0.014661	0.014661
16	ALL	UCART1	576998.5	4327728	NonCancer	0	2.85E-05	0	0	0	0	8.21E-05	0	0.014604	0.014604
17	ALL	UCART1	577048.5	4327728	NonCancer	0	2.74E-05	0	0	0	0	8.35E-05	0	0.014056	0.014056
18	ALL	UCART1	577098.5	4327728	NonCancer	0	2.73E-05	0	0	0	0	8.35E-05	0	0.013992	0.013992
19	ALL	UCART1	577148.5	4327728	NonCancer	0	2.69E-05	0	0	0	0	8.07E-05	0	0.013767	0.013767
20	ALL	UCART1	577198.5	4327728	NonCancer	0	2.63E-05	0	0	0	0	7.61E-05	0	0.013442	0.013442
21	ALL	UCART1	577248.5	4327728	NonCancer	0	2.55E-05	0	0	0	0	7.24E-05	0	0.013052	0.013052
22	ALL	UCART1	577298.5	4327728	NonCancer	0	2.64E-05	0	0	0	0	7.20E-05	0	0.013508	0.013508
23	ALL	UCART1	577348.5	4327728	NonCancer	0	2.44E-05	0	0	0	0	7.17E-05	0	0.012476	0.012476
24	ALL	UCART1	577398.5	4327728	NonCancer	0	2.36E-05	0	0	0	0	7.00E-05	0	0.012068	0.012068
25	ALL	UCART1	577448.5	4327728	NonCancer	0	2.25E-05	0	0	0	0	6.90E-05	0	0.011511	0.011511
26	ALL	UCART1	576248.5	4327778	NonCancer	0	2.37E-05	0	0	0	0	7.88E-05	0	0.012139	0.012139
27	ALL	UCART1	576298.5	4327778	NonCancer	0	2.06E-05	0	0	0	0	7.76E-05	0	0.010544	0.010544
28	ALL	UCART1	576348.5	4327778	NonCancer	0	2.11E-05	0	0	0	0	7.85E-05	0	0.010835	0.010835
29	ALL	UCART1	576398.5	4327778	NonCancer	0	2.24E-05	0	0	0	0	7.80E-05	0	0.011473	0.011473
30	ALL	UCART1	576448.5	4327778	NonCancer	0	2.46E-05	0	0	0	0	7.80E-05	0	0.012588	0.012588
31	ALL	UCART1	576498.5	4327778	NonCancer	0	2.48E-05	0	0	0	0	7.84E-05	0	0.012695	0.012695
32	ALL	UCART1	576548.5	4327778	NonCancer	0	2.55E-05	0	0	0	0	8.07E-05	0	0.01305	0.01305
33	ALL	UCART1	576598.5	4327778	NonCancer	0	2.58E-05	0	0	0	0	8.09E-05	0	0.013213	0.013213
34	ALL	UCART1	576648.5	4327778	NonCancer	0	3.05E-05	0	0	0	0	7.94E-05	0	0.015585	0.015585
35	ALL	UCART1	576698.5	4327778	NonCancer	0	2.82E-05	0	0	0	0	8.28E-05	0	0.014436	0.014436
36	ALL	UCART1	576748.5	4327778	NonCancer	0	2.92E-05	0	0	0	0	8.46E-05	0	0.01493	0.01493
37	ALL	UCART1	576798.5	4327778	NonCancer	0	2.96E-05	0	0	0	0	8.45E-05	0	0.015168	0.015168
38	ALL	UCART1	576848.5	4327778	NonCancer	0	3.04E-05	0	0	0	0	8.23E-05	0	0.015538	0.015538
39	ALL	UCART1	576898.5	4327778	NonCancer	0	3.12E-05	0	0	0	0	7.77E-05	0	0.01595	0.01595
40	ALL	UCART1	576948.5	4327778	NonCancer	0	3.12E-05	0	0	0	0	7.95E-05	0	0.015947	0.015947
41	ALL	UCART1	576998.5	4327778	NonCancer	0	3.11E-05	0	0	0	0	8.33E-05	0	0.015928	0.015928
42	ALL	UCART1	577048.5	4327778	NonCancer	0	2.98E-05	0	0	0	0	8.49E-05	0	0.015275	0.015275

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE\	RESP	SKIN	EYE	MAXHI
43	ALL	UCART1	577098.5	4327778	NonCancer	0	2.97E-05	0	0	0	0	8.41E-05	0	0.015227	0.015227
44	ALL	UCART1	577148.5	4327778	NonCancer	0	2.95E-05	0	0	0	0	8.10E-05	0	0.015096	0.015096
45	ALL	UCART1	577198.5	4327778	NonCancer	0	2.89E-05	0	0	0	0	7.72E-05	0	0.014783	0.014783
46	ALL	UCART1	577248.5	4327778	NonCancer	0	2.79E-05	0	0	0	0	7.61E-05	0	0.014303	0.014303
47	ALL	UCART1	577298.5	4327778	NonCancer	0	2.85E-05	0	0	0	0	7.50E-05	0	0.014559	0.014559
48	ALL	UCART1	577348.5	4327778	NonCancer	0	2.59E-05	0	0	0	0	7.41E-05	0	0.013263	0.013263
49	ALL	UCART1	577398.5	4327778	NonCancer	0	2.49E-05	0	0	0	0	7.19E-05	0	0.012726	0.012726
50	ALL	UCART1	577448.5	4327778	NonCancer	0	2.32E-05	0	0	0	0	7.15E-05	0	0.011885	0.011885
51	ALL	UCART1	576248.5	4327828	NonCancer	0	2.56E-05	0	0	0	0	8.30E-05	0	0.013117	0.013117
52	ALL	UCART1	576298.5	4327828	NonCancer	0	2.50E-05	0	0	0	0	8.19E-05	0	0.012802	0.012802
53	ALL	UCART1	576348.5	4327828	NonCancer	0	2.27E-05	0	0	0	0	8.06E-05	0	0.011636	0.011636
54	ALL	UCART1	576398.5	4327828	NonCancer	0	2.34E-05	0	0	0	0	8.21E-05	0	0.012001	0.012001
55	ALL	UCART1	576448.5	4327828	NonCancer	0	2.47E-05	0	0	0	0	8.04E-05	0	0.012667	0.012667
56	ALL	UCART1	576498.5	4327828	NonCancer	0	2.69E-05	0	0	0	0	8.16E-05	0	0.013782	0.013782
57	ALL	UCART1	576548.5	4327828	NonCancer	0	2.73E-05	0	0	0	0	8.20E-05	0	0.013972	0.013972
58	ALL	UCART1	576598.5	4327828	NonCancer	0	2.81E-05	0	0	0	0	8.75E-05	0	0.014412	0.014412
59	ALL	UCART1	576648.5	4327828	NonCancer	0	3.04E-05	0	0	0	0	8.08E-05	0	0.015575	0.015575
60	ALL	UCART1	576698.5	4327828	NonCancer	0	3.35E-05	0	0	0	0	8.35E-05	0	0.017156	0.017156
61	ALL	UCART1	576748.5	4327828	NonCancer	0	3.16E-05	0	0	0	0	8.57E-05	0	0.016174	0.016174
62	ALL	UCART1	576798.5	4327828	NonCancer	0	3.22E-05	0	0	0	0	8.61E-05	0	0.016463	0.016463
63	ALL	UCART1	576848.5	4327828	NonCancer	0	3.30E-05	0	0	0	0	8.46E-05	0	0.016901	0.016901
64	ALL	UCART1	576898.5	4327828	NonCancer	0	3.46E-05	0	0	0	0	8.05E-05	0	0.017671	0.017671
65	ALL	UCART1	576948.5	4327828	NonCancer	0	3.42E-05	0	0	0	0	8.11E-05	0	0.017486	0.017486
66	ALL	UCART1	576998.5	4327828	NonCancer	0	3.42E-05	0	0	0	0	8.47E-05	0	0.017472	0.017472
67	ALL	UCART1	577048.5	4327828	NonCancer	0	3.27E-05	0	0	0	0	8.60E-05	0	0.016758	0.016758
68	ALL	UCART1	577098.5	4327828	NonCancer	0	3.26E-05	0	0	0	0	8.47E-05	0	0.016691	0.016691
69	ALL	UCART1	577148.5	4327828	NonCancer	0	3.20E-05	0	0	0	0	8.14E-05	0	0.016357	0.016357
70	ALL	UCART1	577198.5	4327828	NonCancer	0	3.13E-05	0	0	0	0	7.79E-05	0	0.016003	0.016003
71	ALL	UCART1	577248.5	4327828	NonCancer	0	3.07E-05	0	0	0	0	7.82E-05	0	0.015698	0.015698
72	ALL	UCART1	577298.5	4327828	NonCancer	0	2.94E-05	0	0	0	0	7.80E-05	0	0.015045	0.015045
73	ALL	UCART1	577348.5	4327828	NonCancer	0	2.82E-05	0	0	0	0	7.57E-05	0	0.014451	0.014451
74	ALL	UCART1	577398.5	4327828	NonCancer	0	2.66E-05	0	0	0	0	7.33E-05	0	0.013591	0.013591
75	ALL	UCART1	577448.5	4327828	NonCancer	0	2.39E-05	0	0	0	0	7.35E-05	0	0.012224	0.012224
76	ALL	UCART1	576248.5	4327878	NonCancer	0	2.36E-05	0	0	0	0	9.04E-05	0	0.01208	0.01208
77	ALL	UCART1	576298.5	4327878	NonCancer	0	2.67E-05	0	0	0	0	8.64E-05	0	0.013694	0.013694
78	ALL	UCART1	576348.5	4327878	NonCancer	0	2.64E-05	0	0	0	0	8.51E-05	0	0.013545	0.013545
79	ALL	UCART1	576398.5	4327878	NonCancer	0	2.52E-05	0	0	0	0	8.43E-05	0	0.012928	0.012928
80	ALL	UCART1	576448.5	4327878	NonCancer	0	2.62E-05	0	0	0	0	8.51E-05	0	0.013445	0.013445
81	ALL	UCART1	576498.5	4327878	NonCancer	0	2.82E-05	0	0	0	0	8.43E-05	0	0.014456	0.014456
82	ALL	UCART1	576548.5	4327878	NonCancer	0	2.92E-05	0	0	0	0	8.55E-05	0	0.014959	0.014959
83	ALL	UCART1	576598.5	4327878	NonCancer	0	3.06E-05	0	0	0	0	8.86E-05	0	0.015691	0.015691
84	ALL	UCART1	576648.5	4327878	NonCancer	0	3.12E-05	0	0	0	0	8.73E-05	0	0.015962	0.015962

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE\	RESP	SKIN	EYE	MAXHI
85	ALL	UCART1	576698.5	4327878	NonCancer	0	3.71E-05	0	0	0	0	8.67E-05	0	0.018984	0.018984
86	ALL	UCART1	576748.5	4327878	NonCancer	0	3.39E-05	0	0	0	0	8.79E-05	0	0.01736	0.01736
87	ALL	UCART1	576798.5	4327878	NonCancer	0	3.55E-05	0	0	0	0	8.85E-05	0	0.018165	0.018165
88	ALL	UCART1	576848.5	4327878	NonCancer	0	3.63E-05	0	0	0	0	8.74E-05	0	0.018546	0.018546
89	ALL	UCART1	576898.5	4327878	NonCancer	0	3.81E-05	0	0	0	0	8.74E-05	0	0.01946	0.01946
90	ALL	UCART1	576948.5	4327878	NonCancer	0	3.78E-05	0	0	0	0	8.57E-05	0	0.019338	0.019338
91	ALL	UCART1	576998.5	4327878	NonCancer	0	3.77E-05	0	0	0	0	8.69E-05	0	0.019291	0.019291
92	ALL	UCART1	577048.5	4327878	NonCancer	0	3.62E-05	0	0	0	0	8.68E-05	0	0.018516	0.018516
93	ALL	UCART1	577098.5	4327878	NonCancer	0	3.59E-05	0	0	0	0	8.57E-05	0	0.018357	0.018357
94	ALL	UCART1	577148.5	4327878	NonCancer	0	3.51E-05	0	0	0	0	8.26E-05	0	0.017956	0.017956
95	ALL	UCART1	577198.5	4327878	NonCancer	0	3.39E-05	0	0	0	0	8.33E-05	0	0.01734	0.01734
96	ALL	UCART1	577248.5	4327878	NonCancer	0	3.50E-05	0	0	0	0	8.22E-05	0	0.01788	0.01788
97	ALL	UCART1	577298.5	4327878	NonCancer	0	3.17E-05	0	0	0	0	8.05E-05	0	0.016233	0.016233
98	ALL	UCART1	577348.5	4327878	NonCancer	0	2.98E-05	0	0	0	0	7.71E-05	0	0.015268	0.015268
99	ALL	UCART1	577398.5	4327878	NonCancer	0	2.70E-05	0	0	0	0	7.60E-05	0	0.01381	0.01381
100	ALL	UCART1	577448.5	4327878	NonCancer	0	2.55E-05	0	0	0	0	7.60E-05	0	0.01308	0.01308
101	ALL	UCART1	576248.5	4327928	NonCancer	0	2.51E-05	0	0	0	0	9.35E-05	0	0.012873	0.012873
102	ALL	UCART1	576298.5	4327928	NonCancer	0	2.65E-05	0	0	0	0	9.24E-05	0	0.013577	0.013577
103	ALL	UCART1	576348.5	4327928	NonCancer	0	2.79E-05	0	0	0	0	9.00E-05	0	0.01431	0.01431
104	ALL	UCART1	576398.5	4327928	NonCancer	0	2.81E-05	0	0	0	0	8.90E-05	0	0.01438	0.01438
105	ALL	UCART1	576448.5	4327928	NonCancer	0	2.82E-05	0	0	0	0	8.92E-05	0	0.01447	0.01447
106	ALL	UCART1	576498.5	4327928	NonCancer	0	2.98E-05	0	0	0	0	8.83E-05	0	0.015253	0.015253
107	ALL	UCART1	576548.5	4327928	NonCancer	0	3.26E-05	0	0	0	0	8.94E-05	0	0.016675	0.016675
108	ALL	UCART1	576598.5	4327928	NonCancer	0	3.32E-05	0	0	0	0	8.98E-05	0	0.016984	0.016984
109	ALL	UCART1	576648.5	4327928	NonCancer	0	3.43E-05	0	0	0	0	9.69E-05	0	0.017555	0.017555
110	ALL	UCART1	576698.5	4327928	NonCancer	0	3.74E-05	0	0	0	0	8.97E-05	0	0.019142	0.019142
111	ALL	UCART1	576748.5	4327928	NonCancer	0	4.07E-05	0	0	0	0	9.20E-05	0	0.020819	0.020819
112	ALL	UCART1	576798.5	4327928	NonCancer	0	3.92E-05	0	0	0	0	9.30E-05	0	0.020055	0.020055
113	ALL	UCART1	576848.5	4327928	NonCancer	0	4.02E-05	0	0	0	0	9.28E-05	0	0.020575	0.020575
114	ALL	UCART1	576898.5	4327928	NonCancer	0	4.15E-05	0	0	0	0	9.55E-05	0	0.02122	0.02122
115	ALL	UCART1	576948.5	4327928	NonCancer	0	4.19E-05	0	0	0	0	9.32E-05	0	0.021437	0.021437
116	ALL	UCART1	576998.5	4327928	NonCancer	0	4.20E-05	0	0	0	0	9.38E-05	0	0.021466	0.021466
117	ALL	UCART1	577048.5	4327928	NonCancer	0	4.03E-05	0	0	0	0	9.25E-05	0	0.020622	0.020622
118	ALL	UCART1	577098.5	4327928	NonCancer	0	3.93E-05	0	0	0	0	9.13E-05	0	0.020121	0.020121
119	ALL	UCART1	577148.5	4327928	NonCancer	0	3.86E-05	0	0	0	0	9.07E-05	0	0.019744	0.019744
120	ALL	UCART1	577198.5	4327928	NonCancer	0	3.77E-05	0	0	0	0	8.77E-05	0	0.019285	0.019285
121	ALL	UCART1	577248.5	4327928	NonCancer	0	3.71E-05	0	0	0	0	8.57E-05	0	0.018956	0.018956
122	ALL	UCART1	577298.5	4327928	NonCancer	0	3.47E-05	0	0	0	0	8.25E-05	0	0.017769	0.017769
123	ALL	UCART1	577348.5	4327928	NonCancer	0	3.22E-05	0	0	0	0	7.89E-05	0	0.016474	0.016474
124	ALL	UCART1	577398.5	4327928	NonCancer	0	2.89E-05	0	0	0	0	7.90E-05	0	0.01478	0.01478
125	ALL	UCART1	577448.5	4327928	NonCancer	0	2.76E-05	0	0	0	0	7.70E-05	0	0.014151	0.014151
126	ALL	UCART1	576248.5	4327978	NonCancer	0	2.35E-05	0	0	0	0	9.35E-05	0	0.012049	0.012049

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE\	RESP	SKIN	EYE	MAXHI
127	ALL	UCART1	576298.5	4327978	NonCancer	0	2.72E-05	0	0	0	0	9.61E-05	0	0.013919	0.013919
128	ALL	UCART1	576348.5	4327978	NonCancer	0	2.99E-05	0	0	0	0	9.44E-05	0	0.015292	0.015292
129	ALL	UCART1	576398.5	4327978	NonCancer	0	2.92E-05	0	0	0	0	9.37E-05	0	0.014966	0.014966
130	ALL	UCART1	576448.5	4327978	NonCancer	0	3.00E-05	0	0	0	0	9.29E-05	0	0.015347	0.015347
131	ALL	UCART1	576498.5	4327978	NonCancer	0	3.19E-05	0	0	0	0	9.46E-05	0	0.016334	0.016334
132	ALL	UCART1	576548.5	4327978	NonCancer	0	3.39E-05	0	0	0	0	9.30E-05	0	0.017374	0.017374
133	ALL	UCART1	576598.5	4327978	NonCancer	0	3.73E-05	0	0	0	0	9.42E-05	0	0.019098	0.019098
134	ALL	UCART1	576648.5	4327978	NonCancer	0	3.77E-05	0	0	0	0	9.86E-05	0	0.019294	0.019294
135	ALL	UCART1	576698.5	4327978	NonCancer	0	3.93E-05	0	0	0	0	9.54E-05	0	0.020093	0.020093
136	ALL	UCART1	576748.5	4327978	NonCancer	0	4.66E-05	0	0	0	0	9.73E-05	0	0.023832	0.023832
137	ALL	UCART1	576798.5	4327978	NonCancer	0	4.31E-05	0	0	0	0	0.0001	0	0.022031	0.022031
138	ALL	UCART1	576848.5	4327978	NonCancer	0	4.41E-05	0	0	0	0	0.000101	0	0.022558	0.022558
139	ALL	UCART1	576898.5	4327978	NonCancer	0	4.60E-05	0	0	0	0	0.000104	0	0.023547	0.023547
140	ALL	UCART1	576948.5	4327978	NonCancer	0	4.67E-05	0	0	0	0	0.000102	0	0.023885	0.023885
141	ALL	UCART1	576998.5	4327978	NonCancer	0	4.71E-05	0	0	0	0	0.000103	0	0.024094	0.024094
142	ALL	UCART1	577048.5	4327978	NonCancer	0	4.55E-05	0	0	0	0	0.000101	0	0.023285	0.023285
143	ALL	UCART1	577098.5	4327978	NonCancer	0	4.45E-05	0	0	0	0	0.000101	0	0.022737	0.022737
144	ALL	UCART1	577148.5	4327978	NonCancer	0	4.37E-05	0	0	0	0	9.79E-05	0	0.022347	0.022347
145	ALL	UCART1	577198.5	4327978	NonCancer	0	4.30E-05	0	0	0	0	9.46E-05	0	0.021981	0.021981
146	ALL	UCART1	577248.5	4327978	NonCancer	0	4.00E-05	0	0	0	0	8.84E-05	0	0.020472	0.020472
147	ALL	UCART1	577298.5	4327978	NonCancer	0	3.74E-05	0	0	0	0	8.30E-05	0	0.019124	0.019124
148	ALL	UCART1	577348.5	4327978	NonCancer	0	3.31E-05	0	0	0	0	8.12E-05	0	0.016908	0.016908
149	ALL	UCART1	577398.5	4327978	NonCancer	0	3.20E-05	0	0	0	0	7.99E-05	0	0.016367	0.016367
150	ALL	UCART1	577448.5	4327978	NonCancer	0	2.97E-05	0	0	0	0	7.81E-05	0	0.015179	0.015179
151	ALL	UCART1	576248.5	4328028	NonCancer	0	2.38E-05	0	0	0	0	9.31E-05	0	0.012232	0.012232
152	ALL	UCART1	576298.5	4328028	NonCancer	0	2.61E-05	0	0	0	0	9.78E-05	0	0.013371	0.013371
153	ALL	UCART1	576348.5	4328028	NonCancer	0	2.91E-05	0	0	0	0	9.86E-05	0	0.014938	0.014938
154	ALL	UCART1	576398.5	4328028	NonCancer	0	3.37E-05	0	0	0	0	9.75E-05	0	0.017258	0.017258
155	ALL	UCART1	576448.5	4328028	NonCancer	0	3.24E-05	0	0	0	0	9.77E-05	0	0.0166	0.0166
156	ALL	UCART1	576498.5	4328028	NonCancer	0	3.37E-05	0	0	0	0	9.71E-05	0	0.017265	0.017265
157	ALL	UCART1	576548.5	4328028	NonCancer	0	3.64E-05	0	0	0	0	0.0001	0	0.01862	0.01862
158	ALL	UCART1	576598.5	4328028	NonCancer	0	3.88E-05	0	0	0	0	9.89E-05	0	0.019852	0.019852
159	ALL	UCART1	576648.5	4328028	NonCancer	0	4.22E-05	0	0	0	0	9.99E-05	0	0.021566	0.021566
160	ALL	UCART1	576698.5	4328028	NonCancer	0	4.38E-05	0	0	0	0	0.000109	0	0.022407	0.022407
161	ALL	UCART1	576748.5	4328028	NonCancer	0	4.76E-05	0	0	0	0	0.000106	0	0.024346	0.024346
162	ALL	UCART1	576798.5	4328028	NonCancer	0	5.07E-05	0	0	0	0	0.000111	0	0.025904	0.025904
163	ALL	UCART1	576848.5	4328028	NonCancer	0	5.03E-05	0	0	0	0	0.000112	0	0.025709	0.025709
164	ALL	UCART1	576898.5	4328028	NonCancer	0	5.19E-05	0	0	0	0	0.000115	0	0.02655	0.02655
165	ALL	UCART1	576948.5	4328028	NonCancer	0	5.30E-05	0	0	0	0	0.000111	0	0.027117	0.027117
166	ALL	UCART1	576998.5	4328028	NonCancer	0	5.34E-05	0	0	0	0	0.000112	0	0.027315	0.027315
167	ALL	UCART1	577048.5	4328028	NonCancer	0	5.17E-05	0	0	0	0	0.000111	0	0.026411	0.026411
168	ALL	UCART1	577098.5	4328028	NonCancer	0	5.05E-05	0	0	0	0	0.00011	0	0.025818	0.025818

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE\	RESP	SKIN	EYE	MAXHI
169	ALL	UCART1	577148.5	4328028	NonCancer	0	4.87E-05	0	0	0	0	0.000109	0	0.024879	0.024879
170	ALL	UCART1	577198.5	4328028	NonCancer	0	4.90E-05	0	0	0	0	0.000102	0	0.025046	0.025046
171	ALL	UCART1	577248.5	4328028	NonCancer	0	4.43E-05	0	0	0	0	9.38E-05	0	0.022667	0.022667
172	ALL	UCART1	577298.5	4328028	NonCancer	0	4.01E-05	0	0	0	0	8.73E-05	0	0.020488	0.020488
173	ALL	UCART1	577348.5	4328028	NonCancer	0	3.64E-05	0	0	0	0	8.36E-05	0	0.018618	0.018618
174	ALL	UCART1	577398.5	4328028	NonCancer	0	3.41E-05	0	0	0	0	8.12E-05	0	0.017465	0.017465
175	ALL	UCART1	577448.5	4328028	NonCancer	0	3.12E-05	0	0	0	0	7.91E-05	0	0.01596	0.01596
176	ALL	UCART1	576248.5	4328078	NonCancer	0	2.52E-05	0	0	0	0	9.03E-05	0	0.012935	0.012935
177	ALL	UCART1	576298.5	4328078	NonCancer	0	2.71E-05	0	0	0	0	9.52E-05	0	0.013916	0.013916
178	ALL	UCART1	576348.5	4328078	NonCancer	0	2.90E-05	0	0	0	0	0.000102	0	0.014848	0.014848
179	ALL	UCART1	576398.5	4328078	NonCancer	0	3.14E-05	0	0	0	0	0.000102	0	0.016075	0.016075
180	ALL	UCART1	576448.5	4328078	NonCancer	0	3.81E-05	0	0	0	0	0.000102	0	0.019479	0.019479
181	ALL	UCART1	576498.5	4328078	NonCancer	0	3.83E-05	0	0	0	0	0.000102	0	0.019578	0.019578
182	ALL	UCART1	576548.5	4328078	NonCancer	0	3.87E-05	0	0	0	0	0.000103	0	0.019793	0.019793
183	ALL	UCART1	576598.5	4328078	NonCancer	0	4.20E-05	0	0	0	0	0.000105	0	0.021469	0.021469
184	ALL	UCART1	576648.5	4328078	NonCancer	0	4.48E-05	0	0	0	0	0.000106	0	0.022888	0.022888
185	ALL	UCART1	576698.5	4328078	NonCancer	0	4.82E-05	0	0	0	0	0.000114	0	0.024676	0.024676
186	ALL	UCART1	576748.5	4328078	NonCancer	0	5.11E-05	0	0	0	0	0.000114	0	0.026129	0.026129
187	ALL	UCART1	576798.5	4328078	NonCancer	0	6.10E-05	0	0	0	0	0.000121	0	0.031185	0.031185
188	ALL	UCART1	576848.5	4328078	NonCancer	0	5.70E-05	0	0	0	0	0.000125	0	0.029162	0.029162
189	ALL	UCART1	576898.5	4328078	NonCancer	0	5.88E-05	0	0	0	0	0.000127	0	0.030072	0.030072
190	ALL	UCART1	576948.5	4328078	NonCancer	0	6.09E-05	0	0	0	0	0.000123	0	0.031151	0.031151
191	ALL	UCART1	576998.5	4328078	NonCancer	0	6.13E-05	0	0	0	0	0.000125	0	0.031337	0.031337
192	ALL	UCART1	577048.5	4328078	NonCancer	0	5.89E-05	0	0	0	0	0.000123	0	0.030084	0.030084
193	ALL	UCART1	577098.5	4328078	NonCancer	0	5.73E-05	0	0	0	0	0.000122	0	0.029277	0.029277
194	ALL	UCART1	577148.5	4328078	NonCancer	0	5.52E-05	0	0	0	0	0.000117	0	0.028211	0.028211
195	ALL	UCART1	577198.5	4328078	NonCancer	0	5.25E-05	0	0	0	0	0.000107	0	0.026823	0.026823
196	ALL	UCART1	577248.5	4328078	NonCancer	0	4.87E-05	0	0	0	0	9.87E-05	0	0.024867	0.024867
197	ALL	UCART1	577298.5	4328078	NonCancer	0	4.25E-05	0	0	0	0	9.47E-05	0	0.021712	0.021712
198	ALL	UCART1	577348.5	4328078	NonCancer	0	3.93E-05	0	0	0	0	8.89E-05	0	0.020118	0.020118
199	ALL	UCART1	577398.5	4328078	NonCancer	0	3.66E-05	0	0	0	0	8.36E-05	0	0.018726	0.018726
200	ALL	UCART1	577448.5	4328078	NonCancer	0	3.55E-05	0	0	0	0	8.06E-05	0	0.018146	0.018146
201	ALL	UCART1	576248.5	4328128	NonCancer	0	2.31E-05	0	0	0	0	8.90E-05	0	0.011847	0.011847
202	ALL	UCART1	576298.5	4328128	NonCancer	0	2.63E-05	0	0	0	0	9.31E-05	0	0.01347	0.01347
203	ALL	UCART1	576348.5	4328128	NonCancer	0	3.06E-05	0	0	0	0	9.75E-05	0	0.015658	0.015658
204	ALL	UCART1	576398.5	4328128	NonCancer	0	3.24E-05	0	0	0	0	0.000106	0	0.016592	0.016592
205	ALL	UCART1	576448.5	4328128	NonCancer	0	3.56E-05	0	0	0	0	0.000107	0	0.018209	0.018209
206	ALL	UCART1	576498.5	4328128	NonCancer	0	4.29E-05	0	0	0	0	0.000107	0	0.021936	0.021936
207	ALL	UCART1	576548.5	4328128	NonCancer	0	4.56E-05	0	0	0	0	0.000108	0	0.023342	0.023342
208	ALL	UCART1	576598.5	4328128	NonCancer	0	4.50E-05	0	0	0	0	0.000112	0	0.023033	0.023033
209	ALL	UCART1	576648.5	4328128	NonCancer	0	4.91E-05	0	0	0	0	0.000114	0	0.025092	0.025092
210	ALL	UCART1	576698.5	4328128	NonCancer	0	5.51E-05	0	0	0	0	0.000118	0	0.028162	0.028162

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE\	RESP	SKIN	EYE	MAXHI
211	ALL	UCART1	576748.5	4328128	NonCancer	0	5.74E-05	0	0	0	0	0.000135	0	0.02934	0.02934
212	ALL	UCART1	576798.5	4328128	NonCancer	0	6.36E-05	0	0	0	0	0.000135	0	0.032491	0.032491
213	ALL	UCART1	576848.5	4328128	NonCancer	0	6.49E-05	0	0	0	0	0.00014	0	0.033171	0.033171
214	ALL	UCART1	576898.5	4328128	NonCancer	0	6.83E-05	0	0	0	0	0.000143	0	0.034932	0.034932
215	ALL	UCART1	576948.5	4328128	NonCancer	0	7.18E-05	0	0	0	0	0.000138	0	0.036678	0.036678
216	ALL	UCART1	576998.5	4328128	NonCancer	0	7.13E-05	0	0	0	0	0.000139	0	0.036455	0.036455
217	ALL	UCART1	577048.5	4328128	NonCancer	0	6.80E-05	0	0	0	0	0.000137	0	0.034751	0.034751
218	ALL	UCART1	577098.5	4328128	NonCancer	0	6.59E-05	0	0	0	0	0.000135	0	0.033688	0.033688
219	ALL	UCART1	577148.5	4328128	NonCancer	0	6.60E-05	0	0	0	0	0.000126	0	0.033742	0.033742
220	ALL	UCART1	577198.5	4328128	NonCancer	0	5.95E-05	0	0	0	0	0.000115	0	0.030392	0.030392
221	ALL	UCART1	577248.5	4328128	NonCancer	0	5.09E-05	0	0	0	0	0.000107	0	0.026027	0.026027
222	ALL	UCART1	577298.5	4328128	NonCancer	0	4.77E-05	0	0	0	0	0.000101	0	0.02439	0.02439
223	ALL	UCART1	577348.5	4328128	NonCancer	0	4.35E-05	0	0	0	0	9.33E-05	0	0.022262	0.022262
224	ALL	UCART1	577398.5	4328128	NonCancer	0	4.18E-05	0	0	0	0	9.01E-05	0	0.021345	0.021345
225	ALL	UCART1	577448.5	4328128	NonCancer	0	3.88E-05	0	0	0	0	8.19E-05	0	0.019813	0.019813
226	ALL	UCART1	576248.5	4328178	NonCancer	0	2.37E-05	0	0	0	0	8.36E-05	0	0.012125	0.012125
227	ALL	UCART1	576298.5	4328178	NonCancer	0	2.60E-05	0	0	0	0	9.04E-05	0	0.013342	0.013342
228	ALL	UCART1	576348.5	4328178	NonCancer	0	2.79E-05	0	0	0	0	9.60E-05	0	0.014293	0.014293
229	ALL	UCART1	576398.5	4328178	NonCancer	0	3.31E-05	0	0	0	0	0.000101	0	0.016953	0.016953
230	ALL	UCART1	576448.5	4328178	NonCancer	0	3.74E-05	0	0	0	0	0.00011	0	0.019158	0.019158
231	ALL	UCART1	576498.5	4328178	NonCancer	0	4.07E-05	0	0	0	0	0.000114	0	0.020832	0.020832
232	ALL	UCART1	576548.5	4328178	NonCancer	0	4.80E-05	0	0	0	0	0.000114	0	0.024534	0.024534
233	ALL	UCART1	576598.5	4328178	NonCancer	0	5.51E-05	0	0	0	0	0.000117	0	0.028145	0.028145
234	ALL	UCART1	576648.5	4328178	NonCancer	0	5.34E-05	0	0	0	0	0.000127	0	0.027299	0.027299
235	ALL	UCART1	576698.5	4328178	NonCancer	0	5.86E-05	0	0	0	0	0.000132	0	0.029976	0.029976
236	ALL	UCART1	576748.5	4328178	NonCancer	0	6.77E-05	0	0	0	0	0.000147	0	0.034598	0.034598
237	ALL	UCART1	576798.5	4328178	NonCancer	0	6.97E-05	0	0	0	0	0.00015	0	0.035658	0.035658
238	ALL	UCART1	576848.5	4328178	NonCancer	0	8.46E-05	0	0	0	0	0.000159	0	0.043251	0.043251
239	ALL	UCART1	576898.5	4328178	NonCancer	0	7.97E-05	0	0	0	0	0.000163	0	0.040721	0.040721
240	ALL	UCART1	576948.5	4328178	NonCancer	0	8.55E-05	0	0	0	0	0.000157	0	0.043697	0.043697
241	ALL	UCART1	576998.5	4328178	NonCancer	0	8.45E-05	0	0	0	0	0.000157	0	0.043165	0.043165
242	ALL	UCART1	577048.5	4328178	NonCancer	0	8.06E-05	0	0	0	0	0.000155	0	0.041173	0.041173
243	ALL	UCART1	577098.5	4328178	NonCancer	0	7.82E-05	0	0	0	0	0.000148	0	0.039942	0.039942
244	ALL	UCART1	577148.5	4328178	NonCancer	0	7.42E-05	0	0	0	0	0.000134	0	0.037891	0.037891
245	ALL	UCART1	577198.5	4328178	NonCancer	0	6.65E-05	0	0	0	0	0.000122	0	0.033989	0.033989
246	ALL	UCART1	577248.5	4328178	NonCancer	0	5.87E-05	0	0	0	0	0.000114	0	0.029973	0.029973
247	ALL	UCART1	577298.5	4328178	NonCancer	0	5.27E-05	0	0	0	0	0.000106	0	0.02691	0.02691
248	ALL	UCART1	577348.5	4328178	NonCancer	0	5.01E-05	0	0	0	0	0.000103	0	0.025617	0.025617
249	ALL	UCART1	577398.5	4328178	NonCancer	0	4.49E-05	0	0	0	0	9.23E-05	0	0.02297	0.02297
250	ALL	UCART1	577448.5	4328178	NonCancer	0	3.85E-05	0	0	0	0	8.48E-05	0	0.019689	0.019689
251	ALL	UCART1	576248.5	4328228	NonCancer	0	2.59E-05	0	0	0	0	7.93E-05	0	0.013252	0.013252
252	ALL	UCART1	576298.5	4328228	NonCancer	0	2.64E-05	0	0	0	0	8.35E-05	0	0.013534	0.013534

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE\	RESP	SKIN	EYE	MAXHI
253	ALL	UCART1	576348.5	4328228	NonCancer	0	2.85E-05	0	0	0	0	9.18E-05	0	0.014599	0.014599
254	ALL	UCART1	576398.5	4328228	NonCancer	0	3.20E-05	0	0	0	0	9.85E-05	0	0.016364	0.016364
255	ALL	UCART1	576448.5	4328228	NonCancer	0	3.46E-05	0	0	0	0	0.000106	0	0.017708	0.017708
256	ALL	UCART1	576498.5	4328228	NonCancer	0	4.28E-05	0	0	0	0	0.000115	0	0.021906	0.021906
257	ALL	UCART1	576548.5	4328228	NonCancer	0	4.76E-05	0	0	0	0	0.000124	0	0.024358	0.024358
258	ALL	UCART1	576598.5	4328228	NonCancer	0	5.33E-05	0	0	0	0	0.000128	0	0.027248	0.027248
259	ALL	UCART1	576648.5	4328228	NonCancer	0	6.72E-05	0	0	0	0	0.000137	0	0.034329	0.034329
260	ALL	UCART1	576698.5	4328228	NonCancer	0	6.53E-05	0	0	0	0	0.00015	0	0.033412	0.033412
261	ALL	UCART1	576748.5	4328228	NonCancer	0	7.24E-05	0	0	0	0	0.000159	0	0.037017	0.037017
262	ALL	UCART1	576798.5	4328228	NonCancer	0	8.14E-05	0	0	0	0	0.000179	0	0.041612	0.041612
263	ALL	UCART1	576848.5	4328228	NonCancer	0	9.11E-05	0	0	0	0	0.000182	0	0.046547	0.046547
264	ALL	UCART1	576898.5	4328228	NonCancer	0	9.54E-05	0	0	0	0	0.000191	0	0.048767	0.048767
265	ALL	UCART1	576948.5	4328228	NonCancer	0	0.0001	0	0	0	0	0.000185	0	0.051205	0.051205
266	ALL	UCART1	576998.5	4328228	NonCancer	0	0.000102	0	0	0	0	0.000182	0	0.052125	0.052125
267	ALL	UCART1	577048.5	4328228	NonCancer	0	9.70E-05	0	0	0	0	0.000174	0	0.049556	0.049556
268	ALL	UCART1	577098.5	4328228	NonCancer	0	9.28E-05	0	0	0	0	0.000159	0	0.047381	0.047381
269	ALL	UCART1	577148.5	4328228	NonCancer	0	8.62E-05	0	0	0	0	0.000142	0	0.044016	0.044016
270	ALL	UCART1	577198.5	4328228	NonCancer	0	7.23E-05	0	0	0	0	0.000132	0	0.036948	0.036948
271	ALL	UCART1	577248.5	4328228	NonCancer	0	6.53E-05	0	0	0	0	0.000121	0	0.033372	0.033372
272	ALL	UCART1	577298.5	4328228	NonCancer	0	6.18E-05	0	0	0	0	0.000118	0	0.031592	0.031592
273	ALL	UCART1	577348.5	4328228	NonCancer	0	5.28E-05	0	0	0	0	0.000104	0	0.026961	0.026961
274	ALL	UCART1	577398.5	4328228	NonCancer	0	4.68E-05	0	0	0	0	9.68E-05	0	0.023925	0.023925
275	ALL	UCART1	577448.5	4328228	NonCancer	0	4.21E-05	0	0	0	0	8.97E-05	0	0.021515	0.021515
276	ALL	UCART1	576248.5	4328278	NonCancer	0	2.57E-05	0	0	0	0	8.10E-05	0	0.013142	0.013142
277	ALL	UCART1	576298.5	4328278	NonCancer	0	2.90E-05	0	0	0	0	8.31E-05	0	0.014867	0.014867
278	ALL	UCART1	576348.5	4328278	NonCancer	0	3.22E-05	0	0	0	0	8.60E-05	0	0.016492	0.016492
279	ALL	UCART1	576398.5	4328278	NonCancer	0	3.39E-05	0	0	0	0	9.05E-05	0	0.017351	0.017351
280	ALL	UCART1	576448.5	4328278	NonCancer	0	3.50E-05	0	0	0	0	0.000103	0	0.017946	0.017946
281	ALL	UCART1	576498.5	4328278	NonCancer	0	4.05E-05	0	0	0	0	0.000111	0	0.020751	0.020751
282	ALL	UCART1	576548.5	4328278	NonCancer	0	4.46E-05	0	0	0	0	0.000125	0	0.022811	0.022811
283	ALL	UCART1	576598.5	4328278	NonCancer	0	5.72E-05	0	0	0	0	0.000147	0	0.029268	0.029268
284	ALL	UCART1	576648.5	4328278	NonCancer	0	6.38E-05	0	0	0	0	0.000156	0	0.032644	0.032644
285	ALL	UCART1	576698.5	4328278	NonCancer	0	8.27E-05	0	0	0	0	0.00017	0	0.042256	0.042256
286	ALL	UCART1	576748.5	4328278	NonCancer	0	8.25E-05	0	0	0	0	0.000188	0	0.04218	0.04218
287	ALL	UCART1	576798.5	4328278	NonCancer	0	9.42E-05	0	0	0	0	0.000212	0	0.048155	0.048155
288	ALL	UCART1	576848.5	4328278	NonCancer	0	0.000105	0	0	0	0	0.000219	0	0.053433	0.053433
289	ALL	UCART1	576898.5	4328278	NonCancer	0	0.000128	0	0	0	0	0.000232	0	0.065496	0.065496
290	ALL	UCART1	576948.5	4328278	NonCancer	0	0.000124	0	0	0	0	0.000223	0	0.063123	0.063123
291	ALL	UCART1	576998.5	4328278	NonCancer	0	0.000127	0	0	0	0	0.000218	0	0.06479	0.06479
292	ALL	UCART1	577048.5	4328278	NonCancer	0	0.000121	0	0	0	0	0.000208	0	0.061644	0.061644
293	ALL	UCART1	577098.5	4328278	NonCancer	0	0.000119	0	0	0	0	0.000181	0	0.060508	0.060508
294	ALL	UCART1	577148.5	4328278	NonCancer	0	9.81E-05	0	0	0	0	0.00016	0	0.050076	0.050076

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE\	RESP	SKIN	EYE	MAXHI
295	ALL	UCART1	577198.5	4328278	NonCancer	0	8.51E-05	0	0	0	0	0.000142	0	0.043452	0.043452
296	ALL	UCART1	577248.5	4328278	NonCancer	0	7.88E-05	0	0	0	0	0.000137	0	0.040262	0.040262
297	ALL	UCART1	577298.5	4328278	NonCancer	0	6.51E-05	0	0	0	0	0.000117	0	0.033269	0.033269
298	ALL	UCART1	577348.5	4328278	NonCancer	0	5.68E-05	0	0	0	0	0.000109	0	0.029011	0.029011
299	ALL	UCART1	577398.5	4328278	NonCancer	0	4.92E-05	0	0	0	0	9.61E-05	0	0.025118	0.025118
300	ALL	UCART1	577448.5	4328278	NonCancer	0	4.38E-05	0	0	0	0	8.83E-05	0	0.022369	0.022369
301	ALL	UCART1	576248.5	4328328	NonCancer	0	2.59E-05	0	0	0	0	8.62E-05	0	0.013252	0.013252
302	ALL	UCART1	576298.5	4328328	NonCancer	0	2.82E-05	0	0	0	0	9.01E-05	0	0.014469	0.014469
303	ALL	UCART1	576348.5	4328328	NonCancer	0	3.12E-05	0	0	0	0	9.15E-05	0	0.015983	0.015983
304	ALL	UCART1	576398.5	4328328	NonCancer	0	3.45E-05	0	0	0	0	9.44E-05	0	0.017649	0.017649
305	ALL	UCART1	576448.5	4328328	NonCancer	0	4.02E-05	0	0	0	0	0.0001	0	0.02054	0.02054
306	ALL	UCART1	576498.5	4328328	NonCancer	0	4.50E-05	0	0	0	0	0.000103	0	0.023003	0.023003
307	ALL	UCART1	576548.5	4328328	NonCancer	0	4.66E-05	0	0	0	0	0.000126	0	0.02385	0.02385
308	ALL	UCART1	576598.5	4328328	NonCancer	0	5.41E-05	0	0	0	0	0.000148	0	0.027675	0.027675
309	ALL	UCART1	576648.5	4328328	NonCancer	0	6.39E-05	0	0	0	0	0.000179	0	0.032694	0.032694
310	ALL	UCART1	576698.5	4328328	NonCancer	0	8.03E-05	0	0	0	0	0.000199	0	0.041072	0.041072
311	ALL	UCART1	576748.5	4328328	NonCancer	0	0.000102	0	0	0	0	0.000217	0	0.052085	0.052085
312	ALL	UCART1	576798.5	4328328	NonCancer	0	0.000108	0	0	0	0	0.000245	0	0.055476	0.055476
313	ALL	UCART1	576848.5	4328328	NonCancer	0	0.000127	0	0	0	0	0.000273	0	0.064717	0.064717
314	ALL	UCART1	576898.5	4328328	NonCancer	0	0.000146	0	0	0	0	0.000294	0	0.074773	0.074773
315	ALL	UCART1	576948.5	4328328	NonCancer	0	0.000157	0	0	0	0	0.000286	0	0.080115	0.080115
316	ALL	UCART1	576998.5	4328328	NonCancer	0	0.000164	0	0	0	0	0.000274	0	0.083812	0.083812
317	ALL	UCART1	577048.5	4328328	NonCancer	0	0.000154	0	0	0	0	0.000239	0	0.078779	0.078779
318	ALL	UCART1	577098.5	4328328	NonCancer	0	0.000141	0	0	0	0	0.000203	0	0.072206	0.072206
319	ALL	UCART1	577148.5	4328328	NonCancer	0	0.000116	0	0	0	0	0.000179	0	0.059286	0.059286
320	ALL	UCART1	577198.5	4328328	NonCancer	0	0.000105	0	0	0	0	0.000165	0	0.053798	0.053798
321	ALL	UCART1	577248.5	4328328	NonCancer	0	8.23E-05	0	0	0	0	0.000139	0	0.042054	0.042054
322	ALL	UCART1	577298.5	4328328	NonCancer	0	7.18E-05	0	0	0	0	0.000121	0	0.036664	0.036664
323	ALL	UCART1	577348.5	4328328	NonCancer	0	6.17E-05	0	0	0	0	0.00011	0	0.031501	0.031501
324	ALL	UCART1	577398.5	4328328	NonCancer	0	4.48E-05	0	0	0	0	9.34E-05	0	0.022917	0.022917
325	ALL	UCART1	577448.5	4328328	NonCancer	0	3.92E-05	0	0	0	0	8.12E-05	0	0.020042	0.020042
326	ALL	UCART1	576248.5	4328378	NonCancer	0	2.63E-05	0	0	0	0	8.82E-05	0	0.013455	0.013455
327	ALL	UCART1	576298.5	4328378	NonCancer	0	2.90E-05	0	0	0	0	9.26E-05	0	0.01488	0.01488
328	ALL	UCART1	576348.5	4328378	NonCancer	0	3.21E-05	0	0	0	0	9.63E-05	0	0.016427	0.016427
329	ALL	UCART1	576398.5	4328378	NonCancer	0	3.51E-05	0	0	0	0	0.000102	0	0.017974	0.017974
330	ALL	UCART1	576448.5	4328378	NonCancer	0	3.89E-05	0	0	0	0	0.000108	0	0.019899	0.019899
331	ALL	UCART1	576498.5	4328378	NonCancer	0	4.41E-05	0	0	0	0	0.000111	0	0.022586	0.022586
332	ALL	UCART1	576548.5	4328378	NonCancer	0	5.00E-05	0	0	0	0	0.000123	0	0.025571	0.025571
333	ALL	UCART1	576598.5	4328378	NonCancer	0	6.09E-05	0	0	0	0	0.000141	0	0.031141	0.031141
334	ALL	UCART1	576648.5	4328378	NonCancer	0	6.90E-05	0	0	0	0	0.000173	0	0.03529	0.03529
335	ALL	UCART1	576698.5	4328378	NonCancer	0	7.74E-05	0	0	0	0	0.000225	0	0.039638	0.039638
336	ALL	UCART1	576748.5	4328378	NonCancer	0	9.99E-05	0	0	0	0	0.000264	0	0.051113	0.051113

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE\	RESP	SKIN	EYE	MAXHI
337	ALL	UCART1	576798.5	4328378	NonCancer	0	0.000124	0	0	0	0	0.000311	0	0.063245	0.063245
344	ALL	UCART1	577148.5	4328378	NonCancer	0	0.000151	0	0	0	0	0.00021	0	0.07699	0.07699
345	ALL	UCART1	577198.5	4328378	NonCancer	0	0.000114	0	0	0	0	0.000167	0	0.058394	0.058394
346	ALL	UCART1	577248.5	4328378	NonCancer	0	9.42E-05	0	0	0	0	0.000142	0	0.048094	0.048094
347	ALL	UCART1	577298.5	4328378	NonCancer	0	6.66E-05	0	0	0	0	0.00012	0	0.034026	0.034026
348	ALL	UCART1	577348.5	4328378	NonCancer	0	5.51E-05	0	0	0	0	0.000101	0	0.028142	0.028142
349	ALL	UCART1	577398.5	4328378	NonCancer	0	4.87E-05	0	0	0	0	9.15E-05	0	0.02486	0.02486
350	ALL	UCART1	577448.5	4328378	NonCancer	0	4.13E-05	0	0	0	0	8.51E-05	0	0.021095	0.021095
351	ALL	UCART1	576248.5	4328428	NonCancer	0	2.69E-05	0	0	0	0	9.03E-05	0	0.013808	0.013808
352	ALL	UCART1	576298.5	4328428	NonCancer	0	2.94E-05	0	0	0	0	9.46E-05	0	0.015053	0.015053
353	ALL	UCART1	576348.5	4328428	NonCancer	0	3.21E-05	0	0	0	0	9.92E-05	0	0.01646	0.01646
354	ALL	UCART1	576398.5	4328428	NonCancer	0	3.61E-05	0	0	0	0	0.000104	0	0.018503	0.018503
355	ALL	UCART1	576448.5	4328428	NonCancer	0	4.04E-05	0	0	0	0	0.00011	0	0.020653	0.020653
356	ALL	UCART1	576498.5	4328428	NonCancer	0	4.47E-05	0	0	0	0	0.000118	0	0.022871	0.022871
357	ALL	UCART1	576548.5	4328428	NonCancer	0	5.17E-05	0	0	0	0	0.000132	0	0.026448	0.026448
358	ALL	UCART1	576598.5	4328428	NonCancer	0	5.94E-05	0	0	0	0	0.000149	0	0.03041	0.03041
359	ALL	UCART1	576648.5	4328428	NonCancer	0	6.90E-05	0	0	0	0	0.000175	0	0.035313	0.035313
360	ALL	UCART1	576698.5	4328428	NonCancer	0	8.29E-05	0	0	0	0	0.000227	0	0.042408	0.042408
361	ALL	UCART1	576748.5	4328428	NonCancer	0	0.000109	0	0	0	0	0.000286	0	0.055713	0.055713
362	ALL	UCART1	576798.5	4328428	NonCancer	0	0.000125	0	0	0	0	0.000381	0	0.063927	0.063927
369	ALL	UCART1	577148.5	4328428	NonCancer	0	0.000167	0	0	0	0	0.000219	0	0.084984	0.084984
370	ALL	UCART1	577198.5	4328428	NonCancer	0	0.000113	0	0	0	0	0.000174	0	0.057828	0.057828
371	ALL	UCART1	577248.5	4328428	NonCancer	0	8.92E-05	0	0	0	0	0.000137	0	0.045534	0.045534
372	ALL	UCART1	577298.5	4328428	NonCancer	0	7.10E-05	0	0	0	0	0.00012	0	0.036273	0.036273
373	ALL	UCART1	577348.5	4328428	NonCancer	0	6.13E-05	0	0	0	0	0.000106	0	0.031296	0.031296
374	ALL	UCART1	577398.5	4328428	NonCancer	0	5.03E-05	0	0	0	0	9.54E-05	0	0.025709	0.025709
375	ALL	UCART1	577448.5	4328428	NonCancer	0	4.27E-05	0	0	0	0	8.73E-05	0	0.021838	0.021838
376	ALL	UCART1	576248.5	4328478	NonCancer	0	2.72E-05	0	0	0	0	9.08E-05	0	0.013921	0.013921
377	ALL	UCART1	576298.5	4328478	NonCancer	0	3.00E-05	0	0	0	0	9.47E-05	0	0.01535	0.01535
378	ALL	UCART1	576348.5	4328478	NonCancer	0	3.35E-05	0	0	0	0	0.0001	0	0.01715	0.01715
379	ALL	UCART1	576398.5	4328478	NonCancer	0	3.76E-05	0	0	0	0	0.000107	0	0.019267	0.019267
380	ALL	UCART1	576448.5	4328478	NonCancer	0	4.25E-05	0	0	0	0	0.000114	0	0.02177	0.02177
381	ALL	UCART1	576498.5	4328478	NonCancer	0	4.84E-05	0	0	0	0	0.000123	0	0.024749	0.024749
382	ALL	UCART1	576548.5	4328478	NonCancer	0	5.53E-05	0	0	0	0	0.000136	0	0.028281	0.028281
383	ALL	UCART1	576598.5	4328478	NonCancer	0	6.35E-05	0	0	0	0	0.000157	0	0.032495	0.032495
384	ALL	UCART1	576648.5	4328478	NonCancer	0	7.31E-05	0	0	0	0	0.000187	0	0.037418	0.037418
385	ALL	UCART1	576698.5	4328478	NonCancer	0	8.61E-05	0	0	0	0	0.00024	0	0.044092	0.044092
386	ALL	UCART1	576748.5	4328478	NonCancer	0	0.000107	0	0	0	0	0.000302	0	0.054989	0.054989
394	ALL	UCART1	577148.5	4328478	NonCancer	0	0.000175	0	0	0	0	0.000215	0	0.089255	0.089255
395	ALL	UCART1	577198.5	4328478	NonCancer	0	0.000122	0	0	0	0	0.000172	0	0.062514	0.062514
396	ALL	UCART1	577248.5	4328478	NonCancer	0	9.33E-05	0	0	0	0	0.000145	0	0.047648	0.047648
397	ALL	UCART1	577298.5	4328478	NonCancer	0	7.32E-05	0	0	0	0	0.000123	0	0.037412	0.037412

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE\	RESP	SKIN	EYE	MAXHI
398	ALL	UCART1	577348.5	4328478	NonCancer	0	6.08E-05	0	0	0	0	0.000109	0	0.031048	0.031048
399	ALL	UCART1	577398.5	4328478	NonCancer	0	5.07E-05	0	0	0	0	9.87E-05	0	0.025909	0.025909
400	ALL	UCART1	577448.5	4328478	NonCancer	0	4.26E-05	0	0	0	0	8.95E-05	0	0.021795	0.021795
401	ALL	UCART1	576248.5	4328528	NonCancer	0	2.76E-05	0	0	0	0	9.00E-05	0	0.014123	0.014123
402	ALL	UCART1	576298.5	4328528	NonCancer	0	3.03E-05	0	0	0	0	9.44E-05	0	0.015515	0.015515
403	ALL	UCART1	576348.5	4328528	NonCancer	0	3.35E-05	0	0	0	0	9.99E-05	0	0.017154	0.017154
404	ALL	UCART1	576398.5	4328528	NonCancer	0	3.73E-05	0	0	0	0	0.000107	0	0.019102	0.019102
405	ALL	UCART1	576448.5	4328528	NonCancer	0	4.19E-05	0	0	0	0	0.000115	0	0.02146	0.02146
406	ALL	UCART1	576498.5	4328528	NonCancer	0	4.76E-05	0	0	0	0	0.000126	0	0.024359	0.024359
407	ALL	UCART1	576548.5	4328528	NonCancer	0	5.47E-05	0	0	0	0	0.000142	0	0.027986	0.027986
408	ALL	UCART1	576598.5	4328528	NonCancer	0	6.37E-05	0	0	0	0	0.000165	0	0.0326	0.0326
409	ALL	UCART1	576648.5	4328528	NonCancer	0	7.55E-05	0	0	0	0	0.000195	0	0.038629	0.038629
410	ALL	UCART1	576698.5	4328528	NonCancer	0	9.14E-05	0	0	0	0	0.000244	0	0.046765	0.046765
411	ALL	UCART1	576748.5	4328528	NonCancer	0	0.000114	0	0	0	0	0.000319	0	0.058261	0.058261
420	ALL	UCART1	577198.5	4328528	NonCancer	0	0.000138	0	0	0	0	0.000184	0	0.070592	0.070592
421	ALL	UCART1	577248.5	4328528	NonCancer	0	0.000106	0	0	0	0	0.000153	0	0.054354	0.054354
422	ALL	UCART1	577298.5	4328528	NonCancer	0	8.50E-05	0	0	0	0	0.00013	0	0.043407	0.043407
423	ALL	UCART1	577348.5	4328528	NonCancer	0	6.99E-05	0	0	0	0	0.000113	0	0.035706	0.035706
424	ALL	UCART1	577398.5	4328528	NonCancer	0	5.88E-05	0	0	0	0	0.000101	0	0.030056	0.030056
425	ALL	UCART1	577448.5	4328528	NonCancer	0	5.04E-05	0	0	0	0	9.13E-05	0	0.025766	0.025766
426	ALL	UCART1	576248.5	4328578	NonCancer	0	2.59E-05	0	0	0	0	9.01E-05	0	0.013268	0.013268
427	ALL	UCART1	576298.5	4328578	NonCancer	0	2.82E-05	0	0	0	0	9.31E-05	0	0.014441	0.014441
428	ALL	UCART1	576348.5	4328578	NonCancer	0	3.08E-05	0	0	0	0	9.78E-05	0	0.01576	0.01576
429	ALL	UCART1	576398.5	4328578	NonCancer	0	3.44E-05	0	0	0	0	0.000105	0	0.017594	0.017594
430	ALL	UCART1	576448.5	4328578	NonCancer	0	3.86E-05	0	0	0	0	0.000112	0	0.019757	0.019757
431	ALL	UCART1	576498.5	4328578	NonCancer	0	4.37E-05	0	0	0	0	0.000122	0	0.022377	0.022377
432	ALL	UCART1	576548.5	4328578	NonCancer	0	5.00E-05	0	0	0	0	0.000137	0	0.025612	0.025612
433	ALL	UCART1	576598.5	4328578	NonCancer	0	5.72E-05	0	0	0	0	0.00016	0	0.029256	0.029256
434	ALL	UCART1	576648.5	4328578	NonCancer	0	6.73E-05	0	0	0	0	0.000194	0	0.034463	0.034463
435	ALL	UCART1	576698.5	4328578	NonCancer	0	8.09E-05	0	0	0	0	0.00024	0	0.041415	0.041415
445	ALL	UCART1	577198.5	4328578	NonCancer	0	0.000136	0	0	0	0	0.000202	0	0.069654	0.069654
446	ALL	UCART1	577248.5	4328578	NonCancer	0	0.000104	0	0	0	0	0.000165	0	0.053032	0.053032
447	ALL	UCART1	577298.5	4328578	NonCancer	0	8.42E-05	0	0	0	0	0.00014	0	0.043026	0.043026
448	ALL	UCART1	577348.5	4328578	NonCancer	0	6.92E-05	0	0	0	0	0.000121	0	0.035326	0.035326
449	ALL	UCART1	577398.5	4328578	NonCancer	0	5.69E-05	0	0	0	0	0.000108	0	0.029061	0.029061
450	ALL	UCART1	577448.5	4328578	NonCancer	0	4.91E-05	0	0	0	0	9.74E-05	0	0.025112	0.025112
451	ALL	UCART1	576248.5	4328628	NonCancer	0	2.51E-05	0	0	0	0	8.73E-05	0	0.01289	0.01289
452	ALL	UCART1	576298.5	4328628	NonCancer	0	2.77E-05	0	0	0	0	8.96E-05	0	0.014215	0.014215
453	ALL	UCART1	576348.5	4328628	NonCancer	0	3.05E-05	0	0	0	0	9.40E-05	0	0.015619	0.015619
454	ALL	UCART1	576398.5	4328628	NonCancer	0	3.38E-05	0	0	0	0	1.00E-04	0	0.01732	0.01732
455	ALL	UCART1	576448.5	4328628	NonCancer	0	3.76E-05	0	0	0	0	0.000107	0	0.019274	0.019274
456	ALL	UCART1	576498.5	4328628	NonCancer	0	4.25E-05	0	0	0	0	0.000115	0	0.021755	0.021755

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE\	RESP	SKIN	EYE	MAXHI
457	ALL	UCART1	576548.5	4328628	NonCancer	0	4.96E-05	0	0	0	0	0.00013	0	0.025401	0.025401
458	ALL	UCART1	576598.5	4328628	NonCancer	0	5.69E-05	0	0	0	0	0.000149	0	0.029121	0.029121
459	ALL	UCART1	576648.5	4328628	NonCancer	0	6.71E-05	0	0	0	0	0.000176	0	0.034359	0.034359
460	ALL	UCART1	576698.5	4328628	NonCancer	0	7.75E-05	0	0	0	0	0.000219	0	0.039677	0.039677
470	ALL	UCART1	577198.5	4328628	NonCancer	0	0.000121	0	0	0	0	0.000194	0	0.061692	0.061692
471	ALL	UCART1	577248.5	4328628	NonCancer	0	9.63E-05	0	0	0	0	0.000164	0	0.049207	0.049207
472	ALL	UCART1	577298.5	4328628	NonCancer	0	7.89E-05	0	0	0	0	0.000139	0	0.040311	0.040311
473	ALL	UCART1	577348.5	4328628	NonCancer	0	6.80E-05	0	0	0	0	0.00012	0	0.034713	0.034713
474	ALL	UCART1	577398.5	4328628	NonCancer	0	5.64E-05	0	0	0	0	0.000105	0	0.02881	0.02881
475	ALL	UCART1	577448.5	4328628	NonCancer	0	4.86E-05	0	0	0	0	9.62E-05	0	0.024857	0.024857
476	ALL	UCART1	576248.5	4328678	NonCancer	0	2.50E-05	0	0	0	0	8.56E-05	0	0.012831	0.012831
477	ALL	UCART1	576298.5	4328678	NonCancer	0	2.74E-05	0	0	0	0	8.81E-05	0	0.014033	0.014033
478	ALL	UCART1	576348.5	4328678	NonCancer	0	3.09E-05	0	0	0	0	9.21E-05	0	0.015818	0.015818
479	ALL	UCART1	576398.5	4328678	NonCancer	0	3.40E-05	0	0	0	0	9.76E-05	0	0.017414	0.017414
480	ALL	UCART1	576448.5	4328678	NonCancer	0	3.73E-05	0	0	0	0	0.000104	0	0.019098	0.019098
481	ALL	UCART1	576498.5	4328678	NonCancer	0	4.24E-05	0	0	0	0	0.000113	0	0.021711	0.021711
482	ALL	UCART1	576548.5	4328678	NonCancer	0	4.68E-05	0	0	0	0	0.000124	0	0.023968	0.023968
483	ALL	UCART1	576598.5	4328678	NonCancer	0	5.36E-05	0	0	0	0	0.000141	0	0.02743	0.02743
484	ALL	UCART1	576648.5	4328678	NonCancer	0	6.12E-05	0	0	0	0	0.000164	0	0.031341	0.031341
495	ALL	UCART1	577198.5	4328678	NonCancer	0	9.43E-05	0	0	0	0	0.000178	0	0.048191	0.048191
496	ALL	UCART1	577248.5	4328678	NonCancer	0	8.33E-05	0	0	0	0	0.000152	0	0.04258	0.04258
497	ALL	UCART1	577298.5	4328678	NonCancer	0	7.31E-05	0	0	0	0	0.000135	0	0.037332	0.037332
498	ALL	UCART1	577348.5	4328678	NonCancer	0	6.23E-05	0	0	0	0	0.000118	0	0.031813	0.031813
499	ALL	UCART1	577398.5	4328678	NonCancer	0	5.45E-05	0	0	0	0	0.000105	0	0.02786	0.02786
500	ALL	UCART1	577448.5	4328678	NonCancer	0	4.72E-05	0	0	0	0	9.55E-05	0	0.024107	0.024107
501	ALL	UCART1	576248.5	4328728	NonCancer	0	2.50E-05	0	0	0	0	8.23E-05	0	0.012814	0.012814
502	ALL	UCART1	576298.5	4328728	NonCancer	0	2.73E-05	0	0	0	0	8.61E-05	0	0.014004	0.014004
503	ALL	UCART1	576348.5	4328728	NonCancer	0	2.99E-05	0	0	0	0	8.96E-05	0	0.015318	0.015318
504	ALL	UCART1	576398.5	4328728	NonCancer	0	3.23E-05	0	0	0	0	9.41E-05	0	0.016531	0.016531
505	ALL	UCART1	576448.5	4328728	NonCancer	0	3.57E-05	0	0	0	0	9.83E-05	0	0.018289	0.018289
506	ALL	UCART1	576498.5	4328728	NonCancer	0	3.95E-05	0	0	0	0	0.000107	0	0.020207	0.020207
507	ALL	UCART1	576548.5	4328728	NonCancer	0	4.44E-05	0	0	0	0	0.000119	0	0.022747	0.022747
508	ALL	UCART1	576598.5	4328728	NonCancer	0	5.16E-05	0	0	0	0	0.000127	0	0.026386	0.026386
509	ALL	UCART1	576648.5	4328728	NonCancer	0	6.00E-05	0	0	0	0	0.000149	0	0.030695	0.030695
520	ALL	UCART1	577198.5	4328728	NonCancer	0	7.83E-05	0	0	0	0	0.000152	0	0.040036	0.040036
521	ALL	UCART1	577248.5	4328728	NonCancer	0	6.90E-05	0	0	0	0	0.000141	0	0.035247	0.035247
522	ALL	UCART1	577298.5	4328728	NonCancer	0	6.31E-05	0	0	0	0	0.000125	0	0.032258	0.032258
523	ALL	UCART1	577348.5	4328728	NonCancer	0	5.52E-05	0	0	0	0	0.000112	0	0.028204	0.028204
524	ALL	UCART1	577398.5	4328728	NonCancer	0	4.99E-05	0	0	0	0	0.000101	0	0.025509	0.025509
525	ALL	UCART1	577448.5	4328728	NonCancer	0	4.46E-05	0	0	0	0	9.33E-05	0	0.022782	0.022782
526	ALL	UCART1	576248.5	4328778	NonCancer	0	2.40E-05	0	0	0	0	7.94E-05	0	0.012319	0.012319
527	ALL	UCART1	576298.5	4328778	NonCancer	0	2.62E-05	0	0	0	0	8.31E-05	0	0.013409	0.013409

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE\	RESP	SKIN	EYE	MAXHI
528	ALL	UCART1	576348.5	4328778	NonCancer	0	2.85E-05	0	0	0	0	8.82E-05	0	0.014572	0.014572
529	ALL	UCART1	576398.5	4328778	NonCancer	0	3.07E-05	0	0	0	0	9.26E-05	0	0.015721	0.015721
530	ALL	UCART1	576448.5	4328778	NonCancer	0	3.42E-05	0	0	0	0	9.84E-05	0	0.017529	0.017529
531	ALL	UCART1	576498.5	4328778	NonCancer	0	3.82E-05	0	0	0	0	0.000101	0	0.019555	0.019555
532	ALL	UCART1	576548.5	4328778	NonCancer	0	4.44E-05	0	0	0	0	0.000109	0	0.022735	0.022735
533	ALL	UCART1	576598.5	4328778	NonCancer	0	4.39E-05	0	0	0	0	0.000113	0	0.022454	0.022454
545	ALL	UCART1	577198.5	4328778	NonCancer	0	6.86E-05	0	0	0	0	0.000137	0	0.035073	0.035073
546	ALL	UCART1	577248.5	4328778	NonCancer	0	5.88E-05	0	0	0	0	0.000126	0	0.030075	0.030075
547	ALL	UCART1	577298.5	4328778	NonCancer	0	5.37E-05	0	0	0	0	0.000115	0	0.027458	0.027458
548	ALL	UCART1	577348.5	4328778	NonCancer	0	4.71E-05	0	0	0	0	0.000103	0	0.024102	0.024102
549	ALL	UCART1	577398.5	4328778	NonCancer	0	4.47E-05	0	0	0	0	9.86E-05	0	0.022874	0.022874
550	ALL	UCART1	577448.5	4328778	NonCancer	0	4.15E-05	0	0	0	0	9.03E-05	0	0.021199	0.021199
551	ALL	UCART1	576248.5	4328828	NonCancer	0	2.32E-05	0	0	0	0	8.11E-05	0	0.011916	0.011916
552	ALL	UCART1	576298.5	4328828	NonCancer	0	2.50E-05	0	0	0	0	8.43E-05	0	0.012809	0.012809
553	ALL	UCART1	576348.5	4328828	NonCancer	0	2.74E-05	0	0	0	0	8.90E-05	0	0.014043	0.014043
554	ALL	UCART1	576398.5	4328828	NonCancer	0	2.98E-05	0	0	0	0	9.17E-05	0	0.015245	0.015245
555	ALL	UCART1	576448.5	4328828	NonCancer	0	3.45E-05	0	0	0	0	9.47E-05	0	0.017654	0.017654
556	ALL	UCART1	576498.5	4328828	NonCancer	0	3.54E-05	0	0	0	0	9.62E-05	0	0.018112	0.018112
557	ALL	UCART1	576548.5	4328828	NonCancer	0	3.40E-05	0	0	0	0	9.60E-05	0	0.017396	0.017396
558	ALL	UCART1	576598.5	4328828	NonCancer	0	3.81E-05	0	0	0	0	0.000105	0	0.019495	0.019495
570	ALL	UCART1	577198.5	4328828	NonCancer	0	5.91E-05	0	0	0	0	0.000121	0	0.03022	0.03022
571	ALL	UCART1	577248.5	4328828	NonCancer	0	5.36E-05	0	0	0	0	0.000113	0	0.027396	0.027396
572	ALL	UCART1	577298.5	4328828	NonCancer	0	4.65E-05	0	0	0	0	0.000105	0	0.02376	0.02376
573	ALL	UCART1	577348.5	4328828	NonCancer	0	4.35E-05	0	0	0	0	9.65E-05	0	0.022232	0.022232
574	ALL	UCART1	577398.5	4328828	NonCancer	0	3.84E-05	0	0	0	0	9.15E-05	0	0.01966	0.01966
575	ALL	UCART1	577448.5	4328828	NonCancer	0	3.73E-05	0	0	0	0	8.47E-05	0	0.019083	0.019083
576	ALL	UCART1	576248.5	4328878	NonCancer	0	2.26E-05	0	0	0	0	8.18E-05	0	0.01158	0.01158
577	ALL	UCART1	576298.5	4328878	NonCancer	0	2.40E-05	0	0	0	0	8.46E-05	0	0.012314	0.012314
578	ALL	UCART1	576348.5	4328878	NonCancer	0	2.77E-05	0	0	0	0	8.60E-05	0	0.014189	0.014189
579	ALL	UCART1	576398.5	4328878	NonCancer	0	2.91E-05	0	0	0	0	8.89E-05	0	0.01488	0.01488
580	ALL	UCART1	576448.5	4328878	NonCancer	0	2.70E-05	0	0	0	0	8.47E-05	0	0.013826	0.013826
581	ALL	UCART1	576498.5	4328878	NonCancer	0	2.92E-05	0	0	0	0	9.06E-05	0	0.014968	0.014968
582	ALL	UCART1	576548.5	4328878	NonCancer	0	3.23E-05	0	0	0	0	9.67E-05	0	0.016557	0.016557
583	ALL	UCART1	576598.5	4328878	NonCancer	0	3.48E-05	0	0	0	0	0.000101	0	0.017837	0.017837
584	ALL	UCART1	576648.5	4328878	NonCancer	0	3.83E-05	0	0	0	0	0.000106	0	0.019599	0.019599
585	ALL	UCART1	576698.5	4328878	NonCancer	0	4.25E-05	0	0	0	0	0.000117	0	0.021761	0.021761
586	ALL	UCART1	576748.5	4328878	NonCancer	0	4.59E-05	0	0	0	0	0.000119	0	0.023503	0.023503
587	ALL	UCART1	576798.5	4328878	NonCancer	0	4.90E-05	0	0	0	0	0.000122	0	0.025057	0.025057
588	ALL	UCART1	576848.5	4328878	NonCancer	0	4.76E-05	0	0	0	0	0.000129	0	0.024385	0.024385
589	ALL	UCART1	576898.5	4328878	NonCancer	0	5.21E-05	0	0	0	0	0.000132	0	0.026632	0.026632
590	ALL	UCART1	576948.5	4328878	NonCancer	0	5.34E-05	0	0	0	0	0.000136	0	0.027325	0.027325
591	ALL	UCART1	576998.5	4328878	NonCancer	0	5.55E-05	0	0	0	0	0.000132	0	0.028368	0.028368

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE\	RESP	SKIN	EYE	MAXHI
592	ALL	UCART1	577048.5	4328878	NonCancer	0	5.57E-05	0	0	0	0	0.000129	0	0.028503	0.028503
593	ALL	UCART1	577098.5	4328878	NonCancer	0	5.19E-05	0	0	0	0	0.000121	0	0.026522	0.026522
594	ALL	UCART1	577148.5	4328878	NonCancer	0	5.10E-05	0	0	0	0	0.000121	0	0.026092	0.026092
595	ALL	UCART1	577198.5	4328878	NonCancer	0	5.00E-05	0	0	0	0	0.000116	0	0.025587	0.025587
596	ALL	UCART1	577248.5	4328878	NonCancer	0	4.68E-05	0	0	0	0	0.000103	0	0.023916	0.023916
597	ALL	UCART1	577298.5	4328878	NonCancer	0	4.33E-05	0	0	0	0	9.69E-05	0	0.022117	0.022117
598	ALL	UCART1	577348.5	4328878	NonCancer	0	3.80E-05	0	0	0	0	9.04E-05	0	0.019415	0.019415
599	ALL	UCART1	577398.5	4328878	NonCancer	0	3.60E-05	0	0	0	0	8.56E-05	0	0.018424	0.018424
600	ALL	UCART1	577448.5	4328878	NonCancer	0	3.27E-05	0	0	0	0	7.92E-05	0	0.01671	0.01671
601	ALL	UCART1	576248.5	4328928	NonCancer	0	2.28E-05	0	0	0	0	8.02E-05	0	0.01171	0.01171
602	ALL	UCART1	576298.5	4328928	NonCancer	0	2.43E-05	0	0	0	0	8.25E-05	0	0.012442	0.012442
603	ALL	UCART1	576348.5	4328928	NonCancer	0	2.35E-05	0	0	0	0	8.07E-05	0	0.012019	0.012019
604	ALL	UCART1	576398.5	4328928	NonCancer	0	2.33E-05	0	0	0	0	8.08E-05	0	0.011922	0.011922
605	ALL	UCART1	576448.5	4328928	NonCancer	0	2.47E-05	0	0	0	0	8.56E-05	0	0.012684	0.012684
606	ALL	UCART1	576498.5	4328928	NonCancer	0	2.75E-05	0	0	0	0	9.10E-05	0	0.014075	0.014075
607	ALL	UCART1	576548.5	4328928	NonCancer	0	2.94E-05	0	0	0	0	9.48E-05	0	0.015057	0.015057
608	ALL	UCART1	576598.5	4328928	NonCancer	0	3.22E-05	0	0	0	0	9.83E-05	0	0.016481	0.016481
609	ALL	UCART1	576648.5	4328928	NonCancer	0	3.54E-05	0	0	0	0	0.000101	0	0.018146	0.018146
610	ALL	UCART1	576698.5	4328928	NonCancer	0	3.76E-05	0	0	0	0	0.000105	0	0.019257	0.019257
611	ALL	UCART1	576748.5	4328928	NonCancer	0	4.00E-05	0	0	0	0	0.000103	0	0.020484	0.020484
612	ALL	UCART1	576798.5	4328928	NonCancer	0	3.99E-05	0	0	0	0	0.000108	0	0.020446	0.020446
613	ALL	UCART1	576848.5	4328928	NonCancer	0	4.19E-05	0	0	0	0	0.000114	0	0.021429	0.021429
614	ALL	UCART1	576898.5	4328928	NonCancer	0	4.44E-05	0	0	0	0	0.000116	0	0.022696	0.022696
615	ALL	UCART1	576948.5	4328928	NonCancer	0	4.54E-05	0	0	0	0	0.000119	0	0.023244	0.023244
616	ALL	UCART1	576998.5	4328928	NonCancer	0	4.67E-05	0	0	0	0	0.000117	0	0.023887	0.023887
617	ALL	UCART1	577048.5	4328928	NonCancer	0	4.68E-05	0	0	0	0	0.000113	0	0.023956	0.023956
618	ALL	UCART1	577098.5	4328928	NonCancer	0	4.53E-05	0	0	0	0	0.000109	0	0.02317	0.02317
619	ALL	UCART1	577148.5	4328928	NonCancer	0	4.39E-05	0	0	0	0	0.00011	0	0.022466	0.022466
620	ALL	UCART1	577198.5	4328928	NonCancer	0	4.08E-05	0	0	0	0	0.000105	0	0.020872	0.020872
621	ALL	UCART1	577248.5	4328928	NonCancer	0	4.15E-05	0	0	0	0	9.92E-05	0	0.021205	0.021205
622	ALL	UCART1	577298.5	4328928	NonCancer	0	3.89E-05	0	0	0	0	8.97E-05	0	0.019899	0.019899
623	ALL	UCART1	577348.5	4328928	NonCancer	0	3.60E-05	0	0	0	0	8.52E-05	0	0.018416	0.018416
624	ALL	UCART1	577398.5	4328928	NonCancer	0	3.18E-05	0	0	0	0	8.05E-05	0	0.01625	0.01625
625	ALL	UCART1	577448.5	4328928	NonCancer	0	3.04E-05	0	0	0	0	7.52E-05	0	0.015528	0.015528
626	ALL	UCART1	576248.5	4328978	NonCancer	0	2.04E-05	0	0	0	0	7.69E-05	0	0.010476	0.010476
627	ALL	UCART1	576298.5	4328978	NonCancer	0	1.95E-05	0	0	0	0	7.50E-05	0	0.009992	0.009992
628	ALL	UCART1	576348.5	4328978	NonCancer	0	2.08E-05	0	0	0	0	7.84E-05	0	0.01066	0.01066
629	ALL	UCART1	576398.5	4328978	NonCancer	0	2.23E-05	0	0	0	0	8.32E-05	0	0.011411	0.011411
630	ALL	UCART1	576448.5	4328978	NonCancer	0	2.37E-05	0	0	0	0	8.74E-05	0	0.012156	0.012156
631	ALL	UCART1	576498.5	4328978	NonCancer	0	2.53E-05	0	0	0	0	9.03E-05	0	0.012979	0.012979
632	ALL	UCART1	576548.5	4328978	NonCancer	0	2.76E-05	0	0	0	0	9.32E-05	0	0.014135	0.014135
633	ALL	UCART1	576598.5	4328978	NonCancer	0	3.00E-05	0	0	0	0	9.31E-05	0	0.015372	0.015372

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE\	RESP	SKIN	EYE	MAXHI
634	ALL	UCART1	576648.5	4328978	NonCancer	0	3.22E-05	0	0	0	0	9.37E-05	0	0.016485	0.016485
635	ALL	UCART1	576698.5	4328978	NonCancer	0	3.41E-05	0	0	0	0	9.38E-05	0	0.017457	0.017457
636	ALL	UCART1	576748.5	4328978	NonCancer	0	3.47E-05	0	0	0	0	9.38E-05	0	0.017771	0.017771
637	ALL	UCART1	576798.5	4328978	NonCancer	0	3.45E-05	0	0	0	0	9.88E-05	0	0.017685	0.017685
638	ALL	UCART1	576848.5	4328978	NonCancer	0	3.69E-05	0	0	0	0	0.000101	0	0.018893	0.018893
639	ALL	UCART1	576898.5	4328978	NonCancer	0	3.84E-05	0	0	0	0	0.000104	0	0.019654	0.019654
640	ALL	UCART1	576948.5	4328978	NonCancer	0	3.92E-05	0	0	0	0	0.000106	0	0.020077	0.020077
641	ALL	UCART1	576998.5	4328978	NonCancer	0	4.00E-05	0	0	0	0	0.000104	0	0.020475	0.020475
642	ALL	UCART1	577048.5	4328978	NonCancer	0	4.02E-05	0	0	0	0	0.0001	0	0.020549	0.020549
643	ALL	UCART1	577098.5	4328978	NonCancer	0	3.90E-05	0	0	0	0	9.93E-05	0	0.019966	0.019966
644	ALL	UCART1	577148.5	4328978	NonCancer	0	3.70E-05	0	0	0	0	9.57E-05	0	0.018931	0.018931
645	ALL	UCART1	577198.5	4328978	NonCancer	0	3.61E-05	0	0	0	0	9.63E-05	0	0.018495	0.018495
646	ALL	UCART1	577248.5	4328978	NonCancer	0	3.56E-05	0	0	0	0	9.23E-05	0	0.018222	0.018222
647	ALL	UCART1	577298.5	4328978	NonCancer	0	3.47E-05	0	0	0	0	8.66E-05	0	0.017751	0.017751
648	ALL	UCART1	577348.5	4328978	NonCancer	0	3.24E-05	0	0	0	0	7.79E-05	0	0.016594	0.016594
649	ALL	UCART1	577398.5	4328978	NonCancer	0	3.02E-05	0	0	0	0	7.52E-05	0	0.015473	0.015473
650	ALL	UCART1	577448.5	4328978	NonCancer	0	2.70E-05	0	0	0	0	7.15E-05	0	0.013839	0.013839
651	ALL	UCART1	576248.5	4329028	NonCancer	0	1.73E-05	0	0	0	0	7.16E-05	0	0.00886	0.00886
652	ALL	UCART1	576298.5	4329028	NonCancer	0	1.84E-05	0	0	0	0	7.58E-05	0	0.009439	0.009439
653	ALL	UCART1	576348.5	4329028	NonCancer	0	2.00E-05	0	0	0	0	8.06E-05	0	0.010255	0.010255
654	ALL	UCART1	576398.5	4329028	NonCancer	0	2.10E-05	0	0	0	0	8.41E-05	0	0.010778	0.010778
655	ALL	UCART1	576448.5	4329028	NonCancer	0	2.23E-05	0	0	0	0	8.71E-05	0	0.011426	0.011426
656	ALL	UCART1	576498.5	4329028	NonCancer	0	2.40E-05	0	0	0	0	8.92E-05	0	0.012308	0.012308
657	ALL	UCART1	576548.5	4329028	NonCancer	0	2.60E-05	0	0	0	0	8.91E-05	0	0.013302	0.013302
658	ALL	UCART1	576598.5	4329028	NonCancer	0	2.78E-05	0	0	0	0	8.73E-05	0	0.014236	0.014236
659	ALL	UCART1	576648.5	4329028	NonCancer	0	2.89E-05	0	0	0	0	8.38E-05	0	0.014773	0.014773
660	ALL	UCART1	576698.5	4329028	NonCancer	0	3.08E-05	0	0	0	0	8.20E-05	0	0.015785	0.015785
661	ALL	UCART1	576748.5	4329028	NonCancer	0	2.98E-05	0	0	0	0	8.47E-05	0	0.015272	0.015272
662	ALL	UCART1	576798.5	4329028	NonCancer	0	3.06E-05	0	0	0	0	9.00E-05	0	0.015643	0.015643
663	ALL	UCART1	576848.5	4329028	NonCancer	0	3.22E-05	0	0	0	0	9.16E-05	0	0.016506	0.016506
664	ALL	UCART1	576898.5	4329028	NonCancer	0	3.38E-05	0	0	0	0	9.30E-05	0	0.017284	0.017284
665	ALL	UCART1	576948.5	4329028	NonCancer	0	3.42E-05	0	0	0	0	9.51E-05	0	0.017527	0.017527
666	ALL	UCART1	576998.5	4329028	NonCancer	0	3.48E-05	0	0	0	0	9.49E-05	0	0.017828	0.017828
667	ALL	UCART1	577048.5	4329028	NonCancer	0	3.51E-05	0	0	0	0	9.26E-05	0	0.017968	0.017968
668	ALL	UCART1	577098.5	4329028	NonCancer	0	3.42E-05	0	0	0	0	9.04E-05	0	0.017477	0.017477
669	ALL	UCART1	577148.5	4329028	NonCancer	0	3.24E-05	0	0	0	0	8.79E-05	0	0.016604	0.016604
670	ALL	UCART1	577198.5	4329028	NonCancer	0	3.22E-05	0	0	0	0	8.75E-05	0	0.01648	0.01648
671	ALL	UCART1	577248.5	4329028	NonCancer	0	3.03E-05	0	0	0	0	8.42E-05	0	0.015521	0.015521
672	ALL	UCART1	577298.5	4329028	NonCancer	0	3.17E-05	0	0	0	0	8.13E-05	0	0.016202	0.016202
673	ALL	UCART1	577348.5	4329028	NonCancer	0	2.95E-05	0	0	0	0	7.63E-05	0	0.01507	0.01507
674	ALL	UCART1	577398.5	4329028	NonCancer	0	2.79E-05	0	0	0	0	6.93E-05	0	0.014281	0.014281
675	ALL	UCART1	577448.5	4329028	NonCancer	0	2.59E-05	0	0	0	0	6.71E-05	0	0.013274	0.013274

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE\	RESP	SKIN	EYE	MAXHI
676	ALL	UCART1	576248.5	4329078	NonCancer	0	1.63E-05	0	0	0	0	7.35E-05	0	0.008351	0.008351
677	ALL	UCART1	576298.5	4329078	NonCancer	0	1.79E-05	0	0	0	0	7.79E-05	0	0.009187	0.009187
678	ALL	UCART1	576348.5	4329078	NonCancer	0	1.87E-05	0	0	0	0	8.15E-05	0	0.009589	0.009589
679	ALL	UCART1	576398.5	4329078	NonCancer	0	1.98E-05	0	0	0	0	8.42E-05	0	0.010156	0.010156
680	ALL	UCART1	576448.5	4329078	NonCancer	0	2.12E-05	0	0	0	0	8.57E-05	0	0.010853	0.010853
681	ALL	UCART1	576498.5	4329078	NonCancer	0	2.27E-05	0	0	0	0	8.62E-05	0	0.011666	0.011666
682	ALL	UCART1	576548.5	4329078	NonCancer	0	2.43E-05	0	0	0	0	8.49E-05	0	0.012438	0.012438
683	ALL	UCART1	576598.5	4329078	NonCancer	0	2.53E-05	0	0	0	0	8.19E-05	0	0.012983	0.012983
684	ALL	UCART1	576648.5	4329078	NonCancer	0	2.60E-05	0	0	0	0	7.60E-05	0	0.013309	0.013309
685	ALL	UCART1	576698.5	4329078	NonCancer	0	2.60E-05	0	0	0	0	7.64E-05	0	0.013304	0.013304
686	ALL	UCART1	576748.5	4329078	NonCancer	0	2.65E-05	0	0	0	0	7.91E-05	0	0.013579	0.013579
687	ALL	UCART1	576798.5	4329078	NonCancer	0	2.79E-05	0	0	0	0	8.28E-05	0	0.01428	0.01428
688	ALL	UCART1	576848.5	4329078	NonCancer	0	2.90E-05	0	0	0	0	8.35E-05	0	0.014869	0.014869
689	ALL	UCART1	576898.5	4329078	NonCancer	0	3.01E-05	0	0	0	0	8.45E-05	0	0.015391	0.015391
690	ALL	UCART1	576948.5	4329078	NonCancer	0	3.02E-05	0	0	0	0	8.63E-05	0	0.015469	0.015469
691	ALL	UCART1	576998.5	4329078	NonCancer	0	3.07E-05	0	0	0	0	8.61E-05	0	0.015701	0.015701
692	ALL	UCART1	577048.5	4329078	NonCancer	0	3.10E-05	0	0	0	0	8.43E-05	0	0.015859	0.015859
693	ALL	UCART1	577098.5	4329078	NonCancer	0	3.04E-05	0	0	0	0	8.18E-05	0	0.01557	0.01557
694	ALL	UCART1	577148.5	4329078	NonCancer	0	2.88E-05	0	0	0	0	8.04E-05	0	0.014749	0.014749
695	ALL	UCART1	577198.5	4329078	NonCancer	0	2.88E-05	0	0	0	0	7.73E-05	0	0.01475	0.01475
696	ALL	UCART1	577248.5	4329078	NonCancer	0	2.75E-05	0	0	0	0	7.79E-05	0	0.014079	0.014079
697	ALL	UCART1	577298.5	4329078	NonCancer	0	2.68E-05	0	0	0	0	7.48E-05	0	0.013704	0.013704
698	ALL	UCART1	577348.5	4329078	NonCancer	0	2.71E-05	0	0	0	0	7.11E-05	0	0.013851	0.013851
699	ALL	UCART1	577398.5	4329078	NonCancer	0	2.55E-05	0	0	0	0	6.73E-05	0	0.013056	0.013056
700	ALL	UCART1	577448.5	4329078	NonCancer	0	2.41E-05	0	0	0	0	6.23E-05	0	0.012352	0.012352
701	ALL	UCART1	576248.5	4329128	NonCancer	0	1.60E-05	0	0	0	0	7.53E-05	0	0.008221	0.008221
702	ALL	UCART1	576298.5	4329128	NonCancer	0	1.69E-05	0	0	0	0	7.89E-05	0	0.008668	0.008668
703	ALL	UCART1	576348.5	4329128	NonCancer	0	1.77E-05	0	0	0	0	8.15E-05	0	0.009103	0.009103
704	ALL	UCART1	576398.5	4329128	NonCancer	0	1.88E-05	0	0	0	0	8.29E-05	0	0.009671	0.009671
705	ALL	UCART1	576448.5	4329128	NonCancer	0	2.02E-05	0	0	0	0	8.38E-05	0	0.010346	0.010346
706	ALL	UCART1	576498.5	4329128	NonCancer	0	2.12E-05	0	0	0	0	8.26E-05	0	0.010896	0.010896
707	ALL	UCART1	576548.5	4329128	NonCancer	0	2.20E-05	0	0	0	0	7.98E-05	0	0.011299	0.011299
708	ALL	UCART1	576598.5	4329128	NonCancer	0	2.34E-05	0	0	0	0	7.55E-05	0	0.01198	0.01198
709	ALL	UCART1	576648.5	4329128	NonCancer	0	2.43E-05	0	0	0	0	6.82E-05	0	0.012458	0.012458
710	ALL	UCART1	576698.5	4329128	NonCancer	0	2.34E-05	0	0	0	0	7.00E-05	0	0.012006	0.012006
711	ALL	UCART1	576748.5	4329128	NonCancer	0	2.36E-05	0	0	0	0	7.35E-05	0	0.01211	0.01211
712	ALL	UCART1	576798.5	4329128	NonCancer	0	2.53E-05	0	0	0	0	7.63E-05	0	0.012931	0.012931
713	ALL	UCART1	576848.5	4329128	NonCancer	0	2.60E-05	0	0	0	0	7.60E-05	0	0.013336	0.013336
714	ALL	UCART1	576898.5	4329128	NonCancer	0	2.66E-05	0	0	0	0	7.76E-05	0	0.013606	0.013606
715	ALL	UCART1	576948.5	4329128	NonCancer	0	2.68E-05	0	0	0	0	7.88E-05	0	0.013711	0.013711
716	ALL	UCART1	576998.5	4329128	NonCancer	0	2.73E-05	0	0	0	0	7.88E-05	0	0.01399	0.01399
717	ALL	UCART1	577048.5	4329128	NonCancer	0	2.77E-05	0	0	0	0	7.70E-05	0	0.014171	0.014171

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE\	RESP	SKIN	EYE	MAXHI
718	ALL	UCART1	577098.5	4329128	NonCancer	0	2.73E-05	0	0	0	0	7.44E-05	0	0.013956	0.013956
719	ALL	UCART1	577148.5	4329128	NonCancer	0	2.64E-05	0	0	0	0	7.52E-05	0	0.013538	0.013538
720	ALL	UCART1	577198.5	4329128	NonCancer	0	2.52E-05	0	0	0	0	7.23E-05	0	0.012913	0.012913
721	ALL	UCART1	577248.5	4329128	NonCancer	0	2.52E-05	0	0	0	0	7.09E-05	0	0.012878	0.012878
722	ALL	UCART1	577298.5	4329128	NonCancer	0	2.36E-05	0	0	0	0	6.93E-05	0	0.012076	0.012076
723	ALL	UCART1	577348.5	4329128	NonCancer	0	2.48E-05	0	0	0	0	6.71E-05	0	0.012716	0.012716
724	ALL	UCART1	577398.5	4329128	NonCancer	0	2.33E-05	0	0	0	0	6.36E-05	0	0.011936	0.011936
725	ALL	UCART1	577448.5	4329128	NonCancer	0	2.25E-05	0	0	0	0	5.98E-05	0	0.011531	0.011531
726	ALL	UCART1	576248.5	4329178	NonCancer	0	1.53E-05	0	0	0	0	7.64E-05	0	0.007867	0.007867
727	ALL	UCART1	576298.5	4329178	NonCancer	0	1.60E-05	0	0	0	0	7.90E-05	0	0.008217	0.008217
728	ALL	UCART1	576348.5	4329178	NonCancer	0	1.69E-05	0	0	0	0	8.03E-05	0	0.008694	0.008694
729	ALL	UCART1	576398.5	4329178	NonCancer	0	1.81E-05	0	0	0	0	8.12E-05	0	0.009293	0.009293
730	ALL	UCART1	576448.5	4329178	NonCancer	0	1.88E-05	0	0	0	0	8.05E-05	0	0.009666	0.009666
731	ALL	UCART1	576498.5	4329178	NonCancer	0	1.99E-05	0	0	0	0	7.80E-05	0	0.010206	0.010206
732	ALL	UCART1	576548.5	4329178	NonCancer	0	2.06E-05	0	0	0	0	7.39E-05	0	0.010544	0.010544
733	ALL	UCART1	576598.5	4329178	NonCancer	0	2.15E-05	0	0	0	0	6.83E-05	0	0.011013	0.011013
734	ALL	UCART1	576648.5	4329178	NonCancer	0	2.07E-05	0	0	0	0	6.66E-05	0	0.010585	0.010585
735	ALL	UCART1	576698.5	4329178	NonCancer	0	2.13E-05	0	0	0	0	6.85E-05	0	0.01089	0.01089
736	ALL	UCART1	576748.5	4329178	NonCancer	0	2.20E-05	0	0	0	0	7.05E-05	0	0.011258	0.011258
737	ALL	UCART1	576798.5	4329178	NonCancer	0	2.27E-05	0	0	0	0	7.23E-05	0	0.011605	0.011605
738	ALL	UCART1	576848.5	4329178	NonCancer	0	2.35E-05	0	0	0	0	7.14E-05	0	0.012051	0.012051
739	ALL	UCART1	576898.5	4329178	NonCancer	0	2.37E-05	0	0	0	0	7.14E-05	0	0.012142	0.012142
740	ALL	UCART1	576948.5	4329178	NonCancer	0	2.41E-05	0	0	0	0	7.24E-05	0	0.012354	0.012354
741	ALL	UCART1	576998.5	4329178	NonCancer	0	2.45E-05	0	0	0	0	7.21E-05	0	0.012565	0.012565
742	ALL	UCART1	577048.5	4329178	NonCancer	0	2.49E-05	0	0	0	0	7.14E-05	0	0.012752	0.012752
743	ALL	UCART1	577098.5	4329178	NonCancer	0	2.43E-05	0	0	0	0	7.12E-05	0	0.012463	0.012463
744	ALL	UCART1	577148.5	4329178	NonCancer	0	2.38E-05	0	0	0	0	7.20E-05	0	0.012181	0.012181
745	ALL	UCART1	577198.5	4329178	NonCancer	0	2.27E-05	0	0	0	0	7.03E-05	0	0.01164	0.01164
746	ALL	UCART1	577248.5	4329178	NonCancer	0	2.29E-05	0	0	0	0	6.74E-05	0	0.011731	0.011731
747	ALL	UCART1	577298.5	4329178	NonCancer	0	2.19E-05	0	0	0	0	6.74E-05	0	0.0112	0.0112
748	ALL	UCART1	577348.5	4329178	NonCancer	0	2.11E-05	0	0	0	0	6.26E-05	0	0.010825	0.010825
749	ALL	UCART1	577398.5	4329178	NonCancer	0	2.17E-05	0	0	0	0	6.00E-05	0	0.011083	0.011083
750	ALL	UCART1	577448.5	4329178	NonCancer	0	2.07E-05	0	0	0	0	5.81E-05	0	0.010603	0.010603
751	ALL		576601.1	4328803	NonCancer	0	3.96E-05	0	0	0	0	0.000106	0	0.020284	0.020284
752	ALL		577169.5	4328803	NonCancer	0	6.77E-05	0	0	0	0	0.000135	0	0.034596	0.034596
753	ALL		577174.5	4328402	NonCancer	0	0.000136	0	0	0	0	0.000187	0	0.069309	0.069309
754	ALL		576818.6	4328402	NonCancer	0	0.000145	0	0	0	0	0.00038	0	0.074135	0.074135

Appendix "B2"

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DEVEL	RESP	MAXHI
1	ALL	UCART1	576248.5	4327728	NonCancer	1.16E-07	7.07E-05	0	1.16E-07	1.16E-07	5.10E-07	0.00030246	0.000302
2	ALL	UCART1	576298.5	4327728	NonCancer	1.23E-07	7.47E-05	0	1.23E-07	1.23E-07	5.39E-07	0.00031941	0.000319
3	ALL	UCART1	576348.5	4327728	NonCancer	1.29E-07	7.89E-05	0	1.29E-07	1.29E-07	5.69E-07	0.00033697	0.000337
4	ALL	UCART1	576398.5	4327728	NonCancer	1.36E-07	8.29E-05	0	1.36E-07	1.36E-07	5.98E-07	0.0003541	0.000354
5	ALL	UCART1	576448.5	4327728	NonCancer	1.42E-07	8.68E-05	0	1.42E-07	1.42E-07	6.26E-07	0.00037109	0.000371
6	ALL	UCART1	576498.5	4327728	NonCancer	1.50E-07	9.12E-05	0	1.50E-07	1.50E-07	6.58E-07	0.00039048	0.00039
7	ALL	UCART1	576548.5	4327728	NonCancer	1.59E-07	9.68E-05	0	1.59E-07	1.59E-07	6.98E-07	0.00041434	0.000414
8	ALL	UCART1	576598.5	4327728	NonCancer	1.70E-07	0.00010341	0	1.70E-07	1.70E-07	7.46E-07	0.00044192	0.000442
9	ALL	UCART1	576648.5	4327728	NonCancer	1.81E-07	0.00011017	0	1.81E-07	1.81E-07	7.95E-07	0.00047015	0.00047
10	ALL	UCART1	576698.5	4327728	NonCancer	1.91E-07	0.00011624	0	1.91E-07	1.91E-07	8.39E-07	0.00049617	0.000496
11	ALL	UCART1	576748.5	4327728	NonCancer	1.99E-07	0.00012132	0	1.99E-07	1.99E-07	8.75E-07	0.00051919	0.000519
12	ALL	UCART1	576798.5	4327728	NonCancer	2.07E-07	0.00012612	0	2.07E-07	2.07E-07	9.10E-07	0.00054213	0.000542
13	ALL	UCART1	576848.5	4327728	NonCancer	2.17E-07	0.00013231	0	2.17E-07	2.17E-07	9.55E-07	0.00057082	0.000571
14	ALL	UCART1	576898.5	4327728	NonCancer	2.30E-07	0.00014006	0	2.30E-07	2.30E-07	1.01E-06	0.00060617	0.000606
15	ALL	UCART1	576948.5	4327728	NonCancer	2.39E-07	0.00014556	0	2.39E-07	2.39E-07	1.05E-06	0.00063568	0.000636
16	ALL	UCART1	576998.5	4327728	NonCancer	2.41E-07	0.0001468	0	2.41E-07	2.41E-07	1.06E-06	0.00065376	0.000654
17	ALL	UCART1	577048.5	4327728	NonCancer	2.44E-07	0.00014864	0	2.44E-07	2.44E-07	1.07E-06	0.00068303	0.000683
18	ALL	UCART1	577098.5	4327728	NonCancer	2.55E-07	0.00015517	0	2.55E-07	2.55E-07	1.12E-06	0.00076239	0.000762
19	ALL	UCART1	577148.5	4327728	NonCancer	2.70E-07	0.00016453	0	2.70E-07	2.70E-07	1.19E-06	0.00094618	0.000946
20	ALL	UCART1	577198.5	4327728	NonCancer	2.85E-07	0.00017387	0	2.85E-07	2.85E-07	1.25E-06	0.00080666	0.000807
21	ALL	UCART1	577248.5	4327728	NonCancer	2.98E-07	0.00018177	0	2.98E-07	2.98E-07	1.31E-06	0.0007969	0.000797
22	ALL	UCART1	577298.5	4327728	NonCancer	3.07E-07	0.00018743	0	3.07E-07	3.07E-07	1.35E-06	0.00080308	0.000803
23	ALL	UCART1	577348.5	4327728	NonCancer	3.13E-07	0.00019088	0	3.13E-07	3.13E-07	1.38E-06	0.00080604	0.000806
24	ALL	UCART1	577398.5	4327728	NonCancer	3.16E-07	0.00019256	0	3.16E-07	3.16E-07	1.39E-06	0.000804	0.000804
25	ALL	UCART1	577448.5	4327728	NonCancer	3.15E-07	0.00019202	0	3.15E-07	3.15E-07	1.39E-06	0.00079517	0.000795
26	ALL	UCART1	576248.5	4327778	NonCancer	1.22E-07	7.46E-05	0	1.22E-07	1.22E-07	5.38E-07	0.00031893	0.000319
27	ALL	UCART1	576298.5	4327778	NonCancer	1.29E-07	7.89E-05	0	1.29E-07	1.29E-07	5.69E-07	0.00033751	0.000338
28	ALL	UCART1	576348.5	4327778	NonCancer	1.37E-07	8.37E-05	0	1.37E-07	1.37E-07	6.04E-07	0.00035771	0.000358
29	ALL	UCART1	576398.5	4327778	NonCancer	1.46E-07	8.87E-05	0	1.46E-07	1.46E-07	6.40E-07	0.0003786	0.000379
30	ALL	UCART1	576448.5	4327778	NonCancer	1.53E-07	9.35E-05	0	1.53E-07	1.53E-07	6.75E-07	0.00039902	0.000399
31	ALL	UCART1	576498.5	4327778	NonCancer	1.61E-07	9.83E-05	0	1.61E-07	1.61E-07	7.09E-07	0.0004202	0.00042
32	ALL	UCART1	576548.5	4327778	NonCancer	1.71E-07	0.00010404	0	1.71E-07	1.71E-07	7.51E-07	0.00044527	0.000445
33	ALL	UCART1	576598.5	4327778	NonCancer	1.82E-07	0.00011118	0	1.82E-07	1.82E-07	8.02E-07	0.00047578	0.000476
34	ALL	UCART1	576648.5	4327778	NonCancer	1.95E-07	0.00011917	0	1.95E-07	1.95E-07	8.60E-07	0.00050935	0.000509
35	ALL	UCART1	576698.5	4327778	NonCancer	2.08E-07	0.00012682	0	2.08E-07	2.08E-07	9.15E-07	0.00054193	0.000542
36	ALL	UCART1	576748.5	4327778	NonCancer	2.19E-07	0.00013338	0	2.19E-07	2.19E-07	9.62E-07	0.00057126	0.000571
37	ALL	UCART1	576798.5	4327778	NonCancer	2.28E-07	0.00013917	0	2.28E-07	2.28E-07	1.00E-06	0.000599	0.000599
38	ALL	UCART1	576848.5	4327778	NonCancer	2.40E-07	0.00014606	0	2.40E-07	2.40E-07	1.05E-06	0.00063204	0.000632
39	ALL	UCART1	576898.5	4327778	NonCancer	2.54E-07	0.00015499	0	2.54E-07	2.54E-07	1.12E-06	0.00067393	0.000674
40	ALL	UCART1	576948.5	4327778	NonCancer	2.66E-07	0.00016194	0	2.66E-07	2.66E-07	1.17E-06	0.00071212	0.000712
41	ALL	UCART1	576998.5	4327778	NonCancer	2.69E-07	0.00016388	0	2.69E-07	2.69E-07	1.18E-06	0.00073902	0.000739
42	ALL	UCART1	577048.5	4327778	NonCancer	2.73E-07	0.00016647	0	2.73E-07	2.73E-07	1.20E-06	0.00078806	0.000788
43	ALL	UCART1	577098.5	4327778	NonCancer	2.87E-07	0.00017468	0	2.87E-07	2.87E-07	1.26E-06	0.0010102	0.00101
44	ALL	UCART1	577148.5	4327778	NonCancer	3.05E-07	0.00018591	0	3.05E-07	3.05E-07	1.34E-06	0.00097707	0.000977
45	ALL	UCART1	577198.5	4327778	NonCancer	3.23E-07	0.00019675	0	3.23E-07	3.23E-07	1.42E-06	0.00088756	0.000888
46	ALL	UCART1	577248.5	4327778	NonCancer	3.37E-07	0.00020541	0	3.37E-07	3.37E-07	1.48E-06	0.00088862	0.000889
47	ALL	UCART1	577298.5	4327778	NonCancer	3.46E-07	0.00021117	0	3.46E-07	3.46E-07	1.52E-06	0.00089478	0.000895
48	ALL	UCART1	577348.5	4327778	NonCancer	3.52E-07	0.00021434	0	3.52E-07	3.52E-07	1.55E-06	0.00089531	0.000895
49	ALL	UCART1	577398.5	4327778	NonCancer	3.53E-07	0.00021499	0	3.53E-07	3.53E-07	1.55E-06	0.00088892	0.000889
50	ALL	UCART1	577448.5	4327778	NonCancer	3.48E-07	0.00021219	0	3.48E-07	3.48E-07	1.53E-06	0.00087181	0.000872
51	ALL	UCART1	576248.5	4327828	NonCancer	1.29E-07	7.87E-05	0	1.29E-07	1.29E-07	5.68E-07	0.00033659	0.000337
52	ALL	UCART1	576298.5	4327828	NonCancer	1.37E-07	8.36E-05	0	1.37E-07	1.37E-07	6.03E-07	0.00035725	0.000357
53	ALL	UCART1	576348.5	4327828	NonCancer	1.46E-07	8.88E-05	0	1.46E-07	1.46E-07	6.41E-07	0.00037968	0.00038

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DEVEL	RESP	MAXHI
54	ALL	UCART1	576398.5	4327828	NonCancer	1.55E-07	9.47E-05	0	1.55E-07	1.55E-07	6.83E-07	0.00040409	0.000404
55	ALL	UCART1	576448.5	4327828	NonCancer	1.65E-07	0.00010066	0	1.65E-07	1.65E-07	7.26E-07	0.0004292	0.000429
56	ALL	UCART1	576498.5	4327828	NonCancer	1.75E-07	0.00010647	0	1.75E-07	1.75E-07	7.68E-07	0.00045429	0.000454
57	ALL	UCART1	576548.5	4327828	NonCancer	1.85E-07	0.00011259	0	1.85E-07	1.85E-07	8.12E-07	0.00048147	0.000481
58	ALL	UCART1	576598.5	4327828	NonCancer	1.97E-07	0.00012011	0	1.97E-07	1.97E-07	8.67E-07	0.00051442	0.000514
59	ALL	UCART1	576648.5	4327828	NonCancer	2.12E-07	0.0001292	0	2.12E-07	2.12E-07	9.32E-07	0.00055321	0.000553
60	ALL	UCART1	576698.5	4327828	NonCancer	2.27E-07	0.00013867	0	2.27E-07	2.27E-07	1.00E-06	0.00059362	0.000594
61	ALL	UCART1	576748.5	4327828	NonCancer	2.41E-07	0.00014719	0	2.41E-07	2.41E-07	1.06E-06	0.00063134	0.000631
62	ALL	UCART1	576798.5	4327828	NonCancer	2.53E-07	0.0001545	0	2.53E-07	2.53E-07	1.11E-06	0.00066613	0.000666
63	ALL	UCART1	576848.5	4327828	NonCancer	2.66E-07	0.00016236	0	2.66E-07	2.66E-07	1.17E-06	0.000705	0.000705
64	ALL	UCART1	576898.5	4327828	NonCancer	2.83E-07	0.00017268	0	2.83E-07	2.83E-07	1.25E-06	0.00075517	0.000755
65	ALL	UCART1	576948.5	4327828	NonCancer	2.98E-07	0.00018148	0	2.98E-07	2.98E-07	1.31E-06	0.00080506	0.000805
66	ALL	UCART1	576998.5	4327828	NonCancer	3.02E-07	0.00018438	0	3.02E-07	3.02E-07	1.33E-06	0.00084627	0.000846
67	ALL	UCART1	577048.5	4327828	NonCancer	3.08E-07	0.00018802	0	3.08E-07	3.08E-07	1.36E-06	0.00094046	0.00094
68	ALL	UCART1	577098.5	4327828	NonCancer	3.25E-07	0.00019843	0	3.25E-07	3.25E-07	1.43E-06	0.0012341	0.001234
69	ALL	UCART1	577148.5	4327828	NonCancer	3.48E-07	0.00021201	0	3.48E-07	3.48E-07	1.53E-06	0.0010064	0.001006
70	ALL	UCART1	577198.5	4327828	NonCancer	3.68E-07	0.00022455	0	3.68E-07	3.68E-07	1.62E-06	0.00098957	0.00099
71	ALL	UCART1	577248.5	4327828	NonCancer	3.84E-07	0.00023393	0	3.84E-07	3.84E-07	1.69E-06	0.00099743	0.000997
72	ALL	UCART1	577298.5	4327828	NonCancer	3.93E-07	0.00023961	0	3.93E-07	3.93E-07	1.73E-06	0.0010022	0.001002
73	ALL	UCART1	577348.5	4327828	NonCancer	3.97E-07	0.00024202	0	3.97E-07	3.97E-07	1.75E-06	0.00099947	0.000999
74	ALL	UCART1	577398.5	4327828	NonCancer	3.94E-07	0.00024049	0	3.94E-07	3.94E-07	1.74E-06	0.000985	0.000985
75	ALL	UCART1	577448.5	4327828	NonCancer	3.84E-07	0.00023419	0	3.84E-07	3.84E-07	1.69E-06	0.00095512	0.000955
76	ALL	UCART1	576248.5	4327878	NonCancer	1.36E-07	8.28E-05	0	1.36E-07	1.36E-07	5.98E-07	0.0003543	0.000354
77	ALL	UCART1	576298.5	4327878	NonCancer	1.45E-07	8.86E-05	0	1.45E-07	1.45E-07	6.39E-07	0.00037844	0.000378
78	ALL	UCART1	576348.5	4327878	NonCancer	1.55E-07	9.45E-05	0	1.55E-07	1.55E-07	6.81E-07	0.00040369	0.000404
79	ALL	UCART1	576398.5	4327878	NonCancer	1.66E-07	0.00010094	0	1.66E-07	1.66E-07	7.28E-07	0.00043119	0.000431
80	ALL	UCART1	576448.5	4327878	NonCancer	1.77E-07	0.00010808	0	1.77E-07	1.77E-07	7.80E-07	0.00046105	0.000461
81	ALL	UCART1	576498.5	4327878	NonCancer	1.89E-07	0.00011543	0	1.89E-07	1.89E-07	8.33E-07	0.00049202	0.000492
82	ALL	UCART1	576548.5	4327878	NonCancer	2.01E-07	0.00012265	0	2.01E-07	2.01E-07	8.85E-07	0.00052364	0.000524
83	ALL	UCART1	576598.5	4327878	NonCancer	2.14E-07	0.00013066	0	2.14E-07	2.14E-07	9.43E-07	0.00055947	0.000559
84	ALL	UCART1	576648.5	4327878	NonCancer	2.31E-07	0.00014063	0	2.31E-07	2.31E-07	1.01E-06	0.00060304	0.000603
85	ALL	UCART1	576698.5	4327878	NonCancer	2.49E-07	0.00015199	0	2.49E-07	2.49E-07	1.10E-06	0.00065207	0.000652
86	ALL	UCART1	576748.5	4327878	NonCancer	2.67E-07	0.00016301	0	2.67E-07	2.67E-07	1.18E-06	0.00070075	0.000701
87	ALL	UCART1	576798.5	4327878	NonCancer	2.83E-07	0.00017257	0	2.83E-07	2.83E-07	1.25E-06	0.00074593	0.000746
88	ALL	UCART1	576848.5	4327878	NonCancer	2.98E-07	0.0001819	0	2.98E-07	2.98E-07	1.31E-06	0.00079325	0.000793
89	ALL	UCART1	576898.5	4327878	NonCancer	3.18E-07	0.0001939	0	3.18E-07	3.18E-07	1.40E-06	0.00085455	0.000855
90	ALL	UCART1	576948.5	4327878	NonCancer	3.36E-07	0.00020507	0	3.36E-07	3.36E-07	1.48E-06	0.0009212	0.000921
91	ALL	UCART1	576998.5	4327878	NonCancer	3.43E-07	0.00020933	0	3.43E-07	3.43E-07	1.51E-06	0.00098844	0.000988
92	ALL	UCART1	577048.5	4327878	NonCancer	3.52E-07	0.00021446	0	3.52E-07	3.52E-07	1.55E-06	0.001154	0.001154
93	ALL	UCART1	577098.5	4327878	NonCancer	3.74E-07	0.0002278	0	3.74E-07	3.74E-07	1.64E-06	0.0011658	0.001166
94	ALL	UCART1	577148.5	4327878	NonCancer	4.01E-07	0.00024436	0	4.01E-07	4.01E-07	1.76E-06	0.0011088	0.001109
95	ALL	UCART1	577198.5	4327878	NonCancer	4.24E-07	0.00025878	0	4.24E-07	4.24E-07	1.87E-06	0.0011168	0.001117
96	ALL	UCART1	577248.5	4327878	NonCancer	4.41E-07	0.00026882	0	4.41E-07	4.41E-07	1.94E-06	0.001128	0.001128
97	ALL	UCART1	577298.5	4327878	NonCancer	4.49E-07	0.00027392	0	4.49E-07	4.49E-07	1.98E-06	0.0011305	0.001131
98	ALL	UCART1	577348.5	4327878	NonCancer	4.50E-07	0.00027445	0	4.50E-07	4.50E-07	1.98E-06	0.0011205	0.001121
99	ALL	UCART1	577398.5	4327878	NonCancer	4.41E-07	0.000269	0	4.41E-07	4.41E-07	1.94E-06	0.0010917	0.001092
100	ALL	UCART1	577448.5	4327878	NonCancer	4.23E-07	0.00025781	0	4.23E-07	4.23E-07	1.86E-06	0.0010445	0.001045
101	ALL	UCART1	576248.5	4327928	NonCancer	1.42E-07	8.65E-05	0	1.42E-07	1.42E-07	6.24E-07	0.000371	0.000371
102	ALL	UCART1	576298.5	4327928	NonCancer	1.53E-07	9.34E-05	0	1.53E-07	1.53E-07	6.74E-07	0.00039965	0.0004
103	ALL	UCART1	576348.5	4327928	NonCancer	1.65E-07	0.00010051	0	1.65E-07	1.65E-07	7.25E-07	0.00042942	0.000429
104	ALL	UCART1	576398.5	4327928	NonCancer	1.77E-07	0.00010788	0	1.77E-07	1.77E-07	7.78E-07	0.00046081	0.000461
105	ALL	UCART1	576448.5	4327928	NonCancer	1.90E-07	0.00011594	0	1.90E-07	1.90E-07	8.36E-07	0.00049497	0.000495
106	ALL	UCART1	576498.5	4327928	NonCancer	2.05E-07	0.00012488	0	2.05E-07	2.05E-07	9.01E-07	0.00053244	0.000532

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DEVEL	RESP	MAXHI
107	ALL	UCART1	576548.5	4327928	NonCancer	2.20E-07	0.00013402	0	2.20E-07	2.20E-07	9.67E-07	0.00057146	0.000571
108	ALL	UCART1	576598.5	4327928	NonCancer	2.35E-07	0.00014326	0	2.35E-07	2.35E-07	1.03E-06	0.00061261	0.000613
109	ALL	UCART1	576648.5	4327928	NonCancer	2.53E-07	0.00015405	0	2.53E-07	2.53E-07	1.11E-06	0.00066098	0.000661
110	ALL	UCART1	576698.5	4327928	NonCancer	2.74E-07	0.00016721	0	2.74E-07	2.74E-07	1.21E-06	0.00071892	0.000719
111	ALL	UCART1	576748.5	4327928	NonCancer	2.97E-07	0.0001812	0	2.97E-07	2.97E-07	1.31E-06	0.00078119	0.000781
112	ALL	UCART1	576798.5	4327928	NonCancer	3.18E-07	0.00019394	0	3.18E-07	3.18E-07	1.40E-06	0.00084149	0.000841
113	ALL	UCART1	576848.5	4327928	NonCancer	3.37E-07	0.0002056	0	3.37E-07	3.37E-07	1.48E-06	0.00090227	0.000902
114	ALL	UCART1	576898.5	4327928	NonCancer	3.60E-07	0.00021972	0	3.60E-07	3.60E-07	1.59E-06	0.00097921	0.000979
115	ALL	UCART1	576948.5	4327928	NonCancer	3.84E-07	0.00023396	0	3.84E-07	3.84E-07	1.69E-06	0.0010718	0.001072
116	ALL	UCART1	576998.5	4327928	NonCancer	3.94E-07	0.00024017	0	3.94E-07	3.94E-07	1.73E-06	0.0012002	0.0012
117	ALL	UCART1	577048.5	4327928	NonCancer	4.06E-07	0.00024742	0	4.06E-07	4.06E-07	1.79E-06	0.0013603	0.00136
118	ALL	UCART1	577098.5	4327928	NonCancer	4.34E-07	0.00026473	0	4.34E-07	4.34E-07	1.91E-06	0.0012534	0.001253
119	ALL	UCART1	577148.5	4327928	NonCancer	4.67E-07	0.00028498	0	4.67E-07	4.67E-07	2.06E-06	0.001255	0.001255
120	ALL	UCART1	577198.5	4327928	NonCancer	4.95E-07	0.00030166	0	4.95E-07	4.95E-07	2.18E-06	0.0012747	0.001275
121	ALL	UCART1	577248.5	4327928	NonCancer	5.11E-07	0.0003118	0	5.11E-07	5.11E-07	2.25E-06	0.0012871	0.001287
122	ALL	UCART1	577298.5	4327928	NonCancer	5.18E-07	0.00031553	0	5.18E-07	5.18E-07	2.28E-06	0.0012841	0.001284
123	ALL	UCART1	577348.5	4327928	NonCancer	5.12E-07	0.00031202	0	5.12E-07	5.12E-07	2.25E-06	0.0012596	0.00126
124	ALL	UCART1	577398.5	4327928	NonCancer	4.93E-07	0.0003004	0	4.93E-07	4.93E-07	2.17E-06	0.0012095	0.00121
125	ALL	UCART1	577448.5	4327928	NonCancer	4.63E-07	0.00028246	0	4.63E-07	4.63E-07	2.04E-06	0.0011386	0.001139
126	ALL	UCART1	576248.5	4327978	NonCancer	1.47E-07	8.97E-05	0	1.47E-07	1.47E-07	6.47E-07	0.00038609	0.000386
127	ALL	UCART1	576298.5	4327978	NonCancer	1.60E-07	9.78E-05	0	1.60E-07	1.60E-07	7.05E-07	0.00041938	0.000419
128	ALL	UCART1	576348.5	4327978	NonCancer	1.74E-07	0.00010636	0	1.74E-07	1.74E-07	7.67E-07	0.00045498	0.000455
129	ALL	UCART1	576398.5	4327978	NonCancer	1.89E-07	0.00011531	0	1.89E-07	1.89E-07	8.32E-07	0.00049246	0.000492
130	ALL	UCART1	576448.5	4327978	NonCancer	2.04E-07	0.00012462	0	2.04E-07	2.04E-07	8.99E-07	0.00053202	0.000532
131	ALL	UCART1	576498.5	4327978	NonCancer	2.21E-07	0.0001349	0	2.21E-07	2.21E-07	9.73E-07	0.00057565	0.000576
132	ALL	UCART1	576548.5	4327978	NonCancer	2.40E-07	0.00014629	0	2.40E-07	2.40E-07	1.06E-06	0.00062383	0.000624
133	ALL	UCART1	576598.5	4327978	NonCancer	2.59E-07	0.00015799	0	2.59E-07	2.59E-07	1.14E-06	0.00067467	0.000675
134	ALL	UCART1	576648.5	4327978	NonCancer	2.79E-07	0.00017025	0	2.79E-07	2.79E-07	1.23E-06	0.00073015	0.00073
135	ALL	UCART1	576698.5	4327978	NonCancer	3.03E-07	0.00018503	0	3.03E-07	3.03E-07	1.33E-06	0.00079703	0.000797
136	ALL	UCART1	576748.5	4327978	NonCancer	3.32E-07	0.00020228	0	3.32E-07	3.32E-07	1.46E-06	0.00087502	0.000875
137	ALL	UCART1	576798.5	4327978	NonCancer	3.60E-07	0.00021929	0	3.60E-07	3.60E-07	1.58E-06	0.00095638	0.000956
138	ALL	UCART1	576848.5	4327978	NonCancer	3.85E-07	0.00023462	0	3.85E-07	3.85E-07	1.69E-06	0.0010391	0.001039
139	ALL	UCART1	576898.5	4327978	NonCancer	4.13E-07	0.00025165	0	4.13E-07	4.13E-07	1.82E-06	0.0011412	0.001141
140	ALL	UCART1	576948.5	4327978	NonCancer	4.43E-07	0.00026992	0	4.43E-07	4.43E-07	1.95E-06	0.0012809	0.001281
141	ALL	UCART1	576998.5	4327978	NonCancer	4.58E-07	0.00027898	0	4.58E-07	4.58E-07	2.01E-06	0.0015203	0.00152
142	ALL	UCART1	577048.5	4327978	NonCancer	4.75E-07	0.00028936	0	4.75E-07	4.75E-07	2.09E-06	0.0014683	0.001468
143	ALL	UCART1	577098.5	4327978	NonCancer	5.12E-07	0.00031216	0	5.12E-07	5.12E-07	2.25E-06	0.0014224	0.001422
144	ALL	UCART1	577148.5	4327978	NonCancer	5.53E-07	0.00033721	0	5.53E-07	5.53E-07	2.43E-06	0.0014444	0.001444
145	ALL	UCART1	577198.5	4327978	NonCancer	5.84E-07	0.00035593	0	5.84E-07	5.84E-07	2.57E-06	0.0014721	0.001472
146	ALL	UCART1	577248.5	4327978	NonCancer	6.00E-07	0.00036553	0	6.00E-07	6.00E-07	2.64E-06	0.001483	0.001483
147	ALL	UCART1	577298.5	4327978	NonCancer	5.99E-07	0.00036549	0	5.99E-07	5.99E-07	2.64E-06	0.0014672	0.001467
148	ALL	UCART1	577348.5	4327978	NonCancer	5.81E-07	0.0003544	0	5.81E-07	5.81E-07	2.56E-06	0.0014169	0.001417
149	ALL	UCART1	577398.5	4327978	NonCancer	5.47E-07	0.00033373	0	5.47E-07	5.47E-07	2.41E-06	0.0013355	0.001336
150	ALL	UCART1	577448.5	4327978	NonCancer	5.02E-07	0.0003061	0	5.02E-07	5.02E-07	2.21E-06	0.0012305	0.001231
151	ALL	UCART1	576248.5	4328028	NonCancer	1.51E-07	9.23E-05	0	1.51E-07	1.51E-07	6.66E-07	0.00039937	0.000399
152	ALL	UCART1	576298.5	4328028	NonCancer	1.66E-07	0.00010143	0	1.66E-07	1.66E-07	7.32E-07	0.0004371	0.000437
153	ALL	UCART1	576348.5	4328028	NonCancer	1.83E-07	0.00011151	0	1.83E-07	1.83E-07	8.04E-07	0.00047868	0.000479
154	ALL	UCART1	576398.5	4328028	NonCancer	2.01E-07	0.00012246	0	2.01E-07	2.01E-07	8.83E-07	0.00052383	0.000524
155	ALL	UCART1	576448.5	4328028	NonCancer	2.20E-07	0.00013394	0	2.20E-07	2.20E-07	9.66E-07	0.0005718	0.000572
156	ALL	UCART1	576498.5	4328028	NonCancer	2.40E-07	0.00014603	0	2.40E-07	2.40E-07	1.05E-06	0.00062319	0.000623
157	ALL	UCART1	576548.5	4328028	NonCancer	2.61E-07	0.00015943	0	2.61E-07	2.61E-07	1.15E-06	0.00068038	0.00068
158	ALL	UCART1	576598.5	4328028	NonCancer	2.86E-07	0.0001743	0	2.86E-07	2.86E-07	1.26E-06	0.00074415	0.000744
159	ALL	UCART1	576648.5	4328028	NonCancer	3.11E-07	0.0001897	0	3.11E-07	3.11E-07	1.37E-06	0.00081272	0.000813

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DEVEL	RESP	MAXHI
160	ALL	UCART1	576698.5	4328028	NonCancer	3.39E-07	0.00020661	0	3.39E-07	3.39E-07	1.49E-06	0.000891	0.000891
161	ALL	UCART1	576748.5	4328028	NonCancer	3.73E-07	0.00022714	0	3.73E-07	3.73E-07	1.64E-06	0.00098649	0.000986
162	ALL	UCART1	576798.5	4328028	NonCancer	4.09E-07	0.00024953	0	4.09E-07	4.09E-07	1.80E-06	0.0010954	0.001095
163	ALL	UCART1	576848.5	4328028	NonCancer	4.44E-07	0.00027047	0	4.44E-07	4.44E-07	1.95E-06	0.0012128	0.001213
164	ALL	UCART1	576898.5	4328028	NonCancer	4.79E-07	0.00029186	0	4.79E-07	4.79E-07	2.11E-06	0.0013623	0.001362
165	ALL	UCART1	576948.5	4328028	NonCancer	5.18E-07	0.00031559	0	5.18E-07	5.18E-07	2.28E-06	0.0016219	0.001622
166	ALL	UCART1	576998.5	4328028	NonCancer	5.39E-07	0.0003289	0	5.39E-07	5.39E-07	2.37E-06	0.0019202	0.00192
167	ALL	UCART1	577048.5	4328028	NonCancer	5.64E-07	0.00034396	0	5.64E-07	5.64E-07	2.48E-06	0.0016832	0.001683
168	ALL	UCART1	577098.5	4328028	NonCancer	6.14E-07	0.00037437	0	6.14E-07	6.14E-07	2.70E-06	0.001646	0.001646
169	ALL	UCART1	577148.5	4328028	NonCancer	6.65E-07	0.00040547	0	6.65E-07	6.65E-07	2.93E-06	0.0016882	0.001688
170	ALL	UCART1	577198.5	4328028	NonCancer	6.99E-07	0.00042607	0	6.99E-07	6.99E-07	3.07E-06	0.0017242	0.001724
171	ALL	UCART1	577248.5	4328028	NonCancer	7.10E-07	0.00043277	0	7.10E-07	7.10E-07	3.12E-06	0.0017266	0.001727
172	ALL	UCART1	577298.5	4328028	NonCancer	6.96E-07	0.0004242	0	6.96E-07	6.96E-07	3.06E-06	0.0016824	0.001682
173	ALL	UCART1	577348.5	4328028	NonCancer	6.58E-07	0.00040113	0	6.58E-07	6.58E-07	2.89E-06	0.0015915	0.001591
174	ALL	UCART1	577398.5	4328028	NonCancer	6.02E-07	0.0003669	0	6.02E-07	6.02E-07	2.65E-06	0.001463	0.001463
175	ALL	UCART1	577448.5	4328028	NonCancer	5.33E-07	0.00032522	0	5.33E-07	5.33E-07	2.35E-06	0.0013085	0.001309
176	ALL	UCART1	576248.5	4328078	NonCancer	1.55E-07	9.43E-05	0	1.55E-07	1.55E-07	6.80E-07	0.00041051	0.000411
177	ALL	UCART1	576298.5	4328078	NonCancer	1.71E-07	0.00010434	0	1.71E-07	1.71E-07	7.53E-07	0.00045237	0.000452
178	ALL	UCART1	576348.5	4328078	NonCancer	1.90E-07	0.00011575	0	1.90E-07	1.90E-07	8.35E-07	0.00049971	0.0005
179	ALL	UCART1	576398.5	4328078	NonCancer	2.11E-07	0.00012861	0	2.11E-07	2.11E-07	9.28E-07	0.00055265	0.000553
180	ALL	UCART1	576448.5	4328078	NonCancer	2.34E-07	0.0001428	0	2.34E-07	2.34E-07	1.03E-06	0.00061106	0.000611
181	ALL	UCART1	576498.5	4328078	NonCancer	2.59E-07	0.00015795	0	2.59E-07	2.59E-07	1.14E-06	0.00067437	0.000674
182	ALL	UCART1	576548.5	4328078	NonCancer	2.85E-07	0.00017403	0	2.85E-07	2.85E-07	1.26E-06	0.00074311	0.000743
183	ALL	UCART1	576598.5	4328078	NonCancer	3.15E-07	0.00019203	0	3.15E-07	3.15E-07	1.39E-06	0.00082068	0.000821
184	ALL	UCART1	576648.5	4328078	NonCancer	3.48E-07	0.00021204	0	3.48E-07	3.48E-07	1.53E-06	0.00090829	0.000908
185	ALL	UCART1	576698.5	4328078	NonCancer	3.82E-07	0.00023316	0	3.82E-07	3.82E-07	1.68E-06	0.0010057	0.001006
186	ALL	UCART1	576748.5	4328078	NonCancer	4.22E-07	0.00025737	0	4.22E-07	4.22E-07	1.86E-06	0.0011221	0.001122
187	ALL	UCART1	576798.5	4328078	NonCancer	4.69E-07	0.00028603	0	4.69E-07	4.69E-07	2.06E-06	0.0012662	0.001266
188	ALL	UCART1	576848.5	4328078	NonCancer	5.17E-07	0.00031515	0	5.17E-07	5.17E-07	2.27E-06	0.0014377	0.001438
189	ALL	UCART1	576898.5	4328078	NonCancer	5.63E-07	0.00034353	0	5.63E-07	5.63E-07	2.48E-06	0.0016818	0.001682
190	ALL	UCART1	576948.5	4328078	NonCancer	6.15E-07	0.00037494	0	6.15E-07	6.15E-07	2.71E-06	0.0022456	0.002246
191	ALL	UCART1	576998.5	4328078	NonCancer	6.47E-07	0.00039478	0	6.47E-07	6.47E-07	2.85E-06	0.002198	0.002198
192	ALL	UCART1	577048.5	4328078	NonCancer	6.84E-07	0.00041719	0	6.84E-07	6.84E-07	3.01E-06	0.0019431	0.001943
193	ALL	UCART1	577098.5	4328078	NonCancer	7.52E-07	0.00045877	0	7.52E-07	7.52E-07	3.31E-06	0.0019384	0.001938
194	ALL	UCART1	577148.5	4328078	NonCancer	8.16E-07	0.00049732	0	8.16E-07	8.16E-07	3.59E-06	0.0020126	0.002013
195	ALL	UCART1	577198.5	4328078	NonCancer	8.49E-07	0.00051787	0	8.49E-07	8.49E-07	3.74E-06	0.002052	0.002052
196	ALL	UCART1	577248.5	4328078	NonCancer	8.46E-07	0.00051594	0	8.46E-07	8.46E-07	3.72E-06	0.0020274	0.002027
197	ALL	UCART1	577298.5	4328078	NonCancer	8.06E-07	0.00049159	0	8.06E-07	8.06E-07	3.55E-06	0.0019309	0.001931
198	ALL	UCART1	577348.5	4328078	NonCancer	7.37E-07	0.00044905	0	7.37E-07	7.37E-07	3.24E-06	0.0017734	0.001773
199	ALL	UCART1	577398.5	4328078	NonCancer	6.48E-07	0.00039502	0	6.48E-07	6.48E-07	2.85E-06	0.0015759	0.001576
200	ALL	UCART1	577448.5	4328078	NonCancer	5.54E-07	0.00033778	0	5.54E-07	5.54E-07	2.44E-06	0.0013654	0.001365
201	ALL	UCART1	576248.5	4328128	NonCancer	1.58E-07	9.63E-05	0	1.58E-07	1.58E-07	6.95E-07	0.00042139	0.000421
202	ALL	UCART1	576298.5	4328128	NonCancer	1.75E-07	0.00010666	0	1.75E-07	1.75E-07	7.70E-07	0.00046566	0.000466
203	ALL	UCART1	576348.5	4328128	NonCancer	1.95E-07	0.00011901	0	1.95E-07	1.95E-07	8.59E-07	0.00051756	0.000518
204	ALL	UCART1	576398.5	4328128	NonCancer	2.19E-07	0.00013347	0	2.19E-07	2.19E-07	9.63E-07	0.00057761	0.000578
205	ALL	UCART1	576448.5	4328128	NonCancer	2.46E-07	0.00015018	0	2.46E-07	2.46E-07	1.08E-06	0.00064645	0.000646
206	ALL	UCART1	576498.5	4328128	NonCancer	2.77E-07	0.0001691	0	2.77E-07	2.77E-07	1.22E-06	0.00072457	0.000725
207	ALL	UCART1	576548.5	4328128	NonCancer	3.11E-07	0.00018973	0	3.11E-07	3.11E-07	1.37E-06	0.00081119	0.000811
208	ALL	UCART1	576598.5	4328128	NonCancer	3.48E-07	0.00021187	0	3.48E-07	3.48E-07	1.53E-06	0.00090663	0.000907
209	ALL	UCART1	576648.5	4328128	NonCancer	3.88E-07	0.00023684	0	3.88E-07	3.88E-07	1.71E-06	0.0010162	0.001016
210	ALL	UCART1	576698.5	4328128	NonCancer	4.34E-07	0.00026487	0	4.34E-07	4.34E-07	1.91E-06	0.0011436	0.001144
211	ALL	UCART1	576748.5	4328128	NonCancer	4.84E-07	0.00029528	0	4.84E-07	4.84E-07	2.13E-06	0.0012922	0.001292
212	ALL	UCART1	576798.5	4328128	NonCancer	5.43E-07	0.00033116	0	5.43E-07	5.43E-07	2.39E-06	0.001482	0.001482

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DEVEL	RESP	MAXHI
213	ALL	UCART1	576848.5	4328128	NonCancer	6.09E-07	0.00037148	0	6.09E-07	6.09E-07	2.68E-06	0.0017381	0.001738
214	ALL	UCART1	576898.5	4328128	NonCancer	6.75E-07	0.00041139	0	6.75E-07	6.75E-07	2.97E-06	0.0022043	0.002204
215	ALL	UCART1	576948.5	4328128	NonCancer	7.45E-07	0.00045429	0	7.45E-07	7.45E-07	3.28E-06	0.0028264	0.002826
216	ALL	UCART1	576998.5	4328128	NonCancer	7.95E-07	0.00048448	0	7.95E-07	7.95E-07	3.50E-06	0.0027366	0.002737
217	ALL	UCART1	577048.5	4328128	NonCancer	8.50E-07	0.00051855	0	8.50E-07	8.50E-07	3.74E-06	0.0022706	0.002271
218	ALL	UCART1	577098.5	4328128	NonCancer	9.46E-07	0.00057665	0	9.46E-07	9.46E-07	4.16E-06	0.0023485	0.002349
219	ALL	UCART1	577148.5	4328128	NonCancer	1.02E-06	0.00062354	0	1.02E-06	1.02E-06	4.50E-06	0.0024591	0.002459
220	ALL	UCART1	577198.5	4328128	NonCancer	1.05E-06	0.0006384	0	1.05E-06	1.05E-06	4.61E-06	0.0024833	0.002483
221	ALL	UCART1	577248.5	4328128	NonCancer	1.01E-06	0.00061681	0	1.01E-06	1.01E-06	4.45E-06	0.002395	0.002395
222	ALL	UCART1	577298.5	4328128	NonCancer	9.26E-07	0.00056433	0	9.26E-07	9.26E-07	4.07E-06	0.0022038	0.002204
223	ALL	UCART1	577348.5	4328128	NonCancer	8.06E-07	0.00049169	0	8.06E-07	8.06E-07	3.55E-06	0.0019424	0.001942
224	ALL	UCART1	577398.5	4328128	NonCancer	6.78E-07	0.0004136	0	6.78E-07	6.78E-07	2.98E-06	0.0016591	0.001659
225	ALL	UCART1	577448.5	4328128	NonCancer	5.65E-07	0.0003447	0	5.65E-07	5.65E-07	2.49E-06	0.0014028	0.001403
226	ALL	UCART1	576248.5	4328178	NonCancer	1.63E-07	9.94E-05	0	1.63E-07	1.63E-07	7.17E-07	0.00043601	0.000436
227	ALL	UCART1	576298.5	4328178	NonCancer	1.80E-07	0.00010971	0	1.80E-07	1.80E-07	7.92E-07	0.00048116	0.000481
228	ALL	UCART1	576348.5	4328178	NonCancer	2.00E-07	0.00012213	0	2.00E-07	2.00E-07	8.81E-07	0.00053491	0.000535
229	ALL	UCART1	576398.5	4328178	NonCancer	2.25E-07	0.00013733	0	2.25E-07	2.25E-07	9.91E-07	0.00059947	0.000599
230	ALL	UCART1	576448.5	4328178	NonCancer	2.56E-07	0.00015583	0	2.56E-07	2.56E-07	1.12E-06	0.00067684	0.000677
231	ALL	UCART1	576498.5	4328178	NonCancer	2.92E-07	0.00017804	0	2.92E-07	2.92E-07	1.28E-06	0.00076906	0.000769
232	ALL	UCART1	576548.5	4328178	NonCancer	3.35E-07	0.00020399	0	3.35E-07	3.35E-07	1.47E-06	0.00087703	0.000877
233	ALL	UCART1	576598.5	4328178	NonCancer	3.82E-07	0.00023313	0	3.82E-07	3.82E-07	1.68E-06	0.0010004	0.001
234	ALL	UCART1	576648.5	4328178	NonCancer	4.35E-07	0.00026492	0	4.35E-07	4.35E-07	1.91E-06	0.0011397	0.00114
235	ALL	UCART1	576698.5	4328178	NonCancer	4.94E-07	0.00030117	0	4.94E-07	4.94E-07	2.17E-06	0.0013044	0.001304
236	ALL	UCART1	576748.5	4328178	NonCancer	5.62E-07	0.00034253	0	5.62E-07	5.62E-07	2.47E-06	0.001505	0.001505
237	ALL	UCART1	576798.5	4328178	NonCancer	6.38E-07	0.00038896	0	6.38E-07	6.38E-07	2.81E-06	0.0017617	0.001762
238	ALL	UCART1	576848.5	4328178	NonCancer	7.28E-07	0.00044386	0	7.28E-07	7.28E-07	3.20E-06	0.0021547	0.002155
239	ALL	UCART1	576898.5	4328178	NonCancer	8.24E-07	0.00050253	0	8.24E-07	8.24E-07	3.63E-06	0.0030447	0.003045
240	ALL	UCART1	576948.5	4328178	NonCancer	9.25E-07	0.0005641	0	9.25E-07	9.25E-07	4.07E-06	0.0038004	0.0038
241	ALL	UCART1	576998.5	4328178	NonCancer	1.00E-06	0.00061171	0	1.00E-06	1.00E-06	4.41E-06	0.002868	0.002868
242	ALL	UCART1	577048.5	4328178	NonCancer	1.09E-06	0.00066611	0	1.09E-06	1.09E-06	4.81E-06	0.0027623	0.002762
243	ALL	UCART1	577098.5	4328178	NonCancer	1.23E-06	0.0007493	0	1.23E-06	1.23E-06	5.41E-06	0.0029508	0.002951
244	ALL	UCART1	577148.5	4328178	NonCancer	1.32E-06	0.00080231	0	1.32E-06	1.32E-06	5.79E-06	0.003092	0.003092
245	ALL	UCART1	577198.5	4328178	NonCancer	1.31E-06	0.00079568	0	1.31E-06	1.31E-06	5.74E-06	0.0030493	0.003049
246	ALL	UCART1	577248.5	4328178	NonCancer	1.20E-06	0.00073246	0	1.20E-06	1.20E-06	5.28E-06	0.0028234	0.002823
247	ALL	UCART1	577298.5	4328178	NonCancer	1.04E-06	0.00063242	0	1.04E-06	1.04E-06	4.56E-06	0.0024701	0.00247
248	ALL	UCART1	577348.5	4328178	NonCancer	8.54E-07	0.00052076	0	8.54E-07	8.54E-07	3.76E-06	0.0020711	0.002071
249	ALL	UCART1	577398.5	4328178	NonCancer	6.95E-07	0.00042363	0	6.95E-07	6.95E-07	3.06E-06	0.0017141	0.001714
250	ALL	UCART1	577448.5	4328178	NonCancer	5.71E-07	0.00034796	0	5.71E-07	5.71E-07	2.51E-06	0.0014263	0.001426
251	ALL	UCART1	576248.5	4328228	NonCancer	1.70E-07	0.00010394	0	1.70E-07	1.70E-07	7.50E-07	0.00045544	0.000455
252	ALL	UCART1	576298.5	4328228	NonCancer	1.88E-07	0.00011447	0	1.88E-07	1.88E-07	8.26E-07	0.00050231	0.000502
253	ALL	UCART1	576348.5	4328228	NonCancer	2.08E-07	0.00012694	0	2.08E-07	2.08E-07	9.16E-07	0.0005577	0.000558
254	ALL	UCART1	576398.5	4328228	NonCancer	2.33E-07	0.00014206	0	2.33E-07	2.33E-07	1.02E-06	0.00062415	0.000624
255	ALL	UCART1	576448.5	4328228	NonCancer	2.64E-07	0.00016096	0	2.64E-07	2.64E-07	1.16E-06	0.00070577	0.000706
256	ALL	UCART1	576498.5	4328228	NonCancer	3.03E-07	0.00018491	0	3.03E-07	3.03E-07	1.33E-06	0.00080759	0.000808
257	ALL	UCART1	576548.5	4328228	NonCancer	3.53E-07	0.00021496	0	3.53E-07	3.53E-07	1.55E-06	0.00093406	0.000934
258	ALL	UCART1	576598.5	4328228	NonCancer	4.13E-07	0.00025179	0	4.13E-07	4.13E-07	1.82E-06	0.0010889	0.001089
259	ALL	UCART1	576648.5	4328228	NonCancer	4.84E-07	0.00029481	0	4.84E-07	4.84E-07	2.13E-06	0.0012737	0.001274
260	ALL	UCART1	576698.5	4328228	NonCancer	5.63E-07	0.000343	0	5.63E-07	5.63E-07	2.47E-06	0.0014916	0.001492
261	ALL	UCART1	576748.5	4328228	NonCancer	6.54E-07	0.000399	0	6.54E-07	6.54E-07	2.88E-06	0.0017642	0.001764
262	ALL	UCART1	576798.5	4328228	NonCancer	7.62E-07	0.00046436	0	7.62E-07	7.62E-07	3.35E-06	0.0021368	0.002137
263	ALL	UCART1	576848.5	4328228	NonCancer	8.86E-07	0.00054013	0	8.86E-07	8.86E-07	3.90E-06	0.0028325	0.002833
264	ALL	UCART1	576898.5	4328228	NonCancer	1.03E-06	0.00062817	0	1.03E-06	1.03E-06	4.53E-06	0.0036778	0.003678
265	ALL	UCART1	576948.5	4328228	NonCancer	1.19E-06	0.00072255	0	1.19E-06	1.19E-06	5.21E-06	0.0037574	0.003757

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DEVEL	RESP	MAXHI
266	ALL	UCART1	576998.5	4328228	NonCancer	1.31E-06	0.00080077	0	1.31E-06	1.31E-06	5.78E-06	0.0034051	0.003405
267	ALL	UCART1	577048.5	4328228	NonCancer	1.47E-06	0.00089323	0	1.47E-06	1.47E-06	6.44E-06	0.0035412	0.003541
268	ALL	UCART1	577098.5	4328228	NonCancer	1.66E-06	0.0010145	0	1.66E-06	1.66E-06	7.32E-06	0.0038785	0.003878
269	ALL	UCART1	577148.5	4328228	NonCancer	1.74E-06	0.0010584	0	1.74E-06	1.74E-06	7.64E-06	0.0040001	0.004
270	ALL	UCART1	577198.5	4328228	NonCancer	1.63E-06	0.00099174	0	1.63E-06	1.63E-06	7.15E-06	0.0037628	0.003763
271	ALL	UCART1	577248.5	4328228	NonCancer	1.39E-06	0.00084844	0	1.39E-06	1.39E-06	6.12E-06	0.0032691	0.003269
272	ALL	UCART1	577298.5	4328228	NonCancer	1.12E-06	0.00068067	0	1.12E-06	1.12E-06	4.91E-06	0.0026799	0.00268
273	ALL	UCART1	577348.5	4328228	NonCancer	8.78E-07	0.00053561	0	8.78E-07	8.78E-07	3.86E-06	0.0021537	0.002154
274	ALL	UCART1	577398.5	4328228	NonCancer	6.99E-07	0.00042601	0	6.99E-07	6.99E-07	3.07E-06	0.0017415	0.001742
275	ALL	UCART1	577448.5	4328228	NonCancer	5.61E-07	0.00034234	0	5.61E-07	5.61E-07	2.47E-06	0.0014184	0.001418
276	ALL	UCART1	576248.5	4328278	NonCancer	1.78E-07	0.00010846	0	1.78E-07	1.78E-07	7.83E-07	0.00047571	0.000476
277	ALL	UCART1	576298.5	4328278	NonCancer	1.97E-07	0.00012003	0	1.97E-07	1.97E-07	8.66E-07	0.00052669	0.000527
278	ALL	UCART1	576348.5	4328278	NonCancer	2.19E-07	0.0001335	0	2.19E-07	2.19E-07	9.63E-07	0.00058648	0.000586
279	ALL	UCART1	576398.5	4328278	NonCancer	2.45E-07	0.00014938	0	2.45E-07	2.45E-07	1.08E-06	0.00065707	0.000657
280	ALL	UCART1	576448.5	4328278	NonCancer	2.77E-07	0.00016863	0	2.77E-07	2.77E-07	1.22E-06	0.0007424	0.000742
281	ALL	UCART1	576498.5	4328278	NonCancer	3.16E-07	0.0001928	0	3.16E-07	3.16E-07	1.39E-06	0.00084899	0.000849
282	ALL	UCART1	576548.5	4328278	NonCancer	3.68E-07	0.00022429	0	3.68E-07	3.68E-07	1.62E-06	0.00098633	0.000986
283	ALL	UCART1	576598.5	4328278	NonCancer	4.36E-07	0.00026582	0	4.36E-07	4.36E-07	1.92E-06	0.0011652	0.001165
284	ALL	UCART1	576648.5	4328278	NonCancer	5.25E-07	0.0003199	0	5.25E-07	5.25E-07	2.31E-06	0.0013982	0.001398
285	ALL	UCART1	576698.5	4328278	NonCancer	6.35E-07	0.00038704	0	6.35E-07	6.35E-07	2.79E-06	0.0016972	0.001697
286	ALL	UCART1	576748.5	4328278	NonCancer	7.64E-07	0.00046564	0	7.64E-07	7.64E-07	3.36E-06	0.0020827	0.002083
287	ALL	UCART1	576798.5	4328278	NonCancer	9.18E-07	0.00055979	0	9.18E-07	9.18E-07	4.04E-06	0.0026565	0.002657
288	ALL	UCART1	576848.5	4328278	NonCancer	1.10E-06	0.00067315	0	1.10E-06	1.10E-06	4.86E-06	0.0038569	0.003857
289	ALL	UCART1	576898.5	4328278	NonCancer	1.33E-06	0.00080792	0	1.33E-06	1.33E-06	5.83E-06	0.0042877	0.004288
290	ALL	UCART1	576948.5	4328278	NonCancer	1.58E-06	0.00096397	0	1.58E-06	1.58E-06	6.95E-06	0.0042293	0.004229
291	ALL	UCART1	576998.5	4328278	NonCancer	1.81E-06	0.0011038	0	1.81E-06	1.81E-06	7.96E-06	0.0044118	0.004412
292	ALL	UCART1	577048.5	4328278	NonCancer	2.08E-06	0.0012698	0	2.08E-06	2.08E-06	9.16E-06	0.0048523	0.004852
293	ALL	UCART1	577098.5	4328278	NonCancer	2.37E-06	0.0014427	0	2.37E-06	2.37E-06	1.04E-05	0.0053808	0.005381
294	ALL	UCART1	577148.5	4328278	NonCancer	2.33E-06	0.0014185	0	2.33E-06	2.33E-06	1.02E-05	0.0052919	0.005292
295	ALL	UCART1	577198.5	4328278	NonCancer	1.98E-06	0.0012078	0	1.98E-06	1.98E-06	8.71E-06	0.0045798	0.00458
296	ALL	UCART1	577248.5	4328278	NonCancer	1.53E-06	0.00093488	0	1.53E-06	1.53E-06	6.74E-06	0.00364	0.00364
297	ALL	UCART1	577298.5	4328278	NonCancer	1.15E-06	0.00070308	0	1.15E-06	1.15E-06	5.07E-06	0.0028084	0.002808
298	ALL	UCART1	577348.5	4328278	NonCancer	8.77E-07	0.00053453	0	8.77E-07	8.77E-07	3.86E-06	0.002181	0.002181
299	ALL	UCART1	577398.5	4328278	NonCancer	6.76E-07	0.00041232	0	6.76E-07	6.76E-07	2.97E-06	0.001713	0.001713
300	ALL	UCART1	577448.5	4328278	NonCancer	5.30E-07	0.00032339	0	5.30E-07	5.30E-07	2.33E-06	0.0013627	0.001363
301	ALL	UCART1	576248.5	4328328	NonCancer	1.83E-07	0.00011173	0	1.83E-07	1.83E-07	8.06E-07	0.0004928	0.000493
302	ALL	UCART1	576298.5	4328328	NonCancer	2.04E-07	0.00012438	0	2.04E-07	2.04E-07	8.97E-07	0.0005482	0.000548
303	ALL	UCART1	576348.5	4328328	NonCancer	2.29E-07	0.00013939	0	2.29E-07	2.29E-07	1.01E-06	0.00061419	0.000614
304	ALL	UCART1	576398.5	4328328	NonCancer	2.58E-07	0.00015721	0	2.58E-07	2.58E-07	1.13E-06	0.00069272	0.000693
305	ALL	UCART1	576448.5	4328328	NonCancer	2.93E-07	0.00017859	0	2.93E-07	2.93E-07	1.29E-06	0.00078729	0.000787
306	ALL	UCART1	576498.5	4328328	NonCancer	3.36E-07	0.00020475	0	3.36E-07	3.36E-07	1.48E-06	0.00090395	0.000904
307	ALL	UCART1	576548.5	4328328	NonCancer	3.90E-07	0.00023769	0	3.90E-07	3.90E-07	1.71E-06	0.001052	0.001052
308	ALL	UCART1	576598.5	4328328	NonCancer	4.60E-07	0.00028073	0	4.60E-07	4.60E-07	2.03E-06	0.0012461	0.001246
309	ALL	UCART1	576648.5	4328328	NonCancer	5.57E-07	0.00033977	0	5.57E-07	5.57E-07	2.45E-06	0.0015124	0.001512
310	ALL	UCART1	576698.5	4328328	NonCancer	6.93E-07	0.0004224	0	6.93E-07	6.93E-07	3.05E-06	0.0018909	0.001891
311	ALL	UCART1	576748.5	4328328	NonCancer	8.77E-07	0.00053472	0	8.77E-07	8.77E-07	3.86E-06	0.0024505	0.002451
312	ALL	UCART1	576798.5	4328328	NonCancer	1.11E-06	0.0006768	0	1.11E-06	1.11E-06	4.88E-06	0.0033954	0.003395
313	ALL	UCART1	576848.5	4328328	NonCancer	1.40E-06	0.00085582	0	1.40E-06	1.40E-06	6.17E-06	0.0046495	0.00465
314	ALL	UCART1	576898.5	4328328	NonCancer	1.77E-06	0.0010797	0	1.77E-06	1.77E-06	7.79E-06	0.0051134	0.005113
315	ALL	UCART1	576948.5	4328328	NonCancer	2.23E-06	0.0013574	0	2.23E-06	2.23E-06	9.79E-06	0.0055211	0.005521
316	ALL	UCART1	576998.5	4328328	NonCancer	2.69E-06	0.001638	0	2.69E-06	2.69E-06	1.18E-05	0.0062964	0.006296
317	ALL	UCART1	577048.5	4328328	NonCancer	3.23E-06	0.0019708	0	3.23E-06	3.23E-06	1.42E-05	0.007324	0.007324
318	ALL	UCART1	577098.5	4328328	NonCancer	3.55E-06	0.0021654	0	3.55E-06	3.55E-06	1.56E-05	0.007952	0.007952

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DEVEL	RESP	MAXHI
319	ALL	UCART1	577148.5	4328328	NonCancer	3.08E-06	0.0018759	0	3.08E-06	3.08E-06	1.35E-05	0.0070144	0.007014
320	ALL	UCART1	577198.5	4328328	NonCancer	2.27E-06	0.001381	0	2.27E-06	2.27E-06	9.96E-06	0.0053421	0.005342
321	ALL	UCART1	577248.5	4328328	NonCancer	1.59E-06	0.00096885	0	1.59E-06	1.59E-06	6.99E-06	0.0038548	0.003855
322	ALL	UCART1	577298.5	4328328	NonCancer	1.13E-06	0.00069048	0	1.13E-06	1.13E-06	4.98E-06	0.0028186	0.002819
323	ALL	UCART1	577348.5	4328328	NonCancer	8.29E-07	0.00050559	0	8.29E-07	8.29E-07	3.65E-06	0.0021118	0.002112
324	ALL	UCART1	577398.5	4328328	NonCancer	6.29E-07	0.00038351	0	6.29E-07	6.29E-07	2.77E-06	0.0016272	0.001627
325	ALL	UCART1	577448.5	4328328	NonCancer	4.96E-07	0.00030231	0	4.96E-07	4.96E-07	2.18E-06	0.0012924	0.001292
326	ALL	UCART1	576248.5	4328378	NonCancer	1.88E-07	0.00011441	0	1.88E-07	1.88E-07	8.25E-07	0.00050812	0.000508
327	ALL	UCART1	576298.5	4328378	NonCancer	2.09E-07	0.00012768	0	2.09E-07	2.09E-07	9.21E-07	0.00056695	0.000567
328	ALL	UCART1	576348.5	4328378	NonCancer	2.36E-07	0.00014361	0	2.36E-07	2.36E-07	1.04E-06	0.0006376	0.000638
329	ALL	UCART1	576398.5	4328378	NonCancer	2.67E-07	0.00016299	0	2.67E-07	2.67E-07	1.18E-06	0.00072335	0.000723
330	ALL	UCART1	576448.5	4328378	NonCancer	3.06E-07	0.00018681	0	3.06E-07	3.06E-07	1.35E-06	0.00082872	0.000829
331	ALL	UCART1	576498.5	4328378	NonCancer	3.55E-07	0.00021638	0	3.55E-07	3.55E-07	1.56E-06	0.00096051	0.000961
332	ALL	UCART1	576548.5	4328378	NonCancer	4.16E-07	0.00025378	0	4.16E-07	4.16E-07	1.83E-06	0.0011292	0.001129
333	ALL	UCART1	576598.5	4328378	NonCancer	4.95E-07	0.00030195	0	4.95E-07	4.95E-07	2.18E-06	0.0013508	0.001351
334	ALL	UCART1	576648.5	4328378	NonCancer	6.00E-07	0.00036611	0	6.00E-07	6.00E-07	2.64E-06	0.0016545	0.001655
335	ALL	UCART1	576698.5	4328378	NonCancer	7.48E-07	0.0004559	0	7.48E-07	7.48E-07	3.29E-06	0.0020998	0.0021
336	ALL	UCART1	576748.5	4328378	NonCancer	9.68E-07	0.00058993	0	9.68E-07	9.68E-07	4.26E-06	0.0028585	0.002859
337	ALL	UCART1	576798.5	4328378	NonCancer	1.31E-06	0.00079582	0	1.31E-06	1.31E-06	5.74E-06	0.0045982	0.004598
344	ALL	UCART1	577148.5	4328378	NonCancer	3.75E-06	0.0022886	0	3.75E-06	3.75E-06	1.65E-05	0.0086158	0.008616
345	ALL	UCART1	577198.5	4328378	NonCancer	2.35E-06	0.0014304	0	2.35E-06	2.35E-06	1.03E-05	0.0058009	0.005801
346	ALL	UCART1	577248.5	4328378	NonCancer	1.52E-06	0.00092432	0	1.52E-06	1.52E-06	6.67E-06	0.0038042	0.003804
347	ALL	UCART1	577298.5	4328378	NonCancer	1.04E-06	0.00063476	0	1.04E-06	1.04E-06	4.58E-06	0.0026787	0.002679
348	ALL	UCART1	577348.5	4328378	NonCancer	7.61E-07	0.00046424	0	7.61E-07	7.61E-07	3.35E-06	0.0019891	0.001989
349	ALL	UCART1	577398.5	4328378	NonCancer	5.85E-07	0.00035647	0	5.85E-07	5.85E-07	2.57E-06	0.0015359	0.001536
350	ALL	UCART1	577448.5	4328378	NonCancer	4.65E-07	0.00028351	0	4.65E-07	4.65E-07	2.05E-06	0.0012239	0.001224
351	ALL	UCART1	576248.5	4328428	NonCancer	1.94E-07	0.00011817	0	1.94E-07	1.94E-07	8.53E-07	0.00052675	0.000527
352	ALL	UCART1	576298.5	4328428	NonCancer	2.16E-07	0.00013193	0	2.16E-07	2.16E-07	9.52E-07	0.00058875	0.000589
353	ALL	UCART1	576348.5	4328428	NonCancer	2.44E-07	0.00014848	0	2.44E-07	2.44E-07	1.07E-06	0.0006635	0.000664
354	ALL	UCART1	576398.5	4328428	NonCancer	2.77E-07	0.00016873	0	2.77E-07	2.77E-07	1.22E-06	0.00075486	0.000755
355	ALL	UCART1	576448.5	4328428	NonCancer	3.18E-07	0.00019391	0	3.18E-07	3.18E-07	1.40E-06	0.00086851	0.000869
356	ALL	UCART1	576498.5	4328428	NonCancer	3.70E-07	0.00022569	0	3.70E-07	3.70E-07	1.63E-06	0.0010129	0.001013
357	ALL	UCART1	576548.5	4328428	NonCancer	4.38E-07	0.00026689	0	4.38E-07	4.38E-07	1.93E-06	0.0012022	0.001202
358	ALL	UCART1	576598.5	4328428	NonCancer	5.27E-07	0.00032122	0	5.27E-07	5.27E-07	2.32E-06	0.0014571	0.001457
359	ALL	UCART1	576648.5	4328428	NonCancer	6.48E-07	0.00039532	0	6.48E-07	6.48E-07	2.85E-06	0.0018186	0.001819
360	ALL	UCART1	576698.5	4328428	NonCancer	8.19E-07	0.00049959	0	8.19E-07	8.19E-07	3.60E-06	0.0023755	0.002376
361	ALL	UCART1	576748.5	4328428	NonCancer	1.07E-06	0.00065406	0	1.07E-06	1.07E-06	4.72E-06	0.0035031	0.003503
362	ALL	UCART1	576798.5	4328428	NonCancer	1.48E-06	0.00090102	0	1.48E-06	1.48E-06	6.50E-06	0.0049576	0.004958
369	ALL	UCART1	577148.5	4328428	NonCancer	3.84E-06	0.0023408	0	3.84E-06	3.84E-06	1.69E-05	0.0091273	0.009127
370	ALL	UCART1	577198.5	4328428	NonCancer	2.13E-06	0.0013014	0	2.13E-06	2.13E-06	9.39E-06	0.0057016	0.005702
371	ALL	UCART1	577248.5	4328428	NonCancer	1.35E-06	0.00082349	0	1.35E-06	1.35E-06	5.94E-06	0.003555	0.003555
372	ALL	UCART1	577298.5	4328428	NonCancer	9.39E-07	0.00057255	0	9.39E-07	9.39E-07	4.13E-06	0.002499	0.002499
373	ALL	UCART1	577348.5	4328428	NonCancer	6.94E-07	0.0004231	0	6.94E-07	6.94E-07	3.05E-06	0.0018528	0.001853
374	ALL	UCART1	577398.5	4328428	NonCancer	5.35E-07	0.00032603	0	5.35E-07	5.35E-07	2.35E-06	0.0014281	0.001428
375	ALL	UCART1	577448.5	4328428	NonCancer	4.26E-07	0.00025969	0	4.26E-07	4.26E-07	1.87E-06	0.001136	0.001136
376	ALL	UCART1	576248.5	4328478	NonCancer	2.01E-07	0.00012282	0	2.01E-07	2.01E-07	8.86E-07	0.0005485	0.000549
377	ALL	UCART1	576298.5	4328478	NonCancer	2.25E-07	0.0001374	0	2.25E-07	2.25E-07	9.91E-07	0.00061482	0.000615
378	ALL	UCART1	576348.5	4328478	NonCancer	2.54E-07	0.00015498	0	2.54E-07	2.54E-07	1.12E-06	0.00069523	0.000695
379	ALL	UCART1	576398.5	4328478	NonCancer	2.90E-07	0.00017653	0	2.90E-07	2.90E-07	1.27E-06	0.00079399	0.000794
380	ALL	UCART1	576448.5	4328478	NonCancer	3.34E-07	0.00020339	0	3.34E-07	3.34E-07	1.47E-06	0.00091755	0.000918
381	ALL	UCART1	576498.5	4328478	NonCancer	3.90E-07	0.00023757	0	3.90E-07	3.90E-07	1.71E-06	0.0010763	0.001076
382	ALL	UCART1	576548.5	4328478	NonCancer	4.62E-07	0.00028189	0	4.62E-07	4.62E-07	2.03E-06	0.0012857	0.001286
383	ALL	UCART1	576598.5	4328478	NonCancer	5.60E-07	0.00034127	0	5.60E-07	5.60E-07	2.46E-06	0.0015748	0.001575

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DEVEL	RESP	MAXHI
384	ALL	UCART1	576648.5	4328478	NonCancer	6.94E-07	0.0004232	0	6.94E-07	6.94E-07	3.05E-06	0.0019997	0.002
385	ALL	UCART1	576698.5	4328478	NonCancer	8.89E-07	0.00054196	0	8.89E-07	8.89E-07	3.91E-06	0.0027294	0.002729
386	ALL	UCART1	576748.5	4328478	NonCancer	1.19E-06	0.00072403	0	1.19E-06	1.19E-06	5.22E-06	0.0042063	0.004206
394	ALL	UCART1	577148.5	4328478	NonCancer	3.20E-06	0.0019502	0	3.20E-06	3.20E-06	1.41E-05	0.0081577	0.008158
395	ALL	UCART1	577198.5	4328478	NonCancer	1.80E-06	0.001097	0	1.80E-06	1.80E-06	7.91E-06	0.0051208	0.005121
396	ALL	UCART1	577248.5	4328478	NonCancer	1.17E-06	0.00071076	0	1.17E-06	1.17E-06	5.13E-06	0.0032204	0.00322
397	ALL	UCART1	577298.5	4328478	NonCancer	8.23E-07	0.00050174	0	8.23E-07	8.23E-07	3.62E-06	0.0022616	0.002262
398	ALL	UCART1	577348.5	4328478	NonCancer	6.16E-07	0.00037541	0	6.16E-07	6.16E-07	2.71E-06	0.0016818	0.001682
399	ALL	UCART1	577398.5	4328478	NonCancer	4.80E-07	0.00029294	0	4.80E-07	4.80E-07	2.11E-06	0.0013029	0.001303
400	ALL	UCART1	577448.5	4328478	NonCancer	3.87E-07	0.00023594	0	3.87E-07	3.87E-07	1.70E-06	0.0010424	0.001042
401	ALL	UCART1	576248.5	4328528	NonCancer	2.09E-07	0.0001274	0	2.09E-07	2.09E-07	9.19E-07	0.00057056	0.000571
402	ALL	UCART1	576298.5	4328528	NonCancer	2.34E-07	0.00014293	0	2.34E-07	2.34E-07	1.03E-06	0.00064168	0.000642
403	ALL	UCART1	576348.5	4328528	NonCancer	2.65E-07	0.00016175	0	2.65E-07	2.65E-07	1.17E-06	0.00072845	0.000728
404	ALL	UCART1	576398.5	4328528	NonCancer	3.03E-07	0.00018488	0	3.03E-07	3.03E-07	1.33E-06	0.0008356	0.000836
405	ALL	UCART1	576448.5	4328528	NonCancer	3.51E-07	0.00021387	0	3.51E-07	3.51E-07	1.54E-06	0.00097086	0.000971
406	ALL	UCART1	576498.5	4328528	NonCancer	4.12E-07	0.00025097	0	4.12E-07	4.12E-07	1.81E-06	0.0011469	0.001147
407	ALL	UCART1	576548.5	4328528	NonCancer	4.91E-07	0.00029955	0	4.91E-07	4.91E-07	2.16E-06	0.0013836	0.001384
408	ALL	UCART1	576598.5	4328528	NonCancer	5.99E-07	0.00036494	0	5.99E-07	5.99E-07	2.63E-06	0.0017182	0.001718
409	ALL	UCART1	576648.5	4328528	NonCancer	7.49E-07	0.00045643	0	7.49E-07	7.49E-07	3.29E-06	0.0022401	0.00224
410	ALL	UCART1	576698.5	4328528	NonCancer	9.69E-07	0.00059065	0	9.69E-07	9.69E-07	4.26E-06	0.0033566	0.003357
411	ALL	UCART1	576748.5	4328528	NonCancer	1.31E-06	0.00080141	0	1.31E-06	1.31E-06	5.78E-06	0.0042343	0.004234
420	ALL	UCART1	577198.5	4328528	NonCancer	1.58E-06	0.00096052	0	1.58E-06	1.58E-06	6.93E-06	0.0047003	0.0047
421	ALL	UCART1	577248.5	4328528	NonCancer	1.05E-06	0.00064244	0	1.05E-06	1.05E-06	4.63E-06	0.0029837	0.002984
422	ALL	UCART1	577298.5	4328528	NonCancer	7.59E-07	0.0004629	0	7.59E-07	7.59E-07	3.34E-06	0.0021019	0.002102
423	ALL	UCART1	577348.5	4328528	NonCancer	5.76E-07	0.00035141	0	5.76E-07	5.76E-07	2.54E-06	0.0015695	0.00157
424	ALL	UCART1	577398.5	4328528	NonCancer	4.55E-07	0.00027713	0	4.55E-07	4.55E-07	2.00E-06	0.0012241	0.001224
425	ALL	UCART1	577448.5	4328528	NonCancer	3.69E-07	0.00022498	0	3.69E-07	3.69E-07	1.62E-06	0.00098719	0.000987
426	ALL	UCART1	576248.5	4328578	NonCancer	2.18E-07	0.00013273	0	2.18E-07	2.18E-07	9.58E-07	0.0005953	0.000595
427	ALL	UCART1	576298.5	4328578	NonCancer	2.45E-07	0.00014944	0	2.45E-07	2.45E-07	1.08E-06	0.00067225	0.000672
428	ALL	UCART1	576348.5	4328578	NonCancer	2.78E-07	0.00016974	0	2.78E-07	2.78E-07	1.22E-06	0.0007666	0.000767
429	ALL	UCART1	576398.5	4328578	NonCancer	3.20E-07	0.00019485	0	3.20E-07	3.20E-07	1.41E-06	0.00088415	0.000884
430	ALL	UCART1	576448.5	4328578	NonCancer	3.71E-07	0.00022634	0	3.71E-07	3.71E-07	1.63E-06	0.0010334	0.001033
431	ALL	UCART1	576498.5	4328578	NonCancer	4.37E-07	0.00026669	0	4.37E-07	4.37E-07	1.92E-06	0.0012296	0.00123
432	ALL	UCART1	576548.5	4328578	NonCancer	5.24E-07	0.00031968	0	5.24E-07	5.24E-07	2.31E-06	0.0014989	0.001499
433	ALL	UCART1	576598.5	4328578	NonCancer	6.42E-07	0.00039117	0	6.42E-07	6.42E-07	2.82E-06	0.0018939	0.001894
434	ALL	UCART1	576648.5	4328578	NonCancer	8.05E-07	0.00049091	0	8.05E-07	8.05E-07	3.54E-06	0.002581	0.002581
435	ALL	UCART1	576698.5	4328578	NonCancer	1.04E-06	0.00063654	0	1.04E-06	1.04E-06	4.59E-06	0.0041305	0.004131
445	ALL	UCART1	577198.5	4328578	NonCancer	1.52E-06	0.00092507	0	1.52E-06	1.52E-06	6.67E-06	0.0045235	0.004524
446	ALL	UCART1	577248.5	4328578	NonCancer	1.05E-06	0.00063765	0	1.05E-06	1.05E-06	4.60E-06	0.0028971	0.002897
447	ALL	UCART1	577298.5	4328578	NonCancer	7.64E-07	0.00046596	0	7.64E-07	7.64E-07	3.36E-06	0.0020539	0.002054
448	ALL	UCART1	577348.5	4328578	NonCancer	5.84E-07	0.0003558	0	5.84E-07	5.84E-07	2.57E-06	0.0015444	0.001544
449	ALL	UCART1	577398.5	4328578	NonCancer	4.61E-07	0.00028132	0	4.61E-07	4.61E-07	2.03E-06	0.0012115	0.001212
450	ALL	UCART1	577448.5	4328578	NonCancer	3.75E-07	0.00022834	0	3.75E-07	3.75E-07	1.65E-06	0.00097904	0.000979
451	ALL	UCART1	576248.5	4328628	NonCancer	2.28E-07	0.00013924	0	2.28E-07	2.28E-07	1.00E-06	0.00062454	0.000625
452	ALL	UCART1	576298.5	4328628	NonCancer	2.58E-07	0.00015701	0	2.58E-07	2.58E-07	1.13E-06	0.00070727	0.000707
453	ALL	UCART1	576348.5	4328628	NonCancer	2.93E-07	0.00017849	0	2.93E-07	2.93E-07	1.29E-06	0.00080878	0.000809
454	ALL	UCART1	576398.5	4328628	NonCancer	3.36E-07	0.00020482	0	3.36E-07	3.36E-07	1.48E-06	0.00093529	0.000935
455	ALL	UCART1	576448.5	4328628	NonCancer	3.89E-07	0.00023743	0	3.89E-07	3.89E-07	1.71E-06	0.0010959	0.001096
456	ALL	UCART1	576498.5	4328628	NonCancer	4.57E-07	0.00027851	0	4.57E-07	4.57E-07	2.01E-06	0.0013078	0.001308
457	ALL	UCART1	576548.5	4328628	NonCancer	5.43E-07	0.00033124	0	5.43E-07	5.43E-07	2.39E-06	0.0016021	0.001602
458	ALL	UCART1	576598.5	4328628	NonCancer	6.57E-07	0.00040079	0	6.57E-07	6.57E-07	2.89E-06	0.0020605	0.002061
459	ALL	UCART1	576648.5	4328628	NonCancer	8.13E-07	0.00049561	0	8.13E-07	8.13E-07	3.58E-06	0.0030295	0.00303
460	ALL	UCART1	576698.5	4328628	NonCancer	1.04E-06	0.00063142	0	1.04E-06	1.04E-06	4.56E-06	0.0039537	0.003954

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DEVEL	RESP	MAXHI
470	ALL	UCART1	577198.5	4328628	NonCancer	1.29E-06	0.00078404	0	1.29E-06	1.29E-06	5.66E-06	0.0039234	0.003923
471	ALL	UCART1	577248.5	4328628	NonCancer	9.42E-07	0.0005744	0	9.42E-07	9.42E-07	4.14E-06	0.0026123	0.002612
472	ALL	UCART1	577298.5	4328628	NonCancer	7.23E-07	0.00044064	0	7.23E-07	7.23E-07	3.18E-06	0.0019238	0.001924
473	ALL	UCART1	577348.5	4328628	NonCancer	5.70E-07	0.00034762	0	5.70E-07	5.70E-07	2.51E-06	0.0014874	0.001487
474	ALL	UCART1	577398.5	4328628	NonCancer	4.60E-07	0.00028041	0	4.60E-07	4.60E-07	2.02E-06	0.0011875	0.001188
475	ALL	UCART1	577448.5	4328628	NonCancer	3.78E-07	0.00023058	0	3.78E-07	3.78E-07	1.66E-06	0.00097138	0.000971
476	ALL	UCART1	576248.5	4328678	NonCancer	2.36E-07	0.00014381	0	2.36E-07	2.36E-07	1.04E-06	0.0006485	0.000649
477	ALL	UCART1	576298.5	4328678	NonCancer	2.65E-07	0.00016127	0	2.65E-07	2.65E-07	1.16E-06	0.00073297	0.000733
478	ALL	UCART1	576348.5	4328678	NonCancer	2.98E-07	0.00018199	0	2.98E-07	2.98E-07	1.31E-06	0.00083609	0.000836
479	ALL	UCART1	576398.5	4328678	NonCancer	3.39E-07	0.0002069	0	3.39E-07	3.39E-07	1.49E-06	0.0009642	0.000964
480	ALL	UCART1	576448.5	4328678	NonCancer	3.89E-07	0.00023725	0	3.89E-07	3.89E-07	1.71E-06	0.0011274	0.001127
481	ALL	UCART1	576498.5	4328678	NonCancer	4.51E-07	0.00027497	0	4.51E-07	4.51E-07	1.98E-06	0.0013466	0.001347
482	ALL	UCART1	576548.5	4328678	NonCancer	5.30E-07	0.00032327	0	5.30E-07	5.30E-07	2.33E-06	0.0016679	0.001668
483	ALL	UCART1	576598.5	4328678	NonCancer	6.36E-07	0.0003876	0	6.36E-07	6.36E-07	2.80E-06	0.0022587	0.002259
484	ALL	UCART1	576648.5	4328678	NonCancer	7.83E-07	0.00047738	0	7.83E-07	7.83E-07	3.44E-06	0.0032418	0.003242
495	ALL	UCART1	577198.5	4328678	NonCancer	1.10E-06	0.00067112	0	1.10E-06	1.10E-06	4.84E-06	0.0033699	0.00337
496	ALL	UCART1	577248.5	4328678	NonCancer	8.06E-07	0.0004916	0	8.06E-07	8.06E-07	3.55E-06	0.0022585	0.002259
497	ALL	UCART1	577298.5	4328678	NonCancer	6.31E-07	0.00038496	0	6.31E-07	6.31E-07	2.78E-06	0.0017026	0.001703
498	ALL	UCART1	577348.5	4328678	NonCancer	5.15E-07	0.00031393	0	5.15E-07	5.15E-07	2.26E-06	0.0013566	0.001357
499	ALL	UCART1	577398.5	4328678	NonCancer	4.29E-07	0.00026142	0	4.29E-07	4.29E-07	1.89E-06	0.0011132	0.001113
500	ALL	UCART1	577448.5	4328678	NonCancer	3.62E-07	0.00022055	0	3.62E-07	3.62E-07	1.59E-06	0.00093074	0.000931
501	ALL	UCART1	576248.5	4328728	NonCancer	2.35E-07	0.00014301	0	2.35E-07	2.35E-07	1.03E-06	0.00065578	0.000656
502	ALL	UCART1	576298.5	4328728	NonCancer	2.61E-07	0.00015894	0	2.61E-07	2.61E-07	1.15E-06	0.00073845	0.000738
503	ALL	UCART1	576348.5	4328728	NonCancer	2.92E-07	0.00017784	0	2.92E-07	2.92E-07	1.28E-06	0.00084031	0.00084
504	ALL	UCART1	576398.5	4328728	NonCancer	3.29E-07	0.00020068	0	3.29E-07	3.29E-07	1.45E-06	0.00096887	0.000969
505	ALL	UCART1	576448.5	4328728	NonCancer	3.75E-07	0.00022892	0	3.75E-07	3.75E-07	1.65E-06	0.0011377	0.001138
506	ALL	UCART1	576498.5	4328728	NonCancer	4.34E-07	0.00026473	0	4.34E-07	4.34E-07	1.91E-06	0.0013766	0.001377
507	ALL	UCART1	576548.5	4328728	NonCancer	5.11E-07	0.00031165	0	5.11E-07	5.11E-07	2.25E-06	0.0017664	0.001766
508	ALL	UCART1	576598.5	4328728	NonCancer	6.16E-07	0.00037551	0	6.16E-07	6.16E-07	2.71E-06	0.0028014	0.002801
509	ALL	UCART1	576648.5	4328728	NonCancer	7.65E-07	0.0004665	0	7.65E-07	7.65E-07	3.37E-06	0.0033475	0.003348
520	ALL	UCART1	577198.5	4328728	NonCancer	9.75E-07	0.00059428	0	9.75E-07	9.75E-07	4.29E-06	0.0029205	0.002921
521	ALL	UCART1	577248.5	4328728	NonCancer	7.23E-07	0.00044065	0	7.23E-07	7.23E-07	3.18E-06	0.0020246	0.002025
522	ALL	UCART1	577298.5	4328728	NonCancer	5.60E-07	0.0003415	0	5.60E-07	5.60E-07	2.46E-06	0.0015322	0.001532
523	ALL	UCART1	577348.5	4328728	NonCancer	4.55E-07	0.00027718	0	4.55E-07	4.55E-07	2.00E-06	0.0012234	0.001223
524	ALL	UCART1	577398.5	4328728	NonCancer	3.83E-07	0.00023342	0	3.83E-07	3.83E-07	1.68E-06	0.0010154	0.001015
525	ALL	UCART1	577448.5	4328728	NonCancer	3.30E-07	0.00020092	0	3.30E-07	3.30E-07	1.45E-06	0.00086346	0.000863
526	ALL	UCART1	576248.5	4328778	NonCancer	2.27E-07	0.00013853	0	2.27E-07	2.27E-07	9.99E-07	0.00065097	0.000651
527	ALL	UCART1	576298.5	4328778	NonCancer	2.52E-07	0.00015353	0	2.52E-07	2.52E-07	1.11E-06	0.0007339	0.000734
528	ALL	UCART1	576348.5	4328778	NonCancer	2.81E-07	0.00017162	0	2.81E-07	2.81E-07	1.24E-06	0.00083814	0.000838
529	ALL	UCART1	576398.5	4328778	NonCancer	3.18E-07	0.00019385	0	3.18E-07	3.18E-07	1.40E-06	0.00097333	0.000973
530	ALL	UCART1	576448.5	4328778	NonCancer	3.64E-07	0.00022174	0	3.64E-07	3.64E-07	1.60E-06	0.0011579	0.001158
531	ALL	UCART1	576498.5	4328778	NonCancer	4.23E-07	0.00025766	0	4.23E-07	4.23E-07	1.86E-06	0.0014385	0.001439
532	ALL	UCART1	576548.5	4328778	NonCancer	5.01E-07	0.00030549	0	5.01E-07	5.01E-07	2.20E-06	0.0019944	0.001994
533	ALL	UCART1	576598.5	4328778	NonCancer	6.09E-07	0.00037111	0	6.09E-07	6.09E-07	2.68E-06	0.0030207	0.003021
545	ALL	UCART1	577198.5	4328778	NonCancer	8.63E-07	0.00052601	0	8.63E-07	8.63E-07	3.79E-06	0.0024897	0.00249
546	ALL	UCART1	577248.5	4328778	NonCancer	6.56E-07	0.00040003	0	6.56E-07	6.56E-07	2.89E-06	0.0018209	0.001821
547	ALL	UCART1	577298.5	4328778	NonCancer	5.16E-07	0.00031475	0	5.16E-07	5.16E-07	2.27E-06	0.0014094	0.001409
548	ALL	UCART1	577348.5	4328778	NonCancer	4.16E-07	0.00025384	0	4.16E-07	4.16E-07	1.83E-06	0.0011279	0.001128
549	ALL	UCART1	577398.5	4328778	NonCancer	3.46E-07	0.00021115	0	3.46E-07	3.46E-07	1.52E-06	0.00093237	0.000932
550	ALL	UCART1	577448.5	4328778	NonCancer	2.97E-07	0.00018108	0	2.97E-07	2.97E-07	1.31E-06	0.00079346	0.000793
551	ALL	UCART1	576248.5	4328828	NonCancer	2.20E-07	0.0001342	0	2.20E-07	2.20E-07	9.68E-07	0.00064553	0.000646
552	ALL	UCART1	576298.5	4328828	NonCancer	2.44E-07	0.00014904	0	2.44E-07	2.44E-07	1.08E-06	0.00073151	0.000732
553	ALL	UCART1	576348.5	4328828	NonCancer	2.74E-07	0.00016709	0	2.74E-07	2.74E-07	1.21E-06	0.0008416	0.000842

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DEVEL	RESP	MAXHI
554	ALL	UCART1	576398.5	4328828	NonCancer	3.11E-07	0.00018948	0	3.11E-07	3.11E-07	1.37E-06	0.00098881	0.000989
555	ALL	UCART1	576448.5	4328828	NonCancer	3.57E-07	0.00021794	0	3.57E-07	3.57E-07	1.57E-06	0.0012006	0.001201
556	ALL	UCART1	576498.5	4328828	NonCancer	4.18E-07	0.00025498	0	4.18E-07	4.18E-07	1.84E-06	0.0015615	0.001562
557	ALL	UCART1	576548.5	4328828	NonCancer	4.98E-07	0.00030383	0	4.98E-07	4.98E-07	2.19E-06	0.0025321	0.002532
558	ALL	UCART1	576598.5	4328828	NonCancer	6.04E-07	0.00036845	0	6.04E-07	6.04E-07	2.66E-06	0.0032791	0.003279
570	ALL	UCART1	577198.5	4328828	NonCancer	7.69E-07	0.00046892	0	7.69E-07	7.69E-07	3.38E-06	0.0021664	0.002166
571	ALL	UCART1	577248.5	4328828	NonCancer	5.94E-07	0.00036191	0	5.94E-07	5.94E-07	2.61E-06	0.0016282	0.001628
572	ALL	UCART1	577298.5	4328828	NonCancer	4.76E-07	0.00029018	0	4.76E-07	4.76E-07	2.09E-06	0.0012866	0.001287
573	ALL	UCART1	577348.5	4328828	NonCancer	3.90E-07	0.00023773	0	3.90E-07	3.90E-07	1.72E-06	0.0010474	0.001047
574	ALL	UCART1	577398.5	4328828	NonCancer	3.24E-07	0.00019774	0	3.24E-07	3.24E-07	1.43E-06	0.0008702	0.00087
575	ALL	UCART1	577448.5	4328828	NonCancer	2.75E-07	0.00016767	0	2.75E-07	2.75E-07	1.21E-06	0.00073768	0.000738
576	ALL	UCART1	576248.5	4328878	NonCancer	2.15E-07	0.0001312	0	2.15E-07	2.15E-07	9.47E-07	0.00064283	0.000643
577	ALL	UCART1	576298.5	4328878	NonCancer	2.40E-07	0.00014617	0	2.40E-07	2.40E-07	1.05E-06	0.00073344	0.000733
578	ALL	UCART1	576348.5	4328878	NonCancer	2.70E-07	0.00016459	0	2.70E-07	2.70E-07	1.19E-06	0.00085253	0.000853
579	ALL	UCART1	576398.5	4328878	NonCancer	3.08E-07	0.00018767	0	3.08E-07	3.08E-07	1.35E-06	0.0010186	0.001019
580	ALL	UCART1	576448.5	4328878	NonCancer	3.56E-07	0.00021695	0	3.56E-07	3.56E-07	1.57E-06	0.001276	0.001276
581	ALL	UCART1	576498.5	4328878	NonCancer	4.17E-07	0.00025414	0	4.17E-07	4.17E-07	1.83E-06	0.0018202	0.00182
582	ALL	UCART1	576548.5	4328878	NonCancer	4.94E-07	0.00030126	0	4.94E-07	4.94E-07	2.17E-06	0.0028679	0.002868
583	ALL	UCART1	576598.5	4328878	NonCancer	5.92E-07	0.00036122	0	5.92E-07	5.92E-07	2.61E-06	0.0025555	0.002556
584	ALL	UCART1	576648.5	4328878	NonCancer	7.20E-07	0.0004387	0	7.20E-07	7.20E-07	3.17E-06	0.0022929	0.002293
585	ALL	UCART1	576698.5	4328878	NonCancer	8.86E-07	0.00054046	0	8.86E-07	8.86E-07	3.90E-06	0.0025294	0.002529
586	ALL	UCART1	576748.5	4328878	NonCancer	1.10E-06	0.00067091	0	1.10E-06	1.10E-06	4.84E-06	0.0029853	0.002985
587	ALL	UCART1	576798.5	4328878	NonCancer	1.35E-06	0.00082023	0	1.35E-06	1.35E-06	5.92E-06	0.0035677	0.003568
588	ALL	UCART1	576848.5	4328878	NonCancer	1.57E-06	0.00095784	0	1.57E-06	1.57E-06	6.91E-06	0.0041747	0.004175
589	ALL	UCART1	576898.5	4328878	NonCancer	1.71E-06	0.0010445	0	1.71E-06	1.71E-06	7.54E-06	0.0046817	0.004682
590	ALL	UCART1	576948.5	4328878	NonCancer	1.72E-06	0.0010489	0	1.72E-06	1.72E-06	7.57E-06	0.0049431	0.004943
591	ALL	UCART1	576998.5	4328878	NonCancer	1.57E-06	0.00096014	0	1.57E-06	1.57E-06	6.93E-06	0.0047636	0.004764
592	ALL	UCART1	577048.5	4328878	NonCancer	1.34E-06	0.00081908	0	1.34E-06	1.34E-06	5.91E-06	0.0041249	0.004125
593	ALL	UCART1	577098.5	4328878	NonCancer	1.11E-06	0.00067574	0	1.11E-06	1.11E-06	4.88E-06	0.0033133	0.003313
594	ALL	UCART1	577148.5	4328878	NonCancer	8.85E-07	0.00053946	0	8.85E-07	8.85E-07	3.89E-06	0.0025402	0.00254
595	ALL	UCART1	577198.5	4328878	NonCancer	6.89E-07	0.00041993	0	6.89E-07	6.89E-07	3.03E-06	0.001912	0.001912
596	ALL	UCART1	577248.5	4328878	NonCancer	5.40E-07	0.00032944	0	5.40E-07	5.40E-07	2.38E-06	0.0014728	0.001473
597	ALL	UCART1	577298.5	4328878	NonCancer	4.37E-07	0.00026662	0	4.37E-07	4.37E-07	1.92E-06	0.0011773	0.001177
598	ALL	UCART1	577348.5	4328878	NonCancer	3.64E-07	0.00022173	0	3.64E-07	3.64E-07	1.60E-06	0.00097048	0.00097
599	ALL	UCART1	577398.5	4328878	NonCancer	3.07E-07	0.00018696	0	3.07E-07	3.07E-07	1.35E-06	0.00081539	0.000815
600	ALL	UCART1	577448.5	4328878	NonCancer	2.61E-07	0.00015918	0	2.61E-07	2.61E-07	1.15E-06	0.0006948	0.000695
601	ALL	UCART1	576248.5	4328928	NonCancer	2.12E-07	0.00012943	0	2.12E-07	2.12E-07	9.34E-07	0.00064304	0.000643
602	ALL	UCART1	576298.5	4328928	NonCancer	2.38E-07	0.00014488	0	2.38E-07	2.38E-07	1.05E-06	0.00074068	0.000741
603	ALL	UCART1	576348.5	4328928	NonCancer	2.69E-07	0.00016389	0	2.69E-07	2.69E-07	1.18E-06	0.00087314	0.000873
604	ALL	UCART1	576398.5	4328928	NonCancer	3.07E-07	0.00018736	0	3.07E-07	3.07E-07	1.35E-06	0.0010673	0.001067
605	ALL	UCART1	576448.5	4328928	NonCancer	3.55E-07	0.00021619	0	3.55E-07	3.55E-07	1.56E-06	0.0014074	0.001407
606	ALL	UCART1	576498.5	4328928	NonCancer	4.13E-07	0.00025153	0	4.13E-07	4.13E-07	1.81E-06	0.002473	0.002473
607	ALL	UCART1	576548.5	4328928	NonCancer	4.84E-07	0.00029519	0	4.84E-07	4.84E-07	2.13E-06	0.0028708	0.002871
608	ALL	UCART1	576598.5	4328928	NonCancer	5.74E-07	0.00034986	0	5.74E-07	5.74E-07	2.52E-06	0.0020929	0.002093
609	ALL	UCART1	576648.5	4328928	NonCancer	6.88E-07	0.00041945	0	6.88E-07	6.88E-07	3.03E-06	0.0020899	0.00209
610	ALL	UCART1	576698.5	4328928	NonCancer	8.32E-07	0.00050706	0	8.32E-07	8.32E-07	3.66E-06	0.0023312	0.002331
611	ALL	UCART1	576748.5	4328928	NonCancer	1.00E-06	0.00060943	0	1.00E-06	1.00E-06	4.40E-06	0.0026968	0.002697
612	ALL	UCART1	576798.5	4328928	NonCancer	1.17E-06	0.00071234	0	1.17E-06	1.17E-06	5.14E-06	0.0031118	0.003112
613	ALL	UCART1	576848.5	4328928	NonCancer	1.30E-06	0.00079501	0	1.30E-06	1.30E-06	5.74E-06	0.0035001	0.0035
614	ALL	UCART1	576898.5	4328928	NonCancer	1.37E-06	0.00083769	0	1.37E-06	1.37E-06	6.04E-06	0.0037795	0.00378
615	ALL	UCART1	576948.5	4328928	NonCancer	1.36E-06	0.0008271	0	1.36E-06	1.36E-06	5.97E-06	0.0038574	0.003857
616	ALL	UCART1	576998.5	4328928	NonCancer	1.25E-06	0.00075934	0	1.25E-06	1.25E-06	5.48E-06	0.0036434	0.003643
617	ALL	UCART1	577048.5	4328928	NonCancer	1.08E-06	0.00066098	0	1.08E-06	1.08E-06	4.77E-06	0.0031935	0.003193

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DEVEL	RESP	MAXHI
618	ALL	UCART1	577098.5	4328928	NonCancer	9.21E-07	0.00056142	0	9.21E-07	9.21E-07	4.05E-06	0.002668	0.002668
619	ALL	UCART1	577148.5	4328928	NonCancer	7.64E-07	0.00046587	0	7.64E-07	7.64E-07	3.36E-06	0.0021567	0.002157
620	ALL	UCART1	577198.5	4328928	NonCancer	6.17E-07	0.00037625	0	6.17E-07	6.17E-07	2.71E-06	0.0016978	0.001698
621	ALL	UCART1	577248.5	4328928	NonCancer	4.95E-07	0.00030168	0	4.95E-07	4.95E-07	2.18E-06	0.0013407	0.001341
622	ALL	UCART1	577298.5	4328928	NonCancer	4.03E-07	0.00024594	0	4.03E-07	4.03E-07	1.77E-06	0.0010842	0.001084
623	ALL	UCART1	577348.5	4328928	NonCancer	3.38E-07	0.00020598	0	3.38E-07	3.38E-07	1.49E-06	0.00090123	0.000901
624	ALL	UCART1	577398.5	4328928	NonCancer	2.88E-07	0.00017577	0	2.88E-07	2.88E-07	1.27E-06	0.00076415	0.000764
625	ALL	UCART1	577448.5	4328928	NonCancer	2.48E-07	0.00015141	0	2.48E-07	2.48E-07	1.09E-06	0.00065637	0.000656
626	ALL	UCART1	576248.5	4328978	NonCancer	2.11E-07	0.0001289	0	2.11E-07	2.11E-07	9.30E-07	0.00064746	0.000647
627	ALL	UCART1	576298.5	4328978	NonCancer	2.37E-07	0.00014473	0	2.37E-07	2.37E-07	1.04E-06	0.00075378	0.000754
628	ALL	UCART1	576348.5	4328978	NonCancer	2.69E-07	0.00016374	0	2.69E-07	2.69E-07	1.18E-06	0.00090358	0.000904
629	ALL	UCART1	576398.5	4328978	NonCancer	3.06E-07	0.00018646	0	3.06E-07	3.06E-07	1.35E-06	0.0011414	0.001141
630	ALL	UCART1	576448.5	4328978	NonCancer	3.50E-07	0.00021363	0	3.50E-07	3.50E-07	1.54E-06	0.0016831	0.001683
631	ALL	UCART1	576498.5	4328978	NonCancer	4.04E-07	0.00024646	0	4.04E-07	4.04E-07	1.78E-06	0.002587	0.002587
632	ALL	UCART1	576548.5	4328978	NonCancer	4.70E-07	0.00028669	0	4.70E-07	4.70E-07	2.07E-06	0.0021407	0.002141
633	ALL	UCART1	576598.5	4328978	NonCancer	5.52E-07	0.00033652	0	5.52E-07	5.52E-07	2.43E-06	0.0018404	0.00184
634	ALL	UCART1	576648.5	4328978	NonCancer	6.53E-07	0.00039808	0	6.53E-07	6.53E-07	2.87E-06	0.0019229	0.001923
635	ALL	UCART1	576698.5	4328978	NonCancer	7.72E-07	0.00047079	0	7.72E-07	7.72E-07	3.40E-06	0.0021414	0.002141
636	ALL	UCART1	576748.5	4328978	NonCancer	8.98E-07	0.00054748	0	8.98E-07	8.98E-07	3.95E-06	0.0024224	0.002422
637	ALL	UCART1	576798.5	4328978	NonCancer	1.01E-06	0.00061651	0	1.01E-06	1.01E-06	4.45E-06	0.0027107	0.002711
638	ALL	UCART1	576848.5	4328978	NonCancer	1.09E-06	0.00066571	0	1.09E-06	1.09E-06	4.80E-06	0.0029545	0.002955
639	ALL	UCART1	576898.5	4328978	NonCancer	1.13E-06	0.00068589	0	1.13E-06	1.13E-06	4.95E-06	0.0031014	0.003101
640	ALL	UCART1	576948.5	4328978	NonCancer	1.10E-06	0.00067005	0	1.10E-06	1.10E-06	4.83E-06	0.0030944	0.003094
641	ALL	UCART1	576998.5	4328978	NonCancer	1.01E-06	0.00061736	0	1.01E-06	1.01E-06	4.45E-06	0.0028991	0.002899
642	ALL	UCART1	577048.5	4328978	NonCancer	8.95E-07	0.00054546	0	8.95E-07	8.95E-07	3.94E-06	0.0025695	0.00257
643	ALL	UCART1	577098.5	4328978	NonCancer	7.76E-07	0.00047342	0	7.76E-07	7.76E-07	3.42E-06	0.002205	0.002205
644	ALL	UCART1	577148.5	4328978	NonCancer	6.63E-07	0.00040447	0	6.63E-07	6.63E-07	2.92E-06	0.0018501	0.00185
645	ALL	UCART1	577198.5	4328978	NonCancer	5.53E-07	0.00033712	0	5.53E-07	5.53E-07	2.43E-06	0.0015126	0.001513
646	ALL	UCART1	577248.5	4328978	NonCancer	4.54E-07	0.00027684	0	4.54E-07	4.54E-07	2.00E-06	0.0012252	0.001225
647	ALL	UCART1	577298.5	4328978	NonCancer	3.74E-07	0.00022827	0	3.74E-07	3.74E-07	1.65E-06	0.0010033	0.001003
648	ALL	UCART1	577348.5	4328978	NonCancer	3.15E-07	0.00019177	0	3.15E-07	3.15E-07	1.38E-06	0.0008393	0.000839
649	ALL	UCART1	577398.5	4328978	NonCancer	2.70E-07	0.00016454	0	2.70E-07	2.70E-07	1.19E-06	0.00071636	0.000716
650	ALL	UCART1	577448.5	4328978	NonCancer	2.35E-07	0.00014316	0	2.35E-07	2.35E-07	1.03E-06	0.00062025	0.00062
651	ALL	UCART1	576248.5	4329028	NonCancer	2.11E-07	0.00012893	0	2.11E-07	2.11E-07	9.30E-07	0.00065427	0.000654
652	ALL	UCART1	576298.5	4329028	NonCancer	2.37E-07	0.0001445	0	2.37E-07	2.37E-07	1.04E-06	0.00076975	0.00077
653	ALL	UCART1	576348.5	4329028	NonCancer	2.67E-07	0.00016268	0	2.67E-07	2.67E-07	1.17E-06	0.00094291	0.000943
654	ALL	UCART1	576398.5	4329028	NonCancer	3.02E-07	0.00018403	0	3.02E-07	3.02E-07	1.33E-06	0.0012652	0.001265
655	ALL	UCART1	576448.5	4329028	NonCancer	3.43E-07	0.0002094	0	3.43E-07	3.43E-07	1.51E-06	0.0024455	0.002445
656	ALL	UCART1	576498.5	4329028	NonCancer	3.93E-07	0.0002399	0	3.93E-07	3.93E-07	1.73E-06	0.0021557	0.002156
657	ALL	UCART1	576548.5	4329028	NonCancer	4.54E-07	0.00027688	0	4.54E-07	4.54E-07	2.00E-06	0.0017328	0.001733
658	ALL	UCART1	576598.5	4329028	NonCancer	5.28E-07	0.00032191	0	5.28E-07	5.28E-07	2.32E-06	0.0016638	0.001664
659	ALL	UCART1	576648.5	4329028	NonCancer	6.15E-07	0.00037516	0	6.15E-07	6.15E-07	2.71E-06	0.0017737	0.001774
660	ALL	UCART1	576698.5	4329028	NonCancer	7.10E-07	0.00043299	0	7.10E-07	7.10E-07	3.12E-06	0.0019578	0.001958
661	ALL	UCART1	576748.5	4329028	NonCancer	8.01E-07	0.00048862	0	8.01E-07	8.01E-07	3.53E-06	0.0021676	0.002168
662	ALL	UCART1	576798.5	4329028	NonCancer	8.76E-07	0.00053439	0	8.76E-07	8.76E-07	3.86E-06	0.0023649	0.002365
663	ALL	UCART1	576848.5	4329028	NonCancer	9.24E-07	0.00056353	0	9.24E-07	9.24E-07	4.07E-06	0.0025145	0.002515
664	ALL	UCART1	576898.5	4329028	NonCancer	9.38E-07	0.00057187	0	9.38E-07	9.38E-07	4.13E-06	0.0025853	0.002585
665	ALL	UCART1	576948.5	4329028	NonCancer	9.10E-07	0.00055506	0	9.10E-07	9.10E-07	4.00E-06	0.0025434	0.002543
666	ALL	UCART1	576998.5	4329028	NonCancer	8.42E-07	0.0005133	0	8.42E-07	8.42E-07	3.70E-06	0.0023762	0.002376
667	ALL	UCART1	577048.5	4329028	NonCancer	7.52E-07	0.00045875	0	7.52E-07	7.52E-07	3.31E-06	0.0021261	0.002126
668	ALL	UCART1	577098.5	4329028	NonCancer	6.63E-07	0.0004044	0	6.63E-07	6.63E-07	2.92E-06	0.0018585	0.001859
669	ALL	UCART1	577148.5	4329028	NonCancer	5.79E-07	0.00035312	0	5.79E-07	5.79E-07	2.55E-06	0.0016014	0.001601
670	ALL	UCART1	577198.5	4329028	NonCancer	4.96E-07	0.00030235	0	4.96E-07	4.96E-07	2.18E-06	0.001351	0.001351

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DEVEL	RESP	MAXHI
671	ALL	UCART1	577248.5	4329028	NonCancer	4.17E-07	0.00025407	0	4.17E-07	4.17E-07	1.83E-06	0.0011218	0.001122
672	ALL	UCART1	577298.5	4329028	NonCancer	3.49E-07	0.00021255	0	3.49E-07	3.49E-07	1.53E-06	0.00093181	0.000932
673	ALL	UCART1	577348.5	4329028	NonCancer	2.94E-07	0.00017937	0	2.94E-07	2.94E-07	1.29E-06	0.00078389	0.000784
674	ALL	UCART1	577398.5	4329028	NonCancer	2.53E-07	0.00015419	0	2.53E-07	2.53E-07	1.11E-06	0.00067205	0.000672
675	ALL	UCART1	577448.5	4329028	NonCancer	2.21E-07	0.00013489	0	2.21E-07	2.21E-07	9.73E-07	0.00058571	0.000586
676	ALL	UCART1	576248.5	4329078	NonCancer	2.11E-07	0.00012855	0	2.11E-07	2.11E-07	9.27E-07	0.00065925	0.000659
677	ALL	UCART1	576298.5	4329078	NonCancer	2.35E-07	0.00014333	0	2.35E-07	2.35E-07	1.03E-06	0.00078431	0.000784
678	ALL	UCART1	576348.5	4329078	NonCancer	2.63E-07	0.00016044	0	2.63E-07	2.63E-07	1.16E-06	0.00099483	0.000995
679	ALL	UCART1	576398.5	4329078	NonCancer	2.96E-07	0.00018049	0	2.96E-07	2.96E-07	1.30E-06	0.0015394	0.001539
680	ALL	UCART1	576448.5	4329078	NonCancer	3.35E-07	0.00020422	0	3.35E-07	3.35E-07	1.47E-06	0.0023734	0.002373
681	ALL	UCART1	576498.5	4329078	NonCancer	3.81E-07	0.00023253	0	3.81E-07	3.81E-07	1.68E-06	0.0017885	0.001789
682	ALL	UCART1	576548.5	4329078	NonCancer	4.37E-07	0.00026645	0	4.37E-07	4.37E-07	1.92E-06	0.0015056	0.001506
683	ALL	UCART1	576598.5	4329078	NonCancer	5.03E-07	0.0003064	0	5.03E-07	5.03E-07	2.21E-06	0.0015233	0.001523
684	ALL	UCART1	576648.5	4329078	NonCancer	5.75E-07	0.00035084	0	5.75E-07	5.75E-07	2.53E-06	0.001635	0.001635
685	ALL	UCART1	576698.5	4329078	NonCancer	6.49E-07	0.00039546	0	6.49E-07	6.49E-07	2.85E-06	0.0017837	0.001784
686	ALL	UCART1	576748.5	4329078	NonCancer	7.13E-07	0.00043501	0	7.13E-07	7.13E-07	3.14E-06	0.0019366	0.001937
687	ALL	UCART1	576798.5	4329078	NonCancer	7.63E-07	0.00046511	0	7.63E-07	7.63E-07	3.36E-06	0.0020692	0.002069
688	ALL	UCART1	576848.5	4329078	NonCancer	7.91E-07	0.00048244	0	7.91E-07	7.91E-07	3.48E-06	0.0021598	0.00216
689	ALL	UCART1	576898.5	4329078	NonCancer	7.94E-07	0.00048431	0	7.94E-07	7.94E-07	3.49E-06	0.002187	0.002187
690	ALL	UCART1	576948.5	4329078	NonCancer	7.68E-07	0.00046813	0	7.68E-07	7.68E-07	3.38E-06	0.0021325	0.002133
691	ALL	UCART1	576998.5	4329078	NonCancer	7.12E-07	0.00043432	0	7.12E-07	7.12E-07	3.13E-06	0.0019911	0.001991
692	ALL	UCART1	577048.5	4329078	NonCancer	6.43E-07	0.0003919	0	6.43E-07	6.43E-07	2.83E-06	0.0017969	0.001797
693	ALL	UCART1	577098.5	4329078	NonCancer	5.74E-07	0.00034966	0	5.74E-07	5.74E-07	2.52E-06	0.0015926	0.001593
694	ALL	UCART1	577148.5	4329078	NonCancer	5.09E-07	0.00031036	0	5.09E-07	5.09E-07	2.24E-06	0.0013989	0.001399
695	ALL	UCART1	577198.5	4329078	NonCancer	4.45E-07	0.00027135	0	4.45E-07	4.45E-07	1.96E-06	0.0012089	0.001209
696	ALL	UCART1	577248.5	4329078	NonCancer	3.82E-07	0.00023279	0	3.82E-07	3.82E-07	1.68E-06	0.0010265	0.001027
697	ALL	UCART1	577298.5	4329078	NonCancer	3.24E-07	0.00019782	0	3.24E-07	3.24E-07	1.43E-06	0.0008662	0.000866
698	ALL	UCART1	577348.5	4329078	NonCancer	2.76E-07	0.00016848	0	2.76E-07	2.76E-07	1.22E-06	0.00073516	0.000735
699	ALL	UCART1	577398.5	4329078	NonCancer	2.38E-07	0.00014519	0	2.38E-07	2.38E-07	1.05E-06	0.00063259	0.000633
700	ALL	UCART1	577448.5	4329078	NonCancer	2.09E-07	0.00012728	0	2.09E-07	2.09E-07	9.18E-07	0.00055352	0.000554
701	ALL	UCART1	576248.5	4329128	NonCancer	2.09E-07	0.00012735	0	2.09E-07	2.09E-07	9.19E-07	0.00065991	0.00066
702	ALL	UCART1	576298.5	4329128	NonCancer	2.32E-07	0.00014131	0	2.32E-07	2.32E-07	1.02E-06	0.00079314	0.000793
703	ALL	UCART1	576348.5	4329128	NonCancer	2.58E-07	0.00015747	0	2.58E-07	2.58E-07	1.14E-06	0.0010672	0.001067
704	ALL	UCART1	576398.5	4329128	NonCancer	2.89E-07	0.00017633	0	2.89E-07	2.89E-07	1.27E-06	0.0019916	0.001992
705	ALL	UCART1	576448.5	4329128	NonCancer	3.26E-07	0.00019851	0	3.26E-07	3.26E-07	1.43E-06	0.0022286	0.002229
706	ALL	UCART1	576498.5	4329128	NonCancer	3.69E-07	0.0002247	0	3.69E-07	3.69E-07	1.62E-06	0.0014267	0.001427
707	ALL	UCART1	576548.5	4329128	NonCancer	4.19E-07	0.00025546	0	4.19E-07	4.19E-07	1.84E-06	0.0013514	0.001351
708	ALL	UCART1	576598.5	4329128	NonCancer	4.76E-07	0.00029002	0	4.76E-07	4.76E-07	2.09E-06	0.001404	0.001404
709	ALL	UCART1	576648.5	4329128	NonCancer	5.35E-07	0.0003259	0	5.35E-07	5.35E-07	2.35E-06	0.0015047	0.001505
710	ALL	UCART1	576698.5	4329128	NonCancer	5.90E-07	0.0003595	0	5.90E-07	5.90E-07	2.59E-06	0.001621	0.001621
711	ALL	UCART1	576748.5	4329128	NonCancer	6.35E-07	0.00038744	0	6.35E-07	6.35E-07	2.80E-06	0.0017313	0.001731
712	ALL	UCART1	576798.5	4329128	NonCancer	6.68E-07	0.00040728	0	6.68E-07	6.68E-07	2.94E-06	0.0018194	0.001819
713	ALL	UCART1	576848.5	4329128	NonCancer	6.84E-07	0.00041722	0	6.84E-07	6.84E-07	3.01E-06	0.0018714	0.001871
714	ALL	UCART1	576898.5	4329128	NonCancer	6.82E-07	0.00041582	0	6.82E-07	6.82E-07	3.00E-06	0.0018755	0.001876
715	ALL	UCART1	576948.5	4329128	NonCancer	6.57E-07	0.00040076	0	6.57E-07	6.57E-07	2.89E-06	0.0018177	0.001818
716	ALL	UCART1	576998.5	4329128	NonCancer	6.12E-07	0.00037319	0	6.12E-07	6.12E-07	2.69E-06	0.0016996	0.0017
717	ALL	UCART1	577048.5	4329128	NonCancer	5.56E-07	0.00033921	0	5.56E-07	5.56E-07	2.45E-06	0.0015441	0.001544
718	ALL	UCART1	577098.5	4329128	NonCancer	5.01E-07	0.00030568	0	5.01E-07	5.01E-07	2.21E-06	0.0013839	0.001384
719	ALL	UCART1	577148.5	4329128	NonCancer	4.50E-07	0.00027466	0	4.50E-07	4.50E-07	1.98E-06	0.0012328	0.001233
720	ALL	UCART1	577198.5	4329128	NonCancer	4.00E-07	0.00024411	0	4.00E-07	4.00E-07	1.76E-06	0.0010851	0.001085
721	ALL	UCART1	577248.5	4329128	NonCancer	3.50E-07	0.00021328	0	3.50E-07	3.50E-07	1.54E-06	0.00093985	0.00094
722	ALL	UCART1	577298.5	4329128	NonCancer	3.02E-07	0.00018419	0	3.02E-07	3.02E-07	1.33E-06	0.00080636	0.000806
723	ALL	UCART1	577348.5	4329128	NonCancer	2.60E-07	0.00015857	0	2.60E-07	2.60E-07	1.14E-06	0.00069146	0.000691

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DEVEL	RESP	MAXHI
724	ALL	UCART1	577398.5	4329128	NonCancer	2.25E-07	0.00013737	0	2.25E-07	2.25E-07	9.91E-07	0.00059808	0.000598
725	ALL	UCART1	577448.5	4329128	NonCancer	1.98E-07	0.00012055	0	1.98E-07	1.98E-07	8.70E-07	0.00052448	0.000524
726	ALL	UCART1	576248.5	4329178	NonCancer	2.06E-07	0.00012555	0	2.06E-07	2.06E-07	9.06E-07	0.00065565	0.000656
727	ALL	UCART1	576298.5	4329178	NonCancer	2.28E-07	0.0001388	0	2.28E-07	2.28E-07	1.00E-06	0.00079198	0.000792
728	ALL	UCART1	576348.5	4329178	NonCancer	2.53E-07	0.00015408	0	2.53E-07	2.53E-07	1.11E-06	0.0011446	0.001145
729	ALL	UCART1	576398.5	4329178	NonCancer	2.82E-07	0.0001718	0	2.82E-07	2.82E-07	1.24E-06	0.0020006	0.002001
730	ALL	UCART1	576448.5	4329178	NonCancer	3.16E-07	0.00019249	0	3.16E-07	3.16E-07	1.39E-06	0.0014156	0.001416
731	ALL	UCART1	576498.5	4329178	NonCancer	3.55E-07	0.00021663	0	3.55E-07	3.55E-07	1.56E-06	0.0012324	0.001232
732	ALL	UCART1	576548.5	4329178	NonCancer	4.00E-07	0.00024395	0	4.00E-07	4.00E-07	1.76E-06	0.0012356	0.001236
733	ALL	UCART1	576598.5	4329178	NonCancer	4.48E-07	0.00027299	0	4.48E-07	4.48E-07	1.97E-06	0.0012982	0.001298
734	ALL	UCART1	576648.5	4329178	NonCancer	4.94E-07	0.00030118	0	4.94E-07	4.94E-07	2.17E-06	0.0013833	0.001383
735	ALL	UCART1	576698.5	4329178	NonCancer	5.35E-07	0.00032619	0	5.35E-07	5.35E-07	2.35E-06	0.0014722	0.001472
736	ALL	UCART1	576748.5	4329178	NonCancer	5.67E-07	0.00034586	0	5.67E-07	5.67E-07	2.50E-06	0.0015506	0.001551
737	ALL	UCART1	576798.5	4329178	NonCancer	5.89E-07	0.00035892	0	5.89E-07	5.89E-07	2.59E-06	0.0016082	0.001608
738	ALL	UCART1	576848.5	4329178	NonCancer	5.98E-07	0.00036438	0	5.98E-07	5.98E-07	2.63E-06	0.0016364	0.001636
739	ALL	UCART1	576898.5	4329178	NonCancer	5.92E-07	0.00036107	0	5.92E-07	5.92E-07	2.60E-06	0.0016267	0.001627
740	ALL	UCART1	576948.5	4329178	NonCancer	5.70E-07	0.00034753	0	5.70E-07	5.70E-07	2.51E-06	0.0015715	0.001572
741	ALL	UCART1	576998.5	4329178	NonCancer	5.32E-07	0.00032454	0	5.32E-07	5.32E-07	2.34E-06	0.0014715	0.001472
742	ALL	UCART1	577048.5	4329178	NonCancer	4.87E-07	0.00029709	0	4.87E-07	4.87E-07	2.14E-06	0.001346	0.001346
743	ALL	UCART1	577098.5	4329178	NonCancer	4.43E-07	0.00026984	0	4.43E-07	4.43E-07	1.95E-06	0.0012168	0.001217
744	ALL	UCART1	577148.5	4329178	NonCancer	4.01E-07	0.00024478	0	4.01E-07	4.01E-07	1.77E-06	0.0010958	0.001096
745	ALL	UCART1	577198.5	4329178	NonCancer	3.62E-07	0.00022046	0	3.62E-07	3.62E-07	1.59E-06	0.00097869	0.000979
746	ALL	UCART1	577248.5	4329178	NonCancer	3.21E-07	0.00019577	0	3.21E-07	3.21E-07	1.41E-06	0.00086251	0.000863
747	ALL	UCART1	577298.5	4329178	NonCancer	2.81E-07	0.00017152	0	2.81E-07	2.81E-07	1.24E-06	0.00075115	0.000751
748	ALL	UCART1	577348.5	4329178	NonCancer	2.45E-07	0.00014942	0	2.45E-07	2.45E-07	1.08E-06	0.00065164	0.000652
749	ALL	UCART1	577398.5	4329178	NonCancer	2.14E-07	0.00013034	0	2.14E-07	2.14E-07	9.40E-07	0.00056728	0.000567
750	ALL	UCART1	577448.5	4329178	NonCancer	1.88E-07	0.0001146	0	1.88E-07	1.88E-07	8.27E-07	0.00049852	0.000499
751	ALL		576601.1	4328803	NonCancer	6.14E-07	0.00037405	0	6.14E-07	6.14E-07	2.70E-06	0.0031575	0.003157
752	ALL		577169.5	4328803	NonCancer	9.70E-07	0.00059143	0	9.70E-07	9.70E-07	4.27E-06	0.0028522	0.002852
753	ALL		577174.5	4328402	NonCancer	2.93E-06	0.0017836	0	2.93E-06	2.93E-06	1.29E-05	0.0072115	0.007211
754	ALL		576818.6	4328402	NonCancer	1.60E-06	0.00097472	0	1.60E-06	1.60E-06	7.03E-06	0.0053243	0.005324