

APPENDIX B

Air Quality and Greenhouse Gas Emissions Assessment

TOPGOLF AIR QUALITY ASSESSMENT

Burlingame, California

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Introduction

The purpose of this report is to address air quality impacts associated with the proposed Topgolf Project at 250 Anza Boulevard in Burlingame, California. The air quality impacts would be associated with the construction of the new building and infrastructure, and operation of the project. Air pollutant emissions associated with the construction and operation of the project were predicted using models that predict emissions and dispersion of contaminants. In addition, the potential construction health risk impact and the impact of existing toxic air contaminant (TAC) sources to nearby sensitive receptors were evaluated. This analysis addresses those issues following the guidance provided by the Bay Area Air Quality Management District (BAAQMD).¹

Project Description

The 12.7-acre site is currently occupied by the existing Burlingame Golf Center that is a driving range with 45 hitting bays and the large net poles. The project proposes to redevelop the site with a TopGolf entertainment complex that includes a three-level, approximately 71,074 square-foot (sf) main building. The proposed building features 120 hitting bays, which would face northeast toward the artificial turf outfield enclosed by poles and netting. Each hitting bay can accommodate up to six players at a time but it is not unusual to have one or two players in some bays. Hitting bays include seating, television screens to monitor sporting events and track TopGolf scoring, and include overhead speakers providing amplified music. In addition to the internal building areas, an approximately 20,000 square-foot external mini-golf area is being proposed adjacent to the outdoor patio area. There would be a total of 475 parking lot spaces.

Setting

The project is located in San Mateo County, which is in the San Francisco Bay Area Air Basin. Ambient air quality standards have been established at both the State and federal level. The Bay Area meets all ambient air quality standards with the exception of ground-level ozone, respirable particulate matter (PM₁₀), and fine particulate matter (PM_{2.5}).

Air Pollutants of Concern

High ozone levels are caused by the cumulative emissions of reactive organic gases (ROG) and nitrogen oxides (NO_x). These precursor pollutants react under certain meteorological conditions to form high ozone levels. Controlling the emissions of these precursor pollutants is the focus of the Bay Area's attempts to reduce ozone levels. The highest ozone levels in the Bay Area occur in the eastern and southern inland valleys that are downwind of air pollutant sources. High ozone levels aggravate respiratory and cardiovascular diseases, reduced lung function, and increase coughing and chest discomfort.

Particulate matter is another problematic air pollutant of the Bay Area. Particulate matter is assessed and measured in terms of respirable particulate matter or particles that have a diameter of 10 micrometers or less (PM₁₀) and fine particulate matter where particles have a diameter of 2.5 micrometers or less (PM_{2.5}). Elevated concentrations of PM₁₀ and PM_{2.5} are the result of both

¹ Bay Area Air Quality Management District, *CEQA Air Quality Guidelines*, May 2017.

region-wide (or cumulative) emissions and localized emissions. High particulate matter levels aggravate respiratory and cardiovascular diseases, reduce lung function, increase mortality (e.g., lung cancer), and result in reduced lung function growth in children.

Toxic Air Contaminants

Toxic air contaminants (TAC) are a broad class of compounds known to cause morbidity or mortality (usually because they cause cancer) and include, but are not limited to, the criteria air pollutants. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter [DPM] near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, State, and federal level.

Diesel exhaust is the predominant TAC in urban air and is estimated to represent about three-quarters of the cancer risk from TACs (based on the Bay Area average). According to the California Air Resources Board (CARB), diesel exhaust is a complex mixture of gases, vapors, and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB, and are listed as carcinogens either under the State's Proposition 65 or under the Federal Hazardous Air Pollutants programs. The most recent Office of Environmental Health Hazard Assessment (OEHHA) risk assessment guidelines were published in February of 2015.² See *Attachment 1* for a detailed description of the community risk modeling methodology used in this assessment.

Sensitive Receptors

There are groups of people more affected by air pollution than others. CARB has identified the following persons who are most likely to be affected by air pollution: children under 16, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities, and elementary schools. This project would not introduce new sensitive receptors to the area. The closest sensitive receptors to the project site are the single- and multi-family residences to the south of the project site opposite U.S. Highway 101 (U.S. 101).

Regulatory Setting

Federal Regulations

The United States Environmental Protection Agency (EPA) sets nationwide emission standards for mobile sources, which include on-road (highway) motor vehicles such trucks, buses, and

² OEHHA, 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. Office of Environmental Health Hazard Assessment. February.

automobiles, and non-road (off-road) vehicles and equipment used in construction, agricultural, industrial, and mining activities (such as bulldozers and loaders). The EPA also sets nationwide fuel standards. California also has the ability to set motor vehicle emission standards and standards for fuel used in California, as long as they are the same or more stringent than the federal standards.

In the past decade the EPA has established a number of emission standards for on- and non-road heavy-duty diesel engines used in trucks and other equipment. This was done in part because diesel engines are a significant source of NO_x and particulate matter (PM₁₀ and PM_{2.5}) and because the EPA has identified DPM as a probable carcinogen. Implementation of the heavy-duty diesel on-road vehicle standards and the non-road diesel engine standards are estimated to reduce particulate matter and NO_x emissions from diesel engines up to 95 percent in 2030 when the heavy-duty vehicle fleet is completely replaced with newer heavy-duty vehicles that comply with these emission standards.³

In concert with the diesel engine emission standards, the EPA has also substantially reduced the amount of sulfur allowed in diesel fuels. The sulfur contained in diesel fuel is a significant contributor to the formation of particulate matter in diesel-fueled engine exhaust. The new standards reduced the amount of sulfur allowed by 97 percent for highway diesel fuel (from 500 parts per million by weight [ppmw] to 15 ppmw), and by 99 percent for off-highway diesel fuel (from about 3,000 ppmw to 15 ppmw). The low sulfur highway fuel (15 ppmw sulfur), also called ultra-low sulfur diesel (ULSD), is currently required for use by all vehicles in the U.S.

All of the above federal diesel engine and diesel fuel requirements have been adopted by California, in some cases with modifications making the requirements more stringent or the implementation dates sooner.

State Regulations

To address the issue of diesel emissions in the state, CARB developed the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles.⁴ In addition to requiring more stringent emission standards for new on-road and off-road mobile sources and stationary diesel-fueled engines to reduce particulate matter emissions by 90 percent, a significant component of the plan involves application of emission control strategies to existing diesel vehicles and equipment. Many of the measures of the Diesel Risk Reduction Plan have been approved and adopted, including the federal on-road and non-road diesel engine emission standards for new engines, as well as adoption of regulations for low sulfur fuel in California.

CARB has adopted and implemented a number of regulations for stationary and mobile sources to reduce emissions of DPM. Several of these regulatory programs affect medium and heavy-duty diesel trucks that represent the bulk of DPM emissions from California highways. CARB regulations require on-road diesel trucks to be retrofitted with particulate matter controls or replaced to meet 2010 or later engine standards that have much lower DPM and PM_{2.5} emissions.

³ USEPA, 2000. *Regulatory Announcement, Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements*. EPA420-F-00-057. December.

⁴ California Air Resources Board, 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*. October.

This regulation will substantially reduce these emissions between 2013 and 2023. While new trucks and buses will meet strict federal standards, this measure is intended to accelerate the rate at which the fleet either turns over so there are more cleaner vehicles on the road or is retrofitted to meet similar standards. With this regulation, older, more polluting trucks would be removed from the roads sooner.

CARB has also adopted and implemented regulations to reduce DPM and NO_x emissions from in-use (existing) and new off-road heavy-duty diesel vehicles (e.g., loaders, tractors, bulldozers, backhoes, off-highway trucks, etc.). The regulations apply to diesel-powered off-road vehicles with engines 25 horsepower (hp) or greater. The regulations are intended to reduce particulate matter and NO_x exhaust emissions by requiring owners to turn over their fleet (replace older equipment with newer equipment) or retrofit existing equipment in order to achieve specified fleet-averaged emission rates. Implementation of this regulation, in conjunction with stringent federal off-road equipment engine emission limits for new vehicles, will significantly reduce emissions of DPM and NO_x.

Bay Area Air Quality Management District (BAAQMD)

BAAQMD has jurisdiction over an approximately 5,600-square mile area, commonly referred to as the San Francisco Bay Area (Bay Area). The District's boundary encompasses the nine San Francisco Bay Area counties, including Alameda County, Contra Costa County, Marin County, San Francisco County, San Mateo County, Santa Clara County, Napa County, southwestern Solano County, and southern Sonoma County.

BAAQMD is the lead agency in developing plans to address attainment and maintenance of the National Ambient Air Quality Standards and California Ambient Air Quality Standards. The District also has permit authority over most types of stationary equipment utilized for the proposed project. The BAAQMD is responsible for permitting and inspection of stationary sources; enforcement of regulations, including setting fees, levying fines, and enforcement actions; and ensuring that public nuisances are minimized.

The BAAQMD California Environmental Quality Act (CEQA) *Air Quality Guidelines*⁵ were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process consistent with CEQA requirements including thresholds of significance, mitigation measures, and background air quality information. They also include assessment methodologies for air toxics, odors, and greenhouse gas emissions.

Envision Burlingame Draft 2040 General Plan

In January 2019, the City of Burlingame adopted their Envision Burlingame Updated Draft 2040 General Plan, which includes goals to reduce exposure of the City's sensitive population to exposure of air pollution, toxic air contaminants, and greenhouse gases. The following goals are applicable to the proposed project:

⁵ Bay Area Air Quality Management District, 2017. *CEQA Air Quality Guidelines*. May.

Goal HP-3: Minimize exposure of residents and employees of local business to harmful air pollutants.

- HP-3.2 Local Air Quality Standards.* Work with local business, industries, and developers to reduce the impact of stationary and mobile sources of pollution. Ensure that new development does not create cumulative net increases in air pollution, and require Transportation Demand Management Techniques when air quality impacts are unavoidable.
- HP-3.3 Indoor Air Quality Standards.* Require that developers mitigate impacts on indoor air quality for new residential and commercial developments, particularly along higher-density corridors, near industrial uses, and along the freeway and rail line, such as in North Burlingame, along Rollins Road, and in Downtown. Potential mitigation strategies include installing air filters (MERV 13 or higher), building sound walls, and planting vegetation and trees as pollution buffers.
- HP-3.10 Truck Routes.* Ensure projects that generate truck traffic and existing truck routes avoid sensitive land uses such as residences, schools, day care centers, senior facilities, and hospitals.
- HP-3.11 Dust Abatement.* Require dust abatement actions for all new construction and redevelopment projects.
- HP-3.12 Construction Best Practices.* Require construction projects to implement the Bay Area Air Quality Management District's Best Practices for Construction to reduce pollution from dust and exhaust as feasible.

Significance Thresholds

In June 2010, BAAQMD adopted thresholds of significance to assist in the review of projects under CEQA and these significance thresholds were contained in the District's 2011 *CEQA Air Quality Guidelines*. These thresholds were designed to establish the level at which BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA. The thresholds were challenged through a series of court challenges and were mostly upheld. BAAQMD updated the *CEQA Air Quality Guidelines* in 2017 to include the latest significance thresholds that were used in this analysis are summarized in Table 1.

Table 1. Air Quality Significance Thresholds

Criteria Air Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (lbs./day)	Average Daily Emissions (lbs./day)	Annual Average Emissions (tons/year)
ROG	54	54	10
NO _x	54	54	10
PM ₁₀	82 (Exhaust)	82	15
PM _{2.5}	54 (Exhaust)	54	10
CO	Not Applicable	9.0 ppm (8-hour average) or 20.0 ppm (1-hour average)	
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	Not Applicable	
Health Risks and Hazards	Single Sources Within 1,000-foot Zone of Influence	Combined Sources (Cumulative from all sources within 1,000-foot zone of influence)	
Excess Cancer Risk	>10.0 per one million	>100 per one million	
Hazard Index	>1.0	>10.0	
Incremental annual PM _{2.5}	>0.3 µg/m ³	>0.8 µg/m ³	
Note: ROG = reactive organic gases, NO _x = nitrogen oxides, PM ₁₀ = course particulate matter or particulates with an aerodynamic diameter of 10 micrometers (µm) or less, PM _{2.5} = fine particulate matter or particulates with an aerodynamic diameter of 2.5µm or less.			

Air Quality Impacts and Mitigation Measures

Impact: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

The Bay Area is considered a non-attainment area for ground-level ozone and PM_{2.5} under both the Federal Clean Air Act and the California Clean Air Act. The area is also considered non-attainment for PM₁₀ under the California Clean Air Act, but not the federal act. The area has attained both State and federal ambient air quality standards for carbon monoxide. As part of an effort to attain and maintain ambient air quality standards for ozone and PM₁₀, the BAAQMD has established thresholds of significance for these air pollutants and their precursors. These thresholds are for ozone precursor pollutants (ROG and NO_x), PM₁₀, and PM_{2.5} and apply to both construction period and operational period impacts.

The California Emissions Estimator Model (CalEEMod) Version 2016.3.2 was used to estimate emissions from construction and operation of the site assuming full build-out of the project. The project land use types and size, and anticipated construction schedule were input to CalEEMod. The model output from CalEEMod is included as *Attachment 2*.

Construction period emissions

CalEEMod provided annual emissions for construction and estimates emissions for both on-site and off-site construction activities. On-site activities are primarily made up of construction equipment emissions, while off-site activity includes worker, hauling, and vendor traffic. A construction build-out scenario, including equipment list and schedule, was based on CalEEMod default information for a project of this type and size. The equipment list was reviewed by the applicant and additional equipment was added. The proposed project land uses were input into CalEEMod, including 8.2 acres entered as “Golf Course”, 71,074-sf entered as “Racquet Club”, and 3.5 acres and 475 parking spaces entered as “Parking Lot” on a 12.7-acre site. In addition, 7,025 cubic yards (cy) of soil import and 2 one-way daily water truck trips during the grading phase were entered into the model.

The CalEEMod default construction schedule assumed that the project would be built out over a period of approximately 17 months, beginning in January 2020. Based on the CalEEMod default assumptions, there are an estimated 360 construction workdays. Average daily emissions were computed by dividing the total construction emissions by the number of construction days. Table 2 shows average daily construction emissions of ROG, NO_x, PM₁₀ exhaust, and PM_{2.5} exhaust during construction of the project. As indicated in Table 2, predicted the construction period emissions would not exceed the BAAQMD significance thresholds.

Table 2. Construction Period Emissions

Scenario	ROG	NO _x	PM ₁₀ Exhaust	PM _{2.5} Exhaust
Total project construction emissions (tons)	1.3 tons	8.0 tons	0.3 tons	0.3 tons
Average daily emissions (pounds) ¹	7.0 lbs./day	44.6 lbs./day	1.8 lbs./day	1.7 lbs./day
BAAQMD Thresholds (pounds per day)	54 lbs./day	54 lbs./day	82 lbs./day	54 lbs./day
Exceed Threshold?	No	No	No	No
Notes: ¹ Assumes 360 workdays.				

Construction activities, particularly during site preparation and grading, would temporarily generate fugitive dust in the form of PM₁₀ and PM_{2.5}. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. The BAAQMD CEQA Air Quality Guidelines consider these impacts to be less-than-significant if best management practices are implemented to reduce these emissions. *Mitigation Measure AQ-1 would implement BAAQMD-recommended best management practices.*

Operational Period Emissions

Operational air emissions from the project would be generated primarily from autos driven by future customers and employees. CalEEMod was also used to estimate emissions from operation of the proposed project assuming full build-out.

Land Uses

The project land uses were input to CalEEMod as described above for the construction period modeling.

Model Year

Emissions associated with vehicle travel depend on the year of analysis because emission control technology requirements are phased-in over time. Therefore, the earlier the year analyzed in the model, the higher the emission rates utilized by CalEEMod. The earliest the project could possibly be constructed and begin operating would be 2022. Emissions associated with build-out later than 2022 would be lower.

Trip Generation Rates

CalEEMod allows the user to enter specific vehicle trip generation rates, which were input to the model using the daily trip generation rate provided in the project trip generation table. The Saturday and Sunday trip rates were assumed to be the weekday rate adjusted by multiplying the ratio of the CalEEMod default rates for Saturday and Sunday trips. The default trip lengths and trip types specified by CalEEMod were used. The project traffic analysis provided project trip generation values for the golf facility.⁶ The weekday trip rates used after being calculated per acre was 263.41 trips per day. The Saturday trip rate was adjusted to 304.22 trips per day and the Sunday rate to 307.37 trips per day.

Energy

CalEEMod defaults for energy use were used, which include the 2016 Title 24 Building Standards. Indirect emissions from electricity were computed in CalEEMod. The model has a default rate of 641.3 pounds of CO₂ per megawatt of electricity produced, which is based on PG&E's 2008 emissions rate. Peninsula Clean Energy (PCE) now provides electricity to Burlingame, with 50 percent renewable and 75 percent being carbon free electricity. The rate was adjusted to account for PCE's 2017 CO₂ intensity rate. The 2017 rate provided by PCE was 142.26 pounds of CO₂ per megawatt of electricity delivered.⁷

Other Inputs

Default model assumptions for emissions associated with solid waste generation use were applied to the project. Water/wastewater use were changed to 100% aerobic conditions to represent wastewater treatment plant conditions.

⁶ Fehr & Peers Transportation Consultants, "Burlingame Topgolf Transportation Impact Analysis Report", January 2019.

⁷ Correspondence with Michael Totah, Peninsula Clean Energy, April 11, 2019.

Existing Uses

A CalEEMod model run was developed to compute emissions from use of the existing golf facility as if it was operating in 2022. The input for this modeling scenario included 8 acres entered as “Golf Course”. The existing weekday trip rate used for the “Golf Course” land use after being calculated per acre was 76.75, which adjusted the Saturday trip rate to 88.63 and the Sunday trip rate to 89.54. These inputs were applied to the model in the same manner described for the proposed project.

As shown in Table 3, operational emissions would not exceed the BAAQMD significance thresholds. This would be considered a *less-than-significant* impact.

Table 3. Operational Emissions

Scenario	ROG	NO _x	PM ₁₀	PM _{2.5}
2022 Project Operational Emissions (tons/year)	0.8 tons	1.5 tons	1.5 tons	0.4 tons
2022 Existing Use Emissions (tons/year)	0.1 tons	0.4 tons	0.4 tons	0.1 tons
Net Annual Emissions (tons/year)	0.7 tons	1.1 tons	1.1 tons	0.3 tons
BAAQMD Thresholds (tons/year)	10 tons	10 tons	15 tons	10 tons
Exceed Threshold?	No	No	No	No
2022 Project Operational Emissions (lbs/day) ¹	3.8 lbs.	5.9 lbs.	6.0 lbs.	1.7 lbs.
BAAQMD Thresholds (pounds/day)	54 lbs.	54 lbs.	82 lbs.	54 lbs.
Exceed Threshold?	No	No	No	No

Notes: ¹ Assumes 365-day operation.

Mitigation Measure AQ-1: Include measures to control dust and exhaust during construction.

During any construction period ground disturbance, the applicant shall ensure that the project contractor implement measures to control dust and exhaust. Implementation of the measures recommended by BAAQMD and listed below would reduce the air quality impacts associated with grading and new construction to a less-than-significant level. Additional measures are identified to reduce construction equipment exhaust emissions. The contractor shall implement the following best management practices that are required of all projects:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
4. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).

5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Effectiveness of Mitigation Measure AQ-1

The measures above are consistent with BAAQMD-recommended basic control measures for reducing fugitive particulate matter that are contained in the BAAQMD CEQA Air Quality Guidelines.

Impact: Expose sensitive receptors to substantial pollutant concentrations?

Project impacts related to increased community risk can occur either by introducing a new source of TAC and air pollutant emissions or introducing new sensitive receptor, such as a residential use, in proximity to an existing source of TACs. The project would not introduce new residents that are sensitive receptors. Operation of the project is not expected to be a source of TAC or localized air pollutant emissions, as the project would not generate substantial truck traffic or include stationary sources of emissions, such as generators powered by diesel engines. Temporary project construction activity would generate dust and equipment exhaust on a temporary basis that could affect nearby sensitive receptors. A construction health risk assessment was prepared to address the impacts the project would have on surrounding sensitive receptors.

Community risk impacts are addressed by predicting increased lifetime cancer risk, the increase in annual PM_{2.5} concentrations and computing the Hazard Index (HI) for non-cancer health risks. The methodology for computing community risks impacts is contained in *Attachment 1*.

Construction Community Health Risk Impacts

Construction equipment and associated heavy-duty truck traffic generates diesel exhaust, which is a known TAC. These exhaust air pollutant emissions would not be considered to contribute substantially to existing or projected air quality violations. Construction exhaust emissions may

still pose health risks for sensitive receptors such as surrounding residents. The primary community risk impact issues associated with construction emissions are cancer risk and exposure to PM_{2.5}. Diesel exhaust poses both a potential health and nuisance impact to nearby receptors. A health risk assessment of the project construction activities was conducted that evaluated potential health effects to nearby sensitive receptors from construction emissions of DPM and PM_{2.5}.⁸ This assessment included dispersion modeling to predict the offsite and onsite concentrations resulting from project construction, so that lifetime cancer risks and non-cancer health effects could be evaluated.

Construction Emissions

The CalEEMod model provided total annual PM₁₀ exhaust emissions (assumed to be DPM) for the off-road construction equipment and for exhaust emissions from on-road vehicles, with total emissions from all construction stages as 0.3166 tons (633 pounds). The on-road emissions are a result of haul truck travel during demolition and grading activities, worker travel, and vendor deliveries during construction. A trip length of two miles was used to represent vehicle travel while at or near the construction site. It was assumed that these emissions from on-road vehicles traveling at or near the site would occur at the construction site. Fugitive PM_{2.5} dust emissions were calculated by CalEEMod as 0.1311 tons (262 pounds) for the overall construction period.

Dispersion Modeling

The U.S. EPA AERMOD dispersion model was used to predict concentrations of DPM and PM_{2.5} concentrations at existing sensitive receptors in the vicinity of the project construction area. The AERMOD dispersion model is a BAAQMD-recommended model for use in modeling these types of emission activities for CEQA projects.⁹ Emission sources for the construction site were grouped into two categories, exhaust emissions of DPM and fugitive PM_{2.5} dust emissions. The AERMOD modeling utilized four area sources to represent the on-site construction emissions, two area sources for DPM exhaust emissions and two area sources for fugitive PM_{2.5} dust emissions. For the exhaust emissions from construction equipment, an emission release height of 6 meters (20 feet) was used for the area sources. The elevated source height reflects the height of the equipment exhaust pipes plus an additional distance for the height of the exhaust plume above the exhaust pipes to account for plume rise of the exhaust gases. For modeling fugitive PM_{2.5} emissions, a near-ground level release height of 2 meters (6.6 feet) was used for the area sources. Emissions from vehicle travel around the project site were included in the modeled area sources. Construction emissions were modeled as occurring daily between 7 a.m. and 4 p.m., when most of the construction activity involving equipment usage would occur.

The modeling used a five-year data set (2013-2017) of hourly meteorological data from the San Francisco International Airport meteorological site that was prepared for use with the AERMOD model by BAAQMD.¹⁰ Annual DPM and PM_{2.5} concentrations from construction activities during the 2020-2021 period were calculated using the model. DPM and PM_{2.5} concentrations were

⁸ DPM is identified by California as a toxic air contaminant due to the potential to cause cancer.

⁹ Bay Area Air Quality Management District (BAAQMD), 2012. *Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 3.0*. May.

¹⁰ Correspondence with James Cordova, BAAQMD, June 20, 2019.

calculated at nearby sensitive receptors. Receptor heights of 1.5 meters (4.9 feet) and 4.5 meters (14.7 feet) were used to represent the breathing height on the first and second levels of nearby single- and multi-family residences.

The maximum-modeled annual DPM and PM_{2.5} concentrations, which includes both the DPM and fugitive PM_{2.5} concentrations, were identified at nearby sensitive receptors (as shown in Figure 1) to find the maximally exposed individuals (MEIs). Using the maximum annual modeled DPM concentrations, the maximum increased cancer risks were calculated using BAAQMD recommended methods and exposure parameters described in *Attachment 1*. Non-cancer health hazards and maximum PM_{2.5} concentrations were also calculated and identified.

Results of this assessment indicated that the residential and construction MEI was located on the first floor (1.5 meters) of a multi-family apartment building to the south of the project site opposite U.S. 101. The maximum excess residential cancer risk for infant exposure, the annual maximum PM_{2.5} concentration, and the health HI at this location would not exceed the BAAQMD single-source thresholds of 10 in one million for cancer risk, 0.3 µg/m³ for PM_{2.5} concentration, and 1.0 for HI. Table 4 summarizes the maximum cancer risks, PM_{2.5} concentrations, and health hazard indexes for project related construction activities affecting the construction MEI. *Attachment 3* to this report includes the emission calculations used for the construction area source modeling and the cancer risk calculations.

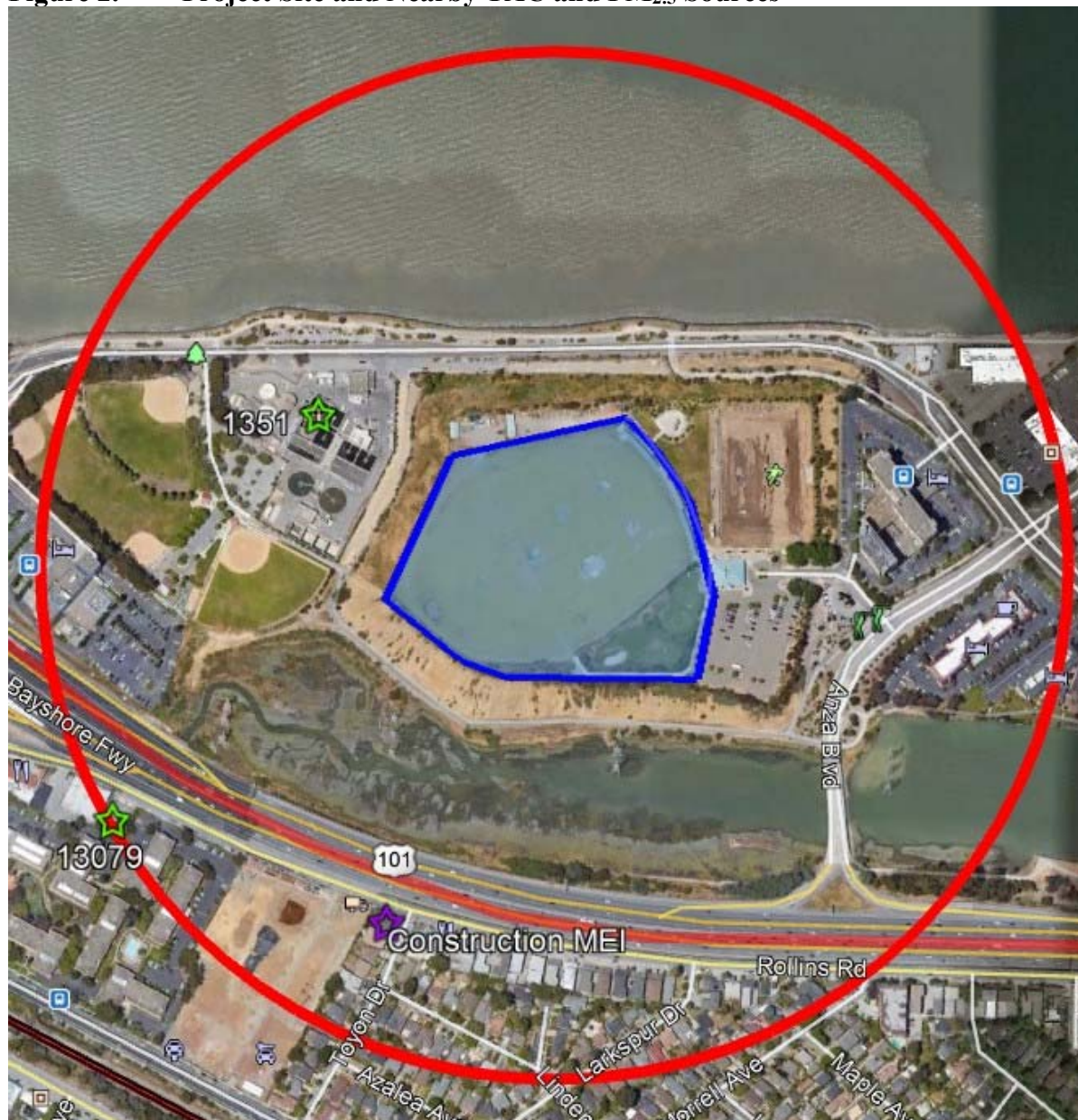
Figure 1. Project Construction Site and Locations of Off-Site Sensitive Receptors and TAC Impacts



Cumulative Impact on Construction MEI

Community health risk assessments typically look at all substantial sources of TACs located within 1,000 feet of project site and at new TAC sources that would be introduced by the project. These sources include highways, railways, busy surface streets, and stationary sources identified by BAAQMD. A review of the project area indicates that traffic on U.S. 101 has average daily traffic (ADT) volumes over 10,000 vehicles, which are sources of TACs. All other roadways within the area are assumed to have an ADT less than 10,000 vehicles. Two stationary sources were identified within the 1,000-foot influence area using the BAAQMD's stationary source website map and Google Earth map. This project would not introduce any new TAC sources, such as substantial truck traffic or generators powered by diesel engines. Figure 2 shows the sources affecting the project site and nearby cumulative sources affecting the construction MEI. Community risk impacts from these sources upon the construction MEI are reported in Table 4. Details of the screening, modeling, and community risk calculations are included in *Attachment 4*.

Figure 2. Project Site and Nearby TAC and PM_{2.5} Sources



Highways – U.S. 101

BAAQMD provides a *Highway Screening Analysis Google Earth Map* tool to identify estimated risk and hazard impacts from highways throughout the Bay Area. Cumulative risk, hazard, and PM_{2.5} impacts at various distances from the highway are estimated for different segments of the highways. The tool uses the average annual daily traffic (AADT) count, fleet mix, and other modeling parameters specific to that segment of the highway. The lifetime cancer risk, annual PM_{2.5} exposure, and non-cancer HI impacts from Link 131 (6ft elevation) for U.S. 101, in which the construction MEI was approximately 75 feet south of U.S. 101, were identified using this tool. Cancer risk levels were adjusted for exposure duration, age, and new exposure guidance provided by OEHHA, as described in *Attachment 1*. Risk impacts from U.S. 101 are discussed in Table 4.

Stationary Sources

Permitted stationary sources of air pollution near the project site were identified using BAAQMD's *Stationary Source Risk & Hazard Analysis Tool*. This mapping tool uses Google Earth and identifies the location of nearby stationary sources and their estimated risk and hazard impacts. In addition, BAAQMD's *Permitted Stationary Sources 2017* GIS website¹¹ was used to locate updated nearby permitted stationary sources. A Stationary Source Information Form (SSIF) containing the identified sources was prepared and submitted to BAAQMD. They provided updated emissions data.¹² Those data were input into BAAQMD's *Risk and Hazards Emissions Screening Calculator* which computes the cancer risk, annual PM_{2.5} concentrations, and HI using adjustments to account for new OEHHA guidance and distance from the sources.

Two stationary sources were identified; Plant #1351 has multiple sources and Plant #13079 has diesel-powered generators. The screening risk levels for these stationary sources were provided by BAAQMD. Concentrations and community risk impacts from these sources upon the construction MEI are reported in Table 4.

Cumulative Community Health Risk at Construction MEI

Cumulative TAC impacts are assessed by predicting the combined community risk impacts to the project and nearby sources. Table 4 reports both the project and cumulative community risk impacts. The project would not have a significant impact with respect to community risk caused by project construction activities, since the cancer risk, PM_{2.5} concentration, and HI do not exceed the single-source thresholds. However, as shown in Table 4, the combined unmitigated cancer risk would exceed the cumulative threshold of 100 in a million. This is considered a *significant* impact. The cumulative PM_{2.5} concentrations and hazard risk values would not exceed the cumulative thresholds. *Mitigation Measures AQ-2 would reduce this impact to a level of less-than-significant.*

¹¹ BAAQMD, <https://baaqmd.maps.arcgis.com/apps/webappviewer/index.html?id=2387ae674013413f987b1071715daa65>

¹² Correspondence with Areana Flores, BAAQMD, November 21, 2018.

Table 4. Impacts from Combined Sources at Construction MEI

Source		Cancer Risk (per million)	Annual PM _{2.5} (µg/m ³)	Hazard Index
Project Construction	Unmitigated	6.2 (infant)	0.04	0.01
	Mitigated	1.5 (infant)	0.01	<0.01
BAAQMD Single-Source Threshold		>10.0	>0.3	>1.0
Significant?	Unmitigated	No	No	No
	Mitigated	No	No	No
U.S. 101 (Link 131, 6ft) at 75 feet south		94.1	0.64	0.07
Plant #1351 (Multiple) at 1,000 feet		3.5	<0.01	0.02
Plant #13079 (Generators) at 850 feet		<0.1	<0.01	<0.01
Cumulative Total	Unmitigated	<103.9	<0.70	<0.11
	Mitigated	<99.2	<0.67	<0.11
BAAQMD Cumulative Source Threshold		>100	>0.8	>10.0
Significant?	Unmitigated	Yes	No	No
	Mitigated	No	No	No

Mitigation Measure AQ-2: Selection of equipment during construction to minimize emissions. Such equipment selection would include the following:

The project shall develop a plan demonstrating that the off-road equipment used on-site to construct the project would achieve a fleet-wide average 70 percent reduction in particulate matter exhaust emissions or greater. One feasible plan to achieve this reduction would include the following:

- All diesel-powered off-road equipment, larger than 25 horsepower, operating on the site for more than two days continuously shall, at a minimum, meet U.S. EPA particulate matter emissions standards for Tier 4 Interim engines or equivalent. When Tier 4 Interim engines are not available, it would be acceptable to use Tier 3 engines with CARB-certified Level 3 Diesel Particulate Filters¹³. Alternatively, the use of equipment that includes electric or alternatively-fueled equipment (i.e., non-diesel) would meet this requirement.

Effectiveness of Mitigation Measure AQ-2

Implementation of *Mitigation Measure AQ-1* is considered to reduce exhaust emissions by 5 percent and fugitive dust emissions by over 50 percent. Implementation of *Mitigation Measure AQ-2* using construction equipment meeting Tier 4 Interim engine standards would further reduce on-site diesel exhaust emissions from construction equipment by over 75 percent. This would reduce the cumulative cancer risk, such that the mitigated infant cancer risk from the project at the construction MEI would be 1.5 in one million and the cumulative cancer risk would be 99.2 in one million, which would not exceed the BAAQMD cumulative significance threshold for increased lifetime cancer risk. After implementation of these mitigation measures, the project would have a *less-than-significant* impact with respect to community risk caused by construction activities.

¹³ See <http://www.arb.ca.gov/diesel/verdev/vt/cvt.htm>

Supporting Documentation

Attachment 1 is the methodology used to compute community risk impacts, including the methods to compute lifetime cancer risk from exposure to project emissions.

Attachment 2 includes the CalEEMod output for project construction and operational criteria air pollutant. The operational outputs for existing uses are also included in this attachment. Also included are any modeling assumptions.

Attachment 3 is the construction health risk assessment. AERMOD dispersion modeling files for this assessment, which are quite voluminous, are available upon request and would be provided in digital format

Attachment 4 includes the screening community risk calculations from sources affecting the construction MEI.

Attachment 1: Health Risk Calculation Methodology

A health risk assessment (HRA) for exposure to Toxic Air Contaminates (TACs) requires the application of a risk characterization model to the results from the air dispersion model to estimate potential health risk at each sensitive receptor location. The State of California Office of Environmental Health Hazard Assessment (OEHHA) and California Air Resources Board (CARB) develop recommended methods for conducting health risk assessments. The most recent OEHHA risk assessment guidelines were published in February of 2015.¹⁴ These guidelines incorporate substantial changes designed to provide for enhanced protection of children, as required by State law, compared to previous published risk assessment guidelines. CARB has provided additional guidance on implementing OEHHA's recommended methods.¹⁵ This HRA used the 2015 OEHHA risk assessment guidelines and CARB guidance. The BAAQMD has adopted recommended procedures for applying the newest OEHHA guidelines as part of Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants.¹⁶ Exposure parameters from the OEHHA guidelines and the recent BAAQMD HRA Guidelines were used in this evaluation.

Cancer Risk

Potential increased cancer risk from inhalation of TACs are calculated based on the TAC concentration over the period of exposure, inhalation dose, the TAC cancer potency factor, and an age sensitivity factor to reflect the greater sensitivity of infants and children to cancer causing TACs. The inhalation dose depends on a person's breathing rate, exposure time and frequency and duration of exposure. These parameters vary depending on the age, or age range, of the persons being exposed and whether the exposure is considered to occur at a residential location or other sensitive receptor location.

The current OEHHA guidance recommends that cancer risk be calculated by age groups to account for different breathing rates and sensitivity to TACs. Specifically, they recommend evaluating risks for the third trimester of pregnancy to age zero, ages zero to less than two (infant exposure), ages two to less than 16 (child exposure), and ages 16 to 70 (adult exposure). Age sensitivity factors (ASFs) associated with the different types of exposure are an ASF of 10 for the third trimester and infant exposures, an ASF of 3 for a child exposure, and an ASF of 1 for an adult exposure. Also associated with each exposure type are different breathing rates, expressed as liters per kilogram of body weight per day (L/kg-day). As recommended by the BAAQMD for residential exposures, 95th percentile breathing rates are used for the third trimester and infant exposures, and 80th percentile breathing rates for child and adult exposures. For children at schools and daycare facilities, BAAQMD recommends using the 95th percentile breathing rates. Additionally, CARB and the BAAQMD recommend the use of a residential exposure duration of

¹⁴ OEHHA, 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. Office of Environmental Health Hazard Assessment. February.

¹⁵ CARB, 2015. *Risk Management Guidance for Stationary Sources of Air Toxics*. July 23.

¹⁶ BAAQMD, 2016. *BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines*. December 2016.

30 years for sources with long-term emissions (e.g., roadways). For workers, assumed to be adults, a 25-year exposure period is recommended by the BAAQMD.

Under previous OEHHA and BAAQMD HRA guidance, residential receptors are assumed to be at their home 24 hours a day, or 100 percent of the time. In the 2015 Risk Assessment Guidance, OEHHA includes adjustments to exposure duration to account for the fraction of time at home (FAH), which can be less than 100 percent of the time, based on updated population and activity statistics. The FAH factors are age-specific and are: 0.85 for third trimester of pregnancy to less than 2 years old, 0.72 for ages 2 to less than 16 years, and 0.73 for ages 16 to 70 years. Use of the FAH factors is allowed by the BAAQMD if there are no schools in the project vicinity that would have a cancer risk of one in a million or greater assuming 100 percent exposure (FAH = 1.0).

Functionally, cancer risk is calculated using the following parameters and formulas:

$$\text{Cancer Risk (per million)} = CPF \times \text{Inhalation Dose} \times ASF \times ED/AT \times FAH \times 10^6$$

Where:

CPF = Cancer potency factor (mg/kg-day)⁻¹

ASF = Age sensitivity factor for specified age group

ED = Exposure duration (years)

AT = Averaging time for lifetime cancer risk (years)

FAH = Fraction of time spent at home (unitless)

$$\text{Inhalation Dose} = C_{\text{air}} \times DBR \times A \times (EF/365) \times 10^{-6}$$

Where:

C_{air} = concentration in air (µg/m³)

DBR = daily breathing rate (L/kg body weight-day)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10⁻⁶ = Conversion factor

The health risk parameters used in this evaluation are summarized as follows:

Parameter	Exposure Type →	Infant		Child		Adult
	Age Range →	3 rd Trimester	0<2	2 < 9	2 < 16	16 - 30
DPM Cancer Potency Factor (mg/kg-day) ⁻¹		1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
Daily Breathing Rate (L/kg-day) 80 th Percentile Rate		273	758	631	572	261
Daily Breathing Rate (L/kg-day) 95 th Percentile Rate		361	1,090	861	745	335
Inhalation Absorption Factor		1	1	1	1	1
Averaging Time (years)		70	70	70	70	70
Exposure Duration (years)		0.25	2	14	14	14
Exposure Frequency (days/year)		350	350	350	350	350
Age Sensitivity Factor		10	10	3	3	1
Fraction of Time at Home		0.85-1.0	0.85-1.0	0.72-1.0	0.72-1.0	0.73

Non-Cancer Hazards

Potential non-cancer health hazards from TAC exposure are expressed in terms of a hazard index (HI), which is the ratio of the TAC concentration to a reference exposure level (REL). OEHHA has defined acceptable concentration levels for contaminants that pose non-cancer health hazards. TAC concentrations below the REL are not expected to cause adverse health impacts, even for sensitive individuals. The total HI is calculated as the sum of the HIs for each TAC evaluated and the total HI is compared to the BAAQMD significance thresholds to determine whether a significant non-cancer health impact from a project would occur.

Typically, for residential projects located near roadways with substantial TAC emissions, the primary TAC of concern with non-cancer health effects is diesel particulate matter (DPM). For DPM, the chronic inhalation REL is 5 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).

Annual PM_{2.5} Concentrations

While not a TAC, fine particulate matter (PM_{2.5}) has been identified by the BAAQMD as a pollutant with potential non-cancer health effects that should be included when evaluating potential community health impacts under the California Environmental Quality Act (CEQA). The thresholds of significance for PM_{2.5} (project level and cumulative) are in terms of an increase in the annual average concentration. When considering PM_{2.5} impacts, the contribution from all sources of PM_{2.5} emissions should be included. For projects with potential impacts from nearby local roadways, the PM_{2.5} impacts should include those from vehicle exhaust emissions, PM_{2.5} generated from vehicle tire and brake wear, and fugitive emissions from re-suspended dust on the roads.

Attachment 2: CalEEMod Modeling Output

Casey Divine

From: Tali Ashurov <TAshurov@davidjpowers.com>
Sent: Monday, July 1, 2019 1:39 PM
To: James Reyff
Cc: Will Burns
Subject: Topgolf AQ Assumptions

Hi James,

Topgolf commented on the AQ assumptions and added a few things in red. Let me know if you have any other questions!

		DJP	ARCO
Phase Name	Offroad Equipment Type	Amount	Amount
Site Preparation	Rubber Tired Dozers	3	3
Site Preparation	Tractors/Loaders/Backhoes	4	4
Grading	Excavators	2	2
Grading	Graders	1	3
Grading	Rubber Tired Dozers	1	1
Grading	Tractors/Loaders/Backhoes	2	2
Grading	Rollers		3
Grading	Water Trucks		2
Grading	Scrapers	2	3
Building Construction	Cranes	1	1
Architectural	Air Compressors	1	1
Building Construction	Forklifts	3	5
Building Construction	Diesel Boom Lifts		6
Building Construction	Generator Sets	1	1
Paving	Pavers	2	2
Paving	Paving Equipment	2	2
Paving	Rollers	2	2
Building Construction	Tractors/Loaders/Backhoes	3	3
Building Construction	Welders	1	4
Trenching	Excavators	1	2
Trenching	Tractors/Loaders/Backhoes	1	1

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tashurov@davidjpowers.com

Quality Environmental Review Makes a Difference

We've moved! Please note our new address.

Top Golf facility in Burlingame - San Mateo County, Annual

Top Golf facility in Burlingame San Mateo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	475.00	Space	3.50	190,000.00	0
Golf Course	8.20	Acre	8.20	357,192.00	0
Racquet Club	71.07	1000sqft	1.00	71,074.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	70
Climate Zone	5			Operational Year	2022

Utility Company

CO2 Intensity (lb/MW hr)	142.26	CH4 Intensity (lb/MW hr)	0	N2O Intensity (lb/MW hr)	0
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1.3 User Entered Comments & Non-Default Data

Project Characteristics - Peninsula Clean Energy - Per email from Michael Totah 4/12/2019

Land Use - golf course acreage from plans. Total = 12.7 acres

Construction Phase - added trenching

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - added trenching equipment per 7/1 email

Trips and VMT - 2 water trucks during grading - added as vendor

Grading - Import 7025 cubic yards.

Vehicle Trips - trips assinged to golf course 2160/8.2 acres = 263.41,304.22,307.37

Water And Wastewater - wtp only

Construction Off-road Equipment Mitigation - BMPs and Tier 4

Off-road Equipment - added equipment per 7/1 email

Off-road Equipment - added equipment per 7/1 email

Off-road Equipment -

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim

tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblGrading	MaterialImported	0.00	7,025.00
tblLandUse	LandUseSquareFeet	71,070.00	71,074.00
tblLandUse	LotAcreage	4.27	3.50
tblLandUse	LotAcreage	1.63	1.00
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.31	0.31
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblProjectCharacteristics	CO2IntensityFactor	0	142.26
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblVehicleTrips	ST_TR	5.82	304.22
tblVehicleTrips	ST_TR	21.35	0.00
tblVehicleTrips	SU_TR	5.88	307.37
tblVehicleTrips	SU_TR	17.40	0.00
tblVehicleTrips	WD_TR	5.04	263.41
tblVehicleTrips	WD_TR	14.03	0.00
tblWater	AerobicPercent	87.46	100.00

tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPerce nt	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPerce nt	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPerce nt	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	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					
2020	0.6690	6.3685	5.5356	0.0126	0.5662	0.2588	0.8251	0.1923	0.2432	0.4355	0.0000	1,135.2281	1,135.2281	0.1990	0.0000	1,140.2035
2021	0.5981	1.6607	1.7282	3.9000e-003	0.1108	0.0644	0.1752	0.0301	0.0608	0.0909	0.0000	351.1594	351.1594	0.0560	0.0000	352.5582
Maximum	0.6690	6.3685	5.5356	0.0126	0.5662	0.2588	0.8251	0.1923	0.2432	0.4355	0.0000	1,135.2281	1,135.2281	0.1990	0.0000	1,140.2035

Mitigated Construction

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

2020	0.2675	4.6181	5.8330	0.0126	0.4273	0.0624	0.4897	0.1334	0.0620	0.1954	0.0000	1,135.2274	1,135.2274	0.1990	0.0000	1,140.2028
2021	0.4971	1.4310	1.8209	3.9000e-003	0.1108	0.0198	0.1306	0.0301	0.0197	0.0498	0.0000	351.1592	351.1592	0.0560	0.0000	352.5579
Maximum	0.4971	4.6181	5.8330	0.0126	0.4273	0.0624	0.4897	0.1334	0.0620	0.1954	0.0000	1,135.2274	1,135.2274	0.1990	0.0000	1,140.2028

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	39.66	24.66	-5.37	0.00	20.52	74.56	37.99	26.49	73.12	53.42	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2020	3-31-2020	2.3818	1.2301
2	4-1-2020	6-30-2020	1.5295	1.1995
3	7-1-2020	9-30-2020	1.5463	1.2126
4	10-1-2020	12-31-2020	1.5588	1.2252
5	1-1-2021	3-31-2021	1.3903	1.1543
6	4-1-2021	6-30-2021	0.8833	0.7866
		Highest	2.3818	1.2301

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	0.3347	5.0000e-005	5.1000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.9000e-003	9.9000e-003	3.0000e-005	0.0000	0.0106
Energy	9.4900e-003	0.0862	0.0724	5.2000e-004		6.5500e-003	6.5500e-003		6.5500e-003	6.5500e-003	0.0000	132.8346	132.8346	1.8000e-003	1.7200e-003	133.3924
Mobile	0.4797	1.3861	4.9740	0.0163	1.5139	0.0140	1.5279	0.4068	0.0131	0.4199	0.0000	1,488.7243	1,488.7243	0.0554	0.0000	1,490.1095
Waste						0.0000	0.0000		0.0000	0.0000	83.7805	0.0000	83.7805	4.9513	0.0000	207.5625
Water						0.0000	0.0000		0.0000	0.0000	1.4871	4.2560	5.7432	5.1200e-003	3.2300e-003	6.8349

Total	0.8239	1.4723	5.0516	0.0168	1.5139	0.0206	1.5344	0.4068	0.0197	0.4265	85.2676	1,625.8248	1,711.0924	5.0136	4.9500e-003	1,837.9099
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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	0.3347	5.0000e-005	5.1000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.9000e-003	9.9000e-003	3.0000e-005	0.0000	0.0106
Energy	9.4900e-003	0.0862	0.0724	5.2000e-004		6.5500e-003	6.5500e-003		6.5500e-003	6.5500e-003	0.0000	132.8346	132.8346	1.8000e-003	1.7200e-003	133.3924
Mobile	0.4797	1.3861	4.9740	0.0163	1.5139	0.0140	1.5279	0.4068	0.0131	0.4199	0.0000	1,488.7243	1,488.7243	0.0554	0.0000	1,490.1095
Waste						0.0000	0.0000		0.0000	0.0000	83.7805	0.0000	83.7805	4.9513	0.0000	207.5625
Water						0.0000	0.0000		0.0000	0.0000	1.1897	3.7924	4.9821	4.0900e-003	2.5900e-003	5.8555
Total	0.8239	1.4723	5.0516	0.0168	1.5139	0.0206	1.5344	0.4068	0.0197	0.4265	84.9702	1,625.3612	1,710.3313	5.0126	4.3100e-003	1,836.9305

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.03	0.04	0.02	12.93	0.05

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	1/1/2020	1/14/2020	5	10	
2	Grading	Grading	1/15/2020	2/25/2020	5	30	
3	Trenching	Trenching	1/15/2020	2/25/2020	5	30	
4	Building Construction	Building Construction	2/26/2020	4/20/2021	5	300	

5	Paving	Paving	4/21/2021	5/18/2021	5	20
6	architectual	Architectural Coating	4/21/2021	5/18/2021	5	20

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 135

Acres of Paving: 3.5

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 106,611; Non-Residential Outdoor: 35,537; Striped Parking Area:

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	3	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	3	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
trenching	Excavators	2	6.00	158	0.38
trenching	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	5	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	4	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
architectual	Air Compressors	1	6.00	78	0.48
Grading	Rollers	3	8.00	80	0.38
Building Construction	Aerial Lifts	6	8.00	63	0.31

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	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	14	35.00	2.00	878.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
trenching	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	20	260.00	101.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
architectual	1	52.00	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

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0204	0.2121	0.1076	1.9000e-004		0.0110	0.0110		0.0101	0.0101	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505
Total	0.0204	0.2121	0.1076	1.9000e-004	0.0903	0.0110	0.1013	0.0497	0.0101	0.0598	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505

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	2.5000e-004	1.7000e-004	1.7500e-003	1.0000e-005	7.1000e-004	0.0000	7.1000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.5900	0.5900	1.0000e-005	0.0000	0.5903
Total	2.5000e-004	1.7000e-004	1.7500e-003	1.0000e-005	7.1000e-004	0.0000	7.1000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.5900	0.5900	1.0000e-005	0.0000	0.5903

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					0.0407	0.0000	0.0407	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.4800e-003	0.0608	0.1148	1.9000e-004		3.1000e-004	3.1000e-004		3.1000e-004	3.1000e-004	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505
Total	3.4800e-003	0.0608	0.1148	1.9000e-004	0.0407	3.1000e-004	0.0410	0.0223	3.1000e-004	0.0227	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505

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	2.5000e-004	1.7000e-004	1.7500e-003	1.0000e-005	7.1000e-004	0.0000	7.1000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.5900	0.5900	1.0000e-005	0.0000	0.5903
Total	2.5000e-004	1.7000e-004	1.7500e-003	1.0000e-005	7.1000e-004	0.0000	7.1000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.5900	0.5900	1.0000e-005	0.0000	0.5903

3.3 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1623	0.0000	0.1623	0.0574	0.0000	0.0574	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1052	1.2115	0.7298	1.4700e-003		0.0515	0.0515		0.0473	0.0473	0.0000	129.4220	129.4220	0.0419	0.0000	130.4685
Total	0.1052	1.2115	0.7298	1.4700e-003	0.1623	0.0515	0.2138	0.0574	0.0473	0.1048	0.0000	129.4220	129.4220	0.0419	0.0000	130.4685

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.8900e-003	0.1417	0.0591	3.6000e-004	7.3400e-003	4.4000e-004	7.7800e-003	2.0200e-003	4.2000e-004	2.4400e-003	0.0000	36.6703	36.6703	4.5800e-003	0.0000	36.7847
Vendor	1.2000e-004	3.4800e-003	1.3800e-003	1.0000e-005	2.0000e-004	2.0000e-005	2.1000e-004	6.0000e-005	2.0000e-005	7.0000e-005	0.0000	0.7950	0.7950	7.0000e-005	0.0000	0.7967
Worker	1.4300e-003	9.7000e-004	0.0102	4.0000e-005	4.1300e-003	3.0000e-005	4.1600e-003	1.1000e-003	2.0000e-005	1.1200e-003	0.0000	3.4415	3.4415	7.0000e-005	0.0000	3.4432

Total	5.4400e-003	0.1461	0.0707	4.1000e-004	0.0117	4.9000e-004	0.0122	3.1800e-003	4.6000e-004	3.6300e-003	0.0000	40.9068	40.9068	4.7200e-003	0.0000	41.0246
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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					0.0730	0.0000	0.0730	0.0259	0.0000	0.0259	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0248	0.4525	0.8656	1.4700e-003		2.4100e-003	2.4100e-003		2.4100e-003	2.4100e-003	0.0000	129.4219	129.4219	0.0419	0.0000	130.4683
Total	0.0248	0.4525	0.8656	1.4700e-003	0.0730	2.4100e-003	0.0755	0.0259	2.4100e-003	0.0283	0.0000	129.4219	129.4219	0.0419	0.0000	130.4683

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.8900e-003	0.1417	0.0591	3.6000e-004	7.3400e-003	4.4000e-004	7.7800e-003	2.0200e-003	4.2000e-004	2.4400e-003	0.0000	36.6703	36.6703	4.5800e-003	0.0000	36.7847
Vendor	1.2000e-004	3.4800e-003	1.3800e-003	1.0000e-005	2.0000e-004	2.0000e-005	2.1000e-004	6.0000e-005	2.0000e-005	7.0000e-005	0.0000	0.7950	0.7950	7.0000e-005	0.0000	0.7967
Worker	1.4300e-003	9.7000e-004	0.0102	4.0000e-005	4.1300e-003	3.0000e-005	4.1600e-003	1.1000e-003	2.0000e-005	1.1200e-003	0.0000	3.4415	3.4415	7.0000e-005	0.0000	3.4432
Total	5.4400e-003	0.1461	0.0707	4.1000e-004	0.0117	4.9000e-004	0.0122	3.1800e-003	4.6000e-004	3.6300e-003	0.0000	40.9068	40.9068	4.7200e-003	0.0000	41.0246

3.4 trenching - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.8700e-003	0.0780	0.0992	1.5000e-004		4.1300e-003	4.1300e-003		3.8000e-003	3.8000e-003	0.0000	13.2778	13.2778	4.2900e-003	0.0000	13.3852
Total	7.8700e-003	0.0780	0.0992	1.5000e-004		4.1300e-003	4.1300e-003		3.8000e-003	3.8000e-003	0.0000	13.2778	13.2778	4.2900e-003	0.0000	13.3852

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	3.3000e-004	2.2000e-004	2.3400e-003	1.0000e-005	9.4000e-004	1.0000e-005	9.5000e-004	2.5000e-004	1.0000e-005	2.6000e-004	0.0000	0.7866	0.7866	2.0000e-005	0.0000	0.7870
Total	3.3000e-004	2.2000e-004	2.3400e-003	1.0000e-005	9.4000e-004	1.0000e-005	9.5000e-004	2.5000e-004	1.0000e-005	2.6000e-004	0.0000	0.7866	0.7866	2.0000e-005	0.0000	0.7870

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	2.2100e-003	0.0665	0.1145	1.5000e-004		2.5000e-004	2.5000e-004		2.5000e-004	2.5000e-004	0.0000	13.2778	13.2778	4.2900e-003	0.0000	13.3852
Total	2.2100e-003	0.0665	0.1145	1.5000e-004		2.5000e-004	2.5000e-004		2.5000e-004	2.5000e-004	0.0000	13.2778	13.2778	4.2900e-003	0.0000	13.3852

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	3.3000e-004	2.2000e-004	2.3400e-003	1.0000e-005	9.4000e-004	1.0000e-005	9.5000e-004	2.5000e-004	1.0000e-005	2.6000e-004	0.0000	0.7866	0.7866	2.0000e-005	0.0000	0.7870
Total	3.3000e-004	2.2000e-004	2.3400e-003	1.0000e-005	9.4000e-004	1.0000e-005	9.5000e-004	2.5000e-004	1.0000e-005	2.6000e-004	0.0000	0.7866	0.7866	2.0000e-005	0.0000	0.7870

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4074	3.3671	3.4452	5.2900e-003		0.1839	0.1839		0.1740	0.1740	0.0000	447.2592	447.2592	0.1132	0.0000	450.0897
Total	0.4074	3.3671	3.4452	5.2900e-003		0.1839	0.1839		0.1740	0.1740	0.0000	447.2592	447.2592	0.1132	0.0000	450.0897

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	0.0435	1.3000	0.5175	2.9800e-003	0.0731	6.4800e-003	0.0796	0.0211	6.2000e-003	0.0273	0.0000	297.0846	297.0846	0.0258	0.0000	297.7299
Worker	0.0787	0.0533	0.5616	2.0900e-003	0.2272	1.4300e-003	0.2286	0.0605	1.3200e-003	0.0618	0.0000	189.1857	189.1857	3.6900e-003	0.0000	189.2779
Total	0.1222	1.3534	1.0792	5.0700e-003	0.3003	7.9100e-003	0.3082	0.0816	7.5200e-003	0.0891	0.0000	486.2703	486.2703	0.0295	0.0000	487.0078

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	0.1088	2.5385	3.5842	5.2900e-003		0.0511	0.0511		0.0511	0.0511	0.0000	447.2587	447.2587	0.1132	0.0000	450.0891
Total	0.1088	2.5385	3.5842	5.2900e-003		0.0511	0.0511		0.0511	0.0511	0.0000	447.2587	447.2587	0.1132	0.0000	450.0891

Mitigated Construction Off-Site

Vendor	0.0126	0.4102	0.1761	1.0300e-003	0.0257	9.4000e-004	0.0266	7.4300e-003	9.0000e-004	8.3300e-003	0.0000	103.0849	103.0849	8.9100e-003	0.0000	103.3076
Worker	0.0259	0.0168	0.1822	7.1000e-004	0.0798	4.9000e-004	0.0803	0.0212	4.5000e-004	0.0217	0.0000	64.1062	64.1062	1.1600e-003	0.0000	64.1353
Total	0.0384	0.4270	0.3583	1.7400e-003	0.1055	1.4300e-003	0.1069	0.0287	1.3500e-003	0.0300	0.0000	167.1911	167.1911	0.0101	0.0000	167.4429

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	0.0382	0.8919	1.2593	1.8600e-003		0.0179	0.0179		0.0179	0.0179	0.0000	157.1556	157.1556	0.0392	0.0000	158.1343
Total	0.0382	0.8919	1.2593	1.8600e-003		0.0179	0.0179		0.0179	0.0179	0.0000	157.1556	157.1556	0.0392	0.0000	158.1343

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	0.0126	0.4102	0.1761	1.0300e-003	0.0257	9.4000e-004	0.0266	7.4300e-003	9.0000e-004	8.3300e-003	0.0000	103.0849	103.0849	8.9100e-003	0.0000	103.3076
Worker	0.0259	0.0168	0.1822	7.1000e-004	0.0798	4.9000e-004	0.0803	0.0212	4.5000e-004	0.0217	0.0000	64.1062	64.1062	1.1600e-003	0.0000	64.1353
Total	0.0384	0.4270	0.3583	1.7400e-003	0.1055	1.4300e-003	0.1069	0.0287	1.3500e-003	0.0300	0.0000	167.1911	167.1911	0.0101	0.0000	167.4429

3.6 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0126	0.1292	0.1465	2.3000e-004		6.7800e-003	6.7800e-003		6.2400e-003	6.2400e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854
Paving	4.5900e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0172	0.1292	0.1465	2.3000e-004		6.7800e-003	6.7800e-003		6.2400e-003	6.2400e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854

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	3.8000e-004	2.5000e-004	2.7000e-003	1.0000e-005	1.1800e-003	1.0000e-005	1.1900e-003	3.1000e-004	1.0000e-005	3.2000e-004	0.0000	0.9483	0.9483	2.0000e-005	0.0000	0.9488
Total	3.8000e-004	2.5000e-004	2.7000e-003	1.0000e-005	1.1800e-003	1.0000e-005	1.1900e-003	3.1000e-004	1.0000e-005	3.2000e-004	0.0000	0.9483	0.9483	2.0000e-005	0.0000	0.9488

Mitigated Construction On-Site

Off-Road	2.1900e-003	0.0153	0.0182	3.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576
Total	0.4124	0.0153	0.0182	3.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3300e-003	8.6000e-004	9.3400e-003	4.0000e-005	4.0900e-003	2.0000e-005	4.1200e-003	1.0900e-003	2.0000e-005	1.1100e-003	0.0000	3.2875	3.2875	6.0000e-005	0.0000	3.2890
Total	1.3300e-003	8.6000e-004	9.3400e-003	4.0000e-005	4.0900e-003	2.0000e-005	4.1200e-003	1.0900e-003	2.0000e-005	1.1100e-003	0.0000	3.2875	3.2875	6.0000e-005	0.0000	3.2890

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	0.4102					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.4000e-004	0.0106	0.0183	3.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576
Total	0.4108	0.0106	0.0183	3.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3300e-003	8.6000e-004	9.3400e-003	4.0000e-005	4.0900e-003	2.0000e-005	4.1200e-003	1.0900e-003	2.0000e-005	1.1100e-003	0.0000	3.2875	3.2875	6.0000e-005	0.0000	3.2890
Total	1.3300e-003	8.6000e-004	9.3400e-003	4.0000e-005	4.0900e-003	2.0000e-005	4.1200e-003	1.0900e-003	2.0000e-005	1.1100e-003	0.0000	3.2875	3.2875	6.0000e-005	0.0000	3.2890

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	0.4797	1.3861	4.9740	0.0163	1.5139	0.0140	1.5279	0.4068	0.0131	0.4199	0.0000	1,488.7243	1,488.7243	0.0554	0.0000	1,490.1095
Unmitigated	0.4797	1.3861	4.9740	0.0163	1.5139	0.0140	1.5279	0.4068	0.0131	0.4199	0.0000	1,488.7243	1,488.7243	0.0554	0.0000	1,490.1095

4.2 Trip Summary Information

	Average Daily Trip Rate	Unmitigated	Mitigated
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Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Golf Course	2,159.96	2,494.60	2520.43	4,083,123	4,083,123
Parking Lot	0.00	0.00	0.00		
Racquet Club	0.00	0.00	0.00		
Total	2,159.96	2,494.60	2,520.43	4,083,123	4,083,123

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
Golf Course	9.50	7.30	7.30	33.00	48.00	19.00	52	39	9
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Racquet Club	9.50	7.30	7.30	11.50	69.50	19.00	52	39	9

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Golf Course	0.476244	0.050164	0.262181	0.139658	0.017521	0.006864	0.023236	0.006525	0.004137	0.003158	0.009064	0.000471	0.000777
Parking Lot	0.476244	0.050164	0.262181	0.139658	0.017521	0.006864	0.023236	0.006525	0.004137	0.003158	0.009064	0.000471	0.000777
Racquet Club	0.476244	0.050164	0.262181	0.139658	0.017521	0.006864	0.023236	0.006525	0.004137	0.003158	0.009064	0.000471	0.000777

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	38.9633	38.9633	0.0000	0.0000	38.9633

Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	38.9633	38.9633	0.0000	0.0000	38.9633
NaturalGas Mitigated	9.4900e-003	0.0862	0.0724	5.2000e-004		6.5500e-003	6.5500e-003		6.5500e-003	6.5500e-003	0.0000	93.8713	93.8713	1.8000e-003	1.7200e-003	94.4291
NaturalGas Unmitigated	9.4900e-003	0.0862	0.0724	5.2000e-004		6.5500e-003	6.5500e-003		6.5500e-003	6.5500e-003	0.0000	93.8713	93.8713	1.8000e-003	1.7200e-003	94.4291

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					
Golf Course	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
Racquet Club	1.75908e+006	9.4900e-003	0.0862	0.0724	5.2000e-004		6.5500e-003	6.5500e-003		6.5500e-003	6.5500e-003	0.0000	93.8713	93.8713	1.8000e-003	1.7200e-003	94.4291
Total		9.4900e-003	0.0862	0.0724	5.2000e-004		6.5500e-003	6.5500e-003		6.5500e-003	6.5500e-003	0.0000	93.8713	93.8713	1.8000e-003	1.7200e-003	94.4291

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					
Golf Course	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
Racquet Club	1.75908e+006	9.4900e-003	0.0862	0.0724	5.2000e-004		6.5500e-003	6.5500e-003		6.5500e-003	6.5500e-003	0.0000	93.8713	93.8713	1.8000e-003	1.7200e-003	94.4291
Total		9.4900e-003	0.0862	0.0724	5.2000e-004		6.5500e-003	6.5500e-003		6.5500e-003	6.5500e-003	0.0000	93.8713	93.8713	1.8000e-003	1.7200e-003	94.4291

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Golf Course	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	66500	4.2911	0.0000	0.0000	4.2911
Racquet Club	537319	34.6722	0.0000	0.0000	34.6722
Total		38.9633	0.0000	0.0000	38.9633

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Golf Course	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	66500	4.2911	0.0000	0.0000	4.2911
Racquet Club	537319	34.6722	0.0000	0.0000	34.6722
Total		38.9633	0.0000	0.0000	38.9633

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	0.3347	5.0000e-005	5.1000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.9000e-003	9.9000e-003	3.0000e-005	0.0000	0.0106
Unmitigated	0.3347	5.0000e-005	5.1000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.9000e-003	9.9000e-003	3.0000e-005	0.0000	0.0106

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	0.0410					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2932					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.7000e-004	5.0000e-005	5.1000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.9000e-003	9.9000e-003	3.0000e-005	0.0000	0.0106
Total	0.3347	5.0000e-005	5.1000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.9000e-003	9.9000e-003	3.0000e-005	0.0000	0.0106

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
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SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0410					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2932					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.7000e-004	5.0000e-005	5.1000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.9000e-003	9.9000e-003	3.0000e-005	0.0000	0.0106
Total	0.3347	5.0000e-005	5.1000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	9.9000e-003	9.9000e-003	3.0000e-005	0.0000	0.0106

7.0 Water Detail

7.1 Mitigation Measures Water

- Install Low Flow Bathroom Faucet
- Install Low Flow Kitchen Faucet
- Install Low Flow Toilet
- Install Low Flow Shower
- Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	4.9821	4.0900e-003	2.5900e-003	5.8555
Unmitigated	5.7432	5.1200e-003	3.2300e-003	6.8349

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Golf Course	0 / 9.77015	2.2066	0.0000	0.0000	2.2066
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Racquet Club	4.2033 / 2.57622	3.5366	5.1200e-003	3.2300e-003	4.6283
Total		5.7432	5.1200e-003	3.2300e-003	6.8349

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Golf Course	0 / 9.17417	2.0720	0.0000	0.0000	2.0720
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Racquet Club	3.36264 / 2.41907	2.9102	4.0900e-003	2.5900e-003	3.7835
Total		4.9821	4.0900e-003	2.5900e-003	5.8555

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	83.7805	4.9513	0.0000	207.5625
Unmitigated	83.7805	4.9513	0.0000	207.5625

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Golf Course	7.63	1.5488	0.0915	0.0000	3.8371
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Racquet Club	405.1	82.2316	4.8598	0.0000	203.7254
Total		83.7805	4.9513	0.0000	207.5626

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			

Golf Course	7.63	1.5488	0.0915	0.0000	3.8371
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Racquet Club	405.1	82.2316	4.8598	0.0000	203.7254
Total		83.7805	4.9513	0.0000	207.5626

9.0 Operational Offroad

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

Fire Pumps and Emergency Generators

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

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

Equipment Type	Number
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11.0 Vegetation

Existing Burlingame Golf Driving Range - San Mateo County, Annual

Existing Burlingame Golf Driving Range San Mateo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Golf Course	8.00	Acre	8.00	348,480.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	70
Climate Zone	5			Operational Year	2022
Utility Company					
CO2 Intensity (lb/MW hr)	142.26	CH4 Intensity (lb/MW hr)	0	N2O Intensity (lb/MW hr)	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Peninsula Clean Energy

Land Use - approximate size in acreage

Construction Phase - no construction

Vehicle Trips - based on traffic 614/8acres=76.75,88.63,89.54

Water And Wastewater - wtp

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	0.00
tblConstructionPhase	PhaseEndDate	8/6/2019	7/23/2019

tblProjectCharacteristics	CO2IntensityFactor	0	142.26
tblVehicleTrips	ST_TR	5.82	88.63
tblVehicleTrips	SU_TR	5.88	89.54
tblVehicleTrips	WD_TR	5.04	76.75
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

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	3.2800e-003	0.0000	7.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.4000e-004	1.4000e-004	0.0000	0.0000	1.5000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.1364	0.3940	1.4139	4.6200e-003	0.4303	3.9800e-003	0.4343	0.1156	3.7200e-003	0.1194	0.0000	423.1689	423.1689	0.0158	0.0000	423.5626
Waste						0.0000	0.0000		0.0000	0.0000	1.5103	0.0000	1.5103	0.0893	0.0000	3.7416
Water						0.0000	0.0000		0.0000	0.0000	0.0000	2.1528	2.1528	0.0000	0.0000	2.1528
Total	0.1396	0.3940	1.4139	4.6200e-003	0.4303	3.9800e-003	0.4343	0.1156	3.7200e-003	0.1194	1.5103	425.3218	426.8320	0.1050	0.0000	429.4571

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	3.2800e-003	0.0000	7.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.4000e-004	1.4000e-004	0.0000	0.0000	1.5000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.1364	0.3940	1.4139	4.6200e-003	0.4303	3.9800e-003	0.4343	0.1156	3.7200e-003	0.1194	0.0000	423.1689	423.1689	0.0158	0.0000	423.5626
Waste						0.0000	0.0000		0.0000	0.0000	1.5103	0.0000	1.5103	0.0893	0.0000	3.7416
Water						0.0000	0.0000		0.0000	0.0000	0.0000	2.1528	2.1528	0.0000	0.0000	2.1528
Total	0.1396	0.3940	1.4139	4.6200e-003	0.4303	3.9800e-003	0.4343	0.1156	3.7200e-003	0.1194	1.5103	425.3218	426.8320	0.1050	0.0000	429.4571

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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	0.1364	0.3940	1.4139	4.6200e-003	0.4303	3.9800e-003	0.4343	0.1156	3.7200e-003	0.1194	0.0000	423.1689	423.1689	0.0158	0.0000	423.5626
Unmitigated	0.1364	0.3940	1.4139	4.6200e-003	0.4303	3.9800e-003	0.4343	0.1156	3.7200e-003	0.1194	0.0000	423.1689	423.1689	0.0158	0.0000	423.5626

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Golf Course	614.00	709.04	716.32	1,160,625	1,160,625
Total	614.00	709.04	716.32	1,160,625	1,160,625

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
Golf Course	9.50	7.30	7.30	33.00	48.00	19.00	52	39	9

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Golf Course	0.476244	0.050164	0.262181	0.139658	0.017521	0.006864	0.023236	0.006525	0.004137	0.003158	0.009064	0.000471	0.000777

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

[illegible]

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
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5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas s 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					
Golf Course	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated

	NaturalGas s 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					
Golf Course	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			
Golf Course	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Golf Course	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	3.2800e-003	0.0000	7.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.4000e-004	1.4000e-004	0.0000	0.0000	1.5000e-004
Unmitigated	3.2800e-003	0.0000	7.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.4000e-004	1.4000e-004	0.0000	0.0000	1.5000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.2800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	7.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.4000e-004	1.4000e-004	0.0000	0.0000	1.5000e-004
Total	3.2900e-003	0.0000	7.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.4000e-004	1.4000e-004	0.0000	0.0000	1.5000e-004

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	3.2800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	7.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.4000e-004	1.4000e-004	0.0000	0.0000	1.5000e-004
Total	3.2900e-003	0.0000	7.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.4000e-004	1.4000e-004	0.0000	0.0000	1.5000e-004

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	2.1528	0.0000	0.0000	2.1528
Unmitigated	2.1528	0.0000	0.0000	2.1528

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Golf Course	0 / 9.53185	2.1528	0.0000	0.0000	2.1528
Total		2.1528	0.0000	0.0000	2.1528

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Golf Course	0 / 9.53185	2.1528	0.0000	0.0000	2.1528
Total		2.1528	0.0000	0.0000	2.1528

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1.5103	0.0893	0.0000	3.7416
Unmitigated	1.5103	0.0893	0.0000	3.7416

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Golf Course	7.44	1.5103	0.0893	0.0000	3.7416
Total		1.5103	0.0893	0.0000	3.7416

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Golf Course	7.44	1.5103	0.0893	0.0000	3.7416
Total		1.5103	0.0893	0.0000	3.7416

9.0 Operational Offroad

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

Fire Pumps and Emergency Generators

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

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

Equipment Type	Number
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11.0 Vegetation

Top Golf facility in Burlingame - San Mateo County, Annual

Top Golf facility in Burlingame - Construction
San Mateo County, Annual

1.0 Project Characteristics**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	475.00	Space	3.50	190,000.00	0
Golf Course	8.20	Acre	8.20	357,192.00	0
Racquet Club	71.07	1000sqft	1.00	71,074.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	70
Climate Zone	5			Operational Year	2022

Utility Company

CO2 Intensity (lb/MW hr)	142.26	CH4 Intensity (lb/MW hr)	0	N2O Intensity (lb/MW hr)	0
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1.3 User Entered Comments & Non-Default Data

Project Characteristics - Peninsula Clean Energy - Per email from Michael Totah 4/12/2019

Land Use - golf course acreage from plans. Total = 12.7 acres

Construction Phase - added trenching

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - added trenching equipment per 7/1 email

Trips and VMT - 2 water trucks during grading - added as vendor 2 mile trip for on- and near-site travel for TAC

Grading - Import 7025 cubic yards.

Vehicle Trips - trips assinged to golf course 2160/8.2 acres = 263.41,304.22,307.37

Water And Wastewater - wtp only

Construction Off-road Equipment Mitigation - BMPs and Tier 4

Off-road Equipment - added equipment per 7/1 email

Off-road Equipment - added equipment per 7/1 email

Off-road Equipment -

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim

tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblGrading	MaterialImported	0.00	7,025.00
tblLandUse	LandUseSquareFeet	71,070.00	71,074.00
tblLandUse	LotAcreage	4.27	3.50
tblLandUse	LotAcreage	1.63	1.00
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.31	0.31
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblProjectCharacteristics	CO2IntensityFactor	0	142.26
tblTripsAndVMT	HaulingTripLength	20.00	2.00
tblTripsAndVMT	HaulingTripLength	20.00	2.00
tblTripsAndVMT	HaulingTripLength	20.00	2.00
tblTripsAndVMT	HaulingTripLength	20.00	2.00
tblTripsAndVMT	HaulingTripLength	20.00	2.00
tblTripsAndVMT	HaulingTripLength	20.00	2.00
tblTripsAndVMT	VendorTripLength	7.30	2.00
tblTripsAndVMT	VendorTripLength	7.30	2.00

tblTripsAndVMT	VendorTripLength	7.30	2.00
tblTripsAndVMT	VendorTripLength	7.30	2.00
tblTripsAndVMT	VendorTripLength	7.30	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	WorkerTripLength	10.80	2.00
tblTripsAndVMT	WorkerTripLength	10.80	2.00
tblTripsAndVMT	WorkerTripLength	10.80	2.00
tblTripsAndVMT	WorkerTripLength	10.80	2.00
tblTripsAndVMT	WorkerTripLength	10.80	2.00
tblTripsAndVMT	WorkerTripLength	10.80	2.00
tblVehicleTrips	ST_TR	5.82	304.22
tblVehicleTrips	ST_TR	21.35	0.00
tblVehicleTrips	SU_TR	5.88	307.37
tblVehicleTrips	SU_TR	17.40	0.00
tblVehicleTrips	WD_TR	5.04	263.41
tblVehicleTrips	WD_TR	14.03	0.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	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					
2020	0.5974	5.7471	4.9158	8.7400e-003	0.3172	0.2531	0.5703	0.1248	0.2378	0.3626	0.0000	766.0951	766.0951	0.1777	0.0000	770.5375
2021	0.5758	1.5029	1.5324	2.6600e-003	0.0230	0.0635	0.0864	6.2900e-003	0.0599	0.0662	0.0000	232.7412	232.7412	0.0499	0.0000	233.9874
Maximum	0.5974	5.7471	4.9158	8.7400e-003	0.3172	0.2531	0.5703	0.1248	0.2378	0.3626	0.0000	766.0951	766.0951	0.1777	0.0000	770.5375

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.1958	3.9967	5.2132	8.7400e-003	0.1782	0.0567	0.2349	0.0659	0.0566	0.1225	0.0000	766.0944	766.0944	0.1777	0.0000	770.5368
2021	0.4749	1.2732	1.6251	2.6600e-003	0.0230	0.0189	0.0418	6.2900e-003	0.0188	0.0251	0.0000	232.7410	232.7410	0.0499	0.0000	233.9872
Maximum	0.4749	3.9967	5.2132	8.7400e-003	0.1782	0.0567	0.2349	0.0659	0.0566	0.1225	0.0000	766.0944	766.0944	0.1777	0.0000	770.5368

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	42.83	27.31	-6.05	0.00	40.85	76.14	57.86	44.94	74.68	65.58	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2020	3-31-2020	2.2123	1.0606
2	4-1-2020	6-30-2020	1.3632	1.0332
3	7-1-2020	9-30-2020	1.3782	1.0446
4	10-1-2020	12-31-2020	1.3769	1.0433

5	1-1-2021	3-31-2021	1.2381	1.0022
6	4-1-2021	6-30-2021	0.8505	0.7538
		Highest	2.2123	1.0606

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	1/1/2020	1/14/2020	5	10	
2	Grading	Grading	1/15/2020	2/25/2020	5	30	
3	Trenching	Trenching	1/15/2020	2/25/2020	5	30	
4	Building Construction	Building Construction	2/26/2020	4/20/2021	5	300	
5	Paving	Paving	4/21/2021	5/18/2021	5	20	
6	architectual	Architectural Coating	4/21/2021	5/18/2021	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 135

Acres of Paving: 3.5

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 106,611; Non-Residential Outdoor: 35,537; Striped Parking Area:

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	3	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	3	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37

trenching	Excavators	2	6.00	158	0.38
trenching	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	5	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	4	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
architectual	Air Compressors	1	6.00	78	0.48
Grading	Rollers	3	8.00	80	0.38
Building Construction	Aerial Lifts	6	8.00	63	0.31

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	7	18.00	0.00	0.00	2.00	2.00	2.00	LD_Mix	HDT_Mix	HHDT
Grading	14	35.00	2.00	878.00	2.00	7.30	2.00	LD_Mix	HDT_Mix	HHDT
trenching	3	8.00	0.00	0.00	2.00	2.00	2.00	LD_Mix	HDT_Mix	HHDT
Building Construction	20	260.00	101.00	0.00	2.00	2.00	2.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	2.00	2.00	2.00	LD_Mix	HDT_Mix	HHDT
architectual	1	52.00	0.00	0.00	2.00	2.00	2.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0204	0.2121	0.1076	1.9000e-004		0.0110	0.0110		0.0101	0.0101	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505
Total	0.0204	0.2121	0.1076	1.9000e-004	0.0903	0.0110	0.1013	0.0497	0.0101	0.0598	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	5.0000e-005	6.1000e-004	0.0000	1.3000e-004	0.0000	1.3000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1236	0.1236	0.0000	0.0000	0.1237
Total	1.0000e-004	5.0000e-005	6.1000e-004	0.0000	1.3000e-004	0.0000	1.3000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1236	0.1236	0.0000	0.0000	0.1237

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
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Category	tons/yr										MT/yr					
Fugitive Dust					0.0407	0.0000	0.0407	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.4800e-003	0.0608	0.1148	1.9000e-004		3.1000e-004	3.1000e-004		3.1000e-004	3.1000e-004	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505
Total	3.4800e-003	0.0608	0.1148	1.9000e-004	0.0407	3.1000e-004	0.0410	0.0223	3.1000e-004	0.0227	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	5.0000e-005	6.1000e-004	0.0000	1.3000e-004	0.0000	1.3000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1236	0.1236	0.0000	0.0000	0.1237
Total	1.0000e-004	5.0000e-005	6.1000e-004	0.0000	1.3000e-004	0.0000	1.3000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1236	0.1236	0.0000	0.0000	0.1237

3.3 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1623	0.0000	0.1623	0.0574	0.0000	0.0574	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1052	1.2115	0.7298	1.4700e-003		0.0515	0.0515		0.0473	0.0473	0.0000	129.4220	129.4220	0.0419	0.0000	130.4685

Total	0.1052	1.2115	0.7298	1.4700e-003	0.1623	0.0515	0.2138	0.0574	0.0473	0.1048	0.0000	129.4220	129.4220	0.0419	0.0000	130.4685
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Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0800e-003	0.0482	0.0159	6.0000e-005	7.4000e-004	7.0000e-005	8.2000e-004	2.0000e-004	7.0000e-005	2.8000e-004	0.0000	6.3481	6.3481	7.7000e-004	0.0000	6.3674
Vendor	1.2000e-004	3.4800e-003	1.3800e-003	1.0000e-005	2.0000e-004	2.0000e-005	2.1000e-004	6.0000e-005	2.0000e-005	7.0000e-005	0.0000	0.7950	0.7950	7.0000e-005	0.0000	0.7967
Worker	5.6000e-004	2.9000e-004	3.5800e-003	1.0000e-005	7.7000e-004	1.0000e-005	7.8000e-004	2.1000e-004	1.0000e-005	2.1000e-004	0.0000	0.7210	0.7210	2.0000e-005	0.0000	0.7215
Total	1.7600e-003	0.0519	0.0208	8.0000e-005	1.7100e-003	1.0000e-004	1.8100e-003	4.7000e-004	1.0000e-004	5.6000e-004	0.0000	7.8641	7.8641	8.6000e-004	0.0000	7.8856

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					0.0730	0.0000	0.0730	0.0259	0.0000	0.0259	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0248	0.4525	0.8656	1.4700e-003		2.4100e-003	2.4100e-003		2.4100e-003	2.4100e-003	0.0000	129.4219	129.4219	0.0419	0.0000	130.4683
Total	0.0248	0.4525	0.8656	1.4700e-003	0.0730	2.4100e-003	0.0755	0.0259	2.4100e-003	0.0283	0.0000	129.4219	129.4219	0.0419	0.0000	130.4683

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0800e-003	0.0482	0.0159	6.0000e-005	7.4000e-004	7.0000e-005	8.2000e-004	2.0000e-004	7.0000e-005	2.8000e-004	0.0000	6.3481	6.3481	7.7000e-004	0.0000	6.3674
Vendor	1.2000e-004	3.4800e-003	1.3800e-003	1.0000e-005	2.0000e-004	2.0000e-005	2.1000e-004	6.0000e-005	2.0000e-005	7.0000e-005	0.0000	0.7950	0.7950	7.0000e-005	0.0000	0.7967
Worker	5.6000e-004	2.9000e-004	3.5800e-003	1.0000e-005	7.7000e-004	1.0000e-005	7.8000e-004	2.1000e-004	1.0000e-005	2.1000e-004	0.0000	0.7210	0.7210	2.0000e-005	0.0000	0.7215
Total	1.7600e-003	0.0519	0.0208	8.0000e-005	1.7100e-003	1.0000e-004	1.8100e-003	4.7000e-004	1.0000e-004	5.6000e-004	0.0000	7.8641	7.8641	8.6000e-004	0.0000	7.8856

3.4 trenching - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.8700e-003	0.0780	0.0992	1.5000e-004		4.1300e-003	4.1300e-003		3.8000e-003	3.8000e-003	0.0000	13.2778	13.2778	4.2900e-003	0.0000	13.3852
Total	7.8700e-003	0.0780	0.0992	1.5000e-004		4.1300e-003	4.1300e-003		3.8000e-003	3.8000e-003	0.0000	13.2778	13.2778	4.2900e-003	0.0000	13.3852

Unmitigated Construction Off-Site

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

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3000e-004	7.0000e-005	8.2000e-004	0.0000	1.8000e-004	0.0000	1.8000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1648	0.1648	0.0000	0.0000	0.1649
Total	1.3000e-004	7.0000e-005	8.2000e-004	0.0000	1.8000e-004	0.0000	1.8000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1648	0.1648	0.0000	0.0000	0.1649

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	2.2100e-003	0.0665	0.1145	1.5000e-004		2.5000e-004	2.5000e-004		2.5000e-004	2.5000e-004	0.0000	13.2778	13.2778	4.2900e-003	0.0000	13.3852
Total	2.2100e-003	0.0665	0.1145	1.5000e-004		2.5000e-004	2.5000e-004		2.5000e-004	2.5000e-004	0.0000	13.2778	13.2778	4.2900e-003	0.0000	13.3852

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3000e-004	7.0000e-005	8.2000e-004	0.0000	1.8000e-004	0.0000	1.8000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1648	0.1648	0.0000	0.0000	0.1649

Total	1.3000e-004	7.0000e-005	8.2000e-004	0.0000	1.8000e-004	0.0000	1.8000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1648	0.1648	0.0000	0.0000	0.1649
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3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4074	3.3671	3.4452	5.2900e-003		0.1839	0.1839		0.1740	0.1740	0.0000	447.2592	447.2592	0.1132	0.0000	450.0897
Total	0.4074	3.3671	3.4452	5.2900e-003		0.1839	0.1839		0.1740	0.1740	0.0000	447.2592	447.2592	0.1132	0.0000	450.0897

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	0.0238	0.8105	0.3149	1.1200e-003	0.0202	2.1600e-003	0.0224	5.8700e-003	2.0600e-003	7.9400e-003	0.0000	111.6326	111.6326	0.0110	0.0000	111.9063
Worker	0.0308	0.0160	0.1969	4.4000e-004	0.0423	4.0000e-004	0.0427	0.0113	3.7000e-004	0.0117	0.0000	39.6356	39.6356	1.1000e-003	0.0000	39.6632
Total	0.0546	0.8264	0.5118	1.5600e-003	0.0625	2.5600e-003	0.0651	0.0172	2.4300e-003	0.0196	0.0000	151.2682	151.2682	0.0121	0.0000	151.5695

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	0.1088	2.5385	3.5842	5.2900e-003		0.0511	0.0511		0.0511	0.0511	0.0000	447.2587	447.2587	0.1132	0.0000	450.0891
Total	0.1088	2.5385	3.5842	5.2900e-003		0.0511	0.0511		0.0511	0.0511	0.0000	447.2587	447.2587	0.1132	0.0000	450.0891

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	0.0238	0.8105	0.3149	1.1200e-003	0.0202	2.1600e-003	0.0224	5.8700e-003	2.0600e-003	7.9400e-003	0.0000	111.6326	111.6326	0.0110	0.0000	111.9063
Worker	0.0308	0.0160	0.1969	4.4000e-004	0.0423	4.0000e-004	0.0427	0.0113	3.7000e-004	0.0117	0.0000	39.6356	39.6356	1.1000e-003	0.0000	39.6632
Total	0.0546	0.8264	0.5118	1.5600e-003	0.0625	2.5600e-003	0.0651	0.0172	2.4300e-003	0.0196	0.0000	151.2682	151.2682	0.0121	0.0000	151.5695

3.5 Building Construction - 2021

Unmitigated Construction On-Site

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

Off-Road	0.1284	1.0881	1.1932	1.8600e-003		0.0553	0.0553		0.0523	0.0523	0.0000	157.1558	157.1558	0.0392	0.0000	158.1345
Total	0.1284	1.0881	1.1932	1.8600e-003		0.0553	0.0553		0.0523	0.0523	0.0000	157.1558	157.1558	0.0392	0.0000	158.1345

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	7.3000e-003	0.2650	0.1073	3.9000e-004	7.1100e-003	3.6000e-004	7.4700e-003	2.0600e-003	3.5000e-004	2.4100e-003	0.0000	38.6847	38.6847	3.6800e-003	0.0000	38.7767
Worker	9.9500e-003	4.9800e-003	0.0630	1.5000e-004	0.0149	1.4000e-004	0.0150	3.9700e-003	1.3000e-004	4.0900e-003	0.0000	13.4362	13.4362	3.4000e-004	0.0000	13.4448
Total	0.0173	0.2700	0.1704	5.4000e-004	0.0220	5.0000e-004	0.0225	6.0300e-003	4.8000e-004	6.5000e-003	0.0000	52.1209	52.1209	4.0200e-003	0.0000	52.2215

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	0.0382	0.8919	1.2593	1.8600e-003		0.0179	0.0179		0.0179	0.0179	0.0000	157.1556	157.1556	0.0392	0.0000	158.1343
Total	0.0382	0.8919	1.2593	1.8600e-003		0.0179	0.0179		0.0179	0.0179	0.0000	157.1556	157.1556	0.0392	0.0000	158.1343

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	7.3000e-003	0.2650	0.1073	3.9000e-004	7.1100e-003	3.6000e-004	7.4700e-003	2.0600e-003	3.5000e-004	2.4100e-003	0.0000	38.6847	38.6847	3.6800e-003	0.0000	38.7767
Worker	9.9500e-003	4.9800e-003	0.0630	1.5000e-004	0.0149	1.4000e-004	0.0150	3.9700e-003	1.3000e-004	4.0900e-003	0.0000	13.4362	13.4362	3.4000e-004	0.0000	13.4448
Total	0.0173	0.2700	0.1704	5.4000e-004	0.0220	5.0000e-004	0.0225	6.0300e-003	4.8000e-004	6.5000e-003	0.0000	52.1209	52.1209	4.0200e-003	0.0000	52.2215

3.6 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0126	0.1292	0.1465	2.3000e-004		6.7800e-003	6.7800e-003		6.2400e-003	6.2400e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854
Paving	4.5900e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0172	0.1292	0.1465	2.3000e-004		6.7800e-003	6.7800e-003		6.2400e-003	6.2400e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854

Unmitigated Construction Off-Site

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5000e-004	7.0000e-005	9.3000e-004	0.0000	2.2000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1988	0.1988	1.0000e-005	0.0000	0.1989
Total	1.5000e-004	7.0000e-005	9.3000e-004	0.0000	2.2000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1988	0.1988	1.0000e-005	0.0000	0.1989

3.7 architectural - 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	0.4102					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1900e-003	0.0153	0.0182	3.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576
Total	0.4124	0.0153	0.0182	3.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576

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	5.1000e-004	2.6000e-004	3.2300e-003	1.0000e-005	7.6000e-004	1.0000e-005	7.7000e-004	2.0000e-004	1.0000e-005	2.1000e-004	0.0000	0.6890	0.6890	2.0000e-005	0.0000	0.6895
Total	5.1000e-004	2.6000e-004	3.2300e-003	1.0000e-005	7.6000e-004	1.0000e-005	7.7000e-004	2.0000e-004	1.0000e-005	2.1000e-004	0.0000	0.6890	0.6890	2.0000e-005	0.0000	0.6895

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	0.4102					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.4000e-004	0.0106	0.0183	3.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576
Total	0.4108	0.0106	0.0183	3.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576

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	5.1000e-004	2.6000e-004	3.2300e-003	1.0000e-005	7.6000e-004	1.0000e-005	7.7000e-004	2.0000e-004	1.0000e-005	2.1000e-004	0.0000	0.6890	0.6890	2.0000e-005	0.0000	0.6895
Total	5.1000e-004	2.6000e-004	3.2300e-003	1.0000e-005	7.6000e-004	1.0000e-005	7.7000e-004	2.0000e-004	1.0000e-005	2.1000e-004	0.0000	0.6890	0.6890	2.0000e-005	0.0000	0.6895

Attachment 3 Construction Health Risk Calculations

Topgolf, Burlingame, CA

DPM Emissions and Modeling Emission Rates - Unmitigated

Emissions Model	Activity	DPM (ton/year)	Area Source	DPM Emissions			Modeled Area (m ²)	DPM Emission Rate (g/s/m ²)
				(lb/yr)	(lb/hr)	(g/s)		
2020	Construction	0.2531	DPM	506.2	0.15409	1.94E-02	51,789	3.75E-07
2021	Construction	0.0635	DPM	127.0	0.03866	4.87E-03	51,789	9.41E-08
Total		0.3166		633.2	0.1928	0.0243		

Operation Hours

hr/day = 9 (7am - 4pm)
 days/yr = 365
 hours/year = 3285

Topgolf, Burlingame, CA

PM2.5 Fugitive Dust Emissions for Modeling - Unmitigated

Construction	Activity	Area Source	Area (ton/year)	PM2.5 Emissions			Modeled Area (m ²)	PM2.5 Emission Rate g/s/m ²
				(lb/yr)	(lb/hr)	(g/s)		
2020	Construction	FUG	0.1248	249.6	0.07598	9.57E-03	51,789	1.85E-07
2021	Construction	FUG	0.0063	12.6	0.00383	4.83E-04	51,789	9.32E-09
Total			0.1311	262.2	0.0798	0.0101		

Operation Hours

hr/day = 9 (7am - 4pm)
 days/yr = 365
 hours/year = 3285

DPM Construction Emissions and Modeling Emission Rates - With Mitigation

Emissions Model	Activity	DPM (ton/year)	Area Source	DPM Emissions			Modeled Area (m ²)	DPM Emission Rate (g/s/m ²)
				(lb/yr)	(lb/hr)	(g/s)		
2020	Construction	0.0567	DPM	113.4	0.03452	4.35E-03	51,789	8.40E-08
2021	Construction	0.0189	DPM	37.8	0.01151	1.45E-03	51,789	2.80E-08
Total		0.0756		151.2	0.0460	0.0058		

Operation Hours

hr/day = 9 (7am - 4pm)
 days/yr = 365
 hours/year = 3285

PM2.5 Fugitive Dust Construction Emissions for Modeling - With Mitigation

Construction		Area	PM2.5 Emissions				Modeled Area	PM2.5 Emission Rate
Year	Activity	Source	(ton/year)	(lb/yr)	(lb/hr)	(g/s)	(m ²)	g/s/m ²
2020	Construction	FUG	0.0659	131.8	0.04012	5.06E-03	51,789	9.76E-08
2021	Construction	FUG	0.0063	12.6	0.00383	4.83E-04	51,789	9.32E-09
Total			0.0722	144.4	0.0440	0.0055		

Operation Hours

hr/day = 9 (7am - 4pm)

days/yr = 365

hours/year = 3285

Topgolf, Burlingame, CA

Construction Health Impacts Summary

Maximum Impacts at Construction MEI Location - Unmitigated

Emissions Year						
	Maximum Concentrations		Cancer Risk (per million)		Hazard Index	Maximum Annual PM2.5 Concentration
	Exhaust PM10/DPM	Fugitive PM2.5				
	(µg/m ³)	(µg/m ³)	Child	Adult	(-)	(µg/m ³)
2020	0.0284	0.0144	5.05	0.08	0.01	0.04
2021	0.0071	0.0007	1.17	0.02	0.001	0.01
Total	-	-	6.2	0.1	-	-
Maximum	0.0284	0.0144	-	-	0.01	0.04

Maximum Impacts at Construction MEI Location - With Mitigation

Emissions Year						
	Maximum Concentrations		Cancer Risk (per million)		Hazard Index	Maximum Annual PM2.5 Concentration
	Exhaust PM10/DPM	Fugitive PM2.5				
	(µg/m ³)	(µg/m ³)	Child	Adult	(-)	(µg/m ³)
2020	0.0064	0.0076	1.13	0.02	0.001	0.01
2021	0.0021	0.0007	0.35	0.01	0.0004	0.00
Total	-	-	1.5	0.02	-	-
Maximum	0.0064	0.0076	-	-	0.001	0.01

Topgolf, Burlingame, CA - Unmitigated Emissions
Maximum DPM Cancer Risk Calculations From Construction
Impacts at Off-Site Receptors-1.5 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)⁻¹

ASF = Age sensitivity factor for specified age group

ED = Exposure duration (years)

AT = Averaging time for lifetime cancer risk (years)

FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10⁻⁶

Where: C_{air} = concentration in air (µg/m³)

DBR = daily breathing rate (L/kg body weight-day)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10⁻⁶ = Conversion factor

Values

Age → Parameter	Infant/Child				Adult
	3rd Trimester	0 - 2	2 - 9	2 - 16	16 - 30
ASF =	10	10	3	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	631	572	261
A =	1	1	1	1	1
EF =	350	350	350	350	350
AT =	70	70	70	70	70
FAH =	1.00	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Exposure Duration (years)	Infant/Child - Exposure Information				Infant/Child Cancer Risk (per million)	Adult - Exposure Information			Adult Cancer Risk (per million)	Fugitive PM2.5	Total PM2.5
		Age	DPM Conc (ug/m3)		Sensitivity Factor		Modeled		Age Sensitivity Factor			
			Year	Annual			Year	Annual				
0	0.25	-0.25 - 0*	2020	0.0284	10	0.39	2020	0.0284	-	-		
1	1	0 - 1	2020	0.0284	10	4.66	2020	0.0284	1	0.08	0.0144	0.0427
2	1	1 - 2	2021	0.0071	10	1.17	2021	0.0071	1	0.02	0.0007	0.0078
3	1	2 - 3		0.0000	3	0.00		0.0000	1	0.00		
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00		
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00		
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00		
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00		
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00		
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00		
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00		
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00		
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00		
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00		
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00		
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00		
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00		
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00		
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00		
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00		
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00		
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00		
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00		
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00		
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00		
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00		
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00		
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00		
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00		
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00		
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00		
Total Increased Cancer Risk						6.2				0.10		

* Third trimester of pregnancy

Topgolf, Burlingame, CA - Unmitigated Emissions
Maximum DPM Cancer Risk Calculations From Construction
Impacts at Off-Site Receptors-4.5 meter

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)⁻¹

ASF = Age sensitivity factor for specified age group

ED = Exposure duration (years)

AT = Averaging time for lifetime cancer risk (years)

FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10⁻⁶

Where: C_{air} = concentration in air (µg/m³)

DBR = daily breathing rate (L/kg body weight-day)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10⁻⁶ = Conversion factor

Values

Age -> Parameter	Infant/Child				Adult
	3rd Trimester	0 - 2	2 - 9	2 - 16	16 - 30
ASF =	10	10	3	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	631	572	261
A =	1	1	1	1	1
EF =	350	350	350	350	350
AT =	70	70	70	70	70
FAH =	1.00	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Exposure Duration (years)	Age	Infant/Child - Exposure Information			Infant/Child Cancer Risk (per million)	Adult - Exposure Information			Adult Cancer Risk (per million)	Fugitive PM2.5	Total PM2.5
			DPM Conc (ug/m3)	Sensitivity	Factor		Modeled		Age Sensitivity Factor			
							Year	Annual				
0	0.25	-0.25 - 0*	2020	0.0267	10	0.36	2020	0.0267	-	-		
1	1	0 - 1	2020	0.0267	10	4.39	2020	0.0267	1	0.08	0.0135	0.0402
2	1	1 - 2	2021	0.0067	10	1.10	2021	0.0067	1	0.02	0.0007	0.0074
3	1	2 - 3		0.0000	3	0.00		0.0000	1	0.00		
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00		
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00		
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00		
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00		
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00		
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00		
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00		
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00		
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00		
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00		
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00		
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00		
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00		
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00		
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00		
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00		
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00		
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00		
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00		
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00		
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00		
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00		
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00		
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00		
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00		
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00		
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00		
Total Increased Cancer Risk						5.9				0.10		

* Third trimester of pregnancy

Topgolf, Burlingame, CA - Mitigated Emissions
Maximum DPM Cancer Risk Calculations From Construction
Impacts at Off-Site Receptors-1.5 meter

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)⁻¹

ASF = Age sensitivity factor for specified age group

ED = Exposure duration (years)

AT = Averaging time for lifetime cancer risk (years)

FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10⁻⁶

Where: C_{air} = concentration in air (µg/m³)

DBR = daily breathing rate (L/kg body weight-day)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10⁻⁶ = Conversion factor

Values

Age → Parameter	Infant/Child				Adult
	3rd Trimester	0 - 2	2 - 9	2 - 16	16 - 30
ASF =	10	10	3	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	631	572	261
A =	1	1	1	1	1
EF =	350	350	350	350	350
AT =	70	70	70	70	70
FAH =	1.00	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

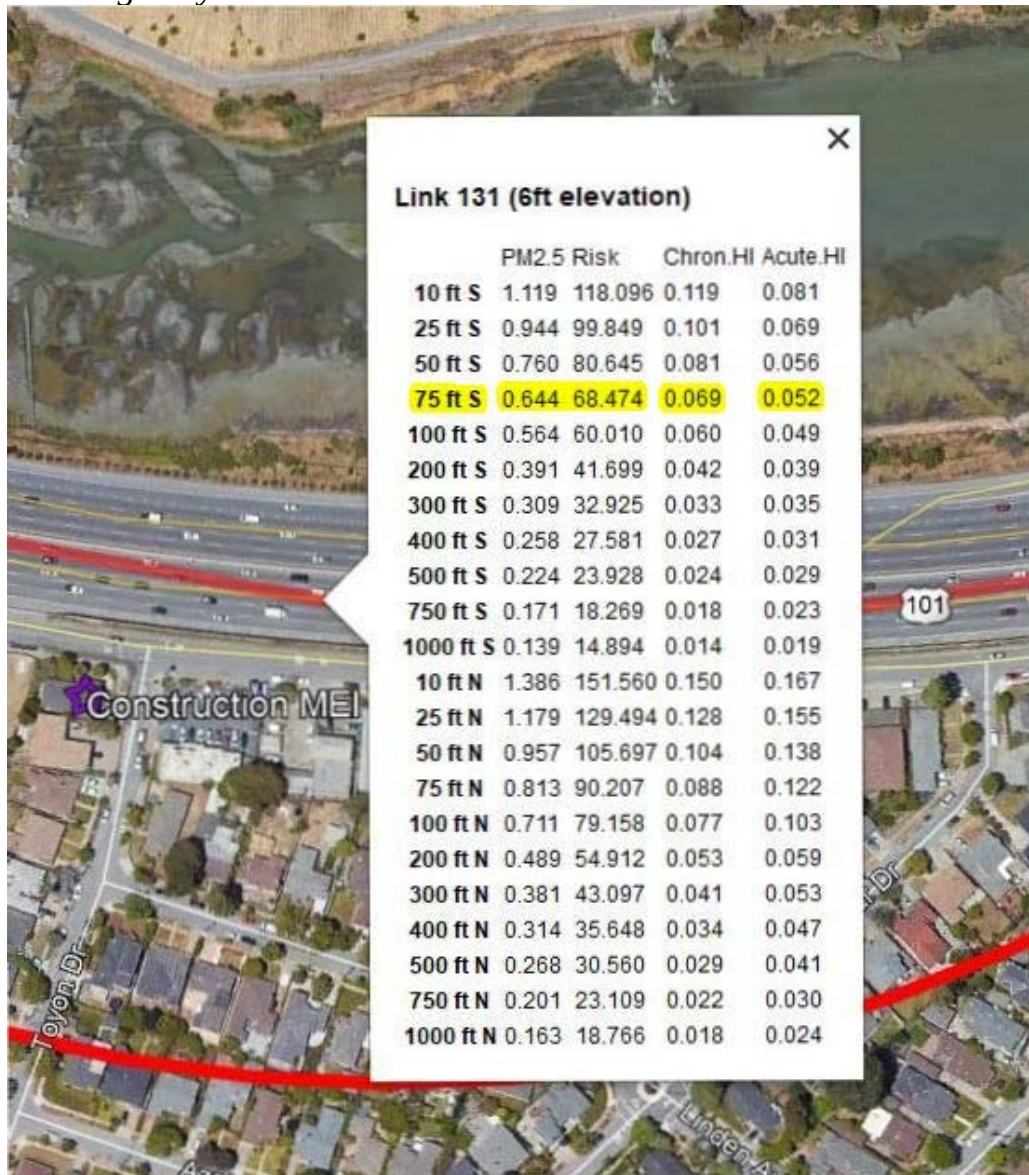
Construction Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Exposure Duration (years)	Age	Infant/Child - Exposure Information			Infant/Child Cancer Risk (per million)	Adult - Exposure Information			Adult Cancer Risk (per million)	Fugitive PM2.5	Total PM2.5
			DPM Conc (ug/m3)	Sensitivity	Age Factor		Modeled		Sensitivity Factor			
							DPM Conc (ug/m3)					
							Year	Annual				
0	0.25	-0.25 - 0*	2020	0.0064	10	0.09	2020	0.0064	-	-		
1	1	0 - 1	2020	0.0064	10	1.04	2020	0.0064	1	0.02	0.0076	0.0139
2	1	1 - 2	2021	0.0021	10	0.35	2021	0.0021	1	0.01	0.0007	0.0028
3	1	2 - 3		0.0000	3	0.00		0.0000	1	0.00		
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00		
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00		
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00		
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00		
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00		
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00		
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00		
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00		
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00		
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00		
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00		
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00		
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00		
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00		
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00		
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00		
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00		
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00		
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00		
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00		
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00		
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00		
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00		
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00		
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00		
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00		
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00		
Total Increased Cancer Risk						1.5				0.02		

* Third trimester of pregnancy

Attachment 4: Screening Community Risk Calculations

U.S. Highway 101





BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Risk & Hazard Stationary Source Inquiry Form

This form is required when users request stationary source data from BAAQMD

This form is to be used with the BAAQMD's Google Earth stationary source screening tables.

[Click here for guidance on conducting risk & hazard screening, including roadways & freeways, refer to the District's Risk & Hazard Analysis flow chart.](#)

[Click here for District's Recommended Methods for Screening and Modeling Local Risks and Hazards document.](#)

Table A: Requester Contact Information

Date of Request	5/20/2019
Contact Name	Casey Divine
Affiliation	Illingworth & Rodkin, Inc.
Phone	707-794-0400 x103
Email	cdivine@illingworthrodkin.com
Project Name	Topgolf
Address	250 Anza Blvd
City	Burlingame
County	San Mateo
Type (residential, commercial, mixed use, industrial, etc.)	Commercial
Project Size (# of units or building square feet)	84ksf
Comments:	

For Air District assistance, the following steps must be completed:

1. Complete all the contact and project information requested in **Table A**. Incomplete forms will not be processed. Please include a project site map.
2. Download and install the free program Google Earth, <http://www.google.com/earth/download/ge/>, and then download the county specific Google Earth stationary source application files from the District's website, <http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx>. The small points on the map represent stationary sources permitted by the District (Map A on right). These permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc. Click on a point to view the source's Information Table, including the name, location, and preliminary estimated cancer risk, hazard index, and PM2.5 concentration.
3. Find the project site in Google Earth by inputting the site's address in the Google Earth search box.
4. Identify stationary sources within at least a 1000ft radius of project site. Verify that the location of the source on the map matches with the source's address in the Information Table, by using the Google Earth address search box to confirm the source's address location. Please report any mapping errors to the District.
5. List the stationary source information in **Table B** blue section only.
6. Note that a small percentage of the stationary sources have Health Risk Screening Assessment (HRS) data INSTEAD of screening level data. These sources will be noted by an asterisk next to the Plant Name (Map B on right). If HRS values are presented, these values have already been modeled and cannot be adjusted further.
7. Email this completed form to District staff. District staff will provide the most recent risk, hazard, and PM2.5 data that are available for the source(s). If this information or data are not available, source emissions data will be provided. Staff will respond to inquiries within three weeks.

Note that a public records request received for the same stationary source information will cancel the processing of your SSIF request.

Submit forms, maps, and questions to Areana Flores at 415-749-4616, or aflores@baaqmd.gov

Table B: Google Earth data											Construction MEI			
Distance from Receptor (feet) or MEI ¹	Facility Name	Address	Plant No.	Cancer Risk ²	Hazard Risk ²	PM _{2.5} ²	Source No. ³	Type of Source ⁴	Fuel Code ⁵	Status/Comments	Distance Adjustment Multiplier	Adjusted Cancer Risk Estimate	Adjusted Hazard Risk	Adjusted PM2.5
1000	City of Burlingame, Waste Water Treatment Plant	1103 Airport Boulevard	1351	29.6673051	0.16009	0.011062	multiple	multiple		emissions file attached; use health risk calculator	0.04 or 0.13	3.5	0.02	0.0004
850	City of Burlingame	1079 Rollins Road	13079	0.43683606	0.00142	0.000512	S1, S2	Generator (2)		emissions file attached; use health risk calculator	0.05	0.02	0.0001	0.00003

Footnotes:

1. Maximally exposed individual
2. These Cancer Risk, Hazard Index, and PM2.5 columns represent the values in the Google Earth Plant Information Table.
3. Each plant may have multiple permits and sources.
4. Permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc.
5. Fuel codes: 98 = diesel, 189 = Natural Gas.
6. If a Health Risk Screening Assessment (HRSA) was completed for the source, the application number will be listed here.
7. The date that the HRSA was completed.
8. Engineer who completed the HRSA. For District purposes only.
9. All HRSA completed before 1/5/2010 need to be multiplied by an age sensitivity factor of 1.7.
10. The HRSA "Chronic Health" number represents the Hazard Index.
11. Further information about common sources:
 - a. Sources that only include diesel internal combustion engines can be adjusted using the BAAQMD's Diesel Multiplier worksheet.
 - b. The risk from natural gas boilers used for space heating when <25 MM BTU/hr would have an estimated cancer risk of one in a million or less, and a chronic hazard
 - c. BAAQMD Reg 11 Rule 16 required that all co-residential (sharing a wall, floor, ceiling or is in the same building as a residential unit) dry cleaners cease use of perc on July 1, 2010. Therefore, there is no cancer risk, hazard or PM2.5 concentrations from co-residential dry cleaning businesses in the BAAQMD.
 - d. Non co-residential dry cleaners must phase out use of perc by Jan. 1, 2023. Therefore, the risk from these dry cleaners does not need to be factored in over a 70-year period,
 - e. Gas stations can be adjusted using BAAQMD's Gas Station Distance Multitplier worksheet.
 - f. Unless otherwise noted, exempt sources are considered insignificant. See BAAQMD Reg 2 Rule 1 for a list of exempt sources.
 - g. This spray booth is considered to be insignificant.

Date last updated:
03/13/2018

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
 DETAIL POLLUTANTS - ABATED
 MOST RECENT P/O APPROVED (2019)

Printed: MAY 22, 2019

City of Burlingame, Waste Water Treatment Plant (P# 1351)

S#	SOURCE NAME	SOURCE CODE	POLLUTANT	CODE	LBS/DAY
MATERIAL	THROUGHPUT	DATE			

9	Burlingame Landfill (closed) with Active Gas Collection Syst	G7145511	Organics (other, including	990	0.00E+00
			Nitrous Oxide (N2O)	2030	2.38E-02
			Carbon Dioxide, non-biogen	6960	0.00E+00
			Carbon Dioxide, biogenic C	6961	1.21E+03
			Methane (CH4)	6970	4.79E+00
		G7145580	Benzene	41	6.34E-04
			Carbon tetrachloride	60	2.61E-06
			Ethylene dichloride	107	1.72E-04
			Hexane	148	2.40E-03
			Methyl ethyl ketone (MEK)	169	2.17E-03
			Perchloroethylene	210	2.63E-03
			Toluene	293	1.54E-02
			Trichloroethylene	295	1.57E-03
			Xylene	307	5.46E-03
			Ethylbenzene	333	2.08E-03
			Dichlorodifluoromethane	355	8.06E-03
			Vinylidene chloride	360	8.24E-05
			Chloroform	390	1.52E-05
			Methylene chloride	396	5.16E-03
			Ethyl chloride	449	3.43E-04
			Vinyl chloride	518	1.96E-03
			1,1,1-Trichloroethane	565	2.72E-04
			CFC-11 (Freon-11)	631	4.44E-04
			Organics (other, excluding	989	1.82E-01
			Hydrogen Sulfide (H2S)	5020	5.14E-01
10	Boiler #1 equipment #1124	C1250493			
				0	0.00E+00
11	Boiler #2 equipment #1125	C1250493			
				0	0.00E+00
12	Standby Generator - Emergency Power	C22BG098			
			Benzene	41	3.25E-04
			Formaldehyde	124	2.69E-05
			Organics (other, including	990	1.57E-02
			Arsenic (all)	1030	2.83E-07

	Beryllium (all) pollutant	1040	1.66E-07
	Cadmium	1070	7.07E-07
	Chromium (hexavalent)	1095	1.46E-08
	Lead (all) pollutant	1140	6.00E-07
	Manganese	1160	9.41E-07
	Nickel pollutant	1180	1.14E-05
	Mercury (all) pollutant	1190	2.00E-07
	Diesel Engine Exhaust Part	1350	3.12E-03
	PAH's (non-speciated)	1840	1.49E-06
	Nitrous Oxide (N2O)	2030	8.70E-05
	Nitrogen Oxides (part not	2990	2.29E-01
	Sulfur Dioxide (SO2)	3990	1.06E-04
	Carbon Monoxide (CO) pollu	4990	4.97E-02
	Carbon Dioxide, non-biogen	6960	1.09E+01
	Methane (CH4)	6970	4.35E-04
13	Digester gas cogeneration C72AF493		
		0	0.00E+00
14	Digester gas fueled IC Engine Generator C72AF493		
	Organics (other, including	990	9.18E+01
	Particulates (part not spe	1990	2.74E-03
	Nitrous Oxide (N2O)	2030	1.29E-02
	Nitrogen Oxides (part not	2990	2.29E+01
	Sulfur Dioxide (SO2)	3990	5.55E+00
	Carbon Monoxide (CO) pollu	4990	9.18E+01
	Carbon Dioxide, biogenic C	6961	5.75E+03
	Methane (CH4)	6970	3.74E+01
100	Municipal Sewage Treatment Plant; 3.6 MGD Annual Average G7200562		
	Benzene	41	2.70E-02
	Perchloroethylene	210	2.73E-01
	Toluene	293	2.08E-01
	Trichloroethylene	295	8.11E-02
	Xylene	307	2.43E-01
	Chloroform	390	2.97E-01
	Methylene chloride	396	7.03E-01
	Dichlorobenzene	528	3.78E-02
	Organics (other, including	990	1.89E+00
	Ammonia (NH3) pollutant	6990	3.19E-01
110	Preliminary Treatment; 2 bar scn, 1 barminutor,1 non-aerated G7200562		
	Organics (other, including	990	2.70E-01
	Ammonia (NH3) pollutant	6990	3.19E-01
120	Primary Treatment;2 primary sedimentation tanks,3 pumps G7220562		
	Organics (other, including	990	0.00E+00
140	Secondary Treatment;4 compressed air aeration tanks G7240562		
	Organics (other, including	990	0.00E+00

150	Secondary Clarifiers, 4 Secondary Clarifiers (3025 sq ft)			
	G7250562			
	Organics (other, including	990	0.00E+00	
160	Tertiary Treatment; 2 (3025 sf) Final Clarifiers			
	G7260562			
	Organics (other, including	990	0.00E+00	
170	Disinfection; 2 nonducted chlor contact tanks, 1 mix tank			
	G7270562			
	Organics (other, including	990	0.00E+00	
180	Sludge Handling; Thickening: Gravity Thickener Tank; GBT			
	G7280562			
	Organics (other, including	990	0.00E+00	
182	Sludge Handling Facility			
	G7280251			
	Organics (other, including	990	0.00E+00	
190	Digesters; 2 Fixed-Cover Anaerobic Digester, 1 Holding Tank			
	G7290562			
	Organics (other, including	990	0.00E+00	
	Carbon Dioxide, non-biogen	6960	0.00E+00	
200	Reclamation			
	G7300562			
	Organics (other, including	990	0.00E+00	
-192	Waste Gas Flare			
	C8550493			
	Organics (other, including	990	3.28E-02	
	Nitrous Oxide (N2O)	2030	1.45E-02	
	Nitrogen Oxides (part not	2990	1.20E+00	
	Sulfur Dioxide (SO2)	3990	4.62E-01	
	Carbon Monoxide (CO) pollu	4990	3.83E-01	
	Carbon Dioxide, biogenic C	6961	1.31E+03	
	Methane (CH4)	6970	2.47E+00	
-191	4 in. Flare Equipment #1134 (Standby)			
	C8550493			
		0	0.00E+00	

PLANT TOTAL:

lbs/day Pollutant

2.72E-04	1,1,1-Trichloroethane (565)
6.38E-01	Ammonia (NH3) pollutant (6990)
2.83E-07	Arsenic (all) (1030)
2.80E-02	Benzene (41)
1.66E-07	Beryllium (all) pollutant (1040)
4.44E-04	CFC-11 (Freon-11) (631)
7.07E-07	Cadmium (1070)
8.26E+03	Carbon Dioxide, biogenic CO2 (6961)
1.09E+01	Carbon Dioxide, non-biogenic CO2 (6960)
9.22E+01	Carbon Monoxide (CO) pollutant (4990)
2.61E-06	Carbon tetrachloride (60)
2.97E-01	Chloroform (390)

1.46E-08 Chromium (hexavalent) (1095)
3.78E-02 Dichlorobenzene (528)
8.06E-03 Dichlorodifluoromethane (355)
3.12E-03 Diesel Engine Exhaust Particulate Matter (1350)
3.43E-04 Ethyl chloride (449)
2.08E-03 Ethylbenzene (333)
1.72E-04 Ethylene dichloride (107)
2.69E-05 Formaldehyde (124)
2.40E-03 Hexane (148)
5.14E-01 Hydrogen Sulfide (H2S) (5020)
6.00E-07 Lead (all) pollutant (1140)
9.41E-07 Manganese (1160)
2.00E-07 Mercury (all) pollutant (1190)
4.47E+01 Methane (CH4) (6970)
2.17E-03 Methyl ethyl ketone (MEK) (169)
7.08E-01 Methylene chloride (396)
1.14E-05 Nickel pollutant (1180)
2.44E+01 Nitrogen Oxides (part not spec elsewhere) (2990)
5.12E-02 Nitrous Oxide (N2O) (2030)
1.82E-01 Organics (other, excluding CH4) (989)
9.40E+01 Organics (other, including CH4) (990)
1.49E-06 PAH's (non-speciated) (1840)
2.74E-03 Particulates (part not spec elsewhere) (1990)
2.76E-01 Perchloroethylene (210)
6.01E+00 Sulfur Dioxide (SO2) (3990)
2.23E-01 Toluene (293)
8.27E-02 Trichloroethylene (295)
1.96E-03 Vinyl chloride (518)
8.24E-05 Vinylidene chloride (360)
2.49E-01 Xylene (307)



Step 1:
Enter Facility Data

Plant Name

City of Burlingame, Waste Water Treatment Plant

Plant No.

1351

Step 3:
Specify Source Type

Does facility have only diesel backup generators?

yes

Is this analysis for a gas station?

no

Step 5:
Read Estimates

Total Cancer Risk

0.199

per 1,000,000

Total Chronic Hazard

0.001

Total PM2.5 Concentration

0.000

µg/m³

Step 2:
Enter Emissions Data

Chemical Name	CAS No. (do not remove)	Emission (lb/day)	Cancer (# / 1,000,000)	Chronic (index)	Concentration (µg/m3)
Fine Particulate Matter (PM2.5)		5.86E-03			0.01
1,1,1-Trichloroethane	71556	0.00E+00			
1,1,2,2-Tetrachloroethane	79345	0.00E+00			
1,1,2-Trichloroethane	79005	0.00E+00			
1,1-Dichloroethane	75343	0.00E+00			
1,1-Dichloroethylene	75354	0.00E+00			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268879	0.00E+00			
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001020	0.00E+00			
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822469	0.00E+00			
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562394	0.00E+00			
1,2,3,4,7,8,9-Heptachlorodibenzo-p-dioxin	55673897	0.00E+00			
1,2,3,4,7,8-Heptachlorodibenzofuran	39227286	0.00E+00			
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	70648269	0.00E+00			
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653857	0.00E+00			
1,2,3,6,7,8-Hexachlorodibenzofuran	57117449	0.00E+00			
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408743	0.00E+00			
1,2,3,7,8,9-Hexachlorodibenzofuran	72918219	0.00E+00			
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321764	0.00E+00			
1,2,3,7,8-Pentachlorodibenzofuran	57117416	0.00E+00			
1,2-Dibromo-3-chloropropane	96128	0.00E+00			
1,2-Dibromoethane	106934	0.00E+00			
1,2-Dichloroethane	107062	0.00E+00			
1,2-Epoxybutane	106887	0.00E+00			
1,3-Butadiene	106990	0.00E+00			
1,3-Propane sultone	1120714	0.00E+00			
1,4-Dichlorobenzene	106467	0.00E+00			
1,4-Dioxane	123911	0.00E+00			
1,6-Dinitropyrene	42397648	0.00E+00			
1,8-Dinitropyrene	42397659	0.00E+00			
1-Nitropyrene	5522430	0.00E+00			
2',3,4,4',5,5'-HxCB	65510443	0.00E+00			
2,3',4,4',5,5'-HxCB	52663726	0.00E+00			
2,3',4,4',5-PeCB	31508006	0.00E+00			
2,3,3',4,4',5'-HxCB	69782907	0.00E+00			
2,3,3',4,4',5,5'-HpCB	39635319	0.00E+00			
2,3,3',4,4',5-HxCB	38380084	0.00E+00			
2,3,3',4,4'-PeCB	32598144	0.00E+00			
2,3,4,4',5-PeCB	74472370	0.00E+00			
2,3,4,6,7,8-hexachlorodibenzofuran	60851345	0.00E+00			
2,3,4,7,8-Pentachlorodibenzofuran	57117314	0.00E+00			
2,3,7,8-Tetrachlorodibenzo-p-dioxin and related compound	1746016	0.00E+00			
2,3,7,8-Tetrachlorodibenzofuran	51207319	0.00E+00			
2,4,6-Trichlorophenol	88062	0.00E+00			
2,4-Diaminobenzene	615054	0.00E+00			
2,4-Diaminotoluene	95807	0.00E+00			
2,4-Dinitrotoluene	121142	0.00E+00			
2-Aminoanthraquinone	117793	0.00E+00			
2-Nitrofluorene	607578	0.00E+00			
3,3',4,4',5,5'-HxCB	32774166	0.00E+00			
3,3',4,4',5-PeCB	57465288	0.00E+00			
3,3',4,4'-TCB	32598133	0.00E+00			
3,3-Dichlorobenzidine	91941	0.00E+00			
3,4,4'-TCB	70362504	0.00E+00			
3-Methylcholanthrene	56495	0.00E+00			
4-Methylene bis(2-chloroaniline)	101144	0.00E+00			
4,4-Methylenedianiline	101779	0.00E+00			
4-Chloro-ortho-phenylenediamine	95830	0.00E+00			
4-Dimethylaminoazobenzene	60117	0.00E+00			
4-Nitropyrene	57835924	0.00E+00			
5-Methylchrysene	3697243	0.00E+00			
5-Nitroacenaphthene	602879	0.00E+00			
6-Nitrochrysene	7496028	0.00E+00			
7,12-Dimethylbenz(a)anthracene	57976	0.00E+00			
7H-dibenzo(c,g)carbazole	194592	0.00E+00			
Acetaldehyde	75070	0.00E+00			
Acetamide	60355	0.00E+00			
Acrolein	107028	0.00E+00			
Acrylamide	79061	0.00E+00			
Acrylic Acid	79107	0.00E+00			
Acrylonitrile	107131	0.00E+00			
Allyl chloride	107051	0.00E+00			
Ammonia	7664417	0.00E+00			
Aniline	62533	0.00E+00			
Arsenic	7440382	0.00E+00	4.34E-03	3.57E-05	
Arsine	7784421	0.00E+00			
Asbestos [1/(100 PCM fibers/m ³)] [^] -1	1332214	0.00E+00			
Benz(a)anthracene	56553	0.00E+00	4.16E-02	2.05E-04	
Benzene	71432	0.00E+00			
Benzo(a)pyrene	50328	0.00E+00			
Benzo(b)fluoranthene	205992	0.00E+00			
Benzo(k)fluoranthene	205823	0.00E+00			
Benzo(k)fluoranthene	207089	0.00E+00			
Benzyl Chloride	100447	0.00E+00			
Beryllium	7440417	1.66E-07	1.78E-03	4.48E-05	
Bis(2-chloroethyl) Ether	111444	0.00E+00			

Bis(2-chloromethyl) Ether	542881	0.00E+00			
Cadmium	7440439	7.07E-07	1.36E-02	6.68E-05	
Caprolactam	105602	0.00E+00			
Carbon Disulfide	75150	0.00E+00			
Carbon Monoxide	630080	9.18E+01			
Carbon Tetrachloride	56235	0.00E+00			
Carbonyl Sulfide	463581	0.00E+00			
Chlorinated paraffins (Avg. chain length C12; approx. 60 p	108171262	0.00E+00			
Chlorine	7782505	0.00E+00			
Chlorine Dioxide	10049044	0.00E+00			
Chlorite	7758192	0.00E+00			
Chlorobenzene	108907	0.00E+00			
Chlorodibromomethane	124481	0.00E+00			
Chloroethane (Ethyl Chloride)	75003	0.00E+00			
Chloroform	67663	0.00E+00			
Chloropicrin	76062	0.00E+00			
Chromic Trioxide	1333820	0.00E+00			
Chromium-hexavalent	18540299	1.46E-08	9.52E-03	1.38E-07	
Barium chromate2	10294403	0.00E+00			
Calcium chromate2	13765190	0.00E+00			
Lead chromate2	7758976	6.00E-07	3.91E-01	5.67E-06	
Sodium dichromate2	10588019	0.00E+00			
Strontium chromate2	7789062	0.00E+00			
CHROMIC TRIOXIDE (as chromic acid mist)	1333820	0.00E+00			
Chrysene	218019	0.00E+00			
Copper	7440508	0.00E+00			
Copper and Copper Compounds	7440508	0.00E+00			
Cresol Mixtures	1319773	0.00E+00			
Cupferron	135206	0.00E+00			
Cyanide	57125	0.00E+00			
Di(2-ethylhexyl)phthalate	117817	0.00E+00			
Dibenz(a-h)acridine	226368	0.00E+00			
Dibenz(a-h)anthracene	53703	0.00E+00			
Dibenz(a-j)acridine	224420	0.00E+00			
Dibenzo(a-e)pyrene	192654	0.00E+00			
Dibenzo(a-h)pyrene	189640	0.00E+00			
Dibenzo(a-l)pyrene	189559	0.00E+00			
Dibenzo(a-l)pyrene	191300	0.00E+00			
Diesel Exhaust Particulate	85105	3.12E-03	4.39E+00	1.18E-03	
Diethanolamine	111422	0.00E+00			
Dimethylformamide	68122	0.00E+00			
Direct Black 38 (Technical Grade)	1937377	0.00E+00			
Direct Blue 6 (Technical Grade)	2602462	0.00E+00			
Direct Brown 95 (Technical Grade)	16071866	0.00E+00			
Epichlorohydrin	106898	0.00E+00			
Ethylbenzene	100414	0.00E+00			
Ethylene Glycol	107211	0.00E+00			
Ethylene Glycol Monobutyl Ether	111762	0.00E+00			
Ethylene Glycol Monoethyl Ether	110805	0.00E+00			
Ethylene Glycol Monoethyl Ether Acetate	111159	0.00E+00			
Ethylene Glycol Monomethyl Ether	109864	0.00E+00			
Ethylene Glycol Monomethyl Ether Acetate	110496	0.00E+00			
Ethylene Oxide	75218	0.00E+00			
Ethylene Thiourea	96457	0.00E+00			
Fluorides	1101	0.00E+00			
Formaldehyde (gas)	50000	2.69E-05	7.22E-04	5.65E-06	
Glutaraldehyde	111308	0.00E+00			
Hexachlorobenzene	118741	0.00E+00			
Hexachlorocyclohexane (Technical Grade)	608731	0.00E+00			
Hexachlorocyclohexane- Alpha Isomer	319846	0.00E+00			
Hexachlorocyclohexane- Beta Isomer	319857	0.00E+00			
Hexachlorocyclohexane- Gamma Isomer	58899	0.00E+00			
Hydrazine	302012	0.00E+00			
Hydrogen Chloride	7647010	0.00E+00			
Hydrogen Cyanide	74908	0.00E+00			
Hydrogen Fluoride	7664393	0.00E+00			
Hydrogen Selenide	7783075	0.00E+00			
Hydrogen Sulfide	7783064	0.00E+00			
Indeno(1-2-3-c-d)pyrene	193395	0.00E+00			
Isophorone	78591	0.00E+00			
Isopropyl Alcohol	67630	0.00E+00			
Lead Acetate	301042	6.00E-07	3.22E-05		
Lead and Lead Compounds	7439921	6.00E-07	3.22E-05		
Lead Phosphate	7446277	6.00E-07	3.22E-05		
Lead Subacetate	1335326	6.00E-07	3.22E-05		
m-CRESOL	108394	0.00E+00			
m-XYLENE	108383	0.00E+00			
Maleic Anhydride	108316	0.00E+00			
Manganese & Manganese Compounds	7439965	9.41E-07		1.98E-05	
Mercury (Inorganic)	7439976	2.00E-07		1.26E-05	
Mercuric chloride	7487947	0.00E+00			
Methanol	67561	0.00E+00			
Methyl Bromide	74839	0.00E+00			
Methyl Ethyl Ketone	78933	0.00E+00			
Methyl Isocyanate	624839	0.00E+00			
Methyl Tertiary Butyl Ether	1634044	0.00E+00			
Methylene Chloride (Dichloromethane)	75092	0.00E+00			
Methylene Diphenyl Isocyanate (MDI)	101688	0.00E+00			
Michlers Ketone	90948	0.00E+00			
n-Hexane	110543	0.00E+00			
n-Nitroso-n-methylethylamine	10595956	0.00E+00			
n-Nitrosodi-n-Butylamine	924163	0.00E+00			
n-Nitrosodi-n-Propylamine	621647	0.00E+00			
n-Nitrosodiethylamine	55185	0.00E+00			
n-Nitrosodimethylamine	62759	0.00E+00			
n-Nitrosodiphenylamine	86306	0.00E+00			
n-Nitrosomorpholine	59892	0.00E+00			
n-Nitrosopiperidine	100754	0.00E+00			
n-Nitrosopyrrolidine	930552	0.00E+00			
Naphthalene	91203	0.00E+00			
Nickel and Nickel Compounds	7440020	1.14E-05	1.33E-02	1.54E-03	
Nickel acetate	373024	1.14E-05	1.33E-02	1.54E-03	
Nickel carbonate	3333673	1.14E-05	1.33E-02	1.54E-03	
Nickel carbonyl	13463393	1.14E-05	1.33E-02	1.54E-03	

Nickel hydroxide	12054487	1.14E-05	1.33E-02	1.54E-03	
Nickelocene	1271289	1.14E-05	1.33E-02	1.54E-03	
Nickel Oxide	1313991	1.14E-05	1.33E-02	1.08E-03	
Nickel Refinery Dust	1146	1.14E-05	1.33E-02	1.54E-03	
Nickel Subsulfide	12035722	1.14E-05	1.33E-02	1.54E-03	
Nitric Acid	7697372	0.00E+00			
Nitrogen Dioxide	10102440	2.31E+01			
o-CRESOL	95487	0.00E+00			
o-XYLENE	95476	0.00E+00			
Oleum	8014957	0.00E+00			
Ozone	10028156	0.00E+00			
p-Chloro-o-toluidine	95692	0.00E+00			
p-Cresidine	120718	0.00E+00			
p-CRESOL	106445	0.00E+00			
p-Nitrosodiphenylamine	156105	0.00E+00			
p-XYLENE	106423	0.00E+00			
Pentachlorophenol	87865	0.00E+00			
Perchloroethylene	127184	0.00E+00			
Phenol	108952	0.00E+00			
Phosgene	75445	0.00E+00			
Phosphine	7803512	0.00E+00			
Phosphoric Acid	7664382	0.00E+00			
Phthalic Anhydride	85449	0.00E+00			
Polychlorinated Biphenyls	1336363	0.00E+00			
Potassium Bromate	7758012	0.00E+00			
Propylene	115071	0.00E+00			
Propylene Glycol Monomethyl Ether	107982	0.00E+00			
Propylene oxide	75569	0.00E+00			
Selenium	7782492	0.00E+00			
Selenium sulfide	7446346	0.00E+00			
Silica (crystalline, respirable)	7631869	0.00E+00			
Sodium hydroxide	1310732	0.00E+00			
Styrene	100425	0.00E+00			
Sulfates	9960	0.00E+00			
Sulfur Dioxide	7446095	5.55E+00			
Sulfuric Acid	7664939	0.00E+00			
Sulfur Trioxide	7446719	0.00E+00			
Tertiary-butyl acetate	540885	0.00E+00			
Tetrachloroethylene	127184	0.00E+00			
Thioacetamide	62555	0.00E+00			
Toluene	108883	0.00E+00			
Toluene Diisocyanates	26471625	0.00E+00			
Toluene Diisocyanates (2,4 and 2, 6)	584849	0.00E+00			
Toluene Diisocyanates (2,4 and 2, 6)	91087	0.00E+00			
Trichloroethylene	79016	0.00E+00			
Triethylamine	121448	0.00E+00			
Urethane	51796	0.00E+00			
Vanadium pentoxide	1314621	0.00E+00			
Vinyl acetate	108054	0.00E+00			
Vinyl chloride	75014	0.00E+00			
Xylenes (technical mixture of m, o, p-isomers)	1330207	0.00E+00			
Vanadium	7440622	0.00E+00			
TOTAL UNADJUSTED Risk Values		4.971	0.015	0.011	



Step 1: Enter Facility Data	
Plant Name	City of Burlingame, Waste Water Treatment Plant
Plant No.	1351

Step 3: Specify Source Type	
Does facility have only diesel backup generators?	no
Is this analysis for a gas station?	no

Step 2: Estimate Distance	
What is the distance (m) from the facility boundary to the MEI?	300

Step 5: Read Estimates	
Total Cancer Risk	3.254
Total Chronic Hazard	0.019
Total PM2.5 Concentration	0.000

per 1,000,000
µg/m³

Step 2: Enter Emissions Data	
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Chemical Name	CAS No. (dashes removed)	Emission (lb/day)	Cancer (# / 1,000,000)	Chronic (index)	Concentration (µg/m3)
Fine Particulate Matter (PM2.5)		0.00E+00			
1,1,1-Trichloroethane	71556	2.72E-04		5.14E-07	
1,1,2,2-Tetrachloroethane	79345	0.00E+00			
1,1,2-Trichloroethane	79005	0.00E+00			
1,1-Dichloroethane	75343	0.00E+00			
1,1-Dichloroethylene	75354	0.00E+00			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268879	0.00E+00			
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001020	0.00E+00			
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822469	0.00E+00			
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562394	0.00E+00			
1,2,3,4,7,8,9-Heptachlorodibenzo-p-dioxin	55673897	0.00E+00			
1,2,3,4,7,8-Heptachlorodibenzofuran	39227286	0.00E+00			
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	70648269	0.00E+00			
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653857	0.00E+00			
1,2,3,6,7,8-Hexachlorodibenzofuran	57117449	0.00E+00			
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408743	0.00E+00			
1,2,3,7,8,9-Hexachlorodibenzofuran	72918219	0.00E+00			
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321764	0.00E+00			
1,2,3,7,8-Pentachlorodibenzofuran	57117416	0.00E+00			
1,2-Dibromo-3-chloropropane	96128	0.00E+00			
1,2-Dibromoethane	106934	0.00E+00			
1,2-Dichloroethane	107062	0.00E+00			
1,2-Epoxybutane	106887	0.00E+00			
1,3-Butadiene	106990	0.00E+00			
1,3-Propane sultone	1120714	0.00E+00			
1,4-Dichlorobenzene	106467	0.00E+00	1.93E+00	8.93E-05	
1,4-Dioxane	123911	0.00E+00			
1,6-Dinitropyrene	42397648	0.00E+00			
1,8-Dinitropyrene	42397659	0.00E+00			
1-Nitropyrene	5522430	0.00E+00			
2',3,4,4',5'-PeCB	65510443	0.00E+00			
2,3',4,4',5,5'-HxCB	52663726	0.00E+00			
2,3',4,4',5'-PeCB	31508006	0.00E+00			
2,3,3',4,4',5'-HxCB	69782907	0.00E+00			
2,3,3',4,4',5,5'-HpCB	39635319	0.00E+00			
2,3,3',4,4',5'-HxCB	38380084	0.00E+00			
2,3,3',4,4',5'-PeCB	32598144	0.00E+00			
2,3,4,4',5'-PeCB	74472370	0.00E+00			
2,3,4,6,7,8-hexachlorodibenzofuran	60851345	0.00E+00			
2,3,4,7,8-Pentachlorodibenzofuran	57117314	0.00E+00			
2,3,7,8-Tetrachlorodibenzo-p-dioxin and related compound	1746016	0.00E+00			
2,3,7,8-Tetrachlorodibenzofuran	51207319	0.00E+00			
2,4,6-Trichlorophenol	88062	0.00E+00			
2,4-Diaminobenzonitrile	615054	0.00E+00			
2,4-Diaminotoluene	95807	0.00E+00			
2,4-Dinitrotoluene	121142	0.00E+00			
2-Aminoanthraquinone	117793	0.00E+00			
2-Nitrofluorene	607578	0.00E+00			
3,3',4,4',5,5'-HxCB	32774166	0.00E+00			
3,3',4,4',5'-PeCB	57465288	0.00E+00			
3,3',4,4'-TCB	32598133	0.00E+00			
3,3-Dichlorobenzidine	91941	0.00E+00			
3,4,4'-TCB	70362504	0.00E+00			
3-Methylcholanthrene	56495	0.00E+00			
4-Methylene bis(2-chloroaniline)	101144	0.00E+00			
4,4-Methylenedianiline	101779	0.00E+00			
4-Chloro-ortho-phenylenediamine	95830	0.00E+00			
4-Dimethylaminoazobenzene	60117	0.00E+00			
4-Nitropyrene	57835924	0.00E+00			
5-Methylchrysene	3697243	0.00E+00			
5-Nitroacenaphthene	602879	0.00E+00			
6-Nitrochrysene	7496028	0.00E+00			
7,12-Dimethylbenz(a)anthracene	57976	0.00E+00			
7H-dibenzo(c,g)carbazole	194592	0.00E+00			
Acetaldehyde	75070	0.00E+00			
Acetamide	60355	0.00E+00			
Acrolein	107028	0.00E+00			
Acrylamide	79061	0.00E+00			
Acrylic Acid	79107	0.00E+00			
Acrylonitrile	107131	0.00E+00			
Allyl chloride	107051	0.00E+00			
Ammonia	7664417	6.38E-01		6.03E-03	
Aniline	62533	0.00E+00			
Arsenic	7440382	0.00E+00			
Arsine	7784421	0.00E+00			
Asbestos [1/(100 PCM fibers/m ³)] ⁻¹	1332214	0.00E+00			
Benz(a)anthracene	56553	0.00E+00			
Benzene	71432	2.76E-02	3.53E+00	1.74E-02	
Benzo(a)pyrene	92875	0.00E+00			
Benzo(b)fluoranthene	50328	0.00E+00			
Benzo(k)fluoranthene	205992	0.00E+00			
Benzo(l)fluoranthene	205823	0.00E+00			
Benzo(a)fluoranthene	207089	0.00E+00			
Benzyl Chloride	100447	0.00E+00			
Beryllium	7440417	0.00E+00			
Bis(2-chloroethyl) Ether	111444	0.00E+00			

[illegible]

Nickel hydroxide	12054487	0.00E+00			
Nickelocene	1271289	0.00E+00			
Nickel Oxide	1313991	0.00E+00			
Nickel Refinery Dust	1146	0.00E+00			
Nickel Subsulfide	12035722	0.00E+00			
Nitric Acid	7697372	0.00E+00			
Nitrogen Dioxide	10102440	1.20E+00			
o-CRESOL	95487	0.00E+00			
o-XYLENE	95476	2.48E-01	6.71E-04		
Oleum	8014957	0.00E+00			
Ozone	10028156	0.00E+00			
p-Chloro-o-toluidine	95692	0.00E+00			
p-Cresidine	120718	0.00E+00			
p-CRESOL	106445	0.00E+00			
p-Nitrosodiphenylamine	156105	0.00E+00			
p-XYLENE	106423	2.48E-01	6.71E-04		
Pentachlorophenol	87865	0.00E+00			
Perchloroethylene	127184	2.76E-01	7.40E+00	1.49E-02	
Phenol	108952	0.00E+00			
Phosgene	75445	0.00E+00			
Phosphine	7803512	0.00E+00			
Phosphoric Acid	7664382	0.00E+00			
Phthalic Anhydride	85449	0.00E+00			
Polychlorinated Biphenyls	1336363	0.00E+00			
Potassium Bromate	7758012	0.00E+00			
Propylene	115071	0.00E+00			
Propylene Glycol Monomethyl Ether	107982	0.00E+00			
Propylene oxide	75569	0.00E+00			
Selenium	7782492	0.00E+00			
Selenium sulfide	7446346	0.00E+00			
Silica (crystalline, respirable)	7631869	0.00E+00			
Sodium hydroxide	1310732	0.00E+00			
Styrene	100425	0.00E+00			
Sulfates	9960	0.00E+00			
Sulfur Dioxide	7446095	4.62E-01			
Sulfuric Acid	7664939	0.00E+00			
Sulfur Trioxide	7446719	0.00E+00			
Tertiary-butyl acetate	540885	0.00E+00			
Tetrachloroethylene	127184	0.00E+00			
Thioacetamide	62555	0.00E+00			
Toluene	108883	2.23E-01	1.41E-03		
Toluene Diisocyanates	26471625	0.00E+00			
Toluene Diisocyanates (2,4 and 2, 6)	584849	0.00E+00			
Toluene Diisocyanates (2,4 and 2, 6)	91087	0.00E+00			
Trichloroethylene	79016	8.27E-02	7.40E-01	2.60E-04	
Triethylamine	121448	0.00E+00			
Urethane	51796	0.00E+00			
Vanadium pentoxide	1314621	0.00E+00			
Vinyl acetate	108054	0.00E+00			
Vinyl chloride	75014	1.96E-03	6.77E-01		
Xylenes (technical mixture of m, o, p-isomers)	1330207	2.48E-01		6.71E-04	
Vanadium	7440622	0.00E+00			
TOTAL UNADJUSTED Risk Values		24.696	0.145	0.000	

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
 DETAIL POLLUTANTS - ABATED
 MOST RECENT P/O APPROVED (2019)

Printed: MAY 22, 2019

City of Burlingame (P# 13079)

S#	SOURCE NAME	SOURCE CODE	POLLUTANT	CODE	LBS/DAY
MATERIAL	THROUGHPUT	DATE			

1	Standby Generator Set				
		C22AG098			
			Benzene	41	9.12E-06
			Formaldehyde	124	7.55E-07
			Organics (other, including	990	4.41E-04
			Arsenic (all)	1030	7.95E-09
			Beryllium (all) pollutant	1040	4.66E-09
			Cadmium	1070	1.99E-08
			Chromium (hexavalent)	1095	4.11E-10
			Lead (all) pollutant	1140	1.68E-08
			Manganese	1160	2.64E-08
			Nickel pollutant	1180	3.21E-07
			Mercury (all) pollutant	1190	5.62E-09
			Diesel Engine Exhaust Part	1350	7.95E-05
			PAH's (non-speciated)	1840	4.19E-08
			Nitrous Oxide (N2O)	2030	2.44E-06
			Nitrogen Oxides (part not	2990	3.21E-03
			Sulfur Dioxide (SO2)	3990	2.98E-06
			Carbon Monoxide (CO) pollu	4990	9.18E-04
			Carbon Dioxide, non-biogen	6960	3.06E-01
			Methane (CH4)	6970	1.22E-05
2	Emergency Standby Diesel Generator Set				
		C22BG098			
			Benzene	41	2.19E-05
			Formaldehyde	124	1.81E-06
			Organics (other, including	990	2.03E-04
			Arsenic (all)	1030	1.91E-08
			Beryllium (all) pollutant	1040	1.12E-08
			Cadmium	1070	4.77E-08
			Chromium (hexavalent)	1095	9.86E-10
			Lead (all) pollutant	1140	4.04E-08
			Manganese	1160	6.35E-08
			Nickel pollutant	1180	7.71E-07
			Mercury (all) pollutant	1190	1.35E-08
			Diesel Engine Exhaust Part	1350	1.91E-04
			PAH's (non-speciated)	1840	1.01E-07
			Nitrous Oxide (N2O)	2030	5.87E-06
			Nitrogen Oxides (part not	2990	4.24E-03
			Sulfur Dioxide (SO2)	3990	7.15E-06
			Carbon Monoxide (CO) pollu	4990	3.23E-03

Carbon Dioxide, non-biogen	6960	7.33E-01
Methane (CH4)	6970	2.93E-05

PLANT TOTAL:

lbs/day Pollutant

2.70E-08	Arsenic (all) (1030)
3.10E-05	Benzene (41)
1.58E-08	Beryllium (all) pollutant (1040)
6.75E-08	Cadmium (1070)
1.04E+00	Carbon Dioxide, non-biogenic CO2 (6960)
4.14E-03	Carbon Monoxide (CO) pollutant (4990)
1.40E-09	Chromium (hexavalent) (1095)
2.71E-04	Diesel Engine Exhaust Particulate Matter (1350)
2.57E-06	Formaldehyde (124)
5.73E-08	Lead (all) pollutant (1140)
8.99E-08	Manganese (1160)
1.91E-08	Mercury (all) pollutant (1190)
4.15E-05	Methane (CH4) (6970)
1.09E-06	Nickel pollutant (1180)
7.45E-03	Nitrogen Oxides (part not spec elsewhere) (2990)
8.31E-06	Nitrous Oxide (N2O) (2030)
6.44E-04	Organics (other, including CH4) (990)
1.43E-07	PAH's (non-speciated) (1840)
1.01E-05	Sulfur Dioxide (SO2) (3990)

Step 1:

City of Burlingame

13079

Step 2:

Estimate Distance

What is the distance (m) from the facility boundary to the MEI?

260

Step 3:

Specify Source Type

Does facility have only diesel backup generators?

yes

Is this analysis for a gas station?

no

Step 5:

Read Estimates

Total Cancer Risk

0.022

per 1,000,000

Total Chronic Hazard

0.000

Total PM2.5 Concentration

0.000

µg/m³

Step 2:

Enter Emissions Data

Chemical Name	CAS No.	Emission	Cancer	Chronic	Concentration
	(dashes removed)	(lb/day)	(# / 1,000,000)	(Index)	(µg/m3)
Fine Particulate Matter (PM2.5)		2.71E-04			0.00
1,1,1-Trichloroethane	71556	0.00E+00			
1,1,2,2-Tetrachloroethane	79345	0.00E+00			
1,1,2-Trichloroethane	79005	0.00E+00			
1,1-Dichloroethane	75343	0.00E+00			
1,1-Dichloroethylene	75354	0.00E+00			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268879	0.00E+00			
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001020	0.00E+00			
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822469	0.00E+00			
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562394	0.00E+00			
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673897	0.00E+00			
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227286	0.00E+00			
1,2,3,4,7,8-Hexachlorodibenzofuran	70648269	0.00E+00			
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653857	0.00E+00			
1,2,3,6,7,8-Hexachlorodibenzofuran	57117449	0.00E+00			
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408743	0.00E+00			
1,2,3,7,8,9-Hexachlorodibenzofuran	72918219	0.00E+00			
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321764	0.00E+00			
1,2,3,7,8-Pentachlorodibenzofuran	57117416	0.00E+00			
1,2-Dibromo-3-chloropropane	96128	0.00E+00			
1,2-Dibromoethane	106934	0.00E+00			
1,2-Dichloroethane	107062	0.00E+00			
1,2-Epoxybutane	106887	0.00E+00			
1,3-Butadiene	106990	0.00E+00			
1,3-Propane sultone	1120714	0.00E+00			
1,4-Dichlorobenzene	106467	0.00E+00			
1,4-Dioxane	123911	0.00E+00			
1,6-Dinitropyrene	42397648	0.00E+00			
1,8-Dinitropyrene	42397659	0.00E+00			
1-Nitropyrene	5522430	0.00E+00			
2',3,4,4',5-PeCB	65510443	0.00E+00			
2,3',4,4',5,5'-HxCB	52663726	0.00E+00			
2,3',4,4',5-PeCB	31508006	0.00E+00			
2,3,3',4,4',5'-HxCB	69782907	0.00E+00			
2,3,3',4,4',5,5'-HpCB	39635319	0.00E+00			
2,3,3',4,4',5-HxCB	38380084	0.00E+00			
2,3,3',4,4'-PeCB	32598144	0.00E+00			
2,3,4,4',5-PeCB	74472370	0.00E+00			
2,3,4,6,7,8-hexachlorodibenzofuran	60851345	0.00E+00			
2,3,4,7,8-Pentachlorodibenzofuran	57117314	0.00E+00			
2,3,7,8-Tetrachlorodibenzo-p-dioxin and related compc	1746016	0.00E+00			
2,3,7,8-Tetrachlorodibenzofuran	51207319	0.00E+00			
2,4,6-Trichlorophenol	88062	0.00E+00			
2,4-Diaminoanisole	615054	0.00E+00			
2,4-Diaminotoluene	95807	0.00E+00			
2,4-Dinitrotoluene	121142	0.00E+00			
2-Aminoanthraquinone	117793	0.00E+00			
2-Nitrofluorene	607578	0.00E+00			
3,3',4,4',5,5'-HxCB	32774166	0.00E+00			
3,3',4,4',5-PeCB	57465288	0.00E+00			
3,3',4,4'-TCB	32598133	0.00E+00			
3,3-Dichlorobenzidine	91941	0.00E+00			

3,4,4'-TCB	70362504	0.00E+00			
3-Methylcholanthrene	56495	0.00E+00			
4,4-Methylene bis(2-chloroaniline)	101144	0.00E+00			
4,4-Methylenedianiline	101779	0.00E+00			
4-Chloro-ortho-phenylenediamine	95830	0.00E+00			
4-Dimethylaminoazobenzene	60117	0.00E+00			
4-Nitropyrene	57835924	0.00E+00			
5-Methylchrysene	3697243	0.00E+00			
5-Nitroacenaphthene	602879	0.00E+00			
6-Nitrochrysene	7496028	0.00E+00			
7,12-Dimethylbenz(a)anthracene	57976	0.00E+00			
7H-dibenzo(c,g)carbazole	194592	0.00E+00			
Acetaldehyde	75070	0.00E+00			
Acetamide	60355	0.00E+00			
Acrolein	107028	0.00E+00			
Acrylamide	79061	0.00E+00			
Acrylic Acid	79107	0.00E+00			
Acrylonitrile	107131	0.00E+00			
Allyl chloride	107051	0.00E+00			
Ammonia	7664417	0.00E+00			
Aniline	62533	0.00E+00			
Arsenic	7440382	2.70E-08	4.14E-04	3.40E-06	
Arsine	7784421	0.00E+00			
Asbestos [1/(100 PCM fibers/m^3)]^1	1332214	0.00E+00			
Benz(a)anthracene	56553	0.00E+00			
Benzene	71432	3.10E-05	3.96E-03	1.95E-05	
Benzidine	92875	0.00E+00			
Benzo(a)pyrene	50328	0.00E+00			
Benzo(b)fluoranthene	205992	0.00E+00			
Benzo(j)fluoranthene	205823	0.00E+00			
Benzo(k)fluoranthene	207089	0.00E+00			
Benzyl Chloride	100447	0.00E+00			
Beryllium	7440417	1.58E-08	1.70E-04	4.27E-06	
Bis(2-chloroethyl) Ether	111444	0.00E+00			
Bis(2-chloromethyl) Ether	542881	0.00E+00			
Cadmium	7440439	6.75E-08	1.29E-03	6.38E-06	
Caprolactam	105602	0.00E+00			
Carbon Disulfide	75150	0.00E+00			
Carbon Monoxide	630080	4.14E-03			
Carbon Tetrachloride	56235	0.00E+00			
Carbonyl Sulfide	463581	0.00E+00			
Chlorinated paraffins (Avg. chain length C12; approx. 60	108171262	0.00E+00			
Chlorine	7782505	0.00E+00			
Chlorine Dioxide	10049044	0.00E+00			
Chlorite	7758192	0.00E+00			
Chlorobenzene	108907	0.00E+00			
Chlorodibromomethane	124481	0.00E+00			
Chloroethane (Ethyl Chloride)	75003	0.00E+00			
Chloroform	67663	0.00E+00			
Chloropicrin	76062	0.00E+00			
Chromic Trioxide	1333820	0.00E+00			
Chromium-hexavalent	18540299	1.40E-09	9.13E-04	1.32E-08	
Barium chromate2	10294403	0.00E+00			
Calcium chromate2	13765190	0.00E+00			
Lead chromate2	7758976	5.73E-08	3.74E-02	5.41E-07	
Sodium dichromate2	10588019	0.00E+00			
Strontium chromate2	7789062	0.00E+00			
CHROMIC TRIOXIDE (as chromic acid mist)	1333820	0.00E+00			
Chrysene	218019	0.00E+00			
Copper	7440508	0.00E+00			
Copper and Copper Compounds	7440508	0.00E+00			
Cresol Mixtures	1319773	0.00E+00			
Cupferron	135206	0.00E+00			
Cyanide	57125	0.00E+00			
Di(2-ethylhexyl)phthalate	117817	0.00E+00			
Dibenz(a-h)acridine	226368	0.00E+00			
Dibenz(a-h)anthracene	53703	0.00E+00			
Dibenz(a-j)acridine	224420	0.00E+00			
Dibenzo(a-e)pyrene	192654	0.00E+00			
Dibenzo(a-h)pyrene	189640	0.00E+00			
Dibenzo(a-i)pyrene	189559	0.00E+00			

Dibenzo(a-l)pyrene	191300	0.00E+00	3.81E-01	1.02E-04		
Diesel Exhaust Particulate	85105	2.71E-04				
Diethanolamine	111422	0.00E+00	6.90E-05	5.40E-07		
Dimethylformamide	68122	0.00E+00				
Direct Black 38 (Technical Grade)	1937377	0.00E+00				
Direct Blue 6 (Technical Grade)	2602462	0.00E+00				
Direct Brown 95 (Technical Grade)	16071866	0.00E+00				
Epichlorohydrin	106898	0.00E+00				
Ethylbenzene	100414	0.00E+00				
Ethylene Glycol	107211	0.00E+00				
Ethylene Glycol Monobutyl Ether	111762	0.00E+00				
Ethylene Glycol Monoethyl Ether	110805	0.00E+00				
Ethylene Glycol Monoethyl Ether Acetate	111159	0.00E+00				
Ethylene Glycol Monomethyl Ether	109864	0.00E+00				
Ethylene Glycol Monomethyl Ether Acetate	110496	0.00E+00				
Ethylene Oxide	75218	0.00E+00				
Ethylene Thiourea	96457	0.00E+00				
Fluorides	1101	0.00E+00				
Formaldehyde (gas)	50000	2.57E-06				
Glutaraldehyde	111308	0.00E+00				
Hexachlorobenzene	118741	0.00E+00				
Hexachlorocyclohexane (Technical Grade)	608731	0.00E+00				
Hexachlorocyclohexane- Alpha Isomer	319846	0.00E+00				
Hexachlorocyclohexane- Beta Isomer	319857	0.00E+00				
Hexachlorocyclohexane- Gamma Isomer	58899	0.00E+00				
Hydrazine	302012	0.00E+00				
		0.00E+00				
Hydrogen Chloride	7647010		3.08E-06	1.89E-06		
Hydrogen Cyanide	74908	0.00E+00				
Hydrogen Fluoride	7664393	0.00E+00				
Hydrogen Selenide	7783075	0.00E+00				
Hydrogen Sulfide	7783064	0.00E+00				
Indeno(1-2-3-c-d)pyrene	193395	0.00E+00				
Isophorone	78591	0.00E+00				
Isopropyl Alcohol	67630	0.00E+00				
Lead Acetate	301042	5.73E-08				
Lead and Lead Compounds	7439921	5.73E-08				
Lead Phosphate	7446277	5.73E-08				
Lead Subacetate	1335326	5.73E-08				
m-CRESOL	108394	0.00E+00				
m-XYLENE	108383	0.00E+00				
Maleic Anhydride	108316	0.00E+00				
Manganese & Manganese Compounds	7439965	8.99E-08				
Mercury (Inorganic)	7439976	1.91E-08				
Mercuric chloride	7487947	0.00E+00				
Methanol	67561	0.00E+00				
Methyl Bromide	74839	0.00E+00				
Methyl Ethyl Ketone	78933	0.00E+00				
Methyl Isocyanate	624839	0.00E+00				
Methyl Tertiary Butyl Ether	1634044	0.00E+00				
Methylene Chloride (Dichloromethane)	75092	0.00E+00	1.27E-03	1.47E-04		
Methylene Diphenyl Isocyanate (MDI)	101688	0.00E+00				
Michlers Ketone	90948	0.00E+00				
n-Hexane	110543	0.00E+00				
n-Nitroso-n-methylethylamine	10595956	0.00E+00				
n-Nitrosodi-n-Butylamine	924163	0.00E+00				
n-Nitrosodi-n-Propylamine	621647	0.00E+00				
n-Nitrosodiethylamine	55185	0.00E+00				
n-Nitrosodimethylamine	62759	0.00E+00				
n-Nitrosodiphenylamine	86306	0.00E+00				
n-Nitrosomorpholine	59892	0.00E+00				
n-Nitrosopiperidine	100754	0.00E+00				
n-Nitrosopyrrolidine	930552	0.00E+00				
Napthalene	91203	0.00E+00				
Nickel and Nickel Compounds	7440020	1.09E-06				
Nickel acetate	373024	1.09E-06				
Nickel carbonate	3333673	1.09E-06				
Nickel carbonyl	13463393	1.09E-06				
Nickel hydroxide	12054487	1.09E-06				
Nickelocene	1271289	1.09E-06				

Nickel Oxide	1313991	1.09E-06	1.27E-03	1.03E-04	
Nickel Refinery Dust	1146	1.09E-06	1.27E-03	1.47E-04	
Nickel Subsulfide	12035722	1.09E-06	1.27E-03	1.47E-04	
Nitric Acid	7697372	0.00E+00			
Nitrogen Dioxide	10102440	7.45E-03			
o-CRESOL	95487	0.00E+00			
o-XYLENE	95476	0.00E+00			
Oleum	8014957	0.00E+00			
Ozone	10028156	0.00E+00			
p-Chloro-o-toluidine	95692	0.00E+00			
p-Cresidine	120718	0.00E+00			
p-CRESOL	106445	0.00E+00			
p-Nitrosodiphenylamine	156105	0.00E+00			
p-XYLENE	106423	0.00E+00			
Pentachlorophenol	87865	0.00E+00			
Perchloroethylene	127184	0.00E+00			
Phenol	108952	0.00E+00			
Phosgene	75445	0.00E+00			
Phosphine	7803512	0.00E+00			
Phosphoric Acid	7664382	0.00E+00			
Phthalic Anhydride	85449	0.00E+00			
Polychlorinated Biphenyls	1336363	0.00E+00			
Potassium Bromate	7758012	0.00E+00			
Propylene	115071	0.00E+00			
Propylene Glycol Monomethyl Ether	107982	0.00E+00			
Propylene oxide	75569	0.00E+00			
Selenium	7782492	0.00E+00			
Selenium sulfide	7446346	0.00E+00			
Silica (crystalline, respirable)	7631869	0.00E+00			
Sodium hydroxide	1310732	0.00E+00			
Styrene	100425	0.00E+00			
Sulfates	9960	0.00E+00			
Sulfur Dioxide	7446095	1.01E-05			
Sulfuric Acid	7664939	0.00E+00			
Sulfur Trioxide	7446719	0.00E+00			
Tertiary-butyl acetate	540885	0.00E+00			
Tetrachloroethylene	127184	0.00E+00			
Thioacetamide	62555	0.00E+00			
Toluene	108883	0.00E+00			
Toluene Diisocyanates	26471625	0.00E+00			
Toluene Diisocyanates (2,4 and 2, 6)	584849	0.00E+00			
Toluene Diisocyanates (2,4 and 2, 6)	91087	0.00E+00			
Trichloroethylene	79016	0.00E+00			
Triethylamine	121448	0.00E+00			
Urethane	51796	0.00E+00			
Vanadium pentoxide	1314621	0.00E+00			
Vinyl acetate	108054	0.00E+00			
Vinyl chloride	75014	0.00E+00			
Xylenes (technical mixture of m, o, p-isomers)	1330207	0.00E+00			
Vanadium	7440622	0.00E+00			
TOTAL UNADJUSTED Risk Values		0.437	0.001	0.001	