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PIONEER AGGREGATES SOUTH PARCEL EXPANSION PROJECT

AIR QUALITY ASSESSMENT

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CONTENTS

TABLES

1. INTRODUCTION

The Pioneer Aggregates South Parcel Project ("South Parcel Project") includes horizontal expansion of mining into approximately 188 acres previously undisturbed by mining and vertical expansion of approximately 125 acres where mining will deepen a portion of the existing mine. The South Parcel Project would extend mining at the current rate for approximately 14 additional years but would not increase current throughput. As under current conditions, all the material from the expansion will be processed in the already permissible processing facilities.

Mining under the South Parcel Project will proceed slowly from the north to the south over a period of five to eight years. The method of mining will be identical to that currently used in the permitted mine area. A dozer would push excavated material from the top of the mine face to two front-end loaders working on the mine floor. The front-end loaders would scoop-up the sand and gravel and dump it into portable hoppers that feed conveyors leading to the processing area.

A conveyor will start at the north end of the Expansion Area and will be extended south as mining progresses. The conveyor is comprised of a 48-inch-wide rubberized belt that is supported by a series of rollers, called idlers, mounted on steel framed segments that support the conveyor about five feet off the ground.

As excavation of the South Parcel proceeds, water wells will be installed to create a "curtain" that intercepts groundwater along the future pit edge. Water that intercepts these wells will be pumped. At its peak, when the pit edge is at the greatest extent, approximately 50 pumps may be working simultaneously.

Ramboll US Consulting (Ramboll) evaluated the air quality implications of the above mining activities associated with the expansion. For sand and gravel excavation, particulate matter (dust) is typically the only pollutant emitted in sufficient quantities to be a potential concern and is the focus of this air quality analysis. In addition, we are providing an assessment of potential greenhouse gas (GHG) emissions associated with the Project. The following information is based on a qualitative analysis of particulate matter (i.e., no air quality monitoring or modeling) and simple GHG calculations.

2. AFFECTED ENVIRONMENT

2.1 Regulatory Overview

Air quality is generally assessed in terms of whether concentrations of air pollutants are higher or lower than ambient air quality standards established to protect human health and welfare. Three agencies have jurisdiction over ambient air quality in the project area: the U.S. Environmental Protection Agency (EPA), the Washington Department of Ecology (Ecology), and the Puget Sound Clean Air Agency (PSCAA). These agencies establish regulations that govern both the concentrations of pollutants in the outdoor air and contaminant emissions from air pollution sources. Although their regulations are similar in stringency, each agency has established its own standards. Unless the state or local jurisdiction has adopted more stringent standards, the EPA standards pertain.

To track air quality conditions over time, Ecology and PSCAA maintain a network of monitoring stations throughout the Puget Sound region. These stations are typically located where air quality problems may be expected to occur, and so are usually in or near urban areas or close to specific large air pollution sources. Other stations are used to indicate regional air pollution levels. Based on monitoring information collected over a period of years, the EPA and Ecology designate regions as being "attainment" or "nonattainment" for particular air pollutants. Attainment status is therefore a benchmark of whether air quality in an area complies with the National Ambient Air Quality Standard (NAAQS) for one or more "criteria" air pollutants.[1] Regions once designated nonattainment that have since attained the standard are considered air quality "maintenance" areas through two 10-year cycles of review, after which the area achieves "attainment" if the ambient standards have been maintained.

The project area is considered in attainment for all monitored air pollutants. This suggests air quality in the project vicinity is generally good. Pertinent air pollutants are discussed in greater detail below. A complete list of local, state, and federal ambient air quality standards is displayed in **Table 1**.

Table 1. Applicable Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Terms of Compliance [(a)]	Concentration
Inhalable Particulate Matter (PM_{10})		
Annual Average ($\mu g/m^{3)}$	Arithmetic mean not to be exceeded	50 $\mu g/m^3$
24-Hour Average ($\mu g/m^3$)	The 3-year average of the 98th percentile of the daily concentrations must not exceed	150 $\mu g/m^3$
Fine Particulate Matter ($PM_{2.5}$)		
Annual Average ($\mu g/m^3$)	The 3-year average of the annual mean must not exceed	12 $\mu g/m^3$
24-Hour Average ($\mu g/m^3$)	The 3-year average of the 98th percentile of daily concentrations must not exceed	35 $\mu g/m^3$
Carbon Monoxide (CO)		
8-Hour Average (ppm)	The 8-hour average must not exceed more than once per year	9 ppm
1-Hour Average (ppm)	The 1-hour average must not exceed more than once per year	35 ppm
Ozone (O_3)		
8-Hour Average (ppm)	The 3-year average of the 4th highest daily maximum 8-hour average must not exceed	0.070 ppm

[1] The criteria air pollutants are particulate matter, CO, SO_2, NO_2, ozone, and lead.

Pollutant	Terms of Compliance [a]	Concentration
Sulfur Dioxide (SO_2) [b]		
Annual Average (ppm)	Annual arithmetic mean of 1-hour averages must not exceed	0.02 ppm [b]
24-Hour Average (ppm)	24-hour average must not exceed	0.10 ppm [b]
1-Hour Average (ppm)	1-hour average must not exceed	0.40 ppm [b]
1-Hour Average (ppm)	The 3-year average of the 99th percentile of daily max 1-hour conc. must not exceed	0.075 ppm
1-Hour Average (ppm)	No more than twice in 7 consecutive days may 1-hour average exceed	0.25 ppm [b]
Nitrogen Dioxide (NO_2)		
Annual Average (ppm)	The annual mean of 1-hour averages must not exceed	0.053 ppm
1-Hour Average (ppm)	3-year average of 98th percentile of daily max 1 hour averages must not exceed	0.1 ppm
Lead (Pb)		
Quarterly Average ($\mu g/m^3$)	3-month average must not exceed	0.15 $\mu g/m^3$

Note: $\mu g/m^3$ = micrograms per cubic meter; ppm = parts per million; note that some standards also are sometimes expressed as parts per billion (ppb)

[a] All limits are federal and state air quality standards except as noted. All indicated limits represent "primary" air quality standards intended to protect human health.

[b] Washington State standards; Washington applies more stringent annual and 24-hour limits for SO_2 than in federal rules. There is also a federal 0.5 ppm 3-hour average "secondary" standard for SO_2 to protect welfare.

2.2 Existing Air Quality

2.2.1 Carbon Monoxide

Carbon monoxide (CO) is a by-product of incomplete combustion. CO is generated by vehicular traffic and other fuel-burning activities, such as residential space heating, especially space heating using solid fuels such as coal or wood. There are two short-term air quality standards for CO: a 1-hour average standard of 35 ppm and an 8-hour average standard of 9 ppm.

The impacts of CO are usually localized near the source(s), with the highest ambient concentrations typically occurring near congested roadways and intersections during periods of cold temperatures (autumn and winter months), light winds, and stable atmospheric conditions. Such weather conditions reduce the atmospheric mechanisms that disperse and dilute pollutants.

The project site is located next to a past CO maintenance area where the 20-year maintenance period ended in 2016. Due to violations of the federal 1-hour CO standard, the Puget Sound region was designated as nonattainment for CO. In 1996, EPA determined that the Puget Sound ozone nonattainment area had attained the health-based CO standard in effect at that time. EPA then reclassified the Puget Sound region as attainment for CO and approved the associated air quality maintenance plan. Under present plans and policies, the CO attainment/nonattainment status of the area would have no direct effects on the proposed project.

2.2.2 Ozone

Ozone is a reactive form of oxygen created by sunlight-activated chemical transformations of nitrogen oxides and volatile organic compounds (hydrocarbons) in the atmosphere. Ozone problems tend to be regional in nature because the atmospheric chemical reactions that produce ozone occur over a period of time, during which ozone precursors can be transported far from their sources. Transportation sources like automobiles and trucks are among the sources that produce ozone precursors.

The project site is located next to a past ozone maintenance area within the Puget Sound region where the 20-year maintenance period ended in 2016. In the past, due to violations of the federal 1-hour ozone standard, the Puget Sound region was designated as nonattainment for ozone. In 1997, EPA determined that the Puget Sound ozone nonattainment area had attained the health-based ozone standard in effect at that time. EPA then reclassified the Puget Sound region as attainment for ozone and approved the associated air quality maintenance plan. In 2005, EPA revoked the 1-hour ozone standard in most areas of the US including the Puget Sound region, which ended the ozone maintenance status of this region. In March of 2008, the EPA adopted a new more stringent 8-hour average ozone standard of 75 parts per billion (ppb). The 8-hour standard was later strengthened to 70 ppb for most areas, effective December 2015.[(2)] Under present plans and policies, the ozone attainment/nonattainment status of the area would have no direct effects on the proposed project.

2.2.3 Inhalable Particulate Matter – PM_{10} and $PM_{2.5}$

Particulate matter air pollution is comprised of particles either emitted directly into the air (e.g., dust) or formed when hot gases cool and condense. Such air pollution is generated primarily by industrial activities and operations involving fuel combustion and material handling, and by other fuel combustion sources like motor vehicle engines, vessel engines, and residential wood burning. Federal, state, and local regulations set limits for particle concentrations in the air (i.e., weight per unit volume) based on the size of the particles and the related potential threat to health. When first regulated, particle pollution limits were based on "total suspended particulate," which included all size fractions. As sampling technology improved and the importance of particle size and chemical composition became more apparent, ambient standards were revised to focus on the size fractions thought to be most dangerous to human health. Based on the most recent studies, EPA has redefined the size fractions and set new, more stringent standards for particulate matter based on fine and coarse inhalable particulate matter to focus control efforts on the smaller size fractions.

The previous PM_{10} maintenance area for health-based ambient air quality standards for PM_{10}, or particles less than or equal to about 10 micrometers (microns) in diameter, was for all of Pierce County. The 20-year maintenance period ended in 2021 and is now classified as an attainment area for PM_{10}. This site is close to a current maintenance area for $PM_{2.5}$, or particulate matter less than or equal to 2.5 microns in diameter, which was designated in 2015. The latter size fraction and even smaller (ultra-fine) particles are now considered the most dangerous size fractions of airborne particulate matter because such small particles (e.g. a typical human hair is about 100 microns in diameter) can be breathed deeply into lungs. In addition, such particles are often associated with toxic

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(2) 80 Fed. Reg. 65,292 (Oct. 26, 2015).

substances that are deleterious in their own right and that adsorb to the particles and be carried into respiratory system.

The nearest PM2.5 maintenance area encompasses Tacoma and surrounding lowland areas in Pierce County.(3) The project site is south of Tacoma in the lowlands of Pierce County and is considered part of this maintenance area.

In gravel excavation and processing operations, particulate matter (dust) is typically the only pollutant emitted in sufficient quantities to be a potential concern. Therefore, particulate emissions, inhalable and fine particulate matter (PM10/PM2.5), are a focus of this analysis.

PSCAA states that reasonable precautions must be in place to control fugitive dust if visible emissions are present. PSCAA must respond to any emission of fugitive dust that is or can be damaging to human health, plant or animal life, property, or the enjoyment of life. The Agency can respond to complaints and will take enforcement action if necessary.

2.2.4 Greenhouse Gases and Global Climate Change

The phenomena of natural and human-caused effects on the atmosphere that cause changes in long-term meteorological patterns is known as climate change. Due to the importance of the greenhouse effect and related atmospheric warming to climate change, the gases that affect such warming are called greenhouse gasses (GHGs). The GHGs of primary importance are CO_2, methane, and nitrous oxide. Because CO_2 is the most abundant of these gases, GHGs are usually quantified in terms of CO_2e (carbon dioxide equivalent), based on their relative longevity in the atmosphere and the related "global warming potential" of these constituents. CO_2 is not considered an air "pollutant" that causes direct health-related effects, so it is not subject to ambient air quality standards used to gauge pollutant concentrations in the air.

Fuel combustion used for transportation is a significant source of GHG emissions, primarily through the burning of gasoline and diesel fuels. National estimates indicate the transportation sector (including on-road, construction, airplanes, and vessels) accounts for about 29 percent of total domestic CO_2e emissions from fossil fuels in 2017.[4] In a tabulation of 2017 emissions within Washington, Ecology estimated transportation accounted for about 45 percent of statewide GHG emissions;[5] the higher percentage is due to lower GHG emissions from electrical generation because the state relies heavily on hydropower for electricity.

No specific federal, state, or local emission reduction requirements or targets are applicable to the proposed Project, and there are no generally accepted emission level thresholds against which to assess potential localized or global consequences of GHG emissions. Therefore, this assessment

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(3) The maintenance area is called the Tacoma – Pierce County area. See information and maps at: https://ecology.wa.gov/Regulations-Permits/Plans-policies/State-implementation-plans/Maintenance-SIPs.

4 *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2017*, February 2020, https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks

5 *2017 Greenhouse Gas Data,* https://ecology.wa.gov/Air-Climate/Climate-change/Greenhouse-gases/2017-greenhouse-gas-data

includes a qualitative consideration of GHG emissions that may be associated with emissions related to operations at the facility.

2.3 Local Climate and Terrain

Weather is one of several variables that influence air quality, with wind (speed and direction) and atmospheric stability being two major factors that affect dispersion. Periods with stable high-pressure systems and periods that include nighttime thermal inversions due to the low solar heating of the land in winter create stable atmospheric conditions. It is during these very stable atmospheric conditions when little vertical dispersion occurs high concentrations of air pollutants emitted at ground level typically occur. Ground-level emitted pollutants include CO from motor vehicles and particulate matter from vehicles and wood stoves.

In the Puget Sound region, summers are cool and comparatively dry, and winters are mild, wet, and cloudy. The winter months are dominated by a stronger south wind and frequent precipitation. Annual average precipitation in the region is approximately 50.82 inches. Annual mean temperature in the urban areas of Olympia is about 50°F. The annual mean wind speed is about 4.5 mph, with a predominately southerly wind direction (i.e., from the south). Ecology maintains records of wind data, and wind roses which are available on their website at: (https://enviwa.ecology.wa.gov/home/map).

In some instances, terrain can also influence air quality. The proposed area is in the south Puget Sound area and is characterized as relatively flat terrain.

3. IMPACTS

3.1 Operational Impacts

The proposal would enable the Dupont site to expand its mining operations to a neighboring parcel. The proposed site would operate much like the existing site. A new loader will be purchased to operate in the area and will feed material onto conveyor belts to be transported to the processing plant. Their existing dozer will be used to maintain the high wall. Water pumps will be used to pump groundwater that intercepts the edge of the pit. The processing plant and other operations in the current site will continue unchanged.

Fugitive dust emissions could continue to be emitted in the current and new pit, in the processing areas, and on the transport roads from a number of sources; with the potential effects discussed below.

- **Wind erosion.** Wind erosion over exposed surfaces and stockpiles generates fugitive dust. Emissions of wind-blown dust are directly related to the number of exposed areas and are affected by a number of other factors such as moisture content and soil type. Groundwater is expected to come in contact with the material during mining operations. Therefore, there is little potential for wind erosion associated with the mining pit. The potential for wind erosion and wind-blown dust would continue for the current mining areas and for stockpiles and transport of materials.

- **Automobiles and off-site haul trucks.** Employee vehicles and haul trucks traveling on area roadways could be sources of fugitive dust and exhaust particulate. Haul trucks may be used to

export mined materials from the site. With the proposal, these sources would not notably differ from the current activities.

- **Heavy equipment.** Mobile heavy equipment (such as a front-end loader) would continue excavating and dropping material into hoppers feeding conveyors transporting material to the existing processing area.

- **On-site haul trucks.** On-site haul trucks typically generate the greatest fugitive dust emissions compared with other air pollution sources at a mining site. However, material at the site is transported from active mining areas to the processing areas via conveyors, and the use of on-site haul trucks is limited.

Fugitive dust emissions from the sources listed above are likely to be greatest in the dry summer months. It is not likely that gravel extraction would significantly affect particulate matter concentrations during the winter months (when existing concentrations are typically higher due to residential wood burning and other factors) because greater precipitation keeps the material wet.

Heavy equipment and trucks generate diesel engine exhaust pollutants, but engine emissions from these existing sources are inconsequential considering the limited number of these vehicles.

3.1.1 Fugitive Dust Deposition

Due to the nature of the process, excavation of the proposed mine may cause dust deposition in the surrounding area. Although fugitive dust deposition is not a health issue, excess dust deposition is considered a nuisance as it can increase the soiling of surfaces, such as parked cars or the exterior of buildings.

The State of Washington does not have any quantitative standards pertaining to dust deposition. However, Section 9.11 of PSCAA Regulations states that "It shall be unlawful for any person to cause or allow the emission of any air contaminant in sufficient quantities and of such characteristics and duration as is, or is likely to be, injurious to human health, plant or animal life, or property, or which unreasonably interferes with enjoyment of life and property." Members of the public can contact PSCAA if they feel the project is interfering with the use and enjoyment of their property due to a dust deposition issue. The Agency will respond to complaints and potentially issue a Notice of Violation to the facility if the concern is determined to be valid. In that event the facility will likely have to pay a fine and provide assurances to PSCAA that measures to resolve the dust problem have been implemented and impacts will not continue. In the event of repeated violations, PSCAA may levy an enforcement action against the facility. This scenario could result in a shutdown of the facility, criminal penalties for the operators and firm requirements for changes at the facility.

3.1.2 Greenhouse Gas Emissions

When a Greenhouse Gas (GHG) emissions inventory is prepared for a facility or other entity, associated GHG emissions are separated into three categories, or "scopes":

- Scope 1 GHG emissions are direct emissions from sources that are owned or controlled by the facility, such as on-site fossil fuel combustion and industrial processes;

- Scope 2 GHG emissions are indirect emissions from the generation of electricity, heat or steam purchased by the facility from a utility provider; and

- Scope 3 GHG emissions are all indirect emissions linked to facility operations and production that are not included in Scope 2.

The GHGs emitted by the loaders and dozer are classified as Scope 1 emissions. GHGs emitted by off-site sources that generate electricity used by the conveyor drives and water pumps are Scope 2 emissions. Because the facility's annual production and operating time will not change, Scope 3 emissions are not expected to change as a result of the project.

Annual Scope 1 emissions were estimated using CO_2-equivalent (CO_2e) emission factors, expected annual operating hours for the South parcel, and the estimated fuel usage for each piece of equipment. The loaders and dozer fuel consumption ranges were estimated using hourly fuel consumption rates from tables found in the 29th edition of Caterpillar's performance handbook.[6&7]

CalPortland estimates that the South Parcel will be operated 2,080 hours per year and is expected to be the area of highest production at the facility. Total Scope 1 GHG emissions are expected to be 1,497 metric tons per year (mtpy) of CO_2e. It should be noted that the expansion of mining into the South Parcel will not require the addition of new equipment to the site but will instead redirect use of existing equipment into the expansion area. In this way, the overall annual hours of operation of the dozer and loaders are not expected to increase over current active mining operations. In this way, the emission calculations can be considered a very conservative estimation of the GHG emissions due to the South Parcel Expansion Project. The calculations are summarized below.

Table 2. Scope 1 Estimated Greenhouse Gas Emissions (mtpy CO_2e)

Equipment	Annual Operation (hr/yr)	Maximum Fuel Use (gal/hr)[3]	Emission Factor (lb CO_2e/gal)	Annual Scope 1 GHG Emissions (mtpy CO_2e)[1&2]
Caterpillar 992K Loader (2)	2,080	26	22.58	1,090
Caterpillar D10T Dozer	2,080	19.4	22.58	407
Total Annual GHG Emissions				1,497

Notes:
[1] Calculated using default emission factors from 40 CFR Part 98 Subpart C Tables C-1 and C-2 and assuming two loaders each operate 2,080 hours per year.
[2] Calculated using global warming potentials from 40 CFR Part 98 Subpart A Table A-1.
[3] Calculated using fuel consumption range on page 21-18 of, pages 25-9 and 25-39 of edition 46, the equipment is estimated to be used at medium load on average.

[6] Caterpillar Performance Handbook: Edition 29, Prepared by Caterpillar: http://nees.ucsd.edu/facilities/docs/Performance_Handbook_416C.pdf
[7] Caterpillar Performance Handbook: Edition 48, Prepared by Caterpillar: https://wheelercat.com/wp-content/uploads/2018/07/SEBD0351_ED48.pdf

Scope 2 emissions were estimated using CO_2e emission factors, expected annual South Parcel operating hours, and the quantity of electricity required to operate the conveyor belt and water pumps.

The facility purchases electricity from Puget Sound Energy (PSE). The Total Firm & Total Non-Firm Contracts, Purchases, and PSE Generated Electricity from Table 7 (Detailed Emissions Calculations) of PSE's 2020 Greenhouse Inventory document were combined to calculate a supplier-specific emission factor of 874 pounds of CO_2e per megawatt-hour (CO_2e/MWh). [8] This emission factor was combined with the estimated annual megawatt (MW) usage for conveyor drive motors and water pumps to be used in the South Phase to calculate annual Scope 2 GHG emissions.

The conveyor belt currently operated in the North Parcel of the facility is approximately 1,200 feet (ft) long and requires drive motors that total approximately 400 HP. A similar conveyor belt would be used in the South Parcel, so it is assumed that electric drive motors totaling 400 HP will be needed for every 1,200 ft of conveyor belt length. The South Parcel is expected to require approximately 1,200 feet of conveyors when operations begin, and approximately 5,000 feet of conveyors when operations are at their maximum expected extent (i.e., driver motors totaling approximately 1,667 HP). It was assumed that the conveyor belts will be operated the same number of hours per year as the loaders (i.e., 2,080) because they will be operated jointly with the loaders.

There are expected to be a total of approximately 50 water pumps used at the South Parcel to intercept water at the edge of the pit, and each pump will be driven by a 10 HP electric motor. While all 50 pump motors will typically not be operated simultaneously, we assumed continuous operation of all 50 pumps throughout the year (i.e., 8,760 hours per year) as a worst-case GHG emission scenario.

The water pumps will be operated as needed and continuous operation is not anticipated. To provide a conservative estimate of potential emissions attributable to the pumps, the GHG emissions summarized in the table below assume that all 50 pumps will be operated continuously throughout the year (i.e., 8,760 hr/yr); actual emissions are expected to be less than the values shown. Total Scope 2 emissions attributable to planned operations at the South Parcel are expected to range from 2,034 to 3,062 mtpy of CO_2e as the extent of the conveyor system increases from an initial 1,200 ft to a maximum of 5,000 ft.

Table 3. Scope 2 Estimated Greenhouse Gas Emissions (mtpy CO_2e)

Operating Scenario	Equipment	Annual Operation (hr/yr)	Annual Power Consumption (MW/yr)[2]	Annual Scope 2 GHG Emissions (mtpy CO_2e)[1]
Initial Extent	1,200 ft Conveyor System	2,080	832	325
	50 Water Pumps	8,760	4,380	1,709
	Total		**5,212**	**2,034**

[8] 2020 Greenhouse Inventory, prepared by Puget Sound Energy and published online in June 2021: https://www.pse.com/-/media/PDFs/GHG_Inventory_2020.pdf

Maximum Extent	5,000 ft Conveyor System	2,080	3,467	1,353
	50 Water Pumps	8,760	4,380	1,709
	Total		**7,847**	**3,062**

Notes:
[1] Calculated using a 2020 PSE-specific emission factor of 873.9 lb/MWh.
[2] A 1 horsepower (HP) motor is assumed to use 0.001 megawatt-hour (MWh) of electricity.

Adding the worst-case potential Scope 1 and Scope 2 emissions at the maximum extent of mining results in overall annual GHG emissions of 4,559 mtpy of CO_2e.

There are no well-established nor well-recognized thresholds for determining whether GHG emission rates from a project would be considered significant, although there are reporting thresholds established by the USEPA and by Ecology for stationary sources. Furthermore, GHG emission rates are reported by Ecology for the State of Washington, by USEPA for the United States, and by the World Resources Institute (and others) for the entire globe. The large-scale (United States and global) emission inventories are relevant since the impacts due to GHG emissions are considered to be global in scale.

Even these maximum potential worst-case GHG emissions from the proposed sources are less than half of the reporting thresholds identified by Washington State (10,000 mtpy CO_2e) and federal agencies (25,000 mtpy CO_2e). The three-year average GHG emissions (2013 to 2015) for all sources in Washington State was 97.4 million mtpy CO_2e. The GHG emissions from the proposed project would represent a very small percentage of the total state-wide inventory.

3.2 Construction Impacts

Construction related to the project will include site preparation activities such as logging and clearing, topsoil removal, and construction of perimeter berms using diesel-powered, heavy equipment (e.g., dozers and loaders). During construction, fugitive dust from site preparation may temporarily cause a localized ambient concentration increase of particulate matter (PM_{10} and $PM_{2.5}$). In addition, heavy machinery will emit diesel engine exhaust pollutants that could slightly degrade local air quality in the immediate vicinity of the activity. However, these emissions will be temporary and localized and are expected to be minimal in comparison to regional emissions considering the limited amount of this equipment.

In addition to emissions from diesel-powered equipment, logging of the site in preparation of mining may result in GHG emissions due to the removal of the trees. The extent of the GHG emissions will ultimately depend on the final use of the logs. For example, use of the trees to produce wood products used in construction would result in the storage of some of the GHG emissions. Regardless of the ultimate use of the trees, GHG emissions resulting from the logging of the site would be minimal in comparison with other local sources, such as truck and vehicular traffic.

4. MITIGATION

By virtue of the process, gravel extraction releases fugitive dust. Because of the local climate, much of the material excavated as part of this proposal would be wet much of the year, thereby reducing the potential for fugitive dust emissions. Regardless, the existing mine and the expansion due to the proposal is subject to local and federal air pollution regulations that require precautions to minimize impacts on air quality. PSCAA, the local air pollution agency with jurisdiction over this area, regulates sources of fugitive dust under Section 9.15 of PSCAA Regulations. Section 9.15(c) states that reasonable precautions must be employed to prevent visible fugitive particulate material from becoming airborne. Reasonable precautions include, but are not limited to:

- The use of control equipment, enclosures, and wet (or chemical) suppression techniques, as practical, and curtailment during high winds;
- Surfacing roadways and parking areas with asphalt, concrete, or gravel;
- Treating temporary, low-traffic areas (e.g., construction sites) with water or chemical stabilizers, reducing vehicle speeds, constructing pavement or rip rap exit aprons, and cleaning vehicle undercarriages before they exit to prevent the track-out of mud or dirt onto paved public roadways; or
- Covering or wetting truck loads or allowing adequate freeboard to prevent the escape of dust-bearing materials

Although not specifically identified as mitigation with regards to GHG emissions, CalPortland is the only industrial company in the United States that has reduced energy consumption and been recognized by EPA as an Energy Star Partner for 17 consecutive years. Specific actions taken at the overall Pioneer Aggregates operation that reduce energy consumption and associated greenhouse gas emissions include the following:

- Converting incandescent lighting systems to LED and implementing motion-activated lighting,
- Regenerating electricity from the conveyor belt leading downhill to the barge loadout facility, and
- Participating in PSE's Schedule 258 electricity energy efficiency program.

5. CONCLUSION

With the appropriate application of some or all the mitigation measures described above and consistent use of best management practices, no significant air quality impacts are expected from the South Parcel Expansion Project.