Section 3.2 – Air

WAC 463-60-312
Natural environment - Air.

The application shall provide detailed descriptions of the affected environment, project impacts, and mitigation measures for the following:

(1) Air quality. The application shall identify all pertinent air pollution control standards. The application shall contain adequate data showing air quality and meteorological conditions at the site. Meteorological data shall include, at least, adequate information about wind direction patterns, air stability, wind velocity patterns, precipitation, humidity, and temperature. The applicant shall describe the means to be utilized to assure compliance with applicable local, state, and federal air quality and emission standards.

(2) Odor. The application shall describe for the area affected all odors caused by construction or operation of the facility, and shall describe how these are to be minimized or eliminated.

(3) Climate. The application shall describe the extent to which facility operations may cause visible plumes, fogging, misting, icing, or impairment of visibility, and changes in ambient levels caused by all emitted pollutants.

(4) Climate change. The application shall describe impacts caused by greenhouse gases emissions and the mitigation measures proposed.

(5) Dust. The application shall describe for any area affected all dust sources created by construction or operation of the facility, and shall describe how these are to be minimized or eliminated.

(Statutory Authority: Chapter 80.50 RCW and RCW 80.50.040. 09-05-067, § 463-60-312, filed 2/13/09, effective 3/16/09. Statutory Authority: RCW 80.50.040 (1) and (12). 04-21-013, amended and recodified as § 463-60-312, filed 10/11/04, effective 11/11/04. Statutory Authority: RCW 80.50.040. 92-23-012, § 463-42-312, filed 11/6/92, effective 12/7/92.)

Section 3.2 Air

3.2.1 Air Quality

Air quality in Washington is regulated by several agencies. In Vancouver, the Southwest Region Clean Air Agency (SWCAA) is the local authority for air quality permitting of industrial sources, and permits minor sources through the Air Contaminant Discharge Permit (ACDP) process. EFSEC has jurisdiction over projects such as the facility, including air quality preconstruction permitting. EFSEC has adopted virtually all of the air quality regulations established by Ecology that would otherwise apply to the facility. EFSEC will issue the preconstruction permits that allow construction of the facility to begin.

The distinction between emissions and concentrations is important in the review of air quality issues. Emission regulations limit the amount of a particular air pollutant that can be emitted from a stack or facility (e.g., 10 pounds per hour [lbs/hr] of particulate matter). Ambient air quality standards limit concentrations of certain air pollutants (in parts per million [ppm] or millionths of a gram per cubic meter of air [$\mu g/m^3$]) in the outdoor (ambient) air.

The air quality dispersion modeling analysis summarized in Section 5.1 of this Application determined that worst-case emissions from the facility would result in ambient concentrations that comply with Washington and National Ambient Air Quality Standards (WAAQS and NAAQS) and Washington's toxic air pollutant (TAP) criteria. .

3.2.1.1 Emission Standards

EPA has established performance standards for a number of air pollution sources in 40 CFR Part 60. These New Source Performance Standards (NSPS) represent a minimum level of control that is required for a new source. NSPSs that apply to the facility emission units include:

- Subpart Dc, Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units;
- Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels;
- Subpart IIII--Standards of Performance for Stationary Compression Ignition Internal Combustion Engines; and
- Subpart A, General Provisions.

Emission limits imposed by these NSPS are discussed in more detail in Section 5.1.3.1.1. In general, NSPS limits are less stringent than the emission limits that result from applying Best Available Control Technology (BACT) and, therefore, are not particularly restrictive when BACT is required.

Under the provisions of Section 112 of the 1990 Clean Air Act Amendments, EPA is required to regulate emissions of a total of 187 HAPs from stationary sources. EPA does this by specific industry categories to tailor the controls to the major sources of emissions and the HAPs of concern from that industry. As discussed in greater detail in Section 5.1.3.1.2, the following MACT standards apply to the facility:

- Part 61, Subpart M – National Emission Standards for Asbestos
- Part 63, Subpart ZZZZ -- National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines; and
- Subpart A, General Provisions.

As discussed in Section 5.1, Attachment 1, BACT is the best control technology that is feasible for a specific application, considering the economic, energy and environmental and other costs of each alternative. Chapter 173-460 also requires BACT for TAPs. Generally, the same technologies or operations that reduce criteria pollutants also reduce TAPs. For example, the use of combustion controls to optimize combustion also reduces both criteria and TAPs.

General standards for maximum emissions from air pollution sources are outlined in WAC 173-400-040. This section limits visible emissions to 20 percent opacity except for 3 minutes per hour; controls nuisance particulate fallout, fugitive dust, and odors; and limits SO_2 emissions to no more than 1,000 ppm (hourly average, 7 percent O_2, dry basis). WAC 173-400-050 identifies emission standards for combustion and incinerator units, and limits particulate matter emissions to 0.1 grains per dry standard cubic foot at 7 percent O_2.

SWCAA regulations mirror Ecology's emission limits from new sources. The SWCAA regulation’s opacity standard limits the plume to 20 percent opacity except for 3 minutes of any hour. Particulate matter emissions are limited to 0.1 grains per dry standard cubic foot. Sulfur emissions, calculated as sulfur dioxide, are limited to 1,000 ppm. The facility will comply with all of the general emission standards established by Ecology and SWCAA.

3.2.1.2 Ambient Air Quality Standards

Ambient air quality standards have been established by EPA and Ecology (Table 3.2-1). Some of the pollutants in Table 3.2-1 are subject to both "primary" and "secondary" NAAQS. Primary standards are designed to protect human health with a margin of safety. Secondary standards are established to protect the public welfare from any known or anticipated adverse effects associated with these pollutants, such as soiling, corrosion, or damage to vegetation.

Table 3.2-1. Ambient Air Quality Standards

Pollutant	National Ambient Air Quality Standards: National Primary	National Ambient Air Quality Standards: National Secondary	Washington
Inhalable Particulate (PM_{10})			
24-hour Average ($\mu g/m^3$)[b]	150	150	150
Fine Particulate ($PM_{2.5}$)			
Annual Arith. Mean ($\mu g/m^3$)[c]	12	15	12
24-hour Average ($\mu g/m^3$)[d]	35	35	35
Sulfur Dioxide (SO_2)			
Annual Arith Mean ($\mu g/m^3$)			52
24-hour Average ($\mu g/m^3$)			365
3-hour Average ($\mu g/m^3$)		1,300	1,300
1-hour Average ($\mu g/m^3$)[e]	196		196
Carbon Monoxide (CO)			
8-hour Average ($\mu g/m^3$)	10,000		10,000
1-hour Average ($\mu g/m^3$)	40,000		40,000
Ozone (O_3)			
8-hour Average (ppm) [g]	0.075	0.075	0.075
Nitrogen Dioxide (NO_2)			
Annual Arithmetic Average ($\mu g/m^3$)	100	100	100
1-hour Average ($\mu g/m^3$)[h]	188		188
Lead (Pb)			
Quarterly Average ($\mu g/m^3$)	0.15	0.15	0.15

μg/m³ = micrograms per cubic meter; **ppm** = parts per million

[a]Not to be exceeded on more than once per year.

[b] Based on the 99th percentile of 24-hr PM_{10} concentrations at each monitor.

[c] Based on the 3-year average of annual arithmetic mean $PM_{2.5}$ concentrations.

[d] Based on the 3-year average of the 98th percentile of 24-hour $PM_{2.5}$ concentrations at each monitor within an area.

[e] Based on the 3-year average of 99th percentile of daily maximum 1-hour averages

[f] A second hourly standard limits concentrations to 655 μg/m³, not to be exceeded more than once in a consecutive 7-day period.

[g] Based on the 3-year average of the annual fourth-highest daily maximum 8-hour average ozone concentration.

[h] Based on the 3-year average of the 98th percentile of daily maximum 1-hour averages

Annual standards never to be exceeded unless otherwise noted.

Short term standards not to be exceeded more than once per year unless otherwise noted.

Sources include: NAAQS (40 CFR 50), WAAQS (WAC 173-470, 474, and 475)

3.2.1.3 Toxic Air Pollutant Regulations

Washington regulates emissions of TAPs from new and modified air pollution sources (Chapter 173-460 WAC). This regulation establishes acceptable outdoor exposure levels (called Acceptable Source Impact Levels, or ASILs) for hundreds of substances. The ASILs were set conservatively to protect human health. The regulations also identify Small Quantity Emission Rates (SQERs). If the total emissions of a given pollutant are greater than its SQER, dispersion modeling is required to determine compliance with the ASILs.

If ASILs are exceeded, the Applicant must reduce project emissions or submit a health risk assessment demonstrating that toxic air pollutant emissions from the source are sufficiently low to protect human health.

3.2.1.4 Notice of Construction and Application for Approval

WAC 173-400-110 requires a NOC application for the construction of new air contaminant sources in Washington. SWCAA maintains a similar regulation (SWCAA 400-109) for new or modified sources in its jurisdiction. The NOC application provides a description of the facility and an inventory of pollutant emissions and controls. The reviewing agency, EFSEC, considers whether BACT has been employed and evaluates ambient concentrations resulting from these emissions to ensure compliance with ambient air quality standards, and issues an Order of Approval.

3.2.1.5 Prevention of Significant Deterioration (PSD)

The PSD regulations were established by EPA to ensure that new or expanded major stationary sources that emit Clean Air Act-regulated pollutants above a significance rate do not cause air quality in areas that currently meet the standards (i.e., attainment areas) to deteriorate significantly. The Facility will not be subject to PSD regulations because it will not have the potential to emit any regulated pollutant at an annual rate that exceeds the PSD threshold (see Table 2.12-1).

3.2.1.6 Existing Air Quality

Ecology and EPA designate regions as being “attainment” or “nonattainment” areas for particular air pollutants based on monitoring information collected over a period of years. Attainment status is therefore a measure of whether air quality in an area complies with the health-based ambient air quality standards displayed in Table 3.2-1.

The Facility is located in a region considered to be in attainment for all criteria pollutants, but it remains subject to maintenance plans that ensure continued compliance with ozone and carbon monoxide ambient standards

Existing air quality conditions at the project site can be inferred from several sources of information. First, conditions can be estimated from measurements collected by Ecology and the Oregon Department of Environmental Quality air quality monitoring networks. Current and archived air quality data are accessible from the EPA AirData website.[3] The 2012 AirData database files for several monitoring sites near to the project site were accessed to characterize background air quality. The maximum values reported from these sites represent the conservatively highest background air quality values in the region because monitoring sites are often specifically selected to identify the highest regional pollutant concentrations. Air quality values for each pollutant were estimated using measurements from the following monitors:

- CO: SE Lafayette, Portland, Oregon, EPA AQS Site No. 41-051-0080 (about 10 miles SE of the project site), 2012 maximum and second highest maximum values.
- NO_2: SE Lafayette, Portland, Oregon 2011 Annual mean , 2012 1-hour maximum and 98th percentile daily maximums.[4]
- O_3: Sauvie Island, Oregon, EPA AQS Site No. 41-009-0004 (about 8 miles north-northwest of the project site), 2011 8-hour maximum and fourth highest 8-hour maximum.
- $PM_{2.5}$: Fourth Plain Boulevard East, Vancouver, Washington, EPA AQS Site No. 53-011-0013 (about 10 miles east of the project site), 2012 24-hour maximum and 98th percentile concentrations, annual average estimated using annual average of 1-hour values.
- PM_{10}: N. Roselawn Emerson Playfield, Portland, Oregon, EPA AQS Site No. 41-051-0246 (about 7 miles southeast of the project site), 2012 24-hour average maximum value and 98th percentile 24-hour average value, annual average estimated using annual average of 24-hour values.
- SO_2: SE Lafayette, Portland, Oregon, EPA AQS Site No. 41-051-0080, 2012 maximum and 99th-percentile 1-, 3-, and 24-hour values. Annual average estimated using annual average of 1-hour values.

Background concentrations can also be estimated using a tool provided by Ecology. Ecology provides the 2009-2011 “design values” for background air quality throughout the state using the output from the AIRPACT-3 regional air quality model, with adjustments from assimilated monitor data. The tool is a product of the Northwest International Air Quality Environmental Science and Technology Consortium and is used to support air permitting and regulation in the State.[5] Use of this database may provide a more accurate estimate of the actual background air quality at the project site than the conservative measurements from the monitoring network. Design values were collected in July 2013 using the tool for project site coordinates (46.643 Lat., -122.705 Long.).

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[3] U.S. EPA AirData website archive of monitoring data. http://www.epa.gov/airquality/airdata/

[4] Reported in Oregon Dept. of Environ. Quality (2012): 2011 Oregon Air Quality Data Summaries, DEQ 11-AQ-021

[5] NW-Airquest “design values” tool website: http://lar.wsu.edu/nw-airquest/index.html

The background air quality values estimated from these sources of information are listed in Table 3.2-2.

Table 3.2-2. Background Air Quality

Pollutant	Averaging Time	State Monitoring Network Max. Value	State Monitoring Network Regulatory Value[1]	Design Value
CO	1-hour	3.8 ppm	3.1 ppm (2nd high)	2.065 ppm
	8-hour	2.3 ppm	2.2 ppm (2nd high)	1.276 ppm
NO_2	1-hour	59 ppb	36 ppb (98th percentile)	37 ppb
	Annual	9 ppb	9 ppb	7 ppb
O_3	1-hour	0.068 ppm	0.064 ppm (4th high)	NA
	8-hour	0.057 ppm	0.053 ppm (4th high)	0.056 ppb
$PM_{2.5}$	24-hour	31.2 μg/m^3	20.5 μg/m^3 (98th percentile)	20 μg/m^3
	Annual	7.0 μg/m^3	NA	5.8 μg/m^3
PM_{10}	24-hour	36 μg/m^3	34 μg/m^3 (98th percentile)	31 μg/m^3
	Annual	13 μg/m^3	NA	NA
SO_2	1-hour	9.8 ppb	4.9 ppb (99th percentile)	9.5 ppb
	3-hour	7.0 ppb	2.7 ppb (99th percentile)	7.1 ppb
	24-hour	2.5 ppb	1.7 ppb (99th percentile)	3.6 ppb
	Annual	1.5 ppb	NA	3 ppb

NA: not available/applicable

[1] Values that are applicable for comparison to the NAAQS

3.2.1.7 Meteorology and Climate

The evaluation of air pollutant emissions associated with the facility requires meteorological data to characterize dispersion conditions near the site. The dispersion modeling techniques used to simulate transport and diffusion require hourly meteorological data, including wind speed, wind direction, temperature, atmospheric stability class, and mixing height.

A five-year meteorological dataset of hourly-averaged meteorological variables was developed for the air quality modeling study summarized in Section 5.1.4 and is sufficient to summarize the local wind climate at the project site. The 5-year dataset was produced using the AERMOD meteorological preprocessor AERMET utilizing meteorological data from the Vancouver Airport/Pearson Airfield (KVUO), located about 4 miles east of the project site also located on the north bank of the Columbia River. Pearson Airfield was judged to be the best available source of meteorological data for air quality dispersion modeling of the proposed Facility. The meteorological station at Pearson Airfield is the station closest to the proposed project site that is part of the National Weather Service (NWS) Automatic Surface Observing System (ASOS), and provides 1-minute wind speed and wind direction data that are used to resolve calm and variable wind conditions, as recommended by the EPA.

A "wind-rose" plot of the 2008-2012 wind speed and direction measured with a cup-anemometer at 10-meter elevation at KVUO is illustrated in Figure 3.2-1. Surface winds are heavily influenced by local topography, aligning west-southwest to east-northeast along the Columbia River. Hourly-averaged winds were classified as calm (<1 knot) roughly 5.72 percent of the time and the average wind velocity was 2.32 meters per second. The maximum hourly-averaged windspeed was 21.5 knots from the west-southwest occurring March 15, 2009.

Atmospheric stability has traditionally been classified using the Pasquill-Gifford (P-G) system ranging from class "A" (very unstable) to class "F" (very stable). The categories indicate the level of thermal stratification within the atmospheric boundary layer, which determines the vertical advection of air and pollutants. Unstable conditions typically result in greater vertical dispersion of pollutants while stable conditions can lead to stagnation by limiting vertical dispersion. The P-G classification system is summarized in Table 3.2-3. The 5-year meteorological dataset produced with AERMET does not include an estimate of atmospheric stability classification. However, stability can be inferred through the Monin-Obukhov scaling length (L): a measure used to define the buoyancy characteristics within the atmospheric surface layer. The range of L corresponding to each stability class is also included in Table 3.2-3.

Table 3.2-3. Atmospheric Stability

Class	Condition	L range (m)	General description and plume behavior	Project site % of time[1]
A	Very unstable	$-20 < L < 0$	Significant daytime heating, looping plumes	14
B	Unstable	$-200 < L < -20$	Daytime with heating, some plume looping	21
C	Slightly unstable	$-400 < L < -200$	Daytime	10
D	Neutral	$\|L\| > 400$	Cloudy and/or windy periods	5
E	Slightly stable	$20 < L < 400$	Nights and dusk, some stagnation	31
F	Very stable	$0 < 20$	Cold clear nights and mornings, strong stagnation	16

1) Analysis of 5-year (2008-2012) dataset utilizing Vancouver-Pearson airfield (KVUO) met. tower data

Temperature and precipitation measurement records from the "Vancouver 4 NNE" agricultural meteorological station were accessed to analyze the climate at the project site. This station is located about 4 miles northeast of the project site and has been collecting measurements since 1856. The monthly climate summary, based on 158 years of data, is included in Table 3.2-4.[6] The maximum temperature ever recorded at the site was 106° F on July 30, 2009 and minimum temperature recorded was -8.0° F in 1909. The site averages about 40 inches of rainfall and 6.5 inches of snow a year, with most of the precipitation occurring during the winter months.

[6] Data provided by the U.S. Western Regional Climate Center, Reno, NV www.wrcc.dri.edu

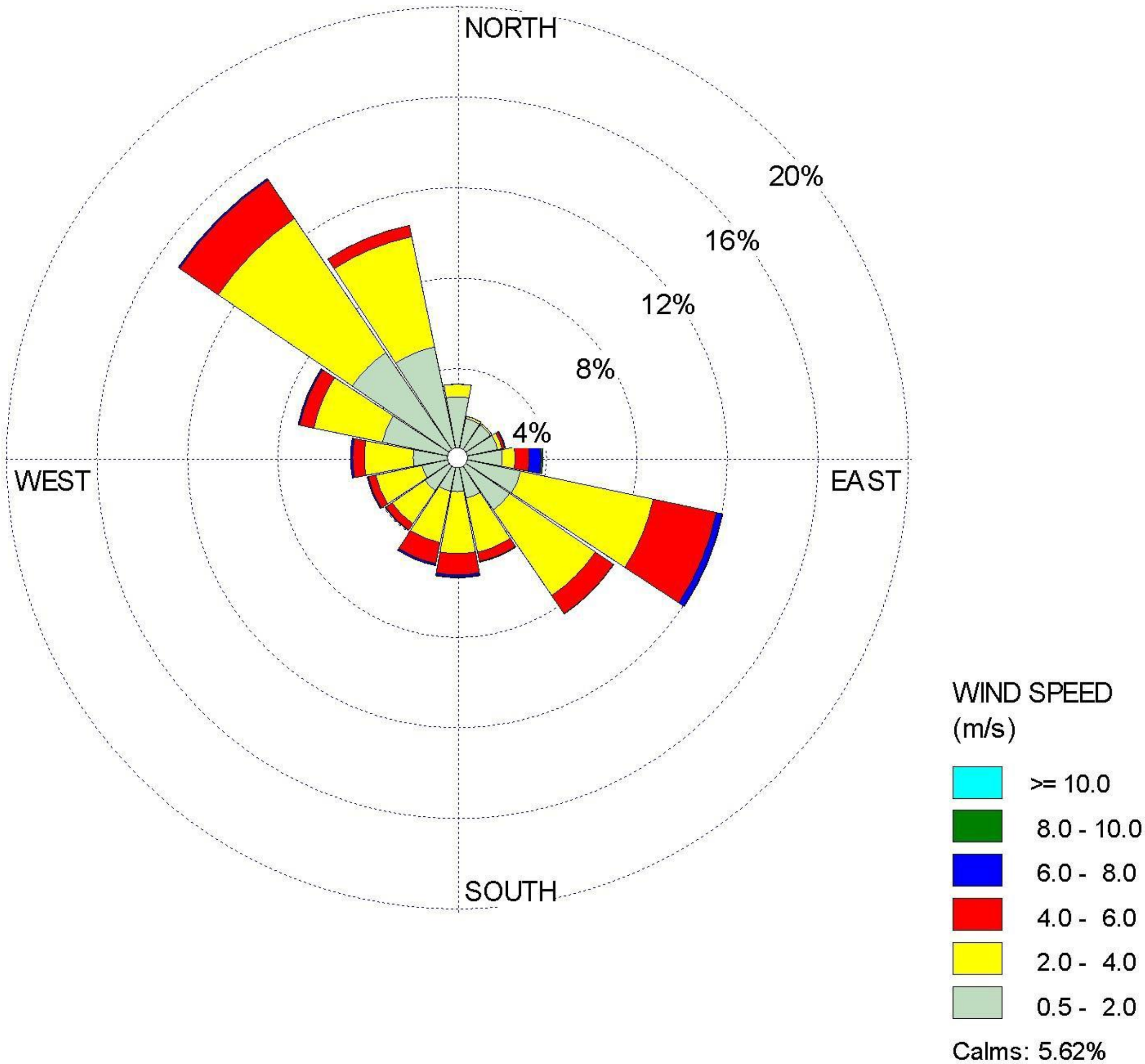

Figure 3.2-1. Pearson Field Airport Windrose (2008-2012)

A 17-year dataset of relative humidity and dewpoint temperature collected at the Portland Int. Airport ASOS meteorological station was retrieved from the National Weather Service archives to analyze these variables. Higher concentrations of water vapor typically occur in autumn and spring months when warm-conveyer-belt winds associated with mid-latitude cyclones advect warm tropical air into the region. Peak dewpoints higher than 60° generally occur in summer during periods of warm advection from the south and dewpoints near 70° can occur in rare periods of monsoonal advection. Lowest concentrations of water vapor generally occur in mid-winter or mid-summer months during periods of offshore flow. The lowest humidity is observed in winter during rare periods of modified-arctic air outflow through the Columbia Gorge. Cold, dry continental air with very low dewpoints advects out of Canada and leaks through the Gorge as a strong gap wind.

Table 3.2-4. Project Site Temperature and Precipitation Climatological Averages[1]

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	44.8	49.8	55.2	61.2	67.3	72.5	78.9	79.2	73.9	63.6	52.3	45.9	62.1
Average Min. Temperature (F)	32.5	34.3	37.3	40.5	45.5	50.4	53.7	53.4	49.1	43.3	38.0	34.1	42.7
Average Total Precipitation (in.)	5.76	4.39	3.83	2.73	2.28	1.68	0.62	0.85	1.80	3.20	6.03	6.45	39.62
Average Total Snowfall (in.)	3.8	1.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.0	6.5

[1]Based on 158-year climate record from Vancouver 4 NNE Met. Co-op station (458773)

3.2.1.8 Air Quality Modeling Analysis

A dispersion modeling analysis was conducted for the project based on the emission rates described in Section 5.1.2 of this Application using the five years of meteorological data described above. Full details of the analysis are outlined in Section 5.1.4. Computer-based dispersion modeling techniques were applied to simulate the dispersion of criteria pollutant and TAP emissions from the facility to assess compliance with NAAQS, WAAQS, and Ecology's ASILs for those TAPs that exceed the SQER. The dispersion modeling techniques that were employed in the analysis follow EPA regulatory guidelines (40 CFR Part 51, Appendix W).

Compliance with ambient air quality standards may be conservatively assessed by summing the highest model-predicted concentrations attributable to facility and maximum measured (existing) concentrations to represent other sources of emissions. The influence of background sources is based on the air quality monitoring data discussed in Section 3.2.1.6 and as summarized in Table 3.2-2.

Total predicted concentrations are compared to the WAAQS and NAAQS in Table 3.2-5. The analysis indicates that when maximum predicted concentrations are added to the highest monitored values, total concentrations comply with Washington and National ambient air quality standards.

Table 3.2-5. Comparison of Cumulative Concentrations with Ambient Air Quality Standards

Pollutant	Averaging Period	Modeled Design Concentration[1]	Background Concentration	Total Concentration[2]	NAAQS/ WAAQS
		(μg/m³)			
CO	1-hour	87.5	2,364	2,452	40,000
	8-hour	69.4	1,461	1,530	10,000
NO_2	1-hour	19.6	70	89.6	188
	Annual	0.833	13	13.8	100
PM_{10}	24-hour	10.1	31	41.1	150
$PM_{2.5}$	24-hour	6.59	20	26.6	35
	Annual	0.559	6	6.56	12
SO_2	1-hour	16.9	25	41.9	196
	3-hour	17.1	19	36.1	1,300
	24-hour	10.4	9	19.4	365
	Annual	0.289	8	8.29	52

Notes:

[1] The forms of the design concentrations are as follows:

CO, 1- & 8-hour average & SO_2, 3- & 24-hour average – highest 2nd high concentration over the five modeled years of meteorological data

NO_2, 1-hour average – 98th percentile of the annual distribution of daily maximum 1-hour average concentrations averaged at each receptor over the five modeled years of meteorological data

NO_2 & SO_2, annual average – maximum annual average concentration

PM_{10}, 24-hour average – highest 6th high concentration over the five modeled years of meteorological data

$PM_{2.5}$, 24-hour average – 98th percentile of the annual distribution of 24-hour average concentrations averaged at each receptor over the five modeled years of meteorological data

$PM_{2.5}$, annual average – maximum annual average concentration averaged over the five modeled years of meteorological data

SO_2, 1-hour average – 99th percentile of the annual distribution of daily maximum 1-hour average concentrations averaged at each receptor over the five modeled years of meteorological data

[2] Total Concentration = Modeled Design Concentration + Background Concentration

The dispersion modeling analysis of the eight TAPs emitted at rates exceeding the SQERs was conducted in the same manner as for the criteria pollutants. TAP emissions estimates for the facility are discussed in Section 5.1.2.2 of the Application and comparison to SQERs is presented in Table 5.1-14.

Maximum TAP concentrations attributable to the facility are compared with Ecology ASILs in Table 3.2-6. Predicted maximum concentrations are less than the Ecology ASILs for all TAPs that are emitted at rates exceeding the SQERs.

Table 3.2-6. Maximum Predicted TAP Concentrations

CAS #	Compound	Maximum Predicted Concentration ($\mu g/m^3$)	ASIL ($\mu g/m^3$)
10102-44-0	Nitrogen dioxide	22.6	470
7446-09-5	Sulfur dioxide	18.6	660
57-97-6	7,12-Dimethylbenz(a)anthracene	1.20E-06	1.41E-05
7440-38-2	Arsenic	1.50E-05	3.03E-04
71-43-2	Benzene	2.16E-02	3.45E-02
7440-43-9	Cadmium	8.23E-05	2.38E-04
18540-29-9	Chromium, (hexavalent)	4.19E-06	6.67E-06
N/A	Diesel Engine Particulate	1.45E-03	3.33E-03

3.2.1.9 Title V (Air Operating) Permit

EFSEC implements a Title V (Air Operating) Permit Program through its adoption by reference of Ecology's WAC 173-401-100 through -300, and -500 through -820 (see WAC 463-78-005(2). The Facility will not emit any criteria pollutant in an amount greater than 100 tons per year, is not a major source, and is, therefore, not required to obtain a Title V permit.

3.2.2 Odor

Background odor can likely be attributed to natural sources, diesel-fueled vehicles, and industrial activities in the vicinity of the project site. The site is located along the Columbia River, which may be a source of odors associated with marine activity. Heavy industrial use of adjacent sites may also contribute to the existing odor at the project site.

Construction of the facility will include some activities that would generate odors. If oil based paints are applied to structures or equipment at the site, paint odors may be perceptible nearby. Some of the site will be paved with asphalt, and asphalt fumes may be perceptible for a short period during the paving operation. These impacts are anticipated to be slight and of short duration.

The project as planned will not result in any significant release of offensive odors into the surrounding region. The following design measures will address odor control:

Area 200 – Unloading, and Area 500 – Transfer Pipelines: Throughout the unloading process crude is contained within rail cars and piping prevent the exposure of the oil to the ambient atmosphere. Pumping of the crude from the unloading area to storage and from storage to the Marine terminal is also conducted in piping, and pumping systems, which prevents exposure of the crude to the ambient atmosphere.

Area 300 – Storage: Within the storage tanks, crude oil exposure to the atmosphere is minimized through the use of a floating roof which minimizes the formation of hydrocarbon vapors.

Area 400 – Marine Terminal: As for Areas 200 and 500, transfer of the crude oil to marine vessels is conducted in closed piping and pumping systems that prevent exposure of the crude oil to the atmosphere. A potential source of odors is the vapors that are displaced from the vessel holds during transfer operations. These sulfurous gases (such as H_2S) and petroleum hydrocarbon vapors are routed through the vapor containment system to the MVCU. The MVCU will reduce sulfurous compounds to SO_2 gas and convert most hydrocarbons to odorless carbon dioxide. The odor detection threshold of SO_2 is less than the SO_2 NAAQS; the local ambient air quality modeling analysis summarized in Section 5 demonstrates that the SO2 NAAQs threshold will not be exceeded at any time, and therefore will not result in perceptible odors.

Area 600 – Unloading Boilers: Emissions from the boiler units are not expected to cause any significant offensive odors at the Facility or adjacent properties. Although the natural gas supplied to the boilers will be odorized for safety purposes, odor impacts will not be observed because combustion of the natural gas is odorless and the methyl mercaptan used to odorize the gas is destroyed during combustion.

Slight minor odor impacts due to road and rail diesel traffic may occur but will more than likely not be discernible from the background traffic odor impacts in the area.

3.2.3 Climate, Visible Plumes, Fogging, Misting, and Icing

There are no cooling towers proposed for construction at the Facility. Except for infrequent and short visible water vapor plumes from the boilers, no visible plumes are expected from the Facility emissions units. Consequently, no off-site fogging, misting, visibility impairment, or icing is expected.

3.2.4 Climate Change

Although most scientists concur that anthropogenic global emissions of greenhouse gases are affecting climate, there are no analytical tools or established procedures for evaluating climate impacts from individual projects. Ecology estimates 2010 state-wide greenhouse gas emissions were 96.1 million metric tons (CO_2e).[7] The Facility is estimated to have the potential to emit approximately 86,200 metric tons of greenhouse gases (CO_2e) annually. The Facility greenhouse gas emissions are approximately 0.09 percent of the state greenhouse gas emissions. Consequently, the incremental effect of the project on global climate change is insignificant.

3.2.5 Dust

Because the site is flat, there will be very little grading of the site prior to construction. Therefore, dust generated by excavation and grading will be short term. Dust from access roads will be controlled by applying gravel or paving the access road and watering as necessary.

After the Facility is completed and operational, virtually no dust would be generated on site.

3.2.6 Mitigation

- To control dust during construction, water will be applied as necessary. Site access and travel roads would be graveled or paved.
- BACT will be incorporated into the Facility design and implemented to minimize air pollution emissions.

[7] Washington Department of Ecology, December 2012 (Revised September 2013). Washington State Greenhouse Gas Emissions Inventory (1990-2010). Publication no.12–02-034.