Section 2.12 – Emission Control

WAC 463-60-225
Proposal – Emission control.

(1) The application shall describe and quantify all construction and operational air emissions subject to regulation by local, state or federal agencies.

(2) The application shall identify all construction and operational air emissions that are exempt from local, state and federal regulation, and the regulatory basis for the exemption.

(3) The applicant shall demonstrate that the highest and best practicable treatment for control of emissions will be utilized in facility construction and operation.

(4) The application shall identify all state and federal air emission permits that would be required after approval of the site certification agreement by the governor, and the timeline for submittal of the appropriate applications for such permits.

(5) In the case of fossil-fuel fired energy plants, the application shall describe and quantify all emissions of greenhouse gases.

(6) In the case of a nuclear-fueled plant, the applicant shall address optional plant designs as these may relate to gaseous emissions.

(Statutory Authority: RCW 80.50.040 (1) and (12). 04-21-013, amended and recodified as § 463-60-225, filed 10/11/04, effective 11/11/04. Statutory Authority: RCW 80.50.040(1). 92-09-013, § 463-42-225, filed 4/2/92, effective 5/3/92. Statutory Authority: RCW 80.50.040(1) and Chapter 80.50 RCW. 81-21-006 (Order 81-5), § 463-42-225, filed 10/8/81. Formerly WAC 463-42-520.)

Section 2.12 Emission Control

The Facility has the potential to emit air pollutants during both construction and operations. During construction, emissions will primarily consist of dust and exhaust from construction vehicles and equipment. During operation, air pollutant emissions will result from the following project components:

- natural-gas fired boilers to provide steam to facilitate transfer of crude oils from rail cars to storage tanks and from storage tanks to vessels;
- MVCU that combust hydrocarbons displaced from vessels as they are filled;
- storage tank evaporative and working losses;
- emergency engines to power firewater pumps; and
- leakage from components.

Air pollutant emissions from these emissions units include "criteria" pollutants designated by the EPA such as nitrogen oxides (NO_x), carbon monoxide (CO), and sulfur dioxide (SO_2), as well as airborne solids and liquids that combine in what is referred to as particulate matter (PM). Volatile organic compounds (VOCs), which are a precursor to the criteria pollutant ozone (O_3), also will be emitted. In addition, emissions will include toxic air pollutants (TAPs), as regulated in Washington under WAC 173-460 and defined in WAC 173-460-150, and hazardous air pollutants (HAPs) as defined and regulated under 40 CFR Part 63. The proposed Facility will utilize a set of best practices and the pollution control equipment to comply with state and federal air quality law.

2.12.1 Regulatory Authority

The authority for air permitting is granted to EFSEC under RCW Chapter 80.50 for crude oil facilities that receive more than an average of 50,000 barrels per day transported over marine waters. This authority is promulgated under WAC Title 463. To address air quality, EFSEC has adopted the provisions of WAC 173-400 (General Regulations for Air Pollution Sources) by reference under WAC 463-78-005.

The federal and Washington clean air acts require new (industrial) stationary sources to obtain the applicable air pollution permits before commencing construction. The permitting process, referred to as new source review (NSR), is used to ensure that the source uses the best available control technology (BACT) to limit emissions and does not cause ambient pollutant concentrations to exceed established standards. Some emission units may have to comply with new source performance standards (NSPS) if they fit the classification for units defined in 40 CFR Part 60.

The air permits required for a source vary depending on its emission potential and location. If the source is located in an area where federal and state ambient air quality standards have not been violated (referred to as an "attainment" area), then the source is subject to the prevention of significant deterioration (PSD) permitting program. If the source is located in a region where concentrations exceed ambient standards, the area is deemed " non-attainment" and the source is permitted under the non-attainment NSR (NNSR) program. The source is considered "major" if the potential-to-emit (PTE) of any one designated pollutant exceeds the PSD threshold for that pollutant. A source can avoid being classified as major by seeking enforceable operations limits in its permit application.

The proposed Facility will be located in a region considered to be in attainment for all criteria pollutants and therefore would be subject to PSD review. However, the region has been in non-attainment in the past and is therefore regulated under regional air quality "maintenance" plans whose purpose is to ensure continued compliance. New stationary sources may therefore be subject to additional requirements set forth in the regional maintenance plans.

Vancouver is designated as a carbon monoxide maintenance area. The region was a carbon monoxide non-attainment region until compliance was demonstrated in 1992; since then, the implementation of a maintenance plan to sustain attainment has been required. The Southwest Clean Air Agency (SWCAA) Section 400-111 rules contain measures for new major stationary sources as part of the maintenance plan. The proposed Facility will not exceed the threshold of 100 tons-per-year of carbon monoxide designated in the plan for major stationary sources and therefore no additional measures are required to comply with the maintenance plan.

Vancouver is also located in an ozone maintenance area and is therefore subject to the Washington state implementation plan (SIP) part of the Portland-Vancouver ozone maintenance plan. The Portland-Vancouver region was declared as "in attainment" for ozone in 2004 and has since required adherence to a maintenance plan. Under the SWCAA Section 400-111 rules, new major stationary sources must offset VOC and nitrogen oxides emissions or may apply to SWCAA for an allocation of the available growth allowance. The proposed Facility will not exceed the threshold of 100 tons per year of VOC or nitrogen oxides designated in the plan for major stationary sources and therefore no additional measures are required to comply with the maintenance plan.

TAP emissions are addressed through NSR as specified in WAC 173-460. All TAPs whose potential emissions exceed the *de minimis* rate must undergo review. If emissions of any TAP exceed the corresponding small quantity emission rate (SQER), dispersion modeling must be conducted to demonstrate that ambient concentrations of that TAP do not exceed a pollutant-specific acceptable source impact level (ASIL). The ASILs, SQERs, and *de minimis* values for each TAP are listed in WAC 173-460-150. Some emission units may need to comply with national emissions standards for hazardous air pollutants (NESHAPs) for unit classes defined under 40 CFR Parts 61 and 63.

Since January 2, 2011, the EPA has regulated the emission of greenhouse gases (GHGs) in the NSR process. GHGs are regulated as a single air pollutant defined as the aggregate of six gases (carbon dioxide [CO_2], nitrous oxide [N_2O], methane [CH_4], hydrofluorocarbons [HFCs], perfluorocarbons [PFCs], and sulfur hexafluoride [SF_6]). Potential emissions are determined by a CO_2 equivalency (CO_2e) that takes into account the potential of each gas to absorb terrestrial radiation through a "global warming potential" weighting factor. Under the PSD tailoring rule for new sources, GHGs require PSD review if 1) the source triggers PSD review for any criteria pollutant and annual GHG emissions exceed 75,000 tons, or 2) the potential annual emissions of GHGs equal or exceed 100,000 tons CO_2e.

Because the Facility would be a new source of air pollutants, under the Clean Air Act (CAA), it must undergo NSR to obtain the applicable air pollution permits before construction begins. The permitting process is used to ensure that the proposed Facility complies with state and federal air quality laws and does not contribute to any future violation of the state and national ambient air quality standards.

Based on the annual emissions identified in section 2.12.2, the proposed Facility is required to apply for and obtain the following permits:

- A notice of construction (NOC) preconstruction permit, as required under WAC 173-400-110, that identifies potential emissions of criteria air pollutants and TAPs; addresses BACT for proposed emission units; and presents an air quality modeling analysis demonstrating compliance with ambient air quality standards and TAP criteria.
- A PSD permit, as required under WAC 173-400-830, addressing BACT for greenhouse gases.
- A Title V air operating permit, as specified under WAC 173-401 and as required for major sources. The application must be submitted within 1 year of commencing operation of the Facility and requires renewal every 5 years.

PSD review is required because the Facility will emit annual amounts of GHGs that are greater than the PSD threshold of 100,000 (CO_2e) and 100,000 tons per year (actual mass). The emissions of all other regulated air pollutants are under the threshold where they must be evaluated under PSD review. The annual emission rate calculations for Facility operations are discussed in detail in section 2.12.2.2.

The Facility includes control equipment to limit emissions of hydrocarbons when the vessels are loaded. The MVCU is composed of components that include a collection system and thermal combustor. The design and operation of such equipment is regulated by the USCG under 33 CFR Part 154. Therefore, approval of the control equipment also must pass review of the appropriate USCG regulatory arm.

2.12.2 Criteria Pollutants

The six common air pollutants, referred to as criteria pollutants, are ozone (O_3), particulate matter (PM), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), and lead (see section 3.2.1 for an expanded discussion of these pollutants). There is no significant emission source of lead associated with the proposed Facility. Although no significant source of ozone is associated with the Facility, nitrogen oxides and VOCs react in the atmosphere to form ozone and these pollutants will be emitted during Facility operations. The NAAQS address particulate matter in terms of the size fractions PM_{10} and $PM_{2.5}$, which include inhalable particulate matter smaller than 10 microns in diameter and fine particulate matter smaller than 2.5 microns in diameter, respectively. Virtually all the particulate matter generated by the Facility will be PM2.5, and this application refers to all size categories generically as PM. Nitrogen oxide air pollutants include nitrogen dioxide and nitric acid.

2.12.2.1 Construction Emissions

Equipment

Construction equipment includes heavy diesel vehicles, cranes, and generators used for excavation, Facility construction, and paving. Diesel engines emit criteria and TAPs. Diesel engine emissions are regulated under federal standards for mobile sources.

Odor

Intermittent and temporary odors may be discernible off site during construction because of the use of diesel vehicles and because of paving, painting, and other construction activities.

Dust
Fugitive dust emissions generated during construction will be mitigated through compliance with existing nuisance regulations. Common work practices include the application of water to unpaved areas to prevent entrainment of dust. During construction, emissions are also minimized by covering exposed piles, limiting vehicle speed, and other BMPs.

2.12.2.2 Operations Emissions

Boilers
Because some crude oils do not flow easily when cold, the Facility will include natural gas-fired boilers to generate steam for heating rail cars and storage tanks. At the rail car unloading building, three boilers, each with a nameplate heat input capacity of 62 MMBtu/hr, will be installed to facilitate transfer from the rail cars. The unloading boilers are expected to operate throughout the year, but at varying loads dictated by railcar arrival schedules and the viscosity of the crude oil contained in the railcars. Typically, no more than two boilers will operate at any given time, with the third boiler kept as a redundant unit. However, to allow for uninterrupted steam supply, the third boiler may operate for a limited period of time before one of the operating boilers is shut down. The calculation of annual emissions from the unloading boilers was based on the conservative assumption that two of the boilers were assumed to operate at full capacity every hour of the year. This assumption is sufficient to address the occasional startup of the third unit.

Two natural gas-fired boilers, each with a nameplate heat input capacity of 12.5 MMBtu/hr, will be installed to provide steam to heat the crude oil storage tanks. Typically, only one of the storage area boilers will operate at any given time, with the second kept as a redundant unit. However, to allow for uninterrupted steam supply, the second boiler may start up and produce steam for a limited time before the operating boiler is shut down. Annual emission calculations are conservatively based on continuous use of one boiler every hour of the year, but the actual operation will depend on crude oil viscosity and loading schedule. This conservative assumption is sufficient to address the occasional startup of the second unit.

Stationary equipment units associated with the Facility are subject to federal NSPS. Subpart Dc applies to steam-generating units that commence construction, modification, or reconstruction after June 9, 1989, and have a maximum design heat input capacity of 100 MMBtu/hr or less, but greater than or equal to 10 MMBtu/hr. Subpart Dc will apply to all natural gas-fired boilers at the Facility because each one has a maximum design heat input capacity within the range specified by the standard.

Because these boilers will be fired solely with natural gas, the PM and SO_2 emission standards defined in Subpart Dc do not apply and only the record-keeping and reporting provisions of Subpart Dc apply. These requirements include maintaining records of daily fuel use and occurrence and duration of startup, shutdown, or malfunction; malfunction of control equipment (if any) Boiler emissions will include criteria pollutants and TAPs. The most effective and feasible control equipment options and corresponding emission rates are determined in a BACT analysis for the boilers, attached in Section 5.1, Attachment 1. Boiler emissions are more specifically addressed in Section 5.1.

Crude Oil Storage Tanks

The Facility includes six 360,000-bbl capacity crude oil storage tanks, each with a working capacity of approximately 340,000 bbl These tanks are subject to an NSPS that applies to storage vessels for petroleum liquids (40 CFR Part 60 Subpart Kb). The Facility will comply with Subpart Kb by incorporating the option identified in §60.112b(a)(1): A fixed roof in combination with an internal floating roof that floats on the liquid surface. The tanks will feature an internal floating-roof design with a pontoon-style internal deck. The storage tanks may emit VOCs as fugitive emissions. The most effective and feasible control options for the storage tanks are determined in the BACT analysis, attached in Section 5.1, Attachment 1. Fugitive emissions from the tanks are more specifically addressed in Section 5.1.

Marine Vapor Combustion Unit

Vessels will arrive at the Facility with on-board tanks filled with inert gas with oxygen levels below eight percent. The inert gas consists of cleaned exhaust from dedicated on-board inert gas generators (engines burning ultra-low sulfur distillate). Note that the inert gas is added to the tanks as the cargo is discharged – not at the Facility, which is a loading facility.

When the vessel tanks are filled with crude oil, the vapors from the cargo tanks, made up of hydrocarbon and inert gases, is displaced to a MVCU, which will combust the hydrocarbons in the vapors. In order to ensure adequate destruction of hydrocarbons by the MVCU, the vapor stream must consist of at least approximately 20 percent hydrocarbon. Natural gas will be added if needed to the displaced vapors at the MVCU as an "assist gas" to increase the heating value of the vapors, and ensure adequate destruction.

The MVCU is expected to achieve a least 99.8 percent destruction of the hydrocarbons in the delivered vapors. MVCU emissions are more specifically addressed in Section 5.1.

Emergency Diesel Fire Water Pump Engines

Emergency fire water pumps powered by diesel engines will be used in the event that water is needed to fight a fire within the Facility. Each of the engines will be 225 horsepower (hp) or smaller, and, while specific makes and models have not been selected, emission rates were calculated using emission factors for a 225 hp fire water pump engine that is representative of the units that will be installed. All three engines will be fueled with ultra-low sulfur diesel (ULSD). Planned operation of the units will be limited to half an hour a week for readiness testing and one 8-hour test per year, as specified by the National Fire Protection Association's NFPA 25. Emission rate calculations are detailed in Section 5.1, Attachment 2.

Fugitive Component Leaks

VOC emissions associated with minute vapor leakage from valve seals, pump seals, pressure relief valves, flanges, and similar equipment will occur at the Facility. Emissions from leaks are limited by procedures addressed in the BACT analysis, attached in Section 5.1, Attachment 1. The emission rate calculations for the Facility fugitive component leaks are summarized in Section 5.1, Attachment 2.

Locomotive and Marine Vessel Emissions

Crude oil will be delivered to the Facility by rail for transport by marine vessel. Emissions from locomotives and vessels are not included in the Facility emissions inventory or dispersion

modeling because they are mobile sources powered by off-road engines, and these sources of emissions are specifically exempted from pre-construction permitting.[4]

Odor

Emissions from the boiler units are expected not to cause any significant offensive odors at the Facility or adjacent properties. Odor impacts from natural-gas combustion units are not typically observed, since the methyl mercaptan that gives the gas its odor is destroyed during combustion.

Vessel gases vented to the vapor combustor contain hydrocarbons and reduced sulfur compounds which could contribute to periods of offensive odor if not oxidized in the vapor combustor. The NAAQS for sulfur dioxide (75 ppb) is sufficiently lower than the average detection threshold for sulfur dioxide of 670 – 4,750ppb[5]. Conservative air quality modeling of vapor combustor emissions, included in Section 5.1, demonstrate that the maximum sulfur dioxide concentrations attributable to MVCU emissions do not exceed the odor threshold for sulfur dioxide at any location outside the property boundaries.

Other minor transient odor impacts attributable to diesel-fueled locomotives may occur during operation. These impacts likely will not extend beyond the boundaries of the property and be indiscernible from unrelated industrial and vehicle operations in the vicinity of the Port.

Dust

Fugitive dust emissions during operation are expected to be insignificant because all Facility roads, parking lots, and storage platforms will be paved.

Summary

The projected annual emissions of criteria pollutants from the project units identified in this section are summarized in Table 2.12-1. GHG emissions, discussed in more detail in Section 2.12.4, are included in Table 2.12-1 GHG emissions exceed the PSD threshold of 100,000 tons per year, therefore requiring that the project Facility be designated as a major source for GHGs. Annual emissions of other pollutants relevant to PSD would be emitted at rates below the PSD thresholds, so they are addressed in a minor source permit process.

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[4] See, e.g., WAC 173-400-030(79) ("Secondary emissions do not include any emissions which come directly from a mobile source such as emissions from the tailpipe of a motor vehicle, from a train, or from a vessel."); In re Cardinal FG Company, EPA Environmental Appeals Board PSD Appeal 04-04 (2005) (holding that Ecology correctly concluded that emissions from a captive on-site locomotive are not attributable to the stationary source); Letter from EPA to Ken Waid (Jan. 8, 1990) stating that "to and fro" vessel emissions are not attributable to a stationary source and that when determining PSD applicability you do not consider those emissions "which result from activities which do not directly serve the purposes of the terminal and are not under the control of the terminal owner or operator.")

[5] U.S. EPA Sulfur Dioxide Final Acute Exposure Guideline Levels, May, 2008

Table 2.12-1. Projected Annual Emissions (tons)

	NO_x	CO	SO_2	PM	VOC	CO2e
Storage area boilers	0.60	1.97	0.20	0.41	0.27	6,415
Unloading boilers	5.95	19.47	1.99	4.06	2.70	63,284
MVCU	13.26	5.76	7.02	4.30	8.64	80,191
Components	--	--	--	--	0.82	12
Tanks	--	--	--	--	23.58	261
Firewater pumps	0.01	0.03	0.01	0.00	0.01	14
Total:	19.82	27.24	9.22	8.77	36.02	150,176
PSD threshold[1]	100	100	100	100	100	100,000
PSD SER[2]	40	100	40	10	40	75,000
NOC exemption[4]	2.0	5.0	2.0	0.5	2.0	Does not apply

[1]PSD criteria pollutant threshold of 100 tons for 28 source category exception as defined in 40 CFR 52.21.

[2]PSD Significant emission rates: PSD review required for pollutant emissions from a major source with emissions exceeding the SER

[4]Notice-Of-Construction (NOC) Exemption levels for new or modified stationary sources (WAC 173-400-110 Table 110(5))

2.12.3 Toxic Air Pollutants

The industrial emissions of almost 400 TAPs are regulated under WAC 173-460, and WAC 173-400-110 requires that increases in TAP emissions attributable to the entire project must be reviewed during the preconstruction permitting process. To comply with WAC 173-460, an inventory of TAPs associated with project emission units has been developed. Any TAP expected to have a pre-control emission rate increase as a result of the project that exceeds the *de minimis* level defined for that TAP in WAC 173-460-150 is subject to NSR.

The impact attributable to the emission increase of a given TAP that is subject to the NSR requirements of WAC 173-460 is determined to be insignificant if it can be shown that the total emission rate increase of that TAP, after the application of BACT, is less than the SQER prescribed in WAC 173-460-150. If the expected emission increase of a TAP exceeds the prescribed SQER, a dispersion modeling analysis is required to demonstrate that the ambient impact of the aggregate emission increase of that TAP does not exceed the acceptable source impact level assigned to that TAP in WAC 173-460-150.

In addition to Washington's TAP regulations, under the provisions of Section 112 of the 1990 Clean Air Act Amendments, the 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. The rules promulgated under Section 112 generally specify the maximum achievable control technology (MACT) that must be applied for a given industry category. Consequently, these rules are often called MACT standards.

MACT standards can require facility owners/operators to meet emission limits, install emission control technologies, monitor emissions and/or operating parameters, and use specified work practices. In addition, the standards typically include recordkeeping and reporting provisions. MACT standards are codified in 40 CFR Parts 61 and 63.

There are two types of HAP sources: major and area sources of HAP emissions. Major sources have a potential to emit more than 10 tons of a single HAP, or 25 tons of all HAPs combined. Area sources are facilities that are not a major source.

The Facility's annual potential emissions of all HAPs will not exceed EPA's combined 25 ton per year or single 10 ton per year major source threshold. Therefore, the Facility is categorized as an area source of HAPs, and the MACT standards for area sources of HAP apply to it.

Construction

Temporary emissions of small amounts of TAPs and HAPs are likely from the operation of construction vehicles and equipment during the construction phase. Emissions from mobile sources are regulated under federal standards for mobile sources. Additional site air permits are not required for the temporary deployment of mobile sources on the site, as indicated under WAC 173-400-020.

Operation

The proposed Facility will contain several potential sources of TAPs and HAPs. The rail car unloading area and storage area boilers will combust natural gas to produce steam, and the MVCU will combust both natural gas and the displaced vapors from the vessels. Combustion exhaust contains small quantities of compounds identified in regulations as TAPs and/or HAPs. Similarly, fugitive emissions associated with the transfer and storage of crude oil at the Facility will include TAPs and/or HAPs. The calculated emission rates of TAPs and HAPs are presented in Table 2.12-2. Further details concerning the calculated TAPs emission rates from each unit are available in Section 5.1, Attachment 2.

Table 2.12-2. Facility-wide TAPs/HAPs emissions

Compound	CAS	HAP?[1]	WA TAP Averaging Period	Emission Rate	SQER[2]	Model?[3]
				lb/avg per	lb/avg per	
Acetaldehyde	75-07-0	Yes	Annual	4.23E-02	71	No
Acrolein	107-02-8	Yes	24-Hour	1.50E-04	0.00789	No
Arsenic	7440-38-2	Yes	Annual	4.31E-01	0.0581	Yes
Benzene	71-43-2	Yes	Annual	1.06E+02	6.62	Yes
Benzo(a)anthracene	56-55-3	No	Annual	3.98E-03	1.74	No
Benzo(a)pyrene	50-32-8	No	Annual	2.60E-03	0.174	No
Benzo(b)fluoranthene	205-99-2	No	Annual	3.89E-03	1.74	No
Benzo(k)fluoranthene	207-08-9	No	Annual	3.89E-03	1.74	No
Beryllium	7440-41-7	Yes	Annual	2.59E-02	0.08	No
1,3-Butadiene	106-99-0	Yes	Annual	2.16E-03	1.13	No
Cadmium	7440-43-9	Yes	Annual	2.37E+00	0.0457	Yes
Carbon monoxide	630-08-0	No	1-Hour	9.23E+00	50.4	No
Chromium, (hexavalent)	18540-29-9	No	Annual	1.21E-01	0.00128	Yes
Chrysene	218-01-9	No	Annual	3.90E-03	17.4	No
Cobalt	7440-48-4	Yes	24-Hour	4.96E-04	0.013	No
Copper	7440-50-8	No	1-Hour	2.94E-04	0.219	No
Cyclohexane	110-82-7	No	24-Hour	1.05E-01	789	No
Dibenzo(a,h)anthracene	53-70-3	No	Annual	2.62E-03	0.16	No
Diesel Engine Particulate	DEP	No	Annual	6.41E+00	0.639	Yes

7,12-Dimethylbenz(a)anthracene	57-97-6	No	Annual	3.45E-02	0.00271	Yes
Ethylbenzene	100-41-4	Yes	Annual	4.53E+01	76.8	No
Fluorene	86-73-7	No	24-Hour	4.73E-05	1.71	No
Formaldehyde	50-00-0	Yes	Annual	2.43E+01	32	No
Hexane	110-54-3	Yes	24-Hour	1.10E+01	92	No
Hydrogen Sulfide	7783-06-4	No	24-Hour	9.45E-03	0.263	No
Indeno(1,2,3-cd)pyrene	193-39-5	No	Annual	3.90E-03	1.74	No
Isopropyl benzene	98-82-8	Yes	24-Hour	3.38E-03	52.6	No
Manganese	7439-96-5	Yes	24-Hour	2.25E-03	0.00526	No
Mercury	7439-97-6	Yes	24-Hour	1.54E-03	0.0118	No
3-Methylchloranthrene	56-49-5	No	Annual	3.88E-03	0.0305	No
Naphthalene	91-20-3	Yes	Annual	1.32E+00	5.64	No
Nitrogen dioxide	10102-44-0	No	1-Hour	7.75E+00	1.03	Yes
Propylene	115-07-1	No	24-Hour	4.18E-04	394	No
Selenium	7782-49-2	Yes	24-Hour	1.42E-04	2.63	No
Sulfur dioxide	7446-09-5	No	1-Hour	4.81E+00	1.45	Yes
Toluene	108-88-3	Yes	24-Hour	1.03E-01	657	No
Vanadium	7440-62-2	No	24-Hour	1.36E-02	0.0263	No
Xylene (-m)	108-38-3	Yes	24-Hour	8.85E-02	29	No
Xylene (-o)	95-47-6	Yes	24-Hour	2.27E-02	29	No
Xylene (-p)	106-42-3	Yes	24-Hour	2.53E-02	29	No

Notes:

[1] TAP: Washington toxic air pollutants listed in WAC 173-460-150; HAP: federal hazardous air pollutants listed in Section 112b of the Clean Air Act.

[2,3]Small Quantity Emission Rate as defined in WAC 173-460-150 – emission rates. TAPs with project emission rates greater than the SQER require an air quality modeling analysis to demonstrate compliance with the Washington State ASILs.

As indicated in Table 2.12-2, eight TAPs were identified whose emission rates exceed the SQER. Air quality modeling is required to demonstrate that the ambient concentrations of these TAPs are below the associated ASILs. Section 5.1 includes the local air quality modeling analysis that demonstrates that TAPs concentrations are all below the associated ASIL for each of the eight TAPs.

Also shown in Table 2.12-2, the Facility's annual potential emissions of all HAPs combined does not exceed EPA's 25 ton per year major source threshold and nor does the Facility's annual potential emissions of any individual HAP exceed EPA's 10 ton per year major source threshold. Therefore, the Facility is categorized as an area source of HAPs, and area source MACT standards apply to the proposed emission units as appropriate.

The MACT standards applicable to the project are discussed in detail in Section 5.1.3.1.2.

2.12.4 GHG Emissions

GHGs are those that absorb and emit terrestrial radiation within the thermal infrared range. Although these gases do not pose a direct threat to human health or property by inhalation or contact, the buildup of these gases in the atmosphere may contribute to anthropogenic climate change. On May 13, 2010 the EPA issued a final tailoring rule with the stated intent of establishing a "common sense approach" to addressing GHG emissions from stationary sources,

by "tailoring" the major source applicability thresholds under the prevention of significant deterioration (PSD) and Title V air operating permit programs, and providing a phased implementation for GHG permitting requirements.[6] The tailoring rule defines GHGs as an aggregate of carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Under the second phase of the tailoring rule, which began on July 1, 2011, a new source of GHG emissions with the potential to emit 100,000 tpy CO_2e or more is subject to PSD review for GHGs, even if the source will not increase the emissions of any other PSD pollutant significantly. Because there is no ambient standard or increment for GHGs, the only PSD requirement that applies to GHGs is that BACT must be employed to reduce GHG emissions from the proposed project.

The project has the potential to emit only three of the six gases that comprise the Tailoring Rule definition of GHGs: carbon dioxide, methane, and nitrous oxide. The Tailoring Rule further defines CO_2e as the sum of the mass emissions of the constituent GHG, each multiplied by the appropriate global warming potential factor provided in Table A-1 of the federal mandatory GHG reporting rule (MRR, codified in 40 CFR Part 98). Table 2.12-3 summarizes the calculations and shows that the project has the potential to generate a maximum of approximately 150,176 tons of CO_2e per year. An expanded review of these calculations is included in Section 5.1.

Table 2.12-3. GHG (Composite CO_2e) Emission Rates

Emission Unit	Activity	Emission rate (tpy)
Unloading boilers	2 units, 8,760 hours/year	63,284
Storage area boilers	1 unit, 8,760 hours/year	6,415
MVCU	360,000 bbl/day, 365 days/year	80,191
Components	Leaks: methane emissions	12
Tanks	Fugitive emissions of methane	261
Firewater pumps	3 engines, ½ hour per week plus 8 hours per month	14
Total:	--	150,176

[6] EPA GHG permitting guidance and tailoring rules available at: http://www.epa.gov/nsr/ghgpermitting.html

Construction

GHG emission during construction is not subject to PSD review or emission reporting. Emissions will primarily consist of CO_2 release from combustion by diesel- and gasoline-powered vehicles associated with construction. Emissions from vehicle use will be minimized by adherence to a set of best practices including limited idling time.

On-site Operations

The main sources of GHG during operation are the combustion of natural gas at the boiler units and the combustion of natural gas and vessel hydrocarbon vapors in the MVCU. GHG emission calculations for each unit are reviewed in detail in Section 5.1, Attachment 2