



Notice of Construction Application

A notice of construction permit is required before installing a new source of air pollution or modifying an existing source of air pollution. This application applies to facilities in Ecology’s jurisdiction. Submit this application for review of your project. For general information about completing the application, refer to Ecology Forms ECY 070-410a-g, “Instructions for Ecology’s Notice of Construction Application.”

Ecology offers up to two hours of free pre-application assistance. We encourage you to schedule a pre-application meeting with the contact person specified for the location of your proposal, below. If you use up your two hours of free pre-application assistance, we will continue to assist you after you submit Part 1 of the application and the application fee. You may schedule a meeting with us at any point in the process.

Upon completion of the application, please enclose a check for the initial fee and mail to:

**Department of Ecology
Cashiering Unit
PO Box 47611
Olympia, WA 98504-7611**

For Fiscal Office Use Only: 0299-3030404-B00-216--001--000404

Check the box for the location of your proposal. For assistance, call the appropriate office listed below:

Check box	Ecology Permitting Office	Contact
<input type="checkbox"/>	Chelan, Douglas, Kittitas, Klickitat, or Okanogan County Ecology Central Regional Office (509) 575-2490	Lynnette Haller (509) 457-7126 lynnette.haller@ecy.wa.gov
<input type="checkbox"/>	Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Stevens, Walla Walla, or Whitman County Ecology Eastern Regional Office (509) 329-3400	Karin Baldwin (509) 329-3452 karin.baldwin@ecy.wa.gov
<input type="checkbox"/>	San Juan County Ecology Northwest Regional Office (206) 594-0000	David Adler (425) 649-7267 david.adler@ecy.wa.gov
<input type="checkbox"/>	For actions taken at Kraft and Sulfite Paper Mills and Aluminum Smelters Only Ecology Industrial Section (360) 407-6900	James DeMay (360) 407-6868 james.demay@ecy.wa.gov
<input type="checkbox"/>	For actions taken on the US Department of Energy Hanford Reservation Only Ecology Nuclear Waste Program (509) 372-7950	Lilyann Murphy (509) 372-7951 lilyann.murphy@ecy.wa.gov

Check the box below for the fee that applies to your application.

New project or equipment:

- \$1,904: Basic project** initial fee covers up to 16 hours of review.
- \$12,614: Complex project** initial fee covers up to 106 hours of review.

Change to an existing permit or equipment:

- \$357: Administrative or simple change** initial fee covers up to 3 hours of review. Ecology may determine your change is complex during the completeness review of your application. If your project is complex, you must pay the additional xxx before we will continue working on your application
- \$1,190: Complex change** initial fee covers up to 10 hours of review
- \$350flat fee:** Replace or alter control technology equipment under WAC 173-400-114. Ecology will contact you if we determine your change belongs in another fee category. You must pay the fee associated with that category before we will continue working on your application.

Read each statement below, then check the box next to it to acknowledge that you agree.

- The initial fee you submitted may not cover the cost of processing your application. Ecology will track the number of hours spent on your project. If the number of hours Ecology spends exceeds the hours included in your initial fee, Ecology will bill you \$119 per hour for the extra time.
- You must include all information requested by this application. Ecology may not process your application if it does not include all the information requested.
- Submittal of this application allows Ecology staff to visit and inspect your facility.

Part 1: General Information

I. Project, Facility, and Company Information

1. Project Name: _____
2. Facility Name: _____
3. Facility Street Address: _____

4. Facility Legal Description: _____
5. Company Legal Name (if different from Facility Name):

6. Company Mailing Address (street, city, state, zip)

II. Contact Information and Certification

1. Facility Contact Name (who will be onsite): _____
2. Facility Contact Mailing Address (if different than Company Mailing Address):


3. Facility Contact Phone Number: _____
4. Facility Contact E-mail: _____
5. Billing Contact Name (who should receive billing information):

6. Billing Contact Mailing Address (if different Company Mailing Address):
7. Billing contact Phone Number: _____
8. Billing Contact E-mail: _____
9. Consultant Name (optional – if 3rd party hired to complete application elements):

10. Consultant Organization/Company: _____
11. Consultant Mailing Address (street, city, state, zip):
12. Consultant Phone Number: _____
13. Consultant E-mail: _____
14. Responsible Official Name and Title (who is responsible for project policy or decision making):

15. Responsible Official Phone: _____
16. Responsible Official E-mail: _____
17. Responsible Official Certification and Signature:

I certify that the information on this application is accurate and complete.

Signature:  Date: _____

Part 2: Technical Information

The Technical Information may be sent with this application form to the Cashiering Unit, or may be sent directly to the Ecology regional office with jurisdiction along with a copy of this application form.

For all sections, check the box next to each item as you complete it.

III. Project Description

- Written narrative describing your proposed project.
- Projected construction start and completion dates.
- Operating schedule and production rates.
- List of all major process equipment and manufacturer and maximum rated capacity.
- Process flow diagram with all emission points identified.
- Plan view site map.
- Manufacturer specification sheets for major process equipment components
- Manufacturer specification sheets for pollution control equipment.
- Fuel specifications, including type, consumption (per hour and per year) and percent sulfur.

IV. State Environmental Policy Act (SEPA) Compliance

Check the appropriate box below.

- SEPA review is complete. Include a copy of the final SEPA checklist and SEPA determination (e.g., DNS, MDNS, and EIS) with your application.
- SEPA review has not been conducted:
 - If review will be conducted by another agency, list the agency. You must provide a copy of the final SEPA checklist and SEPA determination before Ecology will issue your permit.
Agency reviewing SEPA: _____
 - If the review will be conducted by Ecology, fill out a SEPA checklist and submit it with your application. You can find a SEPA checklist online at <https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-document-templates>

V. Emissions Estimations of Criteria Pollutants

Does your project generate criteria air pollutant emissions? Yes No

If yes, please provide the following information regarding your criteria emissions in the application.

- The names of the criteria air pollutants emitted (i.e., NO_x, SO₂, CO, PM_{2.5}, PM₁₀, TSP, VOC, and Pb)
- Potential emissions of criteria air pollutants in tons per hour, tons per day, and tons per year (include calculations)
- If there will be any fugitive criteria pollutant emissions, clearly identify the pollutant and quantity

VI. Emissions Estimations of Toxic Air Pollutants

Does your project generate toxic air pollutant emissions? Yes No

If yes, please provide the following information regarding your toxic air pollutant emissions in your application.

- The names of the toxic air pollutants emitted (specified in [WAC 173-460-150¹](#))
- Potential emissions of toxic air pollutants in pounds per hour, pounds per day, and pounds per year (include calculations)
- If there will be any fugitive toxic air pollutant emissions, clearly identify the pollutant and quantity

VII. Emission Standard Compliance

- Provide a list of all applicable new source performance standards, national emission standards for hazardous air pollutants, national emission standards for hazardous air pollutants for source categories, and emission standards adopted under Chapter 70A.15 RCW.

Does your project comply with all applicable standards identified? Yes No

VIII. Best Available Control Technology

- Provide a complete evaluation of Best Available Control Technology (BACT) for your proposal.

IX. Ambient Air Impacts Analyses

Please provide the following:

- Ambient air impacts analyses for Criteria Air Pollutants (including fugitive emissions)
- Ambient air impacts analyses for Toxic Air Pollutants (including fugitive emissions)
- Discharge point data for each point included in air impacts analyses (include only if modeling is required)
 - Exhaust height
 - Exhaust inside dimensions (ex. diameter or length and width)
 - Exhaust gas velocity or volumetric flow rate
 - Exhaust gas exit temperature
 - The volumetric flow rate
 - Description of the discharges (i.e., vertically or horizontally) and whether there are any obstructions (ex., raincap)
 - Identification of the emission unit(s) discharging from the point
 - The distance from the stack to the nearest property line
 - Emission unit building height, width, and length
 - Height of tallest building on-site or in the vicinity and the nearest distance of that building to the exhaust
 - Whether the facility is in an urban or rural location

Does your project cause or contribute to a violation of any ambient air quality standard or acceptable source impact level? Yes No

To request ADA accommodation, call Ecology at (360) 407-6800, 711 (relay service), or (877) 833-6341 (TTY)

¹ <http://apps.leg.wa.gov/WAC/default.aspx?cite=173-460-150>



Certified Mail 7021 1970 0000 0342 0408

August 23, 2024

Attn: Karen Baldwin
WA Department of Ecology
Cashiering Unit
PO Box 47611
Olympia, WA 98504-7611

**RE: Notice of Construction Application for Approval Order No. 22AQ-E058
Complex Permit Changes
Tidewater Terminal Company
Snake River Terminal
671 Tank Farm Road, Pasco, WA 99301
Approval Order No. 18AQ-E050**

Dear Ms. Baldwin,

Tidewater Terminal Company's (Tidewater) Snake River Terminal (SRT) in Pasco, Washington is proposing administrative modifications to Approval Order No. 22AQ-E058 (Approval Order). Based on the current version of the Approval Order, and conversations with Ecology, Tidewater is notifying Ecology of a change in site operations that may impact the existing Approval Order.

Tidewater has determined that regional demand for biodiesel will continue to increase for the foreseeable future. As such, Tidewater is proposing a change to Approval Order No. 22AQ-E058 that adds a new tank into distillate (biodiesel) service to manage the increased regional demand for biodiesel. Tank 14, listed in the current Approval Order as a diesel tank, will be dedicated to storing biodiesel. To manage the increased demand for biodiesel, Tidewater is also retrofitting and converting Tank 15, previously utilized as a fertilizer tank, to prepare it for distillate service. Tank 15 is not currently included in the 2022 Approval Order. Tank 15, along with Tank 14, will be dedicated to storing biodiesel that will be blended with conventional diesel and distributed at the truck loading rack at the SRT. Biodiesel will be delivered to SRT solely via rail tank cars. Tanks 14 and 15 will contain 100 percent biodiesel which will be blended with conventional diesel at varying concentrations at our existing truck rack (typically at 5 and 20 percent). A new loading bay has been added to the existing truck loading rack to facilitate the efficient distribution of biodiesel.

Tank 15 is in the process of being converted to distillate service (biodiesel) and is not currently listed in Table A of the Approval Order. Despite the addition of Tank 15 for biodiesel service, Tidewater does not anticipate the addition of Tank 15 to the Approval Order to increase overall petroleum throughput as the new biodiesel volume from Tank 15 will be blended with conventional diesel at the track rack. The new throughput of biodiesel will be offset by a decrease in throughput of conventional diesel. For instance, a truck loading a 20 percent blend of biodiesel (B20) at the truck loading rack will be loading a blend of 80 percent conventional diesel with 20 percent biodiesel. As such, Tidewater is not requesting any changes to

Operating Conditions and Limitations in the Approval Conditions section of the current Approval Order (No. 22AQ-E058).

Specific changes to the existing Approval Order are described below. A description of the assumptions for estimating new emissions for the addition of Tank 15 to the Approval Order is also provided further below, followed by a summary of the results. The emission data is provided as an attachment to the submittal.

1 - Requested modifications to Approval Order No. 22AQ-E058 are as follows:

1.1 Changes to Table A. Petroleum Product Storage Tanks

Add new distillate Tank 15 to Table A. Tank 15 was built at the same time and has the same dimensions as Tank 14. The specific requested change is shown in **bold** in Table A below.

Tank Number	Product	Tank capacity (gallons)	Tank Roof	Primary Seal	Secondary Seal	Install Year
1	distillate	1,501,773	fixed	n/a	n/a	1975
2	gasoline/ethanol	1,901,414	internal ¹	shoe	none	1977
4	distillate	402,990	fixed	n/a	n/a	1942
7	transmix	29,600	internal	wiper	wiper	1996
14	Distillate	422,182	fixed	n/a	n/a	1940
15	Distillate	422,182	fixed	n/a	n/a	1940
22	gasoline	803,521	internal	wiper	wiper	1953
23	gasoline	805,494	internal	wiper	wiper	1953
24	gasoline/ethanol	805,262	internal	shoe	none	1953
25	distillate	838,866	fixed	n/a	n/a	1953
26	distillate	837,690	fixed	n/a	n/a	1953
27	distillate	845,964	fixed	n/a	n/a	1953
28	gasoline	804,254	internal	shoe	n/a	1953
29	gasoline	804,002	internal	wiper	wiper	1953
30	gasoline	802,146	internal	wiper	wiper	1953
31	distillate	844,704	fixed	n/a	n/a	1953
32	distillate	844,242	fixed	n/a	n/a	1953
33	distillate	842,562	fixed	n/a	n/a	1953
34	distillate	1,275,666	fixed	n/a	n/a	1953
35	ethanol	1,287,930	internal	shoe	none	1953
84	gasoline	1,190,147	internal	shoe	none	1997
85	gasoline	1,187,963	internal	shoe	none	1997
86	ethanol	2,730,000	internal	shoe	none	2019
87	ethanol	2,730,000	internal	shoe	none	2019

¹ internal refers to internal floating roof

1.2 Changes to Table B. Truck rack, barge loading dock, and associated equipment:

A fourth bay is being built onto Tidewater’s existing truck loading rack as part of the upgrades for offering biodiesel at our terminal. Also, Tidewater has observed the headers in Table B of the existing Approval Order are incorrect and appear to be the same as the headers in Table A. Tidewater recommends updating Table B. as shown in bold below.

Table B. Truck rack, barge loading dock, and associated equipment							
Tank Number	Equipment	Product	Manufacturer	Tank Capacity (gallons)	Tank Model	Tank Roof Capacity	Primary Seal Installed
	Truck Rack- three four bays	Fabricated onsite		na		36604,880 gpm	1996
	Vapor Collection System ¹	Fabricated onsite		na		1016 scfm	1996
	Truck Rack VCU	John Zink		ZTOF		1016 scfm	1996
	Dock Safety Unit (DSU)	John Zink		Marine		4000 bbl/hr	2014
	Barge VCU	John Zink		enclosed		4000 bbl/hr	2014

¹Induced air system from the blower on the vapor combustion unit

2 – Emissions calculations for recommended modifications to Table A and Table B:

Tidewater has calculated the delta of emissions from adding Tank 15 to petroleum (diesel/biodiesel) service. Assumptions used in the calculation of new Tank 15 emissions are provided below followed by emission estimates.

2.1 Emission Modeling Assumptions

Tank Dimension Assumptions

For the purposes of the emissions evaluation, Tidewater assumed a composition and emission factor for biodiesel identical to No. 2 diesel. To calculate Tank 15 volume and capacity, Tidewater used the dimensions and capacity of Tank 14 (422,182 gallons/10,052 barrels) as it has the identical dimensions as Tank 15 and was built at the same time. No emission calculations were conducted for Tank 14 as it is already listed in the Approval Order and emissions have already been considered for such inclusion in the Approval Order.

Biodiesel Throughput Assumptions

Tank 15 Biodiesel Throughput

Next, a conservative biodiesel throughput of 15,144,000 gallons was estimated based on 2023 throughput of all diesel at SRT and conservative business forecasts for biodiesel for the next several years. This is considered conservative as biodiesel will be blended (combined) at the truck rack with conventional diesel in concentrations ranging from 5 to 99 percent, with most of the blending anticipated at 20 percent (B20). For the sake of estimating the most conservative “worst-case” tank loss emission values for adding Tank 15 to the Approval Order, Tidewater assigned 100 percent of the anticipated biodiesel throughput to Tank 15, even though biodiesel will be distributed near evenly between Tanks 14 and Tanks 15 when biodiesel service operations begin.

Truck Loading Rack Biodiesel Throughput

Lastly, Tidewater anticipates a significant volume of biodiesel (blended with conventional diesel) to be delivered offsite via SRT pipelines where truck loading rack and VCU emissions would not be applicable. Regardless, to develop a ‘worst case’ emission estimate, Tidewater conservatively assigned all 15,144,000 gallons of the estimated biodiesel delivery throughput volume to the SRT Truck Loading Rack where a ‘worst-case’ loading rack fugitive and loading rack VCU emission estimate could be estimated.

2.2 Emission Estimates

The estimated Tank 15 throughput (15,144,000 gallons) was entered into Tanks 4.0.9d program evenly at 1,252,000 gallons per month along using the identical Tank 14 dimensions to calculate the yearly tank loss emissions using distillate fuel oil no 2 as the equivalent of biodiesel. Tidewater also calculated facility fugitive losses by conservatively estimating the number of new components required to complete the Tank 15 and truck loading rack upgrades.

Using the conservative assumptions above, the calculated total emissions for adding Tank 15 were estimated at 1,101 pounds (0.55 tons) per year. This conservative emission estimation from adding Tank 15 would equal a 1.4 percent increase of 2023 total tank emissions of 75,238 pounds (Tidewater Terminal Company's Snake River Terminal 2023 Emissions Report for NOC Approval Order No. 22AQ-E058, February 2, 2024). Tidewater anticipates actual emissions from the addition of Tank 15 to be significantly less than the conservative estimations assumed in this exercise.

Though not considered in the emissions calculations, the throughput of biodiesel will be offset by decreases in conventional diesel throughput (namely diesel no. 2). Any proportion of biodiesel throughput from Tank 15 will result in an equal decrease in the throughput of conventional diesel from the other tanks since biodiesel will be blended with conventional diesel at the truck loading rack. Ecology has indicated that this operational assumption can't be considered for the revised Approval Order for calculating overall increases in yearly emissions due to the addition of Tank 15 to a new Approval Order. Nonetheless, Tidewater wishes to state that the throughput of any biodiesel for Tank 15 will result in gallon per gallon volumetric decrease in conventional diesel throughput from the existing diesel service tanks listed in the current Approval Order which should result in limited emission increases.

3 – Emission Summary

Tidewater's proposed modifications to AO 22AQ-E058 will result in marginal increases to site emissions due to the addition of Tank 15 to the Approval Order. Overall VOC emission potential will increase 1,101 pounds (0.55 tons) per year if Tidewater's proposed modifications to AO 22AQ-E058 are approved. Yearly nitrogen oxides (NOx) and carbon monoxide (CO) emissions, resulting from fuel combustion via Tidewater's truck vapor combustion units (VCU), are estimated to increase by approximately 500 pounds (0.25 ton) and 1,257 pounds (0.63 ton), respectively. As described above in Section 2, these emissions estimates are considered a "worst-case" estimation and Tidewater expects actual operational emissions to be significantly less.

Throughput assumptions, data, and emissions calculations are provided in the attached data sheets. Electronic copies of the sheets can also be provided upon request to confirm calculations.

Application Package

Tidewater's Notice of Construction Application for Complex Change is attached, along with the requisite \$1,190 check for the fee. Supporting data and emissions calculations are attached and follow the NOC application.

Tidewater appreciates the assistance provided by the Department of Ecology for this project. Please contact me at (360) 759-0305 if you have any questions regarding our proposed modifications to AO 22AQ-E058 or if you require additional information.

Sincerely,

A handwritten signature in black ink, appearing to read 'Reuben Greer', written in a cursive style.

Reuben Greer
Tidewater Environmental Manager

Emissions Summary

Tidewater Terminal Company - Snake River Terminal - Administrative Modifications Application to Approval Order No. 22AQ-E058

This sheet summarizes the maximum potential increase in emissions from the existing Approval Order against the proposed changes of adding new Tank 15 and an additional truck loading rack bay modification as requested to Approval Order No. 22AQ-E058. This summary uses 2023 Emission Year totals as reported to Ecology and adds the new conservative Tank 15 throughput totals summarized in 10. Emissions Summary tab.

Category	VOC Emissions		NOX Emissions		CO Emissions	
	w/ new Tank 15 Throughput		w/ new Tank 15 Throughput		w/Tank 15 Throughput	
	lbs/year	Tons/year	lbs/year	Tons/year	lbs/year	Tons/year
Petroleum Storage Tanks ¹	462.94	0.23	-	-	-	-
Loading Rack Fugitives ²	3.55	0.00	-	-	-	-
Vapor Combustion Unit ²	284.05	0.14	499.75	0.25	1,256.95	0.63
Marine Loading	-	-	-	-	-	-
Marine Vapor Combustion Unit	-	-	-	-	-	-
Facility Fugitive Losses	329.22	0.16	-	-	-	-
Maintenance Losses	21.60	0.01	-	-	-	-
Boiler Losses	-	-	-	-	-	-
Rail Car Loading Losses	-	-	-	-	-	-
Gasoline Tank Roof Landing Losses	-	-	-	-	-	-
Total Emissions	1,101.36	0.55	499.75	0.25	1,256.95	0.63

Notes:

1 - Conservatively assumes 100 percent of estimated facility biodiesel throughput held in new Tank 15 with 0 percent biodiesel held in existing diesel Tank 14 in order to develop a 'worst-case' emission estimation. Operationally, biodiesel throughput will be stored in both Tanks 14 and 15, thereby resulting in much reduced tank losses for new Tank 15, due to significantly less actual throughput than what was modeled.

2 - Conservatively assumes 100 percent of estimated biodiesel shipping/delivery throughput is through truck loading rack with 0 percent through pipelines in order to develop a 'worst-case' emission estimate. Any amount shipped through the pipeline will reduce VOC emissions from loading rack fugitives and loading rack VCU combustion (included reductions in NOX and CO emissions).

CURRENT AND NEW SOURCES

This table describes individual sources at the Snake River Terminal. Changes or additions shown in **RED**

Source	Description
Petroleum Storage Tanks	
Gasoline	
Tank 2	Internal Floating Roof Tank - Unleaded Regular
Tank 22	Internal Floating Roof Tank - Unleaded Premium
Tank 23	Internal Floating Roof Tank - Unleaded Premium
Tank 28	Internal Floating Roof Tank - Unleaded Regular
Tank 29	Internal Floating Roof Tank - Unleaded Regular
Tank 30	Internal Floating Roof Tank - Unleaded Regular
Tank 84	Internal Floating Roof Tank - Unleaded Regular
Tank 85	Internal Floating Roof Tank - Unleaded Regular
Ethanol	
Tank 2	Internal Floating Roof Tank - Ethanol
Tank 24	Internal Floating Roof Tank - Ethanol
Tank 35	Internal Floating Roof Tank - Ethanol
Tank 86	Internal Floating Roof Tank - Ethanol
Tank 87	Internal Floating Roof Tank - Ethanol
Transmix	
Tank 7	Internal Floating Roof (Diesel-Gasoline Transmix)
Distillates	
Tank 1	Fixed Roof - 2D15 (#2 Distillate, 15 ppm sulfur)
Tank 4	Fixed Roof - 2D15 (#2 Distillate, 15 ppm sulfur)
Tank 14	Fixed Roof - 2D15 (#2 Distillate/ biodiesel , 15 ppm sulfur)
Tank 15	Fixed Roof - 2D15 (#2 Distillate/biodiesel, 15 ppm sulfur)
Tank 25	Fixed Roof - 2D15 (#2 Distillate, 15 ppm sulfur)
Tank 26	Fixed Roof - 2D15 (#2 Distillate, 15 ppm sulfur)
Tank 27	Fixed Roof - 1D15/2D15 (#1 Distillate/#2 Distillate, 15 ppm sulfur)
Tank 31	Fixed Roof - B5 (#2 Distillate w/ 5% biodiesel , 15 ppm sulfur)
Tank 32	Fixed Roof - 2D15 (#2 Distillate, 15 ppm sulfur)
Tank 33	Fixed Roof - 2D15 (#2 Distillate, 15 ppm sulfur)
Tank 34	Fixed Roof - 2D15 (#2 Distillate, 15 ppm sulfur)
Loading Rack Fugitives	
Gasoline	Refined product loading rack fugitive emissions from gasoline service
Ethanol	Refined product loading rack fugitive emissions from ethanol service
Distillate Fuel Oil No. 2	Refined product loading rack fugitive emissions from Distillate Fuel Oil No. 2 service
Distillate Fuel Oil No. 1	Refined product loading rack fugitive emissions from Distillate Fuel Oil No. 1 service
Black Oil	Refined product loading rack fugitive emissions from black oil service - N/A
Vapor Combustion Unit	
Emissions from vapor combustion unit	
Marine Loading	
Gasoline	Emissions from marine loading of gasoline
Ethanol	Emissions from marine loading of ethanol
Distillate Fuel Oil No. 2	Emissions from marine loading of Distillate Fuel Oil No. 2
Distillate Fuel Oil No. 1	Emissions from marine loading of Distillate Fuel Oil No. 1
Black Oil	Emissions from marine loading of black oil - N/A
Marine Vapor Combustion Unit	
Emissions from marine vapor combustion unit	
Facility Fugitive Losses	
Emissions from connectors, valves, check valves, open-ended lines, pump seals and other light liquid service equipment	
Maintenance Losses	
Emissions from miscellaneous maintenance activities	
Boiler Losses	
Emissions from the Gabriel Model S102 boiler - N/A	
Rail Car Loading Losses	
Emissions from loading rail cars	
Gasoline Tank Roof Landings	
Losses from periodic gasoline tank roof landings	

Tidewater Terminal Company
Snake River Terminal, Pasco, WA

ESTIMATED MONTHLY TANK THROUGHPUT

This spreadsheet describes monthly SRT throughput for biodiesel with the conservative assumption of 100 percent of that throughput assigned to Tank 15 to develop a 'worst-case' estimation of increase emissions. Also, a conservative assumption that 100 percent of that monthly Tank 15 throughput will be delivered through the Truck Loading Rack for each month and not delivered offsite via SRT

Tank Throughput	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec		Totals			
	(barrels)	(gallons)	(barrels)	(gallons)	(barrels)	(gallons)	(barrels)	(gallons)	(barrels)	(gallons)	(barrels)	(gallons)	(barrels)	(gallons)	(barrels)	(gallons)	(barrels)	(gallons)	(barrels)	(gallons)	(barrels)	(gallons)	(barrels)	(gallons)	(barrels)	(gallons)		
Distillates/Biodiesel																												
Tank 15¹	30,048	1,262,000	30,048	1,262,000	30,048	1,262,000	30,048	1,262,000	30,048	1,262,000	30,048	1,262,000	30,048	1,262,000	30,048	1,262,000	30,048	1,262,000	30,048	1,262,000	30,048	1,262,000	30,048	1,262,000	30,048	1,262,000	360,571	15,144,000
Truck Loading Rack Shipments/Deliveries²																												
Distillate Fuel Oil No. 2/Biodiesel	30,048	1,262,000	30,048	1,262,000	30,048	1,262,000	30,048	1,262,000	30,048	1,262,000	30,048	1,262,000	30,048	1,262,000	30,048	1,262,000	30,048	1,262,000	30,048	1,262,000	30,048	1,262,000	30,048	1,262,000	30,048	1,262,000	360,571	15,144,000

Note:

- 1 - Conservatively assumes 100 percent of estimated facility biodiesel throughput held in new Tank 15 with 0 percent biodiesel held in existing diesel Tank 14 in order to develop a 'worst-case' emission estimation. Operationally, biodiesel throughput will be stored in both Tanks 14 and 15, thereby resulting in much reduced tank losses for new Tank 15, due to significantly less actual throughput than what was modeled.
- 2 - Conservatively assumes 100 percent of estimated biodiesel shipping/delivery throughput is through truck loading rack with 0 percent through pipelines in order to develop a 'worst-case' emission estimate. Any amount shipped through the pipeline will reduce VOC emissions from loading rack fugatives and loading rack VCU combustion (included reductions in NOx and CO emissions).

ESTIMATED ANNUAL TANK THROUGHPUT & TURNOVER

This spreadsheet provides the conservative estimate of annual Tank 15 throughput and turnover, assuming all estimated annual biodiesel throughput only to Tank 15 to maximize 'worst-case' emission calculations.

Tank Throughput	Total Throughput ¹		Tank Volume ²	Annual Turnover ³
	(barrels)	(gallons)	(gallons)	
Tank 15	360,571	15,144,000	422,182	35.87

Notes:

1. Conservatively assumes 100 percent estimated biodiesel throughput stored in new Tank 15, with 0 percent stored in existing diesel Tank 14.
2. Tank working volume. Calculated using Tank 14 dimensions as Tank 14 and 15 are identical in dimensions.
3. Annual turnover equals estimated annual biodiesel throughput divided by tank working volume

ESTIMATED TANK LOSSES

This sheet describes total working and storage losses for the Snake River Terminal in pounds (lbs) of VOCs for new Tank 15 calculated using Tanks 4.0.9d

Losses in pounds (lbs)

Tank	Standing Storage Losses				Working Losses		Totals
	Rim Seal Loss	Deck Fitting Loss	Deck Seam Loss	Breathing Loss	Withdrawal Loss	Working Loss	
<i>Vertical Fixed Roof Tank</i>							
Tank 15	-	-	-	133.24	-	329.70	462.94
Total(s) (lbs)	-	-	-	133.24	-	329.70	462.94
Total(s) (tons)	-	-	-	0.07	-	0.16	0.23

Note: Conservatively assumes 100 percent estimated SRT biodiesel throughput to be stored in new Tank 15, with 0 percent stored in existing Tank 14.

New Tank 15 emissions

Tidewater Terminal Company												
Snake River Terminal, Pasco, WA												
ESTIMATED TANK LOSSES												
Tanks 4.0.9d Tank 15 Tank Losses calculations.												
ID	MIX ID	PRIMARY	NAME	CAS	MONTH	TANK_TYPE	USER ID	CITY	STATE	COMPANY	DESC	MET CTYST
55	1	TRUE	Distillate fuel oil no. 2		January	Vertical Fixed Roof Tank	Tank 15	Pasco	Washington	TTC-Snake River	Tank 15 2D15	Walla Walla, Washington
55	1	TRUE	Distillate fuel oil no. 2		February	Vertical Fixed Roof Tank	Tank 15	Pasco	Washington	TTC-Snake River	Tank 15 2D15	Walla Walla, Washington
55	1	TRUE	Distillate fuel oil no. 2		March	Vertical Fixed Roof Tank	Tank 15	Pasco	Washington	TTC-Snake River	Tank 15 2D15	Walla Walla, Washington
55	1	TRUE	Distillate fuel oil no. 2		April	Vertical Fixed Roof Tank	Tank 15	Pasco	Washington	TTC-Snake River	Tank 15 2D15	Walla Walla, Washington
55	1	TRUE	Distillate fuel oil no. 2		May	Vertical Fixed Roof Tank	Tank 15	Pasco	Washington	TTC-Snake River	Tank 15 2D15	Walla Walla, Washington
55	1	TRUE	Distillate fuel oil no. 2		June	Vertical Fixed Roof Tank	Tank 15	Pasco	Washington	TTC-Snake River	Tank 15 2D15	Walla Walla, Washington
55	1	TRUE	Distillate fuel oil no. 2		July	Vertical Fixed Roof Tank	Tank 15	Pasco	Washington	TTC-Snake River	Tank 15 2D15	Walla Walla, Washington
55	1	TRUE	Distillate fuel oil no. 2		August	Vertical Fixed Roof Tank	Tank 15	Pasco	Washington	TTC-Snake River	Tank 15 2D15	Walla Walla, Washington
55	1	TRUE	Distillate fuel oil no. 2		September	Vertical Fixed Roof Tank	Tank 15	Pasco	Washington	TTC-Snake River	Tank 15 2D15	Walla Walla, Washington
55	1	TRUE	Distillate fuel oil no. 2		October	Vertical Fixed Roof Tank	Tank 15	Pasco	Washington	TTC-Snake River	Tank 15 2D15	Walla Walla, Washington
55	1	TRUE	Distillate fuel oil no. 2		November	Vertical Fixed Roof Tank	Tank 15	Pasco	Washington	TTC-Snake River	Tank 15 2D15	Walla Walla, Washington
55	1	TRUE	Distillate fuel oil no. 2		December	Vertical Fixed Roof Tank	Tank 15	Pasco	Washington	TTC-Snake River	Tank 15 2D15	Walla Walla, Washington

New Tank 15 emissions

AMB_T	T_MIN	T_MAX	INSOL	P_A	S_LOSS	W_LOSS	RIM_LOSS	WD_LOSS	DECKF_LOSS	DECKS_LOSS	MOLES	L_WT_FRACT	V_WT_FRACT	L_MO_FRACT
34.05	28.4	39.7	348	14.181	2.272540296	16.5841202	0	0	0	0	0	0	0	0
39.85	33	46.7	614	14.181	3.551133161	19.1369688	0	0	0	0	0	0	0	0
46.1	37.1	55.1	1043	14.181	7.241717563	22.87398998	0	0	0	0	0	0	0	0
52	41.4	62.6	1502	14.181	10.94338902	26.90468116	0	0	0	0	0	0	0	0
59.25	47.7	70.8	1925	14.181	16.07009686	31.97786558	0	0	0	0	0	0	0	0
67.65	54.8	80.5	2144	14.181	19.69476193	36.88993786	0	0	0	0	0	0	0	0
75.05	60.7	89.4	2395	14.181	25.60159454	42.09971003	0	0	0	0	0	0	0	0
74.4	61	87.8	1994	14.181	20.90036372	39.53716314	0	0	0	0	0	0	0	0
65.1	52.6	77.6	1502	14.181	13.84816067	32.53350164	0	0	0	0	0	0	0	0
54.1	43.5	64.7	908	14.181	7.869962641	25.12403382	0	0	0	0	0	0	0	0
42.6	35.9	49.3	438	14.181	3.178045168	19.43052683	0	0	0	0	0	0	0	0
34.75	29.2	40.3	293	14.181	2.070281579	16.609987	0	0	0	0	0	0	0	0

New Tank 15 emissions

V_MO_FRACT	MOLWT	VP_MOLWT	L_DENS	ALPHA	ALPHA_2	ALS_TEMP	MLS_TEMP	XLS_TEMP	BULK_T	A_VP	M_VP	X_VP	DIAMETER	EFF_DIAM
0	188	130	0	0.6	0.6	507.8528533	504.3572533	511.3484533	516.0116667	0.004245599	0.003756215	0.004835691	44	44
0	188	130	0	0.6	0.6	511.6656933	506.6208933	516.7104933	516.0116667	0.004899139	0.004073125	0.005908099	44	44
0	188	130	0	0.6	0.6	516.4491533	508.8285533	524.0697533	516.0116667	0.005855831	0.004382197	0.007599938	44	44
0	188	130	0	0.6	0.6	521.2208133	511.0964133	531.3452133	516.0116667	0.006887703	0.004785283	0.009502564	44	44
0	188	130	0	0.6	0.6	526.4158333	514.1728333	538.6588333	516.0116667	0.008186458	0.005400567	0.01169665	44	44
0	188	130	0	0.6	0.6	531.1498933	517.5190933	544.7806933	516.0116667	0.009443968	0.006069819	0.014044277	44	44
0	188	130	0	0.6	0.6	535.5956333	520.3706333	550.8206333	516.0116667	0.01077769	0.006675158	0.01669038	44	44
0	188	130	0	0.6	0.6	533.4088933	520.2100933	546.6076933	516.0116667	0.010121668	0.006635023	0.014775077	44	44
0	188	130	0	0.6	0.6	526.9848133	516.1764133	537.7932133	516.0116667	0.008328703	0.005801283	0.011436964	44	44
0	188	130	0	0.6	0.6	519.3292533	511.6996533	526.9588533	516.0116667	0.006431851	0.004905931	0.008322213	44	44
0	188	130	0	0.6	0.6	512.0414533	507.7898533	516.2930533	516.0116667	0.004974291	0.004236779	0.005824611	44	44
0	188	130	0	0.6	0.6	507.9001533	504.6715533	511.1287533	516.0116667	0.004252221	0.003800217	0.004791751	44	44

New Tank 15 emissions

HEIGHT_S	HEIGHT_R	HEIGHT_L	HEIGHT_AL	VOLUME	Q_NET	TURNOVER	SHL COLSHD	SHL_COND	PT_COND	RF_COLSHD	RF_COND	RF_TYPE	VP_RANGE
40	0	38	20	422182	1262000	35.870786	Aluminum/Diffuse		Good	Aluminum/Diffuse	Good	Cone	0.001079475
40	0	38	20	422182	1262000	35.870786	Aluminum/Diffuse		Good	Aluminum/Diffuse	Good	Cone	0.001834974
40	0	38	20	422182	1262000	35.870786	Aluminum/Diffuse		Good	Aluminum/Diffuse	Good	Cone	0.003217741
40	0	38	20	422182	1262000	35.870786	Aluminum/Diffuse		Good	Aluminum/Diffuse	Good	Cone	0.004717281
40	0	38	20	422182	1262000	35.870786	Aluminum/Diffuse		Good	Aluminum/Diffuse	Good	Cone	0.006296083
40	0	38	20	422182	1262000	35.870786	Aluminum/Diffuse		Good	Aluminum/Diffuse	Good	Cone	0.007974459
40	0	38	20	422182	1262000	35.870786	Aluminum/Diffuse		Good	Aluminum/Diffuse	Good	Cone	0.010015222
40	0	38	20	422182	1262000	35.870786	Aluminum/Diffuse		Good	Aluminum/Diffuse	Good	Cone	0.008140054
40	0	38	20	422182	1262000	35.870786	Aluminum/Diffuse		Good	Aluminum/Diffuse	Good	Cone	0.005635681
40	0	38	20	422182	1262000	35.870786	Aluminum/Diffuse		Good	Aluminum/Diffuse	Good	Cone	0.003416283
40	0	38	20	422182	1262000	35.870786	Aluminum/Diffuse		Good	Aluminum/Diffuse	Good	Cone	0.001587831
40	0	38	20	422182	1262000	35.870786	Aluminum/Diffuse		Good	Aluminum/Diffuse	Good	Cone	0.000991533

New Tank 15 emissions

T_RANGE	VT_RANGE	RF_OUT	VS_OUT	VS_VOL	V_DENS	BV_RANGE	K_E	K_S	K_N	K_P	M_KR	M_P	M_KC	M_C	VENT_P	VENT_V	C_SLOPE
11.3	13.9824	0.458333333	20.45833333	31107.52682	0.000101275	0.06	0.023376248	0.995417627	1	1	0	0	0	0	0.03	-0.03	0.0625
13.7	20.1792	0.458333333	20.45833333	31107.52682	0.000115994	0.06	0.035335217	0.994715974	1	1	0	0	0	0	0.03	-0.03	0.0625
18	30.4824	0.458333333	20.45833333	31107.52682	0.000137361	0.06	0.055017279	0.993690632	1	1	0	0	0	0	0.03	-0.03	0.0625
21.2	40.4976	0.458333333	20.45833333	31107.52682	0.000160087	0.06	0.073797328	0.992587082	1	1	0	0	0	0	0.03	-0.03	0.0625
23.1	48.972	0.458333333	20.45833333	31107.52682	0.000188395	0.06	0.089239896	0.991201591	1	1	0	0	0	0	0.03	-0.03	0.0625
25.7	54.5232	0.458333333	20.45833333	31107.52682	0.000215397	0.06	0.098980125	0.989863779	1	1	0	0	0	0	0.03	-0.03	0.0625
28.7	60.9	0.458333333	20.45833333	31107.52682	0.000243776	0.06	0.110177732	0.988448829	1	1	0	0	0	0	0.03	-0.03	0.0625
26.8	52.7952	0.458333333	20.45833333	31107.52682	0.000229877	0.06	0.095317363	0.989144299	1	1	0	0	0	0	0.03	-0.03	0.0625
25	43.2336	0.458333333	20.45833333	31107.52682	0.000191462	0.06	0.0782037	0.991050081	1	1	0	0	0	0	0.03	-0.03	0.0625
21.2	30.5184	0.458333333	20.45833333	31107.52682	0.000150036	0.06	0.054773113	0.993074298	1	1	0	0	0	0	0.03	-0.03	0.0625
13.4	17.0064	0.458333333	20.45833333	31107.52682	0.000117687	0.06	0.029092446	0.994635353	1	1	0	0	0	0	0.03	-0.03	0.0625
11.1	12.9144	0.458333333	20.45833333	31107.52682	0.000101424	0.06	0.021264703	0.995410512	1	1	0	0	0	0	0.03	-0.03	0.0625

**Tidewater Terminal Company
Snake River Terminal, Pasco, WA**

REFINED PRODUCT LOADING RACK FUGITIVES

This sheet calculates loading rack fugitive losses for VOCs in pounds for Tank 15 biodiesel truck loading rack loading

Equations (1):

$$E = LL \times Q$$

and

$$LL = 12.46 \times S \times P \times M / T$$

where

E = VOC vapor displacement rate (tons)
LL = Loading loss (lb/ 1000 gal loaded)
Q = Loading rate (1000 gal/month)
S = Liquid loading saturation factor
P = True vapor pressure at average loading temperature (psia)
M = Vapor molecular weight (lb/lb-mole)
T = Average bulk liquid temperature (degrees R)

and

$$FL = E \times FLF$$

where

FL = Loading rack fugitive losses (tons/month)
FLF = Fugitive losses factor (0.013 for bottom loader with VCU and 1.00 for top loader no control system)

and

GVCUL = E-FL
EVCUL = E-FL
D2VCUL = E-FL
D1VCUL = E-FL
BOVCUL = E-FL

where

GVCUL = Gasoline VCU loading rate (tons)
EVCUL = Ethanol VCU loading rate (tons)
D2VCUL = Distillate Fuel Oil No. 2 VCU loading rate (tons)
D1VCUL = Distillate Fuel Oil No. 1 VCU loading rate (tons)
BOVCUL = Black oil VCU loading rate (tons)

- Notes: (1) From AP-42, Section 5.2, Transportation and Marketing of Petroleum Liquids
(a) Gasoline P, M and T data taken from Tanks 4.0.9d monthly estimate, depending on RVP, for Pasco, Washington
(c) Assumes NSPS Subpart XX efficiency of 98.7% (0.013)
(d) Distillate Fuel Oil No. 2 P, M and T data taken from Tanks 4.0.9d monthly estimate for Pasco, Washington
(e) Distillate Fuel Oil No. 1 P, M and T data taken from Tanks 4.0.9d monthly estimate for Pasco, Washington
(f) Black Oil P, M and T data taken from Tanks 4.0.9d monthly estimate for Pasco, Washington; P assumed equal to 0.00001 for all months
(g) Ethanol P, M, and T data taken from Tanks 4.0.9d monthly estimate for Pasco, Washington
(h) Gasoline RVP from montly measurements for unleaded regular gasoline in storage

Tank 15 Distillate Fuel Oil No. 2 Service (Estimated at 1,262,000 gals/month)

Month	Service	RVP	S	P (d)	M	T	LL	Q ¹	E (tons)	FLF	FL (tons)	FL (lbs)	D2VCUL (tons)
Jan	Distillate	NA	1	0.0039	130	513.43	0.012	1,262	0.0078	0.013	0.0001	0.2019	0.0077
Feb	Distillate	NA	1	0.0043	130	513.43	0.014	1,262	0.0086	0.013	0.0001	0.2226	0.0084
Mar	Distillate	NA	1	0.0049	130	513.43	0.015	1,262	0.0098	0.013	0.0001	0.2536	0.0096
Apr	Distillate	NA	1	0.0055	130	513.43	0.017	1,262	0.0109	0.013	0.0001	0.2847	0.0108
May	Distillate	NA	1	0.0063	130	513.43	0.020	1,262	0.0125	0.013	0.0002	0.3261	0.0124
Jun	Distillate	NA	1	0.0072	130	513.43	0.023	1,262	0.0143	0.013	0.0002	0.3727	0.0141
Jul	Distillate	NA	1	0.0081	130	513.43	0.026	1,262	0.0161	0.013	0.0002	0.4192	0.0159
Aug	Distillate	NA	1	0.0079	130	513.43	0.025	1,262	0.0157	0.013	0.0002	0.4089	0.0155
Sep	Distillate	NA	1	0.0067	130	513.43	0.021	1,262	0.0133	0.013	0.0002	0.3468	0.0132
Oct	Distillate	NA	1	0.0055	130	513.43	0.017	1,262	0.0109	0.013	0.0001	0.2847	0.0108
Nov	Distillate	NA	1	0.0044	130	513.43	0.014	1,262	0.0088	0.013	0.0001	0.2277	0.0086
Dec	Distillate	NA	1	0.0039	130	513.43	0.012	1,262	0.0078	0.013	0.0001	0.2019	0.0077

Total Tank 15 Throughput Rack Fugitives¹

Month	FL (tons)	FL (lbs)
Jan	0.0001	0.20
Feb	0.0001	0.22
Mar	0.0001	0.25
Apr	0.0001	0.28
May	0.0002	0.33
Jun	0.0002	0.37
Jul	0.0002	0.42
Aug	0.0002	0.41
Sep	0.0002	0.35
Oct	0.0001	0.28
Nov	0.0001	0.23
Dec	0.0001	0.20
Total(s)	0.0018	3.55

Notes:

1 - Conservatively assumes 100 percent of estimated biodiesel shipping/delivery throughput is through truck loading rack with 0 percent through pipelines in order to develop a 'worst-case' emission estimate. Any amount shipped through the pipeline will reduce VOC emissions from loading rack fugitives and loading rack VCU combustion (included reductions in NOX and CO emissions).

**Tidewater Terminal Company
Snake River Terminal, Pasco, WA**

VCU VOC LOSSES

This sheet calculates VOC losses from the vapor combustion unit (VCU) based on new Tank 15 biodiesel throughput at the Truck Loading Rack

Equation (a): $E(\text{VOC}) = \text{TVCUL} * (1 - \text{CE})$

where: E(VOC) = volatile organic compound losses from VCU (tons)
TVCUL = total VCU loading rate for all products loaded (tons)

and: D2VCUL = Distillate Fuel Oil No. 2/Biodiesel VCU loading rate (tons)
CE = control efficiency; vapor combustion unit destruction efficiency (%)

Notes: (a) Loading rates calculated on Loading Rack Fugitives sheet using loading loss equation from AP-42, Section 5.2, Transportation and Marketing of Petroleum Liquids
(b) Equals 96%, From source test data report; Cubix, Test Report on Exhaust Emissions from a John Zink Vapor Combustion Unit, Prepared for Tidewater Terminal Co., Pasco Petroleum Distribution

Month	D2VCUL ¹	CE (b)	E(VOC)	
			(tons)	(lbs)
Jan	0.202	96%	0.008	16.15
Feb	0.223	96%	0.009	17.80
Mar	0.254	96%	0.010	20.29
Apr	0.285	96%	0.011	22.77
May	0.326	96%	0.013	26.09
Jun	0.373	96%	0.015	29.81
Jul	0.419	96%	0.017	33.54
Aug	0.409	96%	0.016	32.71
Sep	0.347	96%	0.014	27.74
Oct	0.285	96%	0.011	22.77
Nov	0.228	96%	0.009	18.22
Dec	0.202	96%	0.008	16.15
Total(s)	3.55		0.142	284.1

Notes:

1 - Conservatively assumes 100 percent of estimated biodiesel shipping/delivery throughput is through truck loading rack with 0 percent through pipelines in order to develop a 'worst-case" emission estimate. Any amount shipped through the pipeline will reduce VOC emissions from loading rack fugitives and loading rack VCU combustion (included reductions in NOX and CO emissions).

**Tidewater Terminal Company
Snake River Terminal, Pasco, WA**

VCU NOx & CO LOSSES

This sheet calculates NOx and CO losses from the vapor combustion unit (VCU) based on Tank 15 biodiesel throughput

Note, This conservatively assumes 100 percent estimated biodiesel throughput shipping/delivery will be through the truck loading rack with the VCU with 0 percent delivered offsite through SRT pipelines.

Equations: $E(\text{NOx}) = Q * \text{EF}(\text{NOx})$
 $E(\text{CO}) = Q * \text{EF}(\text{CO})$

where: Q = Loading rate (1000 gal/month)
E(NOx) = nitrogen oxides losses from VCU (tons)
E(CO) = carbon monoxide losses from VCU (tons)
EF(NOx) = nitrogen oxide emission factor (lbs/1000-gallons loaded)
EF(CO) = carbon monoxide emission factor (lbs/1000-gallons loaded)

Notes: (a) Emission factors for nitrogen oxides and carbon monoxide provided by John Zink; EF(NOx) = 4 mg/L loaded = 0.033 lbs/1000-gallons loaded;
EF(CO) = 10 mg/L loaded = 0.083 lbs/1000-gallons loaded

Month	Q (1,000-gallons) ¹ No. 2 Distillate/Biodiesel
Jan	1,262
Feb	1,262
Mar	1,262
Apr	1,262
May	1,262
Jun	1,262
Jul	1,262
Aug	1,262
Sep	1,262
Oct	1,262
Nov	1,262
Dec	1,262
Total(s)	15,144

2023 Totals	Q (1000-gallons)	EF(NOx) (a)	EF(CO) (a)	Emissions			
				E(NOx)		E(CO)	
				(lbs)	(tons)	(lbs)	(tons)
Distillate Fuel Oil No. 2/Biodiesel	15,144	0.033	0.083	499.75	0.25	1256.95	0.63
Total(s)	15,144			499.75	0.25	1,256.95	0.63

Notes:

1 - Conservatively assumes 100 percent of estimated biodiesel shipping/delivery throughput is through truck loading rack with 0 percent through pipelines in order to develop a "worst-case" emission estimate. Any amount shipped through the pipeline will reduce VOC emissions from loading rack fugatives and loading rack VCU combustion (included reductions in NOx and CO emissions).

TANK 15 FACILITY FUGITIVE LOSSES

This sheet calculates facility fugitive losses from the estimated number of new/additional connectors, valves, loading arm check valves, open-ended lines, pump seals and other equipment in light liquid service related to new Tank 15 and the new Truck Loading Rack Bay 4.

Equation: $E = N \times EF$

where: N = Number of sources
EF = Emissions factor (lbs/source.hour)
E = Emissions (lbs/hr)

Notes: (a) Emissions factors from API Publication Number 4588, Development of Fugitive Factors and Emission Profiles for Petroleum Marketing Terminals, May 1993.

COMPONENT	SERVICE TYPE	COMPONENTS PER SERVICE TYPE	AVERAGE EMISSION FACTOR (lbs/hr) (a)	TOTAL (lbs/hr)
CONNECTORS	LIGHT LIQUID	94	0.000023	0.002162
VALVES	LIGHT LIQUID	38	0.00015	0.00570
LOADING ARM CHECK VALVES	LIGHT LIQUID	14	0.00087	0.01218
OPEN-ENDED LINES	LIGHT LIQUID	1	0.0065	0.0065
PUMP SEALS	LIGHT LIQUID	3	0.00093	0.00279
OTHER	LIGHT LIQUID	33	0.00025	0.00825
			Totals	0.0376

E (lbs/hr)	0.038
E (lbs/day)	0.90
E (lbs/yr)	329.22
E (tons/year)	0.16

Tidewater Terminal Company
Snake River Terminal, Pasco, WA

ESTIMATED TANK 15 MAINTENANCE VOC LOSSES

Includes evaporative losses from maintenance and contaminated water
Assumed to equal 2% of total VOC losses of other sources.

Maintenance losses total	21.60 lbs/year
	0.01 tons/year

EMISSIONS SUMMARY

This sheet summarizes emissions from various sources for new biodiesel Tank 15. These estimates should be considered a 'worst-case' emissions

Sources	Emissions										
	VOCs		PM		SOx		NOx		CO		
	(lbs)	(tons)	(lbs)	(tons)	(lbs)	(tons)	(lbs)	(tons)	(lbs)	(tons)	
Petroleum Storage Tanks ¹	462.94	0.23	-	-	-	-	-	-	-	-	-
Loading Rack Fugitives ²	3.55	0.00	-	-	-	-	-	-	-	-	-
Vapor Combustion Unit ²	284.05	0.14	-	-	-	-	499.75	0.25	1,256.95	0.63	
Marine Loading	-	-	-	-	-	-	-	-	-	-	-
Marine Vapor Combustion Unit	-	-	-	-	-	-	-	-	-	-	-
Facility Fugitive Losses	329.22	0.16	-	-	-	-	-	-	-	-	-
Maintenance Losses	21.60	0.01	-	-	-	-	-	-	-	-	-
Boiler Losses	-	-	-	-	-	-	-	-	-	-	-
Rail Car Loading Losses	-	-	-	-	-	-	-	-	-	-	-
Gasoline Tank Roof Landing Losses	-	-	-	-	-	-	-	-	-	-	-
Totals(s)	1,101.36	0.55	-	-	-	-	499.75	0.25	1,256.95	0.63	

Notes:

1 - Conservatively assumes 100 percent of estimated facility biodiesel throughput held in new Tank 15 with 0 percent biodiesel held in existing diesel Tank 14 in order to develop a 'worst-case' emission estimation. Operationally, biodiesel throughput will be stored in both Tanks 14 and 15, thereby resulting in much reduced tank losses for new Tank 15, due to significantly less actual throughput than what was modeled.

2 - Conservatively assumes 100 percent of estimated biodiesel shipping/delivery throughput is through truck loading rack with 0 percent through pipelines in order to develop a 'worst-case' emission estimate. A portion of Biodiesel throughput is expected to be delivered/shipped offsite via SRT pipelines. Any biodiesel shipped through the pipeline will reduce VOC emissions from loading rack fugitives and loading rack VCU combustion (included reductions in NOX and CO emissions).