

Port of Grays Harbor Grain Terminal PTE Calculations

	metric tons/hr	lbs/hr
Maximum Rated Commodity Throughput ¹	4,000	8,818,400

Total Particulate

Emission Source	Total PM Emission Factor ² (lbs/ton)	Uncontrolled Total PM (lbs/hr)	Pneumatic Capture Efficiency ³ (%)	Baghouse Control Efficiency ⁴ (%)	Controlled Total PM (lbs/hr)	Fugitive Total PM (lbs/hr)	Annual Fugitive PM PTE ⁵ (tons/yr)	Annual Point Source PM PTE ⁵ (tons/yr)
Railcar Unloading	0.0320	141	97.5%	99.99%	0.014	3.53	15.45	0.06
Internal Handling Emissions (belts, scale, shuttle, etc)	0.0610	269	100.0%	99.99%	0.027	0.00	0.00	0.12
Ship Loading	0.0270	119	98.0%	99.99%	0.012	2.38	10.43	0.05
Total					0.052	5.91	25.88	0.23

PM10

Emission Source	PM10 Emission Factor (lbs/ton)	Uncontrolled PM10 (lbs/hr)	Pneumatic Capture Efficiency ³ (%)	Baghouse Control Efficiency ⁴ (%)	Controlled PM10 (lbs/hr)	Fugitive PM10 (lbs/hr)	Annual Fugitive PM10 PTE ⁵ (tons/yr)	Annual Point Source PM10 PTE ⁵ (tons/yr)
Railcar Unloading	0.0078	34	97.5%	99.99%	0.003	0.86	3.77	0.01
Internal Handling Emissions (belts, scale, shuttle, etc)	0.0340	150	100.0%	99.99%	0.015	0.00	0.00	0.07
Ship Loading	0.0022	10	98.0%	99.99%	0.001	0.19	0.85	0.004
Total		194			0.019	1.05	4.62	0.08

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PM2.5

Emission Source	PM2.5 Emission Factor (lbs/ton)	Uncontrolled PM2.5 (lbs/hr)	Pneumatic Capture Efficiency ³ (%)	Baghouse Control Efficiency ⁴ (%)	Controlled PM2.5 (lbs/hr)	Fugitive PM2.5 (lbs/hr)	Annual Fugitive PM2.5 PTE ⁵ (tons/yr)	Annual Point Source PM2.5 PTE ⁵ (tons/yr)
Railcar Unloading	0.0013	6	97.5%	99.99%	0.001	0.14	0.63	0.00
Internal Handling Emissions (belts, scale, shuttle, etc)	0.0058	26	100.0%	99.99%	0.003	0.00	0.00	0.01
Ship Loading	0.00037	2	98.0%	99.99%	0.0002	0.03	0.14	0.00
Total					0.003	0.18	0.77	0.01

Notes:

- Maximum rated commodity throughput based on 2000 MT/hr rating for each ship loading spout (max 2 spouts)
- Emission factors from Section 9.9 in EPA AP-42.
- Pneumatic capture efficiency for internal belt handling assumed to be 100% since this system will be completely enclosed and aspirated to baghouses.
Pneumatic capture efficiency for railcar unloading assumed at 90% from aspiration and 75% from enclosure, combining to 97.5%.
Pneumatic capture efficiency for ship unloading operations assumed at 90% from aspiration and 80% from choked flow and loading skirt, combining to 98.0%
- Baghouse control efficiency from manufacturer performance brochure is 99.99%.
- Annual emissions based on maximum commodity throughput, controls on-line, and 8760 hours per year operation.

Potential To Emit

Pollutant	Source	PTE by Source Type (tpy)	Total PTE (tpy)
PM	Point	0.23	26.11
	Fugitive	25.88	
PM10	Point	0.08	4.70
	Fugitive	4.62	

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PM2.5	Point	0.01	0.78
	Fugitive	0.77	

Face Velocity

receiving flow, per pit 43400 cfm
face area 900 ft² for 6'x150' pit opening
Face velocity 48.22222222 ft/min

Inlet Loading, max

Max thruput, single line 2204.6 ton/hr
Lowest ACFM 3500 acfm Shiploader transfer baghouse
Uncontrolled emissions (inlet
mass rate) 134.4806 lb/hr based on 0.061 lb/ton AP-42 factor
 15689.40333 grains/min
Inlet grain loading 4.482686667 grains/scf <10 gr/scf

Model Screening Results

Pollutant	Averaging Period	SIL	NAAQS	Scaling Factor	Maximum Impact Concentration			Combined Maximum Impact Concentration
					Point Sources	Receiving Building Fugitives	Ship Loader Fugitives	
		(µg/m ³)	(µg/m ³)		(µg/m ³)	(µg/m ³)	(µg/m ³)	(µg/m ³)
Model Default	1-hr	n/a	n/a	n/a	0.107	4.700	1.061	5.868
PM ₁₀	Annual	1	n/a	0.08	0.009	0.376	0.085	0.469
	24-hour	5	150	0.4	0.043	1.880	0.425	2.347
PM _{2.5}	Annual	0.3	12	0.03016	0.003	0.142	0.032	0.177
	24-Hour	1.2	35	0.1508	0.016	0.709	0.160	0.885

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Total Annual PM PTE ⁵ (tons/yr)
15.51
0.12
10.48
26.11

Total Annual PM10 PTE ⁵ (tons/yr)
3.78
0.07
0.85
4.70

Originally-supplied
0.0020 as EF; AP-
42 says 0.0022

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Total Annual PM2.5 PTE ⁵ (tons/yr)
0.63
0.01
0.14
0.78

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Exceeds SIL?
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No
No
No
No