Updated Ambient Air Quality Analysis

AGP Terminal 4 Commodity Transload Facility

Per comments received from Aaron Manley at the Olympic Region Clean Area Agency (ORCAA), the potential-to-emit (PTE) calculations and ambient air quality impact assessment have been revised to incorporate fugitive emissions. Capture and control efficiencies used for these calculations were developed to best represent the facilities and incorporate design features intended to reduce fugitive dust.

The doors of the receiving building are not assumed to be closed during unloading, resulting in a partial enclosure. The receiving activity itself occurs in two identical receiving pits inside the building. The belt in each receiving pit is 8 feet below the receiving grate, and the face of each pit is aspirated by a 43,400 acfm fan, which produces a face velocity at the entrance of the pit of about 50 feet per minute. The walls and roof of the receiving building combined with the enclosure provided by the pit are expected to provide dust reduction at least equivalent to a 3-sided enclosure as described in the WRAP Fugitive Dust Handbook[1], which is credited with 75% control. Combined with the 90% capture efficiency from the aspiration, the effective capture efficiency of the receiving operations is 97.5%.

The ship loading emissions factors provided by AP-42 assume enclosure from a normal ship's hold but were developed assuming a 20- to 40-foot drop from the loading spout into the hold. The AGP ship loading spouts are designed to control flow and are fitted with skirts that initially rest on the floor of the hold and rise during loadout to rest atop the rounded grain pile[2]. This results in a choked flow from the loading spout during loadout. Additionally, the loading spouts are aspirated. The choked flow and skirt are credited with 80% reduction in fugitive dust, which combines with the 90% capture efficiency from aspiration to result in a capture efficiency of 98%.

Calculations of PTE have been revised to incorporate fugitive emissions as suggested by ORCAA. These calculations are summarized in the Table 1, and calculations can be found in the attached spreadsheet.

[1] Western Regional Air Partnership (WRAP) Fugitive Dust Handbook, September 7, 2006. Prepared by Countess Environmental. Available at: https://norcalblobstorage.blob.core.windows.net/stonestown/WRAP_2006_WRAPFugitiveDustHandbook.pdf

[2] Per Reference 40 from AP-42 Chapter 9.9.1. Emission Factors for Barges and Marine Vessels, Final Test Report to the National Grain and Feed Association, Washington, DC, October 2001. Available at www.epa.gov/sites/default/files/2020-10/documents/rel_c09s0901.pdf

Table 1. Potential-to-Emit Totals

Pollutant	Source	PTE by Source Type (tpy)	Total PTE (tpy)
PM	Point	0.23	26.11
	Fugitive	25.88	
PM10	Point	0.08	4.62
	Fugitive	4.54	
PM2.5	Point	0.01	0.78
	Fugitive	0.77	

To determine the ambient air quality impact of the proposed project, screening was performed using AERSCREEN. Maximum fenceline impacts were determined for three sources (merged point source emissions, receiving building fugitive emissions, and ship loading fugitive emissions), and these three maximum impact concentrations were combined for comparison against the insignificant impact limits. Combined maximum impact concentrations are shown in Table 2.

Emissions sources used in the modeling were developed based on the maximum hourly PM_{10} emission rates as calculated in the attached PTE calculation spreadsheet and based on the emission rates provided by ORCAA. Because these calculations are based on AP-42 emission rates and filter control efficiency rather than the maximum grain loading from baghouse exhaust, point source emissions are lower than in the original application. The filter media manufacturer warrants 99.99% control efficiency based on an inlet loading of 10 grains/dcsf, which is higher than that of all proposed baghouses[3].

Fugitive emissions were modeled as volume sources centered on the receiving building and ship berth, and the merged stack representing the exhaust point of the combined point source emissions was not altered from the original modeling submitted.

[3] The two shiploader transfer baghouses have the highest inlet grain loading based on 2,204 ton/hour throughput, 0.061 lb PM/ton emission rate, and 3,500 acfm. This equates to a maximum of 4.48 gr/scf at the inlet.

Table 2. Ambient Air Quality Impact Screening Results

Pollutant	Averaging Period	SIL	NAAQS	Scaling Factor	Maximum Impact Concentration			Combined Maximum Impact Concentration	Exceeds SIL?
					Point Sources	Receiving Building Fugitives	Ship Loader Fugitives		
		($\mu g/m^3$)	($\mu g/m^3$)		($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	($\mu g/m^3$)	
Model Default (PM_{10})	**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	No
	24-hour	5	150	0.4	0.043	1.880	0.425	2.347	No
$PM_{2.5}$	Annual	0.3	12	0.03016	0.003	0.142	0.032	0.177	No
	24-Hour	1.2	35	0.1508	0.016	0.709	0.160	0.885	No