

## GREENHOUSE GAS ASSESSMENT – Supplemental GHG Analysis

Issuance of this permit would authorize use of various equipment and vehicles to install underground storage tanks and associated piping.

The analysis area for this resource is limited to the activities regulated by the issuance of an installation permit for underground storage tanks and their associated piping and dispensers. For this programmatic EA, the proposed installation is less than 6 tanks but greater than 12 dispensers (two dispenser islands – one for standard sized gas and diesel vehicles and one for heavy equipment and semi-trucks). A site-specific analysis has been performed. The proposed installation includes two (2) 25,000-gallon Xerxes fiberglass double-walled single-compartment tanks, one three (3) compartment (8,000-gallon, 9,000-gallon, 8,000-gallon) Xerxes fiberglass double-walled tank and 16 total fueling dispensers. The amount of diesel fuel utilized for tank installations may be impacted by several factors, including seasonal weather impediments and equipment malfunctions so a range of +/- 10% was added to the calculated GHG emissions value.

For the purpose of this analysis, DEQ has defined greenhouse gas emissions as the following gas species: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), and many species of fluorinated compounds. The range of fluorinated compounds includes numerous chemicals which are used in many household and industrial products. Other pollutants can have some properties that also are similar to those mentioned above, but the EPA has clearly identified the species above as the primary GHGs. Water vapor is also technically a greenhouse gas, but its properties are controlled by the temperature and pressure within the atmosphere, and it is not considered an anthropogenic species.

The combustion of diesel fuel at the site would release GHGs: primarily carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O) and much smaller concentrations of uncombusted fuel components, including methane (CH<sub>4</sub>) and other volatile organic compounds (VOCs).

DEQ has calculated GHG emissions using the EPA Simplified GHG Calculator, version May 2023, for the purpose of totaling GHG emissions. This tool totals carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O), and methane (CH<sub>4</sub>) and reports the total as CO<sub>2</sub> equivalent (CO<sub>2</sub>e) in metric tons CO<sub>2</sub>e. The calculations in this tool are widely accepted to represent reliable calculation approaches for developing a GHG inventory.

### **Direct Impacts**

Operation of diesel-fueled vehicles throughout the life of the proposed installation project would produce exhaust fumes containing GHGs.

DEQ estimates that approximately 2,850 gallons of fuel would be utilized for the proposed tank installation event (4 regulated tanks, 1 non-regulated DEF tank, and 16 total dispensers). To account for variability due to the factors described above, DEQ has calculated the predicted maximum emissions and added a factor of +/- 10%. Using the Environmental Protection Agency's (EPA) simplified GHG Emissions Calculator for mobile sources up to 29,099 +/- 2,910 kilograms of CO<sub>2</sub>e would be produced. This is equal to approximately 29.8 metric tons.

DEQ made the following assumptions in the calculation for the proposed tank installation event of 4 tanks, 1 non-regulated DEF tank, and 16 total dispensers. DEQ assumed a semi-truck would bring the tanks to the site for placement, an excavator would dig the tank basin, the canopy footings, and piping trenches, a backhoe would be used for piping and to move gravel, a skid steer for lighter dirt movement and work, a dump truck for bringing in backfill material and removing excavated soil from the tank hole, canopy footings and piping trenches, and a crane would be used to set the tanks. A dump truck gravel shooter would be used to lay gravel on the tank top and to the subgrade after piping and electrical is installed. A concrete truck would be used to pour the tank slab, canopy footings and under canopy dispenser fueling slab. In addition, up to 4 passenger service trucks would be on site for construction and management personnel.

<b>GHG Model Assumptions for Tank Installation Event</b>			
Equipment	Operating Hours Needed for the Project	Gallons of Fuel per Hour of Operation	Total Gallons of Fuel for the Project
Excavator	50	10	500
Backhoe	100	5	500
Skid Steer	150	2	300
Dump Truck	50	8	400
Crane	20	12	240
Semi-Truck	12.5	10	125
Dump Truck Gravel Shooter	20	8	160
Concrete Trucks	50	8	400
Passenger Trucks (4)	37.5	6	225
Total			2850

For the construction and heavy-duty vehicles, it is assumed they are diesel and 10 years old (2014) with 6 mile per gallon fuel economy. The exception is the passenger service trucks that are considered light duty diesel trucks and assumed to get 18 miles per gallon. Direct impacts are expected to be long-term and minor.