



Groundwater & Environmental Services, Inc.

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August 6, 2021

Ms. Amanda Chapel
Senior Environmental Quality Analyst
Michigan Department of Environment, Great Lakes, and Energy – Air Quality Division
Kalamazoo District Office
7953 Adobe Road
Kalamazoo, MI 49009

Re: Response to EGLE – AQD Violation Notice
Marshall Terminal
12451 South Kalamazoo (Old U.S. 27)
Marshall, MI

Dear Ms. Chapel:

On behalf of Buckeye Terminals, LLC (Buckeye), Groundwater & Environmental Services, Inc. (GES) has reviewed the Michigan Department of Environment, Great Lakes, and Energy (EGLE) – Air Quality Division (AQD) Violation Notice sent to the Marshall Terminal facility (site) on July 19, 2021. The Violation Notice cites three (3) violations related to the remediation system at the site. Specifically, each violation cited for the groundwater pump & treat (GWP&T) system was related to air stripper emission control removal efficiencies. Each violation is discussed below with the EGLE-AQD comments in italics and GES' response immediately following:

Dual Stage Granulated Activated Carbon

The activated carbon system is required to meet a minimum of 95% reduction efficiency of the hydrocarbon to the atmosphere. Based on a review of the provided photo-ionization detector (PID) monitoring, the system did not meet the requirements on 10/16/20 and 2/4/21 with efficiencies of 89.4% and 83.7% respectively.

GES Response: The Flexible Group Summary Table in Attachment A, Special Conditions of the permit states for Flexible Group ID FG-REMEDATION:

Air strippers, soil vapor extraction systems, and air sparging systems; associated equipment and pollution control devices. **For sources with total potential VOC or gasoline emissions greater than 10 tons per year and / or total potential BTEX emissions greater than 1 ton per year**, a pollution control device shall consist of a dual-stage granular activated carbon unit, thermal oxidizer, a catalytic oxidizer, an internal combustion engine with catalytic converters, or a biofilter in combination with one of the other controls listed in this paragraph.



Similarly, Condition III.1 states, “**For sources with total potential VOC or gasoline emissions greater than 10 tons per year and/or total potential BTEX emissions greater than 1 ton per year**, the permittee shall not operate FG-REMEDATION unless the associated control device(s) are installed, maintained, and operated properly according to the manufacturer’s specifications.

Since the soil vapor extraction (SVE) equipment was deactivated in June 2017, the remediation system has not met the potential to emit threshold specified in the permit. GES prepared “potential to emit” calculation spreadsheets based on monthly mass recovery data collected from the GWP&T system for the operating period following system restart in October 2017. The VOC potential to emit estimate for the current remediation system is included as **Table 1**, while the BTEX potential to emit estimate is included as **Table 2**.

The potential to emit calculations represent a worst-case scenario for potential emissions. GES considered two separate scenarios to estimate maximum potential to emit from the remediation system. The first scenario being a rolling 12-month average of pre-treatment mass recovery, with the second being a calculation of the peak monthly mass recovery extrapolated over a 12-month period.

The peak 12-month rolling average of untreated mass since October 2017 was calculated to be 0.078 tons per year (tpy) for VOCs/gasoline and 0.029 tpy for BTEX. The peak potential to emit based on monthly recovery extrapolated over 12 months was calculated to be 0.208 tpy for VOCs/gasoline and 0.066 tpy for BTEX. Both “worst-case scenario” estimates are well below the VOC/gasoline threshold of 10 tpy and the BTEX threshold of 1 tpy, where a control device for emissions would be required.

Mass recovery data also provides further evidence that the remediation system is well below the permitted potential to emit threshold. The remediation system was active for a total of 35 months during the period of October 2017 to June 2021. During that time, the system recovered approximately 160.2 lbs (0.080 tons) of VOCs and 60.7 (0.030 tons) of BTEX. Both recovery estimates are well below the respective thresholds that require a control device for emissions.

Due to the total potential VOC / gasoline emissions being less than 10 tpy and total potential BTEX emissions being less than 1 tpy, treatment technologies are not required per the permit conditions. Therefore, the 95% reduction efficiency requirement does not apply.

Dual Stage Granulated Activated Carbon

The permittee is required to monitor for breakthrough on a bi-weekly basis. Records provided show the monitoring frequency of breakthrough is currently done every other month.

GES Response: Off-gas air samples were collected quarterly (June 22, 2020, September 10, 2020, December 21, 2020, April 22, 2021) in order to calculate air emissions. Samples were collected from the influent (entering the first vessel), mid-treatment (between vessels), and effluent (discharge to atmosphere). No constituents of concern (COC) were detected above laboratory method detection limits (MDLs) from the influent, mid-treatment, or effluent samples. The laboratory results are much more accurate than a field-screening device (i.e. PID). As stated



above, the remediation system is below the potential to emit specified in the permit, therefore the monitoring requirements specified in the permit do not apply.

Dual Stage Granulated Activated Carbon

The permittee shall not operate the system once breakthrough occurs without carbon change out, and breakthrough is considered to occur when the reading between the first and second canister is 20% or more of the VOC influent concentration. A review of the PID records indicate that the unit exceeded breakthrough limit on 6/22/20, 12/21/20, 1/25/21, 2/4/21, and 2/25/21 with the highest exceedance being 46.5%.

GES Response: As stated above, air samples were collected from the system on a quarterly basis and no COCs were detected above laboratory MDLs from the influent, mid-treatment, or effluent samples.

As per the permit, treatment technologies are not required due to untreated VOC / gasoline and BTEX emissions being less than 10 tpy and total BTEX emissions being less than 1 tpy, respectively. Therefore the 20% VOC breakthrough requirement does not apply.

Although treatment technologies are not required, the granulated activated carbon system was utilized to provide a means of odor control and a best practice, beyond regulatory requirements.

Should there be any questions or additional required information, please contact the undersigned at (800) 368-0337, extension 3358 or extension 4378.

Sincerely,

A handwritten signature in black ink, appearing to read 'Keith Christofferson'.

Keith Christofferson
Senior Project Manager
Groundwater & Environmental Services, Inc.

A handwritten signature in black ink, appearing to read 'Douglas J. Riggs'.

Douglas J. Riggs, PE
Senior Engineer

Attachments: Table 1 – VOC Potential to Emit
Table 2 – BTEX Potential to Emit
Pace Analytical Reports