OhioEPA
State of Ohio Environmental Protection Agency

Northwest District Office

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Ted Strickland, Governor
Lee Fisher, Lieutenant Governor
Chris Korleski, Director

Re: GMPT Landfill, Defiance County
Ground Water

August 4, 2009

Mr. Chuck Renn
Environmental Engineering
General Motors Powertrain
P. O. Box 70
Defiance, Ohio 43512-0070

Dear Mr. Renn:

On July 9, 2009, the Ohio Environmental Protection Agency (Ohio EPA), Division of Solid and Infectious Waste Management (DSIWM), Northwest District Office (NWDO) received a document titled *"April 2009 Semi-annual Statistical Evaluation of Ground Water Monitoring Data,"* concerning the statistical evaluation of ground water monitoring data for the April 27-29 semi-annual sampling event at the General Motors Powertrain Landfill (GMPT-Defiance) in Defiance County. The report was reviewed to determine compliance with Ohio Administrative Code (OAC) Rule 3745-30-08.

COMMENTS

Violations

1. **GMPT-Defiance continues to be in violation of OAC Rules 3745-30-08(C)(6)(f) and (C)(5) regarding its methods of statistical analysis. To return to compliance with these rules, GMPT-Defiance needs to revise the statistical analysis procedures for sulfate and TDS to control or correct for spatial variability.**

   OAC Rule 3745-30-08(C)(6)(f) requires that the statistical method, if necessary, include procedures to control or correct for spatial variability in the data. OAC Rule 3745-30-08(C)(5) requires that the statistical method ensure protection of human health and safety and the environment and to comply with the performance standards outlined in OAC Rule 3745-30-08(C)(6). Note that the technical issues regarding statistical analyses and their applications to these rules were extensively discussed in the May 6, 2008, letter from Ohio EPA, but are not reiterated herein.

   The May 6, 2008, letter from Ohio EPA cited GMPT-Defiance in violation of OAC Rules 3745-30-08(C)(6)(f) and (C)(5) regarding its methods of statistical analysis for iron, sulfate and TDS. Specifically, considering the high degree of spatial variability in the upgradient concentrations of these parameters, that GMPT-Defiance was not using procedures to control or correct for this spatial variability.

Subsequently, GMPT-Defiance has begun performing intra-well statistics for the iron data from the facility (which corrects for the spatial variability observed for iron data). Therefore, this issue does not currently apply to the iron data for the facility.

However, the statistical analysis procedures for sulfate and TDS have not been revised to control or correct for spatial variability. Therefore, GMPT-Defiance continues to be in violation of OAC Rules 3745-30-08(C)(6)(f) and (C)(5) regarding its methods of statistical analysis for sulfate and TDS.

Statements

2. **GMPT-Defiance will not be meeting the requirements of OAC Rules 3745-30-08(B)(3)(e), (B)(1)(a) and (C)(5) if MW-11DR is retained in the upgradient ground water monitoring network and the ground water quality data from MW-11DR is used in the statistical background database. To avert future violations with these rules, GMPT-Defiance will need to properly abandon MW-11DR and not use the ground water quality data from MW-11DR in the statistical background database.**

For ease of discussion, this issue is documented in Sections 2a., 2b. and 2c. below.

2a. OAC Rule 3745-30-08(B)(3)(e) requires that *"The monitoring wells...shall be operated and maintained to perform to design specifications throughout the life of the ground water monitoring program."*

Regarding MW-11DR, the August 19, 2008, letter from GMPT-Defiance stated *"GMPT-Defiance agrees that there is grout contamination that will correct itself in time when there is sufficient production to flush out the affected screened area."*

MW-11DR has now been purged and sampled on six occasions during April, June, July, September and November, 2008 and April 2009. During each of these sampling events, pH readings at MW-11DR have been very high, which are a strong indication of grout contamination. During these events, the pH readings at MW-11DR are frequently in the range of 8.5 to 11 S.U. These elevated pH readings exceed readings at any other on-site monitoring wells and continue to indicate grout contamination at MW-11DR.

GMPT-Defiance has contended that this issue should not be considered to be a compliance issue as the data from MW-11DR has not yet been used for statistical analysis. Regardless of whether or not the grout contamination will correct itself in time (it may or may not), MW-11DR is not being operated and maintained to perform to design specifications.

Therefore, if MW-11DR is retained in the upgradient ground water monitoring network and the ground water quality data from MW-11DR is used in the statistical background database, the requirements of OAC Rule 3745-30-08(B)(3)(e) would not be met.

2b. OAC Rule 3745-30-08(B)(1)(a) requires that the ground water monitoring system include wells to yield ground water samples which *"Represent the quality of the ground water that has not been affected by past or present operations at the landfill facility."* To address this rule, GMPT-Defiance has been collecting ground water samples from four locations upgradient of the residual waste landfill.

Besides the elevated pH readings being observed at MW-11DR, there are other indicators that MW-11DR is not capable of yielding representative samples of the upgradient ground water. Specifically, these indicators are high zinc concentrations and extremely slow well recovery at MW-11DR as detailed below.

For the November 3, 2008, sampling event (most recent event that zinc was analyzed), the concentration of zinc at MW-11DR was 1,700 μg/L. This concentration is far above the previous concentrations observed at MW-11DR (6 and 6.1 μg/L) and is by far the highest concentration ever observed on-site (previous high concentration was 55 μg/L at MW-11D in April 2007 – which was considered questionable). This extremely high zinc concentration at MW-11DR raises further concern as to the capability of MW-11DR to provide representative ground water samples.

During the April 2009 sampling event, the sampler needed to wait for five days after MW-11DR was purged before the water level recovered enough for the collection of the samples. Ground water samples that are collected more than 24 hours after purging are generally considered suspect. Generally, water sitting in the well casing can (over time) become characteristically different from the ground water in the aquifer.

The Sampling & Analysis Plan (SAP) allows for this 24-hour deadline from purging to be extended in certain circumstances. Regarding this, the SAP states *"If a well will not yield enough groundwater within 24 hours to fill all of the bottles required for that round, additional sampling will be performed within the next 24-hour period (or as soon as enough water has entered the well to fill the sampling pump)..."* However, this described circumstance doesn't describe what is occurring at MW-11DR. As described, the circumstance regards extending the 24-hour sample collection deadline for wells for which some of the sample bottles (actually SAP wording implies "most") are collected within 24 hours of purging and that the remainder are collected as soon as possible thereafter. However, in the case of MW-11DR, none of the sample bottles were collected until 5 days after purging.

Considering these elevated pH readings, elevated zinc concentrations and extremely slow water recovery rate, MW-11DR is not capable of yielding representative ground water samples.

Therefore, if MW-11DR is retained in the upgradient ground water monitoring network and the ground water quality data from MW-11DR is used in the statistical background database, the requirements of OAC Rule 3745-30-08(B)(1)(a) would not be met.

2c. OAC Rule 3745-30-08(C)(5) requires that *"...The statistical method specified shall ensure protection of human health and safety and the environment..."*

The purpose of performing statistical analysis of the ground water quality data is to detect any potential release from the landfill to ground water for the ultimate purpose of ensuring the protection of human health and safety and the environment. Therefore, if non-representative sample data was used in establishing the statistical background dataset, potential releases from the landfill to ground water might not be detected and the protection of human health and safety and the environment would not be ensured.

Therefore, if MW-11DR is retained in the upgradient ground water monitoring network and the ground water quality data from MW-11DR is used in the statistical background database, the requirements of OAC Rule 3745-30-08(C)(5) would not be met.

If you have any questions, please feel free to contact Ken Brock at the Ohio EPA Northwest District Office at 419-373-3143. Any written correspondence should be sent to the attention of Mike Reiser, Division of Solid and Infectious Waste Management, Ohio EPA Northwest District Office, 347 N. Dunbridge Road, Bowling Green, Ohio 43402.

Sincerely,

Michael A. Reiser for

Kimberly Burnham, R.S.
Environmental Specialist
Division of Solid and Infectious Waste Management

/cs
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