



State of Ohio Environmental Protection Agency

Northwest District Office

347 North Dunbridge Rd.
Bowling Green, OH 43402-9398

TELE: (419) 352-8461 FAX: (419) 352-8468
www.epa.ohio.gov

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

Re: GMPT Landfill, Defiance County
Ground Water

March 1, 2010

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

Dear Mr. Renn:

On January 12, 2010, the Ohio Environmental Protection Agency (Ohio EPA), Division of Solid and Infectious Waste Management (DSIWM), Northwest District Office (NWDO) received the report (dated January 2010) documenting the statistical evaluation of ground water monitoring data for the October 27-29 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 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 in violation of OAC Rules 3745-30-08(C)(6)(f) and (C)(5) regarding its methods of statistical analysis for sulfate and TDS.

More Information Needed to Determine Compliance

- 2. Compliance with the requirements of OAC Rule 3745-30-08(C)(1) regarding the collection of representative ground water samples cannot be determined at this time. The high turbidity, field procedures and analytical results noted for MW-26D during the October 2009 sampling event suggest that the water sample from MW-26D might not have been representative. To allow for a determination with the requirements of this rule, GMPT-Defiance needs to respond accordingly.**

OAC Rule 3745-30-08(C)(1) requires that *"The ground water monitoring program shall include consistent sampling and analysis procedures...that are designed to ensure monitoring results that provide an accurate representation of ground water quality at the background and downgradient wells..."*.

To achieve this objective, GMPT-Defiance uses low-flow purging and sampling techniques with dedicated down-hole pumps. Regarding this, the Sampling & Analysis Plan (SAP) states *"This sampling method involves purging the well with the pump intake set at the desired sampling depth, at a rate that does not mobilize naturally non-mobile colloidal matter, does not create excessive drawdown...."*

Ohio EPA realizes that MW-26D is not yet documented in the Ground Water Detection Monitoring Plan (GWDMP) and SAP (see Comment No. 6), but GMPT-Defiance is already using the ground water quality data from MW-26D for the upgradient background ground water quality database.

Ohio EPA notes several comments regarding this issue as detailed below.

2a. Turbidity and Well Development

The low-flow purging and sampling techniques that GMPT-Defiance has been using generally produce low-turbidity samples (usually less than 10 NTU, and always less than 100 NTU).

However, for the October 29, 2009, sampling of MW-26D, the turbidity was recorded as >999 NTU throughout purging and sampling.

The submittal includes a development log for MW-26D. However, this log indicates that MW-26D was not properly developed. The development log indicates that MW-26D was developed on October 27, 2009 (2 days before the sample from MW-26D was collected). The log also indicates that the bladder pump was used to develop the well and that a total of 14 gallons was removed from the well during development. This volume of 14 gallons is approximately 2 well volumes.

The purpose of well development is to remove excess fines from the well and screen that were introduced or mobilized during installation of the well. To assure proper development, wells are pumped and surged until the turbidity of the purged water is low (indicating that the excess fines have been removed). This often involves the purging of relatively large volumes of water (many well volumes).

Given the low volume of water removed from MW-26D during the October 27, 2009, development, the high turbidity at the end of development and the continued high turbidity at MW-26D during the October 29, 2009, sampling event, it appears that MW-26D has not been properly developed.

If MW-26D has not been properly developed, the October 29, 2009, sample from MW-26D is likely not representative.

2b. Water Quality

The MW-26D ground water sample from the October 2009 sampling event exhibited the lowest iron concentration and highest sodium and zinc concentrations of any on-site well.

While the iron (44 µg/L) and zinc (12 µg/L) concentrations were near the concentrations of some other on-site wells, the sodium concentration at MW-26D (240 mg/L) was twice the concentration of the next highest sodium concentration (120 mg/L at MW-10DR). While these concentrations do not raise immediate concern, the fact that they are extreme compared to other on-site data make them suspicious.

Therefore, the iron, zinc and sodium concentrations at MW-26D during the October 2009 sampling event add merit to the possibility that the October 29, 2009, sample from MW-26D may not be representative.

Statements

3. **The submittal indicates that the performance of intra-well statistics for iron is an interim measure. However, GMPT-Defiance will not be meeting the requirements of OAC Rules 3745-30-08(C)(6)(f) and (C)(5) if it discontinues intra-well statistical analysis of iron for the downgradient monitoring wells and resumes inter-well statistical analysis for iron.**

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).

Due to the high degree of spatial variability in the upgradient iron concentrations, intra-well statistical analysis of the downgradient iron data is appropriate, as it corrects for the spatial variability of the iron data.

Considering this, GMPT-Defiance recently began performing intra-well statistics for the iron data from the facility.

However, the submittal indicates that the performance of intra-well statistics for iron is an interim measure.

4. **GMPT-Defiance needs to be aware that if it is determined that the ground water sample from MW-26D from the October 29, 2009 sampling event is not representative (See Comment No. 2), additional compliance issues may be triggered.**
5. **GMPT-Defiance needs to be aware that the very low yield of MW-26D may cause compliance issues if additional development (see Comment No. 2) does not increase the yield of MW-26D.**

Based on the stabilization test log for MW-26D during the October 2009 sampling event, it appears that MW-26D might be very low yielding. After MW-26D had been purged dry during development, MW-26D had only recovered approximately 2.4 feet by the time of sampling two days later. This recovery rate of approximately 1.2 feet per day, would only allow for approximately 0.2 gallons (less than 1 quart) of water for sample collection 24 hours after purging. However, it is possible that MW-26D has not yet reached its full yield potential if it has not yet been properly developed (see Comment No. 2).

Regarding this, GMPT-Defiance needs to be aware that ground water samples that are collected more than 24 hours after purging are generally considered suspect (i.e. may not be representative). Generally, water sitting in the well casing can (over time) become characteristically different from the ground water in the aquifer.

6. **If it is determined that MW-26D can be used to collect representative ground water samples (See Comments No. 2 and 5), the GWDMP will need to be fully revised (text, tables, maps and boring log) to document the inclusion of MW-26D in the ground water detection monitoring program and the abandonment of MW-11DR.**
7. **The concentrations of ammonia and barium at MW-15D continue to be generally elevated.**

During the October 2010 annual sampling event, the concentration of ammonia at MW-15D was 5.1 mg/L. This concentration of ammonia is higher than observed at other on-site wells. Further, concentrations of this magnitude are not typically attributable to natural conditions, but are typically associated with ground water contamination. Such elevated ammonia concentrations have been noted at MW-15D periodically since 2001.

Further, the concentration of barium was 970 µg/L. This concentration of barium is considerably higher than observed at other on-site wells.

Ammonia and barium are not statistical indicator parameters for the facility. However, ground water beneath a landfill facility can still become impacted without a statistically significant change in the indicator parameters.

8. **The potentiometric surface map for the October 2009 sampling event is in error.**

There are a number of errors on the October 2009 potentiometric map. The 660, 680, 690 and 695 potentiometric contours are drawn incorrectly. Note that as MW-26D may not yet be properly developed (see Comment No. 2), the water level data from MW-26D for the October 2009 sampling event should not be used in determining the potentiometric surface at the facility. Further, the map title indicates that the map is for September 27, 2009, rather than for October 27, 2009, when the water levels were collected.

While these errors are not significant enough to alter the overall interpretation of ground water flow, it should be noted that of the 23 points (wells with water levels) that were used to generate the contour map, only a few were correctly contoured.

9. **The turbidity result for MW-26D for the October 2009 sampling event in the summary data tables in Attachment 2 of the submittal is in error.**

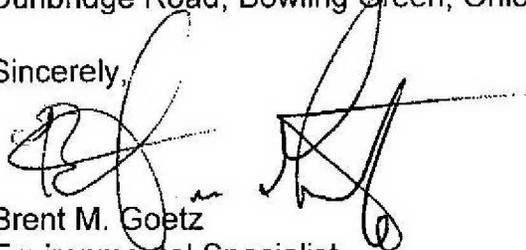
The summary tables in Attachment 2 show a turbidity of 9.99 NTU at MW-26D during the October 2009 sampling event. The turbidity at MW-26D during the October 2009 sampling event was actually >999 NTU.

If you have any questions, please feel free to contact Ken Brock at the Ohio EPA Northwest District Office at 419-373-3143.

Mr. Chuck Renn
March 1, 2010
Page 7

Any written correspondence should be sent to the attention of Brent M. Goetz, Division of Solid and Infectious Waste Management, Ohio EPA Northwest District Office, 347 N. Dunbridge Road, Bowling Green, Ohio 43402.

Sincerely,



Brent M. Goetz
Environmental Specialist
Division of Solid and Infectious Waste Management

/llr

pc: Tamara Moorman, RMT, Inc.

DSIWM-NWDO File: Defiance County, GMPT Landfill, Ground Water

ec: Jack Leow, DDAGW, NWDO
Ken Brock, DDAGW, NWDO
Mike Reiser, DSIWM, NWDO

id #: 5-9113