



State of Ohio Environmental Protection Agency

Northeast District Office

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

March 16, 2010

RE: **WESTLAKE CITY LANDFILL
CUYAHOGA COUNTY
GROUND WATER
NOTICE OF VIOLATION**

CERTIFIED MAIL

Mr. Don Glauner
Service Director
City of Westlake
27216 Hilliard Boulevard
Westlake, Ohio 44145

Dear Mr. Glauner:

On July 17, 2009, Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), received a submittal dated July 2009 "Post Closure Ground Water Monitoring Report, May 2009 Sampling Episode" (May 2009 report)." The report was prepared and submitted by Mr. Fraser Hamilton of Earth Consulting, LTD, on behalf of the City of Westlake.

Westlake Landfill closed under the 1990 Solid Waste Landfill Regulations, and is currently conducting post-closure ground water detection monitoring in accordance with OAC Rule 3745-27-10 of the 2003 revised Solid and Infectious Waste Regulations. The sampling report was prepared and submitted to conform with OAC Rule 3745-27-10(C)(10) of the 2003 revised Solid and Infectious Waste regulations. The May 2009 report was reviewed for compliance with OAC Rule 3745-27-10(D) and the facility's revised 2004 ground water detection monitoring plan (GWDMP).

The following violations were identified during the review of the subject document:

- 1) **OAC Rule 3745-27-10(D)(5)(a)(ii)(b): requires that ground water samples from each well screened in the uppermost aquifer system must be collected and analyzed semiannually for Appendix I parameters 1-66.**

None of the ground water samples from the May 2009 sampling event (as well as several previous events) were analyzed for all of the parameters numbered 1-66 in Appendix I of OAC 3745-27-10.

Ohio EPA records and the ground water detection monitoring plan show that Westlake landfill is under the August 15, 2003 version of OAC 3745-27-10, thus requiring semi-annual ground water samples to be analyzed for parameters numbered 1-66 in Appendix I. However, the list of parameters that were reported

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for the May 2009 sampling event appears to reflect the 1990 rules parameter list. Section 4.3.8 of Revision 2 to the Groundwater Detection Monitoring Program Plan (dated February 2009) refers to "the currently approved alternative ground water monitoring program parameters analyzed on a semi-annual basis." Ohio EPA has no record of the director of Ohio EPA approving an alternative parameter list per OAC 3745-27-10(D)(2) thru -10(D)(4) for Westlake landfill.

In order to return to compliance with the rules, the O/O must revise the Groundwater Detection Monitoring Program Plan to include semi-annual sampling and laboratory analysis of Appendix I parameters 1-66 in accordance with OAC Rule 3745-27-10(D)(5)(a)(ii)(b), and must actually conduct sampling and laboratory analysis of all uppermost aquifer system wells for parameters 1-66 semiannually hereafter.

- 2) **OAC Rules 3745-27-10(A), 3745-27-10(C)(7)(h), 3745-27-10(C)(8) and 3745-27-10(D)(5)(a)(iii)**: require that the ground water monitoring program be capable of determining the impact of the facility on the quality of ground water, including that the owner/operator determine whether statistically significant increases have occurred in the monitoring wells. According to the statistical procedures specified in paragraphs (C)(6) and (C)(7) of this rule, each constituent is required to be statistically analyzed.

The owner/operator continues to utilize intrawell statistical methods in violation of rule. Therefore, the owner/operator has failed to statistically analyze the May 2009 (and previous events) sample results to determine whether any of the results constitute statistically significant increases as required by these rules.

The use of intrawell prediction limits, trend analysis, or any other such intrawell statistical method to meet the requirements of OAC 3745-27-10(D)(5)(a)(iii) is inappropriate and in violation of rules at this time since the O/O has not yet demonstrated in accordance with OAC 3745-27-10(C)(7)(h) that the downgradient wells have not been affected by the landfill. Therefore, there is no confidence that an intrawell method can detect a release from the landfill.

The May 2009 report includes a statement that spatial variation exists in the upgradient data. A demonstration of spatial variation among the upgradient wells does not amount to a demonstration in accordance with OAC 3745-27-10(C)(7)(h) that the downgradient wells have not been affected by the landfill.

To return to compliance with these rules, the O/O must do the following regarding statistical analysis for parameters 1-66 of Appendix I:

- a) Select an interwell statistical approach, or prior to utilizing an intrawell approach demonstrate in accordance with OAC 3745-27-10(C)(7)(h) that the downgradient wells at the facility have not been affected by the landfill.
- b) Choose either ANOVA, a tolerance or prediction interval, or control charts in accordance with OAC 3745-27-10(C)(6) and -10(C)(7), or obtain permission from the director to utilize an alternative statistical method in accordance with OAC 3745-27-10(C)(6)(e).
- c) Revise the statistical analysis plan to reflect changes made in accordance with a) and b) above and implement these changes.
- d) The O/O should notify the director of any statistically significant change that occurs in downgradient wells as required by OAC Rule 3745-27-10(D)(7)(a).

- 1) **OAC Rules 3745-27-10(A) and 3745-27-10(D)(5)(a)(ii)(b): require that the ground water monitoring program be capable of determining the impact of the facility on the quality of ground water and that the owner/operator collect semiannual ground water samples from all monitoring wells.**

The May 2009 report did not indicate that WW-6R was sampled, nor did it provide an explanation as to why it may not have been sampled. Additionally, the seventy-five day deadline for submitting the data found in OAC 3745-27-10(C)(10) has now passed.

For the O/O to return to compliance, the O/O must either submit information demonstrating that monitoring well WW-6R was sampled during the May 2009 sampling event or on an alternative, more recent date, or demonstrate that a representative sample could not be obtained from that monitoring well during the May 2009 sampling event.

- 1) **OAC Rules 3745-27-10(C)(10)(b) and 3745-27-10(C)(1): require that the ground water monitoring data report include "all ground water data," including field QA/QC data, and that sampling and analysis procedures provide an accurate representation of ground water quality at each sampling location.**

The May 2009 report includes an appendix entitled "Appendix A – Field Data Sheets," but no field data sheets were included in that appendix or other location in the report. It appears that the field data sheets were unintentionally omitted from the report. The field data sheets are considered "field quality assurance/quality control data" in accordance with OAC Rules 3745-27-10(C)(10)(b).

Without the field data sheets, it cannot be verified whether or not the purging and sampling methods were conducted in accordance with the sampling and analysis plan or in a manner that would produce a representative sample in accordance with OAC 3745-27-10(C)(1).

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In order to return to compliance with the rules, the O/O must submit copies of the field data sheets for all wells sampled during the May 2009 sampling event.

3) OAC Rule 3745-27-10(C)(10)(g): requires that the ground water monitoring data report include the method detection limits for the constituents analyzed.

The May 2009 report did not include method detection limits (MDLs) for any parameters analyzed.

To return to compliance, the O/O must submit the MDL data to the Ohio EPA for the May 2009 sampling event for each parameter that is analyzed, and for each sample if the MDL varies by batch, matrix or sample. Additionally, all future sampling events must include this MDL data.

Based on a review of the information provided in the July, 2009 document, Ohio EPA cannot determine compliance with the following rules and is requesting additional information to determine compliance:

1) OAC Rule 3745-27-10(C)(1): requires that the ground water sampling procedures be designed to ensure monitoring results that provide an accurate representation of ground water quality at the background and downgradient wells.

Section 6.0, page 3 of the May 2009 report states that "as discussed in a previous submittal to the Ohio EPA, wells were purged approximately 48 hours prior to sampling during this event." Although field data sheets were not included in the May 2009 report, a comparison of the purging date (described as May 18, 2009 in Section 2.2) with the sampling date (May 20, 2009 on chain-of-custody) confirms that wells were sampled approximately 48 hours after purging.

Given that the sampling method prescribed in the plan is bailing, this would leave the water sample in the monitoring wells open to ambient air for up to 48 hours prior to sampling. Ground water exposed to ambient air above the water column for that long of a time period would likely alter the geochemistry of the water in the well significantly and thus produce an unrepresentative sample.

Ohio EPA recommends that the O/O evaluate whether low-flow purging and sampling would be appropriate for monitoring wells at the facility. Low-flow purging and sampling when performed correctly, allows sampling the same day as purging, typically produces the most representative sample among the different methods, and requires far less purging volume compared to other methods. In low-flow purging, the stagnant column of water overlying the screened section is isolated by pumping the well at a rate that is less than or equal to the yield of the formation, thereby

eliminating or stabilizing drawdown in the well. Using low-flow in this manner thereby only removes water from the screened section and eliminates the need to purge the stagnant water column above the screened section, as is done when bailing is used. Low-flow purging and sampling also typically reduces turbidity in the ground water sample, thereby reducing the occurrence of false positives for metals and other parameters caused by the suspended load within the ground water sample and/or dissolving of the suspended load by acid preservatives within the sample bottle. Technical guidance for how to conduct low-flow purging and sampling can be found in the 2006 Ohio EPA Technical Guidance For Ground Water Investigations (TGM), pages 10-30 through 10-32, which can be found at: <http://www.epa.state.oh.us/ddagw/Documents/TGM-10.pdf>.

Two methods that are commonly used for wells that have insufficient yield for low-flow purging and sampling (i.e. <100 mL/min) are: 1) the “no purge” method; and, 2) the “purging to dryness” method (i.e. purge the well dry and allow no more than 24 hours for the well to recover for sampling. Technical guidance for how to conduct both of these sampling methods can be found on pages 10-32 through 10-34 in the TGM.

In order to demonstrate compliance with this rule, the O/O should document and report to Ohio EPA the time period necessary for low-yield monitoring wells (i.e. WW-2, WW-3R, WW-6R and any others that cannot be sampled immediately after purging) to produce a sufficient volume of water for sampling. Additionally, if appropriate complete one of the items a) through c) listed below:

- a) Change the purging and sampling method in the Sampling and Analysis Plan (SAP) for the monitoring wells in question to “low-flow” or another appropriate method that would produce a representative sample immediately after purging.
- b) Change the purging and sampling method in the SAP to the “no purge” method as described in the TGM.
- c) Change the purging and sampling method in the SAP to the “purging to dryness” method as described above and in the TGM. If purging to dryness is selected, the time or approximate range of times necessary for the monitoring well to recover sufficiently to produce a ground water sample should be stated in the SAP and the SAP should prescribe that the well be sampled as soon as a sufficient volume of water for the sample is available in the well.

2) OAC Rules 3745-27-10(C)(10)(b) and 3745-27-10(C)(1): require that the ground water monitoring data report include laboratory quality assurance/quality control (QA/QC) data and that sampling and analysis procedures provide an accurate representation of ground water quality at each sampling location.

The laboratory data sheets in the May 2009 report stated that the percent recovery in laboratory control samples (LCS) and/or duplicate LCS was out of control (low) for several VOCs. However, no explanation was given in the narrative or other part of the report for how the ground water sample laboratory results are still reliable and representative of ground water quality at the sample locations in spite of the low recovery. The laboratory report also did not include data or information regarding matrix spike (MS) matrix spike duplicate (MSD).

The LCS is intended to represent "ideal" conditions for analysis for the intended analytes, and the MS and MSD are intended to mimic analysis in a typical ground water matrix. If the LCS is out of control low for a VOC, it brings into question whether the laboratory and/or methods/procedures used were capable of detecting that particular VOC in a "non-ideal" ground water sample. Furthermore, the lack of MS/MSD data for VOC analyses makes the VOC detection capability of the laboratory and/or methods/procedures for the ground water samples even more uncertain.

The VOCs that exhibited low recovery in the LCS and/or LCS duplicate have not been detected previously in ground water samples at the facility. However, at least two factors indicate that a more thorough scrutiny of the VOC QA/QC data is warranted:

- a) Many of the downgradient ground water samples have historically included high turbidity which may introduce high matrix interference.
- b) Several parameter concentrations (including the VOC chloroethane) in at least one downgradient well (WW-5) indicate that something may be impacting ground water downgradient of the limits of waste placement.

Therefore, for Ohio EPA to determine compliance, the O/O should submit the MS and MSD data for all batches involved in the sample analyses, and submit a justification for how the laboratory analyses for VOCs exhibiting low recovery in the LCS samples are reliable and how they provide results that are representative of ground water quality for the sample locations.

Additionally, the O/O should submit all such QA/QC data for all batches used for all laboratory analyses of ground water samples in future ground water sampling events.

- 3) **OAC Rules 3745-27-10(C)(10)(c) and 3745-27-10(C)(1): require that preservation methods be included on the chain of custody form and that sampling and analysis procedures provide an accurate representation of ground water quality at each sampling location.**

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The May 2009 report includes a copy of the chain of custody forms, which indicate several options for preservatives, but there is no indication of any preservative other than ice used for the volatile organic compound (VOC) analyses. If no preservative other than ice was used for the VOC samples, the holding time requirement of seven days for non-acid preserved VOC samples would have been exceeded for all samples and thus the samples would be considered "unrepresentative" for the purposes of OAC 3745-27-10(C)(1).

At least one of these two rules has been violated. If ice was the only preservative used, then all VOC sample results from the May 2009 event would have to be invalidated due to hold time exceedance, and a violation of OAC 3745-27-10(C)(1) would occur. If an appropriate chemical preservative was used in the VOC sample vials, then a violation of OAC 3745-27-10(C)(10)(c) would occur.

In order to demonstrate compliance with OAC 3745-27-10(C)(1), the O/O should submit information that demonstrates that an appropriate chemical preservative was used in the VOC sample vials from the May 2009 sampling event. This information should also be included in all future submittals.

In order for Ohio EPA to determine compliance with OAC 3745-27-10(C)(10)(c), the O/O should submit information demonstrating that no chemical preservative was used in the VOC sample vials, but that ice was the only preservative used.

Recommendations

1) **Ohio EPA recommends consistent labeling of monitoring wells be used throughout reports.**

The report text, tables, figures and appendices are inconsistent and do not follow the labeling format for monitoring wells found in the Facility's revised 2004 GWDMP. For example, Revision 2 (February 2009) to the Facility's 2004 GWDMP refers to the monitoring wells in terms of "WW-1, WW-2 and WW-3R." However, at least three different designations for the monitoring wells are used across the different sections of the May 2009 report (e.g. GW-1, GW-2, etc. in Appendix D, versus MW-1, MW-2, etc. in Table 1 and Figure 1, versus WW-1, WW-2, etc. in the report text, Table 2 and the laboratory data sheets in Appendix C). These inconsistencies can lead to confusion and could possibly lead to misinterpretation and mischaracterization, especially given that gas monitoring wells at the facility at times are given the same labeling as the ground water monitoring wells (e.g. GW-5 for "gas well #5 in Figure 1, but GW-5 for ground water monitoring well #5 in Appendix D).

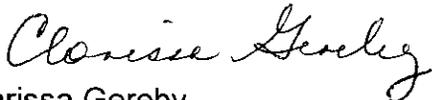
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Ohio EPA recommends that all parts of future data submittals (text, tables, figures, lab reports, chain of custody, statistical analysis reports, etc.) be revised to follow the labeling format found in the latest revision to the Facility's 2004 GWDMP and made consistent throughout.

Please submit the revised the Groundwater Detection Monitoring Program Plan Sampling and Analysis Plan (SAP), and all other requested information to this office within sixty days of receipt of this letter. If you have any questions regarding this review please contact Steve Churchill at (614) 728-1225. Please submit all correspondence to my attention at the Ohio EPA Northeast District Office, 2110 East Aurora Road, Twinsburg, Ohio 44087.

Nothing in this letter shall be construed to authorize any waiver from the requirements of any applicable state or federal laws or regulations. This letter shall not be interpreted to release the Entity from responsibility under Chapters 3704, 3714, 3734, or 6111 of the Ohio Revised Code or under the Federal Clean Water or Comprehensive Environmental Response, Compensation, and Liability Acts for remedying conditions resulting from any release of contaminants to the environment.

Sincerely,



Clarissa Gereby,
Environmental Specialist
Division of Solid and Infectious Waste Management

CG:cl

cc: Mike Sekerak, Cuyahoga County Health Department
Fraser Hamilton, Earth Consulting, LTD
Stephen Churchill, DDAGW, CO
File: [Kurko/LAND/Westlake City LF/GRO/18]
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