



State of Ohio Environmental Protection Agency

Northwest District Office

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

Re: Ground Water
Assessment Sampling Plan
Wapakoneta Landfill, Auglaize County

June 16, 2008

Mr. Rex Katterheinrich
Safety Service Director
P.O. Box 269
Wapakoneta, Ohio 45895

Dear Mr. Katterheinrich:

The Ohio Environmental Protection Agency (Ohio EPA) completed a review of the ground water assessment sampling and analysis plan for the Wapakoneta Landfill. The submittal was dated March 7, 2008, and received March 7, 2008. Following are Ohio EPA comments relating to the review.

COMMENTS

VIOLATIONS

1. **The owner/operator is in violation of director's order number 12 which requires that Ohio EPA review the ground-water quality assessment program and if it is deficient Ohio EPA provide the City with a written notice of deficiencies. The City will then, within 30 days after receipt of the notice, revise the ground water quality assessment program to address the deficiencies and submit the revised program to Ohio EPA. The revised plan was not provided within 30 of receipt of the agency comments.**

Ohio EPA reviewed the City's original ground water detection sampling and analysis plan, dated January 5, 2004, and responded in a letter dated March 29, 2005. The owner/operator has now responded to the Ohio EPA comments in a submittal dated March 7, 2008, which is greater than 30 days from receipt of the Ohio EPA comments.

2. **The owner/operator is in violation of director's order number 11 which requires that within ninety (90) days after the effective date of the orders the City will submit and implement a revised plan that is in accordance with OAC Rule 3745-27-10, et. seq., as effective March 1, 1990. Deficiencies are still present; therefore, the plan is still not meeting the requirements of the above-stated rule.**

The City has now provided the "Submittal of Revision to the Groundwater Detection Sampling and Analysis Plan and Groundwater Assessment Sampling and Analysis Plan; WAP042.100.0006.DOC" dated and received March 7, 2008. This plan continues to contain deficiencies; therefore, the plan still does not meet the requirements of OAC Rule 3745-27-10 and the requirements of director's order number 11.

3. **The owner/operator is in violation of director's order number 11 which requires implementation of the revised plan. The owner/operator needs to implement the ground water quality assessment plan.**

On page 23 of the revised plan the owner/operator states, "As illustrated on Figure 7, the impacted detection monitoring wells and associated assessment wells developed within the uppermost aquifer and significant saturated zones will be sampled quarterly upon Ohio EPA's approval of this AMSAP." On page 24 of the plan the owner/operator states, "Upon approval of this AMSAP, assessment wells will be sampled on a quarterly basis for all leachate-derived constituents that are determined to be above background levels in accordance with OAC 3745-27-10 (E)(8)." In note number 2 on Figure 7, "Groundwater Assessment Monitoring Sampling Frequency Schedule" the owner/operator states, "Sampling frequency will be semi-annual until the Groundwater Quality Assessment Plan is approved." Since the ground water quality assessment plan, as stated by the owner/operator, will not be implemented by the owner/operator until it is approved by Ohio EPA and since Ohio EPA does not need to approve self-implementing plans, the owner/operator has not implemented and does not intend to implement the complete plan as described in the submittal.

4. **The owner/operator is in violation of Ohio Administrative Code (OAC) Rule 3745-27-10 (B)(1)(b) which requires that the ground water monitoring system consist of a sufficient number of wells, installed at appropriate locations and depths to yield ground water samples from the uppermost aquifer system and significant zones of saturation that represent ground water flowing upgradient and downgradient of the landfill. The owner/operator needs to modify the ground water monitoring system to include areas where significant saturated zones can move leachate or leachate-derived constituents away from the landfill. An appropriate number of additional wells need to be added to the ground water monitoring system in these areas.**

Ohio EPA, based on data provided by the owner/operator, has in the past indicated areas of the site which are not adequately monitored by wells at the site. (See Ohio EPA letter dated February 12, 2003, to Rex Katterheinrich regarding broader ground water issues.)

These areas include the significant saturated zones on the northeast side of the site between well SW-4 and the SW-3 area, the significant saturated zones on the southeast side of the site between the SW-3 area and SAW-9, the significant saturated zones on the east and southeast portions of the site between SW-5 and SW-1 and the significant saturated zones on the south side of the site between SW-1 and the SW-2/SW-7 area.

5. **The City is in violation of OAC Rule 3745-27-10 (B)(3)(d) which requires that the design, installation, development and abandonment of any monitoring wells, piezometers, and other measurement, sampling, and analytical devices shall be documented in the operating record. Detailed information regarding the proper decommissioning of well AW-4 needs to be provided to the agency.**

On several occasions Ohio EPA has commented on missing well AW-4 which is located in the SW-3 area. All that is known about decommissioning this well is that it was buried. Burying a well is not considered proper decommissioning and no information was provided relating to proper decommissioning.

6. **The owner/operator is in violation of OAC Rule 3745-27-10 (E)(2)(a), which requires that plan include provisions for sampling affected and background wells for all leachate or leachate-derived constituents including all constituents listed in Appendix II; and OAC Rule 3745-27-10 (E)(3)(d)(vi), which requires that, the plan include detailed descriptions of the techniques, procedures, and analytical equipment to be used for ground-water sampling during assessment, including methods for ground-water sample analysis for all leachate or leachate-derived constituents, including all constituents listed in Appendix II. The plan does not indicate that all of the Appendix II parameters will be analyzed. The plan must indicate that all Appendix II parameters will be analyzed.**

On page 1 of the submittal the owner/operator states in the second paragraph, "Additionally, as clarified in Ohio EPA correspondence dated June 22, 2000, monitoring wells incorporated into the AMSAP will be sampled for 1994 Appendix II organic parameters." In the last paragraph on page 21 the owner/operator states, "As discussed in Section 3.0 of this plan, groundwater samples have been collected from impacted detection monitoring wells and associated assessment monitoring wells/piezometers and analyzed for Appendix I (effective 1990) and Appendix II organic parameters (effective 1994)." At the bottom of page 22, the owner/operator lists their analytical "groups". In the assessment plan they list Group E as "Organics listed in Appendix II of OAC 3745-27-10, effective 1994". Table 3 in the submittal lists Group E. This list does not contain the parameters: antimony, beryllium, cobalt, sulfide, thallium, tin, and vanadium. In addition, Figure 7 provides the "Groundwater Assessment Monitoring Sampling Frequency Schedule". Groups D and E are flagged with a note which states, "Additional list of parameters, performed at facility's discretion."

This information indicates that the owner/operator has not met the requirements of the above-stated rules in that Appendix II parameters will not be analyzed in the samples as required by OAC Rule 3745-27-10 (E)(2)(a) and OAC Rule 3745-27-10 (E)(3)(d)(vi). It should be noted that June 22, 2000, Ohio EPA letter from Beth Brown to Rex Katterheinrich states, "In addition, clarification was provided by HAI that the City intends to perform detection and assessment sampling and analysis in accordance with OAC Rule 3745-27-10 effective date March 10, 1990, for the appendix I parameters, and OAC Rule 3745-27-10 effective date June 1, 1994, for the appendix II parameters." There is no mention that only the appendix II organics will be analyzed using the 1994 rules. Further there is no concurrence that only the appendix II organics will be analyzed using the 1994 rules.

7. **The owner/operator is in violation of OAC Rule 3745-27-10 (E)(2)(a), which requires that the plan include provisions for sampling the affected and background wells. No background wells have been installed/designated for the significant zones of saturation. Background wells need to be installed/designated and sampled.**

On the bottom of page 21 and continuing on the top of page 22 the owner/operator states, "Continued quarterly sampling of background monitoring wells, affected monitoring wells and assessment wells will be conducted to build an adequate analytical database to further characterize the rate, extent and concentration of parameters." However, no background wells have been installed/designated and; therefore, there are no provisions for sampling background wells.

In Figure 6, "Timeline for Groundwater Quality Assessment Activities" the owner/operator provides a row for the timeline for sampling affected and background wells. This timeline is left blank. There is no provision for sampling these wells on this figure.

8. **The owner/operator is in violation of OAC Rule 3745-27-10 (E)(2)(b), which requires that the plan contain provisions for sampling all monitoring wells not sampled under paragraph (E)(2)(a) and analyze those samples for those leachate or leachate-derived constituents found to be above background levels. The plan only allows for sampling and analysis of these well/parameter combinations after approval of the assessment program by Ohio EPA. The owner/operator must include provisions for sampling and analysis of these well/parameter combinations immediately since this plan is self implementing.**

On page 23a of the submittal the owner/operator states, "Upon approval of this AMSAP, assessment wells will be sampled on a quarterly basis for all leachate-derived constituents that are determined to be above background levels in accordance with OAC 3745-27-10(E)(8)." The assessment plan is self implementing and is not approved by Ohio EPA.

This plan must be implemented as required and well/parameter combinations above background need to be sampled and analyzed.

9. **The owner/operator is in violation of OAC Rule 3745-27-10 (E)(2)(c), which requires that the plan contain provisions to submit the analytical results for a sampling event not later than sixty days after sampling a well or not later than fifteen days after receiving the analysis results, whichever is sooner. Procedures for submitting the analytical results in accordance with (E)(2)(c) were not found in the submittal. The plan must contain provisions for meeting this rule.**

10. **The owner/operator is in violation of OAC Rule 3745-27-10 (E)(3)(b)(ii), which requires that the assessment plan include, at a minimum, detailed descriptions of the summary of statistical analyses applied to the data. A review of the plan indicates that no detailed description of the statistical analyses are included. This summary needs to be provided.**

11. **The owner/operator is in violation of OAC Rule 3745-27-10 (E)(3)(c)(i), which requires that the assessment plan include, at a minimum, detailed descriptions of the proposed number, location, depth, installation method, and construction of assessment monitoring wells. There is no detailed description of additional monitoring wells needed to define the plumes emanating from each side of the landfill. These detailed descriptions must be included for all of the incompletely defined plumes at the facility.**

A review of section 4.1, Assessment Activities, indicates that the owner/operator is still considering an optimum location for installation of a well northeast of SAW-9 in the SW-2 area and more wells may be installed. This section also indicates that the owner/operator is still considering an optimum location for installation of a well east of SAW-5 in the SW-7 area. The owner/operator does not provide the details required by OAC Rule 3745-27-10 (E)(3)(c)(i). A review of the geology, hydrogeology and ground water chemistry indicate that the plumes in the general areas of wells SW-7, SW-2, SW-3 and MW-10 are not defined and more wells are needed to accomplish this task. No wells are proposed in the SW-3 and MW-10 areas at all and no additional assessment wells are proposed to the west in the SW-7 and SW-2 areas.

12. **The owner/operator is in violation of OAC Rule 3745-27-10 (E)(3)(c)(ii), which requires that the assessment plan include, at a minimum, detailed descriptions of the proposed method(s) for gathering additional hydrogeologic information and OAC Rule 3745-27-10 (E)(3)(c)(iii), which requires detailed descriptions of the planned use of supporting methodology (i.e., soil gas or geophysical surveys). These detailed descriptions need to be provided**

While the owner/operator includes information on what was done, on what they are considering doing and, in the original plan, on "Potential Alternative/Additional Investigative Approaches", there is no information on proposed methods for gathering additional hydrogeologic information and on the planned use of supporting methodology.

13. **The owner/operator is in violation of OAC Rule 3745-27-10 (E)(3)(f), which requires that the assessment plan include, at a minimum, detailed descriptions of a schedule of implementation. While the plan contains a schedule of implementation, that schedule is incomplete. A complete and detailed schedule of implementation needs to be provided.**

Figure 6, Timeline for Groundwater Quality Assessment Activities, is considered to be the owner/operators schedule of implementation. The schedule contains timelines for submittal of the current revisions for the assessment plan, for the collection of ground water samples, and for the submittal of the assessment reports. It does not contain a timeline for sampling affected and background monitoring wells (E)(2)(a), for sampling wells not sampled (E)(2)(b), for completion of the first determination (E)(6), for installation of additional wells (E)(3)(b)(i), submittal of the first determination report (E)(6), and for providing a corrective measures plan (F)(1).

14. **The owner/operator is in violation of OAC Rule 3745-27-10 (E)(4) which requires that the permittee implement the assessment plan which satisfies the requirements of paragraphs (E)(2) and (E)(3) and at a minimum determines full rate, extent and concentration. The plan cannot determine full rate, extent and concentration. A plan which will determine these parameters must be submitted.**

In the section labeled "Deep Monitoring Well MW-10 Area" the owner/operator states, "Exploratory monitoring wells DAW-2 will continue to be designated as assessment monitoring wells and should provide adequate spatial distribution to determine the rate, extent and concentration of leachate and/or leachate derived constituents." The owner/operator had previously indicated on page 17a, "As previously discussed assessment monitoring wells DAW-1 and DAW-3 will be decommissioned and possibly replaced, in the near future." There is no detailed discussion about replacing these wells. It has been noted previously by Ohio EPA that wells DAW-1 and DAW-3 are affected based on comparison to the upgradient background well MW-6R. Even using wells DAW-1 and DAW-3, the full horizontal extent has not been determined. In addition, the full vertical extent has not been determined. Since the plan does not indicate that additional wells will be installed in affected MW-10 area and merely indicates that sampling DAW-2 will be enough to "...provide adequate spatial distribution to determine the rate, extent and concentration...", the plan cannot define these parameters as required by OAC Rule 3745-27-10 (E)(4).

MORE INFORMATION NEEDED TO DETERMINE COMPLIANCE

15. **Compliance with OAC Rule 3745-27-10 (E)(1), which requires that the owner/operator submit to the director a specific plan, based on the outline required in paragraph (C)(8), for a ground-water quality assessment program, cannot be determined at this time. Since no outline, as required by OAC Rule 3745-27-10 (C)(8), has been submitted, it cannot be determined if the required plan is based on the required outline. An outline needs to be submitted.**

16. **Compliance with OAC Rule 3745-27-10 (E)(3)(a), which requires that the plan include, at a minimum, detailed descriptions of the hydrogeologic conditions at the sanitary landfill, cannot be determined at this time. The owner/operator needs to explain how two of the zones, separated by a thick clay zone, are hydraulically connected.**

On page 8 the owner/operator states, "Furthermore, data collected through monitoring groundwater elevations suggest the granular zones separated by the clay are hydraulically connected." Near the top of page 13 the owner/operator states, "Furthermore, the granular zone screened in the SW-2 area is observed above the glacial-fluvial deposits that are screened in the SW-7 area and due to the vertical close proximity of these deposits, they are likely in hydraulic communication with one another." It is not clear where the owner/operator believes the hydraulic connection is located. It should be noted that near the river, in the general SW-7 and SW-2 areas, these are two fairly distinct significant zones of saturation separated by as much as 10 feet of clay (as noted on page 8 of the submittal). As stated, the ground water elevations observed in the wells in these two zones indicate the zones have similar ground water elevations. As suggested by Ohio EPA previously, it appears that they may be hydraulically connected under the landfill which accounts for both the similar ground water elevations and the presence of different volatile organic compounds in both zones. These two zones need to be considered separate significant zones of saturation and should be monitored separately.

17. **Compliance with OAC Rule 3745-27-10 (C)(1), which requires that the ground water monitoring program, of which the assessment program is a part, include consistent sampling and analysis procedures that are protective of human health and the environment and that are designed to ensure monitoring results that provide an accurate representation of ground water quality, cannot be determined at this time. The owner/operator needs to explain how the sampling of a well with potential gas pressure impacts (SW-16) meets the requirements of this rule.**

In the last paragraph on page 8 the owner/operator states, "Note that the water level reported for piezometer SW-16 was not used to develop the potentiometric map due to potential impacts from gas pressure."

Normally, all of the data should be used to construct the potentiometric surface map unless there is an overriding reason why it should not. This reason should be clearly explained and documented. There is no mention in the submittal as to what kind of gas was observed, when it was observed and what pressure was observed. By the statement it is not clear if gas was truly present at high pressures or if the ground water elevation did not fit the interpretation and gas pressure was assumed. The details regarding the gas in SW-16 need to be discussed:

18. **Compliance with OAC Rule 3745-27-10 (C)(1) cannot be determined at this time. For rule citation see comment 17 above. It is not clear why wells DAW-1 and DAW-3 are not performing to design specifications. The owner/operator needs to completely explain how these wells are not performing properly.**

Near the bottom of page 8a the owner/operator states, "A review of data suggests assessment wells DAW-1 and DAW-3 are not performing according to design specifications and will be decommissioned in the near future." It is unclear if these wells are providing data which is not representative or if these wells are providing data which does not fit the current interpretation and a new interpretation is needed.

19. **Compliance with OAC Rule 3745-27-10 (E)(3)(a), which requires that the plan include, at a minimum, detailed descriptions of the hydrogeologic conditions at the sanitary landfill, cannot be determined at this time. The owner/operator needs to explain how the significant saturated zone observed in well SW-2 "pinches out perpendicular from the river".**

At the top of page 13 the owner/operator states, "The granular zone was observed in soil borings to be present on the east and west banks of the Auglaize River and pinches out perpendicular from the river, which is consistent with fluvial depositional environments." A review of the cross sections, however, indicates that the SW-2 zone, or similar zones at the same stratigraphic horizon, can be traced to the north end of the property. While the correlations perpendicular to the river are less consistent than those parallel with and near the river, the zones still appear to be correlative. It is possible that these zones may be different facies of the same depositional sequence.

20. **Compliance with OAC Rule 3745-27-10 (E)(4) cannot be determined at this time. For rule citation see comment 14 above. The owner/operator needs to clearly indicate under which program well SW-2 and its associated wells are monitored.**

Near the bottom of page 13 the owner/operator states, "Shallow monitoring well SW-2 and shallow assessment wells SAW-4, SAW-5 and SAW-9 continue to be monitored to comply with OAC 3745-27-10 (D)(8)(b-c)."

On page 15, the owner/operator states, "Since the submittal of the April 2002, AMSAP, Shallow piezometer SW-3R continues to be monitored to comply with OAC 3745-27-10 (D)(8)(b-c)." On page 16 the owner/operator states, "Monitoring well SW-7 and associated assessment monitoring wells IAW-1, IAW-3 and IAW-4 have been monitored to comply with OAC 3745-27-10 (D)(8)(b-c), since the submittal of the original AMSAP in April 2002." OAC Rule 3745-27-10 (D) is concerned with detection monitoring. OAC Rule 3745-27-10 (D)(8)(b-c) are concerned with resampling wells which display a statistically significant change and notification of that resampling; and the determination of confirmation or rejection of the original determination of the increase. At this time these wells are affected and should all be in the assessment program. This should be clarified.

21. **Compliance with OAC Rule 3745-27-10 (E)(3)(a), which requires that the plan include, at a minimum, detailed descriptions of the hydrogeologic conditions at the sanitary landfill, cannot be determined at this time. The owner/operator needs to explain how the significant saturated zone observed in well SW-11 "pinches out near the floodplain of the Auglaize River".**

Near the bottom of page 13a the owner/operator states, "The shallow deposit was observed to be laterally continuous towards the location of SW-12 and then pinches out near the floodplain of the Auglaize River." Cross section A-A' interprets this zone, which is screened in well SW-11, to pinch out, but there is no data presented which actually indicates such. It is reasonable that this zone continues toward the river and "daylights" at the floodplain.

22. **Compliance with OAC Rule 3745-27-10 (E)(3)(a), which requires that the plan include, at a minimum, detailed descriptions of the hydrogeologic conditions at the sanitary landfill, cannot be determined at this time. The owner/operator needs to explain which of the significant zones of saturation near the river is in communication with the Auglaize River.**

At the top of page 20 the owner/operator states, "These data suggest the significant saturated zone is potentially in hydraulic communication with the Auglaize River." As discussed in comment 16 above, ground water elevation data appear to indicate that the two distinct significant zones of saturation observed in the areas of wells SW-7 and SW-2 and continuing east and west of the wells, display a confined condition at the wells. The shallower SW-2 zone is likely in hydraulic communication and ground water flows into the river from its bed. With a thick clay zone separating the two zones it is unclear if the lower SW-7 zone is in communication with the river.

23. **Compliance with OAC Rule 3745-27-10 (E)(3)(a), which requires that the plan include, at a minimum, detailed descriptions of the hydrogeologic conditions at the sanitary landfill, cannot be determined at this time.**

The owner/operator needs to explain which of the significant zones of saturation near the SW-3 area is in communication with the pond on the east side of the landfill. In addition the owner/operator needs to provide recent elevation data for the water in the pond.

In comment 4 of the section labeled Shallow Piezometer SW-3 Area on page 20 the owner/operator states, "These data suggest the significant saturated zone observed in the SW-3 area is likely in hydraulic communication with the pond. There are two significant zones of saturation in the SW-3 area which are separated by up to 15 feet of clay. The owner/operator has previously indicated that they are not in hydraulic communication with each other. It is unclear which one of these zones is in communication with the pond. No water levels collected in the pond are presented to support their statement.

24. **Compliance with OAC Rule 3745-27-10 (E)(3)(a), which requires that the plan include, at a minimum, detailed descriptions of the hydrogeologic conditions at the sanitary landfill, cannot be determined at this time. The owner/operator needs to explain if well SW-11 remains dry.**

At the bottom of page 20 the owner/operator states, "SW-11 was observed to be dry during well development and sampling activities." While this well is said to have been dry during well development and sampling, the boring log indicates that this sand, as well as a deeper sand unit, were "wet". It is unclear if this well continues to remain dry.

25. **Compliance with OAC Rule 3745-27-10 (C)(1) cannot be determined at this time. For rule citation see comment 17 above. The owner/operator needs to clarify what is meant by "whichever is greater".**

In the first full paragraph on page 22 the owner/operator states, "Note that, as described in Appendix D, for quality assurance/quality control purposes, one duplicate sample will be collected from a randomly selected monitoring well for each sampling event at a frequency of one per sampling event or one per 20 samples, whichever is greater." It is unclear what is meant by the term "whichever is greater". It could be interpreted to mean whichever procedure is associated with the greatest number of samples being collected or whichever procedure provides for the greatest number of duplicates being collected.

26. **Compliance with OAC Rule 3745-27-10 (B)(1), which requires that the monitoring system contain a sufficient number of wells, installed at appropriate locations and depths, to yield ground water samples from both the uppermost aquifer system and any significant zones of saturation that exist above the uppermost aquifer system, cannot be determined at this time. The owner/operator needs to explain in detail why the 890' zone in the area of SW-3R is not monitored. Alternatively, the owner/operator may install a well in this zone in this area.**

A review of Plate 2, Cross-Section A-A', indicates that the permeable zone located at about 890' above mean sea level is not monitored in the area of affected well SW-3R. While the plan indicates that well SW-11, located some distance from SW-3R, was found to be dry during development, the boring log indicates the zone was "wet". The boring log and the cross section indicate that the well was completed in a sand unit located between about 8' and 14' below surface, but the total depth was 37' below surface. The hole between the total depth and about 20' and between about 18' and 16' was filled with bentonite chips. These types of completions can be problematic. It is unclear if this zone will truly produce water to a well in the area of affected well SW-3R.

27. **Compliance with OAC Rule 3745-27-10 (C)(6)(e), which requires that a PQL which is used in a statistical method be the lowest concentration level that can be reliably achieved within the specified limits of precision and accuracy during routine laboratory operating conditions that are available to the facility, cannot be determined at this time. The owner/operator should explain how the PQLs for iron and zinc, which have been increased above previous levels, meet the requirements of this rule. Alternatively the owner/operator should lower the PQLs to at least the previous level.**

A review of Table 3 indicates that the PQL for iron is now 0.05 mg/L and the PQL for zinc is now 0.01 mg/L. Previously the PQLs/reporting limits for iron and zinc were 0.03 mg/L and 0.005 mg/L respectively. The PQLs/reporting limits have increased. Since the previous PQLs were said to have met the requirements of OAC Rule 3745-27-10 (C)(6)(e) at the lower level, the increased level might not be meeting the requirements of this rule.

28. **Compliance with OAC Rule 3745-27-10 (C)(1) cannot be determined at this time. For rule citation see comment 17 above. The owner/operator needs to clarify the distinction between "affected wells" and "assessment wells" as indicated on their maps.**

The legend on Figure 3, Potentiometric Surface Map for the Significant Saturated Zone (5/14/07), distinguishes between affected wells and assessment wells. This distinction is not clear in that most of the "assessment wells" are also "affected wells" in that they are affected by leachate or leachate-derived constituents. For example, well MW-10 is shown to be an affected well while wells DAW-1, DAW-2 and DAW-3 are shown to be assessment wells. Data indicate that wells DAW-1, DAW-2 and DAW-3 are affected by leachate or leachate-derived constituents.

29. **Compliance with OAC Rule 3745-27-10 (C)(1) cannot be determined at this time. For rule citation see comment 7 above. The owner/operator needs to clarify the location of the limits of fill on the potentiometric surface maps.**

A review of Figure 3, Potentiometric Surface Map for the Significant Saturated Zone (5/14/07), indicates that the "limit of fill" line does not encompass the "north wedge" area. The "north wedge" area is a portion of the landfill that contains solid waste. In addition, the owner/operator has installed leachate collection system wells LEW 1 through LEW-6 to help control leachate which was seeping from this portion of the fill.

30. **Compliance with OAC Rule 3745-27-10 (C)(1) cannot be determined at this time. For rule citation see comment 17 above. The reasons for decommissioning several wells should be presented. Since some of these wells are affected they will need to be replaced in order to define the rate, extent and concentrations of the plumes. The owner/operator also needs to provide the vertical and horizontal location of the replacement wells and also provide the location of the well screens at those locations.**

On Figure 3, Figure 4, and Figure 5 the owner/operator provides a note next to several wells noting that they will be decommissioned. Many of these wells, (e.g., DAW-1 and DAW-3) have been shown to be affected by leachate or leachate-derived constituents.

STATEMENTS

31. Potential typographical errors (underlined) were observed in the plan as noted below:
- In the second paragraph on page 6 the owner/operator states, "To minimize erosion potential, stabilized grass and cover crops were planted of on exposed soil surfaces."
 - In the first (continuing) paragraph on page 7 the owner/operator states, "As such, the SCM been revised to incorporate these findings."
 - On page 23a the owner/operator states, "This AMSAP will be revised accordingly to incorporate sampling, analysis, reporting, and evaluation procedures for leachate-derived constituents determined to be above background concentrations as determined form the interwell data evaluation discussed previously."
 - "SW-11 was observed to dry during well development and sampling activities."
 - In Table 3 (Page 1 of 5) the header indicates that the "LAB PQL" for turbidity is in mg/L and not NTU.
 - On Plate 5, Geologic Cross-Section C-C', "Silt Deposits with Secondary Percentages of Sand, Clay and Gravel" is signified by vertical red lines.

In the area of well SW-1 these lines extend through and overlay a zone described as "Sand Deposits Consisting of Fine to Coarse Sands with Secondary Percentages of Silt, Clay & Gravel" suggesting that the zone contains both lithologies at the same time.

32. In the second paragraph on page 23 the owner/operator states, "Note that the facility will make every attempt to use PQLs designated for Appendix I parameters listed in OAC-3745-27-10 (effective March 1, 1990). However, due to available analytical technology and properties of the samples, the designated PQLs may not always be appropriate." The owner/operator is reminded that OAC Rule 3745-27-10 (C)(5) requires that any PQL utilized in a statistical procedure be the PQL as provided for the volatile organic compounds listed in appendix I of that rule.
33. **There may be complete radial flow from SW-14 in all directions around this well resulting in the presence of leachate or leachate-derived constituents in the significant zones of saturation west of the landfill as well as in other directions.** Figure 2, Potentiometric Surface Map for the Significant Saturated Zone (5/14/07), shows that ground water flows from well SW-14 in a partial radial manner in generally northerly, easterly and southerly directions. There are no wells in the significant zones of saturation within at least 500 feet in any direction of this well.
34. **Figure 5, Areas of Concern Map shows several areas outlined on a map of the site. The legend indicates these areas as Approximate SW-2 Area, Approximate SW-3 Area, Approximate SW-7 Area, and Approximate MW-10 Area. While the label indicates these areas are approximate they may, based on analytical data, be significantly larger or of a significantly different shape.**
35. **A comparison of Figure 3, Potentiometric Surface Map for the Significant Saturated Zone (5/14/07), and Figure 4, Potentiometric Surface Map for the Uppermost Aquifer Zone (5/14/07) indicates that there is a downward flow potential from the significant zones of saturation to the uppermost aquifer system.**

If you have any questions, please feel free to contact Randy Skrzyniecki at the Ohio EPA Northwest District Office (419) 373-3149.

Mr. Rex Katterheinrich
June 16, 2008
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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 North Dunbridge Road, Bowling Green, Ohio 43402.

Sincerely,

Michael A. Reiser

Michael A. Reiser, R.S.
Environmental Supervisor
Division of Solid and Infectious Waste Management

/lr

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Jack Leow, DDAGW, NWDO
Randy Skrzyniecki, DDAGW, NWDO
id: DSIWM-NWDO File: Auglaize County, Wapakoneta Landfill, Ground Water. 5-7560