



State of Ohio Environmental Protection Agency

**Northwest District Office**

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

Re: St. Marys Landfill, Auglaize County  
Groundwater

February 9, 2010

Mr. Thomas Hitchcock  
Director of Public Service and Safety  
City of St. Marys  
101 East Spring Street  
St. Marys, Ohio 45885

Dear Mr. Hitchcock:

The Ohio Environmental Protection Agency (Ohio EPA) has reviewed "Statistical Report of Groundwater Quality for the Detection Monitoring Program; Notification of Statistical Significance, Notification of Constituents Detected in Assessment Monitoring Wells at the St. Marys Landfill, and Results for the Eighth Groundwater Monitoring Event Completed for Investigative Wells MW-7, MW-8, and MW-9; AUG005. The report was submitted by Hull & Associates on behalf of the owner/operator of the closed St. Marys Landfill (facility). The report is dated October 13, 2009 and documents the July 28 and 29, 2009 sampling event at the facility.

The facility is currently operating under the detection monitoring plan as required by OAC Rule 3745-27-10 (D) for the uppermost aquifer system, and under the assessment monitoring plan as required by OAC Rule 3745-27-10 (E) for the stated significant zone of saturation. A revised corrective measures plan has been submitted to Ohio EPA for the stated significant zone of saturation, but has been found to be inadequate. Based upon Ohio EPA's evaluation, the well systems are not adequate for the significant zones of saturation. The owner or operator should move toward implementation of an effective corrective measure. The following are Ohio EPA comments relating to the current submittal.

**COMMENTS**

**VIOLATIONS**

1. **The owner/operator continues to be in violation of OAC Rule 3745-27-10 (C)(1) and (C)(1)(a) which require that the ground water monitoring program include consistent sampling and analysis procedures and statistical methods 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 at the background and downgradient wells; and that the owner or operator use the procedures documented within the sampling and analysis plan. The owner/operator needs to sample wells that purge dry as soon as enough water is available. Other wells should be sampled immediately after purging to ensure that representative samples are collected.**

The sampling and analysis plan, revised April 2009, states on page 22, "If a sample cannot be obtained after the initial purging, multiple trips to the well with less than 24 hours between trips will be made in accordance with the Ohio EPA Technical Guidance Manual for Hydrogeologic Investigations and Ground Water Monitoring (February 1995)." This manual indicates that for wells that purge dry the samples should be collected as soon as sufficient water is available. This is because extended recovery times after purging allow the ground water to equilibrate with atmospheric conditions thereby changing ground water chemistry.

A review of the field data sheets in the submittal indicates that wells: MW-1 (not dry) MW-2 (not dry), MW-3 (dry), MW-4 (not dry), MW-5 (not dry), MW-6 (dry), MW-7 (not dry), MW-8 (dry), MW-9 (not dry), AW-1 (not dry), AW-2 (not dry), AW-3 (dry), AW-4 (dry), BW-1 (not dry), BW-2 (not dry), BW-3 (not dry), BW-4 (not dry), BW-5 (dry), and BW-6 (not dry), whether purged dry or not, were purged on July 28, 2009, but not sampled until July 29, 2009. Some of these wells recharge quickly enough to collect samples immediately after purging. Other wells recharge quickly enough to collect samples in much less than 24 hours. Only 6 of these 19 wells (MW-3, MW-6, MW-8, AW-3, AW-4, and BW-5) were purged dry. (MW-8, which purged dry this event, was not purged dry in the July 2008 event.) The ability for some of the wells to be sampled on the same day has been established during previous sampling events.

In addition, some of the wells which should have been sampled shortly after purging display changes in field parameters between the end of purging on July 28, 2009 and sampling on July 29, 2009. Following is a table indicating the change in field parameter values from purging on July 28, 2009 and sampling on July 29, 2009 for wells which were not bailed dry and displayed a significant change in ground water chemistry between purging and sampling. (It should be noted that the typical wait time between purging and sampling is about 22 hours.) This change may be due to stagnation of the water in the well between purging and sampling. The values which appear to show a significant change are in **bold**.

These differences in values exceed the 10% value specified by the City in SOP No. F3007 included in their sampling and analysis plan. The values marked with an asterisk are those which exceed the current Ohio EPA standards (pH  $\pm 0.2$  S.U., conductance  $\pm 3\%$ , temperature  $\pm 0.5^\circ\text{C}$ ).

WELL	07/28/09 pH	07/29/09 pH	07/28/09 Temp.	07/29/09 Temp.	07/28/09 Cond.	07/29/09 Cond.
MW-1	6.95	7.00	13.8*	12.9*	2010	2020
MW-2	6.76*	7.04*	11.9	12.2	1670*	1280*
MW-4	6.55	6.40	13.5	13.8	1940*	2010*
MW-7	7.03	7.16	12.3*	14.0*	1560*	1670*
MW-9	7.26	7.23	13.4*	12.4*	960*	1010*
AW-1	7.04	6.97	10.9*	13.0*	1310	1280
AW-2	7.09	6.98	11.9*	13.4*	1410*	1200*
BW-1	6.90	6.76	13.6	13.2	1450*	1510*
BW-2	7.21	7.09	11.8*	12.6*	1100*	1150*
BW-3	7.26	7.16	13.0*	14.5*	1250*	1300*
BW-4	7.11	7.10	13.5	14.0	1580*	1650*
BW-6	7.08	7.02	12.7*	13.4*	1730	1770

It is recommended that recharge rates of wells that bail dry should be recorded and monitored in order for the field personnel to know when sufficient water is available and when it is appropriate to sample the well. It had been previously observed that enough water is available for sampling, in wells which bailed dry, within about 3 hours of purging.

2. **The City of St. Marys continues to be in violation of OAC Rule 3745-27-10 (C)(3)(b) which requires that the ground water flow direction be determined for all significant zones of saturation monitored. Maps for all significant zones of saturation need to be provided.**

Based on cross sections provided by the owner/operator in April 2009, there are two, and perhaps three separate significant zones of saturation. (AW-3 and AW-4 are screened in a separate zone from the other SZS wells based on the most recent cross sections.)

The owner/operator submitted one map for the "Significant Saturated Units", indicating flow direction; however, since there are two (2) or three (3) significant zones of saturation, there should be a map for each of these zones.

3. **The City of St. Marys continues to be in violation of OAC Rule 3745-27-10 (B)(1)(b) which requires that the ground water monitoring system consist of a sufficient number of wells in significant zones of saturation that represent the quality of the ground water downgradient of the limits of solid waste placement. Additional wells need to be added to the monitoring system for each of the significant zones of saturation.**

Based on cross sections provided by the owner/operator in April 2009, there are two (or three) separate significant zones of saturation. As of yet, and based on the cross sections, the two thicker zones (typically occurring at about 825' and 835') are not properly monitored and additional wells are needed in each of these zones as documented by Ohio EPA in a letter to the owner/operator dated September 27, 2004. In addition, the need for additional wells and the potential locations of these wells was discussed with the owner/operator in a meeting held in the City of St. Marys on September 16, 2004. Based on the recent cross sections and maps there are at least six (6) more monitoring wells that are needed at the site in the two thicker zones.

4. **The City of St. Marys is in violation of OAC Rule 3745-27-10(D)(7)(c)(ii) which requires the owner/operator, who has not obtained approval to remain in detection monitoring under this rule, to comply with the provisions of OAC Rule 3745-27-10 (D)(7)(c)(ii) within two hundred and ten days from initial sampling. The owner/operator needs to comply with the requirements of this rule.**

On April 27, 2009 Ohio EPA received the statistical report of ground water quality for the February 11, 2009 sampling event. On page 5 of this report the owner/operator indicates, "This report serves as formal notification to Ohio EPA that the chloride values reported for detection monitoring wells BW-5 and BW-6 during the February 2009 sampling event demonstrate statistically significant increases over their statistical backgrounds." The two hundred and ten day period from initial sampling ended September 10, 2009. No demonstration for chloride at wells BW-5 or BW-6 has been provided to Ohio EPA and no approval has been granted.

5. **The City of St. Marys is in violation of OAC Rule 3745-27-10(E)(1) which requires the owner/operator, who has not obtained approval to remain in detection monitoring under OAC Rule 3745-27-10(D)(7)(c)(ii), to implement a ground water quality assessment plan capable of determining the concentration, rate and extent of**

**migration of waste-derived constituents. The owner/operator needs to implement a ground water quality assessment plan.**

On April 27, 2009 Ohio EPA received the statistical report of ground water quality for the February 11, 2009 sampling event. On page 5 of this report the owner/operator indicates, "This report serves as formal notification to Ohio EPA that the chloride values reported for detection monitoring wells BW-5 and BW-6 during the February 2009 sampling event demonstrate statistically significant increases over their statistical backgrounds." The two hundred and ten day period from initial sampling ended September 10, 2009. No demonstration for chloride at wells BW-5 or BW-6 has been provided to Ohio EPA and no approval has been granted. Also, the owner/operator has not implemented a ground water quality assessment plan.

6. **The City of St. Marys is in violation of OAC Rule 3745-27-10(E)(3) which requires the owner/operator, who has not obtained approval to remain in detection monitoring under OAC Rule 3745-27-10(D)(7)(c)(ii), to submit to Ohio EPA a ground water quality assessment plan within one hundred and thirty-five days of notifying the agency of a statistically significant increase over background. The owner/operator needs to implement a ground water quality assessment plan.**

On April 27, 2009 Ohio EPA received the statistical report of ground water quality for the February 11, 2009 sampling event. On page 5 of this report the owner/operator indicates, "This report serves as formal notification to Ohio EPA that the chloride values reported for detection monitoring wells BW-5 and BW-6 during the February 2009 sampling event demonstrate statistically significant increases over their statistical backgrounds." The one hundred and thirty-five day period from notification ended September 10, 2009. No demonstration for chloride at wells BW-5 or BW-6 has been provided to Ohio EPA and no approval has been granted. Also, the owner/operator has not provided a ground water quality assessment plan.

#### **MORE INFORMATION NEEDED TO DETERMINE COMPLIANCE**

7. **Compliance with OAC Rule 3745-27-10 (C)(1) cannot be determined at this time. For rule citation see comment number 1 above.**

**The City of St. Marys needs to indicate how the collection of excessively turbid samples provides results which are representative of the ground water of the site and ensure that low turbidity samples are collected from the site's wells. They should also document why the field and laboratory turbidities significantly differ for some of the wells listed in the table. Results from samples collected with excessive turbidities should not be used in background. In addition,**

**the owner/operator needs to describe any changes in purging, sampling or analytical procedures which might affect the turbidity of these samples.**

A review of the laboratory turbidity, field turbidity, and total suspended solids (TSS) data for the well samples included in the submittal indicates that several wells continue to demonstrate excessive turbidity/TSS values. Following is a list of the wells which display significantly excessive values (**bold**) as observed from the results for the July 2009 sampling event. Compared to previous sampling events, the number of wells displaying high turbidity readings appears to have increased. In addition, there is a marked difference between some of the field and laboratory turbidity and TSS readings. If the procedures are consistent the readings should be nearly consistent.

Ground water velocities would typically not be sufficient to mobilize additional fine material to cause increased turbidity unless some outside stress was applied. Well MW-4 was purged and sampled with a bailer. Care must be taken to purge and sample with a bailer in order to not produce increased turbidity. It might be helpful to use a constant flow pump at a very slow rate to obtain low turbidity samples. The use of slow rate constant flow pumps has been successful in reducing turbidity at other sites.

WELL	FIELD TURBIDITY (NTU)	LAB TURBIDITY (NTU)	LOWEST HISTORICAL REPORTED FIELD TURBIDITY (NTU)	SAMPLE DATE	TSS (MG/L)
MW-2	ND	84.9	10.7	07/08/08	<b>231</b>
MW-3	<b>129</b>	62.9	50	06/24/97	<b>188</b>
MW-4	54	<b>101</b>	54	07/28/09	<b>350</b>
MW-5	<b>364</b>	30.1	23	06/25/97	59.5
AW-1	<b>175</b>	28.2	10.2	01/18/06	66.5
AW-2	47.0	90.2	7.4	09/19/96	<b>130</b>
AW-4	9.0	92.1	13.4	06/15/00	<b>306</b>

8. **Compliance with OAC Rule 3745-27-10(B)(3)(e), which requires that monitoring wells be operated and maintained to perform to design specifications cannot be determined at this time. The City of St. Marys needs to describe any changes in well conditions which occurred at the site and if any of the wells were damaged.**

During the July 2009 sampling event, the wells noted in comment 4 above displayed excessive turbidity or TSS values. OAC Rule 3745-27-10 (B)(3)(e) requires that the wells be maintained to perform to design specifications and OAC Rule 3745-27-10 (C)(1) requires that procedures be used which will result in data which is representative of the ground water of the site. This excessive turbidity may be the result of sampling procedures or may be due to damage to the wells. Since the site's wells have been installed and sampled for some time and the conditions in most of the wells have stabilized at lower turbidity values, it would not be expected that turbidity values would rise due to natural conditions.

9. **Compliance with OAC Rule 3745-27-10 (C)(1) cannot be determined at this time. For rule citation see comment number 1 above. The City needs to clarify when the field parameter results were determined both in the field and in the laboratory.**

A review of the field data sheets indicates that the field parameters were determined in the field on July 29, 2009 subsequent to purging on July 28, 2009. The laboratory report indicates, for example, that "Turbidity – Client Supplied" was analyzed on August 18, 2009. The laboratory report also indicates that specific conductance, pH, and temperature were also analyzed on August 18, 2009. The laboratory-derived turbidity and TSS, however, were analyzed on July 30, 2009 which is prior to when the laboratory report indicates the field parameters were analyzed.

10. **Compliance with OAC Rule 3745-27-10 (C)(1) cannot be determined at this time. For rule citation see comment number 1 above. The owner/operator needs to explain how Figure 1, Potentiometric Surface Map for the Significant Saturated Units meets the requirements of this rule. Alternatively the owner/operator may redraw the map making all necessary corrections and resubmit the map to Ohio EPA.**

A review of the above-referenced map indicates that some of the contours may be inappropriately drawn relative to data for wells MW-2, AW-3, AW-4, MW-4, and MW-7. Well MW-2, with a ground water elevation of 834.28' is drawn near the 835' contour line and a long way from the 834' contour line.

It would be expected closer to the 834' line rather than the 835' line. Similarly, well AW-3, with a value of 834.19' would be expected to be near the 834' line, but is located very close to the 835' line; and MW-7, with a value of 834.80', but is located very near the 834' line and a long distance from the 835' line. More concerning is well AW-4, with a value of 833.62', but is located at the 834' contour line; and well MW-4, with a value of 834.23', but is located between the 835' and 836' contour lines. It should be located between the 834' and 835' lines. Corrections will change the direction of flow in the areas of these wells.

11. **Compliance with OAC Rule 3745-27-10 (C)(7)(g), which requires that background can only be added in groups of four after the latest data set has been analyzed and there are no statistical differences, cannot be determined at this time. The City needs to explain why sodium was updated for well MW-1 even though the Mann-Kendall test showed an increasing trend. The background data should not be updated until the new background is justified.**

In Appendix C the City provides statistical analyses of the data for well MW-1 and others. The analyses include the Mann-Kendall Trend Analysis. The test results state, " $|2.69182| > 1.64485$  indicating a trend". If there is a statistical difference (a trend) updating must be justified. A demonstration is usually necessary in accordance with OAC Rule 3745-27-10 (C)(7)(g).

12. **Compliance with OAC Rule 3745-27-10 (C)(10)(d), which requires the submittal of data summary tables, cannot be determined at this time. The City needs to clearly indicate what data are being used as background for each statistical procedure for each well/parameter pair.**

The Shewhart-CUSUM control Chart for chloride at well MW-6 indicates that background consists of 16 samples. It is presumed that the first 16 samples are utilized, but this is not certain. If the first 16 samples are counted on the control chart the background data will include the data from June 20, 2001. If the first 16 data points are counted on the historical data chart (there are no duplicates) the background includes the data from December 8, 2000 and does not include the June 20, 2001 data. It is, therefore, not clear what data are being used in the background.

13. **Compliance with OAC Rule 3745-27-10 (C)(1) cannot be determined at this time. For rule citation see comment number 1 above. The City needs to carefully review and explain all field and laboratory procedures relative to the presence or detection above the PQL of a significant number of parameters in the field blank and trip blank.**

**In addition, the owner/operator needs to completely explain how the presence and detection of these parameters in these quality control samples meets the requirements of this rule. In addition, the owner/operator needs to explain how the presence and detections of these parameters impacts the analyses in the field samples. The owner/operator also needs to list all necessary changes to procedures to ensure that representative results are provided.**

A review of the TestAmerica analytical reports for the field blank and the trip blank indicates the presence or actual detection of parameters in these blank samples. Following is a table of the parameters found in these samples:

QC Sample	Parameter	Concentration (mg/L)
Field Blank	Chloride	4.71 mg/L
Field Blank	Sulfide	Present
Field Blank	Nitrate/Nitrite	1.58 mg/L
Field Blank	Sulfate	13.2 mg/L
Field Blank	Total Alkalinity	130 mg/L
Field Blank	Barium	0.0238 mg/L
Field Blank	Calcium	55.4 mg/L
Field Blank	Cobalt	Present
Field Blank	Copper	Present
Field Blank	Iron	Present
Field Blank	Magnesium	20.9 mg/L
Field Blank	Potassium	Present
Field Blank	Sodium	1.90 mg/L
Field Blank	Zinc	0.0102 mg/L
Field Blank	Bis(2-ethylhexyl)phthalate	Present
Trip Blank	Carbon disulfide	1.26 µg/L

Field blanks and trip blanks are typically prepared using analyte-free water. Since there should be no analytes in the water the, results should be non-detect for all parameters tested. The presence or detections in the results then indicates problems with QA/QC in the field or in the laboratory or may be the result of cross contamination from samples stored near the blanks between the time the blanks are prepared and the time they are analyzed. It is important to determine the cause of the presence or detections in order to ensure that representative results are being provided to Ohio EPA as required by OAC Rule 3745-27-10 (C)(1).

14. **Compliance with OAC Rule 3745-27-10 (C)(1) cannot be determined at this time. For rule citation see comment number 1 above.**

**The City needs to carefully review and explain all laboratory procedures relative to the detection of a significant number of parameters in the laboratory blank, relative percent difference exceedances in the laboratory duplicate QC data, recovery exceedances in the matrix spike/matrix spike duplicate QC data, and other QC data. In addition, the owner/operator needs to completely explain how these detections and exceedances meet the requirements of this rule. In addition the owner/operator needs to explain how the presence and detections of these parameters impacts the analyses in the field samples. The owner/operator also needs to list all necessary changes to procedures to ensure that representative results are provided.**

A review of the QA/QC portion of the TestAmerica analytical report indicates a significant number of detections in laboratory blanks. Laboratory blanks are typically prepared with analyte-free water and should result in no detections. The review also indicates a significant number of exceedances in relative percent differences in laboratory duplicates, LCS/LCS duplicates, matrix spike and matrix spike duplicates, and "other" data. No case narrative describing these problems could be found in the report.

## STATEMENTS

15. **A review of the TestAmerica analytical reports for the wells on the site indicates the presence of several organic compounds in the samples of many of the wells.** While the presence of these organic compounds, detected between the PQL and the MDL, are not quantifiable, the fact that they have not been commonly observed is cause for some concern. Following is a table of the wells and the organic compounds not typically found in them. It should be noted that wells MW-2, MW-3 and/or MW-4 are still observing volatile organic compounds above the PQL including, but not limited to: benzene, vinyl chloride, chloroethane, cis-1,2-Dichloroethane, and trans-1,2-Dichloroethane.

Well	Organic Compound Present
MW-1	Bis(2-ethylhexyl) phthalate, Benzo (a) pyrene,
MW-2	Bis(2-ethylhexyl) phthalate, Di-n-butyl phthalate, Pentachlorophenol
MW-3	Bis(2-ethylhexyl) phthalate, Di-n-butyl phthalate, 3&4-Methylphenol (m&p cresol)
MW-4	Bis(2-ethylhexyl) phthalate, Di-n-butyl phthalate, o-Toluidine
MW-5	Benzyl Alcohol, Bis(2-ethylhexyl) phthalate, Butyl benzyl phthalate, Di-n-butyl phthalate, Phenol
AW-1	Bis(2-ethylhexyl) phthalate, Di-n-butyl phthalate
AW-2	Bis(2-ethylhexyl) phthalate, Di-n-butyl phthalate

Well	Organic Compound Present
AW-3	Benzyl Alcohol, Bis(2-ethylhexyl) phthalate, Butyl benzyl phthalate, Di-n-butyl phthalate

16. **Several parameters display exceedances in MW-2, MW-3, and MW-4.** On page 5 of the submittal the owner/operator notes that, "For assessment monitoring wells, statistical significances were calculated for chloride in monitoring well MW-2; chloride and sodium in monitoring well MW-3; chloride and sodium in monitoring well MW-4 and chloride in monitoring well MW-5." The owner/operator also notes that volatile organic compounds (VOCs) were observed above their respective practical quantitation limits in MW-2, MW-3, and MW-4.

A review of the data also indicates that arsenic concentrations were significantly above values recorded at upgradient well MW-1. Well MW-1 reported a concentration of 11.4 µg/L while MW-2 reported a concentration of 33.5 µg/L, MW-3 reported a concentration of 34.3 µg/L, and MW-4 reported a concentration of 99.4 µg/L. Although statistical analyses were not performed for metals on these wells, other metals appear to display significant increases above background. Also, wells AW-2 and AW-3 display chloride levels above upgradient background, and well AW-4 displays sodium and potassium levels above upgradient background.

17. **A letter dated June 13, 2008 (5-7702) sent by Ohio EPA to the City of Saint Marys provided thirty one comments related to violations, requests for more information and statements. No response has yet been received by Ohio EPA relative to these requests. More recently, a letter dated December 1, 2008 (5-8055) provided 11 comments. Also, a letter dated July 17, 2009 (5-8504) contained 18 comments. No responses have been received from the City. It is important that the owner/operator respond to the agency requests for information and violations.**
18. **In previous Ohio EPA reviews of owner/operator reports of ground water quality, the agency indicated that the City of Saint Marys continued to be in violation relative to several rules and information requested by Ohio EPA of the owner/operator had not yet been received. This information is again requested. These comments include, but are not limited to:**
- A violation of OAC Rule 3745-27-10 (B)(3)(d) relative to the documentation of redevelopment activities conducted in the summer of 2005,
  - A violation of OAC Rule 3745-27-10 (C)(1)(a) relative to providing field data sheets for the March 29, 2007 re-sampling event,

- A violation of OAC Rule 3745-27-10(C)(7)(e) relative to the inclusion of metals values associated with excessive TSS values and reanalysis for statistically significant increases above background for the February and March 2007 sampling events, and
- A violation of OAC Rule 3745-27-10 (C)(1) relative to errors in the potentiometric surface map for the significant zones of saturation produced for the February and March 2007 sampling events.

19. **Wells MW-2, MW-3, MW-4, and MW-5 are affected and in the assessment program.** On the top of page 2 of the submittal the City states, "Note that significant saturated unit monitoring wells MW-1 through MW-5 are included in both the detection and assessment monitoring programs at the facility." While well MW-1 is used as a background well and is considered a detection well, wells MW-2 through MW-5 are affected based on OAC Rule 3745-27-10 (D) and are in the assessment program based on OAC Rule 3745-27-10 (E). If these wells are returned to the detection monitoring program by OAC Rule 3745-27-10 (E)(9), they will then be considered to be in the detection program.

20. **It is important that apparently non-representative data not be removed from the data set, but it should not be used in background.** Near the base of page 2 the owner/operator states, "In a letter dated March 18, 2004 from Ben Smith of Ohio EPA to Mike Mackenzie of the City, Ohio EPA states that the low flow data does not appear to be an accurate representation of groundwater quality and requested it be removed from the dataset. Note that this data was not used in the evaluation and has been excluded from the facility's dataset."

Ohio EPA did not say to exclude the data from the dataset, but indicated that it not be used in background. In the March 2004 letter, Ohio EPA stated, "The analytical results determined from low flow samples should not be utilized in the background data set until they can be shown to be representative of the ground water of the site." It is important to retain the data, but not use it in background for several reasons including the situation where, in the future, it can be shown to be representative of the ground water of the site.

21. **In the second paragraph on page 4 the City indicates that chloride displays a statistically significant increase in bedrock wells BW-5 and BW-6.** Statistical significance has been observed for chloride at these wells in the past.

22. A review of the historical data for the wells at the site indicates that some of the wells display an apparent increasing trend for non-statistical parameters and perhaps a few statistical parameters. This information is shown on the following table. Investigation of these potential trends would be appropriate.

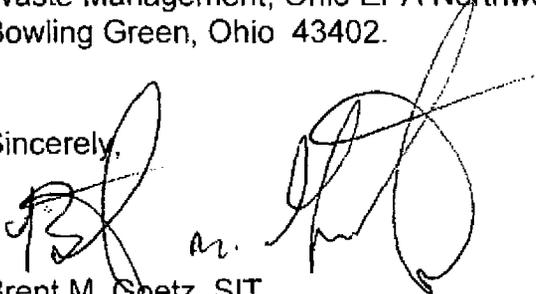
WELL	PARAMETERS	APPARENT INCREASING TREND?
MW-6	nitrate/nitrite conductance	yes
MW-1	conductance	yes
AW-1	conductance	yes
AW-3	nitrate/nitrite conductance chloride sodium	yes
AW-4	conductance	yes
BW-1	conductance	yes
BW-2	nitrate/nitrite	yes
BW-3	nitrate/nitrite conductance	yes
BW-4	nitrate/nitrite conductance	yes
BW-6	nitrate/nitrite conductance	yes

23. **A review of the ground water surface data and constructed map on Figure 1 "Potentiometric Surface Map for the Significant Saturated Units" indicates a noticeable difference between wells MW-7 (ground water elevation at 834.80') and adjacent well AW-4 (ground water elevation at 833.62'). This information suggests that the two wells are completed in separate zones. It appears from the ground water data and the boring log/cross section data, that AW-4 is completed in a different zone than either MW-7 (deeper zone typically observed at about 825') or MW-4 (shallower zone typically observed at about 835').**
24. **Besides the volatile organic compounds, the herbicide 2,4-D has now been observed in wells MW-2 and MW-3. This was noted by the owner/operator near the top of page 3 of the submittal.**
25. **In the second paragraph on page 3 the owner/operator references the U.S. EPA 1989 and 1992 statistical guidance documents relative to the statistical methodologies and techniques used in this report. The owner/operator should be aware that the 2009 U.S. EPA Unified Guidance is now available and should take precedence over the other two documents.**

26. **Statistically significant increases in upgradient wells may be the result of laboratory or field errors and not the result of spatial variability.** In the first paragraph on page 4 the owner/operator states, "Statistical significance was identified for antimony and chloride in upgradient monitoring well BW-1 during this sampling event. These statistical significances are the result of natural variation in groundwater quality that occurs over time and do not require notification to Ohio EOA as they are calculated for an upgradient well." The owner/operator should understand that significant changes in background values may be the result of errors in laboratory or field procedures and not the result of natural variability. Clearly, if these values were observed to be exceedances when compared to BW-1 historical background they are statistically significant increases over background and may not be representative of background ground water quality.

If you have any questions please feel free to contact Randy Skrzyniecki at the Ohio EPA Northwest District Office (419-373-3149). Any written correspondence should be sent to the attention of Brent Goetz, Division of Solid and Infectious Waste Management, Ohio EPA Northwest District Office, 347 Dunbridge Road, Bowling Green, Ohio 43402.

Sincerely,



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

/lb

pc: Auglaize County Commissioners  
Bill Petruzzi, Hull & Associates, Inc.

~~DSIWM-NWDO File # Auglaize County, St. Marys Landfill, Groundwater~~

ec: Mike Reiser, DSIWM, NWDO  
Jack Leow, DDAGW, NWDO  
Randy Skrzyniecki, DDAGW, NWDO

i.d.: 5-8901