



State of Ohio Environmental Protection Agency

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MAY 13 2002

Mr. Todd Brady
Project and Compliance Manager
Evergreen Recycling and Disposal Facility
2625 East Broadway
Northwood, Ohio 43619

I hereby certify that _____, of the
Ohio Environmental Protection Agency
is authorized to sign this document on 5/13/02

OHIO E.P.A.
MAY 13 2002
ENTERED DIRECTOR'S JOURNAL

**Re: Evergreen RDF, Wood County
Ohio Administrative Code (OAC) Rule 3745-27-10(E)(7)(b) Authorization**

Dear Mr. Brady:

On October 1-3, 2001, ground water sampling events were conducted at the Evergreen Recycling and Disposal Facility (Evergreen RDF). A report that summarized the findings of the monitoring events was received by Ohio EPA, dated December 12, 2001.

"This report served as notification to the Director of Environmental Protection that the following statistically significant increases occurred:

- Sodium and Chloride at monitoring wells MW-15LT, MW-16UT, and MW-17UT
- Sodium at monitoring well MW-18LT
- Barium at monitoring well MW-18

The December 12, 2001, report represented Evergreen RDF's demonstration in accordance with OAC Rule 3745-27-10(D)(7)(c) that the landfill was not impacting the ground water for sodium and chloride at MW-15LT, MW-16UT, and MW-17UT; sodium for MW-18LT; and barium for MW-18. Additional information was submitted to Ohio EPA on March 20 and 22, 2002 for MW-15LT.

The deadline for approval for the OAC Rule 3745-27-10(D)(7)(c) demonstration for MW-15LT, MW-16UT, MW-17UT, MW-18LT, and MW-18 was March 28, 2002. Since the approval was not granted prior to the deadline, the wells listed above were subject to ground water quality assessment monitoring in accordance with OAC Rule 3745-27-10(E). In accordance with OAC Rule 3745-27-10(E)(7)(b), the owner or operator may demonstrate that a statistically significant change in ground water monitoring parameter(s) was not a result of impact from the landfill. Upon such a determination by the Director, the Director may reinstate the ground water detection monitoring program for the affected wells. The December 12, 2001, report was evaluated under OAC Rule 3745-27-10(E)(7)(b). Ohio EPA's evaluation of the demonstration is summarized in the attached appendix.

Bob Taft, Governor
Maureen O'Connor, Lieutenant Governor
Christopher Jones, Director

Pursuant to OAC Rule 3745-27-10(E)(7)(b), I hereby approve the December 12, 2001 demonstration and Evergreen RDF may return to ground water detection monitoring for monitoring wells MW-15LT, MW-16UT, MW-17UT, MW-18LTI and MW-18.

Should future or existing ground water sampling results indicate statistically significant increases in ground water monitoring parameters, the owner/operator will be required to either enter into assessment monitoring in accordance with OAC Rule 3745-27-10(E) or obtain an approval to remain in the detection monitoring program pursuant to OAC Rule 3745-27-10(D)(7)(c).

You are hereby notified that this action of the Director of Environmental Protection is final and may be appealed to the Environmental Review Appeals Commission (Commission) pursuant to Ohio Revised Code Section 3745.04. The appeal must be in writing and set forth the action complained of and the ground upon which the appeal is based. The appeal must be filed with the Commission within thirty (30) days after notice of the director's action. A copy of the appeal must be served on the director within three (3) days of filing with the Commission. An appeal may be filed with the Commission at the following address:

Environmental Review Appeals Commission
236 East Town Street, Room 300
Columbus, Ohio 43215

Sincerely,



Christopher Jones
Director

cc: Jim Konopinski, Wood County Health Department
Allan Razem, Eagon & Associates, Inc.
Chad Zajkowski, DDAGW-NWDO
Scott Hester, DSIWM-CO
Ben Smith, DSIWM-NWDO
Pat Bacon, City of Northwood
File: Wood County, Evergreen RDF, Ground Water

Appendix

Ohio EPA has reviewed the owner/operator's demonstration that the significant statistical differences of sodium and chloride at MW-16UT, MW-17UT and MW-15LT, barium at MW-18, and sodium at MW-18LT during the October 1-3, 2001 semiannual ground water sampling event were not a result of impact from the landfill.

The following is a summary of Ohio EPA's evaluation of the demonstration.

1. During the October 1-3, 2001 semiannual ground water sampling event, a significant statistical difference was noted for sodium and chloride at monitoring wells MW-15LT, MW-16UT and MW-17UT. A significant statistical difference was also noted for sodium at MW-18LT and barium at MW-18. Monitoring wells MW-16UT and MW-17UT are screened in the upper glacial till. Monitoring wells MW-15LT and MW-18LT are screened in the lower glacial till and MW-18 is screened in the uppermost bedrock aquifer system.

In accordance with Ohio Administrative Code (OAC) Rule 3745-27-10(D)(7)(b), the December 12, 2001 report (received by Ohio EPA December 13, 2001) represents a notice to the Director of significant statistical differences in sodium and chloride at MW-15LT, MW-16UT, and MW-17UT; sodium at MW-18LT; and barium at MW-18.

Further, the December 12, 2001 report documents the owner/operator's demonstration in accordance with OAC Rule 3745-27-10(D)(7)(c) for the October 1-3, 2001 ground water sampling event. The intent of the demonstration is to show that the significant statistical difference of sodium and chloride at MW-15LT, MW-16UT, and MW-17UT; sodium at MW-18LT; and barium at MW-18 are not the result of leachate or leachate-derived constituents from the landfill. The owner/operator submitted an addendum to the above request for demonstration approval dated March 22, 2002 (Received by Ohio EPA March 25, 2002). The addendum contained an additional demonstration for the statistical increases for sodium and chloride at monitoring well 15LT.

The December 12, 2001 report, and addenda submitted on March 20 and March 22, 2002 indicates that the owner/operator's demonstration for the monitoring wells listed below are based on the following rationale. For ease of discussion, these rationales have been labeled as statements **"a."** through **"m."**.

MW-17UT

- a. **"A previous demonstration was approved for well MW-17UT for sodium and chloride in a letter from Ohio EPA dated September 18, 2001...The demonstration provided evidence that the statistically significant increases in sodium and chloride were due to spreading of road salt in the vicinity of the well and not due to a release from**

the facility.”

This statement is correct. A previous demonstration for the 2001 first semiannual sampling event was approved for monitoring well MW-17UT for sodium, chloride, and chemical oxygen demand (COD). The 2001 first semiannual sampling event demonstration indicated no plausible pathway was present for leachate or leachate derived constituents to enter MW-17UT. In addition, on July 6, 2001 the owner/operator provided further demonstration by collecting another sample at MW-17UT in which concentrations of chloride, sodium and COD decreased in concentration by approximately half. This, along with the surface topography in the vicinity of MW-17UT having a swale in which water could pond and the shallow construction of MW-17UT, lead the owner/operator to conclude that salt spreading activities that took place during the winter of 2000-2001 appeared to be the source of the statistically significant increases at MW-17UT. Note Ohio EPA emphasizes that the September 18, 2001, approval of the demonstration for MW-17UT was predominantly based on the owner/operator's demonstration that no plausible pathway is present for leachate or leachate derived constituents to enter MW-17UT.

Given this, the rationale noted in bold above lends support to the owner/operator's demonstration.

- b. **“As stated in the previous demonstration submitted for the first semiannual event, no plausible pathway is present for leachate or leachate-derived constituents to enter MW-17UT due to the presence of the large excavation between waste placement and MW1 7UT.”**

According to the well construction diagram, the base of the screen at monitoring well MW-17UT is 603.3 Mean Sea Level (MSL). A recent topographic map of the facility was not submitted with this demonstration; however, the topographic map submitted as part of the 2000 annual report shows landfill construction activities have created an excavation to an elevation lower than the base of the screen at MW-17UT. The excavation is between the current limits of waste placement and MW-17UT. Therefore, there is no current pathway for leachate or leachate derived constituents to migrate between the limits of solid waste and MW-17UT.

Given this, this part of the rationale noted in the bold above supports the owner/operator's demonstration.

- c. **“Based on the second semiannual sampling results for sodium and**

chloride at MW-17UT, it is concluded that the effects **of** the road salting in the vicinity **of** the well persist. Chloride displays an overall decreasing trend since the initial statistical exceedance and sodium **has** displayed an overall decrease at MW-17UT. It is believed that concentrations of sodium and chloride will continue to decrease at MW-17UT.”

The owner/operator is correct in that chloride concentrations do display a decreasing trend since the initial statistical exceedance and, overall, sodium has displayed a decrease from April 2001 (121 mg/l) to November’s resampling event (**15** mg/l). However, the owner/operator’s belief that concentration of sodium and chloride will continue to decrease is not a demonstration, but rather a scenario.

Given this, this part of the rationale noted in the bold does not support the owner/operator’s demonstration.

Based upon the rationale detailed in statement **b.** above, the owner/operator has adequately demonstrated in accordance with OAC Rule 3745-27-10(E)(7)(b) that the significant statistical differences of chloride and sodium at monitoring well MW-17UT during the October 1-3, 2001 semiannual ground water sampling event were not a result of impact from the landfill.

MW-16UT

- d. “No VOC detections have been reported and concentrations for the other indicator parameters were reported at non-detect concentrations.

Leachate-impacted ground water will not always contain detectable concentrations of volatile organic compounds (VOCs) or other indicator parameters. This part of the rationale noted in the bold above does not support the owner/operator’s demonstration.

- e. “**No** pathway exists between the landfill waste and MW-16UT for leachate migration to affect the well. MW-16UT is a shallow well (16 feet) and the depth **of** the excavation between the well and the waste is at least 50 feet. Therefore, there is no pathway and the increase in sodium and chloride is not attributed to landfill impacts.”

According to the well construction diagram, the base of the screen at monitoring well MW-16UT is 601.9 feet MSL. A recent topographic map of the facility was not submitted with this demonstration; however, the

topographic map submitted as part of the 2000 annual report shows landfill construction activities have created an excavation to an elevation lower than the base of the screen at MW-16UT. The excavation is between the current limits of waste placement and MW-16UT. Therefore, there is no apparent pathway for leachate or leachate derived constituents to migrate between the limits of solid waste and MW-16UT.

Given this, this part of the rationale noted in the bold above supports the owner/operator's demonstration.

- f. "The previous road salting in the vicinity of this well is most likely responsible for the increase in sodium and chloride."

This is a possible scenario, but does not demonstrate the cause of significant statistical differences of sodium and chloride at monitoring well MW-16UT. Given this, the rationale noted in the bold above does not support the owner/operator's demonstration.

Based upon the rationale detailed in statement e. above, the owner/operator has adequately demonstrated, in accordance with OAC Rule 3745-27-10(E)(7)(b), that the significant statistical differences of chloride and sodium at monitoring well MW-16UT during the October 1-3, 2001 semiannual ground water sampling event were not a result of impact from the landfill.

MW-18

- g, "The statistical failure [barium] is due to an exceedance of the CUSUM limit...The CUSUM began to increase beginning with the first sample collected after background despite the fact that the post-background concentrations are in the same general range as the latest background data. This is due to the fact that the background period ~~is~~ comprised of early data in the range of approximately **0.02-0.03 mg/l** and later data in the range of approximately 0.05-0.08 mg/l."

This statement is correct. The background period for barium at MW-18 consists of data from 1994 through 2000. A step increase in background barium concentration occurred beginning with the 1997 first semiannual sampling event (0.02 - 0.03 mg/l to 0.05 - 0.08 mg/l). The post-background concentrations are in the same range as the latest background (0.05-0.08 mg/l) data, but with the exception of the second semiannual events for 2000 and 2001 which are slightly higher.

Given this, the rationale noted in the bold above supports the owner/operator's demonstration.

Ohio EPA recommends that the owner/operator remove barium background concentrations through 1996 (0.02-0.03 mg/l). These values do not reflect current background concentrations of barium at MW-18.

- h. "The historical range in fluctuations are attributed to natural variability in ground-water quality and not a release from the landfill... Therefore, the CUSUM exceedance is attributed to natural variability in barium concentrations and not a release from the facility."

Though not provided in this demonstration a correlation can be made between the concentration of barium and turbidity. Beginning with the 1999 second semiannual sampling event the increase and decrease in barium concentrations are proportional to the turbidity measurements recorded on the Field Information Forms. Therefore, it appears that the natural variability in ground water quality (turbidity) may influence barium concentrations.

Given this, the rationale noted in the bold above lends support to the owner/operator's demonstration.

- i. "No VOC detections have been reported for well MW-18 and the remaining parameter results display no evidence of landfill impacts."

Leachate-impacted ground water will not always contain detectable concentrations of volatile organic compounds (VOCs) or other indicator parameters. Given this, the rationale noted in the bold above does not support the owner/operator's demonstration.

Based upon the rationale detailed in statement **g.** above, the owner/operator has adequately demonstrated, in accordance with OAC Rule 3745-27-10(E)(7)(b), that the significant statistical differences of barium at monitoring well MW-18 during the October 1-3, 2001 semiannual ground water sampling event were not a result of impact from the landfill.

MW-18LT

- j. "The failure for sodium is due to an exceedance of the CUSUM limit... The May 2000 result of 179 mg/l has caused the CUSUM to

increase resulting in an exceedance. Removal of the May 2000 datum for sodium at MW-18LT results in a lower CUSUM. With the removal of this outlier, the 2001 CUSUM result for sodium at MW-18LT is not statistically significant. Therefore, it is concluded that the May 2000 result has artificially raised the CUSUM results causing a false positive statistical result. Appendix C contains a control chart with the May 2000 results removed and shows that the 2001 second semiannual result is not statistically significant.”

The owner/operator has concluded that the May 2000 result of 179 mg/l has caused the CUSUM to increase resulting in a statistical exceedance of sodium at MW-18LT. The owner/operator concludes that this result is an outlier and that with it removed, the 2001 second semiannual result of sodium at MW-18LT is not statistically significant. On March 8, 2002 the owner/operator submitted additional information regarding an outlier test that identified the sodium concentration at MW-18LT collected on May 9, 2000 as an outlier. Appendix C contained a control chart of sodium at MW-18LT with the May 2000 result removed and showed that the sodium result collected during the 2001 second semiannual event was not statistically significant.

Given this, the rationale noted in the bold supports the owner/operator's demonstration.

Based upon the rationale detailed in statement **j.** above, the owner/operator has adequately demonstrated, in accordance with OAC Rule 3745-27-10(E)(7)(b), that the significant statistical differences of sodium at monitoring well MW-18LT during the October 1-3, 2001 semiannual ground water sampling event were not a result of impact from the landfill.

MW-15LT

- k.** “The concentration for chloride at MW-15LT of 22 mg/l for the 2001 second semiannual event continues to be statistically significant. A demonstration was previously approved by Ohio EPA that determined that the increase in chloride at MW-15LT was not the result of landfill impact. The increase in chloride ~~is~~ also believed to be related to the application of road salt in the area. The second semiannual results for sodium is also statistically significant for well MW-15LT. It ~~is~~ believed that the sodium increase is also attributed to the effects of road salting.”

The September 18, 2001 correspondence did approve the demonstration for chloride at MW-15LT. However, the correspondence also referenced an attached Appendix for a detailed account of Ohio EPA's review of the demonstration provided for MW-17UT and MW-15LT. In comment 1.g. of the Appendix regarding monitoring well MW-15LT Ohio EPA stated,

'The concentrations of chloride reported for monitoring well MW-15LT in April 2001 (25.4 mg/l, May 2001 (21.2 mg/l, and an additional resample collected in July 2001 (20.1 mg/l indicate a decreasing trend. Though statistically significant values for chloride were detected in monitoring well MW-15LT, it appears that these concentrations are not indicative of a leachate-derived release as indicated by the owner/operator. Though concerned that the concentration of chloride in monitoring well MW-15LT has appeared to double, Ohio EPA concurs that the chloride concentrations observed at MW-15LT may not be indicative of a release from a landfill.

Per verbal communication on August 14, 2001 with Mr. Allen Razem, Eagon & Associates, Inc. (owner/operator's consultant) the possibility was discussed that an alternate source (salt spraying activities that possibly contaminated the well with residual salt) may be the result of the elevated chloride concentrations at monitoring well MW-15LT and that with additional development/purging the concentrations of chloride may continue to decrease to background levels. Therefore, a condition for the owner/operator to continue with detection monitoring shall be that background, for statistical analysis, not be updated at monitoring well MW-15LT until the owner/operator has additional ground water quality data to determine if the significant statistical differences of chloride are the result of natural ground water quality, alternate source (residual salt) contamination, or a result of a leachate derived release."

The Director did approve the demonstration contained in the first semiannual sampling event for 2001 citing that the chloride concentrations did not appear to be indicative of a leachate derived release. However, Ohio EPA stated in that approval that additional data needed to be collected to determine if the significant statistical increases of chloride were the result of natural ground water quality, an alternate source (road salt), or the result of a leachate derived release.

The current concentration of chloride reported in MW-15LT during the second semiannual sampling event was 22.2 mg/l in October 2001 and 20.8 mg/l during the resampling event that occurred in November 2001. These concentrations of chloride are in the same range as those reported during the first semiannual sampling event. However, during the second semiannual sampling event the sodium concentrations at MW-15LT were statistically significant (196 mg/l in October and 160 mg/l during the

resampling event in November). The owner/operator also attributes the increase in sodium concentrations to the effects of road salt. This rational, in and of it self, is not a demonstration for the statistical increases of sodium. Given this, the rationale noted in the bold above does not support the owner/operator's demonstration.

- I. On March 25, 2002 the owner/operator provided an addendum to the December 12, 2001 demonstration that was submitted in accordance with OAC Rule 3745-27-10(D)(7)(c) for the statistical significant differences of sodium and chloride in MW-15LT. The addendum was submitted to provide additional information specific to and relative to the statistical increases for sodium and chloride at monitoring well MW-15LT. The owner/operator's additional information provided is as follows.

"Eagon & Associates, Inc. has recently reviewed in more detail all water-level measurements and chloride and sodium results collected to date from well MW-15LT, as well as all available field information forms completed during previous sampling events. Graphs of water elevation and chloride versus time and sodium versus time were constructed and any well integrity deficiencies noted on the field forms were superimposed on the trend plots (attached). A graph of water elevation versus time for all wells completed in the lower till zone (LT wells) also was constructed (attached). The trend plots show that a significant and unprecedented upward trend in both water-level elevation and chloride and sodium concentration has occurred at MW-15LT since December 2000. The water level and water quality changes occurred after well integrity deficiencies were observed by the sampling crew in December 2000. The sampling crew wrote "Sand Pack in Well" and "Casing Bend approximately 5 feet down" on April 8, 1997 and "Concrete Base is Cracked" on December 11, 2000. Each of the four water levels recorded after December 11, 2000 were the highest water-level measurements ever recorded in the well. The four highest results for chloride and sodium recorded at MW-15LT also were collected after December 12, 2000.

After a review of the graphs, it is concluded that surface water is entering the well through a separation in the well casing. The crack in the surface pad appears to provide a pathway for surface or near surface water which may be impacted by road salt to reach the breach in the casing...it is believed that the casing integrity problem occurs at the 5-foot depth, which is approximately 2 feet below land surface. The "sand pack" sand is the coarse sand that is placed in

the annulus between the 2-inch PVC and the surface protector casing to allow drainage through the weep hole in the protective casing.

The owner/operator provided graphs displaying water-level elevations versus time for sodium and chloride along with a graph of water elevation versus time for all wells completed in the "LT" zone. These graphs show a substantial increase in water elevation, after the crack was noted on the concrete base at MW-15LT, beginning with the first semiannual sampling event of 2001. These increases in water-level elevations correspond to the highest concentrations of sodium and chloride recorded during the sampling program for MW-15LT. The owner/operator also provided a graph of water-level elevation versus time in all the "LT" wells. Most of the "LT" wells display fairly consistent ground water elevations with the exception of MW-15LT which has increased approximately 25 feet in elevation since the end of 2000.

The owner/operator indicated that the integrity problem associated with the surface water contamination is from a separation in the casing approximately 2 feet below ground surface. According to the Monitor Well Construction Summary, MW-15LT is 61.2 feet below ground surface. MW-15LT is constructed with a 10 foot screen and assuming 10 foot riser sections a joint should be located approximately 1.2 (or 2) feet below ground surface.

This information strongly suggests that the integrity of MW-15LT has been compromised and that surface water is being allowed to enter MW-15LT. It therefore appears that the significant statistical increases of sodium and chloride may be the result of surface water contamination caused by integrity issues associated with monitoring well MW-15LT. Given this, the rationale noted in the bold above supports the owner/operator's demonstration.

- m. **"No VOC detections were reported and the concentrations of the other indicator parameters (ammonia and COD) display no evidence of landfill impact. The results for ammonia and COD were reported as non-detect for the second semiannual event...It is proposed that alkalinity and potassium be used as substitute parameters for the purposes of statistical analysis until sodium and chloride concentrations return to historical levels."**

leachate-impacted ground water will not always contain detectable concentrations of volatile organic compounds (VOCs) or other indicator

parameters (ammonia and COD). Given this, the rationale noted in the bold above does not support the owner/operator's demonstration.

Based upon the rationale detailed in statements I., above, the has adequately demonstrated, in accordance with OAC Rule 3745-27-10(E)(7)(b), that the significant statistical differences of chloride and sodium at monitoring well MW-15LT during the October 1-3, 2001 semiannual ground water sampling event were not a result of impact from the landfill.