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REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

EPA Region 5 Records Ctr.



269129

March 7, 2007

REPLY TO THE ATTENTION OF:
SR-6J

Via Fax and Certified Mail

Mr. Robert Rule
De Maximis, Inc.
450 Montbrook Lane
Knoxville, TN 37919
Fax (865) 691-6485

Re: Garland Road Landfill, near West Milton, Miami County, Ohio
Administrative Order on Consent, Docket No. VW-95-C-296
Modification and Approval of the Draft Revised EECA Report

Dear Mr. Rule:

Thank you for providing the draft Revised Engineering Evaluation/Cost Analysis ("EECA") Report for the Garland Road Landfill Site ("Site"), dated June 30, 2006. The United States Environmental Protection Agency ("U.S. EPA") and the Ohio Environmental Protection Agency ("Ohio EPA") have reviewed the draft EECA Report that was prepared by Connestoga-Rovers and Associates ("CRA") on behalf of GM. While the draft EECA Report contains opinions and estimates with which U.S. EPA does not necessarily agree, U.S. EPA believes that the draft EECA Report as modified by this letter is adequate to support the selection of a response action alternative.

A. Modifications to Site Characterization

1. The draft EECA Report indicates that the Site is located in the city of West Milton. (*See, e.g., page i, Executive Summary, and p. 4.*)¹ While the Site is near West Milton, it is our understanding that the City of Union may have annexed the property including the Site.

2. The draft EECA Report states that the Site is 24 acres, while previous documents have stated that it is 15 acres. (*See, e.g., p. i, Executive Summary, and p. 4.*) The draft EECA Report is modified to indicate that the correct size of the Site will be clarified during the pre-design investigation.

¹ Page numbers refer to the draft EECA Report dated June 30, 2006, that was submitted by letter dated June 30, 2006 from Michael R. Tomka, CRA. While references to the Draft EECA Report by specific page number are included throughout this letter, the analysis in this letter should - unless otherwise indicated - be regarded as generally applicable throughout the draft EECA Report, and not merely limited to the text of the draft EECA Report at the page referenced.

3. The draft EECA Report incorrectly states – relying on limited information from the Ohio Department of Natural Resources (“Ohio DNR”) dating to 1984 - that the Site is located above a “[c]layey till overlying non-waterbearing Ordovician shaly limestone bedrock. . . .” (*See, e.g., p. 5*). The draft EECA Report is modified to reflect the fact that borings completed at and near the Site indicate that it is underlain by sand and gravel. More recent information from Ohio DNR, including their report titled, “Groundwater Pollution of Miami County, Ohio,” dated October 1995, correctly indicates that the Site is located above the same sand and gravel aquifer that the City of Union uses several thousand feet to the south. U.S. EPA has identified this aquifer as a “sole-source aquifer.” Given that the Site is located above this productive aquifer, there is the potential for future groundwater use at or near the Site.

4. The draft EECA Report states (*see, e.g. p. 5*) that the City of Union has no plans to install new wells further to the north in the foreseeable future; that the City’s Master Plan will not be ready until 2007; and that the city manager did not foresee the need for expansion of the well-field based on current growth numbers. The draft EECA Report also states (*see, e.g. p. 5*) that the City of Union’s well-fields are not expected to draw water from the Site due to the extensive distance away from the Site and the significantly different geologic units (e.g., silty sands) in the area of the Site compared to the area closer to the wellfield (e.g., sands and gravels). Since no supporting documentation was provided for any of these assertions, the draft EECA Report is revised to eliminate the first paragraph after the bullets on page 5 and the third paragraph after the bullets on page 5, and to substitute the following paragraph:

By letter dated January 10, 2006, addressed to the Ohio Environmental Protection Agency, the City Manager of the City of Union, John P. Applegate, stated that the City of Union “continues to be concerned with the Garland Road Landfill’s potential effect on groundwater quality in [the city’s] well field. The landfill is the City’s **Number 1** potential contaminate source listed in the City of Union’s Wellhead and Source Water Protection Plan.”² [Emphasis in the original].

5. The draft EECA Report states (*see, e.g., pp. 9 – 10, 18, 24*) that groundwater flows toward and discharges into the Stillwater River. There is significant uncertainty about the groundwater flow within and from the Site and therefore, the groundwater contours depicted in Figure 2.7 must be regarded as hypothetical. U.S. EPA expects that some of these uncertainties will be addressed by the plan for additional pre-design groundwater investigation outlined in the draft EECA Report. (*See paragraph 38 below.*) The presence of a contaminant plume (including trichloroethene (“TCE”) and other contaminants) migrating south of the Site, however, has been documented and seems to

² The City of Union has assigned a “Low” Hazard Potential Priority Rating to the Garland Road Landfill as a potential contaminant source, and has also assigned it a “D.R.A.S.T.I.C.” rating of 180. “Wellhead Protection Area Delineation and Potential Pollution Source Inventory Report,” Table 1 (Potential Contaminant Source (PCS) Listing), p. 19; attached as Appendix A to “City of Union, Ohio, Wellhead and Source Water Protection Program,” November 2002, prepared by Hardin ESE, Inc., Miamisburg, OH for City of Union, Ohio.

be clear evidence of a strong southerly component to groundwater flow within and from the Site. In addition, it is likely that some Site contaminants, especially the heavy, chlorinated volatile organic compounds like TCE, would migrate downward to deeper levels of the aquifer as they flow away from the Site, where any hydraulic connection to Stillwater River, which is comparatively shallow, becomes much weaker and more uncertain.

6. Section 2.3.4 of the draft EECA Report describes a sampling event conducted by the Ohio EPA in 2003 during which Ohio EPA collected and split with GM 14 soil samples collected from the Site and 12 sediment samples collected from the Stillwater River. The draft EECA Report summarizes the results of analysis conducted on GM's portions of the split samples, but not the results of analysis conducted on Ohio EPA's portions. The summary of analytical results in section 2.3.4 should have included a summary of Ohio EPA's analytical results. Any references to the summary provided in section 2.3.4 should also include a reference to the analogous Ohio EPA results that are listed in Appendix H.

7. The draft EECA Report states that waste in the landfill is impacted by seasonal fluctuations in the water table as much as by infiltration of precipitation (*see p. 36*). U.S. EPA believes it is inappropriate to make this statement because there is no data or evidence to support it.

8. The draft EECA Report states, “[v]isual surveying along the riverbank indicates evidence of minor past and possibly ongoing erosion in select areas.” (*See p. 41*). During a September 2005 site visit, the visual survey of the riverbank indicated erosion, failed banks, downed trees, waste in the slope, downed chainlink fence, and other potential problems.

9. The draft EECA Report is modified to recognize that debris exhibiting the hazardous waste characteristic of toxicity for vinyl chloride was placed back in the landfill. (*See p. 18*).

B. Modifications to the Discussion of Removal Alternatives

Scope of the Response Action and RAOs.

10. The draft EECA Report states that the “scope of the response action is to provide long-term mitigation of any remaining risk at the Site in a manner that is appropriate considering the existing and planned future uses of the Site and property adjacent to the Site.” (*See p. 29*). U.S. EPA notes that the scope is properly determined by reference to the RAOs in the Administrative Order on Consent (“AOC”), the final EECA Report, and modifications made following public comment or in the action memorandum for the removal action, together with the NCP and relevant U.S. EPA guidance. The Administrative Order on Consent provides the following minimum response action objectives (“RAOs”) to be included in the draft EECA Report:

- a) prevention or minimization of the release of hazardous substances so that they do not migrate to cause danger to present or future public health or welfare or the environment;
- b) prevention or abatement of actual or potential exposure to nearby populations, animals, or the food chain from hazardous substances, pollutants, or contaminants;
- c) prevention or abatement of actual or potential contamination of drinking water supplies or sensitive ecosystems;
- d) stabilization or elimination of hazardous substances in drums, barrels, tanks, or other bulk storage containers that may pose a threat of release;
- e) treatment or elimination of high levels of hazardous substances, pollutants, or contaminants in soils or sediments largely at or near the surface that may migrate;
- f) elimination of threat of fire or explosion; and
- g) mitigation or abatement of other situations or factors that may pose threats to public health, welfare, or the environment.

The draft Report also identifies several factors that may pose threats to human health or the environment (*see pp. 29 – 30*), including:

- a) Allowing development of the Site in accordance with its expected future land use, which is expected to be passive recreational.

This factor is hereby modified to read as follows: “Allowing use of the Site in accordance with its expected future land use, which may include passive recreational use. Future land use will be more fully articulated during the design phase and shall be consistent with the goals of the response action, including maintenance of engineered components, such as the cap.”

Comments on Caps.

11. The draft EECA Report states: “To protect the GCL at least 18 inches of soil (geonet layer, 12 inches of soil and 6 inches of topsoil) is placed on top to hold the GCL in place and to encourage vegetation growth.” (*See p. 35*). The geonet layer may not be required with a geosynthetic clay liner. In addition, while the draft EECA Report doesn’t include a geonet layer in its discussion of the current Ohio solid waste cap (*see p. 47 -48*), caps utilizing an FML are usually constructed with a genonet under the drainage layer.

12. While the draft EECA Report indicates that landfilling has not occurred along the riverbank based upon aerial photography (*see, e.g., pp. 42, 48, 53, 58*), the topographic maps of the Site indicate that such landfilling may indeed have occurred.³ If waste is found outside the anticipated limit of the waste, the draft EECA Report provides that one

³ The early USGS maps suggest that the site was fairly flat along the river bank before landfilling began at the site and that the 810-foot contour interval was located approximately 250 feet from the river’s edge. Based on the aerial survey in 2006, the current 810-foot interval is located on a steep slope along the river’s edge referred to in the EECA report as the buffer zone. This suggests that landfilling activities may have occurred much closer to the river than is suggested in the EECA Report.

of the following will be completed: (i) the cap will be extended over the waste, (ii) the waste will be excavated and consolidated under the cap, or (iii) the significance of the situation will be assessed with U.S. EPA. (*See p. 48*). While U.S. EPA would expect to assess the situation in consultation with Ohio EPA and the party performing the response action, such an assessment alone is not expected to be an adequate response. The draft EECA Report is modified by this comment to replace the third option with the following: “(3) other action will be taken, as determined by U.S. EPA in consultation with Ohio EPA and the party performing the response action.” U.S. EPA adds that principal threat wastes, e.g., drums of TCE, discovered beyond the expected boundary of the cap will not be reconsolidated under the cap, but will be transported for off-site disposal.

13. While not discussed in the draft EECA Report, Figures 5.2, 5.11, and 5.12 include depictions of potential edge details or terminations for the proposed cap. These details will be determined by U.S. EPA during the design phase and may vary from the figures in the EECA report, i.e., anchor trenches may be included where the cap components will be terminated or secured.

14. The draft EECA Report incorrectly states that the current Ohio solid waste cap (RCRA Subtitle D) is typically applied to new sanitary landfills, giving the impression that it is not ever applied to existing landfills. (*See p. 35*). The Ohio EPA takes the position that the current Ohio solid waste cap requirements apply both to new sanitary landfills and to the closure of any existing sanitary landfill that has not previously been closed under Ohio law. The draft EECA Report also states that “. . . 1×10^{-7} cm/sec is customarily used as the performance standard for construction of landfill caps to account for small variations in composition and actual construction techniques and conditions.” (*See p. 36*). It should state that “ 1×10^{-7} cm/sec is customarily used as the performance standard (i.e., the maximum allowable permeability) for construction of clay landfill caps to account for small variations in composition and actual construction techniques and conditions.”

15. The presumptive remedy guidance states that the presumptive remedy “relates primarily to containment of the landfill mass and collection and/or treatment of landfill gas,” but may also include “measures to control landfill leachate, affected groundwater at the perimeter of the landfill [i.e. source area groundwater controls to mitigate contaminant migration and inhibit the plume], and/or upgradient ground-water that is causing saturation of the landfill mass. . . .” The draft EECA Report indicates that the presumptive remedy [as applied to this landfill] includes the following components: caps or covers, leachate/groundwater collection; leachate/groundwater treatment, leachate gas collection and treatment; and institutional controls. (*See, e.g., p. iv, Executive Summary.*) Leachate/groundwater collection and treatment is a measure that can be used to control source area groundwater. While not expressly discussed in the presumptive remedy guidance, other source area groundwater control measures might also include *in situ* treatment of source area groundwater, sheet pile walls, and others. This draft EECA Report evaluates *in situ* leachate/groundwater treatment and sheet pile walls as measures to control source area groundwater.

16. The draft EECA Report states that Alternatives 2 through 4 would all meet chemical-, action-, and location-specific ARARs. (*See p. vii*). In addition, the draft EECA Report states that Alternative 3 (*see p. 56*) and Alternative 4 (*see p. 64*) “comply with state and federal ARARs for capping” The draft EECA Report is modified to acknowledge that the caps proposed for Alternatives 3 and 4 do not meet the capping requirements in Ohio’s current solid waste closure regulations (i.e., OAC 3745-27-11) and that a waiver of or variance from the capping requirements would be required for both Alternatives 3 and 4. In the case of both Alternatives 3 and 4, an ARAR waiver of these capping requirements appears to be justifiable based upon an equivalent standard of performance given site-specific characteristics, the extensive removal action previously completed at the Site and the nature of the response actions included in Alternatives 3 and 4.

17. The draft EECA Report indicates that the caps proposed as remedy components under Alternatives 2, 3, and 4 are roughly or essentially “equivalent” and provide the same degree of protection (*see, e.g., pp. vi, vii, 36, 67, 69*). U.S. EPA expects, however, that a solid waste cap designed and constructed to meet Ohio’s current solid waste closure regulations (i.e., the cap proposed under Alternative 2), would provide the greatest reduction in the infiltration of precipitation downward through the waste located above the water table. Such a reduction in infiltration is expected to reduce the amount of leachate emanating from these wastes. Infiltration of precipitation is not expected to have a significant impact on wastes that are saturated with water before the precipitation event, i.e., wastes while they are located below the water table or when they have become saturated during flood events. Alternative 4, which includes source area groundwater treatment and a clay cover, would be expected to perform as well as or better than Alternative 2 without a groundwater treatment component in terms of achieving the RAOs. If the groundwater treatment proposed as a component of Alternative 4 were added to Alternative 2, the two alternatives would be expected to have equivalent performance since the treatment requirements will be the decisive factor for determining when groundwater cleanup goals are met. (*See paragraph 34 below*). Alternative 3 may provide protection that is similar to Alternative 4, although it would be expected to have a significantly higher cost over time.

18. The draft EECA Report states that Alternatives 1 and 2 have no active groundwater treatment, but rely on natural attenuation to reduce off-site migration of contaminants exceeding the Maximum Contaminant Levels (“MCLs”). (*See p. vii*). In fact, Alternatives 2 through 4 all include measures to reduce migration of contaminants to the south. While Alternative 2 does not include active source area groundwater control measures, it does include an impermeable cap that will reduce off-site migration of contaminants by minimizing infiltration of precipitation through the landfill contents. Alternative 3 includes an impermeable cap and a source area groundwater control measure (i.e., sheet pile walls). Alternative 4 includes an impermeable cap and a different source area groundwater control measure (i.e., source area groundwater treatment).

19. The draft EECA Report states that “[b]ased on conditions at the Site, a Current Ohio Solid Waste Cap would not provide additional benefit as compared to a GCL or clay cap.” (See p. 36). The Report is modified to state that “based on conditions at the Site, a current Ohio Solid Waste Cap would not provide significant additional benefit as compared to a GCL or clay cap.”

20. The draft EECA Report states that “[I]ining the swales with FML provides relatively minimal incremental benefit compared to the cost and similar benefits that may be recognized in the actual design by optimizing the configuration of the cap, including the location of the crest and swales. Therefore, the FML is not included in the Alternatives.” (See, p. 36). U.S. EPA’s evaluation of the need for FML in the swales will depend upon additional data collected in pre-design and the design details of the swales (e.g., length, slope, and shape). The draft EECA Report is modified to state that the need for an FML in the swales will be re-evaluated during the pre-design and design phases and that the final design of the cap under the swales will be determined by U.S. EPA on the basis of the re-evaluation.

Comments on Monitored Natural Attenuation.

21. The draft EECA Report does not formally include Monitored Natural Attenuation (as specified in Agency guidance) as a component of any of the response action alternatives for the contaminant plume in groundwater south of the Site. A groundwater monitoring program will, however, be included as part of Alternatives 2, 3, and 4. U.S. EPA expects that any response action selected based on the draft EECA Report will result in a return to MCLs throughout the contaminant plume south of the Site within a reasonable period of time. The groundwater monitoring program will ensure that the selected response action alternative is performing as expected.

Comments on Performance of In Situ Treatment Included in Alternative 4.

22. The draft EECA Report estimates that MCLs could be met at the waste management boundary through natural attenuation without any groundwater treatment within 26 years from the time of the removal work, and then states that “[m]eeting MCLs at the WMB in 26 years from the time of the removal work, or by 2023, is reasonable.” (See p. 59). The draft EECA Report also states that MCLs would be met at the river to the south of the Site within an additional 11.5 years. (See p. 59). The draft EECA Report then states that “it is not cost effective to try to reach MCLs sooner, and there is no unacceptable risk to human health or the environment under current and reasonably expected land and groundwater use.” (See p. 59). U.S. EPA disagrees with the judgments expressed in the excerpts within quotes and they are hereby deleted from the draft EECA Report.

23. The draft EECA Report states that “. . . GM proposes groundwater treatment in the source area to reduce TCE concentrations in groundwater within the WMB and beyond by 50 percent” (see p. 59) and that “[t]he objective of the ozone sparging operation is to achieve a 50 percent reduction in the mean average groundwater

concentration of TCE at existing monitoring wells, based on the 2002 data” (See p. 60). The draft EECA Report also states that “[w]hen the average concentration in monitoring wells D-2, D-3, and S-4 reduces to 80 µg/L for two consecutive monitoring events, the groundwater treatment objective will have been met.” (See p. 60). Alternative 4 is modified by completely replacing these requirements. Instead, groundwater treatment will be conducted within the waste management area to ensure that MCLs are achieved:

- a) at the waste management boundary within 8.5 years from the initiation of full-scale treatment (or within 9.5 years from the initiation of the initial pilot test, whichever is earlier), and
- b) at all monitoring points beyond the waste management boundary within 20 years from the initiation of full-scale treatment (or within 21 years from the initiation of the initial pilot test, whichever is earlier).

Compliance with the performance standards will be measured at and beyond the waste management boundary in locations necessary or appropriate to determine whether contaminants are migrating or accumulating south of the Site in concentrations exceeding MCLs. The technology used initially for full-scale treatment will be ozone sparging (as more fully described in the draft EECA Report and elsewhere in this letter); unless the field pilot test demonstrates that ozone treatment of the groundwater within the waste management area will not be effective in ensuring that the performance standards of this paragraph will be achieved. (See paragraphs 25 and 29 below).

24. Success in achieving and maintaining the performance standards in paragraph 23 above will be determined by U.S. EPA based on analytical data from actual samples, and not on the results of modeling.

25. The draft EECA Report states:

A field pilot test is proposed for the south end of the Site in order to confirm delivery of ozone to the impacted media as well as provide data to allow for optimization of well spacing Based on the results of the pilot test, GM would evaluate whether the groundwater objective (i.e., 50 percent reduction of the mean average concentration of the 2002 data) is achievable within 2 years using the ozone sparging methods proposed. . . . If the desired 50 percent reduction could not be achieved within the agreed reasonable timeframe, GM would propose a contingency plan.” (See p. 60).

The draft EECA Report is modified to provide that instead of evaluating the results of the pilot test to determine whether a 50 percent reduction could be achieved within 2 years, the results of the pilot test would be evaluated to determine whether the performance standards in paragraph 23 above could be met using the proposed ozone sparging methods. The draft EECA Report also states that at the end of the pilot study, information from the study will be analyzed and full-scale implementation will be

initiated. (See p. 62). The draft EECA Report is modified to provide that upon conclusion of the pilot study, the pilot study data will be analyzed and reported to U.S. EPA and Ohio EPA and that full-scale implementation will be initiated upon U.S. EPA concurrence and approval.

26. Figure 5.10 of the draft EECA Report includes a depiction of the proposed limit of ozone sparging. The draft EECA Report also states that “if the pre-design groundwater flow assessment concludes groundwater from the northern portion of the Site is or will flow to the south at levels in excess of the MCLs, additional ozone sparging will be performed in those areas.” (See pp. 58-59). U.S. EPA agrees that the pre-design groundwater investigation activities may reveal circumstances that require additional *in situ* treatment in areas of the Site north of the proposed limit of ozone sparging depicted in Figure 5.10. As part of the design process following the conclusion of the pre-design groundwater investigation, U.S. EPA will evaluate the proposed extent of ozone sparging.

Treatment Contingencies for Alternative 4.

27. Each calendar year following the initiation of full-scale treatment, the party conducting the response action shall estimate (using computer software modeling tools acceptable to U.S. EPA and using a methodology reviewed and approved by U.S. EPA) the remaining time necessary for concentrations of contaminants to meet the performance standards of paragraph 23 above. If the modeled time exceeds any performance standard in paragraph 23, additional treatment including *in situ* chemical oxidation or other treatment as determined by U.S. EPA (after consultation with Ohio EPA and the party performing the response action) will be conducted on an accelerated basis to meet this requirement. The annual modeling described in this paragraph 27 must be based on analytical data from groundwater samples collected at and near the Site. Analytical data from samples collected before the pre-design groundwater investigation may not be used in such annual modeling, except as specifically approved by U.S. EPA.

28. If the annual modeling described in paragraph 27 above does not show adequate progress (as determined by U.S. EPA based on analytical data from groundwater sampling and the results of annual modeling) from year to year in achieving the performance standards of paragraph 23 above, additional treatment including *in-situ* chemical oxidation and other treatment as required by U.S. EPA (after consultation with Ohio EPA and the party performing the response action) will be conducted on an accelerated basis to achieve and maintain the cleanup goals.

29. The draft EECA Report states that GM would present the results of the pilot study to U.S. EPA and if the desired 50% reduction could not be achieved within the “agreed reasonable timeframe,” GM would propose a contingency plan. (See p. 60). As noted above, the draft EECA Report is modified to replace the requirement for a 50% reduction in contaminant concentrations by the performance standards in paragraph 23 above. The draft EECA Report is further modified to provide that if results of the pilot study indicate, as determined by U.S. EPA, that the performance standards in paragraph 23 above cannot

be met through *in situ* ozone treatment, additional treatment options including in-situ chemical oxidation or other treatment or actions, as approved by U.S. EPA (after consultation with Ohio EPA and the party performing the response action) will be evaluated and field pilot-tested as appropriate on an accelerated basis to determine whether they could meet the standards in paragraph 23 above. Following accelerated field pilot testing, pilot study data will be analyzed and reported to U.S. EPA and Ohio EPA. If the data demonstrate that using the alternative technology meeting the performance standards of paragraph 23 above would be practicable, full-scale implementation will be initiated upon U.S. EPA concurrence and approval.

30. The draft EECA Report states that if desirable results are not achieved with Alternative 4 within a reasonable timeframe, GM would propose a contingency plan. “GM would evaluate potential modifications to this treatment system and/or research other potential treatment technologies and their cost and present the evaluation to U.S. EPA to determine whether additional treatment activities were warranted based on costs and benefits.” (*See, e.g., pp. vii, 60-61, 70*). This draft EECA Report is modified by deleting that sentence and specifying that if any of the requirements in paragraph 23 above is not met, additional treatment including in-situ chemical oxidation or other treatment or actions as required by U.S. EPA (after consultation with Ohio EPA and the party performing the response action) will be conducted on an accelerated basis to achieve and maintain the requirement. Such treatment shall be designed to meet the performance standards in paragraph 23 above.

31. Once a performance standard in paragraph 23 above has been achieved, compliance with MCLs shall be maintained from year to year, as demonstrated based on groundwater data collection during the monitoring program. (*See paragraph 39 below*). Additional treatment including in-situ chemical oxidation and other treatment may be required by U.S. EPA (after consultation with Ohio EPA and the party performing the response action) as necessary or appropriate to maintain compliance with MCLs.

32. The draft EECA Report states that “[w]hen the water level is below the top of [the] screen, air/ozone will move through the screen and sand pack, entering the formation in small bubbles.” (*See p. 39*). U.S. EPA notes that in this situation, some of the ozone will be quickly lost to the sand pack and soils instead of treating the groundwater. This is because, as the draft EECA Report subsequently explains, the “landfill material is likely to contain a large amount of Natural Oxygen Demand (“NOD”), which will compete with the TCE and reduce the effectiveness of the ozone for TCE degradation.” (*See p. 39*). U.S. EPA notes, however, that there is little or no landfill waste in the southern areas of the Site where the *in situ* treatment will be concentrated. Ozone lost to the soils in the southern areas of the Site may react with the organic carbon content of the soils and thus be ineffective.

Comments on Response Action Alternatives.

33. The draft EECA Report identifies a no action alternative and three response action alternatives to achieve the RAOs. Alternative 1, the no action alternative, is not expected

to meet any of the RAOs. Alternatives 3 and 4 could be designed and constructed to address the RAOs. Alternative 2 could be designed and constructed to meet most of the RAOs, however, its ability to minimize the release and migration of hazardous substances and abate potential contamination of drinking water supplies would depend on the volume and concentration of the source area groundwater contamination that continues to migrate away from the Site after construction of the remedy. Important factors to consider in this case would include, without limitation: the volume of waste above and below the water table; the rate of dissipation of mounded contaminated groundwater/leachate; and the effect of infiltration of surface water or fluctuations in water table elevation during flood events.

34. Alternative 2 includes a cap that complies with the current Ohio solid waste closure capping requirements, but does not include other measures to contain or control source area groundwater, as Alternatives 3 and 4 do. If the *in situ* groundwater treatment (with contingencies) that has been proposed as a component of Alternative 4 were added to Alternative 2, we expect that the two alternatives would have equivalent performance in that (i) both caps would eliminate threats to human health from direct contact, and (ii) since the *in situ* treatment requirements will be the determining factor for when groundwater cleanup goals are met, both caps would achieve groundwater cleanup goals within similar reasonable periods of time. Alternative 2 without treatment is expected to cost significantly more than Alternative 4, and the cost differential would be higher if *in situ* treatment were added to Alternative 2. Therefore, a response action alternative that combines the compliant cap with *in situ* treatment has not been included for comparison in the draft EECA Report.

35. The State of Ohio is not expected to agree with the selection of Alternative 2 as the preferred response action alternative. The State of Ohio would also be unlikely to agree fully with the selection of either Alternative 3 or Alternative 4 as the preferred response action alternative.

Comments on Gas Venting System.

36. The draft EECA Report states (*see p. 41*) that “[b]ecause buried drums and grossly impacted soils were previously removed from the Site, passive gas vents are expected to be appropriate for meeting RAOs at the Site.” The draft EECA Report is modified by adding that active landfill gas collection and treatment will replace passive gas vents and treatment if pre-design data collection and analysis reveals levels of landfill gas that: 1) pose a potential inhalation risk; 2) present a potential fire or explosion risk; 3) inhibit reasonably expected future land uses; or 4) prevent passive gas venting systems from meeting the requirements of ARARs regarding landfill gas (e.g., regulations regarding the control of landfill gas).

37. The draft EECA Report states that the gas venting system would consist of a “number of gas vents at the high points in the cap extending vertically from the waste through the low permeability cover to approximately 4 feet above the finished grade.”

(See p. 48). U.S. EPA adds that the gas venting system shall be designed so that no flood waters enter the landfill waste through the vents during flood events.

Comments on Additional Pre-Design Groundwater Investigation.

38. The draft EECA Report includes a proposal for additional groundwater data collection in a pre-design groundwater investigation. (See, e.g., pp. x, 50 – 51, 55, 63, and 74.) If alternative 4 is selected, the pre-design investigation shall be conducted before the pilot test for the ozone treatment system. U.S. EPA expects to evaluate and determine the frequency of sampling activities and water level measurements, the location and number of additional monitoring wells and other monitoring points,⁴ borings to confirm the extent of the waste, etc., as part of a pre-design data collection plan. March 2006 survey results provided by CRA conflict with 1995 survey results. Specifically, the elevations of well casings were much lower in March 2006 than they were previously. Additional surveying will need to be conducted during the pre-design groundwater investigation to resolve the conflicts.

Comments on Groundwater Monitoring Program.

39. The draft EECA Report includes 2 years of quarterly groundwater monitoring as part of response action in Alternatives 2, 3 and 4. (See pp. 51, 55, and 63 and Table 5.2). For Alternative 4, the draft EECA Report states that “[u]pon termination of the treatment system, quarterly VOC monitoring of wells just outside the WMB will be conducted for 2 years . . .” (See p. 63). U.S. EPA expects, however, to evaluate and determine the parameters of the quarterly groundwater monitoring program for these alternatives in the post removal site control plan that will be subject to approval, modification and approval, or disapproval by U.S. EPA. Quarterly monitoring following termination of treatment for Alternative 4 would involve monitoring more wells and other monitoring points than the monitoring wells just outside the waste management boundary.

The draft EECA Report also includes a program of long-term groundwater monitoring as part of Alternatives 2, 3, and 4. (See pp. 51, 55, and 63 and Table 5.2). U.S. EPA expects to evaluate and determine the parameters of the long-term groundwater monitoring program, including the number and location of monitoring wells and other monitoring points (including the need for additional monitoring wells and other monitoring points south of the Site on the south side of the river), staff gauges, and piezometers, as part of the post-removal site control plan. U.S. EPA expects that groundwater may need to be monitored for up to 30 years or longer after the completion of the cap to satisfy federal and state regulations. Long-term groundwater monitoring shall be consistent with the requirements of CERCLA, the NCP, and other applicable state and federal laws, if any.

⁴ The discussion on pp. 50 -51 of the draft EECA Report regarding the number and location of new borings, piezometers, and monitoring wells, and Figure 5.5 showing the location of proposed monitoring wells, represents a proposal by GM that is subject to modification by U.S. EPA during review and approval of the pre-design groundwater investigation data collection plan.

The draft EECA Report states that groundwater “[m]onitoring wells will be removed from the program and abandoned following four consecutive events reporting all parameters below MCLs. No monitoring will be required once MCLs are achieved for all monitoring wells located outside the WMB.” (See p. 51). U.S. EPA expects to evaluate and determine the criteria for abandonment of monitoring wells and other monitoring points and the termination of the long-term groundwater monitoring program as part of the post-removal site control plan.

Comments on Riverbank Stabilization.

40. While the draft EECA Report states (see p. 42), that GM found that “only a small number of small trees had toppled over,” trees along the river will continue to fall down from a variety of reasons, including ice storms, high winds, lightning strikes, disease and old age. Maintenance of the riverbank, including removal of toppled trees along the riverbank will be an important part of post-removal site controls. In addition, while the draft EECA Report speaks only of a potential for erosion to expose waste along the riverbank, waste has already been exposed in some areas.

41. The draft EECA Report states that “[p]revention of riverbank erosion, preservation of the environment, and maintenance of the appearance of the Stillwater River are considered to be of equal concern.” (See p. 68). Because of potential risks to human health and the environment, prevention of riverbank erosion takes precedence over maintaining the appearance of the Stillwater River.

Comments on Fencing and Signage.

42. The draft EECA Report further indicates that fencing around the Site will be removed. U.S. EPA expects to evaluate the need to maintain physical barriers, such as fencing and gates, and signage as part of the design and the post-removal site control plan.

Comments on Institutional Controls.

43. Institutional controls will be needed to supplement the engineered controls proposed under Alternatives 2, 3, and 4. The institutional controls will need to be applied to areas of the Site where waste/contaminated soils will remain in place and to areas (whether on-site or off-site) where site-linked contaminants have contaminated the underlying groundwater. The consent of the property owner will be necessary for the imposition of such institutional controls. Such areas will include “buffer areas” referred to in the draft EECA Report. Traditional institutional controls may include zoning, property use restrictions, etc.; however, they do not include fencing or monitoring as indicated in the draft EECA Report. (See p. 43-44). The State of Ohio enacted the Uniform Environmental Covenants Act in 2004, which is expected to simplify the task of imposing institutional controls at the Site.

Comments on Waste Consolidation.

44. Excavation of the waste from the southern portion of the Site and its reconsolidation under the cover for the Site is a component of all alternatives except the no action alternative. (See, e.g., pp. 48, 53, and 58). To help ensure that the performance standards are achieved, a functional wetland will be created in this area to provide treatment for any residual contamination that may remain after waste reconsolidation. For purposes of measuring compliance (see paragraph 23 above), the waste management boundary encompasses a waste management area that includes the capped landfill, the treatment wetland, and any portions of the Site directly between the cap and wetland. The party performing the response action must demonstrate ownership or control of the property through enforceable institutional controls. Principal threat wastes, e.g., drums with TCE, that are discovered during waste reconsolidation, will not be placed under the cap, but will be transported off-site for appropriate disposal.

C. Modifications to the Comparison of Alternatives

45. See comments in paragraph 17, above, comparing the caps proposed for Alternatives 2, 3, and 4.

46. The draft EECA Report unfavorably compares (see pp. vii – viii) the leachate/groundwater extraction and treatment component of Alternative 3 as more passive and longer term than the *in situ* ozone treatment component included in Alternative 4. The draft EECA Report also states (see p. viii) that Alternative 4 is expected to be completed within 2 years reducing the inherent hazards on-site in a shorter time frame compared to Alternative 3, which is expected to operate for more than 30 years. U.S. EPA does not regard the leachate/groundwater extraction and treatment system in Alternative 3 as more passive than the *in situ* treatment component in Alternative 4. Given the inclusion of treatment contingencies in Alternative 4, the *in situ* treatment in Alternative 4 could take significantly more than 2 years to complete. The sheet pile wall and leachate/groundwater extraction and treatment system of Alternative 3 would also quickly result in minimizing the migration of contaminants across the waste management boundary but at greatly increased cost as compared with Alternative 4; the *in situ* treatment option in Alternative 4 would also minimize the migration of contaminants across the waste management boundary, but in a somewhat longer timeframe than the sheet pile wall.

47. The draft EECA Report states that Alternative 4 will provide a greater reduction in mobility of contaminants than Alternative 3. (See p. viii). U.S. EPA expects that the opposite may be true considering that extent of the sheet pile wall and pump and treat system proposed in Alternative 3.

48. The draft EECA Report unfavorably compares Alternative 3 with Alternative 4 (see, e.g., pp. vii – viii) by stating that the leachate/groundwater extraction and treatment of Alternative 3 is a groundwater treatment technology whereas the *in situ* ozone treatment included in Alternative 4 is a source treatment technology. Since *in situ* ozone

treatment is primarily aimed at destroying contaminants in source area groundwater and may have only a limited effect on contaminants in those portions of the landfill situated atop the groundwater, U.S. EPA regards both the leachate/groundwater extraction and treatment and the *in situ* ozone treatment as source area groundwater treatment technologies.

49. The draft EECA Report states (*see, e.g., p. viii*) that the leachate/groundwater extraction and treatment component of Alternative 3 would be expected to be necessary for at least 30 years (a period equal to the period over which the sheet pile walls are expected to need to be maintained) while the *in situ* ozone treatment of Alternative 4 would be expected to be needed for as little as two years. The draft EECA Report also states that, given the difference in operational periods and the frequent flooding of the Site, the leachate/groundwater extraction and treatment will require additional maintenance. These advantages will be reduced to the extent that additional *in situ* treatment is necessary under the treatment contingencies included in Alternative 4. In addition, the effect of flooding will be minimized given that the treatment building would be located on high ground in the northern portion of the Site.

50. U.S. EPA does not necessarily agree with the statements in the draft EECA Report that the sheet pile wall in Alternative 3 would remove both floodway and floodplain storage, as stated by the draft EECA Report (*see, e.g., pp. x and 74*). The impact on floodplain storage would depend upon the design and construction of sheet pile wall. The ACM included in Alternatives 2 and 4, however, may remove such storage unless a volume of soil equivalent to the volume of the ACM is removed from the floodplain.

51. The draft EECA Report states (*see p. ix*) that Alternatives 1 and 2 are estimated to achieve MCLs at the waste management boundary and beyond in the same period of time. U.S. EPA believes that it is unlikely that Alternative 2 will not achieve MCLs at the waste management boundary and beyond more quickly than Alternative 1.

D. Preferred Response Action Alternative

52. Alternative 4 is the preferred response action alternative. Since Alternative 4 does not meet state capping ARARs, a variance from or waiver of those ARARs would be necessary before Alternative 4 could be selected as the removal action for this Site. Given site-specific characteristics and the extensive removal action previously completed at the Site, U.S. EPA believes that such a waiver would be justifiable based upon equivalent performance of the alternative compared to ARARs.

E. Appendices

53. U.S. EPA has previously sent correspondence with comments on many of the appendices to the draft EECA Report. *None of this correspondence has been included in the appendices.* To the extent these comments have not already been incorporated, they

are hereby incorporated by reference in the corresponding appendix, except as inconsistent with this letter.

This approval letter does not extend to appendices to the draft EECA Report to the extent such appendices are inconsistent with this letter.

F. Conclusion and Submission of Final EECA Report

54. U.S. EPA understands that further revisions of the draft EECA Report may not best serve the interest of timely progress toward cleanup of the Site. Therefore, U.S. EPA hereby modifies and approves the draft EECA Report in accordance with the comments provided in this letter and pursuant to paragraph 2.2.B of Section V of the AOC. No modifications are necessary in the text of the draft EECA Report in preparing the final EECA Report, with the exception of the following modifications:

- The draft EECA Report is marked with a legend that states: “Confidential – Submitted as Part of Settlement Negotiations This Document or Its Contents May Not Be Used For Any Purpose Other Than Settlement Negotiations Reference No. 7043-90”. Please remove this legend from the final EECA Report.
- Appendices in the draft EECA Report were provided only on a compact disc. Please submit paper copies of all appendices with the final EECA Report.

GM may of course incorporate the comments above into the final EECA Report to facilitate the public comment process. Please do not make any other revisions in the final EECA Report. Please submit the final EECA Report with the modifications noted in this letter no later than thirty (30) days of receipt of this letter, as required by Task 5 of Attachment 1 of the Administrative Order by Consent. U.S. EPA and Ohio EPA should receive complete, final paper copies of the final EECA Report including the necessary appendices on or before this date. The number of copies should include five copies to U.S. EPA and two copies to Ohio EPA. U.S. EPA plans to start the public comment period promptly after receiving the final EECA Report.

If you have any questions regarding this letter, please contact me at (312) 886-4442 or ohl.matthew@epa.gov.

Sincerely,



Matthew J. Ohl
Remedial Project Manager

cc via e-mail: Jean Caufield, GM
Ed Peterson, GM
Bill McFarland, GM
Mike Tomka, CRA
Matt Mankowski, U.S. EPA
Terry Branigan, U.S. EPA
Joe Smindak, Ohio EPA
Mark Allen, Ohio EPA
Ann Fishbein, Ohio EPA