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December 11, 2025

Michael W. Smith, P.E.  
Iowa Department of Natural Resources  
6200 Park Avenue, Suite 200  
Des Moines, IA 50321

Re: Remedial Selection Report  
Winneshiek County Sanitary Landfill  
Permit No. 96-SDP-01-74P

Dear Michael Smith:

On behalf of the Winneshiek County Area Solid Waste Agency (WCASWA), Foth Infrastructure & Environment, LLC (Foth) is submitting this report to select the monitored natural attenuation (MNA) remedy recommended in the revised *2024 ACM Report* dated June 2025 (AECOM, 2025), and to provide details on the remedial implementation plan. The revised *2024 ACM Report* was provided as Attachment E of the "IDNR Comment Letter Response" (AECOM, 2025) and approved by the Iowa Department of Natural Resources (IDNR) in their letter dated July 15, 2025 (IDNR, 2025).

Per 567 Iowa Administrative Code (IAC) 113.10(8)a, the owner or operator must select a remedy within 60 days of holding the public meeting, which was held on October 13, 2025, and submit a report describing the selected remedy and how it meets the standards outlined in 567 IAC 113.10(8)b and c within 14 days of remedy selection. This Remedial Selection Report is being submitted to meet the requirements of 567 IAC 113.10(8)a and is placed in the facility operating record.

## **Description of the Selected Remedy**

As recommended in the revised *2024 ACM Report* (AECOM, 2025) and based on the review of performance, implementation, and cost criteria for three potential remedial alternatives in accordance with 567 IAC 113.10(7)c, MNA is the selected remedy for the assessment of corrective measures (ACM) for cobalt in MW-29A, MW-31A, and MW-35.

Description of the MNA remedy is provided in Section 6.3 of the revised *2024 ACM Report* (AECOM, 2025). In summary, MNA is a remediation approach that relies on naturally occurring physical, chemical, and biological processes to reduce contaminant concentrations in groundwater. Progress is tracked through systematic monitoring to confirm that attenuation is occurring as expected, that performance objectives are met, and that the remedy remains protective of human health and the environment. For this ACM, MNA implementation consists of groundwater and surface water monitoring in accordance with 567 IAC 113.10, Sanitary Disposal Project (SDP) Permit number 96-SDP-01-74P, and the *Winneshiek Hydrologic Monitoring System Plan* (AECOM, 2024). Additional details regarding the MNA corrective action monitoring plan are provided in Table 1.

The revised *2024 ACM Report* (AECOM, 2025) indicated that the cobalt exceedances at MW-29A, MW-31A, and MW-35 were primarily due to the mobilization of naturally occurring cobalt in soil and bedrock into the shallow aquifer groundwater through the presence of geochemically reducing conditions near the landfill. Reducing conditions have resulted from changes in hydrology and chemistry of the shallow aquifer by construction of Cells 4 and 5 and, more recently, capping of Cell 4 and construction of the abutment liner over the north slope of Cell 4. These activities caused a reduction in groundwater flow and have reduced infiltration of precipitation to recharge the shallow aquifer. As a result, there are localized reducing conditions in the shallow aquifer east of Cells 4 and 5. Reducing conditions attenuate and transition to oxidizing conditions downgradient, near the Tributary of the Trout River, as groundwater interacts with oxygenated recharge and natural geochemical processes. The return to oxidizing and aerobic conditions allows cobalt to precipitate back into soil and bedrock. Note that significant rainfall events in 2016 and 2019 have exacerbated the reducing conditions by saturating the soil and further depleting oxygen.

Except at MW-31A, migration of landfill leachate or methane was not attributed as a source or a contributing source for the cobalt exceedances. The perimeter leachate manhole survey conducted in 2022 identified leachate leaking through a manhole joint due to a partially plugged outlet at Lagoon Bay 3 from debris accumulation in the rodent guard. The rodent guard was removed, and discharge was cleared and cleaned in Fall 2022. The leachate leakage was attributed as a contributing source to the cobalt concentrations in MW-31A. Since the completion of the maintenance and repair activities, cobalt concentrations in MW-31A have been decreasing. Leachate manholes MH-1AA and MH-4-2, and leachate lagoon bays LB-1 and LB-2, have been monitored since 2022 to compare the Appendix I concentrations in leachate to groundwater for evaluating leachate as a potential source, and further routine sampling is not recommended. As detailed in Table 1, the MNA remedy will include periodic inspection of the leachate collection system to provide ongoing documentation of effective source control.

## Standards Achievement

A discussion of how the MNA remedy meets the standards in 567 IAC 113.1(8)b was included in the revised *2024 ACM Report* (AECOM, 2025) and is supplemented by this report. In summary:

- ◆ 567 IAC 113.10(8)b(1): Sections 4 and 5 address concerns of human health and the environment.
- ◆ 567 IAC 113.10(8)b(2): Section 6.3 discusses the performance of MNA and its ability to achieve compliance with the site-specific groundwater protection standard (GWPS) of 3.4 micrograms per liter for cobalt.
- ◆ 567 IAC 113.10(8)b(3): as noted above, cobalt exceedances at MW-29A, MW-31A, and MW-35 were primarily attributed to the mobilization of naturally occurring cobalt in soil and bedrock into the shallow aquifer groundwater through the presence of geochemically reducing conditions near the landfill. Source control measures for the localized reducing conditions are not applicable. However, monitoring of geochemical parameters at the corrective action, delineation, and background monitoring locations is recommended to track the localized extent of reducing conditions and the transition to oxidizing conditions. Leachate leakage from a manhole joint was considered a contributing source to the cobalt concentrations identified at MW-31A. Therefore, periodic inspection of the leachate collection system is recommended to provide ongoing documentation of effective source

control. Methane migration was not attributed as a source or a contributing source for the cobalt exceedances; therefore, no source control measures or monitoring of source control measures are recommended for methane.

- ◆ 567 IAC 113.10(8)b(4): management of waste does not apply to an MNA remedy; also discussed in Section 6.3.2.

The requirements of 567 IAC 113.10(8)c(1) through (4) were addressed in Section 6.3 of the revised *2024 ACM Report* (AECOM, 2025). In accordance with 567 IAC 113.10(8)c(5), the degree to which community concerns were addressed by potential remedies was reviewed. The Winneshiek County Area Solid Waste Agency held a public meeting on October 13, 2025. No objections to the groundwater ACM and selection of the MNA remedy were received during or after the public meeting. Meeting minutes and the community's questions and concerns were documented and submitted to the IDNR and placed in the facility operating record on November 20, 2025 (Foth, 2025).

## Remedy Implementation

In accordance with 567 IAC 113.10(8)d and 113.10(9), the corrective action schedule outlined in Table 1 is recommended for initiating and completing the MNA remedy for cobalt in MW-29A, MW-31A, and MW-35.

**Table 1**  
**Corrective Action Schedule**

Task	Initiation	Schedule or Frequency	Completion
Conduct corrective action monitoring for the Appendix I and detected Appendix II constituents at MW-29A, MW-31A, and MW-35 in accordance with IAC 113.10(6) and 113.10(9)a.	Initiated – Next in Spring 2026	Ongoing - Semiannual	Per 113.10(9)e, until cobalt concentrations have achieved compliance with the GWPS for a period of three consecutive years using the statistical procedures in 113.10(4)g and h.
Conduct delineation monitoring for cobalt at MW-39A, MW-42A, MW-43A, and MW-44A <sup>(1)</sup>	Initiated – Next in Spring 2026	Ongoing - Semiannual	Until the corrective action monitoring well upgradient of each delineation monitoring well exits corrective action.
Monitor geochemical parameters <sup>(2)</sup> to track the localized extent of reducing conditions and the transition to oxidizing conditions.	Initiated – Next in Fall 2027	Ongoing – Biennial <sup>(2)</sup>	Until all three corrective action monitoring wells have achieved compliance with the GWPS per 113.10(9)e and exited corrective action.
Conduct semiannual surface water monitoring for cobalt at SW-1 (upstream), SW-2 (downstream), and SW-5 (downstream).	Initiated – Next in Spring 2026	Ongoing - Semiannual	Until all three corrective action monitoring wells have achieved compliance with the GWPS per 113.10(9)e and exited corrective action.
Inspect leachate collection system components on the east side of Cells 4 and 5 for obstructions and leaks.	Initiated – Next in Fall 2026	Ongoing – Annual	Until all three corrective action monitoring wells have achieved compliance with the GWPS per 113.10(9)e and exited corrective action.

**Table 1 (continued)**

Task	Initiation	Schedule or Frequency	Completion
By March 31 of each year, submit AWQRs, including an update on remedy implementation.	Initiated – Next due March 31, 2027	Ongoing – Annual	Until all three corrective action monitoring wells have achieved compliance with the GWPS per 113.10(9)e and exited corrective action.

- (1) MW-39A, MW-42A, MW-43A, and MW-44A are currently listed as detection and assessment monitoring wells. These wells are located downgradient of the corrective action monitoring wells and prior to the tributary to the Trout River and were installed for horizontal delineation of cobalt. Starting in Spring 2026, MW-39A, MW-42A, MW-43A, and MW-44A will transition to delineation monitoring wells and will be monitored for cobalt. Monitoring the remaining Appendix I and II parameters will be discontinued at these wells.
- (2) Geochemical parameters will include biennial laboratory analysis of anion/cation balance, bicarbonate and total alkalinity, calcium, chloride, fluoride, magnesium, potassium, sodium, nitrate, and sulfate at the corrective action, delineation, and background monitoring locations. Field parameters such as pH, dissolved oxygen, oxidation-reduction potential, and specific conductance will continue to be monitored at all of the locations during semiannual sampling events.

## References

AECOM, 2024. 2024 *UPDATE, Winneshiek Hydrologic Monitoring System Plan, Winneshiek County Landfill, Decorah, Iowa*. September 2024. [Doc. No. 110947].

AECOM, 2025. Letter to Mr. Mike Smith. "IDNR Comment Letter Response (AWQR Document No. 112674; ACM Document No. 112672), Winneshiek County Sanitary Landfill, Permit No. 96-SDP-01-74P, AECOM #60711359." [Doc. No. 113221]. June 6, 2025

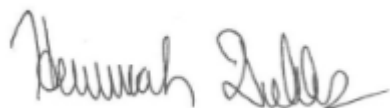
Foth Infrastructure & Environment, LLC, 2025. "ACM Public Meeting Records – Winneshiek County Sanitary Landfill (Permit No. 96-SDP-01-74P)." [Doc No. 114792]. November 20, 2025.

Iowa Department of Natural Resources, 2025. (Michael W. Smith, P.E.), Letter to TJ Schissel. "Winneshiek County Sanitary Landfill, Permit No. 96-SDP-01-74, IDNR Comment Letter Response and Revised Assessment of Corrective Measures (Document No. 113221)." [Doc. No. 113445]. July 15, 2025.

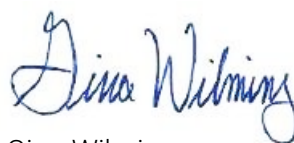
Thank you for your attention to this matter. Please contact us at the numbers listed below if you have any questions or need additional information.

Sincerely,

Foth Infrastructure & Environment, LLC



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Project Environmental Scientist  
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cc: T.J. Schissel, Winneshiek County Area Solid Waste Agency  
IDNR Field Office #1