



September 17, 2025

Transmitted Electronically

Mr. Trey Richardson
Ashland LLC
1979 Atlas Street
Columbus, OH 43228
trichardson@ashland.com

**Ashland Chemical Co
Plan
Correspondence
Transmittal Letter
RCRA C - Hazardous Waste
Hamilton County
OHD000816728**

Hazardous Waste Program – DERR

Subject: Groundwater Monitoring Evaluation (GME) Notice of Deficiency Letter

Dear Mr. Richardson:

Thank you for the 2024 Second Semi-Annual Report,¹ the 2025 First Semi-Annual Report,² and the Off-Site Investigation Work Plan³ which were submitted by EHS Support on behalf of Ashland LLC (Ashland) for the facility located at 1953 Losantiville Avenue, Cincinnati, Ohio. Ohio EPA's Southwest District Office received these documents on April 11, 2025, July 9, 2025, and August 15, 2025, respectively.

Ohio EPA conducted a Non-financial Record Review (NRR) of the documents and generated this Notice of Deficiency (NOD) letter to determine compliance with the Amended Post-Closure Plan (PCP), which Ohio EPA approved in June 2021.⁴ The documents were also evaluated for compliance with Ohio's hazardous waste laws and rules as found in Chapter 3734. of the Ohio Revised Code (ORC), the rules adopted pursuant to ORC § 3734.12 found in Chapter 3745 of the Ohio Administrative Code (OAC), and the PCP. Ohio EPA sent a separate Notice of Violation (NOV) letter dated September 11, 2025⁵, outlining the observed violations based on a review of the listed reports. Ohio EPA has identified and explained the deficiencies in detail to assist Ashland in resolving the violations with recommended actions.

Enclosed are the deficiencies, concerns, and recommendations following review of the reports referenced.

1 <https://edocpub.epa.ohio.gov/publicportal/ViewDocument.aspx?docid=3519311>

2 <https://edocpub.epa.ohio.gov/publicportal/ViewDocument.aspx?docid=3714045>

3 <https://edocpub.epa.ohio.gov/publicportal/ViewDocument.aspx?docid=3795559>

4 <https://edocpub.epa.ohio.gov/publicportal/ViewDocument.aspx?docid=2517474>

5 <https://edocpub.epa.ohio.gov/publicportal/ViewDocument.aspx?docid=3823355>

Please be advised that this report is only associated with those documents reviewed and does not constitute a waiver of potential violations not discovered.

The recommendations set out below are NOT Orders. Ohio EPA offers these recommendations in an effort to provide compliance assistance to the facility.

Deficiencies and Recommendations

Comment 1. Ohio EPA's letter dated June 18, 2024,⁶ requested the groundwater monitoring program expand the monitoring network off-site to the west of the facility, specifically, in the right of way of Eastlawn Drive and north of the facility in the Losantiville Store & Lock property. These additional monitoring wells were requested to determine the rate and extent of an expanding volatile organic compound (VOC) plume.

After several discussions and an extension, Ohio EPA received the Off-Site Investigation Workplan on August 15, 2025; however, it is considered inadequate as it does not show the proposed locations of two or more additional monitoring wells as discussed in the meetings and as stipulated in the letter. It also does not address the rate and extent concerns of an expanding groundwater plume, as depicted in the 2024 Second Semi-Annual Report (see Figure 4 attached). In addition, the cross section included does not show the additional investigation information from the on-site and off-site borings conducted as part of the focused High Resolution Site Characterization (HRSC) Investigation Work Plan approved by Ohio EPA on August 16, 2023.⁷ The final Technical Memorandum of the HRSC has not been submitted to Ohio EPA, even though the field work was conducted in August 2023. An expanded and updated cross-section and a conceptual site model (CSM) were requested as part of the HRSC workplan approval. The HRSC-updated CSM and additional off-site field information were not referenced or considered when developing the August 2025 Off-site Investigation Workplan.

Action Item: Please provide a revised Off-Site Investigation Workplan with a map showing the proposed locations of additional rate and extent monitoring wells and locations of additional investigation points used to determine the most suitable location for these monitoring wells. The revised work plan should include anticipated construction details, depth, and/or other criteria to determine the screen length and ultimate siting locations in the field. Please include a schedule for implementation of the plan that includes the installation of the wells, development and sampling of the wells, evaluation of the results, and the timetable for submitting investigatory reports. Include and reference the updated

⁶ <https://edocpub.epa.ohio.gov/publicportal/ViewDocument.aspx?docid=2969219>

⁷ <https://edocpub.epa.ohio.gov/publicportal/ViewDocument.aspx?docid=2525458>

and expanded cross-section and CSM developed by the HRSC. Ohio EPA also requests that the Final Technical Memorandum of the HRSC work conducted in August 2023 be submitted to Ohio EPA for review and approval.

Comment 2. Ashland's 2024 Second Semi-Annual Report analytical results show an expanding contaminant plume in off-site downgradient wells MW-23, MW-25, MW-28, and MW-29. In that report, groundwater data at monitoring well MW-23 depicted an increasing trend of vinyl chloride at 55J+ micrograms per liter ($\mu\text{g/L}$) and 1,4-dioxane at 590 $\mu\text{g/L}$. 1,4-Dioxane was also detected in MW-28 and MW-29 at 48J and 51J $\mu\text{g/L}$, respectively, exceeding the U.S. EPA Tap Water Regional Screening Level of 0.45 $\mu\text{g/L}$. Additionally, benzene had been detected in well MW-25 at 24 $\mu\text{g/L}$ in the fall of 2023, exceeding the 5 $\mu\text{g/L}$ U.S. EPA maximum contaminant levels (MCLs). These three off-site wells exceed the U.S. EPA MCL or screening levels for multiple parameters and are either new detections or have increasing trends indicating a need for further downgradient assessment.

Action Item: To be protective of human health and the environment, the rate and extent of the groundwater plume must be defined pursuant to OAC Rules 3745-54-100 and 3745-54-101 and Section 6 of the Amended PCP. Ohio EPA recommends that new downgradient rate and extent wells be installed, developed, and sampled before the end of this year (2025). The results of the installation and routine sampling of these monitoring wells will be used to determine if additional corrective action requirements have been triggered due to the presence of contaminants in the downgradient wells, as required by this rule.

Comment 3. Appendix E of the 2024 Second Semi-Annual Report and Appendix D of the 2025 First Semi-Annual Report included Mann-Kendall Evaluations as the statistical method to demonstrate protectiveness. Not all required graphs were included in the 2025 First Semi-Annual Report. Trend analyses should have been submitted for on-site wells MW-7 and MW-16, and off-site wells MW-19 through MW-29 for COCs.

Furthermore, Appendix E in the 2024 Second Semi-Annual Report included a summary table of the Mann-Kendal Evaluation, which contains a column titled "Warning." This column is only populated when the statistical analysis cannot be conducted or is considered less reliable, and the reason for this is provided. This "Warning" column entries indicated the trends were either not calculated because more than half of the observations were less than the laboratory detection limits (non-detect) or were considered less reliable because more than 25 percent of the observations were non-detect at those locations. Therefore, Mann-Kendall graphs were not generated for the submittal.

It is also noted that the trend analyses included data from up to 25 years ago, and the historical non-detections, which are prohibiting the trend analysis on current detections, are

no longer representative of the current conditions, as several different remedial actions and milestone events have occurred over those 25 years. For example, the last milestone event was the groundwater recovery and treatment system shutdown in May 2016. That is why the 2024 First Semi-Annual Report⁸ only utilized data from 2015 onward and was able to provide accurate trends for all site groundwater monitoring wells.

While a summary table was not provided in the 2025 First Semi-Annual Report, it is reasonable to assume that the trend analysis graphs for the same wells were absent for the same reasons.

Please note, as previously requested for all statistical trend analyses, the trend evaluations should be based on data from March 15, 2015, to the current time period.

Action Item: Ohio EPA recommends groundwater reports to discuss trends, including time series graphs and an evaluation using Sens's slope/Mann-Kendall, per Ohio EPA's January 2016 request. The sample dates should be clearly identified on the Mann-Kendall trend graphs and summary table, similar to the 2024 First Semi-Annual Report.

Additionally, trend evaluations should be based on data from March 15, 2015, to the current time period for the wells listed above. These graphs should be similar to Appendix F "Mann-Kendall Evaluation" from the 2024 First Semi-Annual Report, with trends evaluated for the following COCs: 1,1-dichloroethane, 1,1-dichloroethene, 1,1,1-trichloroethane, benzene, chloroethane, cis-1,2-dichloroethene, ethylbenzene, tetrachloroethene, toluene, trichloroethene, vinyl chloride, and total xylenes. These well parameters were requested to be evaluated for trends in Ohio EPA's letter dated April 29, 2021⁹. In addition, 1,4-dioxane has been added as a COC, and trend graphs should be included in future reports.

The milestone event of May 2016 should be added as a vertical line to all future trend graphs (time series and trend analyses), which should be labelled as "GW remediation system shutdown" to assist in interpreting the changes that have occurred since the remediation system was shut down, as previously requested in an Ohio EPA letter dated August 25, 2017¹⁰. Include data collected March 2015 forward in the Mann-Kendall trend analyses to report the post-remedy groundwater trends accurately. Ensure semi-annual reports include a summary table of the data used for evaluations, sample date, and trends from 2015 to the present day for all COCs listed above.

⁸ <https://edocpub.epa.ohio.gov/publicportal/ViewDocument.aspx?docid=3411609>

⁹ <https://edocpub.epa.ohio.gov/publicportal/ViewDocument.aspx?docid=1561654>

¹⁰ <https://edocpub.epa.ohio.gov/publicportal/ViewDocument.aspx?docid=682889>

Comment 4. Discrepancies were noted between the purging and sampling methods conducted in the field versus those specified in Section 2.3 of the SAP included in the GWMP within the PCP. Protocol errors were noted on the purge logs included in Appendix A of the 2024 Second Semi-Annual and Appendix A of the 2025 First Semi-Annual Report. Proper low-flow purging is essential to meet data quality objectives for groundwater data. For comparison, MW-19 had total VOCs at 72,260 µg/L in April 2024, 285,179 µg/L in September 2024, and 111,525 µg/L in April 2025. It is difficult to determine if the deviation from the sampling protocol for these three events influenced the analytical results and if they should still be considered representative and acceptable. The deviations observed during the 2025 First Semi-Annual sampling event include:

- Wells MW-7, MW-8, MW-11, MW-12, MW-16, MW-17, MW-18, MW-19, MW-20, MW-21, MW-22, MW-24, MW-25, MW-27, and MW-28 were all sampled prior to drawdown stabilization and not in accordance with the approved PCP. In addition, several wells never had all indicator parameters stabilize prior to sampling, specifically: MW-11, MW-16, MW-19, MW-20, MW-23, MW-25, MW-27, and MW-28. Only two wells, MW-26 and MW-29, were purged and sampled correctly using multiple measurements with drawdown stabilizing first, and then geochemical field measurements stabilizing all criteria prior to sampling and in accordance with the PCP.
- Drawdown did not stabilize after three (3) consecutive readings with a maximum difference of 0.3 feet at several monitoring wells.
- Turbidity did not stabilize after three (3) readings within 10% or one (1) reading below 10 Nephelometric Turbidity Units (NTUs) at several monitoring wells.
- Well volume calculations were missing from sampling logs. The SAP requires that at least one (1) well volume be purged prior to sample collection.
- Flow rates and purge times do not match the total purge volume on some field forms.

Several of these sampling protocol concerns were previously identified in Ohio EPA's letter dated January 24, 2020¹¹. The MW-19 field form (attached) illustrates an example of the discrepancies.

Action Item: Ashland must ensure that after the drawdown has stabilized, parameter stabilization has occurred before sample collection per the approved PCP GWMP/SAP. Revisions to the PCP (GWMP/SAP) have been requested to prevent similar compliance concerns from occurring. Ashland is asked to follow all low-flow sampling protocols during

11 <https://edocpub.epa.ohio.gov/publicportal/ViewDocument.aspx?docid=1273064>

future sampling events and give the agency at least one week's advance notice of future sampling events.

Comment 5. Periodically, sample results have been qualified due to laboratory interference without a site-specific matrix spike/matrix spike duplicate (MS/MSD) sample for quality assurance and control. Therefore, Ohio EPA requested that Ashland begin collecting an MS/MSD sample during sampling events as part of the ongoing Quality Assurance/Quality Control (QA/QC) process in a letter dated April 8, 2022¹². Ashland committed to collecting MS/MSDs in future sampling events in a response letter dated May 12, 2022¹³.

The 2024 Second Semi-Annual and 2025 First Semi-Annual sampling events did not include the collection of an MS/MSD sample. In addition, the Semi-Annual reports state that the sampling events adhered to the PCP dated July 18, 2019. Therefore, Ashland is requested to review and update the PCP to ensure this data is appropriately collected and presented in future reports.

Lastly, because of the consultant change and numerous updates, it is recommended that Ashland prepare and update the 2021 PCP with the current consultant's standard operating procedures (SOPs) and incorporate all correspondence recommendations and requests submitted since the last revision, as listed below.

Action Item: Ashland should prepare an amended PCP, equivalent to a Class 2 modification request to replace the 2021 PCP. Include a revision-tracking page at the beginning to track all changes from the original July 16, 2019, to March 13, 2020, May 13, 2020, and May 10, 2021, with room for future revisions.

Include the following revisions:

- Include collection of duplicate samples for MS/MSD analysis with additional sample volume (typically three additional VOC vials) during each sampling event as part of the ongoing QA/QC process for future sampling events. Coordination with the laboratory for their requirements, obtaining additional MS/MSD vials, and continuing to note on the laboratory chain of custody the most highly contaminated wells (that is, wells MW-16 and MW-19) will help produce the best data possible at this site.
- Update Tables 1 and 2 with well construction logs and groundwater elevation data for any new wells requested in the off-site investigation.

12 <https://edocpub.epa.ohio.gov/publicportal/ViewDocument.aspx?docid=1780769>

13 <https://edocpub.epa.ohio.gov/publicportal/ViewDocument.aspx?docid=1818316>

- Revise Table 3 of the PCP with U.S. EPA's current MCLs, include 1,4-dioxane as a COC, and list tap water Residential Screening Level at 0.46 µg/L and footnote reference on the table.
- Update Table 4 with all new wells.
- Tables 5 and 6 can be updated or eliminated.
- Update the Site Layout and Monitor Well Location Maps (Figures 2 and 3) to expand to the west to include Eastlawn Drive, the residential homes on both sides of this street, and any new rate and extent wells. The updated maps should also be used for future groundwater potentiometric and iso-concentration plume maps. It is also suggested that the deep and shallow wells be differentiated through symbology.
- Update the PCP cross-section maps (Figures 4 through 9) based on the additional investigations and field work conducted since 2019.
- Add well logs for MW-28, MW-29, and any new wells to Appendix C of the GWMP in the revised PCP.
- Ensure the updated PCP incorporates all the requests and recommendations in the previously referenced correspondence (several are included as footnoted hyperlinks in this letter or can be located via our public document portal system).

Comment 6. In accordance with Section 2.3 of the Sampling and Analysis Plan (SAP) part of the PCP, Ashland must sample groundwater from the least to the most contaminated. It is not clear that this procedure occurred during either the 2024 Second Semi-Annual or 2025 First Semi-Annual sampling event based on the field form and chain of custody sample times. Ohio EPA previously requested this in a letter dated January 24, 2020. Because there are ongoing sampling concerns, as noted in the NOV letter, Ohio EPA reminds Ashland to follow the PCP and continues to give Ohio EPA a one-week notice in advance of future sampling events in case oversight may be desired.

Action Item: Please ensure groundwater sampling occurs in order from the least contaminated to the most contaminated for proper QA/QC and cross-contamination reduction purposes. Please provide Ohio EPA with a one-week notice in advance of future sampling events.

Comment 7. Ohio EPA requests the Final Technical Memorandum for the High-Resolution Site Characterization (HRSC) work conducted in August 2023. Although this work was completed two years ago, it has not been provided to Ohio EPA for review, nor have the next steps of proposed remedial action been presented.

Action Item: Please provide Ohio EPA with the Final Technical Memorandum for the 2023 HRSC.

Comment 8. Ashland must provide semi-annual reports within seventy-five (75) days from receipt of the analytical laboratory report for each sampling event per Section 3.61 of the Groundwater Monitoring Plan (GWMP) that is part of the PCP. Reports must be sent within this time frame in order for the Ohio EPA to review the data, identify concerns, and propose changes to future sampling events in a timely fashion. The 2024 Second Semi-Annual Report was received 182 days after the laboratory report was received; however, no action is required.

The 2025 First Semi-Annual Report was received on July 9, 2025, which is within the 75-day deadline of receiving the analytical report. Ohio EPA will continue to monitor delivery of future reports for adherence to this requirement.

You can find Ohio's hazardous waste rules and other information on the division's web page.¹⁴ Ohio EPA recommends a conference call or in-person meeting to discuss this project and requests that you contact this office to facilitate this meeting.

Should you have any questions, please contact me at (937) 285-6407, or Greg.Brown@epa.ohio.gov.

Sincerely,

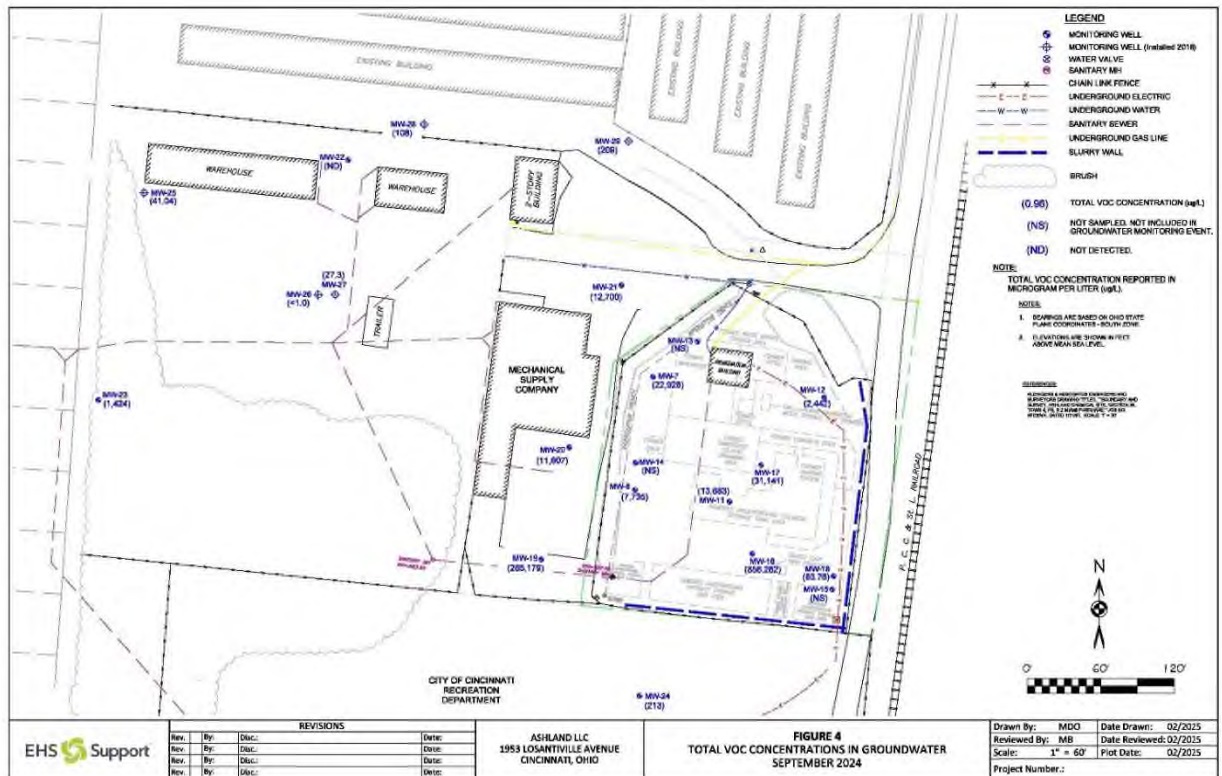
Greg Brown

Greg Brown, Geologist 3 SWDO
Hazardous Waste Program
Division of Environmental Response and Revitalization

Attachments: Figure 4 from the 2024 Second Semi-Annual Report (1 page)
MW-19 Field Form (1 page)

ec: Scott Lindemuth, EHS Support, Scott.Lindemuth@ehs-support.com
Randy Kirkland, Southwest District Office, DERR
Eric Sainey, Central Office, DERR
Brad Mitchell, Central Office, DERR
Melissa Langton, Central Office, DERR
George Strobel, DERR-SWDO
Astrea Taylor, Southwest District Office
EPA.RCRAInfoData@epa.ohio.gov

¹⁴ <https://epa.ohio.gov/divisions-and-offices/environmental-response-revitalization>





Cincinnati (Losantiville), 1953 Losantiville Ave, Cincinnati, OH Groundwater Monitoring Program

Low-Flow Development / Sampling Log

Well ID: MW-19		Project: Cincinnati (Losantiville)		Page 1 of 1						
Purging Data from Below Top of Casing (btoc)										
Purge Date: 4/22/2025	Depth to Water (feet btoc): 7.69	Total Well Depth (feet btoc): 25 feet	Water Column Height (H) (feet): 25 - 7.69 = 17.31 ft.	Screened Interval (feet btoc): 15 - 25 ft.	Casing diameter (D) (inches): 2					
One well volume = (0.16 x 17.31) = 2.77 gal.										
Groundwater Purge Information										
Sampling Method: Low Flow		Purge Equipment: PP-Peristaltic Pump								
Tubing / Pump set at ft. btoc		Total Volume Removed: 1 Gal Purge Volume = 0.66 gallons								
Purge Start Time: 8:21:00 AM		Purge End Time: 8:33	Well Purged Dry: No	Time allowed to recharge before sampling (if applicable):						
Groundwater Purge Data										
Time	Depth to Water (feet btoc)	Drawdown (feet)	Purge Rate (ml/min.)	pH (Units)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Temp. (°C)	DO (mg/L)	O.R.P. (mV)	Remarks
8:26	7.95	0.26	240	6.81	1.66	150	12.80	1.69	-56.00	
8:29	8.21	0.26	240	6.82	1.67	110	12.77	1.53	-58.00	
8:32	8.51	0.25	200	6.81	1.62	102	12.69	1.44	-59.00	
Drawdown did not stabilize, was 8.51 ft. or 0.82 ft from initial reading of 7.69 ft., and greater than SAP limit of 0.3 feet.										
Purge rate could have been adjusted lower (i.e. 100 ml/min) to stabilize drawdown.										
Turbidity not within 10% or < 10 NTUs.										
Indicator parameter stabilization criteria was never applied correctly because drawdown had not stabilized first.										
Example: Low flow almost always requires more than three (3) readings. Turbidity was (150-190 = 40, 40/190 = 21%, second (100-102 = 2, 2/100 = 2%) both are greater than 10% and next consecutive reading (110-102 = 8, 8/100 = 8%). There was not three consecutive readings within 10%.										
Groundwater Sample I.D.: MW-19			Groundwater Sample Time: 8:35		Duplicate Sample I.D.:		Duplicate Sample Time:			
Equipment/Rinsate Sample I.D.:			Equipment/Rinsate Sample Time:		Sampler Name: M. Burge					
Analytical Methods:										
Notes: NR = not recorded; btoc = below top of casing; ml/min = milliliters per minute; L = liters; mS/cm = MilliSiemens/centimeter; NTU = Nephelometric Turbidity Unit; °C = degrees Celsius; mg/L = milligrams per liter; mV = millivolt										