TECHNICAL MEMORANDUM

DATE: May 27, 2025

TO: Emily Brickman, P.G., *Senior Project Manager – Geologist, EnSafe*

FROM: Caleb Gourley, Senior Staff Scientist, Harbor

RE: Bi-weekly Site Inspection
NABORS Landfill
Mountain Home, AR
Harbor Project No: ENSF-23299

Harbor visited the NABORS landfill in Mountain Home, Arkansas on May 21, 2025, to conduct the bi-weekly site inspection to assess the general condition of the landfill and the leachate collection system (LCS). The LCS was last fully repaired by Advanced Fluid Technologies (AFT) in October and November of 2022; however, within a few weeks of these repairs, the LCS began malfunctioning. By March 2023, most of the LCS points were malfunctioning. A quote was then requested and received from AFT to again repair the system. No authorization for the subsequent repairs was provided prior to the expiration of Harbor's contract with DEQ in June 2023.

Landmarc Environmental (Landmarc), a company specializing in LCS installation and service, conducted a full assessment of the LCS on December 3-4, 2024. A report summarizing these activities was submitted on January 20, 2025. Harbor discontinued site visits in February 2025 until DEQ approved a new budget for activities occurring at NABORS. The budget was approved on April 3, 2025, and site visits will continue until 2026.

The LCS remains largely unchanged from previous inspections. Findings and observations from the current landfill inspection are summarized below:

- Vertical leachate collection sump (VLCS)-1 is not functioning correctly and was observed at capacity and overflowing (see photographs 1-2). It appears that a fuse holder is missing a metal contact piece, which is causing the sump to malfunction.
- VLCS-2 appeared to be functioning correctly and was observed at 1/2 capacity.
- The leachate tank battery level was at 89.3 inches.
- Minimal stormwater was observed in the leachate tank containment. As such, no water was released (see photograph 3).
- The panel displays were off at all LCS stations except LCS-2, LCS-5, and LCS-7.
- LCS-2 level was at 0.0 inches and did not activate when the sump was placed in "hand" or "auto" mode. LCS-2 also displayed a pump fault alarm.
- LCS-5 level remained at 9.7 inches and did not activate when the sump was placed in "hand" or "auto" mode.

- LCS-7 level was at 0.0" and the station displayed a pump fault.
- The display at LCS-9 had been removed.
- The closure turf has some significant wrinkles present near LCS-1 and LCS-2. An erosional washout is present along the road between LCS-4 and LCS-5.
- According to a report from Watershed Geo, the closure turf wrinkles were stabilized using a material called DuraGuard by Cline Environmental. The report also stated that WatershedGeo and Cline Environmental made several repairs to the closure turf in September and December 2024. These repairs were apparent during Harbor's site visit (see photographs 4-6).

Attachment A is a map showing the LCS points. Photographs are included in Attachment B. Copies of the field notes and the LCS status form are included in Attachment C.

The leachate collection system has been functioning at a minimal level, resulting in some leachate generation, mainly by placing some of the LCS points in "hand" mode. Harbor contract water hauler 417 Services LLC (417 Services) began hauling leachate on July 2, 2024. As of February 23, 2025, 417 Services hauled 226 loads of leachate totaling 866,700 gallons to the City of Springfield, Missouri wastewater treatment plant under wastewater contribution permit #593. No leachate was hauled between February 24, 2025, and April 10, 2025. 417 Services resumed hauling leachate on April 11, 2025. Since hauling resumed in April, and as of 5/18/25, 417 Services hauled 31 loads of leachate totaling 119,350 gallons to the City of Springfield for disposal.

Attachments:
Attachment A – Site Map
Attachment B – Site Photographs
Attachment C – Field Notes and Leachate Collection System Status Form
Attachment D – WatershedGeo Report

Attachment A

Site Map

Harbor
5800 Evergreen Drive
Little Rock, AR 72205
P: 501.663.8800
www.HarborEnv.com

Client: ENSAFE

Leachate Collection Points
NABORS Landfill
Mountain Home, Baxter County, AR

Date: 5/17/2024
Drawn by: TH
Checked by: LD

Attachment B

Site Photographs

Photograph 1: View of erosional rill from VLCS-1 overflow.

Photograph 2: View of VLCS-1 sump at capacity.

Photograph 3: View of leachate tank containment.

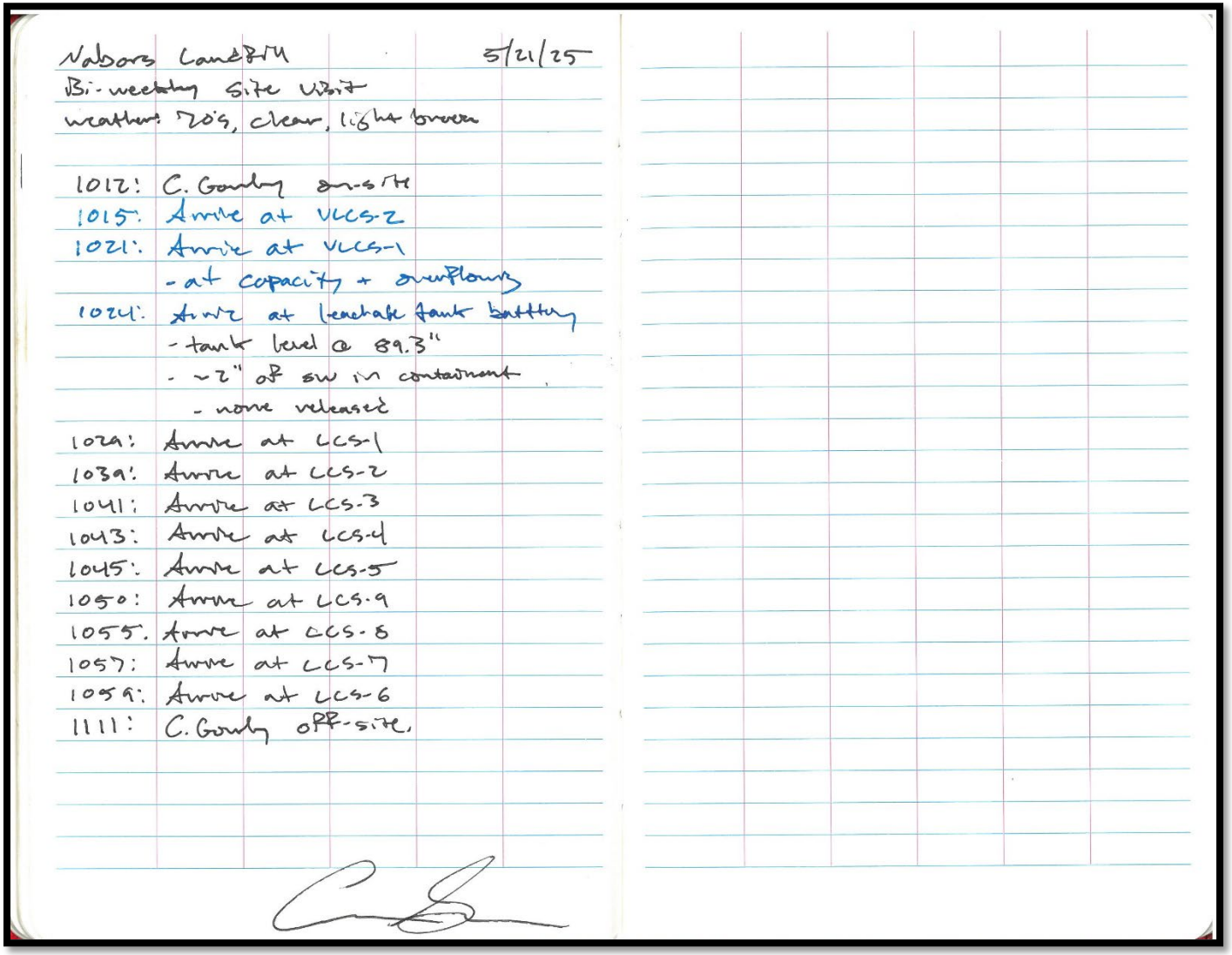
Photograph 4: View of repaired closure turf around a PRV on the north side of Area 1-2.

Photograph 5: View of closure turf repair at LCS-4 sump.

Photograph 6: View of coating added to closure turf wrinkles on north side Area 1-2.

Attachment C

Field Notes and Leachate Collection System Status Inspection Form



Nabors Landfill 5/21/25
Bi-weekly Site Visit
weather: 70's, clear, light breeze

1012: C. Gourley on-site
1015: Arrive at VLCS-2
1021: Arrive at VLCS-1
- at capacity + overflowing
1024: Arrive at leachate tank battery
- tank level @ 89.3"
- ~2" of sw in containment
- none released
1029: Arrive at LCS-1
1039: Arrive at LCS-2
1041: Arrive at LCS-3
1043: Arrive at LCS-4
1045: Arrive at LCS-5
1050: Arrive at LCS-9
1055: Arrive at LCS-8
1057: Arrive at LCS-7
1059: Arrive at LCS-6
1111: C. Gourley off-site.

Harbor
A Terracon Company

Harbor

Leachate Collection System Status

Date: 5/21/25 **Arrival Time:** 1012 **Location:** NABORS Landfill **Leachate Tank Battery Level (inches):** 89.3"

Weather Conditions: 70's, clear, light breeze

Panel Number	Display Functioning (Yes/No)	Leachate Level (inches)	Green Flashing? (Yes/No)	Amber Flashing? (Yes/No)	Red Flashing? (Yes/No)	Working in Hand? (Yes/No)	Working in Auto? (Yes/No)	VFD Status	Hours	Alarm	Comments
VLCS-1	N/A	N/A	N/A	N/A	N	N	N	N/A	N/A	N/A	Sump status: at capacity
VLCS-2	N/A	N/A	N/A	N/A	N	Y	Y	N/A	N/A	N/A	Sump status: 1/2 full
LCS-1	N	—	—	—	—	—	—	—	—	—	Station not operational
LCS-2	Y	0.0	N	N	N	N	N	—	1853	Y	Pump fault
LCS-3	N	—	—	—	—	—	—	—	—	—	station not operational
LCS-4	N	—	—	—	—	—	—	—	—	—	" "
LCS-5	Y	9.7	N	N	N	N	N	—	0	N	Station OK
LCS-6	N	—	—	—	—	—	—	—	—	—	Station not operational
LCS-7	Y	0.0	N	N	N	N	N	—	29	Y	Pump fault
LCS-8	N	—	—	—	—	—	—	—	—	—	Station not operational
LCS-9	N	—	—	—	—	—	—	—	—	—	" "
General Comments:											

5800 Evergreen Drive • Little Rock, Arkansas 72205 • Phone 501.663.8800 • Facsimile 501.588.0123
www.HarborEnv.com

Attachment D

Watershed Geo Report

WG Watershed Geo®
Unearthing Solutions

May 19, 2025

Clay McDaniel
Arkansas Energy & Environment
Division of Environmental Quality – Office of Land Resources
Assessment and Remediation
5301 Northshore Drive
North Little Rock, AR 72118

Vía Email: clay.mdaniel@arkansas.gov

Subject: Summary of Corrective Measures
Nabors Landfill
Baxter County, AR

Dear Mr. McDaniel,

This document provides a summary of site maintenance activities conducted at the Nabors Landfill facility, located at 1320 Landfill Road, Mountain Home, Arkansas 72653. These maintenance activities were implemented in response to observations made during a site evaluation on March 21, 2024, to mark the conclusion of the 5-year monitoring period for the ClosureTurf® system, as initially outlined in our letter dated April 16, 2019.

The corrective actions were implemented during two site visits: September 23–25, 2024 and December 17–19, 2024. These corrective actions were performed by Cline Environmental under the direction of Watershed Geo® and were based on the scope of work provided in our letter dated June 14, 2024 (provided as Attachment A for your convenience).

Based on observations during the site visit on March 21, 2024, the maintenance activities to be completed were:

- Repair approximately five areas of bird damage by removing and replacing engineered turf, welding new turf edges to existing turf, and infilling with specified aggregate infill and a bound infill product (HydroBinder® or UltraArmor™);

- Conduct a reevaluation of the passive relief vents (PRV) and infill displacement for movement or damage; and
- Place DuraGuard® protection over observed wrinkles and seam separations as needed.

Below is a summary of work completed during each of three site visits:

September 23–25, 2024: Watershed Geo® and Cline Environmental visually assessed Cells 1-2, 1-3 and 1-4. Bird damage, wrinkles and seam separation locations for DuraGuard® protection were noted for corrective action. Examples of bird damage are presented in Figure 1 and Figure 2. Cline Environmental subsequently repaired bird damage by removing and replacing engineered turf, welding new turf edges to existing turf, and infilling with specified aggregate infill and UltraArmor™. Corresponding examples of repaired bird damage are presented in Figure 3 and Figure 4. Other site bird damage locations were addressed in a similar manner.

Figure 1. Bird damage around PRV

Figure 2. Bird damage at previously repaired location

Figure 3. Repairing bird damage around PRV

Figure 4. Repairing bird damage at previously repaired location

Cline Environmental also applied DuraGuard® protection at observed wrinkles in the perimeter ditch, seam separations and locations of bird damage repair as presented in Figure 5 and Figure 6.

Figure 5. DuraGuard® and infill application to wrinkles

Figure 6. DuraGuard® and infill application after bird damage repair at PRV

October 10, 2024: Watershed Geo® conducted a follow-up evaluation of Cells 1-2, 1-3, and 1-4. Maintenance activities had been completed on Cells 1-3 and 1-4. On Cell 1-2, items still requiring maintenance were identified.

December 17–19, 2024: Cline Environmental returned to complete the repairs identified October 10, 2024. Additional completed repairs were:

- Repaired bird damage around the gas well on the northwest slope as presented in Figure 7 and Figure 8;

Figure 7. Bird damage at gas well

Figure 8. Confirming ClosureTurf® bird damage repair at gas well on NW slope

- Addressed turf tears and wrinkles due to settlement near leachate piping on the south slope with new ClosureTurf®, infill, and UltraArmor™ as presented in Figure 9 and Figure 10; and

Figure 9. Settlement induced wrinkles and torn ClosureTurf® at leachate piping on south slope

Figure 10. Repaired wrinkles and torn ClosureTurf® at leachate piping on south slope

- Completed seam repair on the west area of the top deck and ridge as presented in Figure 11 and Figure 12.

Figure 11. Seam repair on Cell 1-2

Figure 12. UltraArmor™ application to repaired seam

Also, Watershed Geo® reassessed the infill displacement and pressure valve relief systems to check for signs of movement or damage. This assessment revealed no issues requiring repair.

Please do not hesitate to reach out should you have any questions or need additional documentation. Thank you.

Sincerely,

Bradford H. Cooley, PE (Licensed in California)
Senior Vice President
Watershed Geo

Copy To: Bryan Scholl (Watershed Geo)
Robert Buzzell (Watershed Geo)
Jeff Albright (Watershed Geo)

Attachment

Attachment A

Letter from Watershed Geo® to ADEQ dated June 14, 2024

WG Watershed Geo®
Unearthing Solutions

WG Watershed Geo®
Unearthing Solutions

June 14, 2024

Clay McDaniel
Arkansas Energy & Environment
Division of Environmental Quality
5301 Northshore Drive
North Little Rock, AR 72118

Via Email: mcdaniel@adeq.state.ar.us

Subject: Site Visit
Nabors Landfill
Baxter County, AR

Dear Mr. McDaniel,

Watershed Geo® (WG) performed a site visit to Nabors Landfill on March 21st, 2024. Present for the site visit for WG were Bob Buzzell, Bryan Scholl, and me. We met you on-site as well as Chuck Seaton of the Ozark Mountain Solid Waste District.

The purpose of the visit was to evaluate the condition of the ClosureTurf® system prior to the end of our 5-year monitoring period as outlined in our letter dated April 16, 2019. At this site visit we observed the following:

In general, the ClosureTurf system is performing very well. The following items were observed during our site visit:

- There are areas of bird damage to the engineered turf layer. We observed approximately five (5) areas. Photos of the bird damage are shown in Attachment A – Photos 1, 2, and 3. The largest observed area of bird damage was approximately 10-ft by 10-ft as shown in Photo 3.
- The Passive Relief Vents (PRVs) appear to be in good condition with no observed movement or damage.
- The specified granular infill for the engineered turf is in place with no large areas of displacement or movement.
- The wrinkles previously noted along the north and west slopes of Area 1-2 do not appear to have changed since previous site visits.

11400 Atlantis Place, Ste 200
Alpharetta, GA 30022
770-777-0386
www.watershedgeo.com

- The storm water inlet structure on the south side of Area 1-2 is settling, cracked, and undermined. See Photos 4, 5 and 6 in the Attachment A. This structure is not a part of the ClosureTurf system. If it continues to settle and undermine, it will impact the ClosureTurf and cause significant damage to the cover system, landfill storm water system, and landfill access road. WG suggests that ADEQ have this inlet structure repaired.

To address the above items, WG will schedule and perform a maintenance event to close out our 5-year monitoring commitment. The event will most likely be in August or September 2024. During this maintenance event, WG will walk the site to evaluate areas that may need repairs. WG will perform the following:

- Fix the bird damage by replacing the engineered turf, welding the edges of the new turf to existing turf, and infilling the turf with a bound infill product (i.e., HydroBinder® or UltraArmor™).

- Repair or replace damaged PRVs. None were noted on our site visit, but WG will evaluate again.

- Replace infill in areas where there is no specified granular infill, and the backing geotextile of the engineered turf is exposed. No areas of infill displacement were noted on our site visit, but WG will evaluate again.

- Place DuraGuard™ protection on wrinkles as needed.

In the coming months, WG will coordinate with you to schedule the maintenance event. If you have any questions, or need additional information, please do not hesitate to contact me. Thank you.

Regards,

Bradford H. Cooley, PE (Licensed in California)
Senior Vice President
Watershed Geo

Copy to: Jarrod Zweifel, PG - ADEQ

Attachment

Attachment A

Photos from Site Visit on March 21, 2024
Nabors Landfill

WG WatershedGeo® Unearthing Solutions

Photo 1 – Bird Damage of Engineered Turf

Photo 2 – Bird Damage of Engineered Turf

Photo 3 – Bird Damage of Engineered Turf Around Passive Relief Vent (PRV)

Photo 4 – Storm Water Inlet Structure

Photo 5 – Storm Water Inlet Structure

Photo 6 – Storm Water Inlet Structure

End of Report