

AFIN: 72-00144

PMT#: 0290-S1-R4

**Received**

By Haley Griffith at 9:22 am, Dec 4, 2023

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**Haley Griffith (adpce.ad)**

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**From:** Steve Jett <steve.jett@jettenviro.com>  
**Sent:** Tuesday, November 28, 2023 9:24 AM  
**To:** gwreports  
**Cc:** Reynolds, Jodi; Ciara Childers Beavers; Travis Doll; Michael Caldwell  
**Subject:** Corrective Action Monitoring Plan, Eco-Vista Class 1 Landfill, Solid Waste Permit No. 0290-S1-R4  
**Attachments:** 2023-11-28 Eco-Vista - Updated CAMP.pdf

On behalf of Eco-Vista, LLC, Jett Environmental Consulting is submitting the attached updated Corrective Action Monitoring Plan.

If you have any questions or comments regarding this submittal, please do not hesitate to contact us.

Sincerely,

**Steve Jett, P.G.**

**Owner**

***Jett Environmental Consulting***

*18 Lexington Oaks Court*

*Foristell, MO 63348*

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November 28, 2023

**Submitted via Electronic Mail**

Mr. Aaron Baggett, Geologist  
Arkansas Department of Energy and Environment  
Division of Environmental Quality  
5301 Northshore Drive  
North Little Rock, AR 72118

**Re: Updated Corrective Action Monitoring Plan  
Eco-Vista, LLC, Class 1 Landfill  
AFIN: 72-00144, Permit No.: 0290-S1-R4**

Dear Mr. Baggett:

On behalf of Eco-Vista, LLC, Jett Environmental Consulting is pleased to submit an updated Corrective Action Monitoring Plan. Section 6.0 of the Plan includes an updated schedule for meeting remediation goals.

**Professional Geologist Certification**

I certify that I am a qualified groundwater scientist who has received a baccalaureate or post-graduate degree in the natural sciences and am registered in the State of Arkansas. I have sufficient training and experience in geology, geohydrology, and groundwater hydrology that enable me to make sound professional judgments regarding groundwater monitoring, contaminant fate and transport, and corrective action.

I further certify that this plan was prepared by me or by a subordinate working under my direction.

If you have any questions or comments, please contact me at [steve.jett@jettenviro.com](mailto:steve.jett@jettenviro.com) or 314-496-4654.

Sincerely,



Steve Jett, P.G. No. 1826  
Owner

A handwritten signature in blue ink that reads "Travis Doll".

Travis Doll  
Senior Geologist

Attachment: *Corrective Action Monitoring Plan*

cc: *Jodi Reynolds – WM (PDF via Email)*

# **CORRECTIVE ACTION MONITORING PLAN**

**Eco-Vista Landfill  
Eco-Vista, LLC  
2210 Waste Management Drive  
Springdale, Arkansas 72762**

**Permit Number: 0290-S1-R4  
AFIN: 72-00144**

**Updated  
November 2023**

**Prepared by:**



**18 Lexington Oaks Court  
Foristell, MO 63348**

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## 1.0 INTRODUCTION

Eco-Vista, LLC operates the Eco-Vista Class 1 Municipal Solid Waste Landfill under Solid Waste Permit Number 290-S1-R4 (Permit) issued on July 31, 2023. This updated Corrective Action Monitoring Plan (CAMP) was prepared in accordance with the Permit and the Arkansas Department of Energy and Environment, Division of Environmental Quality (DEQ) Regulation 22.

The Eco-Vista Landfill is currently in a groundwater assessment/corrective action monitoring program pursuant to DEQ Regulation 22.1205/1206. All procedures detailed in this document are designed to provide an accurate representation of groundwater quality at groundwater wells installed at the site and to be protective of human health and the environment.

A Selection of Corrective Measures Remedy (SCMR) report dated May 21, 2004 (Document identification Number (DIN) 23274) was approved by DEQ in a letter dated June 4, 2004 (DIN 23365). In the SCMR report, Genesis Environmental Consulting, Inc. identified that the cause of the concentrations in groundwater greater than the respective GWPS was landfill gas (LFG). Volatile organic compounds (VOCs) entrained within the LFG was the source of vinyl chloride impacts whereas the carbon dioxide within the LFG can alter groundwater pH and/or redox conditions such that naturally occurring cadmium in soils are dissolved.

The original CAMP, dated November 17, 2004 (DIN 24866), was prepared by Genesis Environmental Consulting, Inc. The following is a list of historical Corrective Action Program documents:

DIN	Date	Origin	Subject
23274	5/21/2004	Facility	Selection of Corrective Measures Remedy
23365	6/4/2004	DEQ	Approval for Corrective Measures Remedy
23572	7/1/2004	Facility	Schedule for Corrective Measures Remedy
23792	7/28/2004	DEQ	Approval of Schedule for Corrective Measures Remedy
24866	11/17/2004	Facility	Corrective Action Monitoring Plan
25189	12/16/2004	DEQ	Approval of Corrective Action Monitoring Plan
60765	8/23/2011	Facility	Status of Groundwater Corrective Action
65639	3/10/2014	DEQ	Response to 8/23/2011 Status of Groundwater Corrective Action
65929	5/12/2014	Facility	Workplan for Installation of Additional Nature & Extent (NE) Wells in the Vicinity of MW-8N (Addendum to Status of Corrective Action Investigation)
66045	6/12/2014	Facility	Response on Status of Corrective Action Gas Extraction System
69516	5/5/2016	DEQ	Conditional Approval of Plan for Modifications to the Gas Extraction System
70569	11/04/2016	Facility	Nature & Extent Characterization Work Plan
73049	1/19/2018	Facility	Nature & Extent Characterization Report, Phase 2
74217	7/8/2018	DEQ	Review of Phase 2 Report
74554	9/13/2018	Facility	Response to 7/8/2018 DEQ Review of Phase 2 Report
74635	9/28/2018	DEQ	Response to 9/12/2018 Response to DEQ Review of Phase 2 Report
75678	2/28/2019	Facility	Nature & Extent Work Plan, Phase 3
80807	9/7/2021	Facility	Nature & Extent Investigation Report, Phase 3
81917	5/18/2022	Facility	Status of Groundwater Corrective Action

Condition No. 49 of Permit Number 290-S1-R4 (effective July 31, 2023) stated the following:

- b. An updated schedule for meeting remediation goals will be submitted within 120 days of the effective date of this final permit.*
- c. An updated “Corrective Action Monitoring Plan” will be submitted to the Division for review within 120 days of the effective date of this final permit.*

This updated CAMP is intended to provide items b. (see **Section 6.0**) and c. of Condition No. 49 of Permit Number 290-S1-R4.

## 2.0 SITE LOCATION

The facility is located at 2210 Waste Management Drive, approximately 2.5 miles south of Tontitown, primarily within Section 23, Township 17 North, Range 31 West, Washington County, Arkansas. **Figure 1** presents the location of the Eco-Vista Landfill.

## 3.0 CURRENT GROUNDWATER QUALITY

Review of data through the most recent quarterly sampling event (Third Quarter 2023, conducted in July 2023) indicates the following wells/constituents exceeded the established Groundwater Protection Standards (GWPSs) (highlighted in yellow below):

<b>GWPS EXCEEDANCES THIRD QUARTER 2023 SAMPLING EVENT ECO-VISTA LANDFILL</b>			
Well	Date	Cadmium (mg/L)	Cobalt (mg/L)
<b>GWPS</b>		<b>0.005</b>	<b>0.006</b>
Assessment Monitoring Wells			
MW-3N	07/07/23	0.00698	<0.003
MW-8N	07/07/23	0.00758	<0.003
MW-21	07/07/23	0.00367	0.0132
LGW-5	07/10/23	<0.001	0.00986
LGW-6	07/10/23	0.00188	0.0245
LGW-9	07/10/23	0.0137	<0.003
LGW-10	07/10/23	<0.001	0.0273
Nature & Extent Wells			
NE-5	07/06/23	<0.001	0.0276
NE-5E	07/06/23	0.0171	0.0240
NE-5W	07/06/23	<0.001	0.0204
NE-9	07/05/23	0.0126	<0.003

Based on the table above, the following Assessment Monitoring Wells exceeded a GWPS: cadmium at LGW-9, MW-3N, and MW-8N; and cobalt at LGW-5, LGW-6, LGW-10, and MW-21. At the site it has been previously demonstrated that the carbon dioxide within the LFG can alter groundwater pH and/or redox conditions such that naturally occurring cadmium and cobalt in soils are dissolved. **Figure 2** provides a map displaying the site well locations.

No VOC concentrations currently (as of July 2023 event) exhibit concentrations above a GWPS. Only one VOC has been consistently detected during recent events: 1,4-dichlorobenzene at LGW-10. However, LGW-10 (an interior point of compliance well) is installed immediately adjacent to

the unlined pre-Subtitle D waste cells identified in historical documentation as Site 4. The concentrations of 1,4-dichlorobenzene have been decreasing and were detected only slightly above the laboratory quantitation limit (1.0 ug/L) at LGW-10 during the Third Quarter 2023 event (1.57 ug/L), which is well below the GWPS (75 ug/L). Assessment Monitoring wells and Corrective Action monitoring wells directly downgradient of LGW-10 do not exhibit VOC detections. Remedy is not required or recommended due to the location of LGW-10 and lack of detections in downgradient point-of-compliance wells. Therefore, this CAMP will address the cadmium and cobalt GWPS exceedances in groundwater.

## 4.0 CORRECTIVE MEASURES REMEDY

### Current Status of Corrective Measures Remedy

As noted in previous reports, the source of cadmium is not believed to be attributable to landfill leachate, but to be caused by carbon dioxide mixing with the groundwater, which results in a pH change that dissolutions weathered soils causing cadmium to be released into the groundwater. This idea has been discussed in detail in the past with DEQ and is based on a demonstration submitted to DEQ in December 2002 (Alternative Source Demonstration for Cadmium at Waste Management's Tontitown Sanitary Landfill, December 2002 (DIN 19007)). In addition, this concept has been confirmed in a similar study on the impact of LFG carbon dioxide on cadmium levels from uncontaminated native soils, which were also remedied with gas extraction ("Evaluation and Mitigation of Landfill Gas Impacts on Cadmium Leaching from Native Soils," Ground Water Monitoring & Remediation, Journal 27/No. 4/Fall 2007/Pages 99–109).

Regarding cobalt, as reported in the USGS 2013 Document "*Geochemical and Mineralogical Data for Soils of the Conterminous United States*", Appendix 4a, cobalt was detected in native Arkansas soils ranging from 1.8 to 20.2 mg/kg in "C" (deeper) horizon from more than 60 samples collected. According to the Agency for Toxic Substances and Disease Registry (ATSDR) *Public Health Statement for Cobalt* (dated April 2004), cobalt is a naturally-occurring element with small amounts found naturally in most rocks, soil, water, plants, and animals. For most people, food is the largest source for the intake of cobalt (the non-radioactive isotope form). A biochemically important cobalt compound is vitamin B12, which is essential for good health in animals and humans. Metals in soil and bedrock can easily leach into the groundwater, especially if the groundwater is acidic (pH < 7.0 SU). Cobalt is considered somewhat mobile in acidic soils but less mobile as pH reaches neutrality. Each of the groundwater samples from the site with cobalt GWPS exceedances during the most recent event exhibited pH values below 7.0 SU. The occurrence and levels of cobalt at the site has no indication of being related to a release from the waste unit.

Between 2007 and the present, the site has made several modifications and adjustments to the Gas Collection and Control System (GCCS) in an attempt to reduce the cadmium/cobalt concentrations. These changes included increasing the vacuum flow, installation of additional flares, and the separation of out-of-refuse extraction wells from the main system to isolate areas in order to provide additional vacuum. The presence of carbon dioxide appears to increase the dissolved concentration of carbonic acid and decreases the groundwater pH in first encountered groundwater.

Based on this information, the site previously proposed to improve the efficiency of the removal of carbon dioxide at the gas extraction wells. Previously, the focus had been to remove the methane, which the wells have been efficient at accomplishing. Therefore, it was believed that if further adjustments were made to the system to lower the carbon dioxide concentrations, the cadmium/cobalt concentrations will lower over time. The site made modifications and is closely tracking the carbon dioxide in the wells.

During a previous Nature and Extent Investigation, the site implemented interim corrective measures by installing a GCCS, which included out-of-waste extraction wells. The first phase

commenced in March 2001 with improvements and expansions of the system completed in January and November 2002. **Figure 3** presents the locations of the out-of-waste extraction wells at the facility. These extraction wells fall into two categories, (1) Impact Mitigation, and (2) Preventative Migration.

The Impact Mitigation extraction wells are located in close proximity to monitoring wells or gas probes that indicated impacts during the initial phase of the corrective measures program. They were installed as interim corrective measures as defined in Regulation 22.1208(a)(3). In other words, the extraction wells were focused in areas of known elevated landfill gas in an attempt to avoid further impact and migration. Passive extraction wells were placed near MW-1N, NE-4, NE-5, and GP-1. Active extraction wells were placed near MW-7N, MW-8N, and NE-1.

The Preventative Migration wells were installed across identified fracture traces and intended to stop LFG migration near the source (natural barrier or clay-lined cells historically referred to as Site 3 and Site 4) from reaching the property boundary along known flow pathways. There are two areas of the site where these wells are currently located: (1) across fracture traces located in the southeast portion of site (MW-7N-EW-20, MW-7N-EW-21, MW-7N-EW-22, MW-7N-EW-24, OW-11A, OW-12, OW-12A, OW-13, OW-13A, OW-14, OW-14A, OW-16, OW-17, OW-18, and EW-64), and (2) across identified fracture traces northwest of the landfill unit (OW-1, OW-2, OW-3, OW-4, OW-21, OW-22, OW-23, OW-204, OW-205, OW-206, OW-207, and OW-208). These preventative migration extraction wells are all part of the active on-going remediation efforts.

### **Current GWPS Exceedances**

For the update of this CAMP, data through the most recent event (July 2023) was reviewed to determine if any additional actions are warranted. The original Corrective Measures program included the installation of an in-refuse and out-of-refuse Gas Collection and Control System (GCCS) (initiated in October 2001) and capping of older waste cells. Since 2004, system upgrades to the landfill gas system have controlled migration of LFG and reduced constituents detected greater than the GWPS for each Assessment Monitoring well with the exception of cadmium at LGW-9, MW-3N, and MW-8N; and cobalt at LGW-5, LGW-6, LGW-10, and MW-21 (as of the Third Quarter 2023 event). Attached as **Figure 2** is a potentiometric surface map from the most recent round of water levels collected (October 3, 2023).

In order to visualize the locations of the wells of concern, four “Areas” have been designated where groundwater issues have been identified. As illustrated on **Figure 2**, the four broadly independent “Areas” can be designated as follows:

<b>Area 1</b>	<b>Area 2</b>	<b>Area 3</b>	<b>Area 4</b>
(Eastern Wells)	(Southeastern Wells)	(Southcentral Wells)	(Southwestern Wells)
LGW-5	MW-7N	MW-8N	MW-3N
LGW-14R	NE-3	NE-6 / NE-6D	NE-13
LGW-6	NE-5 / NE-5E / NE-5W	NE-2	NE-10D
NE-14D / NE-14S	NE-11	NE-12	
LGW-7		NE-7	
LGW-8R		MW-21	
NE-9		MW-10N	
LGW-10		NE-8	
LGW-9		NE-1	
NE-15D / NE-15S			

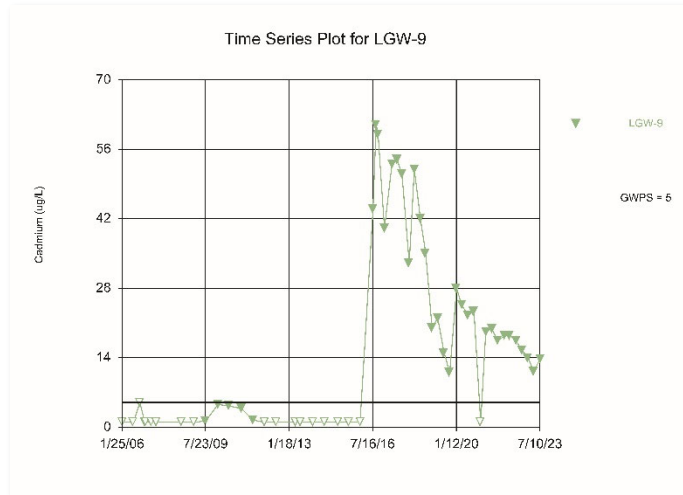
The following is a detailed summary of the current GWPS exceedances as of the Third Quarter 2023 event.



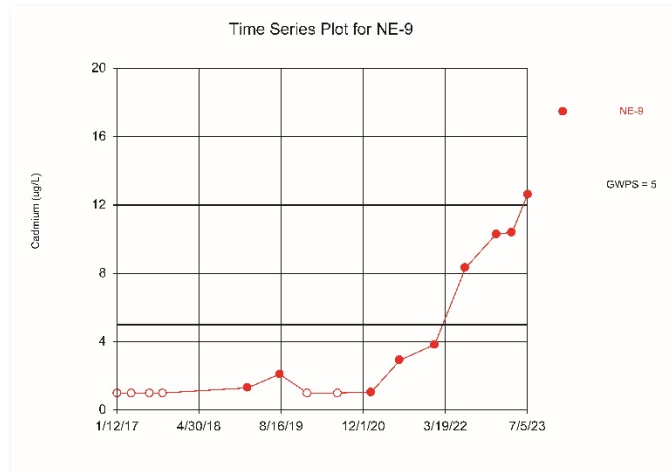
## Cadmium

### Cadmium at LGW-9

The Third Quarter 2023 concentration of cadmium at LGW-9 (13.7 ug/L) was above the GWPS (5 ug/L). Cadmium was first detected at LGW-9 in Second Quarter 2016 (44 ug/L), peaked in Third Quarter 2016 (61 ug/L), and has been trending downward since. NE wells NE-15S and NE-15D are located directly downgradient of LGW-9; however, well NE-15S is typically dry each event and has only been sampled once (Second Quarter 2000, cadmium 2.58 ug/L). NE-15D has been sampled each event since Fourth Quarter 2019 and has been reported as non-detect for cadmium.

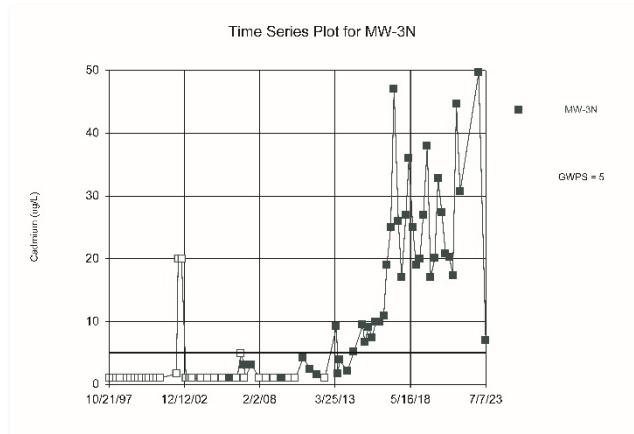


Well NE-9 is sidegradient of LGW-9 and has exhibited recent cadmium concentrations above the GWPS. Well LGW-8R is immediately upgradient of NE-9 and cadmium is below the GWPS. It is recommended to increase in-waste gas extraction efforts in the southern and eastern portions of Cell 1 of the active Class 1 landfill.



### Cadmium at MW-3N

The Third Quarter 2023 concentration of cadmium at MW-3N (6.98 ug/L) was above the GWPS (5 ug/L). Cadmium was first detected above the GWPS at MW-3N in Second Quarter 2013 (9.2 ug/L), peaked in Second Quarter 2017 (47 ug/L), and has been reported at relatively stable levels since.

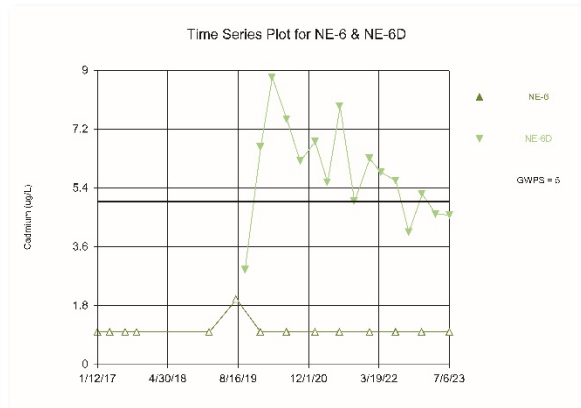
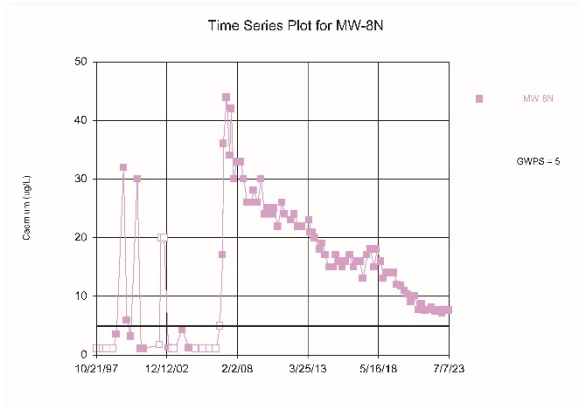


Well NE-13 is adjacent to MW-3N, was first sampled in Second Quarter 2019, and was reported as non-detect for cadmium each event through Third Quarter 2021, but has been dry since. Well NE-10D is located directly downgradient of MW-3N and was first sampled in Fourth Quarter 2019. Cadmium has been reported as non-detect each event at NE-10D.

As documented in the Nature and Extent Investigation Phase 3 Report (dated September 7, 2021 by FTN), there is no evidence of landfill leachate impacts at MW-3N and the cadmium concentrations may be related to well MW-3N damage from clearing and stockpiling activities near the well during phase 7 construction. It is recommended to utilize existing adjacent well NE-13 and downgradient wells MW-10N and MW-21 to replace MW-3N in the monitoring program.

**Cadmium at MW-8N**

The Third Quarter 2023 concentration of cadmium at MW-8N (7.58 ug/L) was above the GWPS (5 ug/L). Cadmium was first confirmed detected above the GWPS at MW-8N in First Quarter 2007 (36 ug/L), peaked in Third Quarter 2007 (44 ug/L), and has been reported at decreasing levels since. Wells adjacent to MW-8N (NE-6 and NE-6D) were below the GWPS for cadmium during Third Quarter 2023. Wells downgradient of MW-8N (NE-2 and NE-12) have been non-detect for cadmium.



**Cadmium at NE-5E**

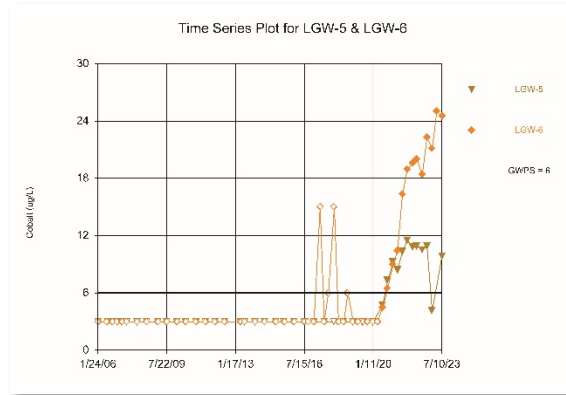
The Third Quarter 2023 concentration of cadmium at NE-5E (17.1 ug/L) was above the GWPS (5 ug/L) and has been decreasing since the peak concentration in Second Quarter 2020 (40.3 ug/L). No wells immediately upgradient of NE-5E (MW-7N and NE-3) or adjacent to NE-5E (NE-5 and NE-5W) exhibited a GWPS exceedance for cadmium. Well NE-11 is located downgradient of NE-

5E and was below the GWPS for cadmium. Therefore, the cadmium GWPS is limited to the immediate NE-5E area in the southeast portion of the site.

### **Cobalt**

#### **Cobalt at LGW-5 & LGW-6**

The Third Quarter 2023 concentrations of cobalt at LGW-5 (9.86 ug/L) and LGW-6 (24.5 ug/L) were above the GWPS (5 ug/L). Over the last couple of years, cobalt has been slightly increasing at LGW-6 and decreasing at LGW-5. The wells downgradient of LGW-5 and LGW-6 (NE-14S and NE-14D) have been non-detect for cobalt.

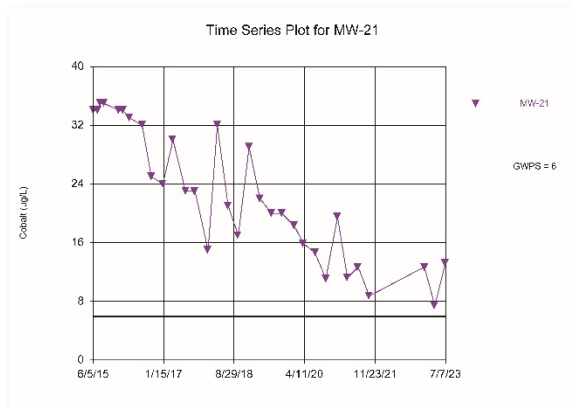


#### **Cobalt at LGW-10**

The Third Quarter 2023 concentration of cobalt at LGW-10 (27.3 ug/L) was above the GWPS (5 ug/L) and has been decreasing since the peak concentration in Second Quarter 2013 (130 ug/L). Wells downgradient of LGW-10 (LGW-9, MW-7N, and NE-15D) were below the GWPS for cobalt. Well NE-15S is typically dry each event and has only been sampled once (Second Quarter 2000, cobalt <3 ug/L).

#### **Cobalt at MW-21**

The Third Quarter 2023 concentration of cobalt at MW-21 (13.2 ug/L) was above the GWPS (6 ug/L). Cobalt was first detected at MW-21 during its initial sampling in Second Quarter 2015 (34 ug/L), peaked in Third Quarter 2015 (35 ug/L), and has been trending downward since.



Wells NE-1 and NE-8 are located directly downgradient of MW-21 and were first sampled in Third Quarter 2002 (NE-1) and First Quarter 2017 (NE-8). Cobalt has been reported as non-detect each event at NE-1 and has been non-detect at NE-8 since Third Quarter 2017.

#### Cobalt at NE-5, NE-5E, and NE-5W

The cobalt concentrations at NE-5 (27.6 ug/L), NE-5E (24.0 ug/L), and NE-5W (20.4 ug/L) were above the GWPS (6 ug/L) and have been reported at relatively stable levels over the last couple of years. However, no wells immediately upgradient of the NE-5-series wells (MW-7N and NE-3) exhibited a GWPS exceedance for cobalt. Well NE-11 is located downgradient of NE-5E and has been non-detect for cobalt. Therefore, the cobalt GWPS exceedances are limited to the immediate NE-5-series wells area in the southeast portion of the site.

In summary, cadmium and cobalt concentrations are below the respective GWPSs downgradient of the Assessment Monitoring wells of concern, suggesting that Corrective Actions to reduce LFG affects has been effective. However; NE-9 is sidegradient and has exhibited recent cadmium concentrations above the GWPS. It is recommended to increase in-waste gas extraction efforts in the southern and eastern portions of Cell 1 of the active Class 1 landfill. It is also recommended to increasing gas extraction efforts in the out-of-wase extraction system to the north of NE-5 series wells.

## **5.0 CORRECTIVE ACTION MONITORING PLAN**

In accordance with Regulation (Reg.)22.1208 (a), the objectives of the Corrective Action Monitoring Program are:

- Meet the requirements of the assessment monitoring program. Therefore the facility would continue assessment monitoring for a sub-set of wells (wells in assessment monitoring);
- Demonstrate the effectiveness of the corrective action; and
- Demonstrate compliance with GWPSs at points within the plume that lie outside the detection monitoring system.

#### Assessment Monitoring

While in assessment monitoring, the site will collect groundwater samples required by Reg. 22.1205(b) through (d) at the list of assessment monitoring wells, parameters, and frequencies is shown on **Table 1**. Analysis of groundwater samples will be performed as follows:

- Annually for the list of parameters included in Appendix 2 of Rule No. 22 plus chloride, total dissolved solids, sulfate, total organic carbon, pH, specific conductance, iron, and manganese at any well that had confirmed measured detections above the GWPS during the prior calendar year.
- Triennially for the list of parameters included in Appendix 2 of Rule No. 22 plus chloride, total dissolved solids, sulfate, total organic carbon, pH, specific conductance, iron, and manganese at all wells.
- Semiannually for the assessment monitoring constituent (AMC) list, which is comprised of any newly detected Appendix 2 parameters (from the triennial analysis) plus the parameters from Appendix 1 of Rule No. 22 and total organic carbon, iron, and manganese.

#### Nature and Extent/Corrective Action Monitoring

While the site is in assessment monitoring or corrective action, the list of NE-series wells shown on **Table 1** will be monitored for, at a minimum, the same list of parameters and at the same frequency as required by assessment monitoring. These wells will be sampled to monitor the progress of the corrective action (gas extraction). Analytical results from these events will be compiled in a table and data points plotted to observe trends and provided in the routine semi-annual report submittals.

### Corrective Action Completion

In accordance with Reg.22.1208(e), the remedies (Corrective Action) shall be considered complete when:

- All points of the contaminant plume that lie outside of the detection monitoring system are statistically below the groundwater protection standard for all Appendix 2 constituents. The site proposes to demonstrate compliance based on data collected from the NE-series wells.
- A confidence interval will be calculated based on samples over the most recent three year period from the NE-wells. Once the upper confidence limit (UCL) is less than the GWPS for the constituents of concern, the site will conduct a verification sampling event for the full Appendix 2 list to insure that all constituents are below the GWPS. Once the results of this event are determined and assuming no additional constituents are detected above the GWPS, the remedies will be considered complete at that individual well and sampling will cease. Once the remedies are determined to be complete at the NE-wells, DEQ will be notified within 14 days and a certification by the site and a qualified groundwater scientist will be placed in the operating record and submitted to DEQ.
- In the event an additional constituent from the Appendix 2 list is detected above the GWPS, the site will conduct a verification sampling event during the subsequent quarterly sampling event. If the constituent is confirmed detected above the GWPS, the site will submit a plan to DEQ to investigate the source and extent of this constituent.

Once the remedies (Corrective Action) are considered complete, the facility will return to Assessment Monitoring within the permitted monitoring system unless the requirement to return to Detection Monitoring can also be met. If during Assessment Monitoring a parameter is determined to statistically exceed a GWPS within an Assessment Monitoring well, the site will sample the NE well associated with that well. If the parameter found to statistically exceed the GWPS is not present in the NE well at a concentration above the GWPS, the facility will continue Assessment Monitoring with no further action necessary. The contaminant plume has previously been defined in the Nature & Extent Investigation Reports; therefore, there is no technical justification to proceed through the requirements of Reg.22.1205 (g), Reg.22.1206, or Reg.22.1207. If a contaminant plume had spread beyond the site monitoring system, the constituents would be present in the NE wells.

In the event a new constituent (e.g., not cadmium or cobalt) is present in the NE wells above the GWPS, the site will prepare and submit a workplan to define the nature and extent of the constituent of concern and a sampling program to monitor that constituent. This investigation will utilize all the information presented in the existing Nature & Extent Investigation Reports and is anticipated to be limited in nature. The site will also evaluate the source of the constituent and determine if alternative corrective measures (other than gas extraction) are necessary to remedy the constituent. This workplan and assessment of corrective measures will be submitted to DEQ for approval, if required.

### Corrective Action Data Evaluation

In addition to trend graphs, data evaluation during corrective action monitoring will consist of the establishment of Upper Confidence Limits (UCLs) as discussed in the site's Sampling and Analysis Plan. Once analytes have been detected at statistical levels below the GWPS (UCL below the GWPS) based on three years of analytical data, the selected remedy program will be considered complete in accordance with Reg.22.1207. The facility can then return to the Assessment Monitoring provisions of Reg.22.1205. Additionally, according to Reg.22.1205(e), the well can return to Detection Monitoring if Appendix 2 constituents are at or below background for two consecutive sampling events. If the concentrations of Appendix 2 constituents are above background values but below the GWPS then Assessment Monitoring will continue unless otherwise approved in writing by the DEQ.

## **6.0 UPDATED SCHEDULE FOR MEETING REMEDIATION GOALS**

The site submitted a Corrective Action Monitoring Plan in November 2004. The site has been following this plan since its submittal and believes the plan still provides a technically valid method of monitoring the on-going Corrective Action efforts at the facility. The site does not believe modification to the schedule is necessary at this time in regards to the Assessment Monitoring wells and Corrective Action (i.e., NE) wells. The in-waste and out-of-waste gas collection efficiency was the primary active remedy in place and appears to also be the most appropriate method moving forward.

### Remediation Goals:

- (1) No non-Appendix 1 parameters detected; and
- (2) All NE-wells are statistically below the GWPS (i.e., UCL less than the GWPS) for Appendix 2 constituents utilizing the most recent three years' worth of data.

Currently no non-Appendix 1 parameters are confirmed detected. Currently, various perimeter NE-wells exhibit a UCL over a GWPS for either cadmium (NE-5E and NE-9) or cobalt (NE-5, NE-5E, and NE-5W).

### Proposed Actions

To address cadmium concentrations at NE-9, it is recommended to increase in-waste gas extraction efforts in the southern and eastern portions of Cell 1 of the active Class 1 landfill. It is also recommended to increasing gas extraction efforts in the out-of-wase extraction system to the north of NE-5 series wells.

### Updated Schedule

It is anticipated the additional gas extraction efforts can be fully initiated within six months of DEQ approval of the recommended action. Once implemented, one year of monitoring will continue to determine the rate of decrease for the respective cadmium and cobalt concentrations. At that point, an updated schedule will be provided to DEQ with a more accurate estimate of the amount of time it will likely take to achieve concentrations below the respective GWPSs.

## TABLES

**TABLE 1  
LIST OF GROUNDWATER MONITORING WELLS, PARAMETERS, & FREQUENCY  
ECO-VISTA LANDFILL**

Program:	Indicator Monitoring	Detection Monitoring	Assessment Monitoring	Nature and Extent/Corrective Action	Monitor and Report
<b>Frequency and Parameters:</b>	Monthly analysis of chloride, ammonia, pH, and specific conductance	Semiannual <sup>(1)</sup> analysis of Appendix 1 plus TOC, iron, and manganese	Semiannual analysis of AMC list plus iron, manganese and TOC <sup>(1)</sup> ; Annual or triennial <sup>(2)</sup> analysis of Appendix 2 plus chloride, TDS, sulfate, TOC, pH, specific conductance, iron, and manganese	Follow Assessment Monitoring schedule	Semiannual analysis of iron, manganese, TOC, hardness and AMC list (while site is in Assessment Monitoring) or Appendix 1 (while site is in Detection Monitoring)
<b>Sample Locations:</b>		MW-1N	MW-1N	NE-1	
		MW-2N	MW-2N	NE-2	
		MW-3N	MW-3N	NE-4	
	MW-7N	MW-7N	MW-7N	NE-5	
		MW-8N	MW-8N	NE-5E	
		MW-10N	MW-10N	NE-5W	
		MW-11N	MW-11N	NE-6	
	MW-15	MW-15	MW-15	NE-6D	
	MW-16	MW-16	MW-16	NE-7	
	MW-17	MW-17	MW-17	NE-8	
	MW-19	MW-19	MW-19	NE-9	
		MW-20	MW-20	NE-10D	
		MW-21	MW-21	NE-11	
		MW-22 <sup>(3)</sup>		NE-12	
		MW-23 <sup>(3)</sup>		NE-13	
		MW-24 <sup>(3)</sup>		NE-14D	
		MW-25 <sup>(3)</sup>		NE-14S	
	LGW-2	LGW-2	LGW-2	NE-15D	
	LGW-3R	LGW-3R	LGW-3R	NE-15S	
	LGW-4	LGW-4	LGW-4		
LGW-5	LGW-5	LGW-5			
LGW-6	LGW-6	LGW-6			
LGW-7	LGW-7	LGW-7			
LGW-8R	LGW-8R	LGW-8R			
LGW-9	LGW-9	LGW-9			
LGW-10	LGW-10	LGW-10			
LGW-14R	LGW-14R	LGW-14R			
					Wildcat Creek

(1) In accordance with Permit Condition 38(b), semiannual events must be performed during the first and third quarters, with resample events performed during the second and fourth quarters as needed.

(2) Annual analysis of Appendix 2 parameters to be collected at wells with an exceedance above a GWPS during the prior calendar year. Triennial analysis of Appendix 2 parameters is required at all 27 wells.

(3) MW-22 through MW-25 are pending installation. In accordance with Section 4.6 and Permit Condition 38(b), the newly installed wells will be sampled quarterly until sufficient data has been collected to establish background, then sampled quarterly for the AMC list, plus iron, manganese, and total organic carbon, as outlined in Permit Condition 38(b) and triennially for the Appendix 2 parameters, plus chloride, total dissolved solids, sulfate, total organic carbon, pH, specific conductance, iron, and manganese.



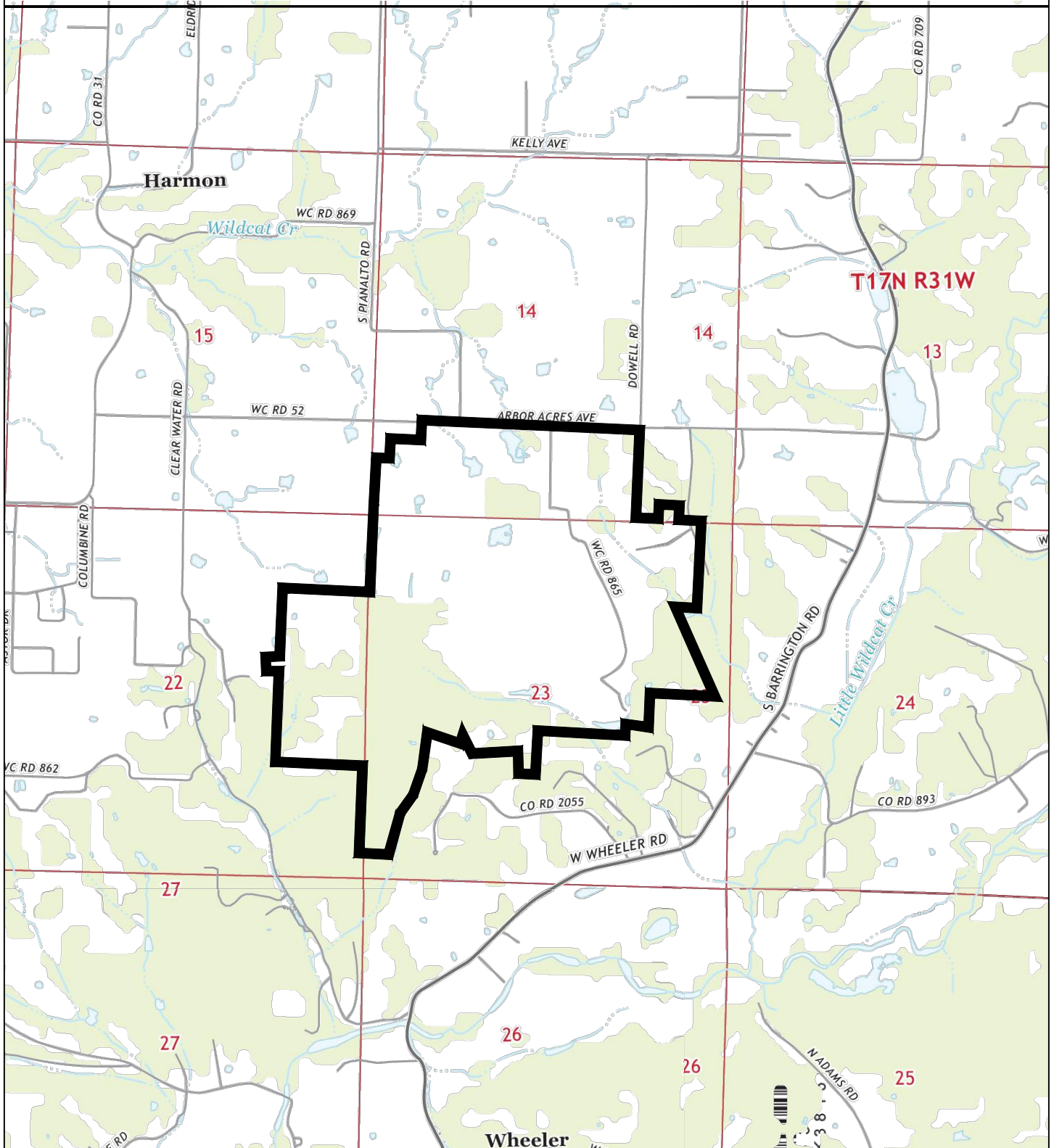
## FIGURES

- NOTES:  
 1. Topography Maps are 7.5-Minute Series of the  
 2. Springdale, Fayetteville, Robinson, & Wheeler, AR Quadrangles

LEGEND

 Property Boundary  
 (Approximate)

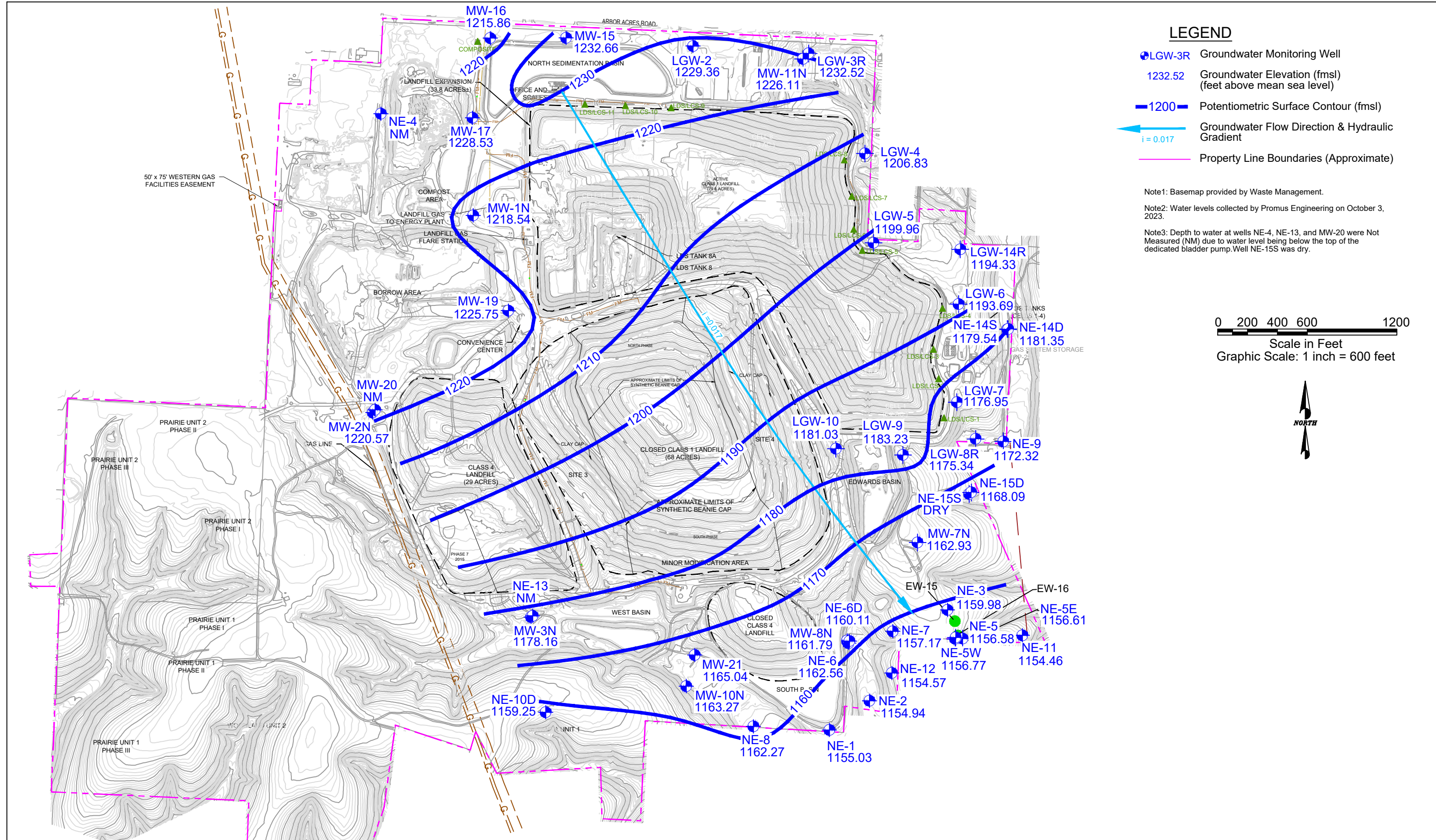
0 500 2000  
 Scale in Feet



18 Lexington Oaks Court  
 Foristell, MO 63348  
 314-496-4654  
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Eco-Vista Landfill  
 Springdale, Arkansas

Figure 1  
 Site Location Map



**LEGEND**

- LGW-3R Groundwater Monitoring Well
- 1232.52 Groundwater Elevation (fmsl)  
(feet above mean sea level)
- 1200— Potentiometric Surface Contour (fmsl)
- ← Groundwater Flow Direction & Hydraulic Gradient  
*i* = 0.017
- Property Line Boundaries (Approximate)

Note1: Basemap provided by Waste Management.  
 Note2: Water levels collected by Promus Engineering on October 3, 2023.  
 Note3: Depth to water at wells NE-4, NE-13, and MW-20 were Not Measured (NM) due to water level being below the top of the dedicated bladder pump. Well NE-15S was dry.

0 200 400 600 1200  
 Scale in Feet  
 Graphic Scale: 1 inch = 600 feet



**Figure 2**  
**Potentiometric Surface Map, Fourth Quarter 2023 Event**  
**Eco-Vista Landfill, Springdale, Arkansas**

FIGURE 3:  
GCCS LAYOUT

