FIFTH FIVE-YEAR REVIEW REPORT FOR DORNEY ROAD LANDFILL SUPERFUND SITE BERKS AND LEHIGH COUNTIES, PENNSYLVANIA

MAY 2023

Prepared by

U.S. Environmental Protection Agency
Region 3
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LIST OF ABBREVIATIONS AND ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIC	Community Involvement Coordinator
COC	Contaminant of Concern
DCA	Dichloroethane
DCE	Dichloroethene
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
FYR	Five-Year Review
HI	Hazard Index
IC	Institutional Control
ICIAP	Institutional Control Implementation and Assessment Plan
MCL	Maximum Contaminant Level
µg/L	Micrograms per Liter
mg/L	Milligrams per Liter
NA	Not Applicable
NCP	National Contingency Plan
ND	Non-Detect
NPL	National Priorities List
O&M	Operations and Maintenance
OU	Operable Unit
PADEP	Pennsylvania Department of Environmental Protection
PADER	Pennsylvania Department of Environmental Resources
PAH	Polycyclic Aromatic Hydrocarbon
PCE	Tetrachloroethylene
PRP	Potentially Responsible Party
RAO	Remedial Action Objective
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
RSL	Regional Screening Level
SDWA	Safe Drinking Water Act
TCE	Trichloroethylene
UAO	Unilateral Administrative Order
UU/UE	Unlimited Use and Unrestricted Exposure
VOCs	Volatile Organic Compounds

I. INTRODUCTION

The purpose of a five-year review (FYR) is to evaluate the implementation and performance of a remedy to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this FYR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii)) and considering EPA policy.

This is the fifth FYR for the Dorney Road Landfill Superfund site (the Site). The triggering action for this statutory review is the completion date of the previous FYR. The FYR has been prepared because hazardous substances, pollutants or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The Site consists of two operable units (OUs). OU1 addresses the landfill and wetlands and OU2 addresses groundwater contamination. This FYR Report addresses both OUs.

EPA's remedial project manager (RPM) David Greaves led the FYR. Additional participants from EPA included EPA's community involvement coordinator (CIC) John Brakeall, Site toxicologist Linda Watson, and the Site hydrogeologist Herminio Concepcion. Ronald Schock from the Pennsylvania Department of Environmental Protection (PADEP - Northeast Region) also participated in the review. Skeo provided EPA contractor support for this FYR. The potentially responsible party (PRP) was notified of the initiation of the FYR. The review began on September 8, 2022.

Appendix A lists the resources referenced during the development of this FYR Report. Appendix B provides a chronology of major site events.

Site Background

The Site is located mostly in southwest Upper Macungie Township, Lehigh County, Pennsylvania. Part of the Site extends into Longswamp Township in Berks County (Figure 1). The Site is an abandoned open pit iron mine that was used as a municipal and industrial landfill from 1952 to 1978. The Pennsylvania Department of Environmental Resources (PADER, now PADEP) inspected the 27-acre landfill in 1970 and found that industrial sludge, batteries, and barrels of petroleum products were dumped on site.

The landfill is covered by an impermeable cap. The Site includes the capped landfill, a wetland south of the landfill and a drainage area north of the landfill. The wetland covers about 14 acres, including about 7 acres of open-water habitat. The wetland, which has a bottom liner, receives surface water from the southern portion of the landfill; it attracts waterfowl and contains many native plants and pollinators. The northern portion of the landfill drains to the North Basin area, which is a former sinkhole that was filled with gravel to capture stormwater runoff from the landfill.

Groundwater beneath the Site occurs in two aquifers, the overburden aquifer, and the bedrock aquifer. The Site is surrounded by farmland and rural residences, some of which use the bedrock aquifer under the Site as the primary source of drinking water. Some farmland near the Site is used to grow crops for human and animal consumption. Groundwater in both aquifers generally flows to the southeast. Under a residential monitoring program, EPA samples private drinking water wells at 39 homes southeast of the Site (Figure G-1 in Appendix G). Based on these results, residential wells are not impacted by site contamination. Municipal water supplies new housing developments in the area; the closest development is about 1,200 feet northeast of the landfill (Figure 1).

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Dorney Road Landfill		
EPA ID: PAD980508832		
Region: 3	**State:** Pennsylvania	**City/County:** Longswamp Township / Upper Macungie Township / Berks and Lehigh

SITE STATUS	
NPL Status: Deleted	
Multiple OUs? Yes	**Has the Site achieved construction completion?** Yes

REVIEW STATUS
Lead agency: EPA
Author name: David Greaves, with additional support provided by Skeo
Author affiliation: EPA Region 3
Review period: 9/8/2022 – 5/18/2023
Date of site inspection: 10/24/2022
Type of review: Statutory
Review number: 5
Triggering action date: 5/18/2018
Due date *(five years after triggering action date)*: 5/18/2023

Figure 1: Site Vicinity Map

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

In 1970, a PADER (now PADEP) representative visited the Site and noted an on-site sludge disposal area. Further visits identified that disposal of petroleum products, asbestos and battery casings had occurred on Site. EPA proposed listing the Site on the Superfund program's National Priorities List (NPL) in September 1983. EPA finalized the Site's listing on the NPL in September 1984.

In 1988, EPA conducted the Site's Remedial Investigation and Feasibility Study (RI/FS). Buried and dumped waste contaminated soil at the landfill. On-site soils exceeded EPA's cancer and non-cancer hazard index (HI), primarily due to polycyclic aromatic hydrocarbons (PAHs), arsenic, lead and chromium. Contaminants in leachate and groundwater included ketones, 1,1-dichloroethene (1,1-DCE), 1,2-dichloroethane (1,2-DCA), trichloroethylene (TCE), tetrachloroethylene (PCE), vinyl chloride, benzene and arsenic. Both cancer and non-cancer groundwater risk substantially exceeded EPA's acceptable criteria. Risk at the Site was due to dermal contact and incidental ingestion of landfill soil, solid waste and on-site ponded waters (OU1) and residential exposure via ingestion of contaminated groundwater and inhalation of volatile contaminants while showering (OU2).

PADER conducted a second RI/FS in 1991 with a focus on groundwater. The results of the 1991 RI/FS confirmed the results of the 1988 RI/FS. During the 1991 RI/FS, residential wells were sampled. Volatile organic compounds (VOCs) were detected; however, inorganics were not detected in any residential wells. The results indicated current risks to residents did not exceed EPA's acceptable risk range for cancer or EPA's target hazard quotient of 1 for noncancer risk.

Response Actions

EPA conducted an emergency removal action in June 1986 at PADER's request. The removal action objective was to regrade the Site to collect and contain on-site surface runoff. The construction of on-site ponds allowed for controlled discharge of surface runoff via two major spillways. Although a soil cover was applied to portions of the Site, the landfill had never been graded and capped, and waste continued to be exposed in some areas.

OU1 – Landfill Cap and Wetlands

EPA issued the Site's Record of Decision (ROD) for OU1 in September 1988 and updated it with an Explanation of Significant Differences (ESD) in September 1991 and a second ESD in March 2007. Neither the 1988 ROD nor the ESDs specified remedial action objectives (RAOs): however the 1988 ROD indicated the OU1 remedy was developed to:

- Prevent dermal contact and incidental ingestion of landfill soil and solid waste.
- Minimize continued leaching of precipitation and ponded waters through the contaminated landfill material.

The 1988 OU1 ROD included the following remedy components:

- The elimination of on-site ponded water
- Regrading
- Multi-layer capping
- Run-on/off controls
- Groundwater monitoring
- Perimeter fencing
- Deed Notice

The 1991 ESD for the OU1 ROD added the following component to the selected remedy:

- Mitigation for the wetlands located on the top of the landfill with 1:1 replacement.

The 2007 ESD for the OU1 ROD added the following component:

- Established requirements for institutional controls for the landfill to protect the effectiveness of the selected remedy.

OU2 – Groundwater

EPA issued the ROD for OU2 in September 1991. The 1991 ROD did not explicitly identify specify remedial action objectives; however, the ROD stated that the goal of the remedy was to eliminate exposure to contaminated groundwater. The 1991 OU2 ROD waived the Applicable or Relevant and Appropriate Requirement (ARAR) to meet background remedial action levels or maximum contaminant levels (MCLs) due to the technical impracticability, from an engineering perspective, of meeting those cleanup levels. The OU2 ROD required that MCLs, as relevant and appropriate drinking water standards, be met at the tap prior to the use of groundwater by residents. The OU2 ROD did not specify the contaminants of concerns (COCs) but did specify that groundwater monitoring samples would be analyzed for Target Compound List volatiles and Target Analyte List metals. The OU2 ROD also specified that EPA may modify the sampling program including analytical parameters.

The September 1991 ROD included the following remedy components:

- Wellhead treatment units to be provided to residences if levels of site-related contaminants exceed action levels (MCLs or high cumulative risk levels), and
- Groundwater monitoring.

Status of Implementation

Two Unilateral Administrative Orders (UAOs) were issued to a total of eight PRPs requiring them to implement the OU1 remedy described in the 1988 ROD, the 1991 ESD and 2007 ESD. The EPA approved the remedial design in June 1995.

The remedial action for OU1 started in April 1998 and finished in September 1999. The major components of the implemented remedy include site clearing and well abandonment; installation of the cap, which consists of a geocomposite gas vent layer, geotextile, geomembrane, geotextile cushion, sand drainage, 18 inches of compacted fill, and vegetative layer; surface drainage using stormwater pipes, riprap channels and natural drainage systems, and construction of the replacement wetland completed with bottom liner, which also serve as the stormwater drainage area; and a chain-link security fence.

Baseline residential well sampling, conducted by the PRPs, for OU2 took place in March 1999. The 1991 OU2 ROD and remedial design required comparison of residential groundwater samples to MCLs. If results were above the action levels (including MCLs or cumulative risk levels), wellhead treatment units would be required. The baseline results were below the MCLs, and no contaminants have been above MCLs in the residential wells since sampling began. Therefore, wellhead treatment units have not been necessary.

In 2018, EPA deleted the Site from the NPL.

Institutional Control (IC) Review

The 1988 ROD required institutional controls in the form of a deed notice. The 2007 ESD further clarified institutional controls. The 2007 ESD required the implementation of institutional controls to prevent future use of the property that could compromise the effectiveness of the selected remedy and prohibit the disturbance of the landfill cap and the installation of drinking water wells on the landfill property.

EPA evaluated various institutional control instruments for use at the Site, including environmental covenants or township ordinances. However, EPA could not obtain cooperation from all property owners, Longswamp Township or Upper Macungie Township. EPA re-evaluated the UAOs already in place at the Site in the Site's 2012 Institutional Control Implementation and Assurance Plan (ICIAP). There are four parcels associated with the Site and the landfill.

The UAOs for Parcels #59548400207772, 545403641265 and 59548400302258 state that:

- Respondents shall not interfere or permit others to interfere with the operation, or in any way alter or disturb the integrity, of any structure or devices now or hereinafter built, installed, or otherwise placed by EPA or its Authorized Representatives.
- If the Respondent becomes aware that the Site is entered, disturbed or adversely affected by persons other than EPA or its Authorized Representatives, Respondents shall immediately notify EPA's Project Coordinator.
- The Order shall be binding upon all successors and assigns any deed or other conveyance of any interest made by the Respondent regarding the Site shall contain a clause or covenant that specifically provides for continued access as set forth in the Order.

The UAO for parcel 59548400103245 states that:

- Respondents agree to cooperate and not interfere with activities of EPA or those acting under the order for EPA during the conduct of response actions, some of which will impact the property.

As presented in the 2012 ICIAP, EPA will rely on the Orders as the main instruments for institutional controls (Table 2 and Figure 2). Informational controls are also outlined in the ICIAP. The informational program is implemented during the FYR process to update site property owners, townships, and counties regarding the use restrictions at the Site. Figure 2 lists the parcel numbers for areas covered by the institutional controls. The landfill area and wetlands are surrounded by locked fencing to restrict access.

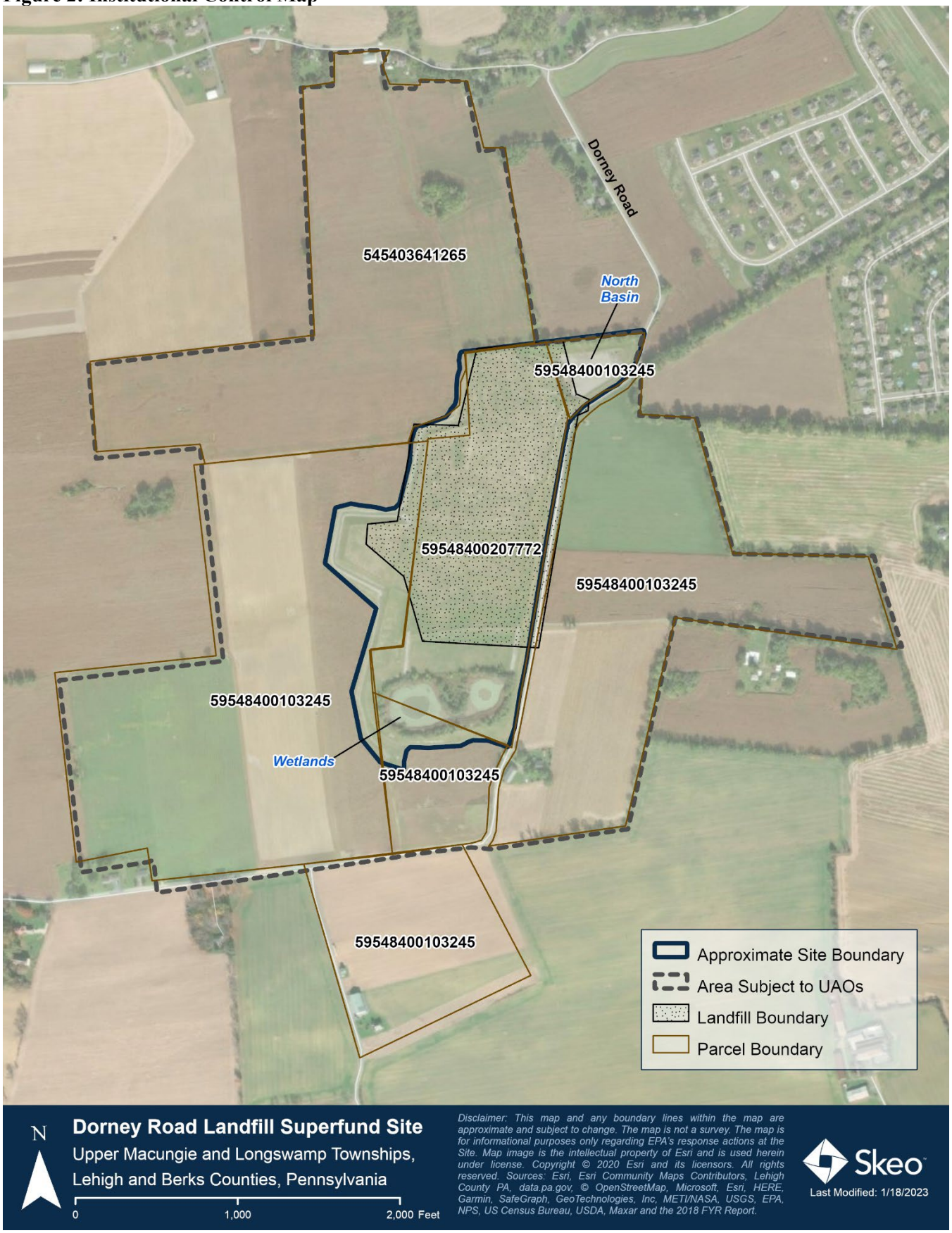
Table 2: Summary of Planned and/or Implemented Institutional Controls (ICs)

Media, Engineered Controls, and Areas That Do Not Support UU/UE Based on Current Conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Soil/Landfill	Yes	Yes	59548400207772 545403641265 5954840030225 59548400103245[1]	Prevent ingestion and dermal contact with waste under the cap cover system. Protect integrity of the cap cover system. No future use of the property that could compromise the effectiveness of the cap.	Unilateral Administrative Order for Access (1997 and 1998) Informational program

Media, Engineered Controls, and Areas That Do Not Support UU/UE Based on Current Conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Groundwater	Yes	Yes		Prohibit installation of drinking water wells on landfill property.	

1: This IC objective is specific to parcel 59548400103245. Do not interfere with activities of EPA or those acting under the order of EPA during the conduct of response actions, some of which will impact the property.

Figure 2: Institutional Control Map



Systems Operations/Operation and Maintenance (O&M)

The PRPs conduct long-term monitoring and maintenance activities at the Site in accordance with the O&M section of the Remedial Action Work Plan developed in January 1996 and associated revisions in 1998 and frequency reduction in 2021. The primary activities include:

- Quarterly visual inspection of the cap for vegetative cover, settlement, stability and any need for corrective action.
- Scheduled periodic mowing.
- Quarterly inspection of groundwater monitoring wells.
- Quarterly groundwater monitoring of landfill and residential wells prior to 2021 and annual monitoring starting in 2021.
- Quarterly engineered wetland inspection and assessment.

Under contract with the PRP, the city of Allentown conducts groundwater monitoring. Under the same contract, the borough of Alburtis conducts landfill O&M activities at the Site. During this FYR period, the most common O&M issues included fence repair from fallen trees and gas vent repairs due to damage during mowing. In October 2012, the city conducted repairs on the landfill cap. Low areas, identified during the previous FYR, were filled with about 120 tons of topsoil. Following repairs, the areas were reseeded and mulched. No other cap repairs have been conducted. The wetland continues to thrive, and no issues have been noted.

In 2021, the city of Allentown conducted a groundwater monitoring optimization evaluation and reported the results in the OU1 and OU2 Landfill Groundwater Monitoring and Residential Groundwater Monitoring Groundwater Optimization Evaluation Report. The report recommended a reduction in sampling frequency from quarterly to once per year for both the landfill groundwater monitoring wells and the residential groundwater monitoring. In April 2021, EPA approved the reduction in sampling and reporting frequency from quarterly to annually. The most recent sampling event occurred on June 21-22, 2022.

III. PROGRESS SINCE THE PREVIOUS REVIEW

This section includes the protectiveness determinations and statements from the previous FYR Report as well as the recommendations from the previous FYR Report and the status of those recommendations.

Table 3: Protectiveness Determinations/Statements from the 2018 FYR Report

OU #	Protectiveness Determination	Protectiveness Statement
1	Protective	The OU1 remedy is protective of human health and the environment because the landfill cap prevents direct contact with the site contamination and prevents migration of contaminants to groundwater. The on-site wetland is functioning and in good condition. Institutional controls are in place and effectively prevent disturbance of the remedy and groundwater use on site.
2	Protective	The OU2 remedy is protective of human health and the environment because residential well monitoring indicates compliance with MCLs.

OU #	Protectiveness Determination	Protectiveness Statement
Sitewide	Protective	The remedies in place at the Site are protective of human health and the environment. The landfill cap prevents direct contact with site contamination and prevents migration of contaminants to groundwater. Groundwater contamination is stable in landfill wells with most contaminants below MCLs. Residential monitoring indicates site contaminants remain below MCLs. The institutional controls in place are adequate to protect the engineered remedy and prevent installation of drinking water wells on the landfill.

There were no issues and recommendations in the 2018 FYR Report.

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Community Involvement and Site Interviews

A public notice was made available by newspaper posting in The Morning Call on December 5, 2022. It stated that the FYR was underway and invited the public to submit any comments to EPA. No comments were received. The results of the review and the report will be made available at the Site's information repository, Upper Macungie Township Building, 8330 Schantz Road, Breinigsville, Pennsylvania.

During the FYR process, interviews were conducted to document any perceived problems or successes with the remedy that has been implemented to date. The interviews are summarized below. Completed interview forms are included in Appendix D.

The PADEP representative indicated that they were aware of the former environmental issues at the Site and the cleanup activities, and they feel well-informed regarding the Site's ongoing activities and progress. The PADEP representative is not aware of any problems with unusual or unexpected activities at the Site but did mention the property has the occasional groundhog or fox. The PADEP representative is not aware of any changes in projected land use. Regarding changes to state laws or local regulations, the PADEP representative recommended sampling for PFAS. The State of Pennsylvania has finalized an MCL for PFOA and PFOS.

The local government representative interviewed was from Upper Macungie Township. Upper Macungie Township is not aware of any problems with unusual or unexpected activities. Upper Macungie Township is also not aware of any changes to state laws, local regulations, or projected site land use. Upper Macungie Township requested yearly updates on the status of the project and updates on reuse restrictions and guidance for reuse of the site. EPA is working to address concerns raised by Upper Macungie Township.

Data Review

This FYR reviewed quarterly reports from 2018 through 2020 and the 2021 and 2022 Annual Reports.

Groundwater Monitoring

The city of Allentown conducts groundwater monitoring to detect any changes in groundwater quality due to leaching of landfill contaminants. Groundwater monitoring is conducted in accordance with the 1996 OU2 Remedial Action Workplan and frequency reduction in 2021. The monitoring network consists of the following wells: MW-2DR, MW-3S, MW-7S, MW-11S/MW-11D (MW-11D is sampled every other event) (Figure 3). During each sampling event, groundwater samples are analyzed for VOCs and dissolved metals. Each summary report includes information on field activities, groundwater elevation data, groundwater quality data and the results of the data validation. A summary of all historical data is also presented in the summary reports. The 2022 analytical results are provided in Appendix G.

During this FYR period, groundwater elevations were consistent with historical results and indicate an overall southeastern groundwater flow direction. MW-7S is located hydraulically upgradient of the landfill and the other monitoring wells are located downgradient.

Despite MCLs being waived due to their impracticability of being met, in general, groundwater quality data from the landfill monitoring wells show concentrations are below MCLs for both inorganics and VOCs and are generally consistent with historical results. Groundwater monitoring wells have not exceeded an MCL in over 10 years, with the exception of thallium in well MW-3S in 2016 (0.003 milligrams per liter [mg/L] compared to the groundwater standard of 0.002 mg/L).

In 2022, the most recent data reviewed, there were no detected VOCs. In 2021, the only detected VOC was cis-1,2-DCE. Inorganics are detected in all monitoring wells, including the upgradient well MW-7S. Detected inorganics generally include barium, cadmium, calcium, chromium, magnesium, potassium, selenium and sodium.

Residential Monitoring

The city of Allentown conducts residential well sampling in accordance with the 1996 OU2 Remedial Action Workplan and associated revisions in 1998 and frequency reduction in 2021. Residential groundwater quality samples are collected from five of the dozens of residential locations, with specific residential wells to be sampled selected by EPA on a rotating basis. Samples are collected from the outside spigot. Results are analyzed for Target Compound List/Drinking Water List VOCs and are compared to the current MCLs.[1] If MCLs do not exist for a contaminant and sampling detects that contaminant, cumulative risk calculations are performed.

Residential groundwater VOCs have never exceeded an MCL. During this FYR period, acetone, chloroform, cis-1,2-DCE, PCE and TCE were detected at concentrations below respective MCLs. Table 4 lists residential wells with detected VOCs. Compared to the previous FYR period, there were more VOC detections. However, this is likely due to a decrease in the laboratory method reporting limit and not necessarily an increase in concentration. During the previous FYR period, the maximum detected PCE concentration was 1.1 micrograms per liter (µg/L) compared to the MCL of 5 µg/L. During this FYR period, the maximum detected PCE concentration was 0.62 µg/L. The 2022 analytical results are provided in Appendix G.

Table 4: Maximum Detected Concentrations in Residential Wells, 2018 to 2022

Residential Well	Maximum Detected Concentration 2018 to 2022 (µg/L)				
Contaminant	**Acetone**	**Chloroform**	**Cis-1,2-DCE**	**PCE**	**TCE**
MCL[a]	**NA**	**70[b]**	**70**	**5**	**5**
HW-06	5	0.52	ND	ND	ND
HW-07	2.5	ND	0.47	0.38	0.22
HW-10	ND	ND	0.48	0.62	0.23
HW-19	ND	ND	0.68	0.6	0.31
HW-20	5.2	ND	0.59	0.6	0.23
HW-26	2.4	ND	ND	0.6	ND
HW-28	4.5	ND	0.68	0.46	0.36
HW-30	3.2	ND	ND	0.38	ND
HW-32	2.3	0.59	ND	ND	ND
HW-34	7.6	ND	0.77	0.44	0.37
HW-35	8	0.31	0.64	0.38	0.33
HW-37	4.9	ND	ND	ND	ND
HW-42	2.4	0.41	ND	ND	ND
HW-46	ND	ND	0.49	0.27	0.26
HW-39	ND	ND	ND	0.6	ND

[1] Residential wells are not analyzed for metals, as metals were not identified as a concern for residential wells during the RI.

Notes:

a. National primary drinking water regulations: https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations (accessed 12/14/2022).
b. There is no MCL for chloroform; 70 µg/L is the MCL goal, which is the level of a contaminant in drinking water below which there is no known or expected risk to health.

ND = non detect
NA = not applicable, no MCL for this contaminant

Figure 3: Detailed Site Map

Site Inspection

The site inspection took place on October 24, 2022. Participants included EPA's RPM, Skeo staff (EPA contractor support) and the PRP contractor. The purpose of the inspection was to assess the protectiveness of the remedy.

During the site inspection, participants discussed the remedial history of the Site and observed the wetland, landfill cap and drainage features, the North Basin area and the fence. The wetland continues to thrive; participants observed several species of birds during the inspection. The landfill cap was well-vegetated and had been mowed recently. The drainage features were clear of vegetation and well-maintained. The fence surrounding the Site was in good condition and clear of vegetation. Site inspection participants observed one area along the southern fence line that needed repair. The housing development located about 1,200 feet north of the landfill continues to expand. Homes in this development use the public water supply for drinking water. Agricultural fields surround the Site on all sides. Besides the minor fence repair, site inspection participants did not identify any further issues. The site inspection checklist and photographs are included in Appendix E and Appendix F, respectively.

V. TECHNICAL ASSESSMENT

QUESTION A: Is the remedy functioning as intended by the decision documents?

Question A Summary:

Yes, the OU1 and OU2 remedies are functioning as intended by the RODs and ESDs. The contaminated soil and waste material is contained beneath the landfill cap, which prevents direct contact and incidental ingestion and controls contaminant migration off site. The wetland is compliant with the wetland ARAR. Observations made during the site inspection showed the landfill cap and wetland were in good condition. The city of Allentown conducts O&M under a contractor with the PRP. Landfill groundwater monitoring indicates that contaminant concentrations are stable; there is no indication that the landfill is impacting groundwater. Concentrations are generally consistent with historical concentrations. No contaminants exceeded MCLs or MCL goals in any monitoring wells during this FYR period.

The residential monitoring program continues to demonstrate that there are no detections of VOCs above MCLs. Historical sampling also indicates that no contamination has ever been observed in the residential wells above MCLs. Because inorganic contamination was not observed in downgradient residential wells during the RI, only VOCs are included in the residential well monitoring program. The landfill monitoring network does not show inorganic contamination at the furthest downgradient well cluster MW-11, which is just upgradient of the nearest residential well, so there is no indication that residential wells would be impacted by inorganics migrating from the landfill.

The institutional controls outlined in the 2012 ICIAP are in place and prevent disturbance of the remedy and groundwater use on site effectively. Existing groundwater residential wells are tested on a rotating basis to ensure compliance with MCLs. No site-related contaminants have exceeded MCLs in any residential monitoring well. All new housing developments in the vicinity of the Site are connected to the public water supply.

The 1988 OU1 ROD indicated that groundwater monitoring would be conducted for 30 years or until 2029. EPA in consultation with PADEP should determine if the original monitoring timeline in the 1988 OU1 ROD is still applicable and take appropriate action as needed.

QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels and RAOs used at the time of the remedy selection still valid?

Question B Summary:
Yes, the exposure assumptions, toxicity data, cleanup levels and remedy objectives used at the time of the remedy selection are still valid.

Changes in Standards and TBCs
There have been no changes to cleanup levels or toxicity data.

The 1988 OU1 ROD did not include chemical-specific ARARs. However, groundwater monitoring is conducted to detect changes in groundwater quality that could indicate that contamination is migrating from the landfill. Groundwater samples are analyzed for VOCs and inorganics. The 1991 OU2 ROD waived MCLs and background cleanup levels for the groundwater aquifer but required that MCLs be met at the tap for potentially impacted residential wells.

Residential groundwater monitoring is conducted at the tap as part of the OU2 remedy. Results are compared to current MCLs. The MCLs provided in the most recent monitoring report (the 2022 Annual Groundwater Monitoring Report – OU2) were compared to current EPA MCLs (Table H-1 in Appendix H). There have been no changes to the MCLs and the current cleanup levels remain valid. However, there were several errors in the MCLs provided in the 2022 Annual Report (Table H-1). These do not affect protectiveness because none of the analytes were detected above the correct MCL. These should be corrected in the next monitoring report.

EPA sampled for 1,4-dioxane at the Site in 2010 and 2011. Eleven samples were analyzed and 1,4-dioxane was detected in seven of the samples. All the detections were below EPA's most current regional screening level (RSL) of(0.67 μg/L). EPA concluded that 1,4-dioxane was not a concern at the Site.

EPA considers per- and polyfluoroalkyl substances (PFAS) to be emerging contaminants of concern. PFAS are a group of manufactured chemicals used in industry and consumer products since the 1940s because of their useful properties. Due to the unknown nature of the wastes disposed of in the landfill, sampling for PFAS is recommended.

Changes in Risk Assessment Methods
There have been changes in EPA's risk assessment methods since the time of the remedy selection. However, they do not affect the protectiveness of the remedy as the landfill cap prevents direct contact with site contamination and prevents migration of contaminants to groundwater. Groundwater contamination has decreased to levels below their respective MCLs for most contaminants. Residential monitoring indicates that site contaminants remain below MCLs. The institutional controls are established to prevent the disturbance of the landfill cap and the installation of ground water wells on the capped portion of the of the Dorney Road Landfill property and to prevent future use of the property that would compromise the effectiveness of the remedy.

Changes in Exposure Pathways
The exposure assumptions remain valid as current and future anticipated land use is consistent with the remedy. Development continues to expand north of the Site, but all new residences are connected to public water supply. Vapor intrusion was not considered during the remedy selection; however VOC concentrations are well below MCLs and should not pose a risk for vapor intrusion.

Expected Progress Toward Meeting RAOs
The remedy objectives for OU1 are still valid and have been met. These include controlling contaminant migration, preventing direct contact and preventing leaching to groundwater. Based on OU1 landfill monitoring results, the groundwater contamination remains stable and as of 2016 all concentrations are below MCLs. The landfill cap and stormwater management system are in good condition to prevent direct contact and control contaminant migration.

The remedy objectives for OU2 was to eliminate exposure to contaminated groundwater by installing wellhead treatment units if contaminants exceeded cleanup levels. Based on residential monitoring results, there have been no exceedances of cleanup levels and wellhead treatment units have not been needed.

QUESTION C: Has any other information come to light that could call into question the protectiveness of the remedy?

No other information has come to light that could call into question the protectiveness of the remedy.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the FYR:
None

OTHER FINDINGS

Additional recommendations identified during the FYR.

- *The 1988 OU1 ROD indicated that groundwater monitoring would be conducted for 30 years which will be complete in 2029. EPA and PADEP should determine if the original monitoring timeline in the 1988 OU1 ROD are still applicable and take appropriate action as needed.*
- During the site inspection, one area along the southern fence line was identified that is in need of repair.
- *Due to the unknown nature of the wastes disposed of in the landfill, and per PADEP's recommendation, EPA plans to sample for PFAS in Site monitoring wells.*
- *Annual groundwater monitoring reports compared Site monitoring data to the incorrect MCLs for Site COCs. These will be corrected in future groundwater monitoring reports.*
- *During the Site inspection, one area along the southern fence line was identified that the fence is in need of repair. Appropriate repairs to the fencing will be completed as necessary.*

VII. PROTECTIVENESS STATEMENT

Protectiveness Statement	
Operable Unit: 1	*Protectiveness Determination:* Protective
Protectiveness Statement: The OU1 remedy currently protects human health and the environment because the landfill cap prevents direct contact with the site contamination and prevents migration of contaminants to groundwater. The on-site wetland is functioning and in good condition. Institutional controls are in place and effectively prevent disturbance of the remedy and groundwater use on site.	

Protectiveness Statement(s)	
Operable Unit: 2	*Protectiveness Determination:* Protective
Protectiveness Statement: The OU2 remedy currently protects human health and the environment because residential well monitoring indicates compliance with MCLs.	

Sitewide Protectiveness Statement
Protectiveness Determination: Protective
Protectiveness Statement: The remedies in place at the Site currently protect human health and the environment. The landfill cap prevents direct contact with site contamination and prevents migration of contaminants to groundwater. Groundwater contamination has decreased to levels below their respective MCLs for most contaminants. Residential monitoring indicates that site contaminants remain below MCLs. The institutional controls are established to prevent the disturbance of the landfill cap and the installed ground water wells on the capped portion of the of the Dorney Road Landfill property and to prevent future use of the property that would compromise the effectiveness of the remedy.

VIII. NEXT REVIEW

The next FYR Report for the Dorney Road Landfill Superfund site is required five years from the completion date of this review.

APPENDIX A – REFERENCE LIST

Annual Groundwater Monitoring Report, March 2021, Operable Unit 1: Landfill Groundwater Monitoring. Prepared by Barton & Loguidice. June 2021.

Annual Groundwater Monitoring Report, March 2021, Operable Unit 2: Residential Groundwater Monitoring. Prepared by Barton & Loguidice. June 2021.

Annual Groundwater Monitoring Report, Operable Unit 1: Landfill Groundwater Monitoring. Prepared by Barton & Loguidice. October 2022.

Annual Groundwater Monitoring Report, Operable Unit 2: Residential Groundwater Monitoring. Prepared by Barton & Loguidice. October 2022.

Declaration for the Record of Decision, Dorney Road Landfill Superfund Site, Upper Macungie Township, Lehigh County, Pennsylvania, Landfill Waste and Soil Operable Unit. EPA Region 3. September 1988.

Explanation of Significant Differences for the Dorney Road Landfill Site, Operable Unit 2. EPA Region 3. September 1991.

First Five-Year Review Report for Dorney Road Landfill Superfund Site, Upper Macungie Township, Lehigh County, Pennsylvania. EPA Region 3. July 2003.

Fourth Five-Year Review Report for Dorney Road Landfill Superfund Site, Berks and Lehigh Counties, Pennsylvania. EPA Region3. May 2018.

Institutional Control Implementation and Assurance Plan for Dorney Road Landfill Superfund Site, Upper Macungie Township, Lehigh and Berks Counties, Pennsylvania. EPA Region 3. March 2012.

Preliminary Close-Out Report, Dorney Road Landfill, Upper Macungie Township, Pennsylvania. EPA Region 3. September 1999.

Quarterly Progress Reports for OU1, 2018 through 2022. Prepared by Ramboll.

Quarterly Progress Reports for OU2, 2018 through 2022. Prepared by Ramboll.

Record of Decision, Dorney Road Landfill Site, Operable Unit 2, Upper Macungie Township, Lehigh County, Pennsylvania. EPA Region 3. September 1991.

Report of 1,4-Dioxane Sampling and Ana lysis, Dorney Road (Oswald) Landfill - Operable Unit No. I and No. 2, Upper Macungie Township, Lehigh County, Pennsylvania. EPA Region 3. October 2011.

Second Explanation of Significant Differences, Dorney Road Landfill Superfund Site, Upper Macungie Township, Pennsylvania. EPA Region 3. March 2007.

Second Five-Year Review Report for Dorney Road Landfill Superfund Site, Upper Macungie Township, Lehigh County, Pennsylvania. EPA Region 3. July 2008.

Third Five-Year Review Report for Dorney Road Landfill Superfund Site, Upper Macungie Township, Berks and Lehigh County, Pennsylvania. EPA Region 3. May 2013.

APPENDIX B – SITE CHRONOLOGY

Table B-1: Site Chronology

Event	Date
A dump started operating on site	1950s
Site landfill operated without a permit	1966-1978
Landfill operations ceased	December 1978
EPA performed the Site's preliminary assessment	May 21, 1980
EPA proposed the Site for listing on the NPL	September 8, 1983
EPA finalized the Site's listing on the NPL	September 21, 1984
EPA conducted a removal action to prevent waste from leaving the Site	June 1986
PADER conducted the Site's RI/FS	1987-1988
EPA issued the OU1 ROD	September 29, 1988
EPA sent liability notice letters to PRPs	September 1989
EPA issued the Site's first UAO	September 28, 1990
EPA issued the ESD for OU1	September 18, 1991
EPA signed the OU2 ROD	September 30, 1991
EPA issued the Site's second UAO	January 25, 1992
EPA initiated the remedial design for OU1	July 1992
EPA issued the Site's third UAO	August 13, 1992
EPA started the remedial design for OU2	May 11, 1993
Remedial design completed for OU1	June 1995
Remedial design completed for OU2; remedial action initiated	December 28, 1995
Remedial action began for OU1	April 13, 1998
EPA issued the Site's Preliminary Close-Out Report	September 28, 1999
EPA completed the remedial action for OU2	March 24, 2000
EPA completed the remedial action for OU1	September 27, 2000
EPA issued the Site's first FYR Report	July 11, 2003
EPA issued the second ESD for OU1	March 20, 2007
EPA issued the Site's second FYR Report	July 28, 2008
EPA finalized the ICIAP	April 2012
EPA issued Sitewide Ready for Anticipated Use determination	April 27, 2012
EPA issued the Site's third FYR Report	May 29, 2013
EPA issued the Site's fourth FYR Report	May 18, 2018
EPA deleted the Site from the NPL	September 24, 2018
City of Allentown issues Groundwater Monitoring Optimization Evaluation Report	February 2021

APPENDIX C – PRESS NOTICE

EPA PUBLIC NOTICE

EPA REVIEWS CLEANUP

DORNEY ROAD LANDFILL SUPERFUND SITE

The U.S. Environmental Protection Agency (EPA) is reviewing the cleanup that was conducted at the Dorney Road Landfill Superfund Site located in Upper Macungie and Longswamp Townships, Pennsylvania. EPA conducts Five-Year Reviews to ensure that cleanups continue to protect public health and the environment. EPA conducted the previous Five-Year Review in 2018 and concluded that the remedies were protective of human health and the environment. EPA will make the findings from this Five-Year Review available in May 2023.

To access site information, including the Five-Year Review, visit:
www.epa.gov/superfund/dorneyroad

For questions or to provide site-related information for the review, contact:
John Brakeall, EPA Community Involvement Coordinator
215-814-5537 or Brakeall.john@epa.gov

APPENDIX D – INTERVIEW FORMS

Dorney Road Superfund Site Five-Year Review Questionnaire

Site Name: Dorney Road
Subject Name: Ronald Schock
Interview Format: Phone
Affiliation: Pennsylvania Department of Environmental Protection
Position: Licensed Professional Geologist
Date: December 22, 2022

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?
Response: Yes. I have been involved since the early 1990s.

2. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future?
Response: Yes, I feel well-informed. I receive regular email updates that are sufficient.

3. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism, or trespassing?
Response: I am not aware of any issues. I've heard that the property has the occasional groundhog or fox. A few years ago, I also received a phone call from a concerned citizen. The citizen noticed that new monitoring wells were being installed and that there were drums onsite for the well cuttings. I explained that the work was being performed for potential future development and not a cause for concern.

4. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Site's remedy?
Response: I understand the site has not been sampled for PFAS and I believe EPA should consider sampling for PFAS at some point. The State of Pennsylvania is finalizing an MCL for PFOA and PFOS.

5. Are you aware of any changes in projected land use(s) at the Site?
Response: I heard there was interest in installing solar panels.

6. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?
Response: Yes.

7. Do you have any comments, suggestions, or recommendations regarding the project?
Response: I would recommend EPA consider sampling for PFAS.

8. Do you consent to have your name included along with your responses to this questionnaire in the FYR report?
Response: Yes.

Dorney Road Superfund Site Five-Year Review Questionnaire

Site Name: Dorney Road
Subject Name: Kalman A. Sostarecz, Jr.
Interview Format: Email
Affiliation: Upper Macungie Township
Position: Assistant Township Manager
Date: November 4, 2022

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?
Response: Yes

2. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future?
Response: No, there was a site inspection approximately 4 years ago at which time we received most of our information. Since then, there has been no contact.

3. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism, or trespassing?
Response: No.

4. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Site's remedy?
Response: No.

5. Are you aware of any changes in projected land use(s) at the Site?
Response: No; we were interested in installing a solar farm, but the Township was told it was prohibited. Please advise if this has changed.

6. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?
Response: No – we do not believe that new homeowners in the area know of the site's existence. Information should be communicated to the Township for distribution to the residents in the area.

7. Do you have any comments, suggestions, or recommendations regarding the project?
Response: Please provide yearly updates on the status of the project such as testing results, maintenance inspections and notification when the site will be released.

8. Do you consent to have your name included along with your responses to this questionnaire in the FYR report?
Response: Yes.

APPENDIX E – SITE INSPECTION CHECKLIST

FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST

I. SITE INFORMATION

Site Name: Dorney Road Landfill	**Date of Inspection:** 10/24/2022
Location and Region: Upper Macungie Township, Pennsylvania, Region 3	**EPA ID: PAD980508832**
Agency, Office or Company Leading the Five-Year Review: EPA	**Weather/Temperature:** Cloudy, 50s

Remedy Includes: (check all that apply)

- ☒ Landfill cover/containment
- ☒ Access controls
- ☒ Institutional controls
- ☐ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☒ Other: Residential groundwater monitoring
- ☐ Monitored natural attenuation
- ☐ Groundwater containment
- ☐ Vertical barrier walls

Attachments: ☐ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (check all that apply)

1. **O&M Site Manager** _____ (Name) _____ (Title) _____ (Date)
   Interviewed ☐ at site ☐ at office ☐ by phone Phone: _____
   Problems, suggestions ☐ Report attached: _____

2. **O&M Staff** _____ (Name) _____ (Title) _____ (Date)
   Interviewed ☐ at site ☐ at office ☐ by phone Phone: _____
   Problems/suggestions ☐ Report attached: _____

3. **Local Regulatory Authorities and Response Agencies** (i.e., state and tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices). Fill in all that apply.

   Agency _____
   Contact _____ (Name) _____ (Title) _____ (Date) _____ (Phone)
   Problems/suggestions ☐ Report attached: _____

   Agency _____
   Contact _____Name _____ (Title) _____ (Date) _____ (Phone)
   Problems/suggestions ☐ Report attached:_____

   Agency _____
   Contact _____ (Name) _____ (Title) _____ (Date) _____ (Phone)
   Problems/suggestions ☐ Report attached:_____

   Agency _____
   Contact _____ (Name) _____ (Title) _____ (Date) _____ (Phone)
   Problems/suggestions ☐ Report attached: _____

   Agency _____

Contact _____ _____ _____ _____
Name Title Date Phone
Problems/suggestions ☐ Report attached: _____

4. **Other Interviews** (optional) ☐ Report attached: _____

III. ON-SITE DOCUMENTS AND RECORDS VERIFIED (check all that apply)

1. **O&M Documents**

☒ O&M manual	☒ Readily available	☒ Up to date	☐ N/A
☒ As-built drawings	☒ Readily available	☒ Up to date	☐ N/A
☒ Maintenance logs	☒ Readily available	☒ Up to date	☐ N/A

Remarks: Documents are not kept on site but are up to date

2.	**Site-Specific Health and Safety Plan**	☒ Readily available	☒ Up to date	☐ N/A
	☐ Contingency plan/emergency response plan	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

3.	**O&M and OSHA Training Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

4. **Permits and Service Agreements**

☐ Air discharge permit	☐ Readily available	☐ Up to date	☒ N/A
☐ Effluent discharge	☐ Readily available	☐ Up to date	☒ N/A
☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	☒ N/A
☐ Other permits: _____	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

5.	**Gas Generation Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

6.	**Settlement Monument Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

7.	**Groundwater Monitoring Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

8.	**Leachate Extraction Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

9. **Discharge Compliance Records**

☐ Air	☐ Readily available	☐ Up to date	☒ N/A
☐ Water (effluent)	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

10.	**Daily Access/Security Logs**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

IV. O&M COSTS

1. **O&M Organization**

☐ State in-house ☐ Contractor for state

☐ PRP in-house ☒ Contractor for PRP

☐ Federal facility in-house ☐ Contractor for Federal facility

☐ _____

2. **O&M Cost Records**

☐ Readily available ☐ Up to date

☐ Funding mechanism/agreement in place ☒ Unavailable

Original O&M cost estimate: _____ ☐ Breakdown attached

Total annual cost by year for review period if available

From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached

3. **Unanticipated or Unusually High O&M Costs during Review Period**

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

1. **Fencing Damaged** ☐ Location shown on site map ☒ Gates secured ☐ N/A

Remarks: Fencing in good condition. One small breach in the fence was noted that will be addressed during the next maintanence event.

B. Other Access Restrictions

1. **Signs and Other Security Measures** ☐ Location shown on site map ☐ N/A

Remarks: Signs are present at regular intervals along the fenceline.

C. Institutional Controls (ICs)

1. **Implementation and Enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☒ No ☐ N/A

Site conditions imply ICs not being fully enforced ☐ Yes ☒ No ☐ N/A

Type of monitoring (e.g., self-reporting, drive by): Self-reporting

Frequency: Quarterly

Responsible party/agency: PRP contractor

Contact _____ _____ _____ _____

Name Title Date Phone

Reporting is up to date ☐ Yes ☐ No ☒ N/A

Reports are verified by the lead agency ☐ Yes ☐ No ☒ N/A

Specific requirements in deed or decision documents have been met ☒ Yes ☐ No ☐ N/A

Violations have been reported ☐ Yes ☐ No ☒ N/A

Other problems or suggestions: ☐ Report attached

2. **Adequacy** ☒ ICs are adequate ☐ ICs are inadequate ☐ N/A

Remarks: _____

D. General

1. **Vandalism/Trespassing** ☐ Location shown on site map ☒ No vandalism evident

Remarks: Occasionally, people will cut through the fence to access the property but no other damage has been noted and fences are repaired as needed.

2. **Land Use Changes On Site** ☒ N/A

Remarks: _____

3. **Land Use Changes Off Site** ☒ N/A

Remarks: _____

VI. GENERAL SITE CONDITIONS

A. Roads ☐ Applicable ☒ N/A

1. **Roads Damaged** ☐ Location shown on site map ☐ Roads adequate ☐ N/A

Remarks: _____

B. Other Site Conditions

Remarks: _____

VII. LANDFILL COVERS ☒ Applicable ☐ N/A

A. Landfill Surface

1. **Settlement** (low spots) ☐ Location shown on site map ☒ Settlement not evident

Area extent: _____ Depth: _____

Remarks: _____

2. **Cracks** ☐ Location shown on site map ☒ Cracking not evident

Lengths: _____ Widths: _____ Depths: _____

Remarks: _____

3.	**Erosion**	☐ Location shown on site map	☒ Erosion not evident
	Area extent: _____		Depth: _____
	Remarks: _____		
4.	**Holes**	☐ Location shown on site map	☒ Holes not evident
	Area extent: _____		Depth: _____
	Remarks: _____		
5.	**Vegetative Cover**	☒ Grass	☒ Cover properly established
	☒ No signs of stress	☐ Trees/shrubs (indicate size and locations on a diagram)	
	Remarks: _____		
6.	**Alternative Cover** (e.g., armored rock, concrete)		☒ N/A
	Remarks: _____		
7.	**Bulges**	☐ Location shown on site map	☒ Bulges not evident
	Area extent: _____		Height: _____
	Remarks: _____		
8.	**Wet Areas/Water Damage**	☒ Wet areas/water damage not evident	
	☐ Wet areas	☐ Location shown on site map	Area extent: _____
	☐ Ponding	☐ Location shown on site map	Area extent: _____
	☐ Seeps	☐ Location shown on site map	Area extent: _____
	☐ Soft subgrade	☐ Location shown on site map	Area extent: _____
	Remarks: _____		
9.	**Slope Instability**	☐ Slides	☐ Location shown on site map
	☒ No evidence of slope instability		
	Area extent: _____		
	Remarks: _____		

B. Benches ☐ Applicable ☒ N/A

(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

C. Letdown Channels ☒ Applicable ☐ N/A

(Channel lined with erosion control mats, riprap, grout bags or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1.	**Settlement** (Low spots)	☐ Location shown on site map	☒ No evidence of settlement
	Area extent: _____		Depth: _____
	Remarks: _____		
2.	**Material Degradation**	☐ Location shown on site map	☒ No evidence of degradation
	Material type:_____		Area extent: _____
	Remarks: _____		

3. **Erosion** ☐ Location shown on site map ☒ No evidence of erosion

Area extent: _____ Depth: _____

Remarks: _____

4. **Undercutting** ☐ Location shown on site map ☒ No evidence of undercutting

Area extent: _____ Depth: _____

Remarks: _____

5. **Obstructions** Type: _____ ☒ No obstructions

☐ Location shown on site map Area extent: _____

Size: _____

Remarks: _____

6. **Excessive Vegetative Growth** Type: _____

☒ No evidence of excessive growth

☐ Vegetation in channels does not obstruct flow

☐ Location shown on site map Area extent: _____

Remarks: _____

D. Cover Penetrations ☒ Applicable ☐ N/A

1. **Gas Vents** ☐ Active ☒ Passive

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☒ Good condition

☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A

Remarks: _____

2. **Gas Monitoring Probes**

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ Evidence of leakage at penetration ☐ Needs maintenance ☒ N/A

Remarks: _____

3. **Monitoring Wells** (within surface area of landfill)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ Evidence of leakage at penetration ☐ Needs maintenance ☒ N/A

Remarks: _____

4. **Extraction Wells Leachate**

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ Evidence of leakage at penetration ☐ Needs maintenance ☒ N/A

Remarks: _____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☒ N/A

Remarks: _____

E. Gas Collection and Treatment ☐ Applicable ☒ N/A

F. Cover Drainage Layer ☒ Applicable ☐ N/A

1. **Outlet Pipes Inspected** ☒ Functioning ☐ N/A

Remarks: _____

2. **Outlet Rock Inspected** ☒ Functioning ☐ N/A

Remarks: _____

G. Detention/Sedimentation Ponds ☐ Applicable ☒ N/A

H. Retaining Walls ☐ Applicable ☒ N/A

I. Perimeter Ditches/Off-Site Discharge ☒ Applicable ☐ N/A

1. **Siltation** ☐ Location shown on site map ☒ Siltation not evident

Area extent: _____ Depth: _____

Remarks: _____

2. **Vegetative Growth** ☐ Location shown on site map ☒ N/A

☐ Vegetation does not impede flow

Area extent: _____ Type: _____

Remarks: _____

3. **Erosion** ☐ Location shown on site map ☒ Erosion not evident

Area extent: _____ Depth: _____

Remarks: _____

4. **Discharge Structure** ☒ Functioning ☐ N/A

Remarks: _____

VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A

IX. GROUNDWATER/SURFACE WATER REMEDIES ☒ Applicable ☐ N/A

A. Groundwater Extraction Wells, Pumps and Pipelines ☐ Applicable ☒ N/A

B. Surface Water Collection Structures, Pumps and Pipelines ☐ Applicable ☒ N/A

D. Monitoring Data

1. **Monitoring Data**

☒ Is routinely submitted on time ☒ Is of acceptable quality

2. **Monitoring Data Suggests:**

☒ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

E. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ All required wells located ☐ Needs maintenance ☒ N/A

Remarks: _____

X. OTHER REMEDIES

Residential tap water is monitored regularly.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

	Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is designed to accomplish (e.g., to contain contaminant plume, minimize infiltration and gas emissions). The remedy includes a graded, capped landfill as well as a restored wetland. The landfill cover is well maintained and well vegetated. Drainage channels are clear and the fence is in good condition. The wetland is thriving. Monitoring wells are located off site and are locked and maintained. Residential wells are also monitored on a rotating schedule.
B.	**Adequacy of O&M**
	Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. O&M activities at the Site are adequate.
C.	**Early Indicators of Potential Remedy Problems**

	Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future. None.
D.	**Opportunities for Optimization**
	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. None.

APPENDIX F – SITE INSPECTION PHOTOS

Entrance gate (usually locked)

Wetland

Wetland pond

Stormwater drainage off landfill cap to wetland

Stormwater drainage system surrounding the cap and fence

Fox den repair – off cap area

Small breach in the fence along northwest boundary

North basin area

APPENDIX G – FIGURES AND DATA TABLES

Figure G-1: Monitoring Well and Residential Well Locations

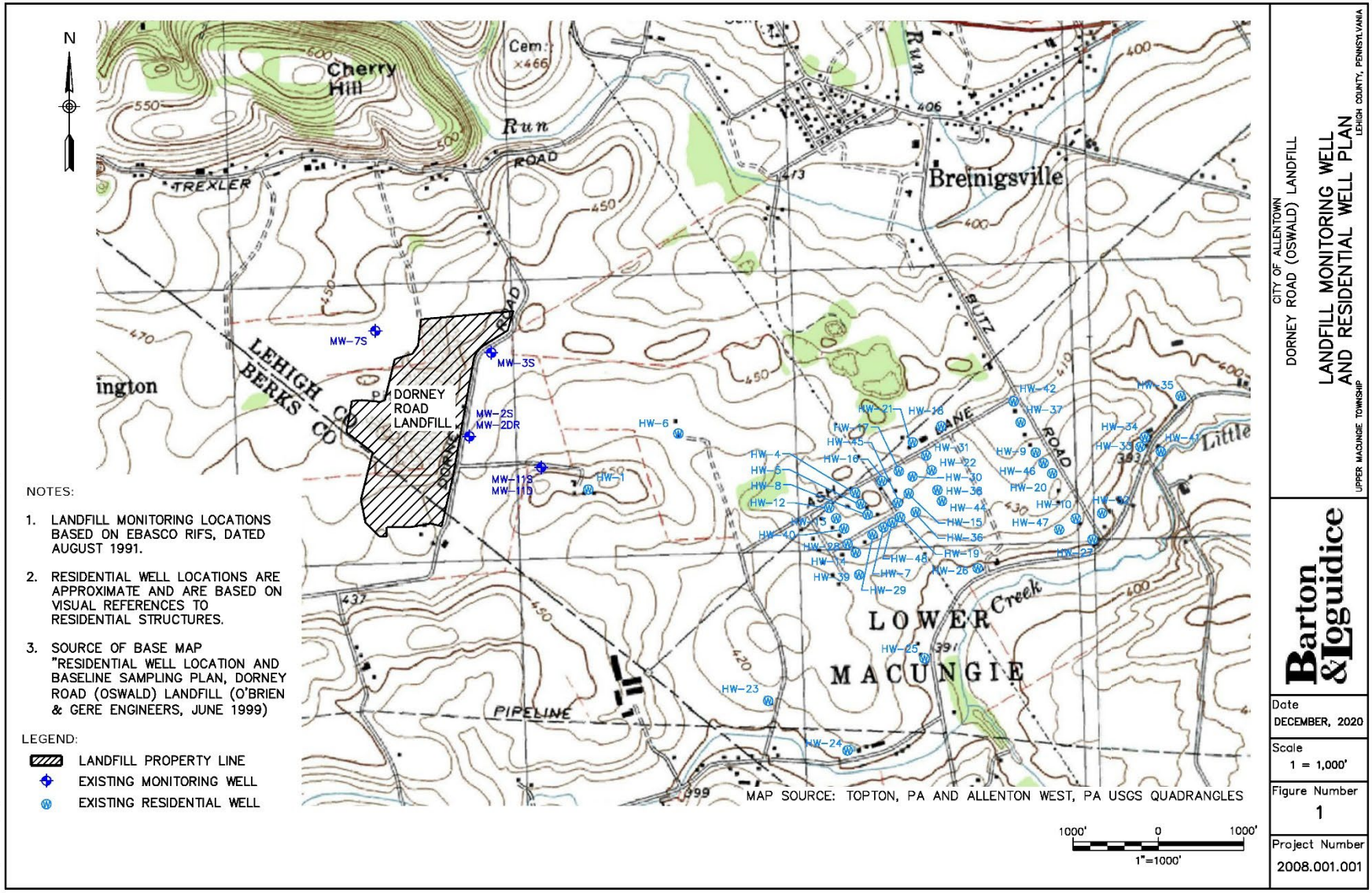


Table G-1: 2022 OU1 Landfill Groundwater Monitoring Results – VOCs[2]

Sample ID:			MW-2DR	MS MW-2DR	MSD MW-2DR	MW-3S	MW-7S	MW-11S
Date:			6/22/2022	6/22/2022	6/22/2022	6/22/2022	6/22/2022	6/22/2022
Parameter	**Units**	**MCL**						
Acetone	ug/l	--	< 12.5	43.8	37.4	< 12.5	< 12.5	< 12.5
Benzene	ug/l	5	< 0.5	23.2	20.2	< 0.5	< 0.5	< 0.5
Bromobenzene	ug/l	--	< 0.5	23.1	20.1	< 0.5	< 0.5	< 0.5
Bromochloromethane	ug/l	80	< 0.5	19.8	17.8	< 0.5	< 0.5	< 0.5
Bromodichloromethane	ug/l	--	< 0.5	20.8	18.6	< 0.5	< 0.5	< 0.5
Bromoform	ug/l	80	< 0.5	17.5	16.0	< 0.5	< 0.5	< 0.5
Bromomethane	ug/l	--	C4 < 0.5	23.4	18.6	C4 < 0.5	C4 < 0.5	C4 < 0.5
2-Butanone (MEK)	ug/l	--	< 1.2	50.4	44.4	< 1.2	< 1.2	< 1.2
n-Butylbenzene	ug/l	--	< 0.5	22.1	19.7	< 0.5	< 0.5	< 0.5
tert-Butylbenzene	ug/l	--	< 0.5	22.5	21.1	< 0.5	< 0.5	< 0.5
sec-Butylbenzene	ug/l	--	< 0.5	22.8	21.6	< 0.5	< 0.5	< 0.5
Carbon Disulfide	ug/l	--	< 1.0	21.9	18.1	< 1.0	< 1.0	< 1.0
Carbon Tetrachloride	ug/l	5	< 0.5	22.6	19.5	< 0.5	< 0.5	< 0.5
Chlorobenzene	ug/l	100	< 0.5	19.8	17.9	< 0.5	< 0.5	< 0.5
Chloroform	ug/l	80	< 0.5	21.9	19.5	< 0.5	< 0.5	< 0.5
Chloroethane	ug/l	--	< 0.5	24.7	21.2	< 0.5	< 0.5	< 0.5
Chloromethane	ug/l	--	< 0.5	23.9	20.8	< 0.5	< 0.5	< 0.5
o-Chlorotoluene	ug/l	--	< 0.5	22.0	20.1	< 0.5	< 0.5	< 0.5
p-Chlorotoluene	ug/l	--	< 0.5	21.5	20.1	< 0.5	< 0.5	< 0.5
1,2-Dibromo-3-chloropropane	ug/l	0.2	< 0.5	20.3	16.8	< 0.5	< 0.5	< 0.5
1,2-Dibromoethane	ug/l	0.05	< 0.5	19.1	18.0	< 0.5	< 0.5	< 0.5
Dibromomethane	ug/l	--	< 0.5	21.7	19.4	< 0.5	< 0.5	< 0.5
1,2-Dichlorobenzene	ug/l	600	< 0.5	20.5	19.6	< 0.5	< 0.5	< 0.5
1,3-Dichlorobenzene	ug/l	--	< 0.5	22.2	20.6	< 0.5	< 0.5	< 0.5
1,4-Dichlorobenzene	ug/l	75	< 0.5	22.7	20.3	< 0.5	< 0.5	< 0.5
Dichlorodifluoromethane	ug/l	--	< 0.5	24.6	20.3	< 0.5	< 0.5	< 0.5
1,1-Dichloroethane	ug/l	7	< 0.5	22.9	20.2	< 0.5	< 0.5	< 0.5
1,2-Dichloroethane	ug/l	5	< 0.5	20.3	18.1	< 0.5	< 0.5	< 0.5
1,1-Dichloroethylene	ug/l	--	< 0.5	23.9	20.8	< 0.5	< 0.5	< 0.5
cis-1,2-Dichloroethylene	ug/l	70	< 0.5	22.8	20.0	< 0.5	< 0.5	< 0.5
trans-1,2-Dichloroethylene	ug/l	100	< 0.5	22.9	19.7	< 0.5	< 0.5	< 0.5
1,2-Dichloropropane	ug/l	5	< 0.5	22.9	20.4	< 0.5	< 0.5	< 0.5
1,3-Dichloropropane	ug/l	--	< 0.5	22.6	29.9	< 0.5	< 0.5	< 0.5
2,2-Dichloropropane	ug/l	--	< 0.5	19.5	16.5	< 0.5	< 0.5	< 0.5
1,1-Dichloropropene	ug/l	--	< 0.5	24.1	20.5	< 0.5	< 0.5	< 0.5
cis-1,3-Dichloropropene	ug/l	--	< 0.5	20.8	18.2	< 0.5	< 0.5	< 0.5
trans-1,3-Dichloropropene	ug/l	--	< 0.5	20.4	17.7	< 0.5	< 0.5	< 0.5
Ethyl Benzene	ug/l	700	< 0.5	21.9	19.4	< 0.5	< 0.5	< 0.5
Hexachlorobutadiene	ug/l	--	< 0.5	21.9	17.5	< 0.5	< 0.5	< 0.5
2-Hexanone	ug/l	--	< 1.2	51.3	45.0	< 1.2	< 1.2	< 1.2
Dibromochloromethane	ug/l	--	< 0.5	17.5	17.5	< 0.5	< 0.5	< 0.5
Isopropylbenzene	ug/l	--	< 0.5	22.5	21.3	< 0.5	< 0.5	< 0.5
4-Isopropyltoluene	ug/l	--	< 0.5	21.0	19.5	< 0.5	< 0.5	< 0.5
Methylene chloride	ug/l	5	< 0.5	21.0	18.4	< 0.5	< 0.5	< 0.5
4-Methyl-2-Pentanone (MIBK)	ug/l	--	< 1.2	51.0	45.2	< 1.2	< 1.2	< 1.2
Naphthalene	ug/l	--	< 0.5	27.8	17.1	< 0.5	< 0.5	< 0.5
n-Propylbenzene	ug/l	--	< 0.5	20.7	19.4	< 0.5	< 0.5	< 0.5
Styrene	ug/l	100	< 0.5	21.6	20.0	< 0.5	< 0.5	< 0.5
1,1,1,2-Tetrachloroethane	ug/l	--	< 0.5	21.2	19.4	< 0.5	< 0.5	< 0.5
1,1,2,2-Tetrachloroethane	ug/l	--	< 0.5	19.8	17.9	< 0.5	< 0.5	< 0.5
Tetrachloroethene	ug/l	5	< 0.5	22.4	20.0	< 0.5	< 0.5	< 0.5
Toluene	ug/l	1	< 0.5	22.3	18.8	< 0.5	< 0.5	< 0.5
1,2,3-Trichlorobenzene	ug/l	--	D1 < 0.5	20.1	16.3	< 0.5	< 0.5	< 0.5
1,2,4-Trichlorobenzene	ug/l	70	< 0.5	20.2	18.1	< 0.5	< 0.5	< 0.5
1,1,1-Trichloroethane	ug/l	200	< 0.5	22.5	19.3	< 0.5	< 0.5	< 0.5
1,1,2-Trichloroethane	ug/l	5	< 0.5	22.7	20.2	< 0.5	< 0.5	< 0.5
Trichloroethane	ug/l	5	< 0.5	22.8	20.0	< 0.5	< 0.5	< 0.5
Trichlorofluoromethane	ug/l	--	< 0.5	25.1	21.2	< 0.5	< 0.5	< 0.5
1,2,3-Trichloropropane	ug/l	--	< 0.5	20.2	18.5	< 0.5	< 0.5	< 0.5
1,2,4-Trimethylbenzene	ug/l	--	< 0.5	25.4	21.6	< 0.5	< 0.5	< 0.5
1,3,5-Trimethylbenzene	ug/l	--	< 0.5	24.0	21.1	< 0.5	< 0.5	< 0.5
Vinyl chloride	ug/l	2	< 0.5	24.6	21.4	< 0.5	< 0.5	< 0.5
mp-Xylenes	ug/l	10	< 1.0	43.2	37.7	< 1.0	< 1.0	< 1.0
o-Xylene	ug/l	10	< 0.5	20.7	18.4	< 0.5	< 0.5	< 0.5
Total xylenes	ug/l	--	< 1.0	63.9	56.2	< 1.0	< 1.0	< 1.0

Notes:
MS = Matrix Spike
MSD = Matrix Spike Duplicate
DUPE-X = Laboratory Blind Field Duplicate
MS/MSD Samples were not compared to MCL or RDL Limits.
Results in *Italics* were detected above the RDL.

C4=The CCV for this analyte was above acceptance criteria, however the analyte was not detected.
D1 = The Duplicate for this sample was not within the established acceptance criteria.
UJ = Analyte was analyzed for, but not detected. The associated Reporting Limit is an estimate.

[2] *Source:* Table 2A, 2022 Annual Groundwater Monitoring Report, OU1

			DUPE-X	Field	Equipment	Trip
		Sample ID:	MW-11S	Blank	Blank	Blank
		Date:	6/22/2022	6/22/2022	6/22/2022	6/20/2022
Parameter	**Units**	**MCL**				
Acetone	ug/l	--	< 12.5	< 12.5	< 12.5	UJ 12.5
Benzene	ug/l	5	< 0.5	< 0.5	< 0.5	UJ 0.5
Bromobenzene	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
Bromochloromethane	ug/l	80	< 0.5	< 0.5	< 0.5	UJ 0.5
Bromodichloromethane	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
Bromoform	ug/l	80	< 0.5	< 0.5	< 0.5	UJ 0.5
Bromomethane	ug/l	--	C4 < 0.5	C4 < 0.5	C4 < 0.5	UJ 0.5
2-Butanone (MEK)	ug/l	--	< 1.2	< 1.2	< 1.2	UJ 1.2
n-Butylbenzene	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
tert-Butylbenzene	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
sec-Butylbenzene	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
Carbon Disulfide	ug/l	--	< 1.0	< 1.0	< 1.0	UJ 1.0
Carbon Tetrachloride	ug/l	5	< 0.5	< 0.5	< 0.5	UJ 0.5
Chlorobenzene	ug/l	100	< 0.5	< 0.5	< 0.5	UJ 0.5
Chloroform	ug/l	80	< 0.5	< 0.5	*9.7*	UJ 0.5
Chloroethane	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
Chloromethane	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
o-Chlorotoluene	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
p-Chlorotoluene	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
1,2-Dibromo-3-chloropropane	ug/l	0.2	< 0.5	< 0.5	< 0.5	UJ 0.5
1,2-Dibromoethane	ug/l	0.05	< 0.5	< 0.5	< 0.5	UJ 0.5
Dibromomethane	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
1,2-Dichlorobenzene	ug/l	600	< 0.5	< 0.5	< 0.5	UJ 0.5
1,3-Dichlorobenzene	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
1,4-Dichlorobenzene	ug/l	75	< 0.5	< 0.5	< 0.5	UJ 0.5
Dichlorodifluoromethane	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
1,1-Dichloroethane	ug/l	7	< 0.5	< 0.5	< 0.5	UJ 0.5
1,2-Dichloroethane	ug/l	5	< 0.5	< 0.5	< 0.5	UJ 0.5
1,1-Dichloroethylene	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
cis-1,2-Dichloroethylene	ug/l	70	< 0.5	< 0.5	< 0.5	UJ 0.5
trans-1,2-Dichloroethylene	ug/l	100	< 0.5	< 0.5	< 0.5	UJ 0.5
1,2-Dichloropropane	ug/l	5	< 0.5	< 0.5	< 0.5	UJ 0.5
1,3-Dichloropropane	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
2,2-Dichloropropane	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
1,1-Dichloropropene	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
cis-1,3-Dichloropropene	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
trans-1,3-Dichloropropene	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
Ethyl Benzene	ug/l	700	< 0.5	< 0.5	< 0.5	UJ 0.5
Hexachlorobutadiene	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
2-Hexanone	ug/l	--	< 1.2	< 1.2	< 1.2	UJ 1.2
Dibromochloromethane	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
Isopropylbenzene	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
4-Isopropyltoluene	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
Methylene chloride	ug/l	5	< 0.5	*1.9*	*2.5*	UJ 0.5
4-Methyl-2-Pentanone (MIBK)	ug/l	--	< 1.2	< 1.2	< 1.2	UJ 1.2
Naphthalene	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
n-Propylbenzene	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
Styrene	ug/l	100	< 0.5	< 0.5	< 0.5	UJ 0.5
1,1,1,2-Tetrachloroethane	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
1,1,2,2-Tetrachloroethane	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
Tetrachloroethene	ug/l	5	< 0.5	< 0.5	< 0.5	UJ 0.5
Toluene	ug/l	1	< 0.5	< 0.5	< 0.5	UJ 0.5
1,2,3-Trichlorobenzene	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
1,2,4-Trichlorobenzene	ug/l	70	< 0.5	< 0.5	< 0.5	UJ 0.5
1,1,1-Trichloroethane	ug/l	200	< 0.5	< 0.5	< 0.5	UJ 0.5
1,1,2-Trichloroethane	ug/l	5	< 0.5	< 0.5	< 0.5	UJ 0.5
Trichloroethane	ug/l	5	< 0.5	< 0.5	< 0.5	UJ 0.5
Trichlorofluoromethane	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
1,2,3-Trichloropropane	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
1,2,4-Trimethylbenzene	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
1,3,5-Trimethylbenzene	ug/l	--	< 0.5	< 0.5	< 0.5	UJ 0.5
Vinyl chloride	ug/l	2	< 0.5	< 0.5	< 0.5	UJ 0.5
mp-Xylenes	ug/l	10	< 1.0	< 1.0	< 1.0	UJ 1.0
o-Xylene	ug/l	10	< 0.5	< 0.5	< 0.5	UJ 0.5
Total xylenes	ug/l	--	< 1.0	< 1.0	< 1.0	UJ 1.0

Notes:

MS = Matrix Spike

MSD = Matrix Spike Duplicate

DUPE-X = Laboratory Blind Field Duplicate

MS/MSD Samples were not compared to MCL or RDL Limits.

Results in *Italics* were detected above the RDL.

C4=The CCV for this analyte was above acceptance criteria, however the analyte was not detected.

D1 = The Duplicate for this sample was not within the established acceptance criteria.

UJ = Analyte was analyzed for, but not detected. The associated Reporting Limit is an estimate.

Table G-2: 2022 OU1 Landfill Groundwater Monitoring – Dissolved Metals[3]

		Sample ID:	MW-2DR	MS MW-2DR	MSD MW-2DR	MW-3S
		Date:	6/22/2022	6/22/2022	6/22/2002	6/22/2022
Parameter	**Units**	**MCL**				
Aluminum, Dissolved	mg/L	--	< 0.100	0.463	0.466	< 0.100
Antimony, Dissolved	mg/L	0.006	< 0.0004	0.0187	0.0184	< 0.0004
Arsenic, Dissolved	mg/L	0.01	< 0.001	0.048	0.045	< 0.001
Barium, Dissolved	mg/L	2	*0.026*			*0.034*
Beryllium, Dissolved	mg/L	0.004	< 0.0004	0.2000	0.0191	< 0.0004
Cadmium, Dissolved	mg/L	0.005	< 0.0004	0.0176	0.0177	< 0.0004
Calcium, Dissolved	mg/L	--	*36.0*	60.8	57.4	*67.3*
Chromium, Dissolved	mg/L	0.1	*0.002*	0.045	0.046	< 0.001
Cobalt, Dissolved	mg/L	--	< 0.001	0.043	0.043	< 0.001
Copper, Dissolved	mg/L	13	< 0.002	0.045	0.045	< 0.002
Iron, Dissolved	mg/L	--	< 0.100	0.446	0.450	< 0.100
Lead, Dissolved	mg/L	0.015	< 0.001	0.045	0.045	< 0.001
Magnesium, Dissolved	mg/L	--	*24.5*	46.5	46.3	*39.5*
Manganese, Dissolved	mg/L	--	< 0.010	0.241	0.242	< 0.010
Mercury, Dissolved	mg/L	0.002	< 0.0002	0.00228	0.00229	< 0.0002
Nickel, Dissolved	mg/L	--	< 0.001	0.044	0.044	< 0.001
Potassium, Dissolved	mg/L	--	*3.73*	27.1	27.2	*8.06*
Selenium, Dissolved	mg/L	0.05	< 0.002	0.1	0.096	*0.002*
Silver, Dissolved	mg/L	--	< 0.001	0.004	0.042	< 0.001
Sodium, Dissolved	mg/L	--	*4.63*	28.2	27.8	*9.29*
Thallium, Dissolved	mg/L	0.002	< 0.0004	0.0183	0.0183	< 0.0004
Vanadium, Dissolved	mg/L	--	< 0.001	0.044	0.044	< 0.001
Zinc, Dissolved	mg/L	--	< 0.010	0.233	0.233	B *0.011*

Notes:
MS = Matrix Spike
MSD = Matrix Spike Duplicate
DUPE-X = Laboratory Blind Field Duplicate
Results in Italics were detected above the RDL.
MS/MSD Samples were not compared to MCL Limits.

B = Results should be "Non-Detect" due to detection in Method, Field, Trip and/or Equipment blank.

[3] *Source:* Table 2B, 2022 Annual Groundwater Monitoring Report, OU1

		Sample ID:	MW-7S	MW-11S	DUPE-X MW-11S	Field Blank
		Date:	6/22/2022	6/22/2022	6/22/2022	6/22/2022
Parameter	**Units**	**MCL**				
Aluminum, Dissolved	mg/L	--	< 0.100	< 0.100	< 0.100	< 0.100
Antimony, Dissolved	mg/L	0.006	< 0.0004	< 0.0004	< 0.0004	< 0.0004
Arsenic, Dissolved	mg/L	0.01	< 0.001	< 0.001	< 0.001	< 0.001
Barium, Dissolved	mg/L	2	*0.256*	*0.038*	*0.038*	< 0.010
Beryllium, Dissolved	mg/L	0.004	< 0.0004	< 0.0004	< 0.0004	< 0.0004
Cadmium, Dissolved	mg/L	0.005	*0.0006*	< 0.0004	< 0.0004	< 0.0004
Calcium, Dissolved	mg/L	--	*14.3*	*56.3*	*55.7*	< 0.40
Chromium, Dissolved	mg/L	0.1	*0.001*	*0.001*	*0.001*	< *0.001*
Cobalt, Dissolved	mg/L	--	*0.002*	< 0.001	< 0.001	< 0.001
Copper, Dissolved	mg/L	13	< 0.002	B *0.004*	B *0.004*	< 0.002
Iron, Dissolved	mg/L	--	< 0.100	< 0.100	< 0.100	< 0.100
Lead, Dissolved	mg/L	0.015	< 0.001	< 0.001	< 0.001	< 0.001
Magnesium, Dissolved	mg/L	--	*6.46*	*35.6*	*35.5*	< 0.40
Manganese, Dissolved	mg/L	--	*1.20*	< 0.010	< 0.010	< 0.010
Mercury, Dissolved	mg/L	0.002	*0.0009*	< 0.0002	< 0.0002	< 0.0002
Nickel, Dissolved	mg/L	--	*0.010*	*0.001*	*0.001*	< 0.001
Potassium, Dissolved	mg/L	--	*9.24*	*1.92*	*1.93*	< 0.40
Selenium, Dissolved	mg/L	0.05	< 0.002	< 0.002	< 0.002	< 0.002
Silver, Dissolved	mg/L	--	< 0.001	< 0.001	< 0.001	< 0.001
Sodium, Dissolved	mg/L	--	*9.09*	*2.12*	*2.12*	< 0.40
Thallium, Dissolved	mg/L	0.002	< 0.0004	< 0.0004	< 0.0004	< 0.0004
Vanadium, Dissolved	mg/L	--	< 0.001	< 0.001	< 0.001	< 0.001
Zinc, Dissolved	mg/L	--	B *0.021*	B *0.012*	B *0.011*	< 0.010

Notes:
MS = Matrix Spike
MSD = Matrix Spike Duplicate
DUPE-X = Laboratory Blind Field Duplicate
Results in Italics were detected above the RDL.
MS/MSD Samples were not compared to MCL Limits.

B = Results should be "Non-Detect" due to detection in Method, Field, Trip and/or Equipment blank.

		Sample ID:	Equipment Blank
		Date:	6/22/2022
Parameter	**Units**	**MCL**	
Aluminum, Dissolved	mg/L	--	< 0.100
Antimony, Dissolved	mg/L	0.006	< 0.0004
Arsenic, Dissolved	mg/L	0.01	< 0.001
Barium, Dissolved	mg/L	2	< 0.010
Beryllium, Dissolved	mg/L	0.004	< 0.0004
Cadmium, Dissolved	mg/L	0.005	< 0.0004
Calcium, Dissolved	mg/L	--	< 0.40
Chromium, Dissolved	mg/L	0.1	< *0.001*
Cobalt, Dissolved	mg/L	--	< 0.001
Copper, Dissolved	mg/L	13	*0.005*
Iron, Dissolved	mg/L	--	< 0.100
Lead, Dissolved	mg/L	0.015	< 0.001
Magnesium, Dissolved	mg/L	--	< 0.40
Manganese, Dissolved	mg/L	--	< 0.010
Mercury, Dissolved	mg/L	0.002	< 0.0002
Nickel, Dissolved	mg/L	--	< 0.001
Potassium, Dissolved	mg/L	--	< 0.40
Selenium, Dissolved	mg/L	0.05	< 0.002
Silver, Dissolved	mg/L	--	< 0.001
Sodium, Dissolved	mg/L	--	< 0.40
Thallium, Dissolved	mg/L	0.002	< 0.0004
Vanadium, Dissolved	mg/L	--	< 0.001
Zinc, Dissolved	mg/L	--	*0.015*

Notes:

MS = Matrix Spike

MSD = Matrix Spike Duplicate

DUPE-X = Laboratory Blind Field Duplicate

Results in Italics were detected above the RDL.

MS/MSD Samples were not compared to MCL Limits.

B = Results should be "Non-Detect" due to detection in Method, Field, Trip and/or Equipment blank.

Table G-3: 2022 OU2 Residential Groundwater Monitoring[4]

	Sample ID:		HW-7	HW-10	HW-21	MS HW-21	MSD HW-21	HW-28
	Date:		6/21/2022	6/21/2022	6/21/2022	6/21/2022	6/21/2022	6/21/2022
Parameter	Units	MCL						
Acetone	ug/l	--	C4, L4 < 1.2	C4, L4 < 1.2	C4, L4, M2 < 1.2	3.6	UJ 2.8	C4, L4 < 1.2
Benzene	ug/l	5	< 0.5	< 0.5	< 0.5	5.5	5.0	< 0.5
Bromobenzene	ug/l	--	< 0.5	< 0.5	< 0.5	5.9	5.3	< 0.5
Bromochloromethane	ug/l	80	< 0.5	< 0.5	< 0.5	5.5	5.1	< 0.5
Bromodichloromethane	ug/l	--	< 0.5	< 0.5	< 0.5	5.3	5.0	< 0.5
Bromoform	ug/l	80	< 0.5	< 0.5	< 0.5	4.3	4.1	< 0.5
Bromomethane	ug/l	--	< 0.5	< 0.5	< 0.5	5.9	5.1	< 0.5
2-Butanone (MEK)	ug/l	--	< 1.2	< 1.2	< 1.2	11.4	10.4	< 1.2
n-Butylbenzene	ug/l	--	< 0.5	< 0.5	< 0.5	5.7	5.1	< 0.5
tert-Butylbenzene	ug/l	--	< 0.5	< 0.5	M3 < 0.5	6.6	6.0	< 0.5
sec-Butylbenzene	ug/l	--	< 0.5	< 0.5	< 0.5	6.0	5.5	< 0.5
Carbon Disulfide	ug/l	--	< 1.0	< 1.0	< 1.0	6.2	5.1	< 1.0
Carbon Tetrachloride	ug/l	5	< 0.5	< 0.5	< 0.5	6.2	5.6	< 0.5
Chlorobenzene	ug/l	100	< 0.5	< 0.5	< 0.5	5.8	5.3	< 0.5
Chloroform	ug/l	80	< 0.5	< 0.5	< 0.5	5.4	4.9	< 0.5
Chloroethane	ug/l	--	< 0.5	< 0.5	< 0.5	6.1	5.6	< 0.5
Chloromethane	ug/l	--	UJ 0.5	UJ 0.5	UJ 0.5	5.8	5.2	UJ 0.5
o-Chlorotoluene	ug/l	--	< 0.5	< 0.5	< 0.5	5.6	5.1	< 0.5
p-Chlorotoluene	ug/l	--	< 0.5	< 0.5	< 0.5	5.7	5.0	< 0.5
1,2-Dibromo-3-chloropropane	ug/l	0.2	< 0.5	< 0.5	< 0.5	5.0	4.6	< 0.5
1,2-Dibromoethane (EDB)	ug/l	0.05	< 0.07	< 0.07	< 0.07	5.7	5.2	< 0.07
Dibromomethane	ug/l	--	< 0.5	< 0.5	< 0.5	6.4	5.8	< 0.5
1,2-Dichlorobenzene	ug/l	600	< 0.5	< 0.5	< 0.5	6.0	5.4	< 0.5
1,3-Dichlorobenzene	ug/l	--	< 0.5	< 0.5	< 0.5	5.9	5.3	< 0.5
1,4-Dichlorobenzene	ug/l	75	< 0.5	< 0.5	< 0.5	6.0	5.4	< 0.5
Dichlorodifluoromethane	ug/l	--	UJ 0.5	UJ 0.5	UJ 0.5	5.4	4.9	UJ 0.5
1,1-Dichloroethane	ug/l	7	< 0.5	< 0.5	< 0.5	5.4	4.8	< 0.5
1,2-Dichloroethane	ug/l	5	< 0.5	< 0.5	< 0.5	5.5	5.0	< 0.5
1,1-Dichloroethylene	ug/l	--	< 0.5	< 0.5	< 0.5	5.8	5.1	< 0.5
cis-1,2-Dichloroethylene	ug/l	70	< 0.5	< 0.5	< 0.5	5.4	4.8	< 0.5
trans-1,2-Dichloroethylene	ug/l	100	< 0.5	< 0.5	< 0.5	5.5	4.7	< 0.5
1,2-Dichloropropane	ug/l	5	< 0.5	< 0.5	< 0.5	5.4	4.9	< 0.5
1,3-Dichloropropane	ug/l	--	< 0.5	< 0.5	< 0.5	5.4	5.0	< 0.5
2,2-Dichloropropane	ug/l	--	< 0.5	< 0.5	< 0.5	5.0	4.4	< 0.5
1,1-Dichloropropene	ug/l	--	< 0.5	< 0.5	< 0.5	5.7	5.1	< 0.5
cis-1,3-Dichloropropene	ug/l	--	< 0.5	< 0.5	< 0.5	5.0	4.5	< 0.5
trans-1,3-Dichloropropene	ug/l	--	< 0.5	< 0.5	< 0.5	5.1	4.5	< 0.5
Ethyl Benzene	ug/l	700	< 0.5	< 0.5	< 0.5	5.6	5.2	< 0.5
Hexachlorobutadiene	ug/l	--	< 0.5	< 0.5	< 0.5	6.2	5.4	< 0.5
2-Hexanone	ug/l	--	< 1.2	< 1.2	< 1.2	11.5	11.0	< 1.2
Dibromochloromethane	ug/l	--	< 0.5	< 0.5	< 0.5	5.1	4.7	< 0.5
Isopropylbenzene	ug/l	--	< 0.5	< 0.5	< 0.5	6.0	5.4	< 0.5
4-Isopropyltoluene	ug/l	--	< 0.5	< 0.5	< 0.5	6.1	5.6	< 0.5
Methylene chloride	ug/l	5	< 0.5	< 0.5	< 0.5	5.6	4.9	< 0.5
4-Mehtyl-2-Pentanone (MIBK)	ug/l	--	< 1.2	< 1.2	< 1.2	11.9	11.4	< 1.2
Naphthalene	ug/l	--	< 0.5	< 0.5	< 0.5	5.4	5.2	< 0.5
n-Propylbenzene	ug/l	--	< 0.5	< 0.5	< 0.5	5.7	5.2	< 0.5
Styrene	ug/l	100	< 0.5	< 0.5	< 0.5	5.6	5.0	< 0.5
1,1,1,2-Tetrachloroethane	ug/l	--	< 0.5	< 0.5	< 0.5	5.7	5.3	< 0.5
1,1,2,2-Tetrachloroethane	ug/l	--	< 0.5	< 0.5	< 0.5	5.1	4.8	< 0.5
Tetrachloroethene	ug/l	5	< 0.5	*0.6*	< 0.5	6.1	5.5	< 0.5
Toluene	ug/l	1	< 0.5	< 0.5	< 0.5	5.7	5.1	< 0.5
1,2,3-Trichlorobenzene	ug/l	--	< 0.5	< 0.5	< 0.5	5.9	5.5	< 0.5
1,2,4-Trichlorobenzene	ug/l	70	< 0.5	< 0.5	< 0.5	5.7	5.4	< 0.5
1,1,1-Trichloroethane	ug/l	200	< 0.5	< 0.5	< 0.5	5.9	5.2	< 0.5
1,1,2-Trichloroethane	ug/l	5	< 0.5	< 0.5	< 0.5	5.7	5.2	< 0.5
Trichloroethane	ug/l	5	< 0.5	< 0.5	< 0.5	6.0	5.5	< 0.5
Trichlorofluoromethane	ug/l	--	< 0.5	< 0.5	< 0.5	5.7	5.2	< 0.5
1,2,3-Trichloropropane	ug/l	--	< 0.5	< 0.5	< 0.5	5.5	5.2	< 0.5
1,2,4-Trimethylbenzene	ug/l	--	< 0.5	< 0.5	< 0.5	5.6	5.1	< 0.5
1,3,5-Trimethylbenzene	ug/l	--	< 0.5	< 0.5	< 0.5	5.9	5.3	< 0.5
Vinyl chloride	ug/l	2	< 0.5	< 0.5	< 0.5	6.1	5.4	< 0.5
mp-Xylenes	ug/l	10	< 1.0	< 1.0	< 1.0	11.3	10.2	< 1.0
o-Xylene	ug/l	10	< 0.5	< 0.5	< 0.5	5.6	5.1	< 0.5
Total xylenes	ug/l	--	< 0.5	< 0.5	< 0.5	16.9	15.4	< 0.5

Notes:
MS = Matrix Spike
MSD = Matrix Spike Duplicate
DUPE-X = Laboratory Blind Field Duplicate
MS/MSD Samples were not compared to MCL or RDL Limits.

C4=The CCV for this analyte was above acceptance criteria, however the analyte was not detected.
L4=The LCS for the analysis batch associated with this sample was above acceptance criteria, however the analyte was not detected in the sample.
M2 = Matrix Spike was below acceptance criteria. Results may be biased low.
M3=Matrix Spike was above acceptance criteria. Results may be biased high.

[4] *Source:* Table 2, 2022 Annual Groundwater Monitoring Report, OU2

			DUPE-X			Trip
		Sample ID:	HW-28	HW-32	Field Blank	Blank
		Date:	6/21/2022	6/21/2022	6/21/2022	6/20/2022
Parameter	Units	MCL				
Acetone	ug/l	--	C4, L4 < 1.2	C4, L4 < 1.2	C4, L4 < 1.2	< 1.2
Benzene	ug/l	5	< 0.5	< 0.5	< 0.5	< 0.5
Bromobenzene	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
Bromochloromethane	ug/l	80	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
Bromoform	ug/l	80	< 0.5	< 0.5	< 0.5	< 0.5
Bromomethane	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
2-Butanone (MEK)	ug/l	--	< 1.2	< 1.2	< 1.2	< 1.2
n-Butylbenzene	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
tert-Butylbenzene	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
sec-Butylbenzene	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Disulfide	ug/l	--	< 1.0	< 1.0	< 1.0	< 1.0
Carbon Tetrachloride	ug/l	5	< 0.5	< 0.5	< 0.5	< 0.5
Chlorobenzene	ug/l	100	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform	ug/l	80	< 0.5	< 0.5	*12.2*	< 0.5
Chloroethane	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
Chloromethane	ug/l	--	UJ 0.5	UJ 0.5	UJ 0.5	UJ 0.5
o-Chlorotoluene	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
p-Chlorotoluene	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dibromo-3-chloropropane	ug/l	0.2	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dibromoethane (EDB)	ug/l	0.05	< 0.07	< 0.07	< 0.07	< 0.07
Dibromomethane	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dichlorobenzene	ug/l	600	< 0.5	< 0.5	< 0.5	< 0.5
1,3-Dichlorobenzene	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
1,4-Dichlorobenzene	ug/l	75	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorodifluoromethane	ug/l	--	UJ 0.5	UJ 0.5	UJ 0.5	UJ 0.5
1,1-Dichloroethane	ug/l	7	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dichloroethane	ug/l	5	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloroethylene	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
cis-1,2-Dichloroethylene	ug/l	70	< 0.5	< 0.5	< 0.5	< 0.5
trans-1,2-Dichloroethylene	ug/l	100	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dichloropropane	ug/l	5	< 0.5	< 0.5	< 0.5	< 0.5
1,3-Dichloropropane	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
2,2-Dichloropropane	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloropropene	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
cis-1,3-Dichloropropene	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
trans-1,3-Dichloropropene	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
Ethyl Benzene	ug/l	700	< 0.5	< 0.5	< 0.5	< 0.5
Hexachlorobutadiene	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
2-Hexanone	ug/l	--	< 1.2	< 1.2	< 1.2	< 1.2
Dibromochloromethane	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
Isopropylbenzene	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
4-Isopropyltoluene	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
Methylene chloride	ug/l	5	< 0.5	< 0.5	*3.0*	< 0.5
4-Mehtyl-2-Pentanone (MIBK)	ug/l	--	< 1.2	< 1.2	< 1.2	< 1.2
Naphthalene	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
n-Propylbenzene	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
Styrene	ug/l	100	< 0.5	< 0.5	< 0.5	< 0.5
1,1,1,2-Tetrachloroethane	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2,2-Tetrachloroethane	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethene	ug/l	5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	ug/l	1	< 0.5	< 0.5	< 0.5	< 0.5
1,2,3-Trichlorobenzene	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
1,2,4-Trichlorobenzene	ug/l	70	< 0.5	< 0.5	< 0.5	< 0.5
1,1,1-Trichloroethane	ug/l	200	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2-Trichloroethane	ug/l	5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethane	ug/l	5	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorofluoromethane	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
1,2,3-Trichloropropane	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
1,2,4-Trimethylbenzene	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
1,3,5-Trimethylbenzene	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5
Vinyl chloride	ug/l	2	< 0.5	< 0.5	< 0.5	< 0.5
mp-Xylenes	ug/l	10	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	ug/l	10	< 0.5	< 0.5	< 0.5	< 0.5
Total xylenes	ug/l	--	< 0.5	< 0.5	< 0.5	< 0.5

Notes:

MS = Matrix Spike
MSD = Matrix Spike Duplicate
DUPE-X = Laboratory Blind Field Duplicate
MS/MSD Samples were not compared to MCL or RDL Limits.

C4=The CCV for this analyte was above acceptance criteria, however the analyte was not detected.
L4=The LCS for the analysis batch associated with this sample was above acceptance criteria, however the analyte was not detected in the sample.
M2 = Matrix Spike was below acceptance criteria. Results may be biased low.
M3=Matrix Spike was above acceptance criteria. Results may be biased high.

APPENDIX H – CLEANUP LEVELS REVIEW TABLE

Table H-1: Groundwater MCL Review Table

Parameter	MCL listed in 2022 Annual Groundwater Monitoring Report, OU2[a]	Current MCL[b]	MCL Change
Acetone	--	--	None
Benzene	5	5	None
Bromobenzene	--	--	None
Bromochloromethane	--	--	None
Bromodichloromethane	80[c]	80[c]	None
Bromoform	80[c]	80[c]	None
Bromomethane	--	--	None
2-Butanone	--	--	None
n-Butylbenzene	--	--	None
tert-Butylbenzene	--	--	None
sec-Butylbenzene	--	--	None
Carbon disulfide	--	--	None
Carbon tetrachloride	5	5	None
Chlorobenzene	100	100	None
Chlorodibromomethane	--	--	None
Chloroethane	--	--	None
Chloroform	80[c]	80[c]	None
Chloromethane	--	--	None
2-Chlorotoluene	--	--	None
4-Chlorotoluene	--	--	None
1.2-Dibromo-3-chloropropane	0.2	0.2	None
Dibromochloromethane	80[c]	80[c]	None
1,2-Dibromoethane	0.05	0.05	None
Dibromomethane	--	--	None
1,2-Dichlorobenzene	600	600	None
1,3-Dichlorobenzene	--	--	None
1,4- Dichlorobenzene	75	75	None
Dichlorodifluoromethane	--	--	None
1,1-Dichloroethane	7	--	e
1,2-Dichloroethane	5	5	None
1,1-Dichloroethylene	--	7	e
cis-1,2-Dichloroethylene	70	70	None
1,3-Dichloropropane	--	--	None
2,2-Dichloropropane	--	--	None
1,2-Dichloropropane	5	5	None
trans-1,2-Dichloroethylene	100	100	None
1,1-Dichloropropene	--	--	None
cis-1,3-Dichloropropene	--	--	None
trans-1,3-Dichloropropene	--	--	None
Ethylbenzene	700	700	None
Hexachlorobutadiene	--	--	None

Parameter	MCL listed in 2022 Annual Groundwater Monitoring Report, OU2[a]	Current MCL[b]	MCL Change
2-Hexanone	--	--	None
Isopropylbenzene	--	--	None
P-Isopropyltoluene	--	--	None
Methyl isobutyl ketone 4-Mehtyl-2-Pentanone (MIBK)	--	--	None
Methylene chloride	5	5	None
Naphthalene	--	--	None
m-Propylbenzene	--	--	None
Styrene	100	100	None
1,1,1,2-Tetrachloroethane	--	--	None
1,1,2,2-Tetrachloroethane	--	--	None
Tetrachloroethylene	5	5	None
Toluene	1	1,000	f
Total xylenes	--	--	None
1,2,3-Trichlorobenzene	--	--	None
1,2,4-Trichlorobenzene	70	70	None
1,1,1-Trichloroethane	200	200	None
1,1,2-Trichloroethane	5	5	None
Trichloroethylene	5	5	None
Trichlorofluoromethane	--	--	None
1,2,3-Trichloropropane	--	--	None
1,2,4-Trimethylbenzene	--	--	None
1,3,5-Trimethylbenzene	--	--	None
Vinyl chloride	2	2	None
o-Xylene	10[d]	10,000	f
mp-Xylenes	10[d]	10,000	f

Notes:

-- = No MCL has been established for this compound. As part of the Performance Standards Assessment Plan of the OU2 Remedial Action Work Plan. In cases where an MCL does not exist for a particular Compound, the cumulative lifetime cancer risk level for carcinogenic compounds and the Hazard Index for non-carcinogenic compounds are calculated for each residential water supply.

a. MCLs presented in Table 5, 2022 Annual Groundwater Monitoring Report – OU2
b. National Primary Drinking Water Regulations (https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations accessed 12/16/2022).
c. Compound is classified as a trihalomethane. The Safe Drinking Water Act (SDWA) MCL for total THMs is 80 µg/L.
d. Based on the SDWA MCL for total xylenes.
e. The 2022 Annual Report appears to have switched the MCL for 1,1-Dichloroethane and 1,1-Dichloroethylene.
f. The 2022 Annual Report appears to be reporting these MCLs in mg/L instead of the µg/L.