

**SEVENTH FIVE-YEAR REVIEW REPORT FOR  
LEE'S LANE LANDFILL SUPERFUND SITE  
JEFFERSON COUNTY, KENTUCKY**



**AUGUST 2023**

**Prepared by**

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## LIST OF ABBREVIATIONS AND ACRONYMS

|                   |   |
|-------------------|---|
| ACL               | Alternate Concentration Limit   |
| AOC               | Administrative Order on Consent                                       |
| ARAR              | Applicable or Relevant and Appropriate Requirements                   |
| ATV               | All-Terrain Vehicle   |
| bgs               | Below Ground Surface  |
| CERCLA            | Comprehensive Environmental Response, Compensation, and Liability Act |
| CFR               | Code of Federal Regulations   |
| COC               | Contaminant of Concern  |
| CSM               | Conceptual Site Model   |
| EDD               | Enforcement Decision Document   |
| EPA               | United States Environmental Protection Agency                         |
| ESD               | Explanation of Significant Differences                                |
| FS                | Feasibility Study   |
| ft                | Feet  |
| FYR               | Five-Year Review  |
| HQ                | Hazard Quotient   |
| KDEP              | Kentucky Department for Environmental Protection                      |
| KDHMM             | Kentucky Department of Hazardous Materials and Waste Management       |
| KDWM              | Kentucky Division of Waste Management                                 |
| LEL               | Lower Explosive Limit   |
| LFG               | Landfill Gas  |
| MCL               | Maximum Contaminant Level   |
| mg/kg             | Milligrams per Kilogram   |
| µg/L              | Micrograms per Liter  |
| µg/m <sup>3</sup> | Micrograms per Cubic Meter  |
| MSD               | Metropolitan Sewer District   |
| NCP               | National Contingency Plan   |
| NPL               | National Priorities List  |
| O&M               | Operation and Maintenance   |
| OU                | Operable Unit   |
| ppmV              | Parts per Million by Volume   |
| PRP               | Potentially Responsible Party   |
| RAO               | Remedial Action Objective   |
| RCRA              | Resource Conservation and Recovery Act                                |
| RI                | Remedial Investigation  |
| ROD               | Record of Decision  |
| RPM               | Remedial Project Manager  |
| RSL               | Regional Screening Level  |
| SGW               | Soil Gas Well   |
| UU/UE             | Unlimited Use and Unrestricted Exposure                               |
| VISL              | Vapor Intrusion Screening Level                                       |
| VOC               | Volatile Organic Compound   |

## **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 is preparing this FYR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (NCP) (40 Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii) and considering EPA policy.

This is the seventh FYR for the Lee's Lane Landfill Superfund site (the Site). The triggering action for this policy 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 one operable unit (OU). OU-1 addresses the Site's soil and groundwater remedy. This FYR Report addresses OU-1.

EPA remedial project manager (RPM) Donna Seadler led the FYR. Participants included EPA attorney John Sheesley, EPA risk assessor Kevin Koporec, EPA community involvement coordinator Angela Miller, Christoph Uhlenbruch and Larry Tackett with the Kentucky Department for Environmental Protection (KDEP), and Johnny Zimmerman-Ward and Lauren Johnson with EPA support contractor Skeo. The review began on 8/30/2022.

### **Site Background**

The 112-acre Site is in Jefferson County, 4.5 miles southwest of Louisville, Kentucky, along the Ohio River (Figure 1). A sand-and-gravel quarry, a junkyard and a landfill have operated at the Site. Quarry operations began at the Site as early as the 1940s. From 1948 to 1974, Lee's Lane Landfill operated on site. Industrial firms in and around Louisville disposed of 212,400 tons of mixed and industrial waste in the landfill. In 1974, the Lee's Lane Landfill solid waste permit expired. Due to repeated compliance violations, it was not renewed.

The Site consists of three areas: the Northern Tract, the Central Tract and the Southern Tract. The Northern Tract and Central Tract have areas of level to gently sloping land, specifically at the location of the engineered cap and riprap bank stabilization. Elevations on site range from 383 feet above mean sea level along the Ohio River to 461 feet at the top of the levee (an artificial earthen wall that provides flood protection). Vegetation consisting of brush and shallow-rooted woodlands covers most of the Site.

The Site is not in use. On occasion, trespassers access the Site on all-terrain vehicles (ATVs) and on foot. The Louisville Loop, a 100-mile trail system used for walking, jogging and biking, runs along the eastern border of the Site and traverses the levee along the eastern edge of the Site (Figure 1). A residential area (Riverside Gardens) is east of the Site.

Groundwater beneath the Site occurs in an alluvial aquifer and a deep limestone aquifer. The alluvial aquifer is unconfined; a shale layer acts as an aquitard between the alluvial aquifer and the deeper

limestone aquifer. The water table begins about 50 feet below land surface. The groundwater flow direction at the Site is predominantly toward the Ohio River, with the potential for groundwater flow under the river. Water levels may vary with fluctuations of the Ohio River. During periods of high flow in the Ohio River, contaminant migration may reverse.<sup>1</sup> The Site is in the 100-year floodplain of the Ohio River. Since 1993, most of Riverside Gardens has been connected to the municipal water supply.<sup>2</sup>

Appendix A lists the resources referenced during the development of the FYR Report. Appendix B provides current site status indicators. Appendix C provides a chronology of major site events.

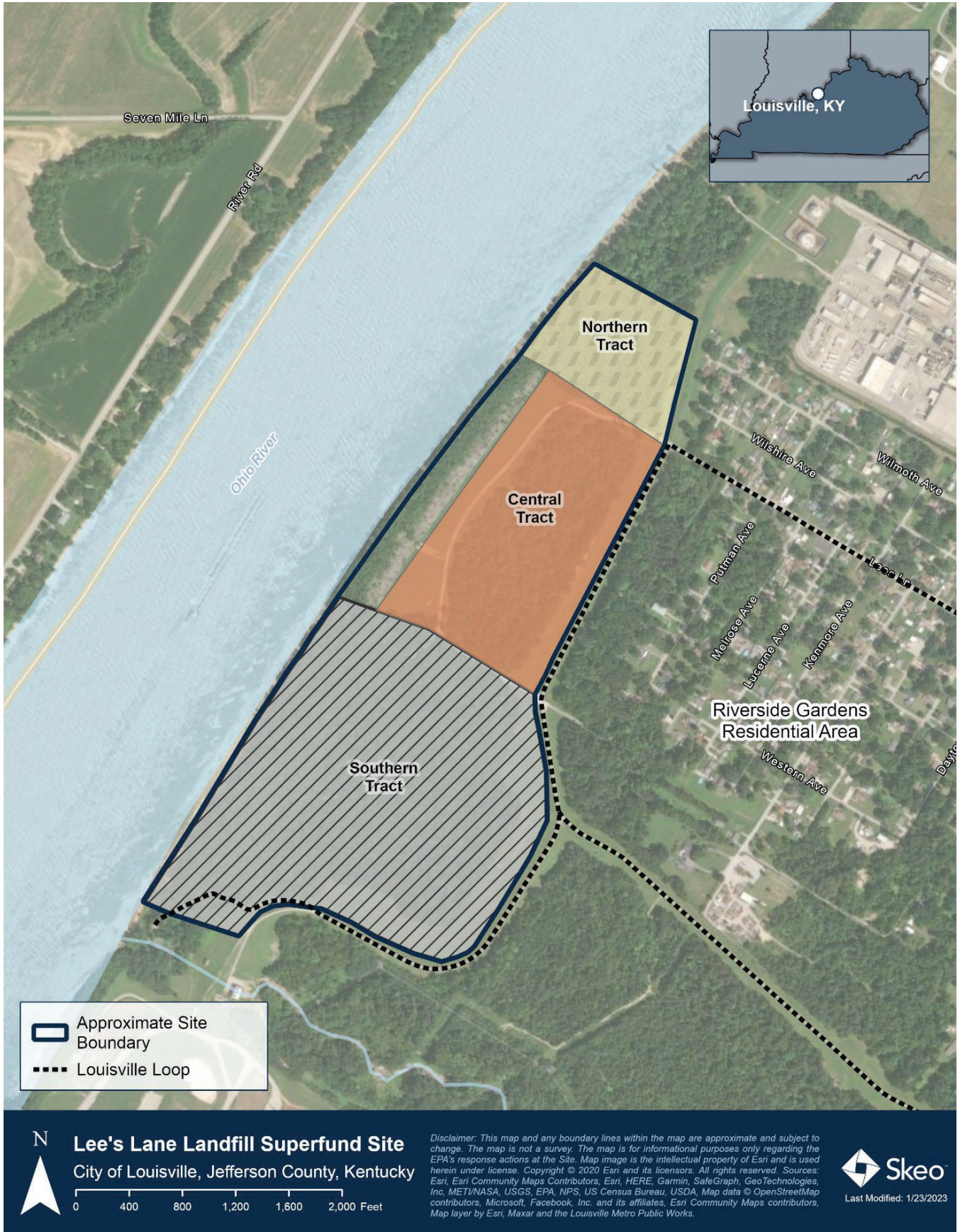
### **FIVE-YEAR REVIEW SUMMARY FORM**

| <b>SITE IDENTIFICATION</b>   |  |  |
|--|--|--|
| <b>Site Name:</b> Lee's Lane Landfill                                |  |  |
| <b>EPA ID:</b> KYD980557052  |  |  |
| <b>Region:</b> 4   | <b>State:</b> Kentucky                                       | <b>City/County:</b> Louisville/Jefferson |
| <b>SITE STATUS</b>   |  |  |
| <b>NPL Status:</b> Deleted   |  |  |
| <b>Multiple OUs?</b><br>No   | <b>Has the Site achieved construction completion?</b><br>Yes |  |
| <b>REVIEW STATUS</b>   |  |  |
| <b>Lead agency:</b> EPA  |  |  |
| <b>Author name:</b> Donna Seadler                                    |  |  |
| <b>Author affiliation:</b> EPA with support provided by Skeo         |  |  |
| <b>Review period:</b> 8/30/2022 - 6/23/2023                          |  |  |
| <b>Date of site inspection:</b> 10/26/2022                           |  |  |
| <b>Type of review:</b> Policy  |  |  |
| <b>Review number:</b> 7  |  |  |
| <b>Triggering action date:</b> 8/30/2018                             |  |  |
| <b>Due date (five years after triggering action date):</b> 8/30/2023 |  |  |

<sup>1</sup> For groundwater flow reversal to reach Riverside Gardens, the conditions necessary for flow reversal would have to be present for a long period.

<sup>2</sup> In 2012, the EPA surveyed 276 properties surrounding the Site for groundwater wells. The EPA received phone calls from several residents on Flagler Avenue (Figure 2) noting that homes on this street continue to use groundwater as a source of drinking water. The Status of Implementation section of this FYR Report provides more details.

**Figure 1: Site Vicinity Map**





## II. RESPONSE ACTION SUMMARY

### **Basis for Taking Action and Response Actions**

In 1975, homeowners in Riverside Gardens reported flash fires around their water heaters. A subsequent investigation detected explosive levels of methane gas. The Jefferson County Housing Authority evacuated seven families from homes near the Site and ultimately purchased the homes due to the presence of explosive levels of methane. In 1978, the Surveillance and Analysis Division of the Kentucky Division of Waste Management (KDWM) collected samples from residential wells in Riverside Gardens to determine the potential effects of the landfill on groundwater quality. The Division reported that there was no indication of contaminated groundwater migration from the landfill to the residential wells near the landfill.

Between 1975 and 1979, 44 gas observation wells were installed in and around the landfill and in Riverside Gardens. Samples from these wells indicated that the source of the methane and associated toxic gas was the decomposition of landfill wastes. In 1980, the Kentucky Department of Hazardous Materials and Waste Management (KDHMWM) designed and installed a landfill gas (LFG) collection system between the landfill and Riverside Gardens. Also in 1980, KDHMWM discovered about 400 drums on a terrace of land about 100 feet from the Ohio River bank. In 1981, the Lee's Lane Landfill owners removed the drums under court order. Also in 1981, the Kentucky Resources and Environmental Protection Cabinet installed 11 shallow groundwater monitoring wells at the Site. The results showed high concentrations of heavy metals and aluminum. However, the results were believed to be affected by the presence of sediment in the wells due to improper well installation.

The EPA proposed listing the Site on the Superfund program's National Priorities List (NPL) in 1982. The EPA finalized the Site's listing on the NPL in 1983. The EPA identified about 30 potentially responsible parties (PRPs), including the Louisville Metropolitan Sewer District (MSD). The Site's 1986 remedial investigation and feasibility study (RI/FS) identified surface water, soil and groundwater contamination with benzene, inorganic chemicals and heavy metals (including lead and arsenic from the landfill). Two "hot spot" areas of soil contamination with elevated levels of chromium were identified. These areas were located along the access road in the Central Tract and were believed to be the result of indiscriminate unauthorized waste disposal. A public health assessment, completed during the Site's RI/FS, concluded that the primary health concerns at the Site were the elevated chromium levels found in on-site groundwater and the potential release of methane and hazardous gases to the air and subsurface. It also concluded that there was no evidence of an off-site public health or environmental problem related to the Site at that time. The RI Report concluded that the concentrations of contaminants did not represent a significant threat to the environmental receptors at the Site.<sup>3</sup> Table 1 lists the Site's contaminants of concern (COCs).

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<sup>3</sup> The RI Report stated that biota in continued direct contact with elevated chromium levels in "hot spot" soil areas may experience symptoms of acute toxicity. However, no acute toxicological effects would be expected at current contaminant levels.

**Table 1: Site COCs, by Media**

| COC  | Media             |
|--|-------------------|
| Arsenic  | Soil, Groundwater |
| Benzene  |                   |
| Chromium (total)   |                   |
| Lead   |                   |
| <p><i>Notes:</i></p> <ul style="list-style-type: none"> <li>• Source: The Site’s 2022 Explanation of Significant Differences (ESD), PDF page 2.</li> <li>• No COCs were selected in the Site’s 1986 Enforcement Decision Document (EDD). Previous FYR reports for the Site listed COCs in addition to the ones in this table. The most recent decision document for the Site (the 2022 ESD) identifies only arsenic, benzene, chromium and lead as site COCs.</li> </ul> |                   |

The EPA selected a remedy in the Site’s 1986 Enforcement Decision Document (EDD) (also referred to as the Record of Decision [ROD]). The EDD did not define remedial action objectives (RAOs) but did define the following public health objectives:

- Construct a groundwater monitoring program that will serve as an early warning system should site conditions change.
- Control the vertical and lateral subsurface migration of methane and other gases.
- Institute a routine monitoring program that will serve to detect any undesirable and possible dangerous levels of methane and/or toxic vapors migrating into Riverside Gardens.
- Institute an ambient air monitoring program.

The remedy selected in the EDD addresses the potential release of methane and hazardous gases to the air and subsurface and called for the following components:

- *Provision for a properly operating gas collection system.*
- *Consideration of a possible future alternate water supply.*
- *Cleanup of surface waste area.*
- *Bank protection controls.*
- *Establishment of an alternate concentration limit (ACL) for the groundwater at the site.*
- *Institutional controls, which will be fully identified during remedial design, will be implemented. These controls may include, but will not be limited to:*
  - *Cautionary signs.*
  - *Installation of a gate at the Putman Street access point.<sup>4</sup>*
- *Operation and maintenance (O&M) activities which will include:*
  - *Groundwater, gas, and air monitoring.*
  - *Inspection of the gas monitoring wells, gas collection system, capped waste areas, and the riprap along the Ohio River bank.*

The EDD did not select a groundwater remedy. However, groundwater monitoring was selected as a remedy component to serve as an early warning system if site conditions change. As per the EDD, groundwater concentrations had been compared to ACLs to comply with potential Resource

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<sup>4</sup> Previous site documents have referred to the name of this street as “Putnam Street.” The correct street name is “Putman Avenue.”

Conservation and Recovery Act (RCRA) applicable or relevant and appropriate requirements (ARARs). In 2013, the EPA determined that comparison of groundwater sample results to ACLs was not appropriate since a groundwater remedy was not selected. Instead, groundwater concentrations were to be compared to drinking water maximum contaminant levels (MCLs) to establish whether groundwater poses a potential risk via ingestion, inhalation, and dermal contact. Table 2 lists current drinking water MCLs for site COCs.

The remedy selected in the EDD did not include institutional controls to prevent human exposure to contaminated subsurface soil and groundwater and protect engineered remedy components. The remedy selected in the EDD did identify cautionary signs and the installation of a gate at the Putnam Street access point as institutional controls. However, the controls mentioned are physical access controls and do not meet the EPA’s definition of institutional controls as legal and administrative instruments. In 2022, the EPA modified the remedy with an Explanation of Significant Differences (ESD). The ESD documents a final decision to implement institutional controls, in the form of an environmental covenant, as part of the remedy for the Site. The environmental covenant will be drafted, executed, and recorded in accordance with Commonwealth of Kentucky Revised Statute Section 224.89 et. seq., which is based on the Uniform Environmental Covenants Act (the Institutional Control Review section of this FYR Report provides more information).

**Table 2: Groundwater MCLs for Site COCs**

| COC  | MCL (µg/L) <sup>a,b</sup> |
|--|---------------------------|
| Arsenic  | 10                        |
| Benzene  | 5                         |
| Chromium (total)   | 100                       |
| Copper   | 1,300                     |
| Lead   | 15                        |
| <i>Notes:</i>  |                           |
| a. Source: National Primary Drinking Water Regulations: <a href="https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations">https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations</a> , accessed 11/17/2022. |                           |
| b. Groundwater cleanup goals have not been documented in a decision document. Therefore, cleanup goals are listed as the current MCLs.   |                           |
| µg/L = micrograms per liter  |                           |

**Status of Implementation**

Remedial actions at the Site began in March 1987 and finished in October 1987. The 1988 Close-Out Report for deletion of the Site from the NPL provides a detailed description of the cleanup. The remedial actions summarized in the report include:

- Surface waste cleanup/implementation of institutional controls: The areas designated as “hot spots” in the EDD were covered with clay to prevent contaminated surface runoff. In addition, 296 exposed drums were placed under the engineered cap. Security gates were installed at the levee entrance and at Putman Avenue and cautionary signs were posted at entrance points to the Site.
- Construction of the riprap slope: About 14 acres of the riverbank in the Central Tract were graded, sloped, and lined with rock for bank protection against flooding. All debris and excess timber were contained in a designated area on the Southern Tract.

- The Central Tract: The tract was leveled, covered with topsoil, sloped for proper drainage and seeded with a mixture of grasses. A drainage ditch on the western end of the Site, which allows water to run off across the Central Tract toward the river, was rebuilt.
- Monitoring well installation: Ten gas monitoring wells and two groundwater monitoring wells were installed at or near the Site.
- Gas collection system inspection and repair: The gas collection system was inspected, evaluated and repaired.
- Alternate water supply hookup: Based on groundwater modeling, the EPA concluded that all private wells within a 1,500-foot zone around the Site should be abandoned. The EPA recommended connecting all residences using private wells within 1,500 feet of the Site to an alternate water supply. Field surveys confirmed there were two operating private wells within the 1,500-foot zone. These residences were connected to the existing municipal water supply in the subdivision.

In 1991, the EPA signed an Administrative Order on Consent (AOC) with Louisville MSD to conduct remedy O&M activities for 29 years. The EPA deleted the Site from the NPL in 1996.

Due to community concerns, the Kentucky Department for Public Health reviewed cancer rates from 1999 to 2008 in the area around the Site. The review, completed in 2011, found that cancer rates did not meet the threshold for further investigation. Also in 2011, the EPA collected soil samples from four on-site locations to determine if hazardous constituents were present at levels exceeding EPA regional screening levels (RSLs) for residential soils. The four areas were targeted based on the presence of surface accumulation of various types of debris. All reported arsenic values exceeded the residential RSL for arsenic (0.39 milligrams per kilogram [mg/kg]).<sup>5</sup> The report stated that the detected arsenic concentration range is typical for soils derived from sedimentary rock and is not thought to be indicative of contamination at the Site. Three of the four locations had contamination above residential RSLs for other contaminants. The EPA concluded that more sampling was necessary to identify remaining contamination.

The Site's 2013 FYR Report identified eight items that required further evaluation. Data collected in response to these items are summarized in the 2016 Conceptual Site Model (CSM) report, prepared by the PRPs and Louisville MSD. As a result of the data collected, the CSM report recommended continuing various activities at the Site. These activities are listed in detail in the 2018 FYR Report. They include an annual inspection of the soil cover and cap area, semiannual measurements of methane, an evaluation to determine the source of carbon tetrachloride and 1,3-butadiene in soil gas, annual groundwater monitoring for metal COCs, and an evaluation of the need for institutional controls. Activities identified in the current O&M Plan include inspection of the soil cover and cap area and groundwater monitoring. This will be updated to remove the groundwater monitoring.

In 2013, KDEP collected 31 surface and subsurface soil samples in 28 locations on the Site to identify remaining soil contamination. The soil samples included five samples from the Northern Tract, 11 samples from the Central Tract and 15 samples from the Southern Tract. Appendix D provides the soil sampling results. Four locations had surface soil contaminant concentrations above the recreational trespasser risk-based screening levels. A 2017 Site Inspection Completion Report updated the human health risk assessment. It confirmed that areas where exceedances of risk-based screening levels were

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<sup>5</sup> 0.39 mg/kg was the RSL at the time of the analysis. Current arsenic RSLs for residential soils are 0.68 mg/kg (carcinogenic) and 35 mg/kg (noncancer). The highest detection of arsenic at the time was 4.5 mg/kg, which corresponds to risk within the EPA's range of acceptable risk.

observed are difficult to access, so the likely frequency of any potential exposure would be much less than the default exposure assumptions used to develop the risk-based screening levels. The 2017 Site Inspection Completion Report revised the risk evaluation using updated exposure assumptions. Using the updated exposure assumptions, none of the sample locations had contaminant concentrations that resulted in a carcinogenic risk above the EPA's acceptable risk range or noncancer hazard above the hazard quotient (HQ) of 1.

In 2012, Louisville MSD conducted a gas monitoring well one-year review. Louisville MSD evaluated gas concentration trends from samples collected in the gas monitoring wells. The report concluded that consistent methane levels below the lower explosive limit (LEL) in the monitoring wells indicated that the operation of the LFG collection system was not required at that time to prevent migration of methane gas at dangerous levels. However, the EPA and KDEP were uncertain of these findings. No action was taken, and the LFG collection system remained in place and operating. In response to the recommendations from the previous FYR, KDEP collected soil gas monitoring data in 2019 and 2020. The sampling results verified that the gas collection system can be removed but a venting cap should be used on the GMW3 monitoring location to address discrete methane accumulations.<sup>6</sup> In 2023 KDEP removed the electrical building associated with the gas collection system and abandoned the wells used for venting.

In 2014, KDEP installed five new groundwater monitoring wells bringing the site total to seven monitoring wells. The 2016 CSM review of groundwater data and data from the new monitoring wells confirmed that no groundwater remedy is necessary as data collected to date confirmed there has not been a changed condition relative to groundwater since the EDD was issued. Groundwater quality has remained stable and the potential for groundwater exposure by human receptors has been eliminated. Based on recommendations from the 2016 CSM report and sampling conducted after the CSM, KDEP and the EPA conducted several more rounds of groundwater sampling for arsenic, manganese, iron, barium and lead. From 2012 to 2017, the five inorganic contaminants were routinely detected in groundwater at the landfill (including some detections over the respective MCL). Because there was no apparent increase or decrease in concentration trends, the remedy did not have a groundwater component, and there is no drinking water exposure, groundwater sampling was discontinued.

Louisville MSD completed its O&M obligations in October 2020. As agreed in the 1994 Intergovernmental Response Agreement with the EPA, KDEP assumed responsibility for O&M activities at the Site in April 2021. Trespassing has been an ongoing issue at the Site. Additional measures, such as downing trees to block former ATV trails, have been taken to discourage trespassers. Ongoing site inspections will determine if more measures need to be taken.

### **Institutional Control Review**

The 2022 ESD modified the remedy to include institutional controls to prevent human exposure to contaminated subsurface soil and groundwater and to protect engineered remedy components, such as the landfill cover and gas collection system. Institutional controls in the form of environmental covenants will be implemented at nine parcels at the Site. Specifically, the environmental covenants will state that, except as approved by the KDWM, use of the nine parcels will be restricted as follows:

- No residential use of the parcels shall be permitted.

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<sup>6</sup> Reoccurring issues with the LFG collection system have been documented in previous FYR reports. In 2010, a site inspection concluded that the system was inoperable and had exceeded its useful life.

- The parcels shall not be used for commercial purposes (including, but not limited to, retail, restaurants and offices), agricultural purposes (including, but not limited to, farming, forestry, fishing and mining), or active recreational purposes (including, but not limited to, hunting, camping, organized sports or riding wheeled vehicles), but may be used for passive recreational purposes (including, but not limited to, walking, jogging, sitting, informal play or birdwatching).
- Other than passive recreational purposes, use of the parcels shall be restricted to industrial use only, as such term or similar terms are presently defined in applicable zoning laws, regulations or ordinances, provided the use is consistent with the restrictions in the environmental covenant.

The environmental covenants will also restrict activities at the parcels as follows:

- Groundwater at the parcels shall not be used for drinking or other domestic or agricultural purposes.
- No person shall install any groundwater wells on the parcels or extract the groundwater underlying the parcels for any purpose, potable or non-potable, inconsistent with the O&M Plan, except for such groundwater investigations or remedial activities as may be required or approved in writing by the KDWM and the EPA.
- No person shall engage in removal of vegetation or excavation, subsurface demolition, drilling, maintenance, construction, utility work, soil removal, soil remediation or other subsurface activities of any kind on the parcels that are inconsistent with the O&M Plan without the written approval of the KDWM and the EPA.
- Except as necessary to protect human health, safety or the environment, no action shall be taken, allowed, suffered or omitted on the parcels if such action or omission is reasonably likely to:
  - Create a risk or release of hazardous substances, pollutants or contaminants or a potential hazard to human health or the environment.
  - Result in the disturbance of the structural integrity of any engineering controls designed or utilized at the parcels to contain hazardous substances, pollutants or contaminants or limit human exposure to hazardous substances, pollutants or contaminants.

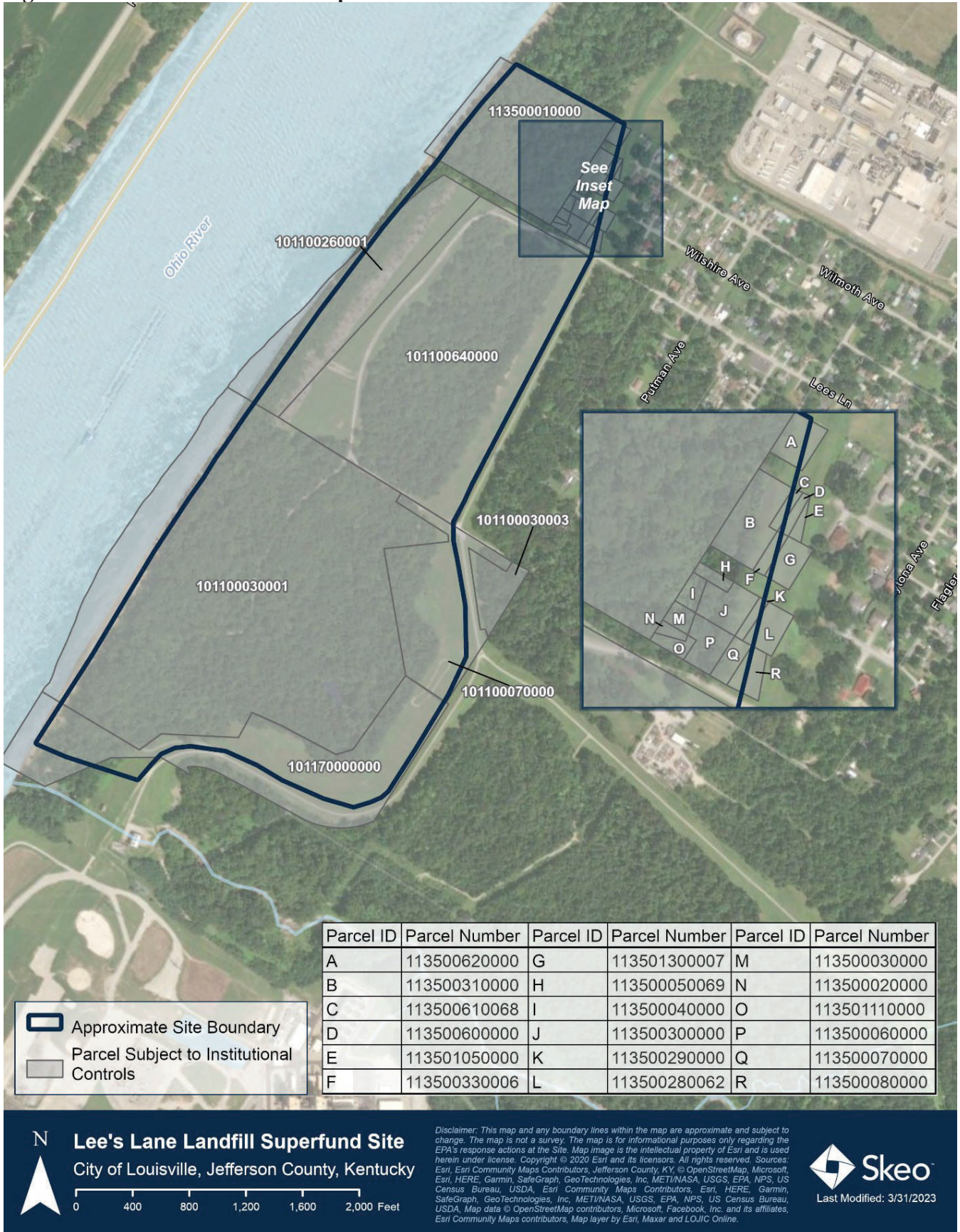
The EPA is working on implementing environmental covenants on the twenty-five parcels shown in Figure 2 below. The 2022 ESD mentioned that the site included 9 parcels, but further review indicated additional smaller parcels which had been missed. Table 3 summarizes the institutional controls at the Site.

**Table 3: 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 |
|---|------------|--|--------------------|---|---|
| Soil  | Yes        | Yes                                      | See Figure 2       | Prevent human exposure to contaminated subsurface soil and protect engineered remedy components by restricting activities that could impair the integrity of the remedy and restricting land use. | To be determined                            |

| <b>Media, Engineered Controls, and Areas That Do Not Support UU/UE Based on Current Conditions</b> | <b>ICs Needed</b> | <b>ICs Called for in the Decision Documents</b> | <b>Impacted Parcel(s)</b> | <b>IC Objective</b>   | <b>Title of IC Instrument Implemented and Date</b> |
|--|-------------------|---|---------------------------|---|--|
| Groundwater  | Yes               | Yes   | See Figure 2              | Prevent human exposure to contaminated groundwater by precluding the drilling of wells or use of groundwater. | To be determined                                   |

**Figure 2: Institutional Control Map**





## **Systems Operations/O&M**

In 1991, the EPA signed an AOC with Louisville MSD to conduct remedy O&M activities for 29 years. These O&M activities were conducted in accordance with the 1991 O&M Plan for Post Removal Site Control. Louisville MSD completed its O&M obligations in October 2020. In April 2021, KDEP assumed responsibility for O&M activities at the Site. The 2021 Draft Interim O&M Plan provides the baseline activities for maintaining remedy protectiveness and will be updated by the EPA as site conditions and uses require. Activities identified in the 2021 Draft Interim O&M Plan include:

- Mowing the engineered cap as needed, at a minimum of two times per year, to reduce the possibility of undesired vegetation growth and allow for inspection of the landfill cap.
- Performing an overall site inspection, including documenting the condition of the engineered cap, the riprap slope, the soil cover, the gas monitoring wells, the groundwater monitoring wells, access controls, and signage at a minimum of twice per year.
- Performing an inspection of the engineered cap, the soil cover and riprap slope following each mowing event.
- Conducting groundwater monitoring at a minimum of every five years in the fourth quarter of the fiscal year preceding the FYR.

Inspections and monitoring results will be documented by an email sent to the EPA RPM. KDEP performed its first site inspection (since taking over O&M responsibilities from Louisville MSD) in February 2022. During this site inspection, the following issues were observed:

- Potholes on the gravel road to the cap.
- Barricade behind the Wilmoth Avenue soil gas wells damaged (does not affect soil gas wells).
- Several swales and depressions about 2 to 12 inches deep and 1 to 5 feet wide across the engineered cap.
- Evidence of off-road driving and ponding water east of the engineered cap.
- Trees and vegetation growing on the rip rap.
- An abandoned boat washed ashore below the rip rap slope.

KDEP performed a second site inspection in February 2023. During this site inspection, the following issues were observed:

- Most of the site signage is damaged or missing.
- Barricade behind the Wilmoth Avenue soil gas monitoring wells is damaged.
- Groundwater monitoring well WM-102 is damaged and needs to be repaired.
- Several swales and depressions about 2 to 12 inches deep and 1 to 5 feet wide across the engineered cap.
- Evidence of off-road driving and ponding water east of the cap and on the southern section of the site.
- Trees and vegetation growing on the riprap.

KDEP plans to install new signage at the Site, repair monitoring well WM-102 and monitor and take appropriate maintenance actions for the swales and depressions in the engineered cap before the end of the 2023 calendar year. KDEP spoke with MSD in February 2023, and it was decided that the repairs to the Wilmoth Avenue barricade are MSD's responsibility. KDEP will continue to monitor the Wilmoth Avenue barricade during site inspections. KDEP will continue to monitor off-road activities and corresponding damage and will take appropriate maintenance actions, if needed.

### III. PROGRESS SINCE THE PREVIOUS REVIEW

This section includes the protectiveness determination and statement from the previous FYR Report (Table 4) as well as the recommendations from the previous FYR Report and the status of those recommendations (Table 5).

**Table 4: Protectiveness Determination and Statement from the 2018 FYR Report**

| OU #     | Protectiveness Determination | Protectiveness Statement   |
|----------|------------------------------|--|
| Sitewide | Short-term Protective        | The remedy at the Site currently protects human health and the environment because there are currently no completed exposure pathways. However, in order for the remedy to be protective in the long term, the following actions need to be taken: implement groundwater and land use institutional controls, identify the source of volatile organic compounds (VOCs) and monitor soil vapor levels migrating from the landfill for effect on shutdown, and for each of these, determine if additional measures need to be taken. |

**Table 5: Status of Recommendations from the 2018 FYR Report**

| OU # | Issue   | Recommendations  | Current Status | Current Implementation Status Description  | Completion Date |
|------|---|--|----------------|--|-----------------|
| 1    | Site conditions do not allow for unrestricted access.   | Implement groundwater and land use institutional controls.                   | Ongoing        | The EPA is working on implementing environmental covenants on the nine parcels mentioned in the 2022 ESD and an additional 16 (very small) parcels identified during this review.  | Not Applicable  |
| 1    | Groundwater monitoring wells MW-102 and MW-103 were off-gassing VOCs at levels of 100% LEL in 2016.   | Identify the source of VOCs and determine if more measures need to be taken. | Completed      | EPA and KDEP confirmed during the Conceptual Site Model development that VOCs in groundwater were not of concern. Issue was discussed with EPA LSASD. Field staff agreed that removing the cap and allowing the well to vent for several minutes was sufficient to alleviate any build-up.                                   | 09/30/2019      |
|      | Airborne contamination (vapor intrusion) is not currently posing unacceptable health risks but could do so if more contaminated vapors migrate from the landfill toward the residential area. | Monitor the vapors migrating from the landfill toward the residential area.  | Ongoing        | KDEP collected soil gas monitoring data in 2020. The screening-level risk evaluations show that vapors are unlikely to migrate toward the residential area at unacceptable levels (Table 6). Methane detections remain below 5% of the Lower Explosion Limit (LEL) at all points except GMW3, where a venting cap is needed. | Not Applicable  |

## IV. FIVE-YEAR REVIEW PROCESS

### **Community Notification, Community Involvement and Site Interviews**

The EPA issued an online news release on October 19, 2022, to announce that the FYR was underway. A copy of the news release is available online at <https://www.epa.gov/newsreleases/epa-review-cleanups-45-southeast-superfund-sites>. It is also included in Appendix E. The results of the review and completed FYR Report will be made available on the EPA's site profile page: <http://www.epa.gov/superfund/lee-lane-landfill>, which can also be accessed online at the Site's information repository, Shively Library, located at 3920 Dixie Highway, Louisville, Kentucky 40216.

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 and included in Appendix F.

Larry Tackett, the project manager with KDEP stated that the capped area seems to be in good shape and that past issues with ATV activity on site seem to have tapered off.

### **Data Review**

This FYR evaluated soil gas and methane data collected in 2019 and 2020 and reviewed historic trends. Groundwater was not monitored during this FYR period.

#### *Soil Gas*

Prior to fulfilling its O&M obligations in October 2020, Louisville MSD monitored soil gas twice per year. During this FYR period, soil gas was collected in 2019 (June and October by Louisville MSD) and in 2020 (June, July and December by KDEP). KDEP conducted soil gas monitoring, in response to recommendations from the previous FYR, at locations that have historically shown elevated levels of carbon tetrachloride and lower exceedances of several other organic contaminants. The soil gas samples are analyzed for VOCs, methane and other general gases. Gas probe locations are shown in Figure 3.

Historic trends of soil gas contaminants were evaluated by the PRPs in the 2016 CSM report, which determined that the source of the carbon tetrachloride is unknown. The PRPs concluded that the concentrations of carbon tetrachloride were low at gas monitoring well G-4 from 1997 until 2002 and then were frequently elevated thereafter. This suggests the arrival of a new source in 2003 that is inconsistent with landfill gas as a source. In the 2016 CSM report the PRPs evaluated soil gas data collected in 2013 near the eastern site boundary that showed 1,3-butadiene, carbon tetrachloride, chloroform and tetrachloroethylene exceeded the EPA's Vapor Intrusion Screening Levels (VISLs) (adjusted to reflect soil gas screening levels). Carbon tetrachloride had the highest exceedances of the four contaminants. Based on these exceedances, the EPA completed an in-depth vapor intrusion study in 2015 using the 2013 data (indoor air, outdoor air and soil gas) at 33 homes in the adjacent Riverside Gardens community to determine whether gases from the landfill were migrating into homes. The EPA's vapor intrusion study showed that there were no unacceptable health risks due to vapor intrusion.

As shown in Table 6, this FYR compared maximum 2020 soil gas results (all observed in December 2020) to the soil gas VISLs. The sample locations resulting in a residential risk exceedance of the EPA's upper bound of cancer risk management range of  $1 \times 10^{-4}$  were locations G-4R, SGW1D and SGWI. There is no current complete exposure pathway, and therefore no health risks, since there are no existing buildings above these elevated soil gas levels. None of the soil gas samples had concentrations that exceeded the noncancer-based soil gas RSL based on a noncancer HQ of 1. These data are consistent

with historic results where carbon tetrachloride is the contaminant with the highest exceedances in location G-4R. SGW1D (deep sample) and SGW1I (intermediate depth sample) are new sample locations located north of G-4R (deep sample). During the EPA’s 2015 vapor intrusion study using the 2013 data, the concentration of carbon tetrachloride in G-4R was 15,727 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ). At that time, the soil gas concentrations in the Riverside Gardens community were much lower, resulting in cancer risks and noncancer HQs below the EPA’s target risk range and below the noncancer HQ of 1. Because the 2020 carbon tetrachloride concentration at G-4R is much lower than the concentration observed in 2013, the vapor intrusion risks in the adjacent Riverside Gardens community are expected to be even lower than those observed in 2013.

The Kentucky action level for methane gas (explosion hazard) is 5% of the LEL. The LEL is 50,000 parts per million by volume (ppmV) therefore the action level is 2,500 ppmV. During this FYR period most of the methane values were below detection except for sample locations GMW1 and GMW3. GMQ1 had one detected value of 6.7 ppmV in December 2020. GMW3 had the highest and only remaining methane detections ranging from 3,300 ppmV in January 2020 to 24,000 ppmV in June 2020 and then dropped to 11,000 ppmV in December 2020. The sampling results verified that the gas collection system can be removed (Table I-1) but KDEP will need to replace the cap at the GMW3 location with a cap that will allow venting to occur as needed so this location will remain below 5% of the LEL.

**Table 6: Screening-Level Vapor Intrusion Evaluation of the 2020 Soil Gas Results**

| COC                  | Soil Gas in December 2020           |                           | Residential Soil Gas VISL <sup>a,b</sup> ( $\mu\text{g}/\text{m}^3$ ) |          | Risk <sup>b</sup>  | HQ <sup>c</sup> |
|----------------------|-------------------------------------|---------------------------|---|----------|--------------------|-----------------|
|                      | Result ( $\mu\text{g}/\text{m}^3$ ) | Sample location           | $10^{-5}$ Risk  | HQ = 1.0 |                    |                 |
| Carbon tetrachloride | <b>3,000</b>                        | G-4R (30-40 ft bgs)       | 47  | 10,000   | $6 \times 10^{-4}$ | 0.3             |
|                      | 82                                  | G-4L (5-15 ft bgs)        |   |          | $2 \times 10^{-5}$ | 0.008           |
|                      | 2,300                               | SGW1D                     |   |          | $5 \times 10^{-4}$ | 0.23            |
|                      | 1,000                               | SGW1I                     |   |          | $2 \times 10^{-4}$ | 0.10            |
|                      | 21                                  | SGW1S                     |   |          | $4 \times 10^{-6}$ | 0.002           |
| Tetrachloroethylene  | 530                                 | SGW3D                     | 1,100   | 42,000   | $5 \times 10^{-6}$ | 0.01            |
|                      | <b>690</b>                          | SGW3I                     |   |          | $6 \times 10^{-6}$ | 0.6             |
|                      | 540                                 | SGW3S                     |   |          | $5 \times 10^{-6}$ | 0.01            |
| Trichloroethylene    | <b>14</b>                           | GMW-3 (4.96-20.15 ft bgs) | 48  | 210      | $3 \times 10^{-6}$ | 0.07            |

*Notes:*

- a. Current EPA VISLS, updated May 2022, are available at <https://www.epa.gov/vaporintrusion>.
- b. According to 2016 CSM report, the screening level for soil gas is equivalent to 33 times the indoor air screening levels that are based on a  $1 \times 10^{-5}$  risk or noncancer HQ of 1.
- c. The cancer risks were calculated using the following equation, based on the fact that the soil gas RSLs are derived based on  $1 \times 10^{-5}$  risk: cancer risk = (maximum concentration  $\div$  cancer-based RSL)  $\times 10^{-5}$ .
- d. The noncancer HQ was calculated using the following equation: HQ = (maximum concentration  $\div$  noncancer RSL).

bgs = below ground surface  
 $\mu\text{g}/\text{m}^3$  = micrograms per cubic meter  
ft = feet

**Figure 3: Detailed Site Map**



## **Site Inspection**

The site inspection took place on 10/26/2022. Participants included EPA RPM Donna Seadler, EPA hydrologist James Ferreira, EPA human health risk assessor Kevin Koporec, Christoph Uhlenbruch and Larry Tackett with KDEP, and Johnny Zimmerman-Ward with EPA FYR support contractor Skeo. The purpose of the inspection was to assess the protectiveness of the remedy. Appendix G includes the site inspection checklist and Appendix H includes site inspection photographs.

Site inspection participants accessed the Site from Lee's Lane. Access to the Site is restricted by a locked security gate. The Site is frequently accessed by pedestrians using the Louisville Loop, the paved trail that traverses the levee along the eastern edge of the Site. Vehicular traffic is limited. The Site is sometimes used by unhoused people and small areas of unauthorized waste disposal were found while walking the Site. During the site inspection, participants toured the capped landfill area and riprap along the Ohio River, viewed the LFG collection system's wells and blower house and recently installed gas monitoring wells. KDEP representatives indicated that the LFG collection system and blower house will be removed from the Site as they are no longer used. The capped area is well mowed, and no problems were observed. Vegetation and trees were growing in the riprap. The culvert area on the cap has vegetation in it, although it does not appear to impede flow. No signs of ATV activity were observed.

## **V. TECHNICAL ASSESSMENT**

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

### **Question A Summary:**

Yes. The review of site documents, ARARs, risk assumptions and the site inspection indicate that the Site's remedy was constructed in accordance with the requirements of the EDD. KDEP collected soil gas monitoring data in 2020. The sampling results verified that the LFG collection system can be removed. Site conditions do not allow for unrestricted use and the remedy selected in the EDD did not include institutional controls. In 2022, the EPA modified the remedy with an ESD to document a final decision to implement institutional controls, in the form of environmental covenants, as part of the remedy for the Site. The EPA is working on implementing the institutional controls called for in the ESD.

Previously, groundwater concentrations had been compared to ACLs. In 2013, the EPA determined groundwater concentrations would be compared to drinking water MCLs to establish whether groundwater can pose a risk for ingestion, inhalation and dermal contact. The 2021 Draft Interim O&M Plan requires groundwater monitoring at a minimum of every five years in the fourth quarter of the fiscal year preceding the FYR. Groundwater has not been monitored during this FYR period. A groundwater remedy has not been selected in a decision document. The 2016 CSM review of groundwater data and data from new groundwater wells confirmed that no active remedy is necessary for groundwater. In 2016, KDEP and the EPA agreed to continue groundwater sampling for arsenic, manganese, iron, barium and lead. From 2012 to 2017, the five inorganic contaminants were routinely detected in groundwater at the landfill (including some detections above the respective MCL), with no apparent increasing or decreasing trends in concentration. Although contaminants in groundwater have been detected above MCLs in previous sampling events, groundwater is not being used and institutional controls preventing the use of groundwater are forthcoming. The 2013 FYR Report stated that Ohio River water samples would be analyzed and compared to the EPA and KDEP surface water concentration standards to determine the presence of surface water contamination related to the Site.

Groundwater monitoring should be conducted to determine if groundwater contamination could be affecting surface water.

Remedial activities in 1987 included sampling and disposal of exposed drums, identification and covering of “hot spots” of contamination, clearing of vegetation from the Central Tract, riprap placement on about 14 acres of riverbank, covering of exposed trash with topsoil, sowing of the ground with a mixture of grass seed, and installation of gas and groundwater monitoring wells for monitoring of any future off-site migration of contaminants. The Site achieved construction completion status in March 1988, and the EPA deleted the Site from the NPL in 1996.

In April 2021, KDEP assumed responsibility for O&M activities at the Site. O&M activities are conducted in accordance with the Site’s 2021 Draft Interim O&M Plan, except for groundwater monitoring which was discontinued and will be removed from the O&M plan in 2023. O&M activities are designed to work in a manner that will continue to maintain the effectiveness of the remedy.

**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:**

The exposure assumptions, toxicity data and RAOs used at the time of the remedy selection are still valid (health protective). The 2016 CSM report and the 2017 Site Inspection Completion Report reviewed ecological and human health risk from exposure to soil for recreational users and trespassers. Using these exposure assumptions, none of the sample locations had contaminant concentrations that resulted in a carcinogenic risk above the EPA’s acceptable risk range or noncancer hazard above the hazard quotient (HQ) of 1. In previous FYRs, groundwater concentration data were compared to ACLs calculated for the Site, to evaluate the protectiveness of the remedy. ACLs were not selected as cleanup goals in the EDD but rather identified as potential ARARs through RCRA compliance. Comparing groundwater sampling results to ACLs is not appropriate since a groundwater remedy was not selected. In 2013, the EPA determined that groundwater concentrations are to be compared to MCLs to establish whether groundwater is capable of posing an unacceptable health risk for ingestion, inhalation or dermal contact.

In 2013, the EPA completed a vapor intrusion study. The EPA determined that there are no unacceptable health risks from vapors beneath homes migrating into indoor air. Vapors migrating from the landfill should be monitored periodically to ensure that there continues to be no unacceptable risks from this exposure. KDEP should install the venting cap on the GMW3 location for methane venting from this discrete area.

Trespassing has been an ongoing issue at the Site. Additional measures have been taken to discourage trespassers; ATV activity has been limited. Ongoing site inspections will determine if more measures need to be taken.

**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   |  |
|--|--|
| <b>OU(s) without Issues/Recommendations Identified in the FYR:</b> |  |
| None   |  |

| Issues and Recommendations Identified in the FYR: |
|---|
|---|

|  |  |                              |                        |                       |
|--|--|------------------------------|------------------------|-----------------------|
| <b>OU(s): 1<br/>(sitewide)</b>           | <b>Issue Category: Institutional Controls</b>  |                              |                        |                       |
|  | <b>Issue:</b> Site conditions do not allow for unrestricted use and no institutional controls are in place to restrict groundwater and land use. |                              |                        |                       |
|  | <b>Recommendation:</b> Implement groundwater and land use institutional controls.  |                              |                        |                       |
| <b>Affect Current<br/>Protectiveness</b> | <b>Affect Future<br/>Protectiveness</b>  | <b>Party<br/>Responsible</b> | <b>Oversight Party</b> | <b>Milestone Date</b> |
| No                                       | Yes  | PRP                          | EPA/State              | 9/25/2025             |

|  |   |                              |                        |                       |
|--|---|------------------------------|------------------------|-----------------------|
| <b>OU(s): 1<br/>(sitewide)</b>           | <b>Issue Category: Operations and Maintenance</b>   |                              |                        |                       |
|  | <b>Issue:</b> During this FYR period GMW3 had the highest and only remaining methane detections above the LEL.  |                              |                        |                       |
|  | <b>Recommendation:</b> Replace the cap at the GMW3 location with a cap that will allow venting to occur as needed so this location will remain below 5% of the LEL. |                              |                        |                       |
| <b>Affect Current<br/>Protectiveness</b> | <b>Affect Future<br/>Protectiveness</b>   | <b>Party<br/>Responsible</b> | <b>Oversight Party</b> | <b>Milestone Date</b> |
| No                                       | Yes   | State                        | EPA                    | 9/30/2024             |

### OTHER FINDINGS

Two additional recommendations were identified during the FYR. These recommendations do not affect current and/or future protectiveness.

- KDEP should install new site signs as required in the March 2021 draft interim O&M plan. The sign design and location plan were approved by EPA in November 2021. New signage will more clearly delineate the site and provide contact information for KDEP.
- Identify the source of the 1,3-butadiene and carbon tetrachloride concentrations in soil gas and take more actions as needed.



## VII. PROTECTIVENESS STATEMENT

| Sitewide Protectiveness Statement  |
|--|
| <i>Protectiveness Determination:</i><br>Short-term Protective  |
| <i>Protectiveness Statement:</i><br>The remedy at the Site currently protects human health and the environment because there are currently no completed exposure pathways. Contaminated soil was covered, and groundwater is not in use. For the remedy to be protective over the long term, the following actions need to be taken: implement groundwater and land use institutional controls; and replace the cap at the GMW3 location with a cap that will allow venting to occur as needed so this location will remain below 5% of the LEL. |

## VIII. NEXT REVIEW

The next FYR Report for the Lee's Lane Landfill Superfund site is required five years from the completion date of this review.

## APPENDIX A – REFERENCE LIST

- Administrative Order on Consent, Lee's Lane Superfund Site, Jefferson County, Kentucky. June 1991.
- Close-Out Report for Deletion of Lee's Lane Landfill Site, Louisville, Kentucky. EPA. March 18, 1988.
- Conceptual Site Model. Lee's Lane Landfill Site. Louisville, Kentucky. Prepared by Lee's Lane Landfill Group and the Louisville and Jefferson County MSD. April 1, 2016.
- Explanation of Significant Differences. Lee's Lane Landfill. EPA. August 2022.
- Fifth Five-Year Review Report for Lee's Lane Landfill. Louisville, Jefferson County, Kentucky. EPA. Region 4. September 25, 2013.
- Final Analytical Report. Lee's Lane Landfill Satellite Site. United States EPA Region 4 Laboratory Services and Applied Science Division. July 24, 2020.
- Final Analytical Report. Lee's Lane Landfill Satellite Site. United States EPA Region 4 Laboratory Services and Applied Science Division. July 31, 2020.
- Final Analytical Report. Lee's Lane Landfill Satellite Site. United States EPA Region 4 Laboratory Services and Applied Science Division. December 28, 2020.
- Final Analytical Report. Lee's Lane Landfill Satellite Site. United States EPA Region 4 Laboratory Services and Applied Science Division. January 8, 2021.
- Lee's Lane Superfund Site. Draft Interim Operations and Maintenance Plan. March 2021.
- Enforcement Decision Document. EPA Region 4. September 25, 1986.
- Site Inspection Completion Report. Lee's Lane Landfill Site. Louisville, Kentucky. Prepared by Lee's Lane Landfill Group and the Louisville and Jefferson County MSD. July 27, 2017.
- Site Inspection Report. Lee's Lane Landfill. Energy and Environmental Protection Cabinet Department for Environmental Protection Division of Waste Management. February 1, 2022.
- Site Inspection Report. Lee's Lane Landfill. Energy and Environmental Protection Cabinet Department for Environmental Protection Division of Waste Management. February 15, 2023.
- Sixth Five-Year Review Report for Lee's Lane Landfill, Jefferson County, Kentucky. U.S. EPA Region 4. August 2018.
- Superfund Five-Year Review Report. Lee's Lane Landfill, Louisville, Jefferson County, KY. Prepared for EPA Region 4 by US Army Corps of Engineers Louisville District. June 2003.

## APPENDIX B – CURRENT SITE STATUS

### Environmental Indicators

- *Current human exposures at the Site are under control.*
- *Current groundwater migration is under control.*

### Are Necessary Institutional Controls in Place?

All  Some  None

### Has the EPA Designated the Site as Sitewide Ready for Anticipated Use?

Yes  No

### Has the Site Been Put into Reuse?

Yes  No

## APPENDIX C – SITE CHRONOLOGY

**Table C-1: Site Chronology**

| Event  | Date                       |
|--|----------------------------|
| Residents complained of flash fires around water heaters due to migration of methane gas from the landfill | 1975                       |
| The EPA conducted an initial site inspection   | November 1, 1978           |
| The state installed the LFG collection system  | October 1980               |
| Landfill owners removed drums under a court order  | September and October 1981 |
| The EPA proposed the Site for listing on the NPL   | December 30, 1982          |
| The EPA listed the Site on the NPL   | September 8, 1983          |
| The EPA began the Site's combined RI/FS  | September 27, 1983         |
| The state conducted a preliminary assessment   | August 1, 1984             |
| The EPA completed a health assessment  | November 25, 1985          |
| The EPA completed combined RI/FS   | September 25, 1986         |
| The EPA signed the EDD   |                            |
| The EPA began the remedial action  | March 16, 1987             |
| The EPA began the first removal action   |                            |
| The EPA began the remedial design  | March 20, 1987             |
| The EPA completed the remedial action  | October 27, 1987           |
| The EPA completed the first removal action   |                            |
| The EPA completed the Site's Close-Out Report  | March 18, 1988             |
| The EPA completed the remedial design  | March 31, 1988             |
| The EPA signed an AOC that transferred O&M responsibilities to MSD   | July 16, 1991              |
| The EPA signed the Site's first FYR Report   | May 25, 1993               |
| Consent decrees were entered into by the court   | August 4, 1993             |
| Oversight of MSD's O&M activities transferred to the Kentucky Environmental and Public Protection Cabinet  | April 7, 1994              |
| The EPA deleted the Site from the NPL  | April 25, 1996             |
| A consent decree was entered into by the court   | January 9, 1997            |
| The EPA signed the Site's second FYR Report  | July 1, 1998               |
| The EPA signed the Site's third FYR Report   | July 2, 2003               |
| The EPA signed the Site's fourth FYR Report  | September 25, 2008         |
| The EPA signed the Site's fifth FYR Report   | September 25, 2013         |
| KDEP installed five new groundwater monitoring wells   | 2014                       |
| The Lee's Lane Landfill Group and MSD prepared a CSM   | April 1, 2016              |
| The Lee's Lane Landfill Group and MSD prepared the Site Inspection Completion Report                       | July 27, 2017              |
| The EPA signed the Site's sixth FYR Report   | August 30, 2018            |
| KDEP assumed responsibility for O&M activities at the Site   | April, 2021                |
| The EPA signed the Site's ESD  | August 23, 2022            |

## APPENDIX D – SOIL SAMPLING RESULTS – APRIL 2013

|                                |                       |                           | April 2013 Soil Sampling Results |         |         |       |       |       |       |       |       |       |       |       |         |         |       |       |       |       |
|--------------------------------|-----------------------|---------------------------|----------------------------------|---------|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|---------|-------|-------|-------|-------|
| Station ID                     |                       |                           | N001                             | N001Dup | N001    | N002  | N003  | N005  | C001  | C002  | C003  | C004  | C005  | C006  | C006Dup | C006    | C007  | C008  | C009  | C010  |
| Sample ID                      |                       |                           | 0-0.5                            | 0-0.5   | 0.5-1.0 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5   | 0.5-2.0 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 |
| Sample Depth Interval (ft bgs) |                       |                           | Soil                             | Soil    | Soil    | Soil  | Soil  | Soil  | Soil  | Soil  | Soil  | Soil  | Soil  | Soil  | Soil    | Soil    | Soil  | Soil  | Soil  | Soil  |
| Matrix                         |                       |                           |                                  |         |         |       |       |       |       |       |       |       |       |       |         |         |       |       |       |       |
| Sample Date                    | Recreational/Trespass |                           |                                  |         |         |       |       |       |       |       |       |       |       |       |         |         |       |       |       |       |
| Analyte                        | Units                 | Risk Screening Level      |                                  |         |         |       |       |       |       |       |       |       |       |       |         |         |       |       |       |       |
| PCB-1248 (Aroclor 1248)        | mg/kg                 | 1.8                       | ND                               | ND      | ND      | ND    | ND    | ND    | ND    | ND    | ND    | ND    | ND    | ND    | ND      | ND      | ND    | ND    | ND    | ND    |
| PCB-1254 (Aroclor 1254)        | mg/kg                 | 1.8                       | ND                               | ND      | ND      | ND    | ND    | ND    | ND    | ND    | ND    | ND    | ND    | ND    | ND      | ND      | ND    | ND    | ND    | ND    |
| Benzo(a)pyrene                 | mg/kg                 | 0.12                      | 0.043                            | 0.035   | 0.028   | ND    | 0.064 | ND    | 0.060 | ND    | 0.14  | ND    | 0.31  | 0.068 | 0.085   | 0.048   | 0.084 | 0.075 | ND    | 0.037 |
| Benzo(a)anthracene             | mg/kg                 | 1.2                       | 0.048                            | 0.035   | ND      | 0.031 | 0.064 | ND    | 0.054 | ND    | 0.14  | ND    | 0.098 | 0.061 | 0.076   | 0.048   | 0.063 | 0.073 | ND    | 0.047 |
| Benzo(k)fluoranthene           | mg/kg                 | 12                        | 0.77                             | ND      | ND      | ND    | 0.036 | ND    | 0.034 | ND    | 0.087 | ND    | 0.087 | 0.045 | 0.044   | ND      | 0.048 | 0.066 | ND    | ND    |
| Dibenzo(a,h)anthracene         | mg/kg                 | 0.12                      | ND                               | ND      | ND      | ND    | ND    | ND    | ND    | ND    | 0.14  | ND    | ND    | ND    | ND      | ND      | ND    | ND    | ND    | ND    |
| Bis(2-ethylhexyl)phthalate     | mg/kg                 | 276                       | 0.38                             | 0.2     | ND      | 0.10  | 0.05  | 0.11  | 0.051 | 0.034 | 0.027 | 0.11  | 0.9   | 0.4   | 0.61    | 0.23    | ND    | 0.96  | 0.21  | ND    |
| Dieldrin                       | mg/kg                 | 0.24                      | ND                               | ND      | ND      | ND    | ND    | ND    | ND    | ND    | ND    | ND    | ND    | ND    | ND      | ND      | ND    | ND    | ND    | ND    |
| Arsenic                        | mg/kg                 | 3.7 - 16.0 <sup>(1)</sup> | 3.7                              | 3.8     | --      | --    | --    | --    | --    | --    | 7.3   | --    | 5.1   | 5.5   | --      | --      | --    | --    | --    | --    |
| Lead                           | mg/kg                 | 400                       | 43                               | 36      | --      | --    | --    | --    | --    | --    | 14    | --    | 37    | 39    | --      | --      | --    | --    | --    | --    |
| Thallium                       | mg/kg                 | 5.5                       | ND                               | ND      | --      | --    | --    | --    | --    | --    | <1.0  | --    | <0.99 | 1.1   | --      | --      | --    | --    | --    | --    |
| Chromium                       | mg/kg                 |                           | 270                              | 200     | --      | --    | --    | --    | --    | --    | 14    | --    | 14    | 13    | --      | --      | --    | --    | --    | --    |
| Copper                         | mg/kg                 |                           | 81                               | 79      | --      | --    | --    | --    | --    | --    | 14    | --    | 13    | 13    | --      | --      | --    | --    | --    | --    |
| Nickel                         | mg/kg                 |                           | 53                               | 63      | --      | --    | --    | --    | --    | --    | 17    | --    | 14    | 15    | --      | --      | --    | --    | --    | --    |
| Mercury                        | mg/kg                 |                           | --                               | --      | --      | --    | --    | --    | --    | --    | --    | --    | --    | --    | --      | --      | --    | --    | --    | --    |
| Zinc                           | mg/kg                 |                           | 180                              |         |         |       |       |       |       |       | 54    |       | 65    |       |         |         |       |       |       |       |

|                                |                       |                           | April 2013 Soil Sampling Results |       |       |         |       |       |       |       |       |       |       |       |       |         |       |       |
|--------------------------------|-----------------------|---------------------------|----------------------------------|-------|-------|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|-------|-------|
| Station ID                     |                       |                           | S001                             | S002  | S003  | S003    | S004  | S005  | S006  | S007  | S008  | S009  | S010  | S011  | S014  | S014Dup | S015  | S016  |
| Sample ID                      |                       |                           | 0.0.5                            | 0.0.5 | 0.0.5 | 0.5-2.0 | 0.0.5 | 0.0.5 | 0.0.5 | 0.0.5 | 0.0.5 | 0.0.5 | 0.0.5 | 0.0.5 | 0.0.5 | 0.0.5   | 0.0.5 | 0.0.5 |
| Sample Depth Interval (ft bgs) |                       |                           | Soil                             | Soil  | Soil  | Soil    | Soil  | Soil  | Soil  | Soil  | Soil  | Soil  | Soil  | Soil  | Soil  | Soil    | Soil  | Soil  |
| Matrix                         |                       |                           |                                  |       |       |         |       |       |       |       |       |       |       |       |       |         |       |       |
| Sample Date                    | Recreational/Trespass |                           |                                  |       |       |         |       |       |       |       |       |       |       |       |       |         |       |       |
| Analyte                        | Units                 | Risk Screening Level      |                                  |       |       |         |       |       |       |       |       |       |       |       |       |         |       |       |
| PCB-1248 (Aroclor 1248)        | mg/kg                 | 1.8                       | ND                               | ND    | ND    | ND      | ND    | 28    | ND    | ND    | ND    | ND    | ND    | ND    | ND    | ND      | ND    | ND    |
| PCB-1254 (Aroclor 1254)        | mg/kg                 | 1.8                       | ND                               | ND    | 0.045 | ND      | ND    | ND    | 0.12  | ND    | ND    | ND    | ND    | ND    | ND    | ND      | ND    | ND    |
| Benzo(a)pyrene                 | mg/kg                 | 0.12                      | 0.079                            | 0.066 | ND    | ND      | 0.064 | 4     | 0.044 | 0.082 | ND    | ND    | 0.045 | ND    | 3.4   | 5.1     | ND    | 0.087 |
| Benzo(a)anthracene             | mg/kg                 | 1.2                       | 0.087                            | 0.078 | ND    | ND      | 0.072 | 0.72  | ND    | 0.068 | ND    | ND    | 0.044 | ND    | 4.6   | 5.9     | ND    | 0.091 |
| Benzo(k)fluoranthene           | mg/kg                 | 12                        | 0.049                            | 0.035 | ND    | ND      | 0.04  | ND    | 0.035 | 0.052 | ND    | ND    | 0.034 | ND    | ND    | 2.1     | ND    | 0.053 |
| Dibenzo(a,h)anthracene         | mg/kg                 | 0.12                      | ND                               | ND    | ND    | ND      | ND    | ND    | ND    | ND    | ND    | ND    | ND    | ND    | 0.22  | 0.10    | ND    | ND    |
| Bis(2-ethylhexyl)phthalate     | mg/kg                 | 276                       | 0.17                             | 0.27  | 0.11  | 0.11    | 0.12  | 350   | 1.3   | 9.9   | 0.54  | 0.11  | 0.23  | 0.054 | ND    | ND      | 0.13  | 0.55  |
| Dieldrin                       | mg/kg                 | 0.24                      | ND                               | ND    | ND    | ND      | 0.04  | ND    | ND    | ND    | ND    | ND    | ND    | ND    | ND    | ND      | ND    | ND    |
| Arsenic                        | mg/kg                 | 3.7 - 16.0 <sup>(1)</sup> | --                               | --    | --    | --      | --    | --    | --    | --    | --    | --    | --    | --    | 7.9   | 16      | --    | --    |
| Lead                           | mg/kg                 | 400                       | --                               | --    | --    | --      | --    | --    | --    | --    | --    | --    | --    | --    | 380   | 1300    | --    | --    |
| Thallium                       | mg/kg                 | 5.5                       | --                               | --    | --    | --      | --    | --    | --    | --    | --    | --    | --    | --    | ND    | 2.8     | --    | --    |
| Chromium                       | mg/kg                 |                           | --                               | --    | --    | --      | --    | --    | --    | --    | --    | --    | --    | --    | 36    | 43      | --    | --    |
| Copper                         | mg/kg                 |                           | --                               | --    | --    | --      | --    | --    | --    | --    | --    | --    | --    | --    | 240   | 260     | --    | --    |
| Nickel                         | mg/kg                 |                           | --                               | --    | --    | --      | --    | --    | --    | --    | --    | --    | --    | --    | 37    | 46      | --    | --    |
| Mercury                        | mg/kg                 |                           | --                               | --    | --    | --      | --    | --    | --    | --    | --    | --    | --    | --    | --    | --      | --    | --    |
| Zinc                           | mg/kg                 |                           |                                  |       |       |         |       |       |       |       |       |       |       |       | 480   |         |       |       |

**Notes:**

Semi-volatiles, VOC and PCB/Pesticides were screened against residential criteria by KDEP and only parameters with residential exceedances are shown. EPA and KDEP did not provide an electronic data base, so a qualitative review of the lab sheets was conducted and it was determined that these parameter groups had very few detections and did not warrant further ecological review other than the parameters that exceeded residential criteria. A similar exercise was completed for metals. However, copper, chromium and nickel were added regardless of concentration at the request of EPA.

NA - Not Analyzed

ND - Non Detect

(1) Arsenic data was evaluated using Kentucky's Ambient Background Guidance Assessment documents

Exceedance of screening level

## APPENDIX E – PRESS NOTICE



### EPA to Review Cleanups at 45 Southeast Superfund Sites

Contact Information: [region4press@epa.gov](mailto:region4press@epa.gov), 404-562-8400

**ATLANTA (Oct. 19, 2022)** – Today, the U.S. Environmental Protection Agency (EPA) announced that comprehensive reviews will be conducted of completed cleanup work at 45 National Priority List (NPL) Superfund sites in the Southeast.

The sites, located in Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee, will undergo a legally required Five-Year Review to ensure that previous remediation efforts at the sites continue to protect public health and the environment.

"The Southeast Region will benefit tremendously from the full restoration of Superfund sites, which can become valuable parts of the community landscape," **said EPA Region 4 Administrator Daniel Blackmon**. "The Five-Year Review evaluations ensure that remedies put in place to protect public health remain effective over time."

The Superfund Sites where EPA will conduct Five-Year Reviews in 2022 are listed below. The web links provide detailed information on site status as well as past assessment and cleanup activity. Once the Five-Year Review is complete, its findings will be posted in a final report at <https://www.epa.gov/superfund/search-superfund-five-year-reviews>.

#### Alabama

Alabama Army Ammunition Plant <https://www.epa.gov/superfund/alabama-army-ammunition-plant>  
Alabama Plating Company, Inc. <https://www.epa.gov/superfund/alabama-plating-co>  
Mowbray Engineering Co. <https://www.epa.gov/superfund/mowbray-engineering>  
US NASA Marshall Space Flight Center  
US Army/NASA Redstone Arsenal <https://www.epa.gov/superfund/redstone-arsenal>

#### Florida

ALARIC Area GW Plume <https://www.epa.gov/superfund/alaric-area-groundwater-plume>  
Beulah Landfill <https://www.epa.gov/superfund/beulah-landfill>  
Chevron Chemical Co. (Ortho Division) <https://www.epa.gov/superfund/chevron-chemical-company>  
Florida Petroleum Reprocessors <https://www.epa.gov/superfund/florida-petroleum-reprocessors>  
Miami Drum Services <https://www.epa.gov/superfund/miami-drum-services>  
Pensacola Naval Air Station <https://www.epa.gov/superfund/naval-air-station-pensacola>  
Raleigh Street Dump <https://www.epa.gov/superfund/raleigh-street-dump>  
Taylor Road Landfill <https://www.epa.gov/superfund/taylor-road-landfill>  
Tower Chemical Co. <https://www.epa.gov/superfund/tower-chemical-company>

#### Georgia

Alternate Energy Resources Inc. <https://www.epa.gov/superfund/alternate-energy-resources>  
Peach Orchard & Nutrition Co. Rd PCE Groundwater Plume Site <https://www.epa.gov/superfund/peach-orchard-road-pce-plume>  
Powersville Site <https://www.epa.gov/superfund/powersville-site>  
T.H. Agriculture & Nutrition Co (Albany Plant) <https://www.epa.gov/superfund/t-h-agriculture>

#### Kentucky

A.L. Taylor (Valley of the Drums) <https://www.epa.gov/superfund/al-taylor-valley-of-drums>  
Brantley Landfill <https://www.epa.gov/superfund/brantley-landfill>

Distler Brickyard <https://www.epa.gov/superfund/distler-brickyard>  
Distler Farm <https://www.epa.gov/superfund> <https://www.epa.gov/superfund/lee-lane-landfill/distler-farm>  
Lee's Lane Landfill <https://www.epa.gov/superfund/lee-lane-landfill>  
National Electric Coil Co./Cooper Industries <https://www.epa.gov/superfund/national-electric-coil-cooper-industries>  
Tri City Disposal Co. <https://www.epa.gov/superfund/tri-city-disposal>

### North Carolina

ABC One Hour Cleaners <https://www.epa.gov/superfund/abc-one-hour-cleaners>  
Aberdeen Pesticide Dumps <https://www.epa.gov/superfund/aberddeen-contaminated-groundwater>  
Benfield Industries, Inc. <https://www.epa.gov/superfund/benfield-industries>  
Cherry Point Marine Corps Air Station <https://www.epa.gov/superfund/cherry-point-marine-corps>  
CTS of Ashville, Inc. <https://www.epa.gov/superfund/cts-millsgap>  
GEIGY Chemical Corp (Aberdeen Plant) <https://www.epa.gov/superfund/ciba-geigy-corporation>  
Gurley Pesticide Burial <https://www.epa.gov/superfund/gurley-pesticide-burial>  
North Carolina State University (Lot 86, Farm Unit #1) <https://www.epa.gov/superfund/north-carolina-state-university>  
Sigmon's Septic Tank Service <https://www.epa.gov/superfund/sigmon-septic-tank>

### South Carolina

Admiral Home Appliances <https://www.epa.gov/superfund/admiral-home-appliances>  
Beaunit Corp (Circular Knit & Dyeing Plant) <https://www.epa.gov/superfund/beaunit>  
Carolawn Inc. <https://www.epa.gov/superfund/carolawn>  
Elmore Waste Disposal <https://www.epa.gov/superfund/elmore-waste-disposal>  
International Minerals and Chemicals (IMC) <https://www.epa.gov/superfund/imc>  
Kalama Specialty Chemicals <https://www.epa.gov/superfund/kalama-specialty-chemicals>  
Koppers Company, Inc. (Charleston Plant) <https://www.epa.gov/superfund/koppers-charleston-plant>  
Savannah River Site (USDOE) <https://www.epa.gov/superfund/savannah-river-site>  
SCRDI Bluff Road <https://www.epa.gov/superfund/scrdi-dixiana>

### Tennessee

Mallory Capacitor Co. <https://www.epa.gov/superfund/mallory-capacitor>  
Memphis Defense Depot (DLA) <https://www.epa.gov/superfund/memphis-defense-depot>

### Background

Throughout the process of designing and constructing a cleanup at a hazardous waste site, EPA's primary goal is to make sure the remedy will be protective of public health and the environment. At many sites, where the remedy has been constructed, EPA continues to ensure it remains protective by requiring reviews of cleanups every five years. It is important for EPA to regularly check on these sites to ensure the remedy is working properly. These reviews identify issues (if any) that may affect the protectiveness of the completed remedy and, if necessary, recommend action(s) necessary to address them.

There are many phases of the Superfund cleanup process including considering future use and redevelopment at sites and conducting post cleanup monitoring of sites. EPA must ensure the remedy is protective of public health and the environment and any redevelopment will uphold the protectiveness of the remedy into the future.

The Superfund program, a federal program established by Congress in 1980, investigates and cleans up the most complex, uncontrolled or abandoned hazardous waste sites in the country and endeavors to facilitate activities to return them to productive use. In total, there are more than 280 Superfund sites across the Southeast.

### More information:

EPA's Superfund program: <https://www.epa.gov/superfund>

###

EPA.GOV



## APPENDIX F – INTERVIEW FORMS

| <b>LEE’S LANE LANDFILL<br/>SUPERFUND SITE<br/>FIVE-YEAR REVIEW INTERVIEW FORM</b>        |                                      |
|--|--------------------------------------|
| <b>Site Names:</b> Lee’s Lane Landfill   |                                      |
| <b>EPA ID:</b> KYD980602155, KYD980601975, KYD980557052                                  |                                      |
| <b>Interviewer name:</b> Johnny Zimmerman-Ward   | <b>Interviewer affiliation:</b> Skeo |
| <b>Subject name:</b> Larry Tackett   | <b>Subject affiliation:</b> KDEP     |
| <b>Subject contact information:</b> larryp.tackett@ky.gov                                |                                      |
| <b>Interview date:</b> 11/9/2022   | <b>Interview time:</b> 8:24 a.m.     |
| <b>Interview location:</b> Electronic via email  |                                      |
| <b>Interview format (circle one):</b> In Person      Phone      Mail <u>Email</u> Other: |                                      |
| <b>Interview category:</b> State Agency  |                                      |

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

The maintenance at the Site is going as planned with MSD doing the mowing. The soil gas sampling events that KDEP completed verified that the gas collection system can be removed. The project to remove the gas collection system is currently being contracted out. Site security is still in question due to most of the Site being easily accessible. Reuse of portions of the Site may be possible but no current plans are known.

2. What is your assessment of the current performance of the remedy in place at the Site?

The remedy has been completed for some time and currently no remedial actions are planned. KDEP is currently contracting out the removal of the gas collection system. The capped area seems to be in good shape; past issues with ATV activity on site seem to have tapered off.

3. Are you aware of any complaints or inquiries regarding site-related environmental issues or remedial activities from residents in the past five years?

KDEP has not received any inquiries in the last five years.

4. Has your office conducted any site-related activities or communications in the past five years? If so, please describe the purpose and results of these activities.

KDEP completed multiple rounds of soil gas sampling at the Site in the last five years. The sampling results verified that the gas collection system can be removed. KDEP is currently contracting out the removal of the gas collection system. The EPA completed an ESD for the Site in fall 2022.



5. Are you aware of any changes to state laws that might affect the protectiveness of the Site's remedy?

The EPA completed an ESD for the Site in fall 2022. The institutional controls will be placed on the Site under state law.

6. Are you comfortable with the status of the institutional controls at the Site? If not, what are the associated outstanding issues?

The EPA completed an ESD for the Site in fall 2022. Once the actions set forth in the ESD are completed, the Site's institutional controls will be appropriate.

7. Are you aware of any changes in projected land use(s) at the Site?

No expected land use changes are known.

8. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy?

A determination of the source of carbon tetrachloride vapors should be identified and steps taken in preventing future impacts at the Site.

9. Do you consent to have your name included along with your responses to this questionnaire in the FYR Report?

Yes.

## APPENDIX G – SITE INSPECTION CHECKLIST

| <b>FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST</b>  |   |  |   |       |       |       |       |   |       |       |   |       |       |      |       |      |       |       |       |       |       |      |       |      |       |       |       |       |       |      |       |      |       |
|--|---|--|---|-------|-------|-------|-------|---|-------|-------|---|-------|-------|------|-------|------|-------|-------|-------|-------|-------|------|-------|------|-------|-------|-------|-------|-------|------|-------|------|-------|
| <b>I. SITE INFORMATION</b>   |   |  |   |       |       |       |       |   |       |       |   |       |       |      |       |      |       |       |       |       |       |      |       |      |       |       |       |       |       |      |       |      |       |
| <b>Site Name:</b> Lee's Lane Landfill  | <b>Date of Inspection:</b> 10/26/2022   |  |   |       |       |       |       |   |       |       |   |       |       |      |       |      |       |       |       |       |       |      |       |      |       |       |       |       |       |      |       |      |       |
| <b>Location and Region:</b> Louisville, Kentucky 4   | <b>EPA ID:</b> KYD980557052   |  |   |       |       |       |       |   |       |       |   |       |       |      |       |      |       |       |       |       |       |      |       |      |       |       |       |       |       |      |       |      |       |
| <b>Agency, Office or Company Leading the Five-Year Review:</b> EPA Region 4  | <b>Weather/Temperature:</b> 50s and overcast with some sprinkles  |  |   |       |       |       |       |   |       |       |   |       |       |      |       |      |       |       |       |       |       |      |       |      |       |       |       |       |       |      |       |      |       |
| <b>Remedy Includes:</b> (check all that apply) <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <input checked="" type="checkbox"/> Landfill cover/containment<br/> <input checked="" type="checkbox"/> Access controls<br/> <input checked="" type="checkbox"/> Institutional controls<br/> <input type="checkbox"/> Groundwater pump and treatment<br/> <input type="checkbox"/> Surface water collection and treatment<br/> <input checked="" type="checkbox"/> Other: <u>Groundwater monitoring and properly functioning gas collection system</u> </td> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Monitored natural attenuation<br/> <input type="checkbox"/> Groundwater containment<br/> <input type="checkbox"/> Vertical barrier walls                 </td> </tr> </table>   |   | <input checked="" type="checkbox"/> Landfill cover/containment<br><input checked="" type="checkbox"/> Access controls<br><input checked="" type="checkbox"/> Institutional controls<br><input type="checkbox"/> Groundwater pump and treatment<br><input type="checkbox"/> Surface water collection and treatment<br><input checked="" type="checkbox"/> Other: <u>Groundwater monitoring and properly functioning gas collection system</u> | <input type="checkbox"/> Monitored natural attenuation<br><input type="checkbox"/> Groundwater containment<br><input type="checkbox"/> Vertical barrier walls |       |       |       |       |   |       |       |   |       |       |      |       |      |       |       |       |       |       |      |       |      |       |       |       |       |       |      |       |      |       |
| <input checked="" type="checkbox"/> Landfill cover/containment<br><input checked="" type="checkbox"/> Access controls<br><input checked="" type="checkbox"/> Institutional controls<br><input type="checkbox"/> Groundwater pump and treatment<br><input type="checkbox"/> Surface water collection and treatment<br><input checked="" type="checkbox"/> Other: <u>Groundwater monitoring and properly functioning gas collection system</u>   | <input type="checkbox"/> Monitored natural attenuation<br><input type="checkbox"/> Groundwater containment<br><input type="checkbox"/> Vertical barrier walls |  |   |       |       |       |       |   |       |       |   |       |       |      |       |      |       |       |       |       |       |      |       |      |       |       |       |       |       |      |       |      |       |
| <b>Attachments:</b> <input type="checkbox"/> Inspection team roster attached <input type="checkbox"/> Site map attached  |   |  |   |       |       |       |       |   |       |       |   |       |       |      |       |      |       |       |       |       |       |      |       |      |       |       |       |       |       |      |       |      |       |
| <b>II. INTERVIEWS</b> (check all that apply)   |   |  |   |       |       |       |       |   |       |       |   |       |       |      |       |      |       |       |       |       |       |      |       |      |       |       |       |       |       |      |       |      |       |
| <b>1. O&amp;M Site Manager</b> <table style="width: 100%; border: none;"> <tr> <td style="width: 30%; text-align: center;">_____</td> <td style="width: 30%; text-align: center;">_____</td> <td style="width: 40%; text-align: center;">_____</td> </tr> <tr> <td style="text-align: center;">Name</td> <td style="text-align: center;">Title</td> <td style="text-align: center;">Date</td> </tr> <tr> <td colspan="3">Interviewed <input type="checkbox"/> at Site <input type="checkbox"/> at office <input type="checkbox"/> by phone _____</td> </tr> <tr> <td colspan="3">Problems, suggestions <input type="checkbox"/> Report attached: _____</td> </tr> </table>   |   | _____  | _____   | _____ | Name  | Title | Date  | Interviewed <input type="checkbox"/> at Site <input type="checkbox"/> at office <input type="checkbox"/> by phone _____ |       |       | Problems, suggestions <input type="checkbox"/> Report attached: _____ |       |       |      |       |      |       |       |       |       |       |      |       |      |       |       |       |       |       |      |       |      |       |
| _____  | _____   | _____  |   |       |       |       |       |   |       |       |   |       |       |      |       |      |       |       |       |       |       |      |       |      |       |       |       |       |       |      |       |      |       |
| Name   | Title   | Date   |   |       |       |       |       |   |       |       |   |       |       |      |       |      |       |       |       |       |       |      |       |      |       |       |       |       |       |      |       |      |       |
| Interviewed <input type="checkbox"/> at Site <input type="checkbox"/> at office <input type="checkbox"/> by phone _____  |   |  |   |       |       |       |       |   |       |       |   |       |       |      |       |      |       |       |       |       |       |      |       |      |       |       |       |       |       |      |       |      |       |
| Problems, suggestions <input type="checkbox"/> Report attached: _____  |   |  |   |       |       |       |       |   |       |       |   |       |       |      |       |      |       |       |       |       |       |      |       |      |       |       |       |       |       |      |       |      |       |
| <b>2. O&amp;M Staff</b> <table style="width: 100%; border: none;"> <tr> <td style="width: 30%; text-align: center;">_____</td> <td style="width: 30%; text-align: center;">_____</td> <td style="width: 40%; text-align: center;">_____</td> </tr> <tr> <td style="text-align: center;">Name</td> <td style="text-align: center;">Title</td> <td style="text-align: center;">Date</td> </tr> <tr> <td colspan="3">Interviewed <input type="checkbox"/> at Site <input type="checkbox"/> at office <input type="checkbox"/> by phone _____</td> </tr> <tr> <td colspan="3">Problems/suggestions <input type="checkbox"/> Report attached: _____</td> </tr> </table>   |   | _____  | _____   | _____ | Name  | Title | Date  | Interviewed <input type="checkbox"/> at Site <input type="checkbox"/> at office <input type="checkbox"/> by phone _____ |       |       | Problems/suggestions <input type="checkbox"/> Report attached: _____  |       |       |      |       |      |       |       |       |       |       |      |       |      |       |       |       |       |       |      |       |      |       |
| _____  | _____   | _____  |   |       |       |       |       |   |       |       |   |       |       |      |       |      |       |       |       |       |       |      |       |      |       |       |       |       |       |      |       |      |       |
| Name   | Title   | Date   |   |       |       |       |       |   |       |       |   |       |       |      |       |      |       |       |       |       |       |      |       |      |       |       |       |       |       |      |       |      |       |
| Interviewed <input type="checkbox"/> at Site <input type="checkbox"/> at office <input type="checkbox"/> by phone _____  |   |  |   |       |       |       |       |   |       |       |   |       |       |      |       |      |       |       |       |       |       |      |       |      |       |       |       |       |       |      |       |      |       |
| Problems/suggestions <input type="checkbox"/> Report attached: _____   |   |  |   |       |       |       |       |   |       |       |   |       |       |      |       |      |       |       |       |       |       |      |       |      |       |       |       |       |       |      |       |      |       |
| <b>3. Local Regulatory Authorities and Response Agencies</b> (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.<br><br>Agency <u>KDEP</u><br>Contact <u>Larry Tackett</u><br><table style="width: 100%; border: none;"> <tr> <td style="width: 30%; text-align: center;">_____</td> <td style="width: 30%; text-align: center;">_____</td> <td style="width: 20%; text-align: center;">_____</td> <td style="width: 20%; text-align: center;">_____</td> </tr> <tr> <td style="text-align: center;">Name</td> <td style="text-align: center;">Title</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Phone</td> </tr> </table> Problems/suggestions <input type="checkbox"/> Report attached: <u>see Appendix F</u><br><br>Agency _____<br>Contact _____<br><table style="width: 100%; border: none;"> <tr> <td style="width: 30%; text-align: center;">_____</td> <td style="width: 30%; text-align: center;">_____</td> <td style="width: 20%; text-align: center;">_____</td> <td style="width: 20%; text-align: center;">_____</td> </tr> <tr> <td style="text-align: center;">Name</td> <td style="text-align: center;">Title</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Phone</td> </tr> </table> Problems/suggestions <input type="checkbox"/> Report attached: _____<br><br>Agency _____<br>Contact _____<br><table style="width: 100%; border: none;"> <tr> <td style="width: 30%; text-align: center;">_____</td> <td style="width: 30%; text-align: center;">_____</td> <td style="width: 20%; text-align: center;">_____</td> <td style="width: 20%; text-align: center;">_____</td> </tr> <tr> <td style="text-align: center;">Name</td> <td style="text-align: center;">Title</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Phone</td> </tr> </table> Problems/suggestions <input type="checkbox"/> Report attached: _____<br><br>Agency _____<br>Contact _____<br><table style="width: 100%; border: none;"> <tr> <td style="width: 30%; text-align: center;">_____</td> <td style="width: 30%; text-align: center;">_____</td> <td style="width: 20%; text-align: center;">_____</td> <td style="width: 20%; text-align: center;">_____</td> </tr> <tr> <td style="text-align: center;">Name</td> <td style="text-align: center;">Title</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Phone</td> </tr> </table> Problems/suggestions <input type="checkbox"/> Report attached: _____ |   | _____  | _____   | _____ | _____ | Name  | Title | Date  | Phone | _____ | _____   | _____ | _____ | Name | Title | Date | Phone | _____ | _____ | _____ | _____ | Name | Title | Date | Phone | _____ | _____ | _____ | _____ | Name | Title | Date | Phone |
| _____  | _____   | _____  | _____   |       |       |       |       |   |       |       |   |       |       |      |       |      |       |       |       |       |       |      |       |      |       |       |       |       |       |      |       |      |       |
| Name   | Title   | Date   | Phone   |       |       |       |       |   |       |       |   |       |       |      |       |      |       |       |       |       |       |      |       |      |       |       |       |       |       |      |       |      |       |
| _____  | _____   | _____  | _____   |       |       |       |       |   |       |       |   |       |       |      |       |      |       |       |       |       |       |      |       |      |       |       |       |       |       |      |       |      |       |
| Name   | Title   | Date   | Phone   |       |       |       |       |   |       |       |   |       |       |      |       |      |       |       |       |       |       |      |       |      |       |       |       |       |       |      |       |      |       |
| _____  | _____   | _____  | _____   |       |       |       |       |   |       |       |   |       |       |      |       |      |       |       |       |       |       |      |       |      |       |       |       |       |       |      |       |      |       |
| Name   | Title   | Date   | Phone   |       |       |       |       |   |       |       |   |       |       |      |       |      |       |       |       |       |       |      |       |      |       |       |       |       |       |      |       |      |       |
| _____  | _____   | _____  | _____   |       |       |       |       |   |       |       |   |       |       |      |       |      |       |       |       |       |       |      |       |      |       |       |       |       |       |      |       |      |       |
| Name   | Title   | Date   | Phone   |       |       |       |       |   |       |       |   |       |       |      |       |      |       |       |       |       |       |      |       |      |       |       |       |       |       |      |       |      |       |

|   |   |  |   |             |
|---|---|--|---|-------------|
|   | Contact _____<br>Name _____                           | Title _____                                    | Date _____                              | Phone _____ |
| Problems/suggestions <input type="checkbox"/> Report attached: _____                  |   |  |   |             |
| 4. <b>Other Interviews</b> (optional) <input type="checkbox"/> Report attached: _____ |   |  |   |             |
| <b>III. ON-SITE DOCUMENTS AND RECORDS VERIFIED</b> (check all that apply)             |   |  |   |             |
| <b>1. O&amp;M Documents</b>   |   |  |   |             |
| <input type="checkbox"/> O&M manual   | <input checked="" type="checkbox"/> Readily available | <input checked="" type="checkbox"/> Up to date | <input type="checkbox"/> N/A            |             |
| <input type="checkbox"/> As-built drawings  | <input type="checkbox"/> Readily available            | <input type="checkbox"/> Up to date            | <input checked="" type="checkbox"/> N/A |             |
| <input type="checkbox"/> Maintenance logs   | <input type="checkbox"/> Readily available            | <input type="checkbox"/> Up to date            | <input checked="" type="checkbox"/> N/A |             |
| Remarks: _____  |   |  |   |             |
| <b>2. Site-Specific Health and Safety Plan</b>  |   |  |   |             |
|   | <input type="checkbox"/> Readily available            | <input type="checkbox"/> Up to date            | <input checked="" type="checkbox"/> N/A |             |
| <input type="checkbox"/> Contingency plan/emergency response plan                     | <input type="checkbox"/> Readily available            | <input type="checkbox"/> Up to date            | <input checked="" type="checkbox"/> N/A |             |
| Remarks: _____  |   |  |   |             |
| <b>3. O&amp;M and OSHA Training Records</b>   |   |  |   |             |
|   | <input type="checkbox"/> Readily available            | <input type="checkbox"/> Up to date            | <input checked="" type="checkbox"/> N/A |             |
| Remarks: _____  |   |  |   |             |
| <b>4. Permits and Service Agreements</b>  |   |  |   |             |
| <input type="checkbox"/> Air discharge permit   | <input type="checkbox"/> Readily available            | <input type="checkbox"/> Up to date            | <input checked="" type="checkbox"/> N/A |             |
| <input type="checkbox"/> Effluent discharge   | <input type="checkbox"/> Readily available            | <input type="checkbox"/> Up to date            | <input checked="" type="checkbox"/> N/A |             |
| <input type="checkbox"/> Waste disposal, POTW   | <input type="checkbox"/> Readily available            | <input type="checkbox"/> Up to date            | <input checked="" type="checkbox"/> N/A |             |
| <input type="checkbox"/> Other permits: _____   | <input type="checkbox"/> Readily available            | <input type="checkbox"/> Up to date            | <input checked="" type="checkbox"/> N/A |             |
| Remarks: _____  |   |  |   |             |
| <b>5. Gas Generation Records</b>  |   |  |   |             |
|   | <input type="checkbox"/> Readily available            | <input type="checkbox"/> Up to date            | <input checked="" type="checkbox"/> N/A |             |
| Remarks: _____  |   |  |   |             |
| <b>6. Settlement Monument Records</b>   |   |  |   |             |
|   | <input type="checkbox"/> Readily available            | <input type="checkbox"/> Up to date            | <input checked="" type="checkbox"/> N/A |             |
| Remarks: _____  |   |  |   |             |
| <b>7. Groundwater Monitoring Records</b>  |   |  |   |             |
|   | <input type="checkbox"/> Readily available            | <input type="checkbox"/> Up to date            | <input checked="" type="checkbox"/> N/A |             |
| Remarks: _____  |   |  |   |             |
| <b>8. Leachate Extraction Records</b>   |   |  |   |             |
|   | <input type="checkbox"/> Readily available            | <input type="checkbox"/> Up to date            | <input checked="" type="checkbox"/> N/A |             |
| Remarks: _____  |   |  |   |             |
| <b>9. Discharge Compliance Records</b>  |   |  |   |             |
| <input type="checkbox"/> Air  | <input type="checkbox"/> Readily available            | <input type="checkbox"/> Up to date            | <input checked="" type="checkbox"/> N/A |             |
| <input type="checkbox"/> Water (effluent)   | <input type="checkbox"/> Readily available            | <input type="checkbox"/> Up to date            | <input checked="" type="checkbox"/> N/A |             |
| Remarks: _____  |   |  |   |             |
| <b>10. Daily Access/Security Logs</b>   |   |  |   |             |
|   | <input type="checkbox"/> Readily available            | <input type="checkbox"/> Up to date            | <input checked="" type="checkbox"/> N/A |             |

|   |   |  |  |
|---|---|--|--|
| Remarks: _____  |   |  |  |
| <b>IV. O&amp;M COSTS</b>  |   |  |  |
| 1.  | <b>O&amp;M Organization</b>   |  |  |
|   | <input type="checkbox"/> State in-house   | <input checked="" type="checkbox"/> Contractor for state |  |
|   | <input type="checkbox"/> PRPs in-house  | <input type="checkbox"/> Contractor for PRPs             |  |
|   | <input type="checkbox"/> Federal facility in-house  | <input type="checkbox"/> Contractor for Federal facility |  |
| 2.  | <b>O&amp;M Cost Records</b>   |  |  |
|   | <input type="checkbox"/> Readily available  | <input type="checkbox"/> Up to date                      |  |
|   | <input type="checkbox"/> Funding mechanism/agreement in place   | <input checked="" type="checkbox"/> Unavailable          |  |
|   | Original O&M cost estimate: _____ <input type="checkbox"/> Breakdown attached   |  |  |
|   | Total annual cost by year for review period if available  |  |  |
|   | From: _____<br>Date   | To: _____<br>Date  | _____ <input type="checkbox"/> Breakdown attached<br>Total cost                  |
|   | From: _____<br>Date   | To: _____<br>Date  | _____ <input type="checkbox"/> Breakdown attached<br>Total cost                  |
|   | From: _____<br>Date   | To: _____<br>Date  | _____ <input type="checkbox"/> Breakdown attached<br>Total cost                  |
|   | From: _____<br>Date   | To: _____<br>Date  | _____ <input type="checkbox"/> Breakdown attached<br>Total cost                  |
|   | From: _____<br>Date   | To: _____<br>Date  | _____ <input type="checkbox"/> Breakdown attached<br>Total cost                  |
| 3.  | <b>Unanticipated or Unusually High O&amp;M Costs during Review Period</b>   |  |  |
|   | Describe costs and reasons: _____   |  |  |
| <b>V. ACCESS AND INSTITUTIONAL CONTROLS</b> <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A |   |  |  |
| <b>A. Fencing</b>   |   |  |  |
| 1.  | <b>Fencing Damaged</b>  | <input type="checkbox"/> Location shown on site map      | <input checked="" type="checkbox"/> Gates secured <input type="checkbox"/> N/A   |
|   | Remarks: _____  |  |  |
| <b>B. Other Access Restrictions</b>   |   |  |  |
| 1.  | <b>Signs and Other Security Measures</b>  |  | <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A |
|   | Remarks: <u>Site signage is in poor condition and difficult to find. The signs should be replaced according to the O&amp;M plan approved by EPA in November 2021.</u> |  |  |
| <b>C. Institutional Controls (ICs)</b>  |   |  |  |

|   |  |  |
|---|--|--|
| 1.  | <b>Implementation and Enforcement</b>  |  |
|   | Site conditions imply ICs not properly implemented   | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A |
|   | Site conditions imply ICs not being fully enforced   | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A |
|   | Type of monitoring (e.g., self-reporting, drive by): _____   |  |
|   | Frequency: _____   |  |
|   | Responsible party/agency: _____  |  |
|   | Contact _____  | _____  |
|   | Name   | Title  |
|   |  | Date   |
|   |  | Phone no.  |
|   | Reporting is up to date  | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A |
|   | Reports are verified by the lead agency  | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A |
|   | Specific requirements in deed or decision documents have been met  | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A |
|   | Violations have been reported  | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A |
|   | Other problems or suggestions: <input type="checkbox"/> Report attached  |  |
| 2.  | <b>Adequacy</b> <input type="checkbox"/> ICs are adequate <input checked="" type="checkbox"/> ICs are inadequate <input type="checkbox"/> N/A  |  |
|   | Remarks: <u>Restrictions to prevent human exposure to contaminated subsurface soil and groundwater and to protect engineered remedy components such as the landfill cover and gas collection system are necessary.</u> |  |
| <b>D. General</b>   |  |  |
| 1.  | <b>Vandalism/Trespassing</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No vandalism evident   |  |
|   | Remarks: <u>Trespassing is evident sitewide, with evidence of unauthorized waste disposal and campsites.</u>   |  |
| 2.  | <b>Land Use Changes On Site</b> <input type="checkbox"/> N/A   |  |
|   | Remarks: <u>None.</u>  |  |
| 3.  | <b>Land Use Changes Off Site</b> <input type="checkbox"/> N/A  |  |
|   | Remarks: <u>None.</u>  |  |
| <b>VI. GENERAL SITE CONDITIONS</b>  |  |  |
| <b>A. Roads</b>   | <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A  |  |
| 1.  | <b>Roads Damaged</b> <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Roads adequate <input type="checkbox"/> N/A   |  |
|   | Remarks: _____   |  |
| <b>B. Other Site Conditions</b>   |  |  |
|   | Remarks: _____   |  |
| <b>VII. LANDFILL COVERS</b> <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A |  |  |
| <b>A. Landfill Surface</b>  |  |  |
| 1.  | <b>Settlement</b> (low spots) <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Settlement not evident   |  |
|   | Area extent: _____   | Depth: _____   |
|   | Remarks: <u>The capped area is well maintained. The historical landfill area is wooded with an uneven ground surface.</u>  |  |
| 2.  | <b>Cracks</b> <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Cracking not evident   |  |
|   | Lengths: _____   | Widths: _____  |
|   |  | Depths: _____  |

|   |  |  |  |
|---|--|--|--|
| Remarks: _____  |  |  |  |
| 3.  | <b>Erosion</b>   | <input type="checkbox"/> Location shown on site map                              | <input checked="" type="checkbox"/> Erosion not evident        |
|   | Area extent: _____   |  | Depth: _____   |
| Remarks: _____  |  |  |  |
| 4.  | <b>Holes</b>   | <input type="checkbox"/> Location shown on site map                              | <input checked="" type="checkbox"/> Holes not evident          |
|   | Area extent: _____   |  | Depth: _____   |
| Remarks: _____  |  |  |  |
| 5.  | <b>Vegetative Cover</b>  | <input checked="" type="checkbox"/> Grass  | <input checked="" type="checkbox"/> Cover properly established |
|   | <input type="checkbox"/> No signs of stress                          | <input type="checkbox"/> Trees/shrubs (indicate size and locations on a diagram) |  |
| Remarks: <u>The historical landfill cover was not properly established. Material from historical unauthorized (non-hazardous) waste disposal has been uncovered.</u>  |  |  |  |
| 6.  | <b>Alternative Cover</b> (e.g., armored rock, concrete)              | <input type="checkbox"/> N/A   |  |
| Remarks: <u>Riprap slope is functioning as designed. Riprap has vegetation growing in it, including small trees.</u>  |  |  |  |
| 7.  | <b>Bulges</b>  | <input type="checkbox"/> Location shown on site map                              | <input checked="" type="checkbox"/> Bulges not evident         |
|   | Area extent: _____   |  | Height: _____  |
| Remarks: _____  |  |  |  |
| 8.  | <b>Wet Areas/Water Damage</b>  | <input checked="" type="checkbox"/> Wet areas/water damage not evident           |  |
|   | <input type="checkbox"/> Wet areas                                   | <input type="checkbox"/> Location shown on site map                              | Area extent: _____   |
|   | <input type="checkbox"/> Ponding                                     | <input type="checkbox"/> Location shown on site map                              | Area extent: _____   |
|   | <input type="checkbox"/> Seeps                                       | <input type="checkbox"/> Location shown on site map                              | Area extent: _____   |
|   | <input type="checkbox"/> Soft subgrade                               | <input type="checkbox"/> Location shown on site map                              | Area extent: _____   |
| Remarks: _____  |  |  |  |
| 9.  | <b>Slope Instability</b>   | <input type="checkbox"/> Slides  | <input type="checkbox"/> Location shown on site map            |
|   | <input checked="" type="checkbox"/> No evidence of slope instability |  |  |
|   | Area extent: _____   |  |  |
| Remarks: _____  |  |  |  |
| <b>B. Benches</b>   |  | <input type="checkbox"/> Applicable  | <input checked="" type="checkbox"/> 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.)                                  |  |  |  |
| <b>C. Letdown Channels</b>  |  | <input type="checkbox"/> Applicable  | <input checked="" type="checkbox"/> 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.) |  |  |  |
| <b>D. Cover Penetrations</b>  |  | <input checked="" type="checkbox"/> Applicable                                   | <input type="checkbox"/> N/A                                   |
| 1.  | <b>Gas Vents</b>   | <input type="checkbox"/> Active  | <input type="checkbox"/> Passive                               |
|   | <input type="checkbox"/> Properly secured/locked                     | <input type="checkbox"/> Functioning   | <input type="checkbox"/> Routinely sampled                     |
|   | <input type="checkbox"/> Evidence of leakage at penetration          | <input type="checkbox"/> Needs maintenance                                       | <input checked="" type="checkbox"/> N/A                        |
|   |  | <input type="checkbox"/> Good condition  |  |

|  |  |   |   |
|--|--|---|---|
| Remarks: <u>Not present in capped area.</u>  |  |   |   |
| 2.   | <b>Gas Monitoring Probes</b>   | <input type="checkbox"/> Properly secured/locked            | <input type="checkbox"/> Functioning                      |
|  |  | <input type="checkbox"/> Routinely sampled                  | <input type="checkbox"/> Good condition                   |
|  |  | <input type="checkbox"/> Evidence of leakage at penetration | <input type="checkbox"/> Needs maintenance                |
|  |  |   | <input checked="" type="checkbox"/> N/A                   |
| Remarks: <u>Not present in capped area.</u>  |  |   |   |
| 3.   | <b>Monitoring Wells</b> (within surface area of landfill)                              | <input checked="" type="checkbox"/> Properly secured/locked | <input type="checkbox"/> Functioning                      |
|  |  | <input type="checkbox"/> Routinely sampled                  | <input checked="" type="checkbox"/> Good condition        |
|  |  | <input type="checkbox"/> Evidence of leakage at penetration | <input type="checkbox"/> Needs maintenance                |
|  |  |   | <input type="checkbox"/> N/A                              |
| Remarks: _____   |  |   |   |
| 4.   | <b>Extraction Wells Leachate</b>   | <input type="checkbox"/> Properly secured/locked            | <input type="checkbox"/> Functioning                      |
|  |  | <input type="checkbox"/> Routinely sampled                  | <input type="checkbox"/> Good condition                   |
|  |  | <input type="checkbox"/> Evidence of leakage at penetration | <input type="checkbox"/> Needs maintenance                |
|  |  |   | <input checked="" type="checkbox"/> N/A                   |
| Remarks: _____   |  |   |   |
| 5.   | <b>Settlement Monuments</b>  | <input type="checkbox"/> Located                            | <input type="checkbox"/> Routinely surveyed               |
|  |  |   | <input checked="" type="checkbox"/> N/A                   |
| Remarks: _____   |  |   |   |
| <b>E. Gas Collection and Treatment</b>   |  | <input checked="" type="checkbox"/> Applicable              | <input type="checkbox"/> N/A                              |
| Remarks: <u>Gas collection system wells were decommissioned and the electrical system removed in March 2023.</u> |  |   |   |
| 1.   | <b>Gas Treatment Facilities</b>  | <input type="checkbox"/> Flaring                            | <input type="checkbox"/> Thermal destruction              |
|  |  | <input type="checkbox"/> Good condition                     | <input type="checkbox"/> Collection for reuse             |
|  |  | <input type="checkbox"/> Needs maintenance                  |   |
| Remarks: _____   |  |   |   |
| 2.   | <b>Gas Collection Wells, Manifolds and Piping</b>                                      | <input type="checkbox"/> Good condition                     | <input type="checkbox"/> Needs maintenance                |
| Remarks: _____   |  |   |   |
| 3.   | <b>Gas Monitoring Facilities</b> (e.g., gas monitoring of adjacent homes or buildings) | <input type="checkbox"/> Good condition                     | <input type="checkbox"/> Needs maintenance                |
|  |  |   | <input checked="" type="checkbox"/> N/A                   |
| Remarks: _____   |  |   |   |
| <b>F. Cover Drainage Layer</b>   |  | <input type="checkbox"/> Applicable                         | <input checked="" type="checkbox"/> N/A                   |
| <b>G. Detention/Sedimentation Ponds</b>  |  | <input type="checkbox"/> Applicable                         | <input checked="" type="checkbox"/> N/A                   |
| <b>H. Retaining Walls</b>  |  | <input type="checkbox"/> Applicable                         | <input checked="" type="checkbox"/> N/A                   |
| <b>I. Perimeter Ditches/Off-Site Discharge</b>   |  | <input checked="" type="checkbox"/> Applicable              | <input type="checkbox"/> N/A                              |
| 1.   | <b>Siltation</b>   | <input type="checkbox"/> Location shown on site map         | <input checked="" type="checkbox"/> Siltation not evident |
|  | Area extent: _____   |   | Depth: _____  |
| Remarks: _____   |  |   |   |
| 2.   | <b>Vegetative Growth</b>   | <input type="checkbox"/> Location shown on site map         | <input type="checkbox"/> N/A                              |
|  | <input checked="" type="checkbox"/> Vegetation does not impede flow                    |   |   |

|   |                            |   |   |
|---|----------------------------|---|---|
| Area extent: _____  |                            | Type: _____   |   |
| Remarks: <u>Vegetation, mostly grasses, was observed in the culvert on both sides of the road.</u>  |                            |   |   |
| 3.  | <b>Erosion</b>             | <input type="checkbox"/> Location shown on site map | <input checked="" type="checkbox"/> Erosion not evident |
| Area extent: _____  |                            | Depth: _____  |   |
| Remarks: _____  |                            |   |   |
| 4.  | <b>Discharge Structure</b> | <input type="checkbox"/> Functioning                | <input checked="" type="checkbox"/> N/A                 |
| Remarks: _____  |                            |   |   |
| <b>VIII. VERTICAL BARRIER WALLS</b>   |                            | <input type="checkbox"/> Applicable                 | <input checked="" type="checkbox"/> N/A                 |
| <b>IX. GROUNDWATER/SURFACE WATER REMEDIES</b>   |                            | <input type="checkbox"/> Applicable                 | <input checked="" type="checkbox"/> N/A                 |
| <b>X. OTHER REMEDIES</b>  |                            |   |   |
| If there are remedies applied at the site and not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.   |                            |   |   |
| <b>XI. OVERALL OBSERVATIONS</b>   |                            |   |   |
| <b>A. Implementation of the Remedy</b>  |                            |   |   |
| 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).<br><u>The remedy was designed to monitor groundwater and air contamination, collect LFGs and clean up the waste area on the surface of the landfill. The Site's remedy was constructed in accordance with the requirements of the EDD.</u> |                            |   |   |
| <b>B. Adequacy of O&amp;M</b>   |                            |   |   |
| 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.<br><u>In April 2021, KDEP assumed O&amp;M activities at the Site. The 2021 Draft Interim O&amp;M Plan provides the baseline activities for maintaining remedy protectiveness and will be updated by the EPA as site conditions and uses require.</u>   |                            |   |   |
| <b>C. Early Indicators of Potential Remedy Problems</b>   |                            |   |   |
| 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.<br><u>None.</u>   |                            |   |   |
| <b>D. Opportunities for Optimization</b>  |                            |   |   |
| Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.<br><u>None.</u>  |                            |   |   |



## APPENDIX H – SITE INSPECTION PHOTOS



The Louisville Loop trail



The electrical housing for the former landfill gas venting system.  
(Removed March 2023)



Gate and signage near the Site entrance



Landfill cap



Riprap and vegetation



Monitoring well GMW1



New gas collection wells



Locked gate at site entrance



Evidence of trespassing



Culvert drain with vegetation on the landfill cap

## APPENDIX I – METHANE DATA

**Table I-1: Summary of Methane Gas Results – 2019 to 2020**

| Location | Sample Date | Result (ppmV) |
|----------|-------------|---------------|
| G1L      | 10/8/2019   | < 4.1         |
| G1L      | 1/28/2020   | < 4.0         |
| G1L      | 6/30/2020   | < 4.4         |
| G1L      | 12/8/2020   | < 3.9         |
| G1R      | 10/8/2019   | < 4.3         |
| G1R      | 1/28/2020   | < 3.7         |
| G1R      | 6/30/2020   | < 4.3         |
| G1R      | 12/8/2020   | < 3.8         |
| G2L      | 10/8/2019   | < 4.0         |
| G2L      | 7/1/2020    | < 4.5         |
| G2L      | 12/9/2020   | < 3.9         |
| G2R      | 10/8/2019   | < 4.1         |
| G2R      | 1/28/2020   | < 4.1         |
| G2R      | 7/1/2020    | < 4.5         |
| G2R      | 12/9/2020   | < 4.0         |
| G3L      | 10/8/2019   | < 4.0         |
| G3L      | 1/29/2020   | < 3.8         |
| G3L      | 7/1/2020    | < 4.3         |
| G3L      | 12/9/2020   | < 4.0         |
| G3LSPLIT | 1/29/2020   | < 3.8         |
| G3R      | 10/8/2019   | < 4.0         |
| G3R      | 1/29/2020   | < 4.1         |
| G3R      | 7/1/2020    | < 4.3         |
| G3R      | 12/9/2020   | < 4.1         |
| G4L      | 10/8/2019   | < 3.9         |
| G4L      | 1/29/2020   | < 3.8         |
| G4L      | 6/30/2020   | < 4.2         |
| G4L      | 12/8/2020   | < 3.8         |
| G4R      | 10/8/2019   | < 3.9         |
| G4R      | 1/29/2020   | < 4.1         |
| G4R      | 6/30/2020   | < 4.3         |
| G4R      | 12/8/2020   | < 3.8         |
| G5L      | 10/8/2019   | < 4.1         |
| G5L      | 1/29/2020   | < 3.8         |
| G5L      | 6/30/2020   | < 4.2         |
| G5L      | 12/8/2020   | < 4.1         |
| G5R      | 10/8/2019   | < 4.1         |
| G5R      | 1/29/2020   | < 3.8         |
| G5R      | 6/30/2020   | < 4.2         |
| G5R      | 12/8/2020   | < 3.9         |
| GMW1     | 10/8/2019   | < 4.2         |
| GMW1     | 1/28/2020   | < 3.8         |
| GMW1     | 6/30/2020   | < 4.4         |
| GMW1     | 12/9/2020   | 6.7           |
| GMW2     | 10/8/2019   | < 4.1         |
| GMW2     | 6/30/2020   | < 4.3         |
| GMW2     | 12/9/2020   | < 4.1         |
| GMW3     | 10/8/2019   | < 4.1         |

| Location   | Sample Date | Result (ppmV) |
|------------|-------------|---------------|
| GMW3       | 1/28/2020   | 3300          |
| GMW3       | 1/28/2020   | < 3.7         |
| GMW3       | 6/30/2020   | 24000         |
| GMW3       | 12/8/2020   | 11000         |
| GMW3S      | 10/8/2019   | < 4.2         |
| GMW3SPLIT  | 6/30/2020   | 16000         |
| GMW3SPLIT  | 12/8/2020   | 15000         |
| SGW1D      | 10/8/2019   | < 4.2         |
| SGW1D      | 1/29/2020   | < 3.9         |
| SGW1D      | 6/30/2020   | < 4.1         |
| SGW1D      | 12/8/2020   | < 3.8         |
| SGW1I      | 10/8/2019   | < 4.3         |
| SGW1I      | 1/29/2020   | < 3.8         |
| SGW1I      | 6/30/2020   | < 4.2         |
| SGW1I      | 12/8/2020   | < 3.9         |
| SGW1S      | 10/8/2019   | < 4.1         |
| SGW1S      | 1/29/2020   | < 3.8         |
| SGW1S      | 6/30/2020   | < 4.2         |
| SGW1S      | 12/8/2020   | < 3.8         |
| SGW2D      | 10/8/2019   | < 3.9         |
| SGW2D      | 1/28/2020   | < 3.7         |
| SGW2D      | 7/1/2020    | < 4.3         |
| SGW2D      | 12/8/2020   | < 4.0         |
| SGW2I      | 10/8/2019   | < 4.0         |
| SGW2I      | 1/28/2020   | < 3.8         |
| SGW2I      | 7/1/2020    | < 4.3         |
| SGW2I      | 12/9/2020   | < 4.0         |
| SGW2IS     | 10/8/2019   | < 4.0         |
| SGW2ISPLIT | 1/28/2020   | < 3.8         |
| SGW2ISPLIT | 7/1/2020    | < 4.3         |
| SGW2ISPLIT | 12/9/2020   | < 4.0         |
| SGW3D      | 10/8/2019   | < 3.9         |
| SGW3D      | 1/28/2020   | < 3.8         |
| SGW3D      | 7/1/2020    | < 4.3         |
| SGW3D      | 12/9/2020   | < 4.1         |
| SGW3I      | 10/8/2019   | < 4.0         |
| SGW3I      | 1/28/2020   | < 3.8         |
| SGW3I      | 7/1/2020    | < 4.2         |
| SGW3I      | 12/9/2020   | < 4.1         |
| SGW3S      | 10/8/2019   | < 3.9         |
| SGW3S      | 1/28/2020   | < 3.8         |
| SGW3S      | 7/1/2020    | < 4.4         |
| SGW3S      | 12/9/2020   | < 4.1         |

*Notes:*  
ppmV – parts per million by volume  
*Source:* EQUIS database received by the EPA on 12/7/2022.