BROOKHAVEN NATIONAL LABORATORY
2022 ENVIRONMENTAL MONITORING REPORT
CURRENT AND FORMER LANDFILL AREAS

Prepared by

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Executive Summary

This report documents the Operations and Maintenance activities undertaken during calendar year 2022 for the Current Landfill (Area of Concern [AOC] 3) and the Former Landfill Areas. The Former Landfill Areas include the Former Landfill (AOC 2A), Interim Landfill (AOC 2D), and Slit Trench (AOC 2E). Brookhaven National Laboratory is responsible for performing this work to comply with the post-closure O&M requirements specified in 6 New York State Code of Rules and Regulations (NYCRR) Part 360, Solid Waste Management Facilities, updated November 4, 2017. The landfill caps are functioning as designed and the 2022 monitoring results are consistent with results from previous years.

GROUNDWATER QUALITY

The groundwater quality at the Current Landfill remains relatively unchanged from 2021. Volatile organic compounds (VOCs) and metals continue to be detected downgradient of the Current Landfill. The most prevalent VOCs detected above NYSDEC Class GA Groundwater/Guidance Values are chloroethane, 1,1-dichloroethane and benzene, at maximum concentrations of 16.9 micrograms per liter (µg/L), 7.8 µg/L and 1.76 µg/L, respectively. As with previous years, antimony, arsenic, iron, manganese, and sodium were detected downgradient from the Current Landfill at concentrations above applicable standards. Concentrations of these metals were similar to those detected historically. Maximum concentrations of antimony, arsenic, iron, manganese, and sodium in downgradient wells were 5.74 µg/L, 25.2 µg/L, 93,400 µg/L, 3,340 µg/L and 83,100 µg/L, respectively. These results are an indicator of continued low-level leachate generation at this landfill. There were no detections of radionuclides above standards at the Current Landfill during 2022 nor have there been since groundwater monitoring began in 1997.

The groundwater monitoring well network for the Current Landfill Area is adequate at this time. VOCs, metals and water quality parameters will continue to be monitored semi-annually but VOCs will be monitored quarterly in wells 088-109 and 098-99. Radionuclides will continue to be monitored annually on wells 087-23, 087-27, 088-109 and 088-21.

The Former Landfill groundwater monitoring program was discontinued in 2020.

SOIL-GAS MONITORING

Soil-gas monitoring at the Current Landfill indicates that decomposition is still occurring. However, as with prior years, there is no indication that the vapors are migrating beyond the monitoring well network. Soil-gas monitoring at the Former Landfill Area indicates that there is no detection of gas emanating from the landfill. The existing soil gas monitoring well networks are sufficient to monitor both landfill areas.

MAINTENANCE AND REPAIR

Monthly inspections and routine maintenance of the cap, drainage channels and wells were performed throughout 2022. A Land Use and Institutional Control (LUIC) sign was replaced at the Current Landfill.

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ACRONYMS

AOC	Area of concern
BNL	Brookhaven National Laboratory
BSA	Brookhaven Science Associates
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CY	Calendar year
DCS	Derived concentration technical standard
DOE	U.S. Department of Energy
DQOs	Data quality objectives
EIMS	Environmental Info. Mgmt. System
HWMF	Former Hazardous Waste Management Facility
LEL	Lower explosive limit
LUIC	Land Use and Institutional Controls
µg/L	Micrograms per liter
mg/L	Milligrams per liter
ng/L	Nanograms per liter
mrem	Millirem
MS/MSDs	Matrix spike/matrix spike duplicates
NPL	National Priorities List
NYSDEC	NY State Dept. of Environmental Conservation
NYSDOH	NY State Dept. of Health
O&M	Operations and Maintenance
OU	Operable Unit
PCBs	Polychlorinated biphenyls
pCi/L	Picocuries per liter
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
SCDHS	Suffolk County Department of Health Services
Sr-90	Strontium 90
TDS	Total dissolved solids
TKN	Total Kjeldahl nitrogen
TSS	Total suspended solids
TVOCs	Total volatile organic compounds
UEL	Upper explosive limit
USEPA	United States Environmental Protection Agency
VOCs	Volatile organic compounds

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1.0 INTRODUCTION

This report documents the Operation and Maintenance (O&M) activities and summarizes monitoring data collected during calendar year (CY) 2022 for the Current Landfill (Area of Concern [AOC] 3) and the Former Landfill Areas (Former Landfill AOC 2A, Interim Landfill AOC 2D, and Slit Trench AOC 2E). Brookhaven National Laboratory (BNL) is responsible for performing this work to comply with the post-closure O&M requirements specified in the 6 New York State Code of Rules and Regulations (6NYCRR) Part 360, Solid Waste Management Facilities, revised November 4, 2017. The details of the O&M programs are described in the Final Operations and Maintenance Manuals for the Current Landfill (CDM Federal, 1996a) and the Former Landfill Areas (CDM Federal, 1996c).

The following are the primary objectives of the O&M program:

- Monitor the effectiveness of the impermeable caps in protecting groundwater quality;
- Monitor the potential generation and migration of soil-gas; and
- Maintain and monitor the various components of the closure system (e.g., landfill caps, drainage structures, and environmental monitoring systems).

This is the twenty-seventh year of O&M for the Current Landfill, the twenty-sixth year for the Former Landfill and Slit Trench, and the twenty-fifth year for the Interim Landfill.

1.1 Site Description and Project Background

BNL is a 5,265-acre site located in central eastern Long Island, New York. The facility is a federally owned and funded international research and learning center managed by Brookhaven Science Associates (BSA) under contract with the United States Department of Energy (DOE). On December 21, 1989, the site was placed on the United States Environmental Protection Agency's (USEPA's) National Priorities List (NPL), a ranking of hazardous waste sites compiled by the federal government as part of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Placing BNL on the NPL resulted in the establishment of a remediation

task list for various locations around the facility. The site subsequently was divided into eight separate remediation work areas known as Operable Units (OU). The Current Landfill and Former Landfill Areas are located in OU I, near the south-central portion of the BNL site **(Figure 1)**.

Current Landfill. The Current Landfill consists of one unlined waste-cell that operated from the late 1960s until 1990 for disposing of waste generated at the Laboratory. An impermeable cap system covering the cell was completed in November 1995. The capping system consists of the following: eight-ounce geotextile fabric; one foot of gas venting layer material; ten gas vents; a double-sided, textured, 40-mil Linear Low Density Polyethylene (LLDPE) geomembrane liner; two feet of protection layer material; six inches of topsoil; vegetation; and erosion control blankets on areas with slopes greater than or equal to four percent. Additional information about the cap's construction can be obtained from the *Construction Certification Report for the Current Landfill* (CDM Federal, 1996b). Following the installation of the cap, the post-closure groundwater monitoring program was implemented in January 1996, in compliance with 6 NYCRR Part 360 Section 2.15, Solid Waste Management Facilities.

Groundwater quality near the Current Landfill is monitored under the O&M program for a wide variety of volatile organic compounds (VOCs), metals, radiological, and water chemistry (landfill leachate) parameters. Monitoring in this vicinity was expanded in 1999 to include a wetland area adjacent to the landfill's eastern boundary. The area shown on **Figure 2**, known as the Wooded Wetland area, is a two-acre wetland located between the Former Hazardous Waste Management Facility (HWMF) and the Current Landfill. The wetland receives surface runoff from the Current Landfill and usually contains standing surface water during the spring/early summer and is dry in late summer/fall. Monitoring of the Wooded Wetland area was incorporated into the Current Landfill Monitoring Program and consisted of sampling and analyzing surface water and sediment annually through 2008, and then every other year to evaluate the potential for leachate migrating into this area, as originally performed under the *OU I Ecological Risk Assessment* (CDM Federal, 1999). In response to information provided in the *2015 Environmental Monitoring Report, Current and Former Landfill Areas* (BNL 2016) and additional tiger salamander information provided upon the request of the NYSDEC, it was agreed that further monitoring of the Wooded Wetlands would be limited to visual tiger salamander assessments. Furthermore, it was agreed to that no further sediment and surface water samples will be collected, and care would be taken by

BNL to not disturb the buildup of detritus material in the Wooded Wetland.

As required under 6 NYCRR Part 360, groundwater quality must be monitored for a minimum of five years, after which the permittee may request modification of the sampling and analysis requirements. In October 2001, BNL submitted the *Five-Year Evaluation Report for the Current Landfill* (BNL, 2001b). This report assessed groundwater trends over the five years after capping, and proposed changes to the sampling program. These changes were implemented in CY 2002. In July 2006, March 2011, June 2016 and June 2021 BNL issued CERCLA Five-Year Review Reports which discussed all remediation areas at the site, including the Current Landfill (BNL 2006, BNL 2011, BNL 2016, BNL 2021).

Former Landfill Area. The Former Landfill Area encompasses three closely located landfill units; the Former Landfill, the Slit Trench, and the Interim Landfill. The Former Landfill is an unlined waste-disposal area originally used by the United States Army starting in 1918. Waste disposal operations ceased in 1966, and the landfill was covered with soil. The Interim Landfill also is unlined and was reportedly used for approximately one year between the time the Former Landfill was closed and the Current Landfill was opened. The Slit Trench is unlined as well and is believed to have operated between 1960 and 1967 for disposal of construction and demolition debris (CDM Federal, 1996c).

The Former Landfill and Slit Trench were capped in November 1996 and the Interim Landfill was capped in October 1997. The Former Landfill and Slit Trench cap system consists of eight-ounce geotextile, twelve inches of gas venting material, a 40-mil LLDPE geomembrane liner, eighteen to twenty-four inches of liner protection soil, six inches of topsoil, vegetation, and erosion control fabric. In areas where the slope exceeds 15%, the geomembrane is textured on both sides and the protection layer is twenty-four inches. In the remaining locations, the geomembrane is smooth on both sides and protection layer is eighteen inches. Additionally, the cap is equipped with ten passive vents. The Interim Landfill cap system consists of eight-ounce geotextile, twelve inches of gas venting material, a 40-mil LLDPE geomembrane liner, eighteen inches of protection soil, six inches of topsoil, vegetation, and erosion control fabric. All of the membrane is of double textured variety, with the protection layer a minimum of eighteen inches thick over the entire landfill. Additionally, the cap is equipped with two passive vents. Additional information about

the construction of the caps can be found in the *Construction Certification Report for the Former Landfill* (Roy F. Weston, 1997) and *Construction Certification Report for the Interim Landfill Capping* (PW Grosser, 1997). BNL started O&M activities in December 1996 at the Former Landfill and Slit Trench, and in November 1997 at the Interim Landfill. Under this O&M program, groundwater quality in downgradient wells near the Former Landfill was monitored for VOCs, metals, radionuclides, and landfill-leachate parameters.

In March 2002, BNL submitted a *Five-Year Evaluation Report for the Former Landfill* (P.W. Grosser, 2002), which assessed trends in groundwater quality over the five-year period following capping and proposed changes to the sampling program. These changes were implemented in CY 2003. In July 2006, March 2011, June 2016 and June 2021 BNL issued CERCLA Five-Year Review Reports which discussed all remediation areas at the site including the Former Landfill Area (BNL 2006, BNL 2011, BNL 2016, BNL 2021). With the groundwater data collected during the past two decades as evidence, and groundwater impact nonexistent, it was recommended in the *2020 Environmental Monitoring Report, Current and Former Landfill Areas* (BNL 2021) that groundwater monitoring of the Former Landfill monitoring well network be discontinued. With NYSDEC acceptance of the *2020 Environmental Monitoring Report, Current and Former Landfill Areas* (BNL 2021) Report, these changes were implemented in CY 2021.

1.2 Overview of the Monitoring Program

Groundwater Monitoring

Data quality objectives (DQOs) for each of BNL's groundwater monitoring programs are presented in the *BNL Environmental Monitoring Plan* (BNL, 2023). The design of the data collection network was optimized as part of the process. Such optimization continues annually as part of the O&M program and is based on the interpretation of new data as well as historical trends. The primary DQO decision identified for the landfill monitoring programs is "Are the controls effectively improving groundwater quality below and downgradient of the landfill?"

Groundwater samples are collected from monitoring wells positioned upgradient and downgradient of each landfill area. Analytical data are reviewed, and determinations are made regarding the effectiveness of landfill controls.

The additional monitoring programs for the landfill areas consist of:

Soil-gas Monitoring. Measurements of methane, Lower Explosive Limit (LEL), and hydrogen sulfide are taken quarterly from monitoring locations surrounding the Current Landfill and annually from monitoring locations surrounding the Former Landfill to evaluate the movement of soil-gas from the landfills.

Routine Visual Inspection, Maintenance, and Repair. Monthly inspections are performed to monitor the structural and/or operational status of the landfill caps, drainage structures, and environmental monitoring systems. Semi-annual inspections of the landfills are also performed to ensure that institutional controls continue to be maintained.

Leachate Discharge. Visual inspections of the landfills are performed monthly to monitor for signs of leachate discharge. If observed, samples of the leachate are collected and analyzed. Leachate was not observed during 2022.

These activities are discussed in greater detail in **Sections 2 through 4** of this report. **Section 5** contains the conclusions and recommendations. References are included in **Section 6**.

2.0 GROUNDWATER MONITORING

2.1 Monitoring Well Networks

2.1.1 Current Landfill

Since January 1996, groundwater quality at the Current Landfill has been monitored using eleven downgradient wells and one background monitoring well. **Figure 2** depicts the location of the monitoring wells. **Figure 3** shows the water table contours for this area in October 2022. The depths of the screen intervals for the Current Landfill wells and fourth quarter depth to water elevations are listed below.

Well ID	Depth to Water (ft BLS) 4th Q 2022	Screen Interval (ft BLS)	Screen Zone
087-09*	29.70	24–34	Shallow Glacial

087-11	16.34	11–21	Shallow Glacial
087-23	34.80	25–40	Shallow Glacial
087-24	34.74	70–80	Middle Glacial
087-26	15.24	70–80	Middle Glacial
087-27	15.34	5–20	Shallow Glacial
088-109	13.82	6–21	Shallow Glacial
088-110	15.67	10–25	Shallow Glacial
088-21	10.31	5–20	Shallow Glacial
088-22	10.40	70–80	Middle Glacial
088-23	10.25	120–130	Deep Glacial
098-99	13.25	39.5-49.5	Middle Glacial

BLS = Below Land Surface

*Background well

2.1.2 Former Landfill

Since January 1997, groundwater quality at the Former Landfill area has been monitored using 14 shallow monitoring wells (three background and 11 downgradient). However, as recommended in the *2020 Environmental Monitoring Report, Current and Former Landfill Areas* (BNL 2021), groundwater monitoring of the Former Landfill monitoring well network has been discontinued. This change was implemented during CY 2021. For historical purposes, the screen zones for the Former Landfill Area wells are summarized below.

Well ID	Depth to Water (ft BLS) 4th Q 2022	Screen Interval (ft BLS)	Screen Zone
086-42*	NS	65–75	Middle Glacial
086-72*	NS	41.5–56.5	Shallow Glacial
087-22*	NS	43–53	Shallow Glacial
097-17	NS	29–39	Shallow Glacial
097-64	NS	29–44	Shallow Glacial
097-277	NS	40–55	Shallow Glacial
106-02	NS	55–65	Middle Glacial
106-30	NS	29–44	Shallow Glacial
106-20	NS	85-95	Middle Glacial
106-21	NS	55-65	Shallow Glacial
106-43	NS	43-53	Shallow Glacial
106-44	NS	44-54	Shallow Glacial
106-45	NS	44-55	Shallow Glacial
106-64	NS	30-40	Shallow Glacial

BLS = Below Land Surface

*Background well
NS = Not sampled

2.1.3 Sampling Frequency and Analytical Parameters

The majority of monitoring wells for the Current Landfill were sampled semiannually during May and December 2022, for VOCs, metals, and water chemistry parameters. A quarterly VOC sampling frequency was maintained for wells 088-109 and 098-99. Samples were analyzed for radionuclides once during 2022 for wells 087-23, 087-27, 088-21, and 088-109.

The BNL sampling team conducted the groundwater sampling, and General Engineering Laboratories, Inc of Charleston, South Carolina analyzed the samples. Groundwater samples were collected using BNL standard operating procedure (SOP) EM-SOP-302, *Groundwater Sampling-Low Flow Purging and Sampling Using Dedicated Bladder Pumps.* In 2021 EPA Method 524.2 was replaced by Method 8260LL. Method 8260LL was used as the sole VOC method throughout 2022. This method duplicates the suite of analytes and detection limits of Method 524.2. See **Table 1** for a summary of analyses performed, by well and sampling round.

2.1.4 Quality Assurance / Quality Control

The groundwater samples were collected and analyzed in accordance with strict quality assurance/ quality control (QA/QC) requirements as described in the BNL SOPs for groundwater monitoring. The analytical results for groundwater samples collected during 2022 satisfied the data-quality objectives. Furthermore, a master calibration/maintenance log is maintained for each field-measuring device (e.g., pH, conductivity, turbidity meters).

The analytical results of samples collected for the Current Landfill project underwent data verification, using EM-SOP-203, *Chemical Data Verification*, and EM-SOP-204, *Radiochemical Data Verification*. These procedures are designed to verify the accuracy and/or completeness of analytical data. The data verification process is implemented to detect the most common analytical problems that affect the quality of the results. To accomplish this task, QA/QC items such as the following were checked: holding times, matrix spikes, laboratory and field blanks, and field logs. If items are found that can affect the use and interpretation of the data, they are either corrected, as in the case of unreadable information on the field logs, or the data are "qualified," as in the case of contamination of the blanks or violations of the holding time.

Guidance on the collection of QA/QC samples is contained in BNL procedure EM-SOP-200, *Collection and Frequency of Field Quality Control Samples*. The QA/QC samples collected included trip blanks, field blanks, matrix spike/matrix spike duplicate (MS/MSDs), and blind duplicates.

Trip blanks were analyzed for aqueous VOCs only. One trip blank was shipped to the analytical laboratory with each set of samples submitted for VOC analyses. The results of the blank samples did not indicate any significant impact on the quality of the results. One duplicate sample was collected from the Current Landfill during each of the four quarters. No inconsistencies were detected in the blind duplicate analyses. The results are indicative of consistency with contract analytical laboratories and sampling methods, resulting in valid, reproduceable data. Matrix spike/matrix spike duplicate (MS/MSD) samples were collected at the same frequency as the duplicates. Due to lab exceedances of some internal method blank quality control standards, BNL provided a secondary data verification review qualifier on a limited set of analytical data. The data has been qualified for the samples that were affected by this exceedance and subsequently denoted in the respective data tables. All qualified data was within acceptable limits and did not adversely impact the review of groundwater quality.

2.2 Landfill Groundwater Monitoring Results

This section summarizes the 2022 results for VOCs, metals, water-chemistry parameters, and radionuclides detected for the Current Landfill. The historical trends in concentrations of key contaminants are assessed and shown graphically in **Figures 4 through 7**. Summary tables of all 2022 landfill groundwater data are presented in **Tables 2 through 5**. Detections that exceed groundwater standards are in bold text. The tables include groundwater standards, laboratory results, reporting limits, minimum detectable activity, laboratory data qualifiers and BNL data verification qualifiers.

The groundwater standards used for evaluating non-radiological groundwater data are those contained in the NYSDEC Division of Water Technical and Operational Guidance Series 1.1.1 Ambient Water Quality Standards and Guidance Values (June 1998, with addendums April 2000 and June 2004) (NYSDEC 1998, 2000 and 2004) and 6NYCRR Part 703.5. Groundwater standards

for radiological isotopes were supplemented with New York State Department of Health's (NYSDOH's) and United States Environmental Protection Agency (EPA) strontium-90 and tritium standards for drinking water. There were no groundwater standards for the gamma constituents; therefore, a Groundwater Screening Level was used. This value is based on a dose equivalent of 4 millirem (mrem)/year and was calculated as 4% of the DOE Derived Concentration Technical Standards (DCS) (DOE-STD-1196-2021) for the isotope of concern. These values are listed under the "groundwater standards" column in the summary tables and annotated where appropriate. Laboratory results that exceed the lower of the groundwater standards or the Cleanup Goals listed in the Record of Decision (ROD) are highlighted in the data summary tables to facilitate review of the information.

The laboratory data qualifiers included in the tables vary for the different analyses. Explanations for the data qualifiers are included in the notes in each table. Complete 2022 laboratory data reports and chain of custody forms are archived and available upon request. The 2022 Groundwater Sampling Logs are included as **Appendix C**. In addition, analytical results are stored in the BNL Environmental Information Management System (EIMS) database.

2.2.1 Current Landfill

2.2.1.1 Volatile Organic Compounds (VOCs)

Benzene and chloroethane have historically been the primary groundwater contaminants detected downgradient of the Current Landfill. Benzene was detected above its standard of 1 microgram per liter (µg/L) in monitoring well 087-11 and 087-27. 1,1-Dichloroethane was detected above the groundwater standard of 5 µg/L in downgradient monitoring well 088-109 during 2022 **(Table 2)**. Chloroethane was detected in well 088-109 above the groundwater standard of 5 µg/L. No other VOCs were detected above groundwater standards during 2022.

Benzene exceeded the 1 µg/L standard in well 087-11 during the May 2022 and December 2022 sampling events, with a maximum concentration of 1.76 µg/L. Well 087-27 exceeded the benzene standard during the December 2022 sampling event with result of 1.01 µg/L. Chloroethane exceeded the 5 µg/L standard in well 088-109 for September and December with a concentration of 16.9 µg/L and 14.6 µg/L respectively. These concentrations are significantly below the historic high of 560 ug/L detected in this well in 1998. Well 088-109 detected 1,1-Dichloroethane slightly

above the standard of 5 µg/L in September at a concentration of 7.8 µg/L. There is no apparent seasonal or water table elevation correlation with VOC concentrations in this well based on an assessment of historical data.

Figure 4 plots the concentration trends of total VOCs (TVOC), benzene and chloroethane. Overall, the trend plots also show a distinct decrease in VOC concentrations from the high concentrations seen prior to the installation of the cap. This reflects the positive effects of the capping on the groundwater quality downgradient of the landfill.

2.2.1.2 Water Chemistry Parameters

Groundwater samples near the Current Landfill were analyzed semi-annually and annually for 088-22 and 088-23 for ammonia, total Kjeldahl nitrogen (TKN), cyanide, sulfate, nitrite, nitrate, total nitrogen, chloride, alkalinity, total dissolved solids (TDS or residue, nonfilterable), and total suspended solids (TSS or residue, filterable) during 2022. The results are provided in **Table 3**. Elevated levels of these parameters can be indicative of the presence of landfill leachate. A comparison of downgradient and background wells shows that leachate continues to be generated from the Current Landfill, albeit at low concentrations. The establishment of stable water chemistry concentration levels indicates that the capping continues to effectively reduce the generation and migration of leachate.

During 2022, ammonia was the only water chemistry parameter detected above standards. Ammonia was detected above the standard of 2 milligrams per liter (mg/L) in wells 087-11 and 088-109. The highest concentration was found in well 087-11 at 4 mg/L in May 2022 **(Table 3)**. The levels of ammonia detected in downgradient wells are consistent with historic data.

Chloride was not detected above the standard of 250 mg/L in any wells in 2022. Downgradient well 088-21 had the highest concentration of chloride at 133 mg/L. **Figure 5** plots the trends for alkalinity and chloride. The trends for downgradient wells show low levels of chloride concentrations near the Current Landfill. The historical concentration trends plotted show overall stable levels of chloride apart from 087-24, 087-26 and 088-21 which are showing a slight overall upward trend.

Alkalinity, in the form of bicarbonate, is the concentration of anions available to neutralize acid, and is often used as an indicator of leachate contamination. The alkalinity in background well 087-09 ranged from 22 mg/L to 35 mg/L. The highest alkalinity concentration during 2022 was detected in downgradient, shallow Upper Glacial aquifer well 087-11, at 217 mg/L. There is no groundwater standard for alkalinity. The historical concentration trends plotted in **Figure 5** show overall stable to decreasing levels of alkalinity apart from 087-24 and 087-26 which are showing a slight upward trend.

During 2022, all sulfate concentrations remained below the groundwater standard of 250 mg/L. The highest sulfate value reported for 2022 was detected in the May sample from monitoring well 088-109 at a concentration of 17 mg/L. This is consistent with historic background levels at the Current Landfill.

TDS and TSS results were similar to those from previous years. TDS concentrations in background well 087-09 ranged from 105 mg/L to 134 mg/L. TSS concentrations ranged from non-detect to an estimated value of 0.83 mg/L for well 087-09. The maximum concentrations observed in downgradient wells were 256 mg/L and 33.5 mg/L of TDS and TSS, respectively.

No water chemistry parameters have exceeded groundwater standards in downgradient wells 087-24, 088-22, and 088-23, since 1998. These wells are all screened in the mid to deep-Upper Glacial aquifer to monitor the vertical extent of contamination from the Current Landfill.

2.2.1.3 Metals

Historically, iron is detected consistently above groundwater standards in the upgradient well, and the majority of downgradient wells surrounding the landfill. Precipitated iron from the BNL Water Treatment Plant was disposed of at the Current Landfill during past operations. However, metals concentrations in upgradient well 087-09 are still lower than in several downgradient wells, suggesting continued leachate migration from the landfill into the groundwater.

During 2022, sodium exceeded the groundwater standard in background well 087-09. Antimony, arsenic, iron, manganese, and sodium exceeded their respective groundwater standards in several downgradient wells **(Table 4)**.

Antimony was reported above the standard of 3 µg/L in downgradient well 088-21 at a maximum concentration of 5.7 µg/L. This result is consistent with sporadic historic results reported for several Current Landfill wells, including background well 087-09. These sporadic results do not represent continuous and ongoing antimony resulting from landfill releases.

Arsenic was reported above the standard of 10 µg/L in wells 087-23 and 088-110 at a high concentration of 25 µg/L. Arsenic detections have historically been observed at similar concentrations in Current Landfill wells.

Iron was reported above the standard of 300 µg/L in wells 087-11, 087-23, 087-27, 088-21 088-109, and 088-110. The background concentrations were non-detect while downgradient concentrations ranged up to 93,400 µg/L in well 087-11. Well 087-11 has shown stable iron concentrations since the second quarter of 2020. Iron trend graphs are plotted on **Figure 6**.

Manganese was detected above the standard of 300 µg/L in wells 087-11, 087-23, 087-27, 088-109, and 088-110. Manganese ranged from non-detect to 6.4 µg/L in background well 087-09, and up to 3,340 µg/L in the downgradient well 088-110.

Sodium was detected above the standard of 20,000 µg/L in wells 087-09, 087-24, 087-26, 088-21, 088-22, and 088-110. Downgradient sodium levels ranged up to 83,100 µg/L in well 088-21.

2.2.1.4 Radionuclides

No radionuclides were detected above groundwater standards for strontium-90, tritium and gamma constituents during 2022 as shown in **Table 5**. As noted in **Section 2.2**, there are no groundwater standards for the gamma constituents; therefore, a groundwater screening level was used for comparison purposes and annotated where appropriate. Sr-90 was detected in well 088-21 at a concentration of 3.8 picocuries per liter (pCi/L), during December. This is below the standard of 8 pCi/L. Tritium was not detected in any wells sampled during 2022. The last time tritium was detected was in well 087-27 at 318 pCi/L in December of 2015. This is significantly below the groundwater standard of 20,000 pCi/L. **Figure 7** shows the historical strontium-90 and tritium concentration trends for the four wells sampled.

2.2.2 Former Landfill

As recommended in the *2020 Environmental Monitoring Report, Current and Former Landfill Areas* (BNL 2021), groundwater monitoring of the Former Landfill monitoring well network has been discontinued.

3.0 SOIL-GAS MONITORING

3.1 Soil-gas Monitoring Networks

Soil-gas readings were collected from wells surrounding the Current Landfill in March, June, September, and December 2022 and from the Former Landfill in August 2022. Methane, lower explosive limit (LEL), and hydrogen sulfide were measured using a Landtec® GEM 2000. The LEL for methane is 5.3% and the upper explosive limit (UEL) is 15%.

3.1.1 Current Landfill

Along the perimeter of the Current Landfill, 58 points were sampled for soil-gas, which includes four outpost soil-gas well clusters, GSGM-1 to GSGM-4, located along the south side of Brookhaven Avenue. The sampling points include 12 soil-gas well clusters consisting of three sampling intervals per cluster, and 11 soil-gas well couplets consisting of two sampling intervals per couplet. **Table 6** describes each soil-gas well adjacent to the landfill. Their locations are illustrated on **Figure 8**.

3.1.2 Former Landfill Area

Twenty-four sampling points were monitored for the Former Landfill Area. These points include 12 well couplets consisting of two sampling points per couplet. Details of each soil-gas well are given in **Table 6** and their locations shown in **Figure 9**.

3.1.3 Sampling Frequency

Soil-gas was monitored for each landfill in the following months.

Sampling Event	Current Landfill	Former Landfill
Round 1	March 2022	August 2022
Round 2	June 2022	None
Round 3	September 2022	None
Round 4	December 2022	None

3.2 Results of Soil-Gas Monitoring

Action levels for soil-gas are specified in 6 NYCRR Part 360-2.17(f) in terms of percent LEL, which is primarily related to the amount of methane present. This discussion focuses primarily on the methane levels detected during monitoring. Hydrogen sulfide is monitored but has no regulatory action level. 6 NYCRR Part 360-2.17(f) specifies that active measures to control decomposition gases are required when the concentration of methane or other explosive gases exceeds 25 percent of the LEL (or 1.3% methane) in facility structures, or 100 percent (%) of the LEL (or 5.3% methane) at the site boundary.

3.2.1 Current Landfill

A total of 23 soil-gas monitoring well clusters are positioned around the Current Landfill **(Figure 8)** and were sampled quarterly during 2022. Potential receptors, or areas where methane can accumulate near the Current Landfill, include the National Weather Service office building located 480 feet north northwest of the Current Landfill on the north side of Brookhaven Avenue. Four outpost soil-gas locations, GSGM-1 to GSGM-4, are located along the south side of Brookhaven Avenue, and are used to monitor the northern extent of the migration of landfill gas. Should methane extend to the south side of Brookhaven Avenue at concentrations exceeding 25 percent of the LEL (or 1.3% methane), active measures may be required to control its migration. This is a BNL administrative limit that would trigger further evaluation.

The results of the soil-gas monitoring for 2022 are summarized in **Table 7**. **Appendix A** contains the field notes recorded during the sampling events. Instrument measurements show that methane continues to be generated in several areas of the landfill. The percent of the LEL is elevated along the western side and the southeast boundary of the Current Landfill. In addition, SGMW-19B along the northern side of the Current Landfill had elevated LEL readings in three of the four quarterly sampling events. The LEL readings in these areas have remained stable since 1996 when monitoring began. The current gas venting system appears to be effective in controlling gas accumulation. These data are consistent with previous years.

Outpost wells, GSGM-1 through GSGM-4, located along the south side of Brookhaven Avenue and immediately upgradient of the landfill showed no methane during 2022. This indicates that the methane accumulation and migration does not extend to this area. Should methane, at concentrations exceeding 25 percent of the LEL (or 1.3% methane) extend to these outpost wells on the south side of Brookhaven Avenue, active measures may be required to control its migration.

Hydrogen sulfide is a product of anaerobic decay in landfills and can produce an odor like rotten eggs. It is a nuisance, but rarely a toxicity problem. For reference, the National Institute of Occupational Safety and Health sets an exposure limit of 10 parts per million (ppm) hydrogen sulfide in the breathing zone for an 8-hour period.

Hydrogen sulfide measurements collected from the soil-gas monitoring wells ranged from 0 ppm to 19 ppm. Well SGMW-03B located along the western section of the landfill, had the highest hydrogen sulfide concentration of 19 ppm, which was above the 10 ppm exposure limit. However, the measurement was taken from a vapor point screened 10.5 to 17 ft below the surface, and not from the ambient breathing zone. Elevated hydrogen sulfide was also detected in well SGMW-10A south of the landfill, which is screened 2.5 to 7.5 ft below the surface at a concentration of 18 ppm. Like methane, receptors to hydrogen sulfide are considered to be in areas such as basements where the gas can accumulate. Based upon the readings obtained from the outpost soil-gas wells along the south side of Brookhaven Avenue (GSGM-1 to GSGM-4), there is no evidence that hydrogen sulfide is migrating toward the National Weather Service building.

3.2.1.1 Trend in Soil-Gas Data

Historically the levels of methane and hydrogen sulfide in the wells along the northwest landfill boundary and southeast corner have remained elevated but stable.

3.2.2 Former Landfill Area

A total of 12 soil-gas monitoring well clusters are positioned around the Former Landfill Area **(Figure 9)**. During 2022, the well clusters were monitored once, in August. The only existing operating facility within the immediate vicinity of the Former Landfill Area is Building 670, located approximately 650 feet to the southeast. This building houses the Chemical Holes Sr-90 groundwater treatment system. This facility does not have a basement. Based upon the sampling

event, there was no methane or hydrogen sulfide detected. **Table 8** details the 2022 soil-gas monitoring results for the Former Landfill Area. **Appendix A** contains the field notes recorded during the sampling events.

3.2.2.1 Trends in Soil-Gas Data

The results of monitoring the Former Landfill Area continue to be consistent with the initial survey of the methane gas migration conducted in 1995, during which concentrations between 0% to 0.1% methane were recorded. Methane has not been detected since 2005. Although hydrogen sulfide gas was measured during this initial survey it has not been detected since 2010.

Presently, there is no measured pathway for methane gas migration, nor do the concentrations represent an explosive hazard, as shown by the non-detectable readings on the landfill gas analyzer. The age of the Former Landfill Area and the types of materials disposed of would likely result in low levels or the absence of methane or hydrogen sulfide.

4.0 MAINTENANCE AND REPAIR

Monthly site inspections were performed by BNL at the Current and Former Landfill areas to monitor the structural and/or operational status of the landfill cap, gas vents, drainage structure, fences and environmental monitoring system (groundwater wells, soil-gas wells) in accordance with the O&M Manuals. A copy of the inspection reports and photos taken during inspections is included in **Appendix B**. Maintenance and repair work completed by BNL is discussed below.

4.1 Landfill Cap and Gas Vents

To prevent ruts in the landfills caused by the weight of the lawn mowers during periods of above normal precipitation, grass cutting is only conducted when soil conditions are optimal. During 2022, the grass at the Current and Former Landfills was cut during June and October. Pine seedlings observed growing on the edge of the Former Landfill Area were hand pulled at the time of inspection. The seedlings only penetrated the top soil cover. Several animal burrows at both the Current and Former Landfills were filled in throughout 2022. The burrows did not penetrate past the protection layer of the cap.

4.2 Drainage Structures

The drainage structures at both the Current and Former Landfill areas were maintained. They were observed to be operational and structurally sound during the site inspections. Small pine seedlings and weeds were noted growing in the drainage channels of both landfills during various times of the year. The weeds died off as cold weather set in. If they grow back in sufficient numbers, they will either be cut back or sprayed with herbicide.

4.3 Environmental Monitoring System

The monitoring wells and soil-gas monitoring wells associated with the landfills required no significant maintenance. Access to the soil-gas monitoring wells was cleared via mechanical weed whacking prior to each sampling event.

4.4 Related Structures

A Land Use and Institutional Control (LUIC) sign located on the south access gate of the Current Landfill was replaced in October due to faded lettering.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Groundwater Monitoring

5.1.1 Conclusions for the Current Landfill

- Although low levels of contaminants continue to be detected, the landfill controls are effective at reducing the impact of the Current Landfill on groundwater quality as evidenced by the improving quality of groundwater downgradient of the landfill.

- Benzene was detected in downgradient wells 087-11, and 087-27 at concentrations slightly above the groundwater standard with a maximum concentration of 1.8 µg/L in well 087-11. The other VOCs detected above the groundwater standard were chloroethane and 1,1-dichloroethane. 1,1-Dichloroethane was detected above the standard of 5 µg/L in monitoring well 088-109 with a maximum concentration of 7.8 µg/L. Chloroethane was detected in wells 088-109 above the groundwater standard of 5 µg/L with concentrations up to 16.9 µg/L. Although VOCs continue to be detected in downgradient wells, an analysis of the trends of VOCs indicate the concentrations are stable to decreasing. These VOCs are naturally attenuating as they migrate south as shown by groundwater monitoring and are not detected at the site boundary above the drinking water standard.

- Concentrations of landfill water chemistry parameters and metals such as ammonia and iron in several downgradient wells were above the upgradient values. This suggests that leachate continues to emanate from the landfill into groundwater. Ammonia was the only water chemistry parameter detected above the standard of 2 mg/L, in downgradient wells 087-11 and 088-109 at a maximum of 4 mg/L.

- During 2022, antimony, arsenic, iron, manganese, and sodium in several downgradient wells were detected above their respective groundwater standards. These parameters and concentrations are consistent with historic values.

- Tritium was not detected in any of the wells sampled during 2022. Strontium-90 was detected in downgradient well 088-21 of the Current Landfill, but at a concentration below

the groundwater standard. There have been no detections of radionuclides above the drinking water standards since 1998.

5.1.2 Recommendations for the Current Landfill

- The monitoring well network for the Current Landfill is adequate, and no changes to the network or the sampling frequency are recommended at this time.

5.2 Soil-Gas Monitoring

5.2.1 Conclusions for the Current Landfill

- Methane and/or hydrogen sulfide levels in wells located along the west landfill boundary, north landfill boundary and southeast corner have remained stable and have not shown any significant increases or decreases over time. No significant gas migration has been observed this year at the outpost soil-gas wells along Brookhaven Avenue.

5.2.2 Recommendations for the Current Landfill

- The soil-gas monitoring program is adequate at this time and no changes are recommended.

5.2.3 Conclusions for the Former Landfill Area

- Methane and hydrogen sulfide monitoring at the Former Landfill Area continue to show no detectable levels of landfill gas. Methane has not been detected at or above standards since monitoring began in 1996.

5.2.4 Recommendations for the Former Landfill Area

- The soil-gas monitoring program is adequate at this time and no changes are recommended.

5.3 Maintenance and Repair

- Maintenance of the landfill caps will continue in accordance with the O&M requirements.

5.3.1 Current Landfill

- Monthly inspections and maintenance will continue in accordance with the O&M requirements. Access to the soil-gas monitoring wells will continue to be cleared via

mechanical weed whacking. Continue the removal of small pines and weeds in the drainage channel during 2023.

5.3.2 Former Landfill Area

- Monthly inspections and maintenance will continue in accordance with the O&M requirements. Access to the soil-gas monitoring wells will continue to be cleared via mechanical weed whacking. Continue the removal of small pines and weeds in the drainage channel during 2023.

6.0 REFERENCES

Brookhaven National Laboratory, 2001a, *Groundwater Monitoring Data Quality Objectives Project, BNL*, September 2001.

Brookhaven National Laboratory, 2001b, *Current Landfill Area Five-Year Evaluation Report.* BNL Environmental Services Division, October 29, 2001.

Brookhaven National Laboratory, 2006, *Five-Year Review Report.* BNL Environment and Waste Management Services Division, July, 2006.

Brookhaven National Laboratory, 2011, *Five-Year Review Report.* BNL Environmental Protection Division, March 31, 2011.

Brookhaven National Laboratory, 2016, *Five-Year Review Report.* BNL Environmental Protection Division, June 21, 2016.

Brookhaven National Laboratory, 2021, *Five-Year Review Report.* BNL Environmental Protection Division, June 1, 2021.

Brookhaven National Laboratory, 2009, *2008 Environmental Monitoring Report – Current and Former Landfill Areas.* BNL Environmental Protection Division, March 16, 2009.

Brookhaven National Laboratory, 2013, *2012 Environmental Monitoring Report – Current and Former Landfill Areas.* BNL Environmental Protection Division, March 14, 2013.

Brookhaven National Laboratory, 2016, *2015 Environmental Monitoring Report – Current and Former Landfill Areas.* BNL Environmental Protection Division, March 14, 2016.

Brookhaven National Laboratory, 2017, *2016 Environmental Monitoring Report – Current and Former Landfill Areas.* BNL Environmental Protection Division, March 15, 2017.

Brookhaven National Laboratory, 2021, *2020 Environmental Monitoring Report – Current and Former Landfill Areas.* BNL Environmental Protection Division, February 24, 2021.

Brookhaven National Laboratory. 2019. *Environmental Monitoring Plan CY 2019* Brookhaven National Laboratory, Upton, NY. January 2019.

Brookhaven National Laboratory. 2022. *Environmental Monitoring Plan CY 2022* Brookhaven National Laboratory, Upton, NY. January 2022.

CDM Federal, 1995a, Final Design Specifications for the Current Landfill, Brookhaven National Laboratory, CDM Federal Programs Corporation, February 1995.

CDM Federal, 1995b, Engineering Evaluation/Cost Analysis for Groundwater: Operable Unit I, Brookhaven National Laboratory, CDM Federal Programs Corporation, September 1995.

CDM Federal, 1995c, Final Closure/Design Report for the Former Landfill Area, Brookhaven National Laboratory, CDM Federal Programs Corporation, November 1995.

CDM Federal, 1996a, Final Operations and Maintenance Manual for the Current Landfill, Brookhaven National Laboratory, CDM Federal Programs Corporation, March 1996.

CDM Federal, 1996b, Final Construction Certification Report for Current Landfill Capping, Brookhaven National Laboratory, CDM Federal Programs Corporation, May 1996.

CDM Federal, 1996c, Final Operations and Maintenance Manual for the Former Landfill Area, Brookhaven National Laboratory, CDM Federal Programs Corporation, May 1996.

CDM Federal, 1999, Focused Ecological Risk Assessment, Appendix L., Final Feasibility Study Report OU I, CDM Federal Programs Corporation March 31, 1999.

DOE-STD-1196-2021, DOE Standard – Derived Concentration Technical Standard. U.S. Department of Energy, July 2021.

EM-SOP-200, Collection and Frequency of Field Quality Control Samples, Brookhaven National Laboratory, Environmental Monitoring Standard Operating Procedure.

EM-SOP-203, Chemical Data Verification, Brookhaven National Laboratory Environmental Monitoring, Standard Operating Procedure.

EM-SOP-204, Radiochemical Data Verification, Brookhaven National Laboratory Environmental Monitoring, Standard Operating Procedure.

EM-SOP-302, Groundwater Sampling-Low Flow Purging and Sampling Using Dedicated Bladder Pumps, Brookhaven National Laboratory Environmental Monitoring, Standard Operating Procedure.

6NYCRR Part 360, Solid Waste Management Facilities, New York State Department of Environmental Conservation, Division of Solid & Hazardous Waste. November 2017.

NYSDEC, 1998. NYSDEC Division of Water Technical and Operational Guidance Series 1.1.1 Ambient Water Quality Standards and Guidance Values, June 1998.

NYSDEC, 2000. NYSDEC Division of Water Technical and Operational Guidance Series 1.1.1 Ambient Water Quality Standards and Guidance Values Addendum, April 2000.

NYSDEC, 2004. NYSDEC Division of Water Technical and Operational Guidance Series 1.1.1 Ambient Water Quality Standards and Guidance Values, Addendum June 2004.

NYSDEC 2014. Screening and Assessment of Contaminated Sediment, June 24, 2014

PW Grosser Consulting, 1997, *Construction Certification Report for the Interim Landfill Capping,* Brookhaven National Laboratory, October 1997

PW Grosser Consulting, 2001, *Current Landfill Area Five-Year Evaluation Report*, October 29, 2001.

PW Grosser Consulting, 2002, *Former Landfill Area Five-Year Evaluation Report,* March 8, 2002.

Roy F. Weston, 1997, *Final Construction Certification Report for Former Landfill Capping,* Brookhaven National Laboratory, March 1997.

Table 1

2022 Analytical Requirements for Groundwater Samples

Well ID	Project 1	Project 2	Decision Subunit	EPA 8260 Low Level VOCs	Pesticides Method 608	PCBs Method 608	TSS/TDS	Sufates/Chloride/Alkalinity	TK Nitrogen	Total Nitrogen	Nitrates	Nitrites	Ammonia	TAL Metals	Cyanide	EPA 901 Gamma Spec	EPA 906 Tritium	EPA 905 Sr 90	Frequency (events/year)
087-09	CLF		Background	X[b]			X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]				2b
087-11	CLF		Downgradient	X[b]			X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]				2b
087-23	CLF		Downgradient	X[b]			X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[a]	X[a]	X[a]	2b
087-24	CLF		Downgradient	X[a]			X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]				2b
087-26	CLF		Downgradient	X[b]			X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]				2b
087-27	CLF		Downgradient	X[b]			X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[a]	X[a]	X[a]	2b
088-109	CLF		Downgradient	X			X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[a]	X[a]	X[a]	4
088-110	CLF		Downgradient	X[b]			X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]				2b
088-21	CLF		Downgradient	X[b]			X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[b]	X[a]	X[a]	X[a]	2b
088-22	CLF		Downgradient	X[a]			X[a]	X[a]	X[a]	X[a]	X[a]	X[a]	X[a]	X[a]	X[a]				1a
088-23	CLF		Downgradient	X[a]			X[a]	X[a]	X[a]	X[a]	X[a]	X[a]	X[a]	X[a]	X[a]				1a
098-99	CLF	OU I (South Boundary)	Downgradient	X															4

NOTES:
a: Collect in 4th Quarter only.
b: Collect in 2nd and 4th Quarters.

Table 2
Current Landfill - Summary of 2022 Volitile Organic Compounds.

		087-09		087-09		087-11		087-11		087-23		087-23		087-24	
	Groundwater Standards	5/10/2022		12/5/2022		5/11/2022		12/5/2022		5/11/2022		12/6/2022		12/6/2022	
Analyte	(ug/L)	(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)	
1,1,1,2-Tetrachloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2,2-Tetrachloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloropropene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichlorobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichloropropane	0.04	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trichlorobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloroethane	0.6	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichloropropane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2-Dichloropropane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Benzene	1	0.5	U	0.5	U	**1.76**		**1.62**		0.55	J	0.62	J	0.5	U
Benzene, 1,2,4-trimethyl	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Benzene, 1,3,5-trimethyl-	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Benzene, 1-methylethyl-	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromodichloromethane	50	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	50	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Carbon tetrachloride	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	5	0.5	U	0.5	U	0.73	J	0.42	J	0.53	J	0.49	J	0.5	U
Chlorobromomethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	5	0.5	U	0.5	U	1.7		1.66		0.56	J	0.84	J	0.5	U
Chloroform	7	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U*
cis-1,2-Dichloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,3-Dichloropropene	0.4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cymene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DBCP	0.04	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromochloromethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromomethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dichlorodifluoromethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
EDB	0.05	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Ethene, 1,2-dichloro-, (E)-	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Ethylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorobutadiene	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
m-Dichlorobenzene	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
m/p xylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl bromide	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl chloride	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl tert-butyl ether	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methylene chloride	5	0.78	U*	0.55	J	0.5	U	0.59	J	0.5	U	0.69	U*	0.62	U*
n-Butylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Propylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Naphthalene	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
o-Chlorotoluene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.34	J	0.5	U
o-Dichlorobenzene	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
o-Xylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
p-Chlorotoluene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
p-Dichlorobenzene	3	0.5	U	0.5	U	0.34	J	0.4	J	0.5	U	0.36	J	0.5	U
sec-Butylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Styrene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
tert-Butylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Toluene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,3-Dichloropropene	0.4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichlorofluoromethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	2	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
8260 TVOC	--	0		0.55		4.53		4.69		1.64		2.65		0	

U: Analyte was analyzed for, but not detected above the MDL.

J: Value is estimated.

R: A rejected result; the data is rejected, not usable, and unreliable.

Bold/Shaded: Value exceeds Standard/Guiadance Value.

*: Data qualified during secondary data verification review by BNL.

Table 2
Current Landfill - Summary of 2022 Volitile Organic Compounds.

Analyte	Groundwater Standards (ug/L)	087-26 5/10/2022 (ug/L)		087-26 12/5/2022 (ug/L)		087-27 5/10/2022 (ug/L)		087-27 12/5/2022 (ug/L)		088-109 1/20/2022 (ug/L)		088-109 5/10/2022 (ug/L)		088-109 9/19/2022 (ug/L)	
1,1,1,2-Tetrachloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2,2-Tetrachloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U	1.6		0.5	U	**7.8**	
1,1-Dichloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloropropene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichlorobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichloropropane	0.04	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trichlorobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloroethane	0.6	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichloropropane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2-Dichloropropane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Benzene	1	0.5	U	0.5	U	0.41	J	**1.01**		0.5	U	0.5	U	0.41	J
Benzene, 1,2,4-trimethyl	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Benzene, 1,3,5-trimethyl-	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Benzene, 1-methylethyl-	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromodichloromethane	50	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	50	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Carbon tetrachloride	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	5	0.5	U	0.5	U	0.5	U	0.6	J	0.5	U	0.5	U	0.5	U
Chlorobromomethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	5	0.5	U	0.5	U	0.42	J	0.82	J	3.97		0.5	U	**16.9**	
Chloroform	7	2.35		2.88		0.96	J	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,3-Dichloropropene	0.4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cymene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DBCP	0.04	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromochloromethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromomethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dichlorodifluoromethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
EDB	0.05	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Ethene, 1,2-dichloro-, (E)-	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Ethylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorobutadiene	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
m-Dichlorobenzene	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
m/p xylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl bromide	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl chloride	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl tert-butyl ether	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methylene chloride	5	0.77	U*	0.5	U	0.74	U*	0.54	J	0.74	J	0.75	U*	0.5	U
n-Butylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Propylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Naphthalene	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
o-Chlorotoluene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
o-Dichlorobenzene	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
o-Xylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
p-Chlorotoluene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
p-Dichlorobenzene	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
sec-Butylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Styrene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
tert-Butylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Toluene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,3-Dichloropropene	0.4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichlorofluoromethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	2	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
8260 TVOC	--	2.35		2.88		1.79		2.97		6.31		0		25.11	

U: Analyte was analyzed for, but not detected above the MDL.

J: Value is estimated.

R: A rejected result; the data is rejected, not usable, and unreliable.

Bold/Shaded: Value exceeds Standard/Guiadance Value.

*: Data qualified during secondary data verification review by BNL.

Table 2
Current Landfill - Summary of 2022 Volitile Organic Compounds.

		088-109		088-110		088-110		088-21		088-21		088-22		088-23	
	Groundwater Standards	12/5/2022		5/10/2022		12/5/2022		5/11/2022		12/6/2022		12/6/2022		12/6/2022	
Analyte	(ug/L)	(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)	
1,1,1,2-Tetrachloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2,2-Tetrachloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethane	5	4.75		0.67	J	1.01		0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloropropene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichlorobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichloropropane	0.04	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trichlorobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloroethane	0.6	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichloropropane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
2,2-Dichloropropane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Benzene	1	0.7	J	0.92	J	0.95	J	0.5	U	0.5	U	0.5	U	0.5	U
Benzene, 1,2,4-trimethyl	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Benzene, 1,3,5-trimethyl-	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Benzene, 1-methylethyl-	--	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromodichloromethane	50	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	50	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Carbon tetrachloride	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobromomethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	5	**14.6**		4.83		4.01		0.5	U	0.5	U	0.5	U	0.5	U
Chloroform	7	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,3-Dichloropropene	0.4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Cymene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
DBCP	0.04	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromochloromethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dibromomethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Dichlorodifluoromethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
EDB	0.05	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Ethene, 1,2-dichloro-, (E)-	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Ethylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorobutadiene	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
m-Dichlorobenzene	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
m/p xylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl bromide	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl chloride	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methyl tert-butyl ether	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Methylene chloride	5	0.5	U	0.94	U*	0.61	J	0.5	U	0.66	U*	0.7	U*	0.66	U*
n-Butylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
n-Propylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Naphthalene	10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
o-Chlorotoluene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
o-Dichlorobenzene	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
o-Xylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
p-Chlorotoluene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
p-Dichlorobenzene	3	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
sec-Butylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Styrene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
tert-Butylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Toluene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,3-Dichloropropene	0.4	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichlorofluoromethane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	2	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
8260 TVOC	--	20.05		6.42		6.58		0		0		0		0	

U: Analyte was analyzed for, but not detected above the MDL.

J: Value is estimated.

R: A rejected result; the data is rejected, not usable, and unreliable.

Bold/Shaded: Value exceeds Standard/Guiadance Value.

*: Data qualified during secondary data verification review by BNL.

Table 2
Current Landfill - Summary of 2022 Volitile Organic Compounds.

Analyte	Groundwater Standards (ug/L)	098-99 1/20/2022 (ug/L)		098-99 5/11/2022 (ug/L)		098-99 9/19/2022 (ug/L)		098-99 12/6/2022 (ug/L)	
1,1,1,2-Tetrachloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2,2-Tetrachloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	1	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethane	5	2.72		2.42		2.93		0.5	U
1,1-Dichloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloropropene	5	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichlorobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichloropropane	0.04	0.5	U	0.5	U	0.5	U	0.5	U
1,2,4-Trichlorobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloroethane	0.6	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	1	0.5	U	0.5	U	0.5	U	0.5	U
1,3-Dichloropropane	5	0.5	U	0.5	U	0.5	U	0.5	U
2,2-Dichloropropane	5	0.5	U	0.5	U	0.5	U	0.5	U
Benzene	1	0.5	U	0.5	U	0.5	U	0.5	U
Benzene, 1,2,4-trimethyl	5	0.5	U	0.5	U	0.5	U	0.5	U
Benzene, 1,3,5-trimethyl-	5	0.5	U	0.5	U	0.5	U	0.5	U
Benzene, 1-methylethyl-	--	0.5	U	0.5	U	0.5	U	0.5	U
Bromobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U
Bromodichloromethane	50	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	50	0.5	U	0.5	U	0.5	U	0.5	U
Carbon tetrachloride	5	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobromomethane	5	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	5	0.5	U	0.5	U	0.5	U	0.5	U
Chloroform	7	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U
cis-1,3-Dichloropropene	0.4	0.5	U	0.5	U	0.5	U	0.5	U
Cymene	5	0.5	U	0.5	U	0.5	U	0.5	U
DBCP	0.04	0.5	U	0.5	U	0.5	U	0.5	U
Dibromochloromethane	5	0.5	U	0.5	U	0.5	U	0.5	U
Dibromomethane	5	0.5	U	0.5	U	0.5	U	0.5	U
Dichlorodifluoromethane	5	0.5	U	0.5	U	0.5	U	0.5	U
EDB	0.05	0.5	U	0.5	U	0.5	U	0.5	U
Ethene, 1,2-dichloro-, (E)-	5	0.5	U	0.5	U	0.5	U	0.5	U
Ethylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorobutadiene	0.5	0.5	U	0.5	U	0.5	U	0.5	U
m-Dichlorobenzene	3	0.5	U	0.5	U	0.5	U	0.5	U
m/p xylene	5	0.5	U	0.5	U	0.5	U	0.5	U
Methyl bromide	5	0.5	U	0.5	U	0.5	U	0.5	U
Methyl chloride	5	0.5	U	0.5	U	0.5	U	0.5	U
Methyl tert-butyl ether	10	0.5	U	0.5	U	0.5	U	0.5	U
Methylene chloride	5	0.82	J	0.5	U	0.5	U	0.7	U*
n-Butylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U
n-Propylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U
Naphthalene	10	0.5	U	0.5	U	0.5	U	0.5	U
o-Chlorotoluene	5	0.5	U	0.5	U	0.5	U	0.5	U
o-Dichlorobenzene	3	0.5	U	0.5	U	0.5	U	0.5	U
o-Xylene	5	0.5	U	0.5	U	0.5	U	0.5	U
p-Chlorotoluene	5	0.5	U	0.5	U	0.5	U	0.5	U
p-Dichlorobenzene	3	0.5	U	0.5	U	0.5	U	0.5	U
sec-Butylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U
Styrene	5	0.5	U	0.5	U	0.5	U	0.5	U
tert-Butylbenzene	5	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U
Toluene	5	0.5	U	0.5	U	0.5	U	0.5	U
trans-1,3-Dichloropropene	0.4	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethylene	5	0.5	U	0.5	U	0.5	U	0.5	U
Trichlorofluoromethane	5	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	2	0.5	U	0.5	U	0.5	U	0.5	U
8260 TVOC	--	3.54		2.42		2.93		0	

U: Analyte was analyzed for, but not detected above the MDL.

J: Value is estimated.

R: A rejected result; the data is rejected, not usable, and unreliable.

Bold/Shaded: Value exceeds Standard/Guiadance Value.

*: Data qualified during secondary data verification review by BNL.

Table 3

Current Landfill-Summary of 2022 Water Chemistry Data

Analyte	Groundwater Standards (mg/L)	087-09 5/10/2022 (mg/L)		087-09 12/5/2022 (mg/L)		087-11 5/11/2022 (mg/L)		087-11 12/5/2022 (mg/L)		087-23 5/11/2022 (mg/L)		087-23 12/6/2022 (mg/L)		087-24 5/11/2022 (mg/L)	
Alkalinity (as CaCO3)	--	35		22		217		137		85.4		41.4		28.4	
Ammonia (as N)	2	0.0301	U*	0.0345	J	**3.97**		**2.7**		0.478		0.503		0.017	U
Chloride	250**	27.9		32		18.1		6.46		6.35		8.32		48.1	
Cyanide	0.2	0.00167	U	0.00167	U	0.00167	U	0.00167	U	0.00167	U	0.00167	U	0.00167	U
Nitrate (as N)	10	1.29		0.48		0.165	U	0.165	U	0.165	U	0.0955	J	0.445	
Nitrite (as N)	1	0.033	U	0.033	U	0.033	U	0.033	U	0.033	U	0.033	U	0.033	U
Nitrite + Nitrate-N	10	1.48		0.87		0.0358	J	0.0403	J	0.041	J	0.0528		0.454	
Nitrogen	--	1.48		0.964		3.99		2.26		0.63		0.499		0.886	
Sulfate	250**	13.1		7.99		0.941		0.408		4.55		3.06		10.2	
TDS	500**	134		105		216		199		84.3		84		130	
Total Kjeldahl Nitrogen	--	0.033	U	0.0943	J	3.95		2.22		0.589		0.446		0.432	
TSS	--	1.14	U	0.833	J	13.9		33.5		7.09		28.6		1.51	J

U: Analyte was analyzed for, but not detected above MDL.

J: Value is estimated.

*: Data qualified during secondary data verification review by BNL.

Bold/Shaded: Concentration exceeds Standard/Guidance Value.

NS: No sample data.

**: USEPA Secondary Maximum Contaminant Levels (SMCLs).
Non-enforceable secondary drinking water regulations for aesthetics.

Table 3

Current Landfill-Summary of 2022 Water Chemistry Data

Analyte	Groundwater Standards (mg/L)	087-24 12/6/2022 (mg/L)		087-26 5/10/2022 (mg/L)		087-26 12/5/2022 (mg/L)		087-27 5/10/2022 (mg/L)		087-27 12/5/2022 (mg/L)		088-109 5/10/2022 (mg/L)		088-109 12/5/2022 (mg/L)	
Alkalinity (as CaCO3)	--	34.8		25.2		30.2		108		102		20.2		144	
Ammonia (as N)	2	0.017	U	0.0422	U*	0.0434	J	1.21		1.64		0.0734	U*	**2.81**	
Chloride	250**	85.3		67.5		44.3		14.7		35.7		14.8		14.7	
Cyanide	0.2	0.00167	U	0.00167	U	0.00167	U	0.00167	U	0.00167	U	0.00167	U	0.00167	U
Nitrate (as N)	10	0.393		0.47		0.383		0.105	U*	0.165	U	0.0847	U*	0.165	U
Nitrite (as N)	1	0.033	U	0.033	U	0.033	U	0.033	U	0.033	U	0.033	U	0.033	U
Nitrite + Nitrate-N	10	0.346		0.492		0.379		0.0676		0.0475	J	0.018	J	0.0469	J
Nitrogen	--	0.395		0.492		0.419		1.12		1.41		0.033	U	2.21	
Sulfate	250**	11.9		8.51		8.8		6.89		3.16		16.6		3.73	
TDS	500**	196		180		126		143		203		74.3		211	
Total Kjeldahl Nitrogen	--	0.0494	J	0.033	U	0.0395	J	1.05		1.36		0.033	U	2.16	
TSS	--	0.671	U	1.14	U	0.591	U	8.04		16.6		4	J	11.5	

U: Analyte was analyzed for, but not detected above MDL.

J: Value is estimated.

*: Data qualified during secondary data verification review by BNL.

Bold/Shaded: Concentration exceeds Standard/Guidance Value.

NS: No sample data.

**: USEPA Secondary Maximum Contaminant Levels (SMCLs).
Non-enforceable secondary drinking water regulations for aesthetics.

Table 3

Current Landfill-Summary of 2022 Water Chemistry Data

Analyte	Groundwater Standards (mg/L)	088-110 5/10/2022 (mg/L)		088-110 12/5/2022 (mg/L)		088-21 5/11/2022 (mg/L)		088-21 12/6/2022 (mg/L)		088-22 12/6/2022 (mg/L)		088-23 12/6/2022 (mg/L)	
Alkalinity (as CaCO3)	--	174		104		29.2		23.4		19.6		31.8	
Ammonia (as N)	2	1.61		1.05		0.0271	J	0.017	U	0.0435	U*	0.0177	U*
Chloride	250**	22.8		26.9		117		133		40.8		14.8	
Cyanide	0.2	0.00167	U	0.00167	U	0.00167	U	0.00167	U	0.00167	U	0.00167	U
Nitrate (as N)	10	0.349	U*	0.165	U	1.43	J	0.372		0.388		0.482	
Nitrite (as N)	1	0.033	U*	0.033	U	0.66	U	0.033	U	0.033	U	0.033	U
Nitrite + Nitrate-N	10	0.177		0.0384	J	0.137		0.267		0.343		0.451	
Nitrogen	--	1.5		1.11		0.441		0.299		0.343		0.451	
Sulfate	250**	9.9		9.97		3.93		3.88		9.61		13.8	
TDS	500**	240		187		230		256		99		67	
Total Kjeldahl Nitrogen	--	1.32		1.07		0.304		0.033	U	0.033	U	0.033	U
TSS	--	16.4		8.62		1.04	U	1.65	J	0.671	U	0.671	U

U: Analyte was analyzed for, but not detected above MDL.

J: Value is estimated.

*: Data qualified during secondary data verification review by BNL.

Bold/Shaded: Concentration exceeds Standard/Guidance Value.

NS: No sample data.

**: USEPA Secondary Maximum Contaminant Levels (SMCLs).
Non-enforceable secondary drinking water regulations for aesthetics.

Table 4

Current Landfill-Summary of 2022 Metals Data

Analyte	Groundwater Standards (ug/L)	087-09 5/10/2022 (ug/L)		087-09 12/5/2022 (ug/L)		087-11 5/11/2022 (ug/L)		087-11 12/5/2022 (ug/L)		087-23 5/11/2022 (ug/L)		087-23 12/6/2022 (ug/L)		087-24 5/11/2022 (ug/L)		087-24 12/6/2022 (ug/L)	
Aluminum	200*	68	U	68	U	157	B	70.8	B	68	U	188	B	68	U	68	U
Antimony	3	3.5	U	3.5	U	3.5	U	3.5	U	3.5	U	3.5	U	3.5	U	3.5	U
Arsenic	10**	2	U	2	U	8.04		9.89		9.6		**25.2**		2	U	2	U
Barium	1000	19.5	B	31	B	39.5	B	19.8	B	28.7	B	24.3	B	19.3	B	31	B
Beryllium	3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Cadmium	5	1.38	B	1	U	1	U	1	U	1.32	B	1	U	1.25	B	1	U
Calcium	--	13400		10800		24800		21800		5750		3890	B	10200		14200	
Chromium	50	8.23	B	8.56	B	1	U	1.4	B	1	U	1	U	1	U	1	U
Cobalt	--	1	U	1	U	1	U	1.62	B	12.7	B	9.03	B	1	U	1	U
Copper	200	3	U	3	U	3	U	3.33	B	3	U	3	U	3	U	3	U
Iron	300	30	U	98.3	B	**88000**		**93400**		**44100**		**45200**		30	U	30	U
Lead	15***	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1.16	B	0.5	U	0.5	U
Magnesium	35000	4670	B	3970	B	5320		3250	B	1380	B	1050	B	5960		8710	
Manganese	300	2	U	6.43	B	**1740**		**1890**		**3130**		**2810**		2	U	2	U
Mercury	0.7	0.067	U	0.067	U	0.067	U	0.067	U	0.067	U	0.067	U	0.067	U	0.067	U
Nickel	100	8.48	B	3.32	B	5.97	B	1.5	U	5.69	B	1.5	U	4.52	B	1.5	U
Potassium	--	1330	B	1310	B	5970		2990	B	1110	B	994	B	1570	B	1760	B
Selenium	10	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U
Silver	50	1	U	1	U	1	U	1	U	1	U	1.44	B	1	U	1	U
Sodium	20000	**21100**		**38600**		10000		3770	B	4920	B	5570		**30100**		**43800**	
Thallium	0.5	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
Vanadium	--	1	U	1	U	4.49	B	1	U	1.52	B	4.1	B	1	U	1	U
Zinc	2000	4.38	B	8.09	B	5.24	B	11.4	B	5.26	B	5.99	B	3.3	U	8.08	B

Table 4

Current Landfill-Summary of 2022 Metals Data

Analyte	Groundwater Standards (ug/L)	087-26 5/10/2022 (ug/L)		087-26 12/5/2022 (ug/L)		087-27 5/10/2022 (ug/L)		087-27 12/5/2022 (ug/L)		088-109 5/10/2022 (ug/L)		088-109 12/5/2022 (ug/L)		088-110 5/10/2022 (ug/L)		088-110 12/5/2022 (ug/L)	
Aluminum	200*	68	U	68	U	68	U	68	U	68	U	68	U	68	U	68	U
Antimony	3	3.5	U	3.5	U	3.5	U	3.5	U	3.5	U	3.5	U	3.5	U	3.5	U
Arsenic	10**	2	U	2	U	4.23	B	7.49		2	U	7.47		8.67		**11.2**	
Barium	1000	50.7	B	32.7	B	21.6	B	30.4	B	22.5	B	41.4	B	42.3	B	30.2	B
Beryllium	3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Cadmium	5	1.19	B	1	U	1.2	B	1	U	1.43	B	1	U	1	U	1	U
Calcium	--	11700		6990		19200		18700		8560		31500		27100		15800	
Chromium	50	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Cobalt	--	1	U	1.12	B	5.84	B	7.84	B	1.28	B	3.88	B	7.52	B	5.12	B
Copper	200	3	U	3.16	B	3	U	3	U	3	U	3	U	4.03	B	3	U
Iron	300	64.2	B	102		**45000**		**66800**		**4320**		**52300**		**91000**		**49400**	
Lead	15***	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Magnesium	35000	6800		4130	B	6720		3940	B	3680	B	5030		7640		5750	
Manganese	300	2	U	2	U	**1400**		**1340**		**402**		**1180**		**3340**		**2320**	
Mercury	0.7	0.067	U	0.067	U	0.067	U	0.067	U	0.067	U	0.067	U	0.067	U	0.067	U
Nickel	100	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U
Potassium	--	2090	B	1590	B	2380	B	3110	B	932	B	5100	B	3760	B	3280	B
Selenium	10	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U
Silver	50	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Sodium	20000	**37300**		**36100**		9730		20000		10900		12000		**17800**		**20300**	
Thallium	0.5	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
Vanadium	--	1	U	1	U	2.08	B	1	U	1	U	1	U	3.51	B	1	U
Zinc	2000	3.3	U	3.41	B	3.3	U	6.06	B	3.86	B	10.5	B	7.8	B	5.63	B

Table 4

Current Landfill-Summary of 2022 Metals Data

Analyte	Groundwater Standards (ug/L)	088-21 5/11/2022 (ug/L)		088-21 12/6/2022 (ug/L)		088-22 12/6/2022 (ug/L)		088-23 12/6/2022 (ug/L)	
Aluminum	200*	68	U	78.4	B	68	U	68	U
Antimony	3	**5.74**	B	3.5	U	3.5	U	3.5	U
Arsenic	10**	2	U	2	U	2	U	2	U
Barium	1000	30.7	B	48.3	B	34.6	B	3.61	B
Beryllium	3	1	U	1	U	1	U	1	U
Cadmium	5	1.28	B	1	U	1	U	1	U
Calcium	--	8180		9450		6670		11500	
Chromium	50	1	U	1	U	1	U	1	U
Cobalt	--	1	U	1	U	1	U	1	U
Copper	200	3	U	3	U	3	U	3	U
Iron	300	48.8	B	**435**		30	U	31.5	B
Lead	15***	0.5	U	0.5	U	0.5	U	0.5	U
Magnesium	35000	4350	B	5180		5180		2840	B
Manganese	300	9.69	B	29.9		2	U	2.23	B
Mercury	0.7	0.067	U	0.067	U	0.067	U	0.067	U
Nickel	100	4.96	B	1.5	U	1.5	U	1.5	U
Potassium	--	1440	B	2230	B	1660	B	578	B
Selenium	10	1.5	U	1.5	U	1.5	U	1.5	U
Silver	50	1	U	1	U	1	U	1	U
Sodium	20000	**83100**		**72700**		**22300**		11700	
Thallium	0.5	0.6	U	0.6	U	0.6	U	0.6	U
Vanadium	--	1	U	1.62	B	1	U	1	U
Zinc	2000	3.3	U	3.3	U	3.3	U	3.3	U

U: Analyte was analyzed for, but not detected above MDL.

J: Value is estimated

Bold/Shaded: Concentration exceeds Standard/Guidance Value.

B: Indicates that the value was less then the Required Detection Limit (CRDL), but greater than or equal to the Instrument Detection Limit(IDL).

E: %Difference of sample and SD is greater then 10%

N:The Matrix spike sample recovery is not within control limits.

*: USEPA SMCL Secondary Maximum Contaminant Levels (SMCLs)

** USEPA Maximum Contaminiant Level (MCL)

*** OUI Record of Decision Selected Cleanup Goal

Table 5

Current Landfill-Summary of 2022 Radionuclide Data

Analyte	**Groundwater Standards** pCi/L	**087-23 12/6/2022 pCi/L**				**087-27 12/5/2022 pCi/L**				**088-109 12/5/2022 pCi/L**				**088-21 12/6/2022 pCi/L**			
		Result	Qual	MDA	Error	Result	Qual	MDA	Error	Result	Qual	MDA	Error	Result	Qual	MDA	Error
Americium-241	29.6*	-0.583	U	7.47	4.65	3.28	U	8.19	4.76	-0.267	U	9.71	5.49	-9.23	U	15.8	9.06
Beryllium-7	100000*	-9.34	U	18.5	10.9	0.385	U	22.1	13.3	1.73	U	29.7	15.9	4.85	U	26.5	14.2
Cesium-134	156*	-1.47	U	2.67	1.69	0.323	U	2.68	1.4	3.11	U-DL	5.01	2.3	-0.227	U	3.28	1.76
Cesium-137	164*	-0.325	U	2.53	1.4	-0.0299	U	2.87	1.58	0.418	U	3.8	2.04	-0.498	U	3.07	1.79
Co-60	560*	0.359	U	2.96	1.45	0.441	U	2.54	1.18	1.2	U	4.63	2.25	-0.503	U	2.68	1.5
Cobalt-57	14800*	0.3	U	2.22	1.27	0.186	U	2.12	1.22	-0.678	U	2.57	1.68	-0.379	U	2.67	1.71
Europium-152	3000*	-0.613	U	6.96	3.78	1.47	U	7.02	4.33	0.0475	U	9.22	4.96	-0.379	U	8.86	4.87
Europium-154	2720*	0.568	U	7.01	3.36	-1.09	U	7.19	3.81	1.75	U	12.5	6.31	1.23	U	9.19	4.71
Europium-155	40000*	-2	U	8.06	4.79	-2.16	U	8.02	4.78	-6.16	U	10.2	6.16	0.0445	U	10.9	6.12
Manganese-54	3920*	-0.323	U	2.42	1.35	3.41	J-UI	2.87	3.47	0.85	U	3.95	1.96	-0.512	U	3.09	1.7
Sodium-22	640*	0.2	U	2.47	1.18	-0.356	U	2.55	1.35	1.3	U	4.43	2.11	0.547	U	3.3	1.68
Strontium-90	8***	0.186	U	0.415	0.243	0.574	U	0.639	0.417	0.303	U	0.621	0.367	3.77		0.793	0.853
Tritium	20000***	-105	U	456	249	67.2	U	401	230	119	U	401	233	44	U	449	255
Zinc-65	48*	2.92	U	5.63	2.68	-0.265	U	5.91	3.08	0.758	U	8.92	4.62	-0.319	U	5.68	3.49

N2: Not usable based on the results that are not distinguishable from background. The reported activity value is less than or equal to the sum of the MDA and the uncertainty.

U: Analyte was analyzed for but not detected above the MDA.

J: Estimated value.

*: Department of Energy (DOE) Groundwater Screening Level.

***:Environmental Protection Agency (EPA) Drinking Water Standards.

UI: Gamma Spectroscopy-Uncertain identification.

DL: Failed required detection limit.

MDA: Minimum Detectable Activity.

Table 6
Current Landfill Soil Gas Monitoring Well Description

Current Landfill			
Soil Gas Monitoring Well	**Screen Location**	**Top of Screen (Feet BLS)**	**Bottom Screen (Feet BLS)**
SGM-1 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-1 PROBE B	**Intermediate**	**10.5**	**17.5**
SGM-1 PROBE C	**Deep**	**20**	**29.5**
SGM-2 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-2 PROBE B	**Intermediate**	**10.5**	**16**
SGM-2 PROBE C	**Deep**	**19**	**28**
SGM-3 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-3 PROBE B	**Intermediate**	**10.5**	**17**
SGM-3 PROBE C	**Deep**	**20**	**29**
SGM-4 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-4 PROBE B	**Intermediate**	**10.5**	**20**
SGM-4 PROBE C	**Deep**	**23**	**32**
SGM-5 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-5 PROBE B	**Intermediate**	**10.5**	**22**
SGM-5 PROBE C	**Deep**	**25**	**34**
SGM-6 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-6 PROBE B	**Intermediate**	**10.5**	**18.5**
SGM-6 PROBE C	**Deep**	**21.5**	**30.5**
SGM-7 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-7 PROBE B	**Intermediate**	**10.5**	**16**
SGM-7 PROBE C	**Deep**	**19**	**26**
SGM-8 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-8 PROBE B	**Intermediate**	**10.5**	**16.5**
SGM-8 PROBE C	**Deep**	**19.5**	**28.5**
SGM-9 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-9 PROBE B	**Intermediate**	**10.5**	**20.5**
SGM-9 PROBE C	**Deep**	**23.5**	**32.5**
SGM-10 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-10 PROBE B	**Intermediate**	**10.5**	**15.5**
SGM-10 PROBE C	**Deep**	**18.5**	**27.5**
SGM-11 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-11 PROBE B	**Intermediate**	**10.5**	**16**
SGM-12 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-12 PROBE B	**Intermediate**	**10.5**	**15**
SGM-13 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-13 PROBE B	**Intermediate**	**10.5**	**13**
SGM-14 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-14 PROBE B	**Intermediate**	**10.5**	**13**
SGM-15 PROBE A	**Shallow**	**2.5**	**5.5**
SGM-15 PROBE B	**Intermediate**	**8.5**	**11.5**
SGM-16 PROBE A	**Shallow**	**2.5**	**5.5**
SGM-16 PROBE B	**Intermediate**	**8.5**	**11**
SGM-17 PROBE A	**Shallow**	**2.5**	**5.5**

Table 6
Current Landfill Soil Gas Monitoring Well Description

Current Landfill			
Soil Gas Monitoring Well	**Screen Location**	**Top of Screen (Feet BLS)**	**Bottom Screen (Feet BLS)**
SGM-17 PROBE B	**Intermediate**	**8.5**	**11**
SGM-18 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-18 PROBE B	**Intermediate**	**10.5**	**13.5**
SGM-19 PROBE A	**Shallow**	**2.5**	**7.5**
SGM-19 PROBE B	**Intermediate**	**10.5**	**17**

BLS – Below Land Surface

Current Landfill Outpost Wells		
Site ID	**Depth to Bottom from top PVC (feet)**	**PVC Stick Up from Ground (feet)**
GSGM-1A	**12.00**	**2.50**
GSGM-1B	**21.00**	**2.50**
GSGM-1C	**29.40**	**2.50**
GSGM-2A	**14.25**	**2.50**
GSGM-2B	**20.05**	**2.50**
GSGM-2C	**27.00**	**2.50**
GSGM-3A	**13.91**	**2.50**
GSGM-3B	**17.75**	**2.50**
GSGM-4A	**11.50**	**2.50**
GSGM-4B	**15.20**	**2.50**

Table 6
Former Landfill Soil Gas Monitoring Well Description

Former Landfill			
Soil Gas Monitoring Well	**Screen Location**	**Top of Screen (Feet BLS)**	**Bottom Screen (Feet BLS)**
SGM-1 PROBE A	**Shallow**	**2.5**	**10**
SGM-1 PROBE B	**Intermediate**	**15**	**43**
SGM-2PROBE A	**Shallow**	**2.5**	**10**
SGM-2 PROBE B	**Intermediate**	**15**	**40**
SGM-3 PROBE A	**Shallow**	**2**	**9.5**
SGM-3 PROBE B	**Intermediate**	**14.5**	**36**
SGM-4 PROBE A	**Shallow**	**2.5**	**10**
SGM-4 PROBE B	**Intermediate**	**15**	**35.5**
SGM-5 PROBE A	**Shallow**	**2.5**	**10**
SGM-5 PROBE B	**Intermediate**	**15**	**37**
SGM-6 PROBE A	**Shallow**	**2.7**	**10.2**
SGM-6 PROBE B	**Intermediate**	**22**	**37.2**
SGM-7 PROBE A	**Shallow**	**2.8**	**10.3**
SGM-7 PROBE B	**Intermediate**	**15**	**42**
SGM-8 PROBE A	**Shallow**	**2.5**	**10**
SGM-8 PROBE B	**Intermediate**	**15**	**47**
SGM-9 PROBE A	**Shallow**	**2.5**	**10**
SGM-9 PROBE B	**Intermediate**	**15**	**52**
SGM-10 PROBE A	**Shallow**	**2.5**	**10**
SGM-10 PROBE B	**Intermediate**	**15**	**52**
SGM-11 PROBE A	**Shallow**	**2.5**	**10**
SGM-11 PROBE B	**Intermediate**	**15**	**46**
SGM-12 PROBE A	**Shallow**	**2.5**	**10**
SGM-12 PROBE B	**Intermediate**	**15**	**43.5**

BLS – Below Land Surface

Table 7

2022 Current Landfill Soil Gas Monitoring Summary Table

Soil/Gas Monitoring Well	Well ID	Methane (% By Volume) 3/29-30/2022	Methane (% By Volume) 6/21-24/2022	Methane (% By Volume) 9/15-19/2022	Methane (% By Volume) 12/27-28/2022	LEL (% By Volume) 3/29-30/2022	LEL (% By Volume) 6/21-24/2022	LEL (% By Volume) 9/15-19/2022	LEL (% By Volume) 12/27-28/2022	Hydrogen Sulfide (ppm By Volume) 3/29-30/2022	Hydrogen Sulfide (ppm By Volume) 6/21-24/2022	Hydrogen Sulfide (ppm By Volume) 9/15-19/2022	Hydrogen Sulfide (ppm By Volume) 12/27-28/2022
GSGM-1A		0	0	0	0	0	0	0	0	0	0	0	0
GSGM-1B		0	0	0	0	0	0	0	0	0	0	0	0
GSGM-1C		0	0	0	0	0	0	0	0	0	0	0	0
GSGM-2A		0	0	0	0	0	0	0	0	0	0	0	0
GSGM-2B		0	0	0	0	0	0	0	0	0	0	0	0
GSGM-2C		0	0	0	0	0	0	0	0	0	0	0	0
GSGM-3A		0	0	0	0	0	0	0	0	0	0	0	0
GSGM-3B		0	0	0	0	0	0	0	0	0	0	0	0
GSGM-4A		0	0	0	0	0	0	0	0	0	0	0	0
GSGM-4B		0	0	0	0	0	0	0	0	0	0	0	0
SGMW-01A (CLF)	087-62	12.6	10	2	5	>100	>100	40	100	3	2	2	2
SGMW-01B (CLF)	087-78	11.6	9	2.9	4.5	>100	>100	58	90	1	1	1	1
SGMW-01C (CLF)	087-79	9.8	7.3	2.9	3.8	>100	>100	58	76	1	0	1	1
SGMW-02A (CLF)	087-63	44.6	44.3	1.4	35.7	>100	>100	28	>100	0	2	0	0
SGMW-02B (CLF)	087-80	37.8	42.8	43.3	30.6	>100	>100	>100	>100	6	8	15	11
SGMW-02C (CLF)	087-81	38.4	42	45.9	34.4	>100	>100	>100	>100	4	3	4	3
SGMW-03A (CLF)	087-64	22	31.7	12.3	2.8	>100	>100	>100	56	0	10	3	1
SGMW-03B (CLF)	087-82	44.6	46.2	46.8	39.6	>100	>100	>100	>100	15	16	19	11
SGMW-03C (CLF)	087-83	40.1	46.4	46.6	35.1	>100	>100	>100	>100	5	8	4	16
SGMW-04A (CLF)	087-65	36.3	38.1	30.5	28.7	>100	>100	>100	>100	0	5	2	0
SGMW-04B (CLF)	087-84	33.5	35.3	30.6	26.6	>100	>100	>100	>100	3	5	7	3
SGMW-04C (CLF)	087-85	25.3	27.5	23	20	>100	>100	>100	>100	3	5	4	2
SGMW-05A (CLF)	087-66	8.7	2.6	0	0	>100	52	0	0	0	0	0	0
SGMW-05B (CLF)	087-86	24.3	24.3	17.8	14.4	>100	>100	>100	>100	0	1	2	0
SGMW-05C (CLF)	087-87	18.5	19.3	14.6	14.7	>100	>100	>100	>100	1	0	0	0
SGMW-06A (CLF)	087-67	6.2	4.4	0	0.6	>100	88	0	12	0	0	0	0
SGMW-06B (CLF)	087-88	26.2	28.4	24.8	23.5	>100	>100	>100	>100	0	4	6	3
SGMW-06C (CLF)	087-89	25.3	25.9	22.1	21.4	>100	>100	>100	>100	1	1	2	0
SGMW-07A (CLF)	087-68	0	0	0	0	0	0	0	0	0	0	0	0

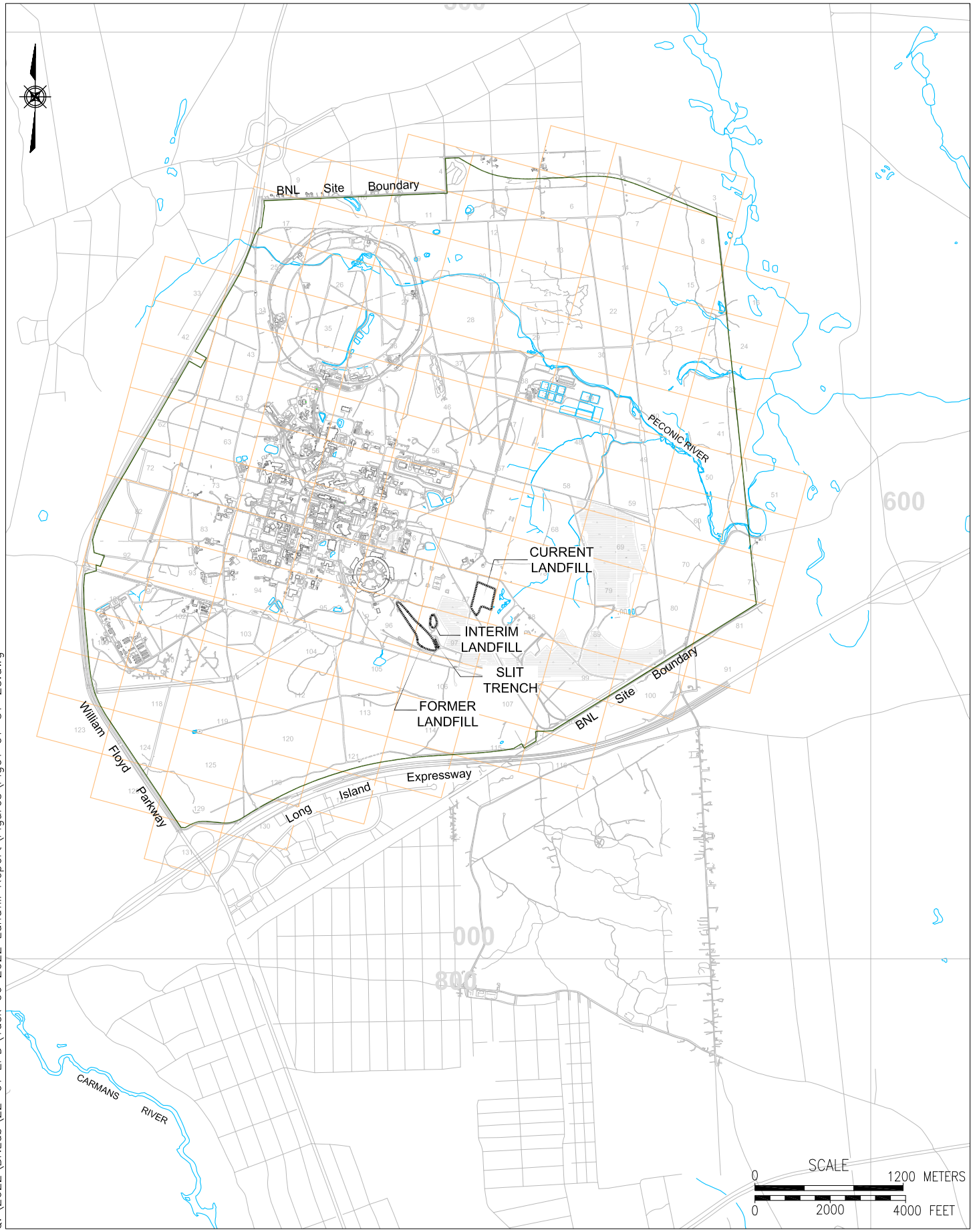
Table 7

2022 Current Landfill Soil Gas Monitoring Summary Table

Soil/Gas Monitoring Well	Well ID	Methane (% By Volume) 3/29-30/2022	Methane (% By Volume) 6/21-24/2022	Methane (% By Volume) 9/15-19/2022	Methane (% By Volume) 12/27-28/2022	LEL (% By Volume) 3/29-30/2022	LEL (% By Volume) 6/21-24/2022	LEL (% By Volume) 9/15-19/2022	LEL (% By Volume) 12/27-28/2022	Hydrogen Sulfide (ppm By Volume) 3/29-30/2022	Hydrogen Sulfide (ppm By Volume) 6/21-24/2022	Hydrogen Sulfide (ppm By Volume) 9/15-19/2022	Hydrogen Sulfide (ppm By Volume) 12/27-28/2022
SGMW-07B (CLF)	087-90	0	0	0	0	0	0	0	0	0	0	0	0
SGMW-07C (CLF)	087-91	0	0	0	0	0	0	0	0	0	0	0	0
SGMW-08A (CLF)	087-69	0	0	0	0	0	0	0	0	0	0	0	0
SGMW-08B (CLF)	087-92	0	0	0	0	0	0	0	0	0	0	0	0
SGMW-08C (CLF)	087-93	0	0	0	0	0	0	0	0	0	0	0	0
SGMW-09A (CLF)	087-70	0	0	0	0	0	0	0	0	0	0	0	0
SGMW-09B (CLF)	087-94	0	0	0	0	0	0	0	0	0	0	0	0
SGMW-09C (CLF)	087-95	0	0	0	0	0	0	0	0	0	0	0	0
SGMW-10A (CLF)	087-71	5.9	8	1.5	0	>100	>100	30	0	4	18	0	0
SGMW-10B (CLF)	087-96	4.9	13.3	12.9	3.5	98	>100	>100	70	0	2	7	0
SGMW-10C (CLF)	087-97	5.6	11.1	11.1	5.4	>100	>100	>100	>100	0	0	3	4
SGMW-11A (CLF)	087-72	4.5	13.3	13	4.8	90	>100	>100	96	1	11	17	12
SGMW-11B (CLF)	087-98	2.5	12.3	13	1.1	50	>100	>100	22	0	0	2	0
SGMW-12A (CLF)	087-73	33.6	37.9	31.6	26.8	>100	>100	>100	>100	1	17	14	0
SGMW-12B (CLF)	087-99	27.2	33.1	15.2	22.4	>100	>100	>100	>100	0	1	0	2
SGMW-13A (CLF)	087-74	0.1	0.1	19.4	0	2	2	>100	0	0	0	4	0
SGMW-13B (CLF)	087-100	22.5	29.3	24.2	14.4	>100	>100	>100	>100	0	0	5	0
SGMW-14A (CLF)	087-75	0.1	0	0	0	2	0	0	0	0	0	0	0
SGMW-14B (CLF)	087-101	0.9	2.4	0	0	18	48	0	0	0	0	0	0
SGMW-15A (CLF)	088-111	0	0	0	0	0	0	0	0	0	0	0	0
SGMW-15B (CLF)	088-114	0	0	35	9.1	0	0	>100	>100	0	0	15	3
SGMW-16A (CLF)	088-112	0	0	5.9	0	0	0	>100	0	0	0	0	0
SGMW-16B (CLF)	088-115	0	0	0	0	0	0	0	0	0	0	0	0
SGMW-17A (CLF)	088-113	0	0	0	0	0	0	0	0	0	0	0	0
SGMW-17B (CLF)	088-116	0	0	0	0	0	0	0	0	0	0	0	0
SGMW-18A (CLF)	087-76	0	0	0	0	0	0	0	0	0	0	0	0
SGMW-18B (CLF)	087-102	0	0	0	0	0	0	0	0	0	0	0	0
SGMW-19A (CLF)	087-77	0	0.7	0	0	0	14	0	0	0	0	0	0
SGMW-19B (CLF)	087-103	4.1	7	6.2	0	82	>100	>100	0	2	0	4	0

Table 8
2022 Former Landfill Soil-Gas Monitoring Summary Table

Soil/Gas Monitoring Well	Well ID	Methane (% By Volume) 8/16-18/2022	LEL (% By Volume) 8/16-18/2022	Hydrogen Sulfide (ppm By Volume) 8/16-18/2022
SGMW-01A (FLF)	096-41	0	0	0
SGMW-01B (FLF)	096-42	0	0	0
SGMW-02A (FLF)	096-43	0	0	0
SGMW-02B (FLF)	096-44	0	0	0
SGMW-03A (FLF)	096-45	0	0	0
SGMW-03B (FLF)	096-46	0	0	0
SGMW-04A (FLF)	096-47	0	0	0
SGMW-04B (FLF)	096-48	0	0	0
SGMW-05A (FLF)	097-50	0	0	0
SGMW-05B (FLF)	097-51	0	0	0
SGMW-06A (FLF)	097-52	0	0	0
SGMW-06B (FLF)	097-53	0	0	0
SGMW-07A (FLF)	097-54	0	0	0
SGMW-07B (FLF)	097-55	0	0	0
SGMW-08A (FLF)	097-56	0	0	0
SGMW-08B (FLF)	097-57	0	0	0
SGMW-09A (FLF)	097-58	0	0	0
SGMW-09B (FLF)	097-59	0	0	0
SGMW-10A (FLF)	097-60	0	0	0
SGMW-10B (FLF)	097-61	0	0	0
SGMW-11A (FLF)	097-62	0	0	0
SGMW-11B (FLF)	097-63	0	0	0
SGMW-12A (FLF)	096-49	0	0	0
SGMW-12B (FLF)	096-50	0	0	0



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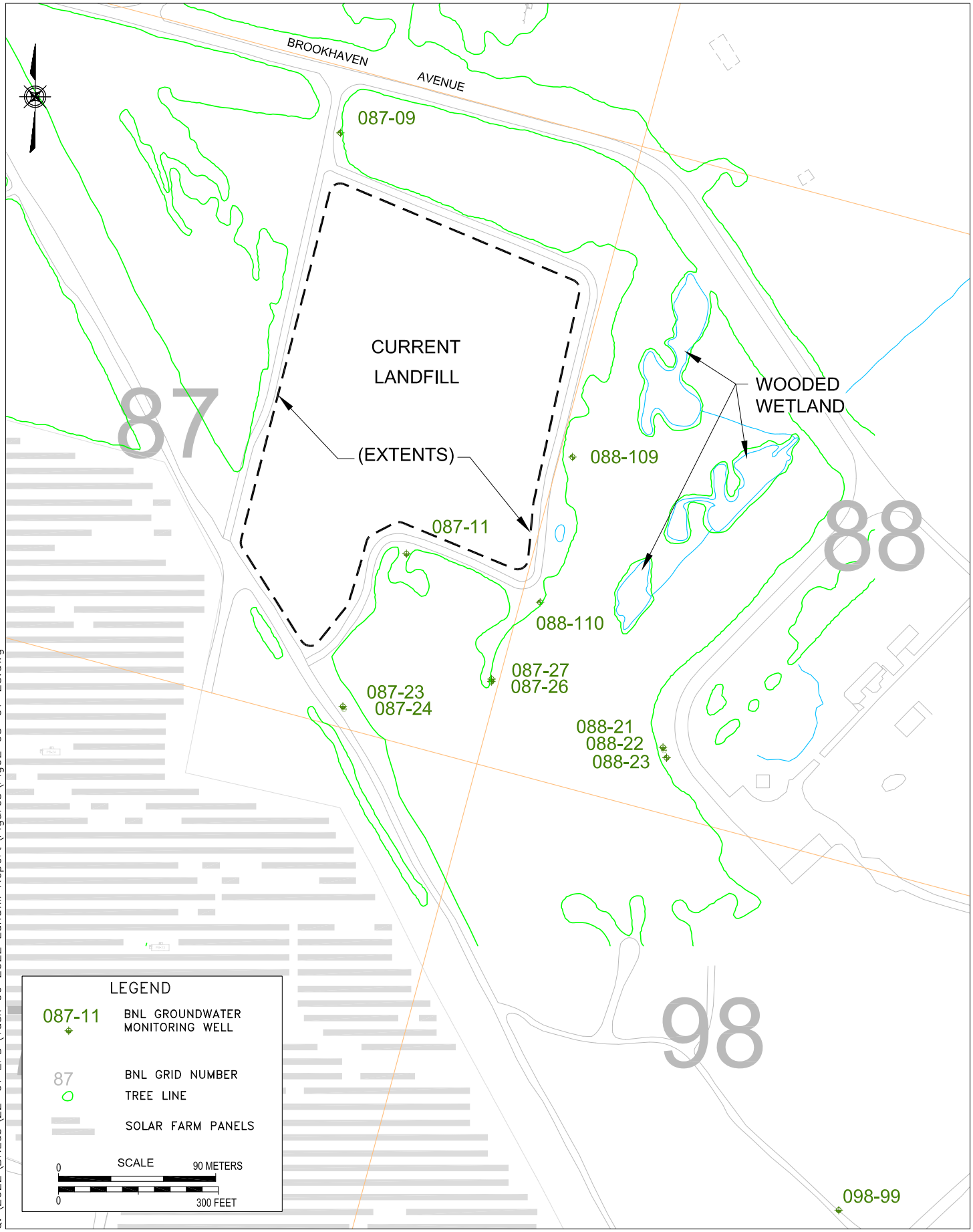
Brookhaven National Laboratory
ENVIRONMENTAL PROTECTION DIVISION

TITLE:

SITE LOCATION MAP
2022 ENVIRONMENTAL MONITORING REPORT
CURRENT AND FORMER LANDFILL AREAS

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
AJZ	–	01/31/23	–
CHKD:	APPD:	REV.:	NOTES:
JM	RFH	–	–

FIGURE NO.: 1



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Brookhaven National Laboratory
ENVIRONMENTAL PROTECTION DIVISION

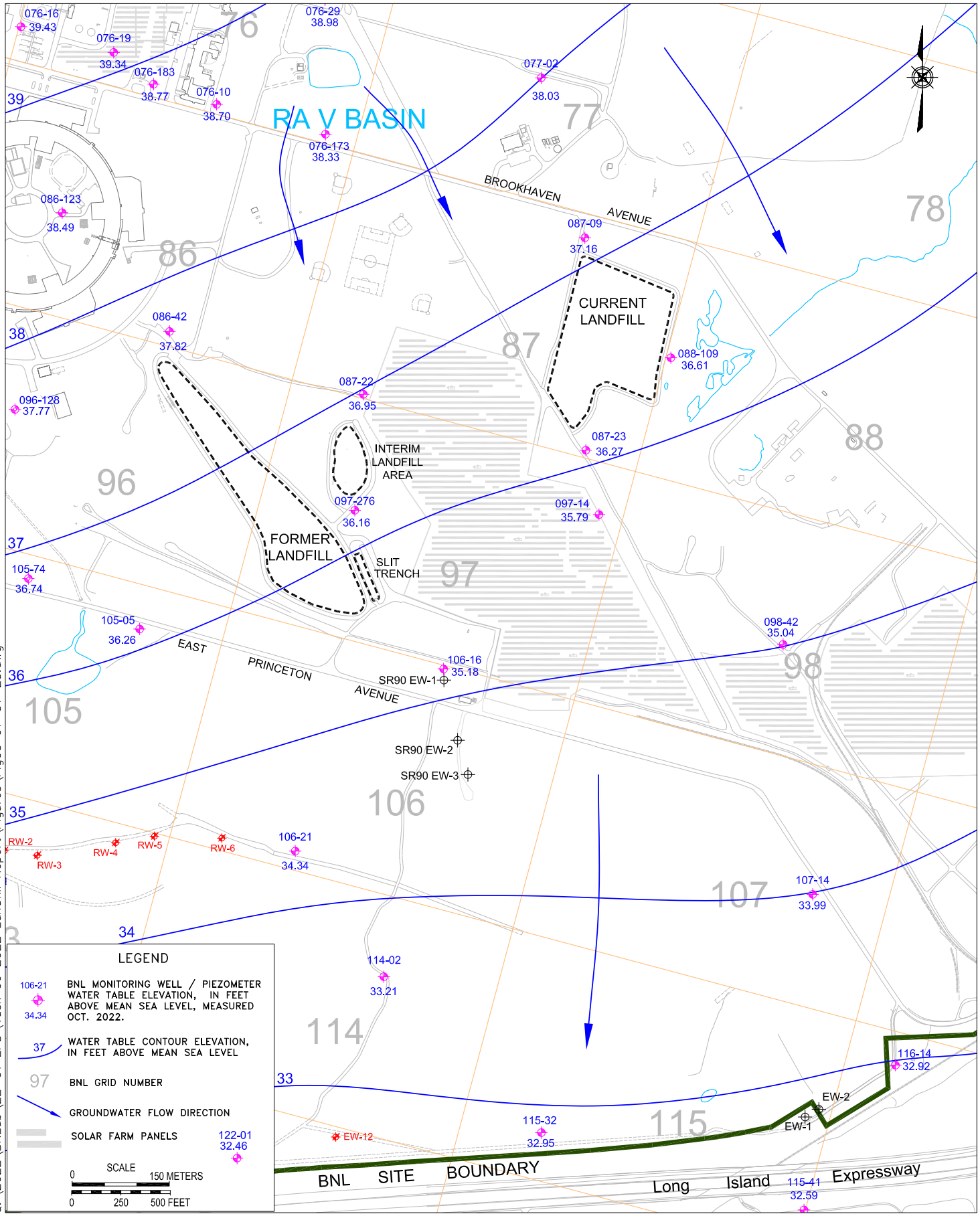
TITLE:

CURRENT LANDFILL GROUNDWATER MONITORING WELL LOCATIONS

2022 ENVIRONMENTAL MONITORING REPORT
CURRENT AND FORMER LANDFILL AREAS

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
AJZ	–	01/31/23	–
CHKD:	APPD:	REV.:	NOTES:
JM	RFH	03/01/23	–

FIGURE NO.: 2



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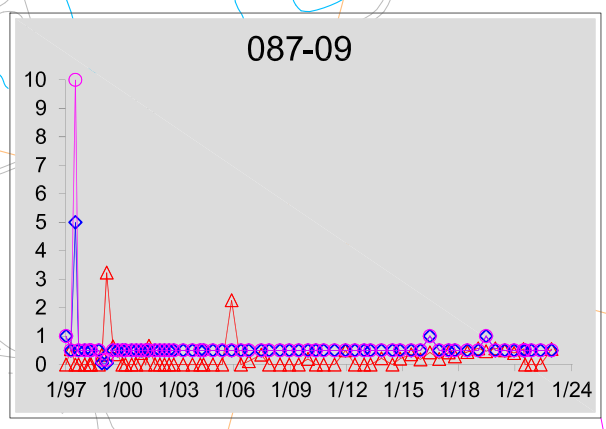
Brookhaven National Laboratory
ENVIRONMENTAL PROTECTION DIVISION

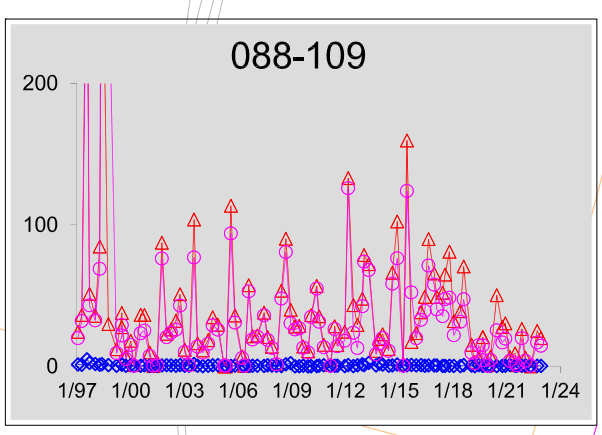
TITLE:

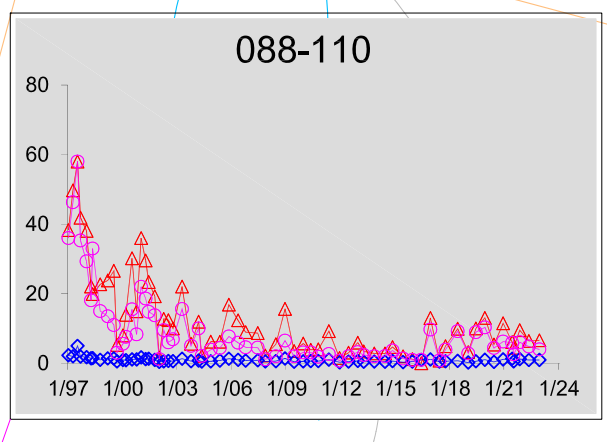
WATER TABLE CONTOUR MAP
2022 ENVIRONMENTAL MONITORING REPORT
CURRENT AND FORMER LANDFILL AREAS

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
AJZ	–	01/31/23	–
CHKD:	APPD:	REV.:	NOTES:
JM	RFH	–	–

FIGURE NO.: 3







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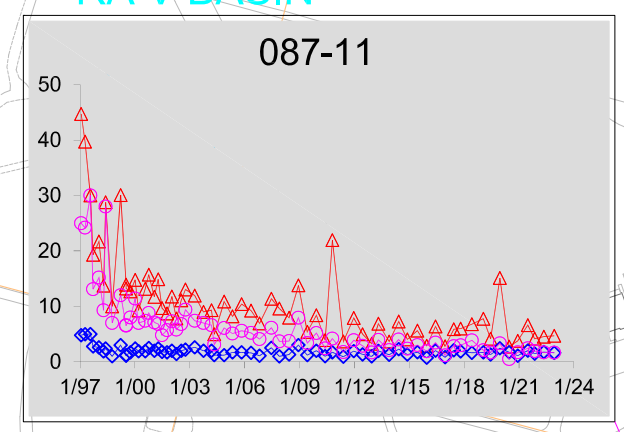

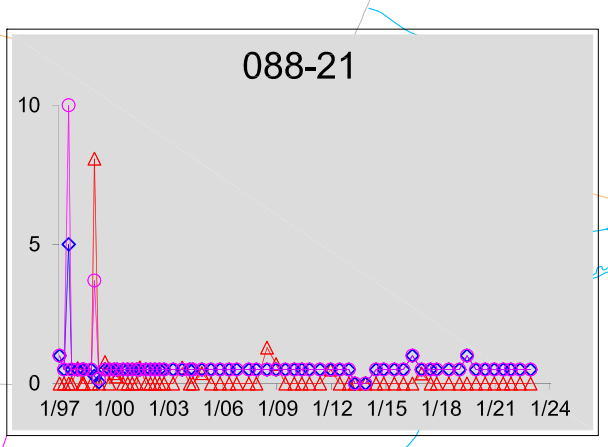

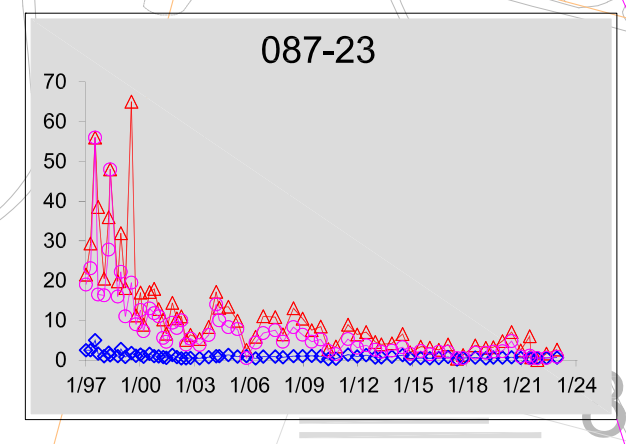

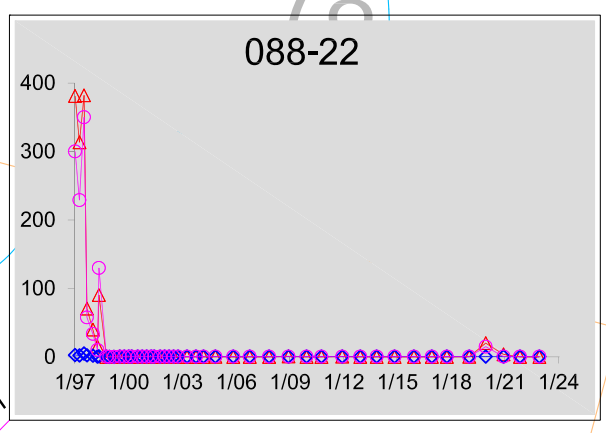

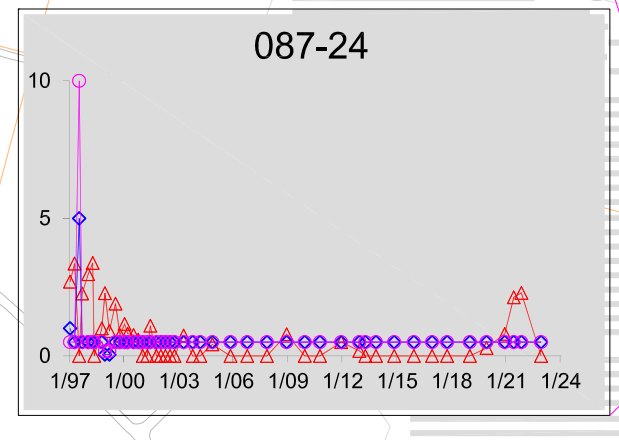

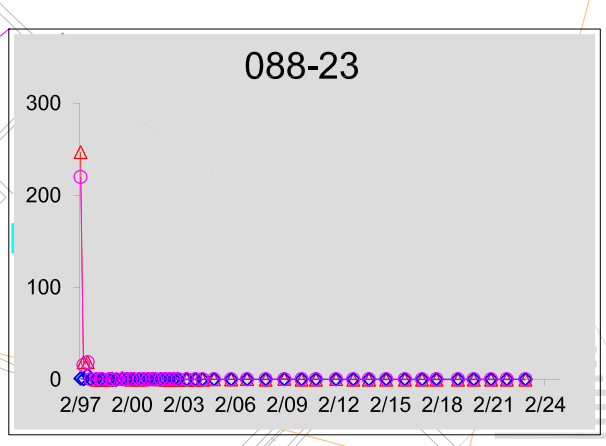

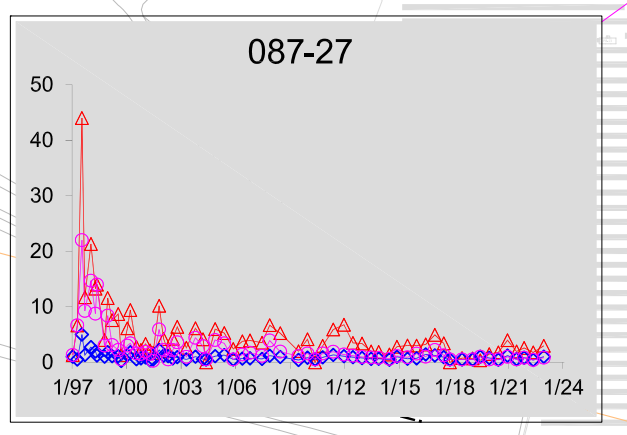

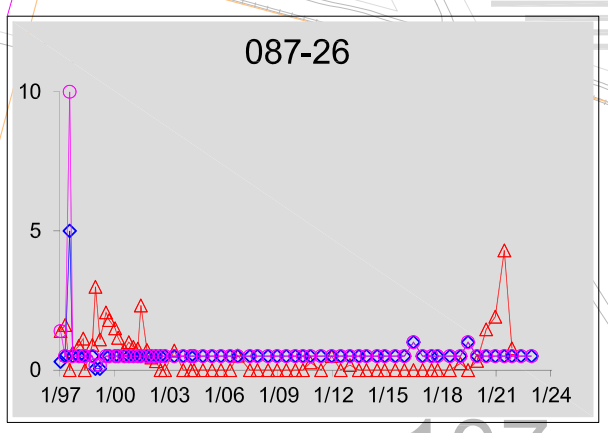

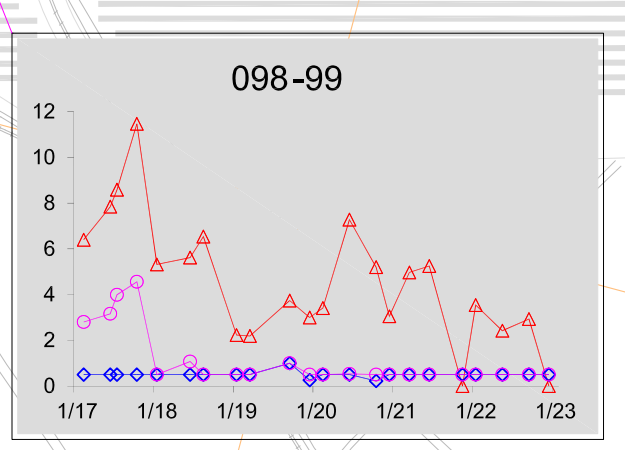

LEGEND

- 11 — MONITORING WELL
- Benzene (µG/L)
- Chloroethane (µG/L)
- TVOC (µG/L)
- 32 — BNL GRID NUMBER
- BNL RECHARGE BASIN
- RA V
- 087-09 — BACKGROUND
- 087-11 — DOWNGRADIENT
- SOLAR FARM PANELS

SCALE
0 500 FEET

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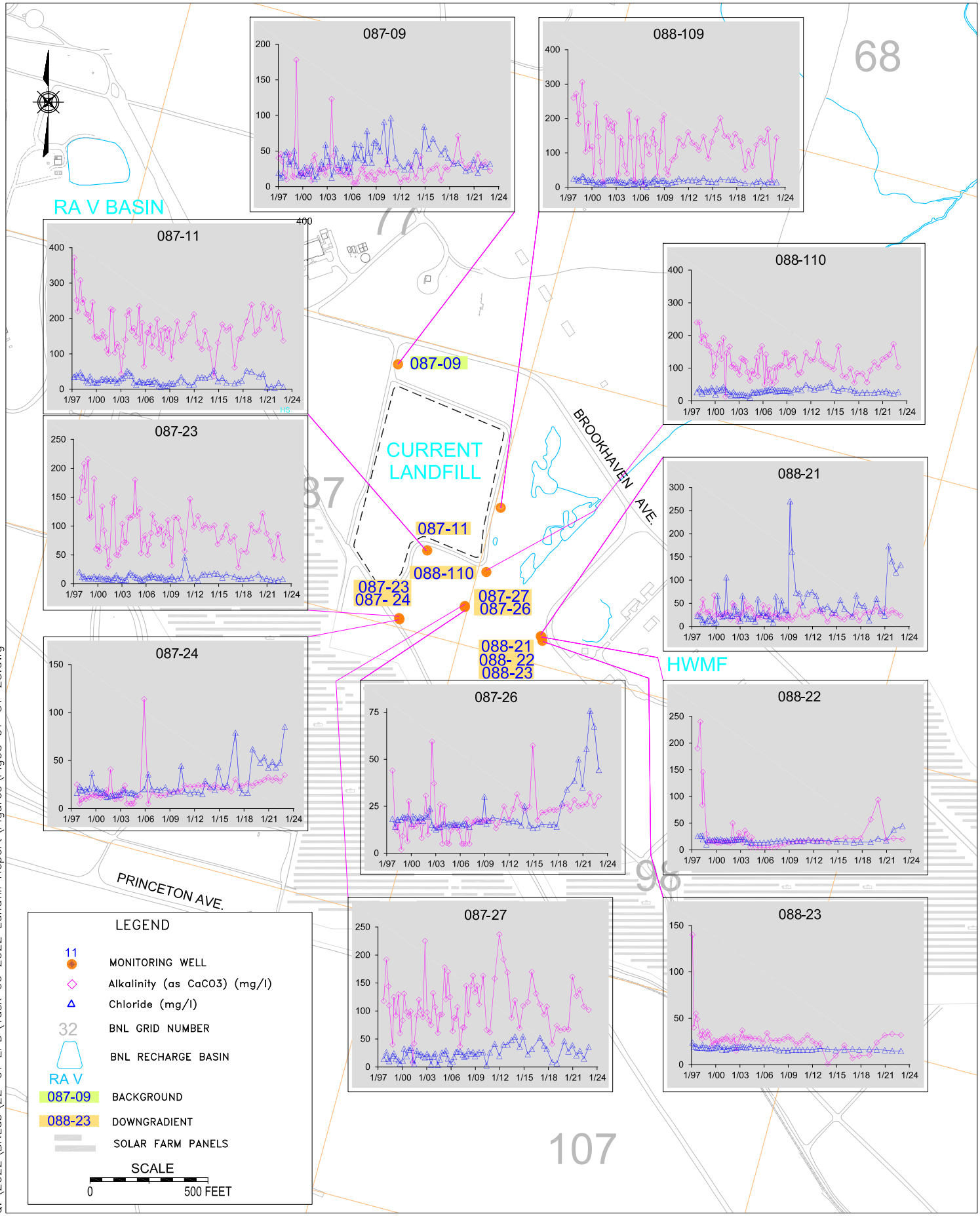
Brookhaven National Laboratory
ENVIRONMENTAL PROTECTION DIVISION

TITLE:
CURRENT LANDFILL
VOC TREND PLOTS
2022 ENVIRONMENTAL MONITORING REPORT
CURRENT AND FORMER LANDFILL AREAS

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
AJZ	–	01/31/23	–
CHKD:	APPD:	REV.:	NOTES:
JM	RFH	–	–

FIGURE NO.: 4



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Brookhaven National Laboratory
ENVIRONMENTAL PROTECTION DIVISION

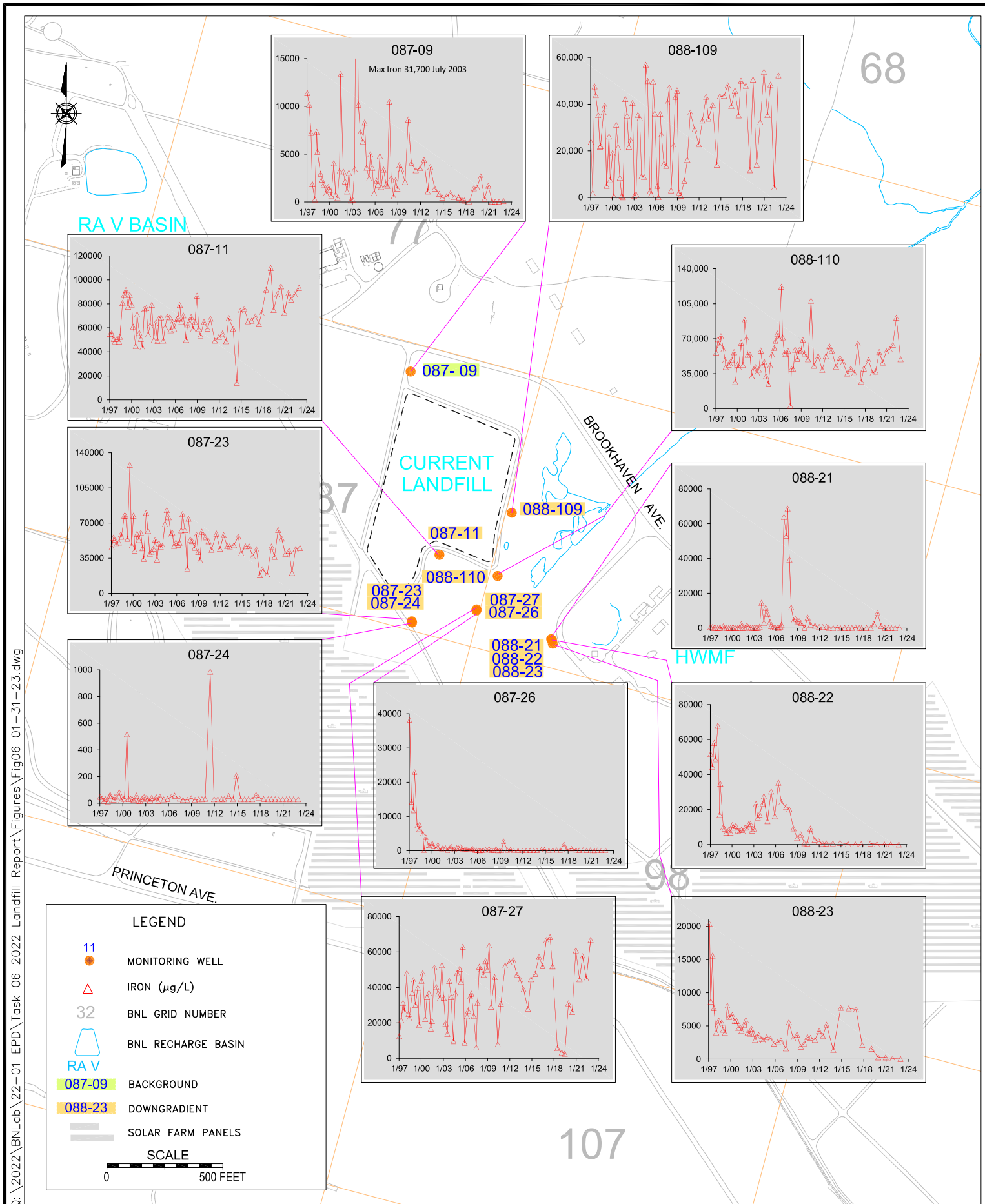
TITLE:

CURRENT LANDFILL ALKALINITY AND CHLORIDE TREND PLOTS

2022 ENVIRONMENTAL MONITORING REPORT
CURRENT AND FORMER LANDFILL AREAS

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
AJZ	–	01/31/23	–
CHKD:	APPD:	REV.:	NOTES:
JM	RFH	–	–

FIGURE NO.: 5



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Brookhaven National Laboratory
ENVIRONMENTAL PROTECTION DIVISION

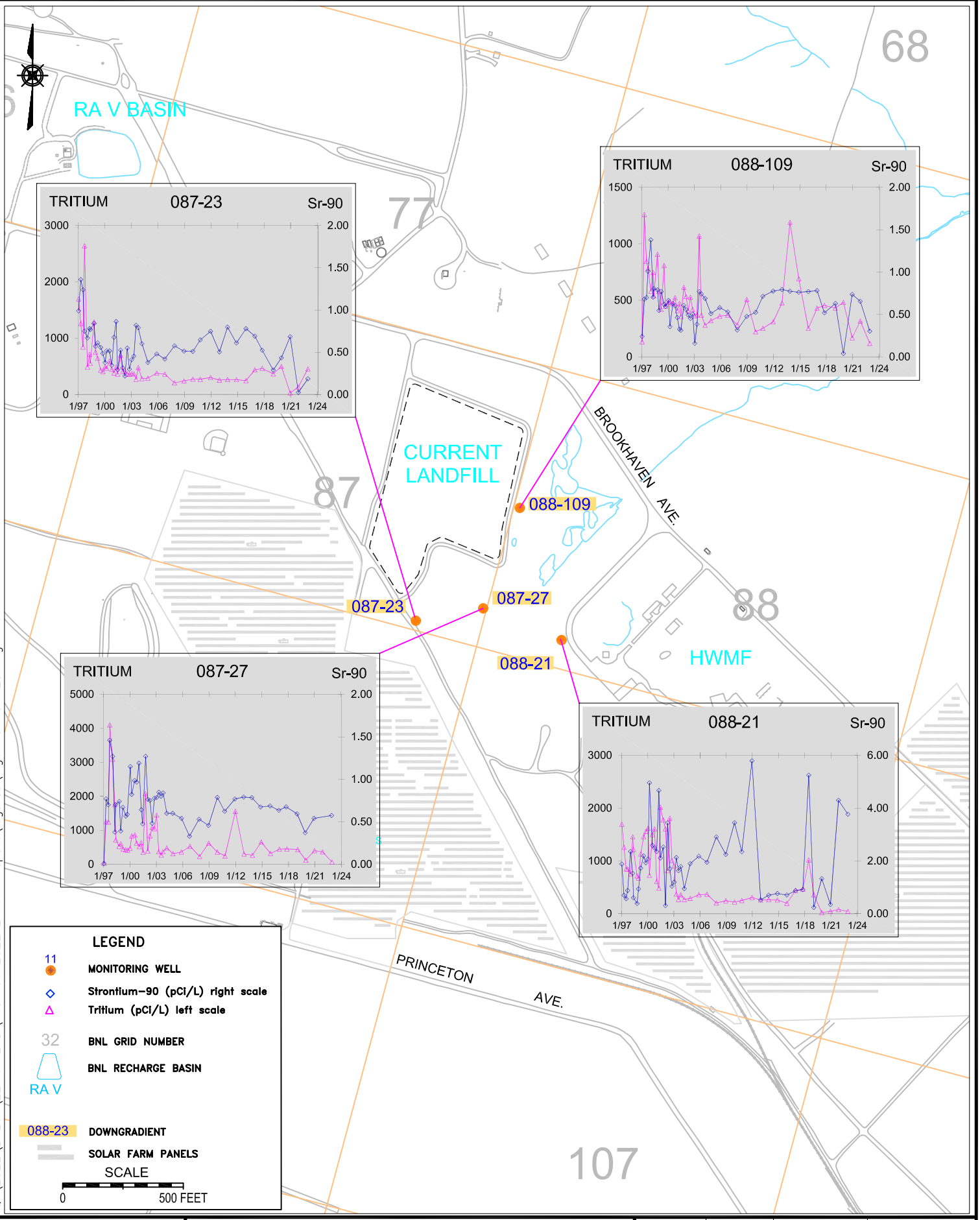
TITLE:

CURRENT LANDFILL IRON TREND PLOTS

2022 ENVIRONMENTAL MONITORING REPORT
CURRENT AND FORMER LANDFILL AREAS

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
AJZ	–	01/31/23	–
CHKD:	APPD:	REV.:	NOTES:
JM	RFH	–	–

FIGURE NO.: 6



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Brookhaven National Laboratory
ENVIRONMENTAL PROTECTION DIVISION

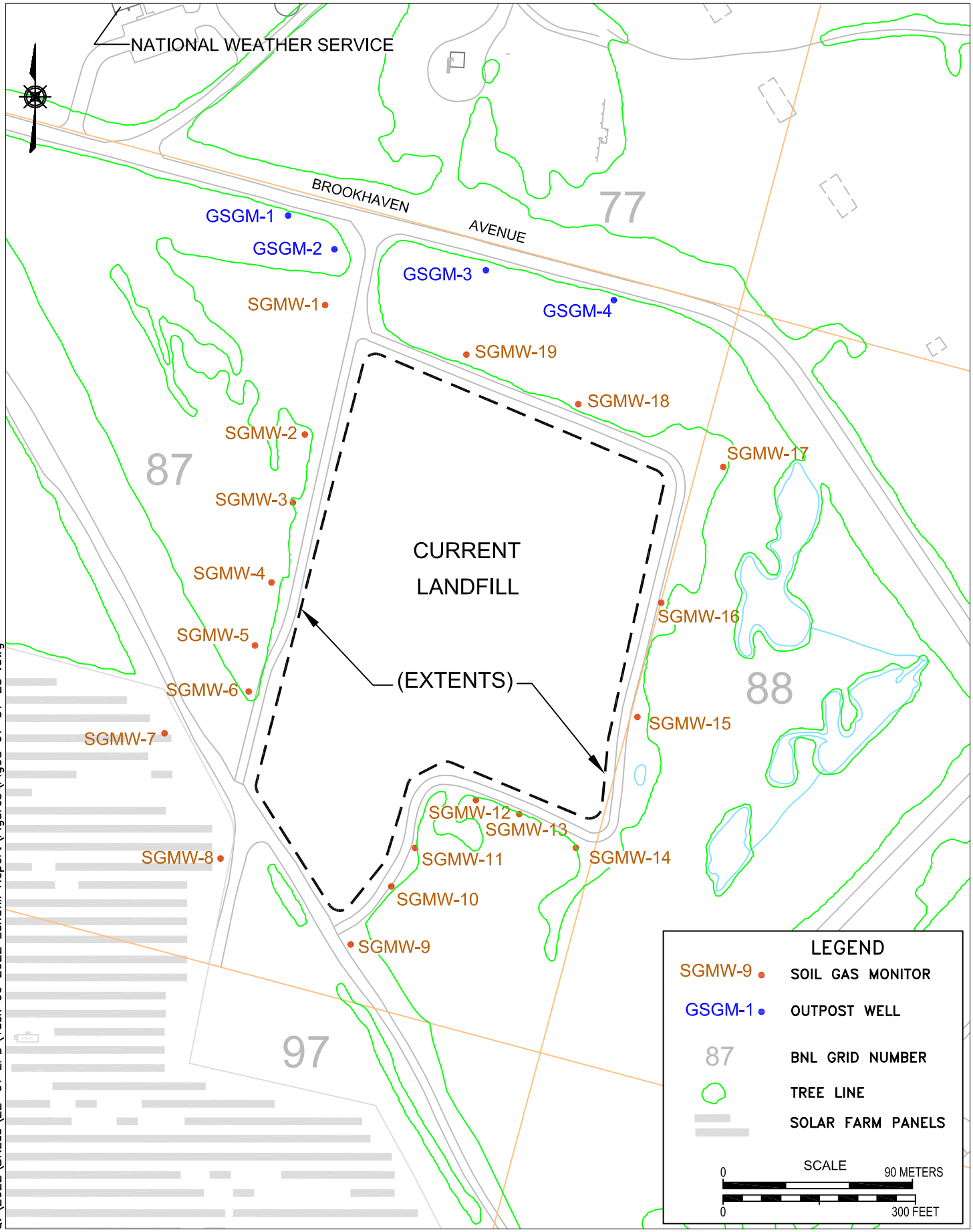
TITLE:

CURRENT LANDFILL TRITIUM AND STRONTIUM-90 TREND PLOTS

2022 ENVIRONMENTAL MONITORING REPORT
CURRENT AND FORMER LANDFILL AREAS

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
AJZ	–	01/31/23	–
CHKD:	APPD:	REV.:	NOTES:
JM	RFH	–	–

FIGURE NO.: 7



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Brookhaven National Laboratory
ENVIRONMENTAL PROTECTION DIVISION

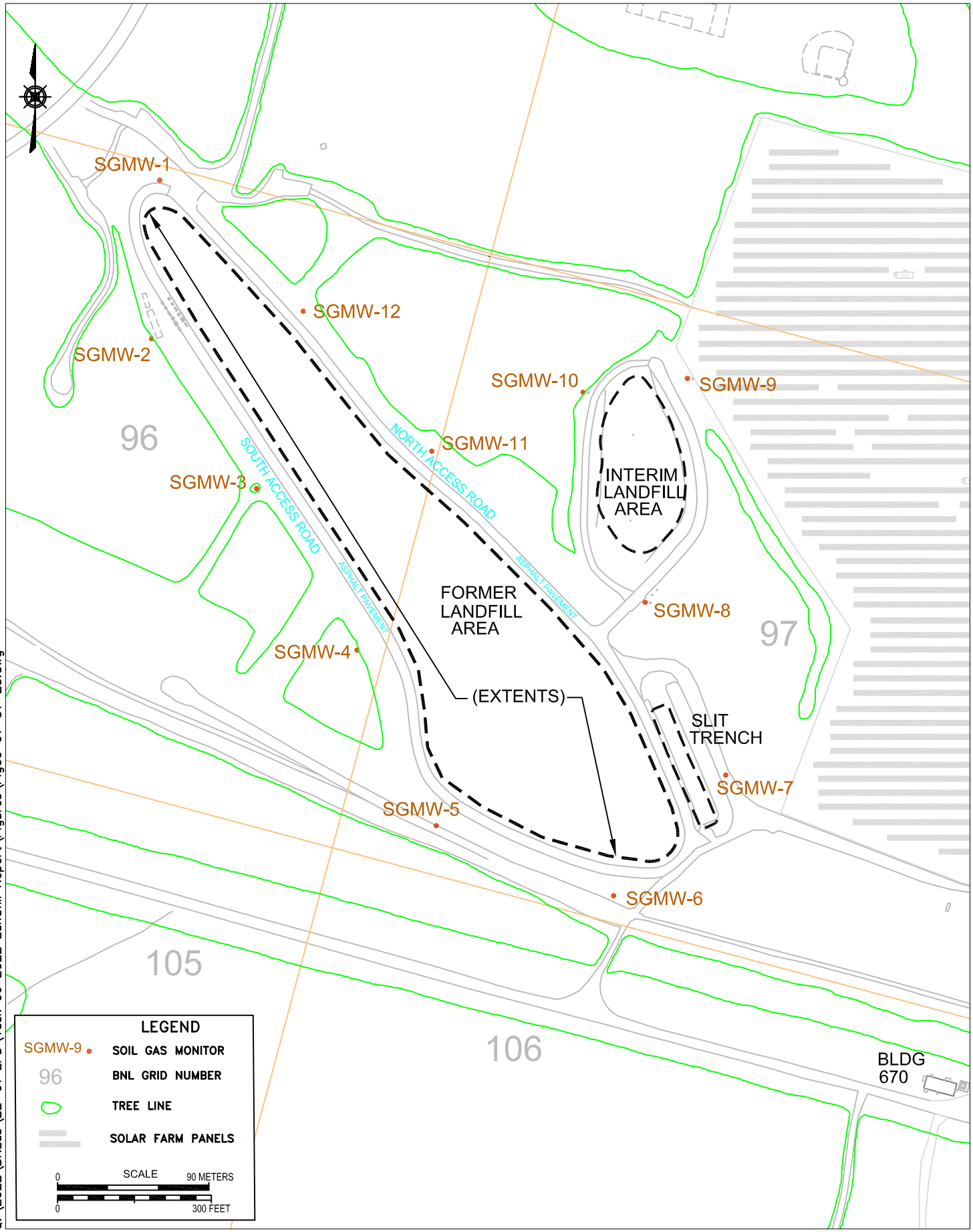
TITLE:

CURRENT LANDFILL SOIL-GAS MONITOR LOCATION MAP

2022 ENVIRONMENTAL MONITORING REPORT
CURRENT AND FORMER LANDFILL AREAS

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
AJZ	–	01/31/23	–
CHKD:	APPD:	REV.:	NOTES:
JM	RFH	–	–

FIGURE NO.: 8



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Brookhaven National Laboratory
ENVIRONMENTAL PROTECTION DIVISION

TITLE:

FORMER LANDFILL AREA SOIL-GAS MONITOR LOCATION MAP

2022 ENVIRONMENTAL MONITORING REPORT
CURRENT AND FORMER LANDFILL AREAS

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
AJZ	–	01/31/23	–
CHKD:	APPD:	REV.:	NOTES:
JM	RFH	–	–

FIGURE NO.: 9

Appendix A

Soil-gas Sampling Field Notes

Clear 26° 1020 mb

Location	Well ID	CH_4 %	LEL %	H_2S	time/comments
SGM- 1A	087-62	12.6	>100 252	3	1019
1B	78	11.6	>100 232	1	1025
1C	79	9.8	>100 196	1	1036
2A	63	44.6	>100 892	20	1044
2B	80	37.8	>100 756	6	1052
2C	81	38.4	>100 768	4	1102
3A	64	22.0	>100 440	0	1111
3B	62	44.6	>100 892	15	1118
3C	83	40.1	>100 802	5	1128
4A	65	36.3	>100 726	0	1136
4B	84	33.5	>100 670	3	1143
4C	85	25.3	>100 506	3	1152
5A	66	8.7	>100 174	0	1330
5B	86	24.3	>100 486	0	1337
5C	87	18.5	>100 370	1	1348
6A	67	6.2	>100 124	0	1356
6B	88	26.2	>100 524	0	1402
6C	89	25.3	>100 506	1	1412
7A	68	0	0	0	1534 ✓
7B	90	0	0	0	1552 ✓
7C	91	0	0	0	1604 ✓
8A	69	0	0	0	1511 ✓
8B	92	0	0	0	1517 ✓
8C	93	0	0	0	1526 ✓

3/29/22

* 3/30/22

Rain on the Rain

LOC	WELL ID	CH4 %	LEL %	H2S	time/comm
9A	087-70	0	0	0	1118 ✓
9B	-94	0	0	0	1125 ✓
9C	-95	0	0	0	1137 ✓
10A	-71	5.9	>100 118	4	1053
10B	-96	4.9	98	0	1059
10C	-97	5.6	>100 112	0	1112
11A	-72	4.5	91	1	1040
11B	-98	2.5	50	0	1047
12A	-73	33.6	>100 672	1	1535
12B	-99	27.2	>100 544	0	1542
13A	-74	.1	3	0	1548
13B	-100	22.5	>100 450	0	1555
14A	-75	.1	1	0	1604
14B	-101	.9	19	0	1611
15A	088 -111	0	0	0	1026 ✓
15B	-114	0	0	0	1033 ✓
16A	112	0	0	0	1572 ✓
16B	115	0	0	0	1579 ✓
17A	113	0	0	0	1453 ✓
17B	116	0	0	0	1459 ✓
18A	087-76	0	0	0	1435 water clogged
18B	-102	0	0	0	1444 ✓
19-A	087-71	0	0	0	1420 ✓
B	087-103	4.1	82	2	1428

3/29/22 — 3/30 — 3/29/22 — 3/30/22

LOC	WELL ID	CH4 %	LEL %	H2S	time/comm
GSM 1A	NA	0	0	0	1413 ✓
1B		0	0	0	1420 ✓
1C		0	0	0	1434 ✓
2A		0	0	0	1345 ✓
2B		0	0	0	1352 ✓
2C		0	0	0	1404 ✓
3A		0	0	0	1331 ✓
3B		0	0	0	1339 ✓
4A		0	0	0	1145 ✓
4B		0	0	0	1152 ✓

3/30/22

Rite in the Rain

current Landfill

Location	Well ID	CH_4%	LEL%	H_2S	comments time
SGM-1A	087-62	10.0	>100 200	2	1043
1B	78	9.0	>100 180	1	1053
1C	79	7.3	>100 146	0	1102
2A	63	44.3	>100 886	2	1111
2B	80	42.8	>100 856	8	1119
2C	81	42.0	>100 840	3	1129
3A	64	31.7	>100 634	10	1136
3B	82	46.2	>100 924	16	1143
3C	83	46.4	>100 928	8	1153
4A	65	38.1	>100 762	5	1347
4B	84	35.3	>100 706	5	1355
4C	85	27.5	>100 550	5	1404
5A	66	2.6	52	0	145
5B	86	24.3	>100 486	1	1424
5C	87	19.3	>100 386	0	1435
6A	67	4.4	89	0	1444
6B	88	28.4	>100 568	4	1452
6C	89	25.9	>100 518	1	1512
7A	68	0	0	0	1358
7B	90	0	0	0	1405
7C	91	0	0	0	1415
8A	69	0	0	0	1418
8B	92	0	0	0	1425
8C	93	0	0	0	1435

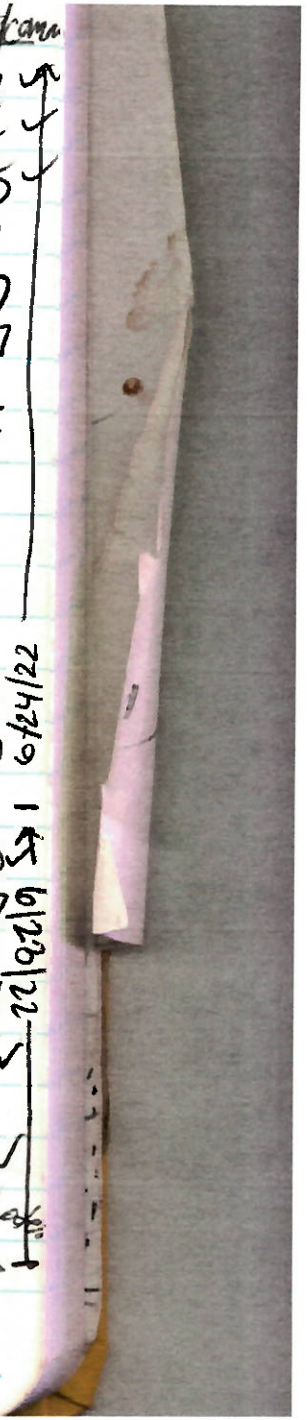
6/21/22

6/24/22

Location	Well ID	CH_4%	LEL%	H_2S	Timeframe
SGM-9A	087-70	0	0	0	0917
9B	94	0	0	0	0924
9C	95	0	0	0	0935
10A	71	8.0	>100 160	18	0940
10B	96	13.3	>100 266	2	0947
10C	97	11.1	>100 222	0	0957
11A	72	13.3	>100 266	11	1002
11B	98	12.3	>100 246	0	1009
OF 6/21/22					
12A	087-73	37.9	>100 758	17	1013
12B	087-99	33.1	>100 662	1	1019
OF 6/21/22					
13A	087-74	.1	2	0	1023
13B	087-100	29.3	>100 586	0	1030
OF 6/21/22					
14A	087-75	0	0	0	1200
14B	087-101	2.4	48	0	1207
OF 6/21/22					
15A	088-111	0	0	0	1148
15B	088-114	0	0	0	1154
OF 6/21/22					
16A	088-112	0	0	0	1135
16B	088-115	0	0	0	1141
OF 6/21/22					

6/24/22

6/21/22



6/24/22 Partly cloudy 10:17 mb
71° 77% humidity

Location	Well ID	CH4 %	LEL %	H2S	Time/comm.
17	A ~~087-77~~	0	0	0	1121 ✓
	B ~~087-103~~ 087-116	0	0	0	1128 ✓ water
OF 6/21/22					
18	A 087-76	0	0	0	1047
	B 087-102	0	0	0	1054 water
OF 6/21/22					6/23/22
19	A 087-77	0.7	14	0	1028
	B 087-103	7.0	>100 MD	0	1036
OF 6/21/22					
GSGM-1A	NA	0	0	0	1129 ✓
1B		0	0	0	1135 ✓
1C		0	0	0	1146 6/24
2A		0	0	0	1105 ✓
2B		0	0	0	1111 ✓
2C		0	0	0	1118 ✓
3A		0	0	0	1054 ✓
3B		0	0	0	1100 ✓
4A		0	0	0	1040 ✓
4B		0	0	0	1048 ✓

Rita in the Rain

1017 mb

%	H_2S	Time/comm.
	0	1121 ✓
	0	1128 water
	0	1047
	0	1054 water
	0	1028
140	0	1036
	0	1129
	0	1135
	0	1146
	0	1105
	0	1111
	0	1118
	0	1054
	0	1000
	0	1040
	0	1048

JF 9/15/22 Sunny, 75°F 34% Humidity 1016.26 mb

Currant Landfill

Location	Well ID	CH_4%	LEL%	H_2S	Time/Comments
SGM-1A	087-62	2.0	42	2	1340
B	087-78	2.9	59	1	B47
C	087-79	2.9	58	1	1357
2A	087-63	1.4	29	0	1405
B	087-80	43.3	>100 566	15	1412
C	087-81	45.9	>100 918	4	1426
3A	087-64	12.3	>100 246	3	1451
B	087-82	46.8	>100 936	19	1500
C	087-83	46.6	>100 932	4	1509 JF 9/15/22
4A	087-65	30.5	>100 610	2	1519
B	087-84	30.6	>100 612	7	1526
C	087-85	23.0	>100 460	4	1536
5A	087-66	0	~~>100 356~~ 0	0	~~1546~~ 1516 9/15/22
B	087-86	17.8	>100 356	2	1549
C	087-87	14.6	>100 292	0	1604
6A	087-67	0	0	0	0940
B	087-88	24.8	>100 496	6	0950
C	087-89	22.1	>100 442	2	1000
7A	087-68	0	0	0	1056
B	087-90	0	0	0	1103
C	087-91	0	0	0	1113
8A	087-69	0	0	0	1349 9/16/22
B	087-92	0	0	0	1356
C	087-93	0	0	0	1406

Rite in the Rain

JF 9/16/22 Current Landfill
Sunny, 65.3°F, 1016.6 mb, Relative Humidity 40%

Location	Well ID	CH_4 %	LEL %	H_2S	Time/Comments
SGM-9A	087-70	0	0	0	1431
087-94B	087-94	0	0	0	1438
087-95C	087-95	0	0	0	1456
10A	087-71	~~1.5~~	~~30~~ JF 9/16/22	0	1001
B	087-96	2.9	>100 258	7	~~0954~~
C	087-97	1.1	>100 222	3	~~0944~~ JF 9/16/22
11A	087-72	3.0	>100 260	17	1007 SAMPLE
B	087-98	3.0	>100 260	2	1014
12A	087-73	31.6	>100 632	14	1022
B	087-99	15.2	>100 304	0	1030
13A	087-74	19.4	>100 388	4	1037
~~JF 9/16/22~~ B	087-100	24.2	>100 484	5	1044
14A	087-75	0	0	0	1050
B	087-101	0	0	0	1059
15A	088-111	0	0	0	1109
B	088-114	35.0	>100 700	15	1116
16A	088-112	5.9	>100 118	0	1133
B	088-115	0	0	0	~~1130~~ water
17A	088-113	0	0	0	~~1140~~ JF 9/19/22 1105
B	088-116	0	0	0	~~1150~~ 1212
18A	087-76	0	0	0	1149
B	087-102	0	0	0	1156 water
19A	087-77	0	0	0	1319
B	087-103	6.2	124 >100	4	1326

JF 9/19/22
Overcast, 69.4°F, 1010.8 mb, Humidity 94%, Current Landfill

Location	Well ID	CH_4 %	LEL %	H_2S	Time/Comments
SGM-1A	NA	0	0	0	1340
B		0	0	0	1347
C		0	0	0	1357
2A		0	0	0	1405
B		0	0	0	1412
C		0	0	0	1422
3A		0	0	0	1431
B		0	0	0	1441
4A		0	0	0	1449
B		0	0	0	1457

JF 9/19/22

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Sun 35°F JF 12/27/22 Current LF
1024 mb JF 12/27/22 Rel. Humidity 44% 12/27/22

Loc	WellID	CH4%	LEL%	H2S	time/comm.
SGM 1A	087-62	5.0	100	2	1034
1B	087-78	4.5	89	1	1043
1C	087-79	3.8	77	1	1053
2A	087-63	35.7	>100 714	0	1100
2B	087-80	30.6	>100 612	4	1108
2C	087-81	34.4	>100 688	3	1118
3A	087-64	2.8	56	1	1124
3B	087-82	39.6	>100 792	11	1131
3C	087-83	35.1	>100 702	16	1141
4A	087-65	25.7	>100 514	0	1149
4B	087-84	26.6	>100 532	3	1156
4C	087-85	20.0	>100 400	2	1206
5A	087-86	0	0	0	1328
5B	087-86	14.4	>100 288	0	1335
5C	087-87	14.7	>100 294	0	1345
6A	087-67	0.6	13	0	1350
6B	087-88	23.5	>100 470	3	1357
6C	087-89	21.4	>100 428	0	1407
7A	087-68	0	0	0	1415
7B	087-90	0	0	0	1422
7C	087-91	0	0	0	1431
8A	087-69	0	0	0	1439
8B	087-92	0	0	0	1446
8C	087-93	0	0	0	1456

39

Sun 28°F JF 12/28/22 CLF
Rel. Humidity 88%
1023.4 mb

Location	WellID	CH4%	LEL%	H2S	12/28/22 Time/Com.
		JF 12/28/22 0	0	0	
SGM 9A	087-70	0	0	0	0858
9B	087-94	0	0	0	0905
9C	087-95	0	0	0	0915
10A	087-71	0	0	0	0926
10B	087-96	3.5	~~>130~~ 108 JF 12/28/22	0	0932
10C	087-97	5.4	>100	4	0942
11A	087-72	4.8	96	12	0952
11B	087-98	1.1	23	0	0959
12A	087-73	26.8	>100 536	0	1006
12B	087-99	22.4	>100 448	2	1013
13A	087-74	0	0	0	1021
13B	087-100	14.4	>100 288	0	1029
*14A	087-75	~~1.20~~	~~25~~ JF 12/28/22	0	water 1037
14B	087-101	0	0	0	1044
15A	088-111	0	0	0	1058
15B	088-114	9.1	>100 182	3	1107
16A	088-112	0	0	0	1115
16B	088-115	0	0	0	water 1122
17A	088-113	0	0	0	1130
17B	088-116	0	0	0	1138 water
18A	087-76	0	0	0	1145 water
18B	087-102	0	0	0	1153 water
19A	087-77	0	0	0	1159
19B	087-103	0	0	0	1206

Rite in the Rain

JF 12/28/22

Location	well ID	CH_4%	LEL%	H_2S	CLF continued time/com.
GSGM	A	NA	0	0	0	1324
"	1B	"	0	0	0	1331
"	1C	"	0	0	0	1343
"	2A	"	0	0	0	1351
"	2B	"	0	0	0	1358
"	2C	"	0	0	0	1409
"	3A	"	0	0	0	1417
"	3B	"	0	0	0	1424
"	4A	"	0	0	0	1433
"	4B	"	0	0	0	1442

JF 12/28/22

GEM 2000 Check — Former Landfill — 8/10/22

75-77F
1013.55mb
67% Humidity

Location	Well ID	CH4 %	LEL %	H2S ppm	Comments
SGM 1A	096-41	0	0	0	1127
1B	096-42	0	0	0	1144 ~~1148~~ JF 8/10/22
2A	096-43	0	0	0	1153
2B	096-44	0	0	0	1200
3A	096-45	0	0	0	1321
3B	096-46	0	0	0	1328
4A	096-47	0	0	0	1337
4B	096-48	0	0	0	1344
5A	097-50	0	0	0	1356
5B	097-51	0	0	0	1404
6A	097-52	0	0	0	1416
6B	097-53	0	0	0	1424
7A	097-54	0	0	0	1434
7B	097-55	0	0	0	1442
CL 8A	097-56	0	0	0	1452
8B	097-57	0	1	0	1501
9A	097-58				
9B	097-59				
10A	097-60				
10B	097-61				
11A	097-62				
11B	097-63				
12A	096-49				
12B	096-50				

JF
8/10/22

GEM 2000 Check — Fo

Location	Well ID	CH
8B	097-57	
9A	097-58	C
9B	097-59	
10A	097-60	
CL-10B	097-61	
11A	097-62	
11B	097-63	
CL-12A	096-49	
12B	096-50	
*8A	097-56	

* Re-sampled along

*

JF

- Landfill

8/15/22

eL%	H_2S ppm	Comments
0	0	1127
0	0	1148 JF 8/16/22
0	0	1153
0	0	1200
0	0	1321
0	0	1328
0	0	1337
0	0	1344
0	0	1356
0	0	1404
0	0	1416
0	0	1424
0	0	1434
0	0	1442
0	0	1452
1	0	1501

JF
8/15/22

75.7F
1013.55mb
63% Humidity

GEM 2000
Check

Former Landfill

66% Relative H. 8/15/22

73.2F
1009.44mb

Location	Well ID	CH4%	LeL%	H_2S ppm	Comment
8B	097-57	0	0	0	JF 8/15/22 1101
9A	097-58	0	0	0	0954
9B	097-59	0	0	0	1012
10A	097-60	0	0	0	1036
CL-10B	097-61	0	0	0	1043
11A	097-62	0	0	0	1022
11B	097-63	0	0	0	1030
CL-12A	096-49	0	0	0	1004
12B	096-50	0	0	0	1011
*8A	097-56	0	0	0	1127

Re-sampled along w/ 8B

*CL indicates that tubing cap was loose.

JF 8/15/22

Appendix B

Monthly Landfill Site Inspection Forms and Photos

BROOKHAVEN NATIONAL LABORATORY
CURRENT LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): James Murphy

Date of Inspection: 1/28/22

Purpose of Inspection: [X] Routine [ ] Heavy Rainfall [ ] Reported Incident

Time on Site: 0950

Time off Site: 0930

Weather Conditions: 28°F, Cloudy

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	✓				✓
	Cap	✓				✓
	Gas Vents	✓				✓
2.0	**Drainage Structures:**					
	Toe Drain	✓				✓
	Drainage Channels	✓				✓
	French Drains/Outfalls	✓				✓
	Subsurface Drainage Pipes/Outfalls	✓				✓
	Manholes	✓				✓
	Recharge Areas	✓				✓
	Monitoring System:					
	Soil Gas Wells	✓				✓
	Groundwater Wells	✓				✓
4.0	**Site Access:**					
	Asphalt Access Road		✓			✓
	Crushed-Concrete Access Road	✓				✓

B. Description of Further Action Requirements:

1. Location: Ice on perimeter Roadway. Photos Taken
Observed Conditions:

Recommendations: None

BROOKHAVEN NATIONAL LABORATORY
CURRENT LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): James milligan

Date of Inspection: 2/17/22

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 1435

Time off Site: 1535

Weather Conditions: 55° Sunny

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	✓				X
	Cap	✓				X
	Gas Vents	✓				X
2.0	**Drainage Structures:**					
	Toe Drain	✓				✓
	Drainage Channels	✓				✓
	French Drains/Outfalls	✓				✓
	Subsurface Drainage Pipes/Outfalls	✓				✓
	Manholes	✓				✓
	Recharge Areas	✓				✓
	Monitoring System:					
	Soil Gas Wells	✓				X
	Groundwater Wells	✓				✓
4.0	**Site Access:**					
	Asphalt Access Road		✓			X
	Crushed-Concrete Access Road					X

B. Description of Further Action Requirements:

1. Location: Ice and Snow on CLF Roadway. Photos Taken
Observed Conditions:

Recommendations: None.

BROOKHAVEN NATIONAL LABORATORY
CURRENT LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): James Milligan

Date of Inspection: 3/16/2022

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 1000

Time off Site: 1025

Weather Conditions: 50° Sunny and Clear

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	V				X
	Cap	V				X
	Gas Vents	V				X
2.0	**Drainage Structures:**					
	Toe Drain	V				X
	Drainage Channels	V				X
	French Drains/Outfalls	V				X
	Subsurface Drainage Pipes/Outfalls	V				X
	Manholes	V				X
	Recharge Areas	V				X
	Monitoring System:					
	Soil Gas Wells	V				X
	Groundwater Wells	V				X
4.0	**Site Access:**					
	Asphalt Access Road		V			X
	Crushed-Concrete Access Road		V			X

B. Description of Further Action Requirements:

1. Location: PHoto Taken. Saved in GPG Drive.
Observed Conditions:

Recommendations: None.

BROOKHAVEN NATIONAL LABORATORY
CURRENT LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): James Milligan

Date of Inspection: 4/12/2011

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 1400

Time off Site: 1430

Weather Conditions: 50° Sunny and Clear

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				X
	Drainage Channels	X				X
	French Drains/Outfalls	X				X
	Subsurface Drainage Pipes/Outfalls	X				X
	Manholes	X				X
	Recharge Areas	X				X
	Monitoring System:					
	Soil Gas Wells	X				X
	Groundwater Wells	X				X
4.0	**Site Access:**					
	Asphalt Access Road		X			X
	Crushed-Concrete Access Road		X			X

B. Description of Further Action Requirements:

1. Location: ___

Observed Conditions: Photos Taken. Sand in GPR Drive

Recommendations: NONE.

BROOKHAVEN NATIONAL LABORATORY
CURRENT LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): James Millig-A

Date of Inspection: 5/26/22

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 1100

Time off Site: 1150

Weather Conditions: 65 clear

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				X
	Drainage Channels	X				X
	French Drains/Outfalls	X				X
	Subsurface Drainage Pipes/Outfalls	X				X
	Manholes	X				X
	Recharge Areas	X				X
	Monitoring System:					
	Soil Gas Wells	X				X
	Groundwater Wells	X				X
4.0	**Site Access:**					
	Asphalt Access Road		X			X
	Crushed-Concrete Access Road		X			X

B. Description of Further Action Requirements:

1. Location: Ash pile.

Observed Conditions:

Recommendations: None.

BROOKHAVEN NATIONAL LABORATORY
CURRENT LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): James Milligan

Date of Inspection: 6/24/22

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 1415

Time off Site: 1452

Weather Conditions: 68° Clear

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				X
	Drainage Channels	X				X
	French Drains/Outfalls					
	Subsurface Drainage Pipes/Outfalls	X				X
	Manholes	X				X
	Recharge Areas	X				X
	Monitoring System:					
	Soil Gas Wells	X				X
	Groundwater Wells	X				X
4.0	**Site Access:**					
	Asphalt Access Road					
	Crushed-Concrete Access Road		X			X

B. Description of Further Action Requirements:

1. Location: All OK JM

Observed Conditions:

Photos Taken

Recommendations:

BROOKHAVEN NATIONAL LABORATORY
LTRA SITE INSPECTION FORM

Location (AOC): Current Landfill and Wooded Wetland
Date of Inspection: 7/6/22
Name of Inspector(s): R. Howe, J. Milligan, L. Singh
Purpose of Inspection: ☒ Routine (Scheduled Frequency of 2x/yr) ☐ Heavy Rainfall ☐ Reported Incident

A. Inspection Checklist

Component	Observed Condition				Further Action Req'd	
	Excell.	Fair	Poor	Not Applic.	Yes (describe)	No
1. Landfill Cap/Soil Covers/Wetlands:						
Vegetation (e.g. grass)	X				Grass cut in June	X
Soil (Cap/Cover/Fill)		X			One active burrows	
Other: _____						
2. Drainage Structures:						
Standing Water	X				None	X
Toe Drain	X					X
Drainage Channels		X			Some veg. in channels	
French Drains/Outfalls				X		X
Subsurface Drainage Pipes/Outfalls		X			Basin outfall not visible	X
Manholes				X		X
Berms				X		X
Roof Drains				X		X
Recharge Areas	X				Significant pine growth	X
Other: _____						
3. Monitoring System:						
Soil Gas Wells	X				Some need veg cleared	
Groundwater Wells	X				Locked	X
Gas Vents	X				Good condition	X
Other: __						
4. Site Access:						
Asphalt Access Road	X				Grass/veg in west road	
Crushed-concrete Access Road				X		X
Fence	X					X
Gates/locks	X				All gates locked	X
LUIC Signs	X				3 signs in place, 2 faded	
Other: Stairs access to cap	X					X

5. Evidence of unauthorized work activities and/or unauthorized access has occurred? ☐ Yes ☒ No
If yes, describe evidence: _ _____

B. Description of Other Observations

Observed Conditions/Recommendations: The grass on the cap was cut in June. One active animal burrow was identified on south-east slope. Grounds were contacted to fill-in the burrows and seed. All three point of contact signs are in place and gates locked. Two of the signs are faded and will be replaced. The Wooded Wetland has some water present. The vegetation on the west asphalt road needs removal. LUIC Factsheet Changes: Minor wording changes under Administrative Controls. Wooded Wetland: No comments.

BROOKHAVEN NATIONAL LABORATORY
CURRENT LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): Dave Miley

Date of Inspection: 7/22/202

Purpose of Inspection: Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 915

Time off Site: 1020

Weather Conditions: 95° Sunny Clear

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				X
	Drainage Channels	X				X
	French Drains/Outfalls					
	Subsurface Drainage Pipes/Outfalls					
	Manholes	X				X
	Recharge Areas	X				X
	Monitoring System:					
	Soil Gas Wells	X				X
	Groundwater Wells	X				X
4.0	**Site Access:**					
	Asphalt Access Road					
	Crushed-Concrete Access Road		X			X

B. Description of Further Action Requirements:

1. Location: One groundhog den noted on southeast slope of Observed Conditions: Landfill. Burrow filled back with sand.

Photos Taken.

Recommendations:

BROOKHAVEN NATIONAL LABORATORY
CURRENT LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): James Milligan

Date of Inspection: 8/25/2022

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 1000

Time off Site: 1046

Weather Conditions: 90° Sunny Clear

A. Inspection Checklist

	Component	Observed Condition: Excellent	Fair	Poor	Further Action Required: Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				X
	Drainage Channels	X				X
	French Drains/Outfalls	X				X
	Subsurface Drainage Pipes/Outfalls	X				X
	Manholes	X				X
	Recharge Areas	X				X
	Monitoring System:					
	Soil Gas Wells	X				X
	Groundwater Wells	X				X
4.0	**Site Access:**					
	Asphalt Access Road		X			X
	Crushed-Concrete Access Road		X			X

B. Description of Further Action Requirements:

1. Location: One groundhog den noted on Southeast slope of Landfill.

Observed Conditions: Backfilled with Sand.

Photos Taken.

Recommendations:

BROOKHAVEN NATIONAL LABORATORY
CURRENT LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): James Milligan

Date of Inspection: 9/30/2025

Purpose of Inspection: Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 1500

Time off Site: 1545

Weather Conditions: Cloudy 70°

A. Inspection Checklist

Component		Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	✓				✓
	Cap	✓				✓
	Gas Vents	✓				✓
2.0	**Drainage Structures:**					
	Toe Drain	✓				✓
	Drainage Channels	✓				✓
	French Drains/Outfalls	✓				✓
	Subsurface Drainage Pipes/Outfalls	✓				✓
	Manholes	✓				✓
	Recharge Areas	✓				✓
3.0	**Monitoring System:**					
	Soil Gas Wells	✓				✓
	Groundwater Wells	✓				✓
4.0	**Site Access:**					
	Asphalt Access Road		✓			✓
	Crushed-Concrete Access Road		✓			

B. Description of Further Action Requirements:

1. Location: Groundhog den not active at time of inspection.

Observed Conditions: Photos taken.

Recommendations:

BROOKHAVEN NATIONAL LABORATORY
LTRA SITE INSPECTION FORM

Location (AOC): Current Landfill and Wooded Wetland
Date of Inspection: 10/18/22
Name of Inspector(s): R. Howe, J. Milligan, L. Singh, V. Bickmeyer, K. Green
Purpose of Inspection: ☒ Routine (Scheduled Frequency of 2x/yr) ☐ Heavy Rainfall ☐ Reported Incident

A. Inspection Checklist

Component	Observed Condition				Further Action Req'd	
	Excell.	Fair	Poor	Not Applic.	Yes (describe)	No
1. Landfill Cap/Soil Covers/Wetlands:						
Vegetation (e.g. grass)	X				Grass cut in October	X
Soil (Cap/Cover/Fill)		X			One active burrow	
Other: _____						
2. Drainage Structures:						
Standing Water	X				None	X
Toe Drain	X					X
Drainage Channels		X				X
French Drains/Outfalls				X		X
Subsurface Drainage Pipes/Outfalls		X			Basin outfall not visible	X
Manholes				X		X
Berms				X		X
Roof Drains				X		X
Recharge Areas	X				Significant growth	X
Other: _____						
3. Monitoring System:						
Soil Gas Wells	X				Recently cleared	
Groundwater Wells	X				Locked	X
Gas Vents	X				Good condition	X
Other: __						
4. Site Access:						
Asphalt Access Road	X				Some grass in cracks	X
Crushed-concrete Access Road				X		X
Fence	X					X
Gates/locks	X				All gates locked	X
LUIC Signs	X				3 signs in place, 1 faded	
Other: Stairs access to cap	X					X

5. Evidence of unauthorized work activities and/or unauthorized access has occurred? ☐ Yes ☒ No
If yes, describe evidence: _ _____

B. Description of Other Observations

Observed Conditions/Recommendations: The grass on the cap was cut in early October. One active and one inactive animal burrow were identified on south slope that need to be filled-in. All three point of contact signs are in place and gates locked. The main gate faded sign was replaced early October. The other faded unreadable sign on southwest gate was removed and will be replaced. The Wooded Wetland was dry. LUIC Factsheet Changes: None. Wooded Wetland: No comments.

BROOKHAVEN NATIONAL LABORATORY
CURRENT LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): Jim Milligan, Bob Howe, V. Bellmeyer, L. Sing, R. Glenn

Date of Inspection: 10/18/22

Purpose of Inspection: ✓ Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 1330

Time off Site: 1500

Weather Conditions: Sunny warm clear

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	✓				✓
	Cap		✓			✓
	Gas Vents	✓				✓
2.0	**Drainage Structures:**					
	Toe Drain	✓				✓
	Drainage Channels		✓			✓
	French Drains/Outfalls		✓			✓
	Subsurface Drainage Pipes/Outfalls		✓			✓
	Manholes	N/A		✓		✓
	Recharge Areas	✓				✓
3.0	**Monitoring System:**					
	Soil Gas Wells	✓				✓
	Groundwater Wells	✓				✓
4.0	**Site Access:**					
	Asphalt Access Road	✓				✓
	Crushed-Concrete Access Road	N/A				

B. Description of Further Action Requirements:

1. Location: CLF.

Observed Conditions: Grass cut early October. One Active Burrow noted. One faded LUC Sign Identified.

Recommendations: Fill in Burrow and Replace LUC Sign.

LUC Sign Replaced 10/20/2022.

Burrow filled in 10/20/22 Photo Taken.


AREA UNDER LAND USE AND
INSTITUTIONAL CONTROLS
-RESTRICTED USE-
PRIOR TO ANY WORK ACTIVITIES
PLEASE CONTACT:
Environmental Protection Division
Long Term Stewardship
X-2828
7/22/2022

BROOKHAVEN NATIONAL LABORATORY
CURRENT LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): James Milligan

Date of Inspection: 11/28/22

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 1420

Time off Site: 1520

Weather Conditions: Clear Sunny

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				X
	Drainage Channels	X				X
	French Drains/Outfalls	X				X
	Subsurface Drainage Pipes/Outfalls	X				X
	Manholes	NA				X
	Recharge Areas		X			X
3.0	**Monitoring System:**					
	Soil Gas Wells	X				X
	Groundwater Wells	X				X
4.0	**Site Access:**					
	Asphalt Access Road	X				X
	Crushed-Concrete Access Road	NA				

B. Description of Further Action Requirements:

1. Location: CLP.

Observed Conditions: Grass in good Conditions. Berm still OK. No Activity noted Photos Taken.

Recommendations: NA.

BROOKHAVEN NATIONAL LABORATORY
CURRENT LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): Jim Milligan

Date of Inspection: 12/22/2022
Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident
Time on Site: 0850
Time off Site: 0950
Weather Conditions: Overcast, cold 20°F.

A. Inspection Checklist

Component		Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				X
	Drainage Channels	X				X
	French Drains/Outfalls	X				X
	Subsurface Drainage Pipes/Outfalls	N/A				X
	Manholes					X
	Recharge Areas		X			X
3.0	**Monitoring System:**					
	Soil Gas Wells	X				X
	Groundwater Wells	X				X
4.0	**Site Access:**					
	Asphalt Access Road	X				X
	Crushed-Concrete Access Road	N/A				

B. Description of Further Action Requirements:

1. Location: CLF.
Observed Conditions: Grass on Cap OK. Some noted ICE on Access Road. No Active Burrows noted.
Photos Taken

Recommendations: N/A

BROOKHAVEN NATIONAL LABORATORY
FORMER LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): James Milligan

Date of Inspection: 1/28/2022

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 0900

Time off Site: 0935

Weather Conditions: 28°F Cloudy

A. Inspection Checklist

Component		Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				X
	Drainage Channels	X				X
	French Drains/Outfalls	X				X
	Subsurface Drainage Pipes/Outfalls	X				X
	Manholes	X				X
	Recharge Areas		X			X
3.0	**Monitoring System:**					
	Soil Gas Wells	X				X
	Groundwater Wells	X				X
4.0	**Site Access:**					
	Asphalt Access Road	X				X
	Crushed-Concrete Access Road	X				X

B. Description of Further Action Requirements:

1. Location: ___

Observed Conditions: Pictures Taken

Recommendations: ___

BROOKHAVEN NATIONAL LABORATORY
FORMER LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): James Mulligan

Date of Inspection: 2/11/2022

Purpose of Inspection: ___ Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 1530

Time off Site: 1600

Weather Conditions: 55° Sunny

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	✓				✓
	Cap	✓				✓
	Gas Vents	✓				✓
2.0	**Drainage Structures:**					
	Toe Drain	✓				✓
	Drainage Channels	✓				✓
	French Drains/Outfalls	✓				✓
	Subsurface Drainage Pipes/Outfalls	✓				✓
	Manholes	✓				✓
	Recharge Areas		✓			✓
3.0	**Monitoring System:**					
	Soil Gas Wells	✓				✓
	Groundwater Wells	✓				✓
4.0	**Site Access:**					
	Asphalt Access Road	✓				✓
	Crushed-Concrete Access Road	✓				

B. Description of Further Action Requirements:

1. Location: FLF Interim Landfill RVC Sign damaged. Due to Refurb.

Observed Conditions:

Recommendations: New Sign @ FLF.

BROOKHAVEN NATIONAL LABORATORY
FORMER LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): James Milligan

Date of Inspection: 3/16/2022

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 1035

Time off Site: 1102

Weather Conditions: 50° Sunny Clear

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	✓				✓
	Cap	✓				✓
	Gas Vents	✓				✓
2.0	**Drainage Structures:**					
	Toe Drain	✓				✓
	Drainage Channels	✓				✓
	French Drains/Outfalls	✓				✓
	Subsurface Drainage Pipes/Outfalls	✓				✓
	Manholes	✓				✓
	Recharge Areas		✓			✓
3.0	**Monitoring System:**					
	Soil Gas Wells	✓				✓
	Groundwater Wells	✓				✓
4.0	**Site Access:**					
	Asphalt Access Road	✓				✓
	Crushed-Concrete Access Road	✓				✓

B. Description of Further Action Requirements:

1. Location: LUIC Sign replaced with new one. Photos taken. Saved
Observed Conditions: In GPR Drive

Recommendations:

BROOKHAVEN NATIONAL LABORATORY
FORMER LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): James Milligan

Date of Inspection: 4/27/2022

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 1440

Time off Site: 1455

Weather Conditions: 50° Sunny Clear

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				X
	Drainage Channels	X				X
	French Drains/Outfalls	X				X
	Subsurface Drainage Pipes/Outfalls	X				X
	Manholes	X				X
	Recharge Areas		X			X
3.0	**Monitoring System:**					
	Soil Gas Wells	X				X
	Groundwater Wells	X				X
4.0	**Site Access:**					
	Asphalt Access Road	X				X
	Crushed-Concrete Access Road	X				X

B. Description of Further Action Requirements:

1. Location: _____

Observed Conditions: Photo Survey.

Recommendations: _____

BROOKHAVEN NATIONAL LABORATORY
FORMER LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): James Milligan

Date of Inspection: 5/26/22

Purpose of Inspection: Y Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 1000

Time off Site: 1045

Weather Conditions: Cl 60°

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	Y				N
	Cap	Y				Y
	Gas Vents	Y				Y
2.0	**Drainage Structures:**					
	Toe Drain	Y				Y
	Drainage Channels	Y				Y
	French Drains/Outfalls	Y				Y
	Subsurface Drainage Pipes/Outfalls	Y				Y
	Manholes	Y				Y
	Recharge Areas		Y			Y
3.0	**Monitoring System:**					
	Soil Gas Wells	Y				Y
	Groundwater Wells	Y				Y
4.0	**Site Access:**					
	Asphalt Access Road	Y				Y
	Crushed-Concrete Access Road	Y				Y

B. Description of Further Action Requirements:

1. Location: ___

Observed Conditions: All OK.

Recommendations: ___

BROOKHAVEN NATIONAL LABORATORY
FORMER LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): James Mitchell

Date of Inspection: 6/24/22

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 1300

Time off Site: 1400

Weather Conditions: Clear Sunny

A. Inspection Checklist

Component		Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				X
	Drainage Channels	X				X
	French Drains/Outfalls	X				X
	Subsurface Drainage Pipes/Outfalls	X				X
	Manholes	X				X
	Recharge Areas		X			X
3.0	**Monitoring System:**					
	Soil Gas Wells	X				X
	Groundwater Wells	X				X
4.0	**Site Access:**					
	Asphalt Access Road	X				X
	Crushed-Concrete Access Road	X				X

B. Description of Further Action Requirements:

1. Location: _____

Observed Conditions: All OK

Recommendations: _____

BROOKHAVEN NATIONAL LABORATORY
SITE INSPECTION FORM

Location (AOC): Former Landfill Area (includes the former and interim landfills and slit trench)
Date of Inspection: 7/6/22
Name of Inspector(s): R. Howe, J. Milligan, L. Singh, V. Bickmeyer
Purpose of Inspection: ☒ Routine (Scheduled Frequency of 2x/yr) ☐ Heavy Rainfall ☐ Reported Incident

A. Inspection Checklist

Component	Observed Condition				Further Action Req'd	
	Excell.	Fair	Poor	Not Applic.	Yes (describe)	No
1. Landfill Cap/Soil Covers/Wetlands:						
Vegetation (e.g. grass)	X				Grass cut in June	X
Soil (Cap/Cover/Fill)	X				No erosion	X
Other: _____						
2. Drainage Structures:						
Standing Water	X				None	X
Toe Drain	X					X
Drainage Channels		X				X
French Drains/Outfalls	X					X
Subsurface Drainage Pipes/Outfalls	X					X
Manholes				X		X
Berms				X		X
Roof Drains				X		X
Recharge Areas	X					X
Other: _____						
3. Monitoring System:						
Soil Gas Wells		X				X
Groundwater Wells	X					X
Gas Vents	X					X
Other: _____	X					X
4. Site Access:						
Asphalt Access Road		X				X
Crushed-concrete Access Road		X				X
Fence				X		X
Gates/locks				X		X
Radiological Postings				X		X
Other: LUIC Signs		X			All signs in place	X

5. Evidence of unauthorized work activities and/or unauthorized access has occurred? ☐ Yes ☒ No
If yes, describe evidence: _____
_____

B. Description of Other Observations

Observed Conditions/Recommendations: Former Landfill, Interim Landfill, and Slit Trench caps are in good condition with no erosion evident. The grass was cut in June. No woodchuck burrows were observed. Factsheet Changes: Under Remedial Actions, reference discontinuation of Former Landfill groundwater monitoring in 2021.

BROOKHAVEN NATIONAL LABORATORY
FORMER LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): James Mirigan

Date of Inspection: 7/22/2022

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 0820

Time off Site: 0900

Weather Conditions: 90° Sunny

A. Inspection Checklist

Component		Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				X
	Drainage Channels	X				X
	French Drains/Outfalls	X				X
	Subsurface Drainage Pipes/Outfalls	X				X
	Manholes	X				X
	Recharge Areas	X				X
3.0	**Monitoring System:**					
	Soil Gas Wells	X				X
	Groundwater Wells	X				X
4.0	**Site Access:**					
	Asphalt Access Road	X				X
	Crushed-Concrete Access Road	X				X

B. Description of Further Action Requirements:

1. Location: All OK. (DN)

Observed Conditions: Photo Taken

Recommendations:

BROOKHAVEN NATIONAL LABORATORY
FORMER LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): James Milligan

Date of Inspection: 8/25/2022

Purpose of Inspection: ✓ Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 0900

Time off Site: 1130

Weather Conditions: 90° Sunny

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	✓				✓
	Cap	✓				✓
	Gas Vents	✓				✓
2.0	**Drainage Structures:**					
	Toe Drain	✓				✓
	Drainage Channels	✓				✓
	French Drains/Outfalls	✓				✓
	Subsurface Drainage Pipes/Outfalls	✓				✓
	Manholes	✓				✓
	Recharge Areas	✓				✓
3.0	**Monitoring System:**					
	Soil Gas Wells	✓				✓
	Groundwater Wells	✓				✓
4.0	**Site Access:**					
	Asphalt Access Road	✓				✓
	Crushed-Concrete Access Road	✓				✓

B. Description of Further Action Requirements:

1. Location: All over

Observed Conditions: Photo taken

Recommendations:

BROOKHAVEN NATIONAL LABORATORY
FORMER LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): James Mingo

Date of Inspection: 9/30/22

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 1359

Time off Site: 1430

Weather Conditions: 70° Cloudy

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				X
	Drainage Channels	X				X
	French Drains/Outfalls	X				X
	Subsurface Drainage Pipes/Outfalls	X				X
	Manholes	X				X
	Recharge Areas	X				X
3.0	**Monitoring System:**					
	Soil Gas Wells	X				X
	Groundwater Wells	X				X
4.0	**Site Access:**					
	Asphalt Access Road	X				X
	Crushed-Concrete Access Road	X				X

B. Description of Further Action Requirements:

1. Location: _____

Observed Conditions: Photos Taken

Recommendations: N/A

BROOKHAVEN NATIONAL LABORATORY
FORMER LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): James Milligan, R. Howe, V. Racaniello, V. Bikmacher.

Date of Inspection: ~~10/28/22~~ 10/27/22

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 0930

Time off Site: 1030

Weather Conditions: Clear, Sunny 50°

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	✓				✓
	Cap	✓				✓
	Gas Vents	✓				✓
2.0	**Drainage Structures:**					
	Toe Drain	✓				✓
	Drainage Channels	✓	→			✓
	French Drains/Outfalls	✓				✓
	Subsurface Drainage Pipes/Outfalls	✓				✓
	Manholes	✓				✓
	Recharge Areas	✓				✓
3.0	**Monitoring System:**	~~✓~~				
	Soil Gas Wells	✓				✓
	Groundwater Wells	✓				✓
4.0	**Site Access:**					
	Asphalt Access Road		✓			✓
	Crushed-Concrete Access Road		✓			✓

B. Description of Further Action Requirements:

1. Location: FLF.

Observed Conditions: Grass cut in early October. No Burrows Present. Photos Taken

Recommendations: Pot hole to be filled in.

BROOKHAVEN NATIONAL LABORATORY
SITE INSPECTION FORM

Location (AOC): Former Landfill Area (includes the former and interim landfills and slit trench)
Date of Inspection: 10/27/22
Name of Inspector(s): R. Howe, J. Milligan, V. Racaniello, V. Bickmeyer
Purpose of Inspection: ☒ Routine (Scheduled Frequency of 2x/yr) ☐ Heavy Rainfall ☐ Reported Incident

A. Inspection Checklist

Component	Observed Condition				Further Action Req'd	
	Excell.	Fair	Poor	Not Applic.	Yes (describe)	No
1. Landfill Cap/Soil Covers/Wetlands:						
Vegetation (e.g. grass)	X				Grass cut in October	X
Soil (Cap/Cover/Fill)	X				No erosion visible	X
Other: _____						
2. Drainage Structures:						
Standing Water	X					X
Toe Drain	X					X
Drainage Channels		X				X
French Drains/Outfalls	X					X
Subsurface Drainage Pipes/Outfalls	X					X
Manholes				X		X
Berms				X		X
Roof Drains				X		X
Recharge Areas	X				Not inspected overgrown	X
Other: _____						
3. Monitoring System:						
Soil Gas Wells	X					X
Groundwater Wells	X					X
Gas Vents	X					X
Other: _____	X					X
4. Site Access:						
Asphalt Access Road		X			One pothole	X
Crushed-concrete Access Road		X				X
Fence				X		X
Gates/locks				X		X
Radiological Postings				X		X
Other: LUIC Signs	X				All signs in place	X

5. Evidence of unauthorized work activities and/or unauthorized access has occurred? ☐ Yes ☒ No
If yes, describe evidence: _____
_____

B. Description of Other Observations

Observed Conditions/Recommendations: Former Landfill, Interim Landfill, and Slit Trench caps are in good condition with no erosion evident. The grass was cut in early October. One area on the former landfill top was spongy due to recent rain. No woodchuck burrows were observed. Some small pines in the drainage channel need to be cut/removed. Asphalt pothole near main entrance needs to be filled-in. Factsheet Changes: One minor change noted.

BROOKHAVEN NATIONAL LABORATORY
FORMER LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): James Milligan

Date of Inspection: 11/28/22

Purpose of Inspection: X Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 1300

Time off Site: 1415

Weather Conditions: Clear Sunny.

A. Inspection Checklist

Component		Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	X				X
	Cap	X				X
	Gas Vents	X				X
2.0	**Drainage Structures:**					
	Toe Drain	X				X
	Drainage Channels	X	X			X
	French Drains/Outfalls	X				X
	Subsurface Drainage Pipes/Outfalls	X				X
	Manholes	X				X
	Recharge Areas	X				X
3.0	**Monitoring System:**					
	Soil Gas Wells	X				X
	Groundwater Wells	X				X
4.0	**Site Access:**					
	Asphalt Access Road		X			X
	Crushed-Concrete Access Road		X			

B. Description of Further Action Requirements:

1. Location: FLP

Observed Conditions: Cap grass in good condition. No Burrows present. Photos Taken.

Recommendations: N/A.

BROOKHAVEN NATIONAL LABORATORY
FORMER LANDFILL AREA
SITE INSPECTION FORM

Name of Inspector(s): James Milligan

Date of Inspection: 12/22

Purpose of Inspection: ✓ Routine ___ Heavy Rainfall ___ Reported Incident

Time on Site: 0805

Time off Site: 0850

Weather Conditions: overcast Cold 30°F

A. Inspection Checklist

	Component	Observed Condition			Further Action Required	
		Excellent	Fair	Poor	Yes	No
1.0	**Landfill Cap:**					
	Vegetation	✓				✓
	Cap	✓				✓
	Gas Vents	✓				✓
2.0	**Drainage Structures:**					
	Toe Drain	✓				✓
	Drainage Channels	✓				✓
	French Drains/Outfalls	✓				✓
	Subsurface Drainage Pipes/Outfalls	✓				✓
	Manholes	✓				✓
	Recharge Areas	✓				✓
3.0	**Monitoring System:**					
	Soil Gas Wells	✓				✓
	Groundwater Wells	✓				✓
4.0	**Site Access:**					
	Asphalt Access Road		✓			✓
	Crushed-Concrete Access Road		✓			✓

B. Description of Further Action Requirements:

1. Location: FLF

Observed Conditions: Cap grass in good condition. No Burrows Present

Photos Taken.

Recommendations: NA.

Appendix C

Groundwater Sample Logs

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 43672-002 **Well ID :** 098-99 **Date :** 01/20/2022

Sampling Personnel : NS **Project :** SITEWD-CLF

Well Depth (ft) : 54.5 **Screen Interval (ft) :** 39.5 - 49.5

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.25000

WQ Inst# : 22 **DTW Meter Serial # :** 14342

Depth to Water from MP (ft) : 13.74 **Casing Stickup :** 2.11

Depth to Water from LS (ft) : 11.63 **One Casing Volume (liter) :** 112

Pump Start Time : 1337 **Pumping Rate (lpm) :** 0.5

Minimum Purge Volume (liter) : 1.99 **Maximum Purge Volume (liter) :** 28

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1341	2.00	270	2.66	6.23	9.3	
1343	3.00	265	2.67	6.23	9.0	
1345	4.00	266	2.65	6.23	9.1	

Final Water Temperature (C) : 11.60

Sample Collect Times : 1346

Notes :

Purge Water Disposition : Carbon treated

Comments :

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag			X	Needs ID
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : Nancy Stewart Date : 1/20/22

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 43672-003 **Well ID :** BD-1 (088-109) **Date :** 01/20/2022

Sampling Personnel : NS **Project :** SITEWD-CLF

Well Depth (ft) : 27 **Screen Interval (ft) :** 6 - 21

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.37500

WQ Inst# : 22 **DTW Meter Serial # :** 14342

Depth to Water from MP (ft) : 13.99 **Casing Stickup :** 1.75

Depth to Water from LS (ft) : 12.24 **One Casing Volume (liter) :** 38.6

Pump Start Time : 1421 **Pumping Rate (lpm) :** 0.5

Minimum Purge Volume (liter) : 1.69 **Maximum Purge Volume (liter) :** 9.65

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1425	2.00	294	0.43	6.17	11.9	
1427	3.00	295	0.43	6.17	11.6	
1429	4.00	296	0.40	6.17	10.6	

Final Water Temperature (C) : 13.00

Sample Collect Times : 1430

Notes :

Purge Water Disposition : Carbon treated.

Comments : MS/MSD: BD-1=43672-004, FB-1=43672-005 @ 1431

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : [signature] Date : 1/20/22

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 43992-001 **Well ID :** 087-09 **Date :** 05/10/2022

Sampling Personnel : My&ns **Project :** Sitewd-CLF

Well Depth (ft) : 34 **Screen Interval (ft) :** 24 - 34

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.25000

WQ Inst# : 24 **DTW Meter Serial # :** 10855

Depth to Water from MP (ft) : 27.97 **Casing Stickup :** 1

Depth to Water from LS (ft) : 26.97 **One Casing Volume (liter) :** 18.36

Pump Start Time : 1017 **Pumping Rate (lpm) :** .5

Minimum Purge Volume (liter) : 1.68 **Maximum Purge Volume (liter) :** 4.59

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1021	2.00	208	6.17	5.42	5.1	
1023	3.00	209	6.21	5.42	5.0	
1025	4.00	208	6.20	5.42	7.4	

Final Water Temperature (C) : 12.90

Sample Collect Times : 1026

Notes :

Purge Water Disposition : On ground 20'away

Comments :

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : Nancy Brunet Date : 5/10/22

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 43992-002 **Well ID :** 088-109 **Date :** 05/10/2022

Sampling Personnel : My&ns **Project :** Sitewd-CLF

Well Depth (ft) : 27 **Screen Interval (ft) :** 6 - 21

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.37500

WQ Inst# : 24 **DTW Meter Serial # :** 10855

Depth to Water from MP (ft) : 12.75 **Casing Stickup :** 1.75

Depth to Water from LS (ft) : 11.00 **One Casing Volume (liter) :** 41.84

Pump Start Time : 1048 **Pumping Rate (lpm) :** 1

Minimum Purge Volume (liter) : 1.69 **Maximum Purge Volume (liter) :** 10.46

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1050	2.00	127	1.88	5.14	13.2	
1052	4.00	126	1.73	5.13	12.8	
1054	6.00	126	1.80	5.13	10.4	

Final Water Temperature (C) : 11.30

Sample Collect Times : 1055

Notes :

Purge Water Disposition : Carbon treat 7L

Comments : fb-1 43992-004@1100/ms/msd, bd-1 43992-003

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : Nancy Sheehan Date : 5/10/22

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 43992-005 **Well ID :** 088-110 **Date :** 05/10/2022

Sampling Personnel : My&ns **Project :** Sitewd-CLF

Well Depth (ft) : 30 **Screen Interval (ft) :** 10 - 25

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.37500

WQ Inst# : 24 **DTW Meter Serial # :** 10855

Depth to Water from MP (ft) : 14.90 **Casing Stickup :** 2.04

Depth to Water from LS (ft) : 12.86 **One Casing Volume (liter) :** 44.76

Pump Start Time : 1138 **Pumping Rate (lpm) :** 1

Minimum Purge Volume (liter) : 1.87 **Maximum Purge Volume (liter) :** 11.19

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1140	2.00	519	1.37	6.12	24.0	
1142	4.00	517	1.32	6.09	18.6	
1144	6.00	518	1.23	6.08	18.0	

Final Water Temperature (C) : 11.50

Sample Collect Times : 1145

Notes :

Purge Water Disposition : Carbon treat 7L/naoh bottle water turned green

Comments :

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : [signature] Date : 5/10/22

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 43992-006 **Well ID :** 087-26 **Date :** 05/10/2022

Sampling Personnel : My&ns **Project :** Sitewd-CLF

Well Depth (ft) : 85 **Screen Interval (ft) :** 70 - 80

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.50000

WQ Inst# : 24 **DTW Meter Serial # :** 10855

Depth to Water from MP (ft) : 14.53 **Casing Stickup :** 2.06

Depth to Water from LS (ft) : 12.47 **One Casing Volume (liter) :** 189.44

Pump Start Time : 1340 **Pumping Rate (lpm) :** 1

Minimum Purge Volume (liter) : 6.96 **Maximum Purge Volume (liter) :** 47.36

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1347	7.00	315	8.03	6.56	4.0	
1349	9.00	307	7.71	6.50	3.7	
1351	11.00	309	7.66	6.49	3.3	

Final Water Temperature (C) : 12.20

Sample Collect Times : 1352

Notes :

Purge Water Disposition : On ground 20'away

Comments :

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : Mary Nivas Date : 5/10/22

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 43992-007 **Well ID :** 087-27 **Date :** 05/10/2022

Sampling Personnel : My&ns **Project :** Sitewd-CLF

Well Depth (ft) : 25 **Screen Interval (ft) :** 5 - 20

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.50000

WQ Inst# : 24 **DTW Meter Serial # :** 10855

Depth to Water from MP (ft) : 14.66 **Casing Stickup :** 2.05

Depth to Water from LS (ft) : 12.61 **One Casing Volume (liter) :** 32.36

Pump Start Time : 1327 **Pumping Rate (lpm) :** 1

Minimum Purge Volume (liter) : 2.09 **Maximum Purge Volume (liter) :** 8.09

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1330	3.00	328	3.67	6.05	16.5	
1332	5.00	329	3.59	6.05	16.3	
1334	7.00	331	3.56	6.05	15.5	

Final Water Temperature (C) : 10.70

Sample Collect Times : 1335

Notes :

Purge Water Disposition : Carbon treat 8L/ naoh bottle water turned green

Comments :

	Good	Poor	Replace	Comments
Paint Condition		X	X	Cap - holes rotted out
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : [signature] Date : 5/10/22

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 43994-001 **Well ID :** 087-11 **Date :** 05/11/2022

Sampling Personnel : My&ns **Project :** Sitewd-CLF

Well Depth (ft) : 21 **Screen Interval (ft) :** 11 - 21

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.37500

WQ Inst# : 24 **DTW Meter Serial # :** 1304

Depth to Water from MP (ft) : 15.67 **Casing Stickup :** 2

Depth to Water from LS (ft) : 13.67 **One Casing Volume (liter) :** 19.2

Pump Start Time : 1004 **Pumping Rate (lpm) :** 14

Minimum Purge Volume (liter) : 1.8 **Maximum Purge Volume (liter) :** 4.8

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1006	2.00	507	1.33	7.12	2.0	
1008	4.00	504	1.30	7.06	4.1	
1010	6.00	502	1.29	7.02	9.6	

Final Water Temperature (C) : 10.90

Sample Collect Times : 1011

Notes :

Purge Water Disposition : Carbon treat 7L/naoh bottle water turned green

Comments :

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : [signature] Date : 5/11/22

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 43994-002 **Well ID :** 087-23 **Date :** 05/11/2022

Sampling Personnel : My&ns **Project :** Sitewd-CLF

Well Depth (ft) : 45 **Screen Interval (ft) :** 25 - 40

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.50000

WQ Inst# : 24 **DTW Meter Serial # :** 1304

Depth to Water from MP (ft) : 35 **Casing Stickup :** 1.83

Depth to Water from LS (ft) : 33.17 **One Casing Volume (liter) :** 30.92

Pump Start Time : 1028 **Pumping Rate (lpm) :** 1

Minimum Purge Volume (liter) : 3.65 **Maximum Purge Volume (liter) :** 7.73

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1032	4.00	198	3.33	6.39	6.8	
1034	6.00	197	3.28	6.39	7.1	
1036	8.00	198	3.55	6.37	7.8	

Final Water Temperature (C) : 12.50

Sample Collect Times : 1037

Notes :

Purge Water Disposition : Carbon treat 8L

Comments : NaOH turned green

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : [signature] Date : 5/11/22

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 43994-003 **Well ID :** 087-24 **Date :** 05/11/2022

Sampling Personnel : My&ns **Project :** Sitewd-CLF

Well Depth (ft) : 85 **Screen Interval (ft) :** 70 - 80

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.50000

WQ Inst# : 24 **DTW Meter Serial # :** 1304

Depth to Water from MP (ft) : 33.91 **Casing Stickup :** 1.92

Depth to Water from LS (ft) : 31.99 **One Casing Volume (liter) :** 138.52

Pump Start Time : 1102 **Pumping Rate (lpm) :** 1

Minimum Purge Volume (liter) : 6.96 **Maximum Purge Volume (liter) :** 34.63

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1109	7.00	251	7.75	7.11	1.9	
1111	9.00	254	7.76	7.11	1.0	
1113	11.00	255	7.75	7.11	2.6	

Final Water Temperature (C) : 12.10

Sample Collect Times : 1114

Notes :

Purge Water Disposition : On ground 20'away

Comments :

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : [signature] Date : 5/11/22

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 43994-004 **Well ID :** 088-21 **Date :** 05/11/2022

Sampling Personnel : My&ns **Project :** Sitewd-CLF

Well Depth (ft) : 25 **Screen Interval (ft) :** 5 - 20

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.50000

WQ Inst# : 24 **DTW Meter Serial # :** 1304

Depth to Water from MP (ft) : 9.31 **Casing Stickup :** 2.04

Depth to Water from LS (ft) : 7.27 **One Casing Volume (liter) :** 46.36

Pump Start Time : 1140 **Pumping Rate (lpm) :** 1

Minimum Purge Volume (liter) : 2.09 **Maximum Purge Volume (liter) :** 11.59

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1143	3.00	481	4.98	6.45	1.4	
1145	5.00	483	5.04	6.45	1.2	
1147	7.00	481	4.86	6.45	4.6	

Final Water Temperature (C) : 10.70

Sample Collect Times : 1148

Notes :

Purge Water Disposition : On ground 20'away

Comments :

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : Hang Shen Date : 5/11/22

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 43994-005 **Well ID :** 098-99 **Date :** 05/11/2022

Sampling Personnel : My&ns **Project :** Sitewd-CLF

Well Depth (ft) : 54.5 **Screen Interval (ft) :** 39.5-49.5

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.25000

WQ Inst# : 24 **DTW Meter Serial # :** 1304

Depth to Water from MP (ft) : 13.79 **Casing Stickup :** 2.11

Depth to Water from LS (ft) : 11.68 **One Casing Volume (liter) :** 111.84

Pump Start Time : 1320 **Pumping Rate (lpm) :** .5

Minimum Purge Volume (liter) : 2.01 **Maximum Purge Volume (liter) :** 27.96

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1325	2.50	273	0.84	7.20	1.2	
1327	3.00	271	0.80	7.18	1.0	
1329	3.50	272	0.83	7.14	1.1	

Final Water Temperature (C) : 11.90

Sample Collect Times : 1330

Notes :

Purge Water Disposition : Carbon treat 3L

Comments :

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : _____ Date : 5/11/22

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 44305-002 **Well ID :** 098-99 **Date :** 09/19/2022

Sampling Personnel : NS **Project :** SITEWD-CLF

Well Depth (ft) : 54.5 **Screen Interval (ft) :** 39.5-49.5

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.25000

WQ Inst# : 22 **DTW Meter Serial # :** 1434

Depth to Water from MP (ft) : 14.36 **Casing Stickup :** 2.11

Depth to Water from LS (ft) : 12.25 **One Casing Volume (liter) :** 110.4

Pump Start Time : 1028 **Pumping Rate (lpm) :** 0.5

Minimum Purge Volume (liter) : 1.99 **Maximum Purge Volume (liter) :** 27.6

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1032	2.00	293	1.36	5.77	2.5	
1034	3.00	293	1.35	5.77	2.9	
1036	4.00	292	1.38	5.77	2.2	

Final Water Temperature (C) : 12.90

Sample Collect Times : 1037

Notes :

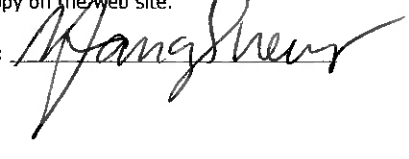
Purge Water Disposition : carbon treated

Comments :

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag			X	add new ID
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By :  Date : 9/19/22

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 44305-003 **Well ID :** BD-1 (088-109) **Date :** 09/19/2022

Sampling Personnel : NS **Project :** SITEWD-CLF

Well Depth (ft) : 27 **Screen Interval (ft) :** 6 - 21

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.37500

WQ Inst# : 22 **DTW Meter Serial # :** 1434

Depth to Water from MP (ft) : 14.65 **Casing Stickup :** 1.75

Depth to Water from LS (ft) : 12.90 **One Casing Volume (liter) :** 36.88

Pump Start Time : 1105 **Pumping Rate (lpm) :** 1

Minimum Purge Volume (liter) : 1.69 **Maximum Purge Volume (liter) :** 9.22

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1107	2.00	430	0.69	6.16	8.5	
1109	4.00	429	0.78	6.16	5.6	
1111	6.00	429	0.82	6.16	5.2	

Final Water Temperature (C) : 14.00

Sample Collect Times : 1112

Notes :

Purge Water Disposition : carbon treated

Comments : MS/MSD: BD-1 = 44305-004, FB-1 = 44305-005 @ 1115

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : [signature] Date : 9/19/22

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 44522-001 **Well ID :** 087-09 **Date :** 12/05/2022

Sampling Personnel : My&ns **Project :** Sitewd-CLF

Well Depth (ft) : 34 **Screen Interval (ft) :** 24 - 34

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.25000

WQ Inst# : 25 **DTW Meter Serial # :** 6783

Depth to Water from MP (ft) : 30.70 **Casing Stickup :** 1

Depth to Water from LS (ft) : 29.70 **One Casing Volume (liter) :** 11.28

Pump Start Time : 1142 **Pumping Rate (lpm) :** .5

Minimum Purge Volume (liter) : 1.68 **Maximum Purge Volume (liter) :** 2.82

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1146	2.00	233	9.07	5.67	1.2	
1148	3.00	231	9.01	5.66	2.0	
1150	4.00	227	8.92	5.64	1.3	

Final Water Temperature (C) : 13.70

Sample Collect Times : 1151

Notes :

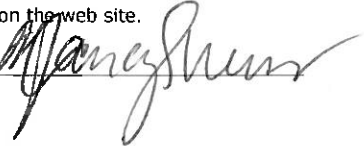
Purge Water Disposition :

Comments :

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By :  Date : 12/5/22

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 44522-002 **Well ID :** 088-109 **Date :** 12/05/2022

Sampling Personnel : My&ns **Project :** Sitewd-CLF

Well Depth (ft) : 27 **Screen Interval (ft) :** 6 - 21

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.37500

WQ Inst# : 25 **DTW Meter Serial # :** 6783

Depth to Water from MP (ft) : 15.57 **Casing Stickup :** 1.75

Depth to Water from LS (ft) : 13.82 **One Casing Volume (liter) :** 34.48

Pump Start Time : 0955 **Pumping Rate (lpm) :** .5

Minimum Purge Volume (liter) : 1.69 **Maximum Purge Volume (liter) :** 8.62

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
0959	2.00	467	0.65	6.29	5.4	
1001	3.00	469	0.61	6.27	4.2	
1003	4.00	471	0.59	6.23	2.7	

Final Water Temperature (C) : 13.20

Sample Collect Times : 1004

Notes :

Purge Water Disposition : Carbon treat 5L

Comments : Ms/msd fb-1 44522-004 @ 1000, bd-144522-003 cyanide sample turned Green

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings		X	X	New cap
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : Nancy Sheerr Date : 12/5/22

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 44522-005 **Well ID :** 088-110 **Date :** 12/05/2022

Sampling Personnel : My&ns **Project :** Sitewd-CLF

Well Depth (ft) : 35 **Screen Interval (ft) :** 10 - 25

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.37500

WQ Inst# : 25 **DTW Meter Serial # :** 6783

Depth to Water from MP (ft) : 17.71 **Casing Stickup :** 2.04

Depth to Water from LS (ft) : 15.67 **One Casing Volume (liter) :** 50.48

Pump Start Time : 1113 **Pumping Rate (lpm) :** .5

Minimum Purge Volume (liter) : 1.87 **Maximum Purge Volume (liter) :** 12.62

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1117	2.00	395	0.01	6.08	18.7	
1119	3.00	394	0.01	6.08	17.5	
1121	4.00	394	0.01	6.08	18.1	

Final Water Temperature (C) : 13.80

Sample Collect Times : 1122

Notes :

Purge Water Disposition : Carbon treat 4L

Comments : Cyanide sample turned green

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : [signature] Date : 12/5/22

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 44522-006 **Well ID :** 087-26 **Date :** 12/05/2022

Sampling Personnel : NS **Project :** SITEWD-CLF

Well Depth (ft) : 85 **Screen Interval (ft) :** 70 - 80

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.50000

WQ Inst# : 22 **DTW Meter Serial # :** 1434

Depth to Water from MP (ft) : 17.30 **Casing Stickup :** 2.06

Depth to Water from LS (ft) : 15.24 **One Casing Volume (liter) :** 182.2

Pump Start Time : 1118 **Pumping Rate (lpm) :** 1

Minimum Purge Volume (liter) : 6.96 **Maximum Purge Volume (liter) :** 45.55

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1125	7.00	252	5.44	6.56	3.5	
1127	9.00	252	5.43	6.56	3.3	
1129	11.00	252	5.43	6.56	3.3	

Final Water Temperature (C) : 12.20

Sample Collect Times : 1130

Notes :

Purge Water Disposition : on ground 20' down gradient

Comments :

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : Nancy Sierra Date : 12/5/22

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 44522-007 **Well ID :** 087-27 **Date :** 12/05/2022

Sampling Personnel : NS **Project :** SITEWD-CLF

Well Depth (ft) : 25 **Screen Interval (ft) :** 5 - 20

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.50000

WQ Inst# : 22 **DTW Meter Serial # :** 1434

Depth to Water from MP (ft) : 17.39 **Casing Stickup :** 2.05

Depth to Water from LS (ft) : 15.34 **One Casing Volume (liter) :** 25.28

Pump Start Time : 1151 **Pumping Rate (lpm) :** 1

Minimum Purge Volume (liter) : 2.09 **Maximum Purge Volume (liter) :** 6.32

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1154	3.00	445	0.56	6.01	16.3	
1156	5.00	445	0.58	6.01	17.4	
1158	7.00	444	0.59	6.01	14.7	

Final Water Temperature (C) : 12.50

Sample Collect Times : 1159

Notes :

Purge Water Disposition : Carbon Treated

Comments : NaOH bottle turned green

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : Nancy Sheens Date : 12/5/22

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 44522-008 **Well ID :** 087-11 **Date :** 12/05/2022

Sampling Personnel : NS **Project :** SITEWD-CLF

Well Depth (ft) : 23 **Screen Interval (ft) :** 11 - 21

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.37500

WQ Inst# : 22 **DTW Meter Serial # :** 1434

Depth to Water from MP (ft) : 18.34 **Casing Stickup :** 2

Depth to Water from LS (ft) : 16.34 **One Casing Volume (liter) :** 17.44

Pump Start Time : 1346 **Pumping Rate (lpm) :** 1

Minimum Purge Volume (liter) : 1.8 **Maximum Purge Volume (liter) :** 4.36

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1348	2.00	444	3.48	5.96	6.7	
1350	4.00	443	3.55	5.96	7.5	
1352	6.00	443	3.55	5.96	13.0	

Final Water Temperature (C) : 14.80

Sample Collect Times : 1353

Notes :

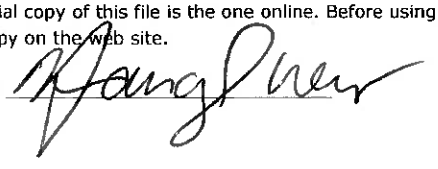
Purge Water Disposition : Carbon Treated

Comments : NaOH turned green. Water smelled bad when sampled.

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By :  Date : 12/5/22

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 44532-001 **Well ID :** 087-23 **Date :** 12/06/2022

Sampling Personnel : NS **Project :** SITEWD-CLF

Well Depth (ft) : 45 **Screen Interval (ft) :** 25 - 40

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.50000

WQ Inst# : 22 **DTW Meter Serial # :** 1434

Depth to Water from MP (ft) : 36.63 **Casing Stickup :** 1.83

Depth to Water from LS (ft) : 34.80 **One Casing Volume (liter) :** 26.64

Pump Start Time : 1039 **Pumping Rate (lpm) :** 1

Minimum Purge Volume (liter) : 3.65 **Maximum Purge Volume (liter) :** 6.66

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1043	4.00	207	0.35	5.74	35.2	
1045	6.00	206	0.38	5.74	33.9	
1047	8.00	205	0.39	5.74	33.8	

Final Water Temperature (C) : 13.00

Sample Collect Times : 1048

Notes :

Purge Water Disposition : Carbon Treated

Comments : NaOH bottle turned green

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : [signature] Date : 12/6/22

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 44532-002 **Well ID :** 087-24 **Date :** 12/06/2022

Sampling Personnel : NS **Project :** SITEWD-CLF

Well Depth (ft) : 85 **Screen Interval (ft) :** 70 - 80

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.50000

WQ Inst# : 22 **DTW Meter Serial # :** 1434

Depth to Water from MP (ft) : 36.66 **Casing Stickup :** 1.92

Depth to Water from LS (ft) : 34.74 **One Casing Volume (liter) :** 131.32

Pump Start Time : 1009 **Pumping Rate (lpm) :** 1

Minimum Purge Volume (liter) : 6.96 **Maximum Purge Volume (liter) :** 32.83

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1016	7.00	412	8.98	6.39	2.1	
1018	9.00	412	8.98	6.39	2.1	
1020	11.00	411	8.98	6.39	2.2	

Final Water Temperature (C) : 12.50

Sample Collect Times : 1022

Notes :

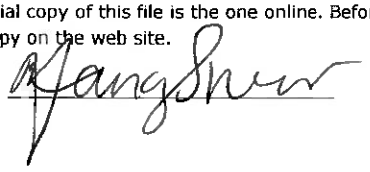
Purge Water Disposition : on ground 20' down gradient

Comments :

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By :  Date : 12/6/22

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 44532-003 **Well ID :** 088-21 **Date :** 12/06/2022

Sampling Personnel : JF **Project :** SITEWD-CLF

Well Depth (ft) : 25 **Screen Interval (ft) :** 5 - 20

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.50000

WQ Inst# : 21 **DTW Meter Serial # :** 6783

Depth to Water from MP (ft) : 12.35 **Casing Stickup :** 2.04

Depth to Water from LS (ft) : 10.31 **One Casing Volume (liter) :** 38.36

Pump Start Time : 0920 **Pumping Rate (lpm) :** 1

Minimum Purge Volume (liter) : 2.09 **Maximum Purge Volume (liter) :** 9.59

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
0923	3.00	497	8.47	5.81	11.5	
0925	5.00	500	8.52	5.80	5.1	
0927	7.00	502	8.53	5.78	3.1	

Final Water Temperature (C) : 13.00

Sample Collect Times : 0928

Notes :

Purge Water Disposition : on ground 20' down gradient

Comments :

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : James Date : 12/6/22

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 44532-004 **Well ID :** 088-22 **Date :** 12/06/2022

Sampling Personnel : JF **Project :** SITEWD-CLF

Well Depth (ft) : 85 **Screen Interval (ft) :** 70 - 80

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.50000

WQ Inst# : 21 **DTW Meter Serial # :** 6783

Depth to Water from MP (ft) : 12.45 **Casing Stickup :** 2.05

Depth to Water from LS (ft) : 10.40 **One Casing Volume (liter) :** 194.84

Pump Start Time : 0945 **Pumping Rate (lpm) :** 1

Minimum Purge Volume (liter) : 6.96 **Maximum Purge Volume (liter) :** 48.71

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
0952	7.00	216	7.45	6.30	1.2	
0954	9.00	217	7.43	6.30	1.3	
0956	11.00	217	7.42	6.30	1.1	

Final Water Temperature (C) : 12.10

Sample Collect Times : 0957

Notes :

Purge Water Disposition : on ground 20' down gradient

Comments :

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : James Fernandes Date : 12/6/22

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 44532-005 **Well ID :** 088-23 **Date :** 12/06/2022

Sampling Personnel : JF **Project :** SITEWD-CLF

Well Depth (ft) : 150 **Screen Interval (ft) :** 120 - 130

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.50000

WQ Inst# : 21 **DTW Meter Serial # :** 6783

Depth to Water from MP (ft) : 12.46 **Casing Stickup :** 2.21

Depth to Water from LS (ft) : 10.25 **One Casing Volume (liter) :** 365.08

Pump Start Time : 1045 **Pumping Rate (lpm) :** 1

Minimum Purge Volume (liter) : 10.85 **Maximum Purge Volume (liter) :** 91.27

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1057	12.00	145	7.87	6.71	1.4	
1059	14.00	146	7.85	6.70	1.5	
1101	16.00	146	7.81	6.70	1.3	

Final Water Temperature (C) : 12.20

Sample Collect Times : 1102

Notes :

Purge Water Disposition : on ground 20' down gradient

Comments :

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : J Ames Ge Date : 12/6/22

Attachment 1 - BNL Groundwater Sample Log

Sample ID : 44532-007 **Well ID :** 098-99 **Date :** 12/06/2022

Sampling Personnel : NS **Project :** SITEWD-CLF

Well Depth (ft) : 54.5 **Screen Interval (ft) :** 39.5-49.5

Sampling Device : ☑ Bladder Pump ☐ Submersible Pump ☐ Other :

Well Diameter (in) : 4.00 **Discharge Tubing Size :** 0.25000

WQ Inst# : 22 **DTW Meter Serial # :** 1434

Depth to Water from MP (ft) : 15.36 **Casing Stickup :** 2.11

Depth to Water from LS (ft) : 13.25 **One Casing Volume (liter) :** 107.8

Pump Start Time : 1134 **Pumping Rate (lpm) :** 0.5

Minimum Purge Volume (liter) : 1.99 **Maximum Purge Volume (liter) :** 26.95

Time	Volume Purged (l)	Cond (uS/Cm) +/- 3%	DO (mg/L) +/- 10%	pH (SU) +/- 0.1	Turb (b) (NTU) <50 NTU	Other (a) +/- ____
1138	2.00	281	0.11	6.09	1.9	
1140	3.00	281	0.10	6.09	2.3	
1142	4.00	281	0.10	6.09	2.0	

Final Water Temperature (C) : 12.30

Sample Collect Times : 1143

Notes :

Purge Water Disposition : Carbon Treated

Comments :

	Good	Poor	Replace	Comments
Paint Condition	X			
Pad	X			
Lock	X			
ID Tag	X			
Discharge Tube	X			
Fittings	X			
Sample Pump	X			
Purge Pump				

(a) For Redox Measurements, stabilization = +/- 10mv

(b) For low turbidity conditions, stabiliztion is reached if three consecutive measurements are <50 NTU

Sampled By : Ryan Sheen Date : 12/6/22