DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT
JACOB K. JAVITS FEDERAL BUILDING
26 FEDERAL PLAZA
NEW YORK, NEW YORK 10278-0090

11 June 2024

Ms. Karyn Treinen
USEPA Region 2
Special Projects Branch/Federal Facilities Section
290 Broadway, 18th Floor
New York, NY 10007-1866

Ms. Melissa Sweet
New York State Department of Environmental Conservation (NYSDEC)
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, NY 12233-7015

Mr. Mark Sergott
New York State Department of Health
Bureau of Environmental Exposure Investigation
Empire State Plaza – Corning Tower, Room 1787
Albany, NY 12237

SUBJECT: Final LTM/LUC UFP-QAPP Addendum No. 1 for the Former Seneca Army Depot in Romulus, NY; EPA Site ID# NY0213820830 and NY Site ID# 8-50-006

Dear Ms. Treinen, Ms. Sweet, and Mr. Sergott:

On behalf of the Army, please find attached the Final LTM/LUC UFP-QAPP Addendum No. 1 for the Former Seneca Army Depot, located in Romulus, New York.

If you have any questions about the attached document, please call me at 917-575-1819.

Sincerely,

Digitally signed by GALLO.CHRISTOPHER.T.1604778820
Date: 2024.06.11 13:09:25 -04'00'

Christopher T. Gallo
Corps of Engineers, Project Manager
US Army BRAC Base Environmental Coordinator

cc: C. Heaton, CEHNC
B. Hodges, CEHNC
T. Reese, EA
F. DeSantis EA

UNIFORM FEDERAL POLICY QUALITY ASSURANCE PROJECT PLAN ADDENDUM No. 1 FINAL

Ash Landfill Operable Unit Remedial System Optimization

Long-Term Monitoring/Land Use Control Management Former Seneca Army Depot, Romulus, New York

PREPARED FOR:

U.S. ARMY CORPS OF ENGINEERS,
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New York, New York 10278

CONTRACT NO. W912DY22D0131
TASK ORDER NO. W912DY22F0374

June 2024

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Uniform Federal Policy
Quality Assurance Project Plan
Addendum No. 1
Final
for
Long-Term Monitoring/Land Use Control Management
Former Seneca Army Depot, Romulus, New York

Contract No. W912DY22D0131
Task Order No. W912DY22F0374

Prepared for

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June 2024

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LIST OF ACRONYMS AND ABBREVIATIONS

APP	Accident Prevention Plan
bgs	Below ground surface
CEHNC	U.S. Army Corps of Engineers, Engineering and Support Center, Huntsville
CENAN	U.S. Army Corps of Engineers–New York District
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	Contaminant of concern
CSM	Conceptual site model
CVOC	Chlorinated volatile organic compounds
DA	Department of the Army
DL	Detection limit
DO	Dissolved oxygen
DoD	Department of Defense
DQO	Data quality objective
EA	EA Engineering, Science, and Technology, Inc., PBC
EDD	Electronic data deliverable
EPA	U.S. Environmental Protection Agency
ft	Foot (feet)
ID	Identification
LOD	Limit of detection
LOQ	Limit of quantitation
LTM	Long-Term Monitoring
LUC	Land use control
MS	Matrix spike
MSD	Matrix spike duplicate
MNA	Monitored Natural Attenuation
N/A	Not applicable
No.	Number
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OU	Operable unit
PDF	Portable document format
PE	Professional Engineer
PG	Professional Geologist

LIST OF ACRONYMS AND ABBREVIATIONS (CONTINUED)

PhD	Doctor of Philosophy
PM	Project Manager
QA	Quality assurance
QAPP	Quality Assurance Project Plan
QC	Quality control
QL	Quantitation limit
QSM	Quality system manual
RSO	Remedial system optimization
SEAD	Former Seneca Army Depot
SMWU	Solid Waste Management Unit
SOP	Standard operation procedure
TO	Task Order
TOC	Total organic carbon
UFP	Uniform Federal Policy
USACE	U.S. Army Corps of Engineers
VOC	Volatile organic compound

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1. INTRODUCTION

1.1 This Uniform Federal Policy (UFP) Quality Assurance Project Plan (QAPP) Addendum No. 1 serves as an addendum to the 2023 Uniform Federal Policy – Quality Assurance Project Plan (UFP-QAPP) for Long-Term Monitoring/Land Use Control Management (EA 2023) based upon a recommendation provided in the Ash Landfill Annual Report and Year 17 Review (EA 2024) to perform a remedial system optimization (RSO) at the Ash Landfill Operable Unit (OU). This UFP-QAPP Addendum is submitted to meet the requirements of the Performance Work Statement for Contract Number (No.) W912DY22D0131, Task Order (TO) No. W912DY22F0374. The project activities will be conducted under the provisions of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Activities will be conducted in full compliance with the U.S. Army Corps of Engineers (USACE), Department of the Army (DA), and Department of Defense (DoD) regulations, guidance, standards, and manuals.

1.2 The Ash Landfill OU is composed of five historic solid waste management units (SWMUs). The five SWMUs that comprise the Ash Landfill OU are the Incinerator Cooling Water Pond (SEAD-3), the Ash Landfill (SEAD-6), the NCFL (SEAD-8), the former Debris Piles (SEAD- 14), and the former Abandoned Solid Waste Incinerator Building (SEAD-15). Ash Landfill is currently subject to long-term monitoring requirements consisting of annual groundwater sampling to inform assessment of biowalls installed as part of the implemented site remedy. Based on the conclusions of Year 17 monitoring (EA 2024), a RSO was recommended for the site to evaluate potential additional actions warranted to address the remaining chlorinated volatile organic compounds (CVOC) source area and off-depot migration of CVOCs.

1.3 This UFP-QAPP Addendum functions as the work plan for the Ash Landfill RSO and documents field activities; data collection activities; laboratory analytical and reporting procedures specific to the RSO activities being undertaken at the site which are in addition to the required LTM program detailed in the original UFP-QAPP (EA 2023). The RSO activities will be conducted in phases. The initial phase includes maintenance of the existing monitoring well network, resurvey of monitoring wells, site-wide groundwater gauging and sampling of the entire monitoring well network, and receptor well survey update. Information obtained during this initial phase will be used to revise the conceptual site model (CSM) and inform recommendations for follow-up activities.

1.8 This UFP-QAPP Addendum is organized with select UFP-QAPP worksheets. The table of contents of this document presents a listing of the included worksheets.

Table 1-1. Summary of Areas of Concern and LTM/LUC Requirements

Site No.	Site Name	LTM	LUC
Ash Landfill Operable Unit			
SEAD 3	Incinerator Cooling Water Pond	X	X
SEAD-6	Abandoned Ash Landfill	X	X
SEAD-8	Non-Combustible Landfill	X	X
SEAD-14	Refuse Burning Pits	X	X
SEAD-15	Building 2207 – Abandoned Solid Waste Incinerator	X	X

Table 1-2. UFP QAPP Addendum No. 1 Worksheet Crosswalk

Worksheet #	Worksheet Name
Worksheet #1a and #2a	Title and Approval Page
Worksheet #10a	Conceptual Site Model
Worksheet #11a	Project/Data Quality Objectives
Worksheet #17a	Sample Design and Rationale
Worksheet #18a	Sampling Locations and Methods
Worksheet # 20a	Field Quality Control Sample Summary

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Worksheet #1a and #2a Title and Approval Page

Site Name/Project Name:	Former Seneca Army Depot/Long-Term Monitoring (LTM) and Land Use Control (LUC) Management and LTM/LUC Optimization	
Site Location:	Romulus, New York	
Contract/Work Assignment	Contract No. W912DY22D0131 TO No. W912DY22F0374	
Document Title:	Uniform Federal Policy-Quality Assurance Project Plan Long-Term Monitoring/Land Use Control Management – Addendum 1 Final Ash Landfill Operable Unit Remedial System Optimization	
Lead Organization Project Manager (PM)	Charles H. Heaton, PE, USACE, Huntsville (CEHNC)	
Signature:	HEATON.CHARLES.HUDDLESTON.JR.1144858758 Digitally signed by HEATON.CHARLES.HUDDLESTON JR.1144858758 Date: 2024.06.11 15:19:25 -05'00'	**Date:**
Organization PM	Chris Gallo, USACE, New York District (CENAN)	
Signature:	Digitally signed by GALLO.CHRISTOPHER.T.1604778820 Date: 2024.06.11 13:10:23 -04'00'	**Date:**
Corporate Director of Quality Control	Frank Barranco, PhD, PE, PG, CMQ/OE, EA Engineering, Science, and Technology, Inc., PBC (EA)	
Signature:		**Date:** 11 June 2024
Site Project Manager	Timothy Reese, PE, EA	
Signature:		**Date: 1**1 June 2024
USEPA Region 2	Karyn Trienan Remedial Project Manager	
Signature:		**Date:**
USEPA Region 2	Lynn Arabia, CHMM Quality Assurance Officer	
Signature:		**Date:**

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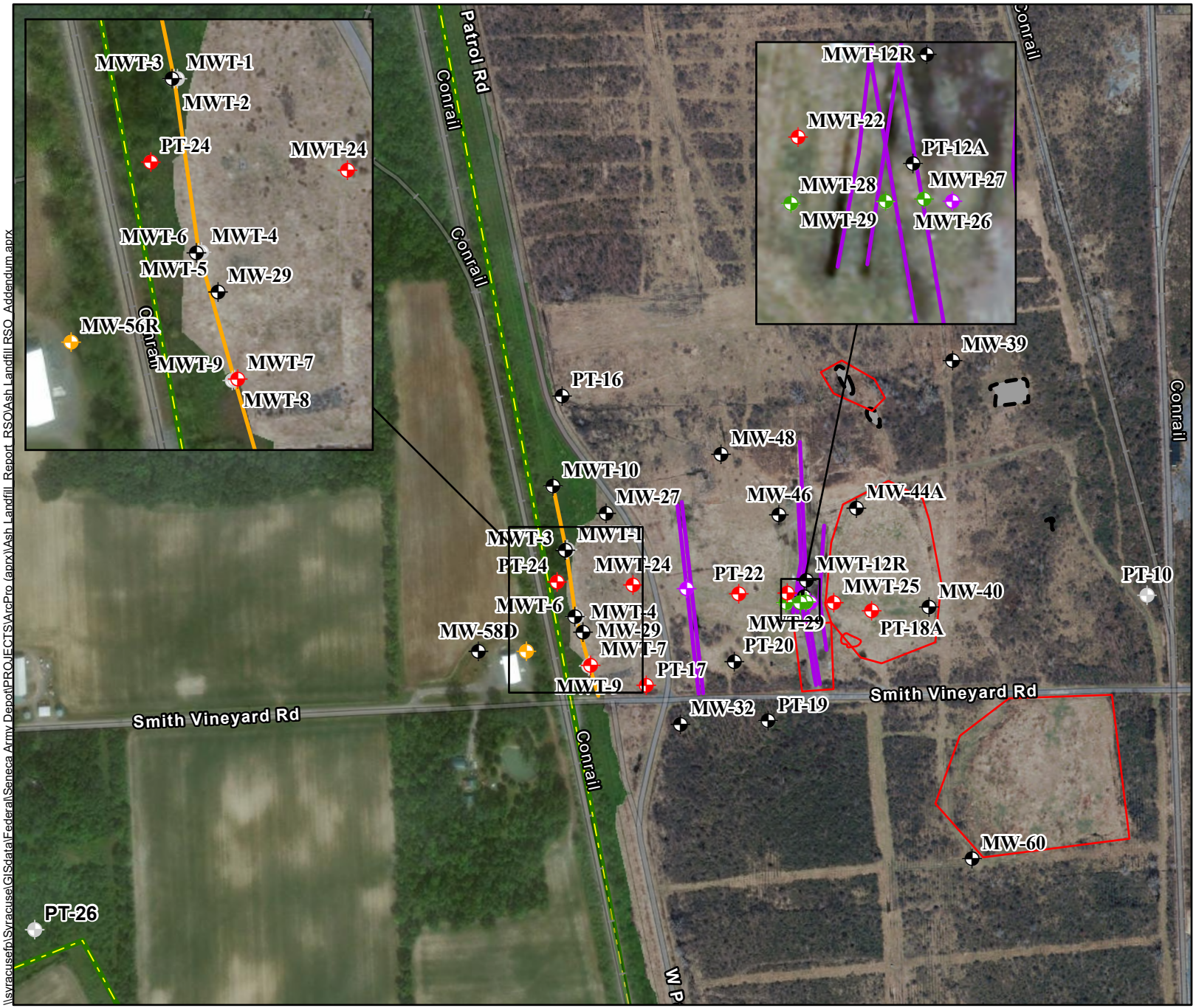
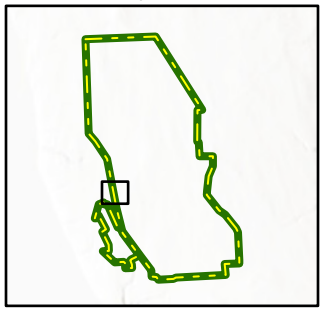
Worksheet #10a Conceptual Site Model

10.1 The current CSM for the Ash Landfill is presented in the Ash Landfill Annual Report and Year 17 Review (EA 2024). The CSM for the site remains consistent with that provided in the original UFP-QAPP (EA 2023) with the exemption of the documentation of off-depot impacts to downgradient groundwater. Based on the conclusions of Year 17 monitoring, an RSO was recommended to address the remaining CVOC source areas and off-depot migration of CVOCs. The RSO will include expanded sampling the monitoring well network at the Ash Landfill OU including wells that are not in the current LTM program **(Figure 10-1a)** (EA 2023)**.**



VICINITY MAP



Legend

Monitoring Well Network

- Biowall Process Monitoring
- Plume Monitoring
- Plume Monitoring/Biowall Process Monitoring
- Off-Site Performance Monitoring
- Additional RSO Sampling
- Other Site Well
- ZVI Wall
- Biowall
- Ash Landfill Operable Unit
- Former Debris Piles
- SEAD Boundary

N

0 200 400

Feet

Figure 10-1a
Ash Landfill OU
Monitoring Well Network
Former Seneca Army Depot
Romulus, New York

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Worksheet #11a Project/Data Quality Objectives

11.1 This worksheet is used to develop and document data quality objectives (DQOs) using a systematic planning process in accordance with Guidance on Systematic Planning Using the Data Quality Objectives Process (EPA 2006). The specific quality assurance/quality control (QA/QC) requirements developed for the site are consistent with those presented in the DoD QSM, Version 5.4 (DoD 2021).

11.2 The DQO process is used to establish performance and acceptance criteria, which serve as the basis for designing a plan for collecting data of sufficient quality and quantity to support the goals of a study. In the context of DQOs, there are two types of intended use for the data: decision making and estimation. Decision making is defined as making a choice between alternative conditions (e.g., does the contamination pose a risk to human health and the environment and therefore necessitate remediation, or is the contamination below risk concerns and does not require remediation?). Estimation studies often include the collection of data intended for further research, modeling, or design and may eventually support decision making. The defining characteristic of an estimation problem is the intended use of the data is not directly associated with a well-defined decision (EPA 2006).

11.3 The DQO process established by Environmental Protection Agency (EPA), and incorporated into the 2012 UFP-QAPP guidance, consists of seven steps that are used during the planning of the data collection process to ensure that field and analytical activities, and the resulting data, meet the project objectives (EPA 2012). The seven steps of the DQO process are as follows: (1) State the Problem; (2) Identify the Goals of the Study; (3) Identify Information Inputs; (4) Define the Boundaries of the Study; (5) Develop the Analytic Approach; (6) Specify Performance or Acceptance Criteria; and (7) Develop the Detailed Plan for Data Collection.

11.4. This project involves RSO activities at the Ash Landfill OU to perform additional characterization outside of the current LTM requirements.

What type of data are needed (matrix, target analytes, analytical groups, field screening, on-site analytical or off-site laboratory techniques, sampling techniques)?

11.5 Physical data (survey, well inspection data, gauging data, and instrumentation data), chemical/analytical data (i.e., groundwater sampling for off-site laboratory analysis), and field screening data (HACH kits for manganese and ferrous iron, and water quality parameters) will be collected.

11.6 Groundwater samples will be collected from the existing monitoring well network and submitted for off-site laboratory analysis by SGS Orlando in Orlando, Florida. Analytical groups will include volatile organic compounds (VOCs), anions, total organic carbon (TOC), and dissolved gases. In addition, field screening for ferrous Fe and Mn will be performed using HACH kits.

11.7 An updated off-site well survey is needed to determine/confirm potential groundwater receptors located downgradient of the site.

What will the data be used for?

11.7 Coordinate and elevation survey of existing and newly installed monitoring wells will be used to confirm groundwater flow directions.

11.8 Groundwater data will be used to update the CSM regarding plume dimensions to:

- confirm the existing monitoring well network is adequate to monitor the CVOC plume footprint
- confirm if off-site migration is occurring as observed in 2023 sampling
- inform location of additional monitoring wells if needed
- identify potential areas for additional remedial treatments to address persistent CVOC concentrations
- evaluate the geochemical conditions across the site to support selection of potential in-situ remedial technologies

11.9 An updated receptor well survey will be used to inform potential downgradient receptor wells.

How much data is needed (number of samples for each analytical group, matrix, and concentration)?

11.10 Worksheet #18a and #20a indicate the number of samples for each matrix to be analyzed by each method for each sampling event.

Who will collect and generate the data?

11.11 A professional land surveyor will re-survey the existing monitoring well network

11.12 EA will complete monitoring well inspections and sampling.

11.13 EA will submit environmental samples to the off-site analytical laboratory for analysis. SGS Orlando will analyze and generate laboratory analytical data for each of the environmental samples. EA will conduct LUC inspections for the identified sites.

Where, when, and how should the data be collected/generated?

11.14 The field effort is scheduled to commence in late May through late June 2024.

How "good" does the data need to be in order to support the environmental decision?

11.15 Analytical data must be technically defensible and of sufficient quality to support the project quality objectives as detailed in original UFP-QAPP (Worksheet #12 lists the Measurement Performance Criteria, and Worksheet #28 lists the Sample QC criteria. Worksheet #15, Reference and Evaluation Table, summarizes the analytical parameters as well as applicable project action levels, project quantitation limit (QLs), and detection limits (DLs), limits of detection (LODs) and

limits of quantitation (LOQs) for each parameter. Worksheet #22 lists field equipment calibration requirements. Worksheets #34, #35, and #36 describe data validation guidelines. Worksheet #37 describes data usability assessment).

Who will use the data?

11.16 The data collected during and generated during implementation of this RSO will primarily be used by EA and USACE, in conjunction with New York State Department of Environmental Conservation (NYSDEC), New York State Department of Health (NYSDOH), and EPA.

How will the data be reported?

11.17 Field data will be recorded in the dedicated logbook and on field forms provided in **Appendix B** of the Original UFP-QAPP.

11.18 The analytical laboratory will generate portable document format (PDF) reports and provide electronic data deliverables (EDDs). Analytical data will be validated by a third-party validator who will supply a report of the data to ensure compliance with the Original UFP-QAPP.

11.19 Inspection, maintenance, and sampling/monitoring data will be documented in the subsequent Annual Report and Year 18 Review.

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Worksheet #17a Sample Design and Rationale

17.1 This UFP-QAPP worksheet documents the overall process for the design and rationale of the sampling program. This worksheet is used to develop and document the investigative approach, in terms of the types of activities/procedures to be conducted, investigative locations, field methodologies, matrices to be sampled, analytical groups to be analyzed and at what concentration levels (QC samples), the number of samples to be taken, and the sampling frequency.

17.2 The objective of this project is to collect additional groundwater data outside of the existing LTM program requirement to inform optimization activities intended to decrease anticipated remedial timeframes and ensure effectiveness of the implemented remedy.

17.4 The number of groundwater samples to be taken, sample locations, and sampling frequencies are summarized in Worksheet #18.

17.5 Field methodologies will be consistent with the tasks presented in Worksheet #14 and #16, and with the standard operation procedures (SOPs) listed in Worksheet #21 and included in **Appendix D** of the Original UFP-QAPP (EA 2023)**.** Field activities will be conducted in accordance with the Accident Protection Plan (APP) (**Appendix E** of Original UFP-QAPP).

GROUNDWATER SAMPLING

17.6 Prior to sampling events, synoptic groundwater level measurements will be collected from each of the 37 monitoring wells to evaluate groundwater conditions at the Ash Landfill OU. Groundwater sampling will be conducted to monitor and characterize the type and nature of contaminate of concern (COCs) at well locations, recommend changes to subsequent sampling events, support determinations of further actions needed to achieve No Further Actions, and determine whether remedial goals have been achieved. Groundwater samples from each well sampled will be submitted to SGS Orlando for off-site laboratory analysis of VOCs by EPA Method 8260D and a subset of monitoring wells with be submitted for laboratory analysis of, anions by EPA Method 9056A, TOC by EPA Method 9060A, and dissolved gases by EPA Method RSK-175. A summary of samples to be collected and the sampling rationale is presented in **Table 17-1a**.

17.7 Information regarding QC samples can be found in Worksheet #20a. Generally, QC samples will consist of the following:

- Field duplicate samples will be collected at a minimum rate of 5% (1 every 20 samples or once per event)
- MS/MSDs (extra volume) will be collected at a minimum rate of 5% (1 every 20 samples or once per event)
- Field blanks will be collected at a minimum rate of 1 per event

- Trip blanks will accompany each cooler containing samples for analysis of VOCs or dissolved gases, when applicable.

17.8 See **Figure 10-1a** for monitoring well locations; and Worksheet #18a for specifics regarding analyses for samples from individual wells.

17.9 The sampling design and rationale in terms of what matrices will be sampled and what analytical groups will be analyzed is described in **Table 17-1a**.

MONITORING WELL MAINTENANCE ACTIVITIES

17.10 Based on the results of LTM monitoring and additional well inspection activities, well maintenance will be conducted at all 37 monitoring wells. Well maintenance will include redevelopment, installation of reflective marker, surface casing replacement, cutting down heaved well casings, and well surveys. Details of the well maintenance locations are presented in **Table 18-1a**.

OFF-SITE WELL SURVEY

17.11 A well survey to determine potential downgradient receptors will be performed to determine/confirm potential groundwater receptors located downgradient of the site. The off-site survey will be comprised of a search of local town well records and statewide databases, with information obtained from those searches confirmed with in-person interviews of property owners.

Table 17-1a. Data Needs

Sample matrix	Parameter	Equipment and/or Method	Rationale for Analysis and Data Use
LTM			
Groundwater	Monitoring well conditions	Inspections	Ensure that the wells remain usable for future monitoring, if required.
	Groundwater elevations	Electronic water level meter	Generate groundwater contour maps, determine groundwater flow directions, and calculate hydraulic gradients
	Water quality parameters (pH, temperature, specific conductivity, oxidation reduction potential (ORP), dissolved oxygen (DO), turbidity)	Low-flow groundwater Horiba U-22 (or equivalent) with flow-thru cell	Groundwater stabilization parameters and indicators of water quality. Evaluate the effectiveness of the permeable reactive barrier.
	VOCs	SW8260D	Monitoring VOC contamination in groundwater and evaluate the effectiveness of the permeable reactive barrier.
	TOC	SW9060A	
	Anions (nitrate, sulfate, chloride)	SW9056A	
	Dissolved gases (methane/ethane/ethene)	RSK-175	
	Ferrous Fe and Mn	HACH 8146 and 8034	Evaluate site conditions for Monitored Natural Attenuation (MNA) parameters.
	Monitoring well survey	New York State Licensed Surveyor	Develop an updated and accurate groundwater elevation map.

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Worksheet #18a Sampling Locations and Methods

18.1 This worksheet documents the samples planned for collection under this project and will serve as a completeness check for field personnel and QA/QC auditors. **Table 18-1a** includes all existing monitoring wells at the Ash Landfill including wells that are not part of the current LTM program, as well as maintenance items that will be completed as part of this RSO. **Table 18-2a** includes analytes for each groundwater sample as well as sampling frequency.

Table 18-1a. Existing Well Specifications and Maintenance

Sample Locations	Northing	Easting	Screen Top (ft bgs)	Screen Bottom (ft bgs)	Well Depth (ft bgs)	Top of Riser Elevation (ft amsl)	Well Maintenance Items	In LTM
PT-12A	994923.8381	740401.803	4.8	9.8	10.3	652.15	Needs to be redeveloped. Resurvey. Install reflective marker	No
PT-16	995521.1910	739682.3080	4.0	9.0	9.1	637.65	Resurvey. Install reflective marker	Yes
PT-17	994661.3460	739932.5010	4.0	9.0	9.8	640.20	Cut down well casing. Resurvey. Install reflective marker	Yes
PT-18A	994882.7640	740601.5180	4.8	9.8	9.8	659.05	Cut down well casing. Resurvey. Install reflective marker	Yes
PT-19	994555.6860	740294.3030	4.0	9.0	10.6	645.44	Resurvey. Install reflective marker	Yes
PT-20	994732.3250	740194.0640	3.8	8.8	9.4	647.54	Replace stick-up surface casing. Resurvey Install reflective marker	Yes
PT-22	994934.0790	740207.0680	4.0	9.0	9.1	648.74	Resurvey. Install reflective marker	Yes
PT-24	994969.0960	739668.0460	4.0	9.0	9.4	636.43	Resurvey. Install reflective marker	Yes
MW-27	995172.6891	739813.5181	3.0	8.0	8.3	639.28	Resurvey. Install reflective marker	Yes
MW-29	994820.6080	739744.9300	3.6	8.6	9.0	637.28	Resurvey. Install reflective marker	Yes
MW-32	994545.9320	740034.3050	3.7	8.7	8.6	641.71	Resurvey. Install reflective marker	Yes
MW-39	995627.1800	740842.3350	4.54	9.54	9.9	659.76	Replace stick-up surface casing. Resurvey Install reflective marker	Yes
MW-40	994893.4210	740771.7510	5.2	12.2	12.3	659.32	Resurvey. Install reflective marker	Yes
MW-44A	995187.3990	740556.5240	3.25	8.25	8.75	653.85	Resurvey. Install reflective marker	Yes
MW-46	995168.0320	740326.0250	3.5	8.5	9.0	650.41	Resurvey. Install reflective marker	Yes
MW-48	995347.6310	740154.2890	3.5	8.5	9.0	648.32	Cut down well casing. Resurvey. Install reflective marker	Yes
MW-56R	994766.0020	739439.4270	5.0	12.0	12.0	-	Survey. Install reflective marker	Yes
MW-58D[1]	994762.324	739433.946	35.29	54.65	55.3	629.69	Needs to be redeveloped. Resurvey. Install reflective marker	No
MW-60	994145.8640	740899.6190	3.4	7.35	8.5	660.15	Resurvey. Install reflective marker	Yes
MWT-1	995064.3671	739698.417	2.42	7.41	7.41	637.24	Needs to be redeveloped. Resurvey. Install reflective marker	No
MWT-2	995064.107	739694.797	2.00	7.00	7.00	637.19	Needs to be redeveloped. Resurvey. Install reflective marker	No
MWT-3	995063.787	739692.447	2.25	7.25	7.50	637.31	Needs to be redeveloped. Resurvey. Install reflective marker	No

1 Water levels in this well are monitored by USGS and transducers need to be removed prior to any inspection or sampling activities.

Table 18-1a. Existing Well Specifications and Maintenance

Sample Locations	Northing	Easting	Screen Top (ft bgs)	Screen Bottom (ft bgs)	Well Depth (ft bgs)	Top of Riser Elevation (ft amsl)	Well Maintenance Items	In LTM
MWT-4	994865.7465	739726.149	4.75	9.75	10.00	637.68	Needs to be redeveloped. Resurvey. Install reflective marker	No
MWT-5	994865.0364	739722.609	5.50	10.50	10.50	637.72	Needs to be redeveloped. Resurvey. Install reflective marker	No
MWT-6	994864.8764	739720.298	4.88	9.88	10.33	637.59	Needs to be redeveloped. Resurvey. Install reflective marker	No
MWT-7	994721.0163	739767.3105	1.42	11.42	11.98	638.34	Resurvey. Install reflective marker	Yes
MWT-8	994719.9162	739763.92	0.81	10.81	10.80	638.40	Needs to be redeveloped. Resurvey. Install reflective marker	No
MWT-9	994718.9962	739761.292	1.75	11.75	12	638.08	Needs to be redeveloped. Resurvey. Install reflective marker	No
MWT-10	995252.6375	739655.6651	1.80	6.80	7.08	636.07	Resurvey. Install reflective marker	Yes
MWT-22	994935.8895	740350.8689	7.5	12.5	12.8	650.66	Install new stick-up surface casing. Resurvey. Install reflective marker	Yes
MWT-23	994949.0210	740052.3120	6.5	11.5	11.5	646.77	Resurvey. Install reflective marker	Yes
MWT-24	994959.7980	739892.7760	6.0	11.0	11.0	641.56	Resurvey. Install reflective marker	Yes
MWT-25	994908.1090	740488.8770	5.0	10.0	10.0	654.51	Cut down well casing. Resurvey. Install reflective marker	Yes
MWT-26	994907.4560	740419.2360	5.2	10.2	10.2	652.19	Cut down well casing. Resurvey. Install reflective marker	Yes
MWT-27	994908.3340	740406.6870	5.5	10.5	10.5	652.99	Cut down well casing. Resurvey. Install reflective marker	Yes
MWT-28	994907.2437	740389.6710	5.0	10.0	10.0	652.69	Cut down well casing. Resurvey. Install reflective marker	Yes
MWT-29	994906.2020	740347.7439	5.5	10.5	10.5	651.82	Cut down well casing. Resurvey. Install reflective marker	Yes

Notes:
Coordinates are in NAD83 New York East State Plane (ft).
- Value unknown

Table 18-2a. Monitoring Wells, Sampling Frequency, and Applicable Analytes/Methods

Sample Locations	Sampling Frequency	Sample ID	Analytes/Methods				
			Dissolved Gases (RSK-175)	TOC (9060A)	Anions (9056A)	HACH Fe and Mn (8146 and 8034)	VOCs (8260D)
Ash Landfill (Currently Sampled LTM Program)							
PT-17	Once	SEAD-AL-PT-17-YYYYMMDD	X	X	X	X	X
PT-18A		SEAD-AL-PT-18A-YYYYMMDD	X	X	X	X	X
PT-22		SEAD-AL-PT-22-YYYYMMDD					X
PT-24		SEAD-AL-PT-24-YYYYMMDD	X	X	X	X	X
MW-56R		SEAD-AL-MW-56R-YYYYMMDD					X
MWT-7		SEAD-AL-MWT-7-YYYYMMDD	X	X	X	X	X
MWT-22		SEAD-AL-MWT-22-YYYYMMDD					X
MWT-23		SEAD-AL-MWT-23-YYYYMMDD	X	X	X	X	X
MWT-24		SEAD-AL-MWT-24-YYYYMMDD					X
MWT-25		SEAD-AL-MWT-25-YYYYMMDD					X
MWT-26		SEAD-AL-MWT-26-YYYYMMDD	X	X	X	X	X
MWT-27		SEAD-AL-MWT-27-YYYYMMDD	X	X	X	X	X
MWT-28		SEAD-AL-MWT-28-YYYYMMDD	X	X	X	X	X
MWT-29		SEAD-AL-MW-29-YYYYMMDD	X	X	X	X	X
Ash Landfill Additional RSO Sampling							
PT-12A	Once	SEAD-AL-PT-12A-YYYYMMDD					X
PT-16		SEAD-AL-PT-16-YYYYMMDD					X
PT-19		SEAD-AL-PT-19-YYYYMMDD					X
PT-20		SEAD-AL-PT-20-YYYYMMDD					X
MW-27		SEAD-AL-MW-27-YYYYMMDD					X
MW-29		SEAD-AL-MW-29-YYYYMMDD					X
MW-32		SEAD-AL-MW-32-YYYYMMDD					X
MW-39		SEAD-AL-MW-39-YYYYMMDD					X
MW-40		SEAD-AL-MW-40-YYYYMMDD	X	X	X	X	X
MW-44A		SEAD-AL-MW-44A-YYYYMMDD					X
MW-46		SEAD-AL-MW-46-YYYYMMDD					X
MW-48		SEAD-AL-MW-48-YYYYMMDD					X
MW-58D		SEAD-AL-MW-58D-YYYYMMDD					X
MW-60		SEAD-AL-MW-60-YYYYMMDD					X

Table 18-2a. Monitoring Wells, Sampling Frequency, and Applicable Analytes/Methods

Sample Locations	Sampling Frequency	Sample ID	Analytes/Methods				
			Dissolved Gases (RSK-175)	TOC (9060A)	Anions (9056A)	HACH Fe and Mn (8146 and 8034)	VOCs (8260D)
MWT-1	Once	SEAD-AL-MWT-1-YYYYMMDD					X
MWT-2		SEAD-AL-MWT-2-YYYYMMDD					X
MWT-3		SEAD-AL-MWT-3-YYYYMMDD					X
MWT-4		SEAD-AL-MWT-4-YYYYMMDD					X
MWT-5		SEAD-AL-MWT-5-YYYYMMDD					X
MWT-6		SEAD-AL-MWT-6-YYYYMMDD					X
MWT-8		SEAD-AL-MWT-8-YYYYMMDD					X
MWT-9		SEAD-AL-MWT-9-YYYYMMDD					X
MWT-10		SEAD-AL-MWT-10-YYYYMMDD					X

Worksheet #20a Field Quality Control Sample Summary

20.1 This worksheet summarizes the number of field QC samples that will be collected and submitted to the laboratory for each matrix and analytical group per event.

Matrix	Analyte/ Analytical Method	Number of Field Samples[1]	Field Duplicates[2]	MS/MSD[3]	Trip Blanks[4]	Field Blanks[5]	Total Number of Analyses
SEAD-16							
			1 per 20 samples (5%); minimum 1 per event	1 set per 20 samples (5%); minimum 1 per event	1 per cooler/shipment with samples for analysis of VOCs	1 per event; when non-dedicated field equipment is used	
Ash Landfill (SEADs 3, 6, 8, 14, 15)							
Aqueous	VOCs (SW8260D)	37	2	4	4	1	48
Aqueous	TOC (SW9060A)	10	1	2	0	1	14
Aqueous	Anions (SW9056A)	10	1	2	0	1	14
Aqueous	Dissolved Gases (RSK-175)	10	1	2	0	1	14
Aqueous	HACH Field Screening - Ferrous Fe (8146)	10	1	0	0	0	11
Aqueous	HACH Field Screening – Mn (8034)	10	1	0	0	0	11

Notes:

1) Standard, non-QC samples.
2) Duplicates are collected at a rate of 5% (1 per 20 standard samples). The number of duplicates may increase if additional standard samples are collected.
3) MS/MSDs are collected at a minimum rate of 5% (1 set per 20 standard samples). MS/MSD pairs require extra volume. These will be collected in separate containers. The number of MS/MSD pairs may increase if additional standard samples are collected.
4) Trip blanks will be shipped at a rate of 1 per cooler (1 in each cooler) that contains aqueous VOC.
5) Field blanks will be collected at a minimum rate of one per event when non-dedicated field equipment is used.

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