Intended for
New York State Department of Environmental Conservation

Document type
Final Basis of Design Report

Date
February 2025

Former Utica City Dump

Final Basis of Design Report (Not Part of Contract)

RAMBOLL Bright ideas. Sustainable change.

Former Utica City Dump
Final Basis of Design Report (Not Part of Contract)

Project name	**Former Utica City Dump Consolidation & ET Cover**
Project no.	**1940101207**
Recipient	**NYSDEC**
Document type	**Report**
Version	**01**
Date	**February 2026**
Prepared by	**Victor Warner**
Checked by	**Dave Farber**
Description	**Final Basis of Design Report**

Ramboll
333 West Washington Street
Syracuse, NY 13202
USA

T 315-956-6100
F 315-463-7554
https://ramboll.com

I David T. Farber certify that I am a NYS Registered Professional engineer and that this Report was prepared in accordance with applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and DER Green Remediation (DER-31) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.

Contents

List of Tables

List of Appendices

1. Introduction

1.1 General

This Basis of Design (BOD) Report was prepared for the former Utica City Dump (Site #6-33-015) located in the City of Utica, Oneida County, New York.

The Site is defined in New York State Department of Environmental Conservation's (NYSDEC) Record of Decision (ROD) dated 2003 (NYSDEC, 2003) as the portion of the dump that reportedly received hazardous waste and is approximately 74 acres in size. The NYSDEC issued an Explanation of Significant Differences (ESD) on April 19, 2025. The ESD includes the closure of the entire dump site that is approximately 126 acres.

The Utica City Dump Site is approximately 126 acres in size and located south of NYS Thruway and north of State Route 5S. A 113.4-acre portion of the dump is owned by the City of Utica (City) and a 12.6-acre portion is privately owned. The site is located east of Leland Ave. along Incinerator Road, between the Erie Canal to the north and the Mohawk River to the east and south. The total amount of land bordered by the road and the two water bodies is about 200 acres. The site has been separated into two Operable Units (OUs). The operable units are the Landfill and wetlands (OU01) and Mohawk River Sediments (OU02). OU01 is the former municipal landfill which is approximately 126 acres in size and lies between the Mohawk River and Erie Barge Canal. The fill area in OU01 begins at Leland Ave on the western end and is bordered by a large inlet of the Mohawk River on the eastern end.

The site was used as a municipal landfill for the City of Utica, dumping began in the 1930s on the western end and extended eastward with time. The western portion containing municipal solid waste closed in 1972. Reportedly hazardous waste was disposed at the eastern portion of the landfill as recently as 1984. Within the eastern portion of the landfill, a temporary cover was constructed over an area that was utilized by the City of Utica for construction and demolition debris as well as yard waste, this area was identified as the Hardfill Area of the landfill, this area was closed in 1997. Another area within the center of the eastern portion, identified as the Arson Area, was temporarily opened as an emergency action in 1996 to dispose of demolished houses affected by a spate of arson of abandoned houses throughout the City and was closed with a temporary cover in 1998

The NYSDEC issued the ROD in August 2003. In this document, the NYSDEC selected the following remedy for the Site:

- A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Any uncertainties identified during the RI/FS will be resolved.
- Landfill closure (52 acres east of the Hardfill Area) according to the 1999 NYS Part 360 Regulations, to prevent exposure to surface soils and reduce the generation of landfill leachate.
- Solid waste excavation and consolidation by placement of waste under the cap, to limit exposure to waste. Any consequential amount of hazardous waste found will be removed off-site for the disposal at a permitted facility.
- Demolition and disposal of the onsite incinerator and surrounding structure.
- Fencing along Leland Ave., to prevent trespassing.
- An institutional control will be imposed, in such form as the Department may approve, that will prevent disturbance to the landfill cap and prevent the use of the untreated groundwater as a

drinking water source. The institutional control will be imposed in the form of existing use and development restrictions to prevent the use of groundwater as a source of potable or process water without necessary water quality treatment as determined by the New York State Department of Health. The institutional control will also be imposed to prevent disturbance of the cap, so that the constructed cap would stay in place and prevent the infiltration of precipitation into the landfill.

The property owner will complete and submit to the Department an annual certification until the NYSDEC notifies the property owner in writing that this certification is no longer needed. This submittal will contain certification that the institutional controls and engineering controls put in place, pursuant to the Record of Decision, are still in place, have not been altered, and are still effective.

- Sediment removal (with replacement of clean fill) along the eastern banks of the landfill (includes submerged portion of banks), to prevent the exposure of fish and wildlife to levels of PCBs and metals above standards/guidance values and background. In accordance with the ESD the removal of sediment has been removed from the proposed OU-1 remediation.
- Monitoring, to evaluate the remedial actions. Since the remedy will result in waste remaining at the site under the engineered closure system, a long-term monitoring program will be instituted. Monitoring locations will be selected according to previous sampling results, the grade and topography of the land, and to address particular areas of concern. The purpose of monitoring will be to evaluate leachate/groundwater quality over time and to assess the degree to which the remedial actions were meeting the established remedial goals. In addition to the environmental monitoring, manual monitoring of the landfill cap will be necessary to check that the waste is constantly covered. Any repairs to the damaged portions of the cap should be performed as soon as possible. This program will allow the effectiveness of the landfill cap to be monitored and will be a component of the operation and maintenance for the site. Long-term operation and maintenance (for thirty years or more, with 3-to-5-year review periods) will be required.

Based on the review of available data, results of additional sampling, and in consultation with the Ramboll, an ESD has been developed by the NYSDEC. In this document, the proposed remedy for the Site includes the following:

- Consolidation of the limits of the dump footprint from the 126 acres to the final area of 103 acres of ET cover.
- Following dump consolidation, a dump closure (approximately 103 acres East from Leland Ave) will be implemented using an evapotranspiration (ET) cover system incorporating Navigable Dredge Material (NDM) from the New York State Canal Corporation (NYSCC) Upland Disposal Site (UDS) 4-26 and Dredge Site 4-44-4 (Sterling Creek) to minimize exposure to surface soils and to reduce the generation of leachate
- Demolition and disposal of the onsite incinerator stack and surrounding structure(s)
- Restoration/creation of 18.2-acres of wetland habitat on the Site perimeter, as well as evaluation of wetland functionality through a five-year, post-construction site monitoring plan
- Fencing to prevent trespassing
- Monitoring to confirm the effectiveness of the remedial actions.

Per the direction of the NYSDEC, this Final BOD report has been prepared in accordance with the ESD.

1.2 Report contents

This BOD Report identifies and addresses the basic technical requirements of the Remedial Action (RA) and includes the following elements:

- Summary of existing conditions
- Basis of remedial design, including
  - Utica City Dump preparation plan including staging areas and temporary erosion control requirements
  - Plans and drawings detailing final grading
  - Green remediation evaluation for an ET cover system
  - Stormwater and slope stability design evaluations
  - Restoration plan of the Site following completion of the remediation
  - Remedial design assumptions and parameters, including remedial design restrictions
- Permit Requirements
- Green and sustainable remediation metrics assessment
- Real estate and institutional control requirements
- Expected long-term operation and maintenance requirements
- Remedial design specifications
- Preliminary construction schedule.

These documents that follow are NOT part of the Contract Documents for the Environmental Remediation at the Utica City Dump Site, Utica, NY. The Department neither represents that the Site conditions will be the same as in the attached documents nor considers the attached documents as being comprehensive and an actual description of the site conditions. The Contractor shall be responsible for performing the required work based upon the existing conditions at the Site.

2. Existing Conditions

2.1 General

This BOD Report was prepared based on the understanding of site conditions established by the remedial investigations detailed in the Remedial Investigation/Feasibility (RI/FS) Report completed by Lawler, Matusky & Skelly Engineers LLP (LMS) and Clough, Harbour & Associates LLP (CHA) (CHA/LMS, 2000) and additional predesign investigation (PDI) activities completed by Ramboll.

2.2 Waste limits

The waste limits were evaluated based on the results of a series of investigations that have been performed at the site. From 1998-1999, LMS and CHA completed a RI Report (RIR) that included the completion of 11 soil borings, 80 test pits, and the installation of 8 groundwater monitoring wells. The locations of the soil borings and monitoring wells can be found on RIR Figure 3-6 Monitoring Well, Piezometer, and Staff Gauge Locations of the RI report, included as **Appendix 1**. The locations of the test pits can be found on RIR Figures 3-3 Test Pit Excavations and Magnetometer Survey Locations and 3-4 Test Pit Locations of the RI reports, included as **Appendix 1**. Based on the boring and test pit logs, the top 10 to 20 feet of the subsurface is a mixture of a Sand and Waste. Beneath the Sand and Waste layer, the native soil, consisting of grey silt and clay was observed to a depth of 80 feet below the ground surface (bgs).

In 2022 and 2023, Ramboll performed soil boring and test pitting activities to further delineate the horizontal and vertical waste extents. In total, Ramboll completed 10 geotechnical soil borings and excavated 136 test pits. The test pits generally confirmed the horizontal and vertical extents of waste observed during the RI. A Subsurface Investigation Summary report detailing the results of the investigations is provided in **Appendix 2**.

2.3 Groundwater quality

Two rounds of groundwater sampling were completed during the RI. During the field investigation work, a total of eight new monitoring wells, identified as CHA-1S, CHA-2S, CHA-3S, CHA-4S, CHA-5S, CHA-6S, CHA-8S, and CHA-9S at the site. These eight wells, along with five existing wells (UD-1, UD-2, UD-3 and MW-1) that were previously installed were sampled in the first round of sampling completed in June 1998. The second round of sampling was completed in the fall of 1999 on the 13 wells previously sampled, along with three additional wells identified as MW-2, MW-3, and MW-4. The samples collected during the first round of sampling were analyzed for full Target Compound List (TCL)/Target Analyte List (TAL) parameters, cyanide, dissolved metals, dissolved solids, alkalinity, chloride, sulfate, sulfide, ammonia, total kjeldahl nitrogen, nitrate, total phenols, total organic carbon, turbidity and hardness. For the second round of sampling, samples were only tested for pesticides, PCBs, and total metals.

Analytical testing results generated during the RI indicated the following:

- A total of seven volatile organic compounds (VOCs) were detected in the groundwater on site. Of note, VOCs were absent from wells CHA-1S, CHA-2S, CHA-4S, and CHA-9S.
- Three VOCs, benzene, chlorobenzene, and total xylenes were observed in concentrations that exceeded Class GA standards or guidance values.
  - Benzene was detected in five wells
  - Chlorobenzene was detected in four wells
  - Total xylenes were detected in two wells
- Samples from wells CHA-3S, CHA-6S, MW-1, and UD-2 exhibited semi-volatile organic compounds (SVOCs) above detection limits but below criteria.

- Samples from wells CHA-3S, UD-2 and MW-2 contained polychlorinated biphenyls (PCBs) in concentrations above groundwater quality standards in at least one of the samples collected
- Lead and copper were present in the majority of the samples above groundwater criteria.

In May 2023, groundwater samples were collected from 7 existing wells (CHA-1S, CHA-3S, CHA-4S, CHA-5S, CHA-6S,CHA-9S, and UD-3) and 7 temporary wells installed within test pits on the western side of the landfill.Samples were analyzed for PCBs, per- and polyfluoroalkyl substances (PFAS) and 1,4 dioxane. Samples from the temporary wells were also analyzed for VOCs, SVOCs, metals, ammonia, bromide, chloride, sulfate, chemical oxygen demand, total organic carbon (TOC), total dissolved solids (TDS) and alkalinity. The laboratory reports are included in Appendix 2. Table 2-1 summarizing the detected constituents compared to groundwater standards and guidance criteria is also included in **Appendix 3**.

The results of the analyses revealed that PFAS were detected in each sample with concentrations of perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) at concentrations above the Class GA groundwater guidance values provided in 6 NYCRR Part 703. In addition, 1,4 dioxane was detected in 6 of the 14 wells at concentrations greater than the guidance value.

Review of the other analytical results revealed the presence of two VOCs and 5 SVOCs at concentrations greater than its corresponding groundwater standard in 1 or 2 of the 9 samples analyzed. Of the metals that were detected, the concentrations that were above corresponding groundwater criteria were generally associated with the naturally occurring metals with the exception of lead that was present in 2 of the 9 samples at concentration slightly above the standard. PCBs were detected in 1 sample collected from MW-TP-5 located on the western end of the dump at a concentration of 0.11 µg/L which was slightly above the groundwater standard of 0.09 µg/L.

2.4 Leachate seeps

Leachate sampling was completed by LMS and CHA as part of the RI. A total of six samples were collected from six locations on site as shown on RIR Figure 3-8 Surface Water, Sediment and Leachate Sample Locations from the RI report and attached in **Appendix 1**. At the time of sampling, each seep was flowing, and samples were obtained directly. Each sample underwent analytical testing for TCL/TAL parameters, cyanide, and wet chemistry parameters. Analytical testing results indicated VOCs, SVOCs, iron, magnesium, cobalt, and manganese concentrations above water quality standards in select sample locations. The laboratory reports are included in **Appendix 3**. Table 2-2 summarizing the detected constituents compared to groundwater standards and guidance criteria is also included in **Appendix 3**.

Ramboll conducted seep surveys in May 2022 and January 2023 to assess the presence, location and water quality being generated by the landfill under existing conditions. The survey was conducted by traversing the toe of the embankments around the perimeter and select interior areas of the fill. A total of 17 seeps were identified based on observations of flowing water on the ground surface, visibly wet soil or surface material, and/or iron staining. Locations were marked with a stake or pin flag and recorded using a hand-held GPS and presented on Figure 1 provided in **Appendix 3**. Periodic observations of the seeps revealed that only 6 of the originally identified seeps exhibit moderate or high flows and then flows were only occasionally observed. These seeps were clustered at two locations; on the eastern end near well UD-3 and on the south-central side. Additionally, when flows were observed, they were generally found to occur following a heavy precipitation event or when the Mohawk River level receded following high flow events. In 2023, these events were observed to occur periodically in April and May.

In general flows observed were low to moderate. Four seeps, SP-5, SP-1, SP-10 and SP-14, were selected for sampling and analysis. The locations were selected based on locations with moderate flow and to provide distribution across the area. Seeps SP-10 and SP-14 exhibited moderate flow during the sampling event. Seeps SP-01 and SP-05 exhibited little flow but the volume was sufficient to allow for collection of the samples for analysis.

Surface water samples were collected from 4 seeps. The collected samples were analyzed for TCL, VOCs, TCL, semi-volatile organic compounds (SVOCs), pesticides, PCBs, TAL metals, and cyanide, 1,4 dioxane, and PFAS. In addition, as required by Part 363, the samples will be analyzed for Part 360 Baseline Parameters. A summary of the constituents detected in one or more of the samples is provided in Appendix 2 together with the respective surface water standard or guidance value for a Class C stream as contained in Division of Water Technical and Operational Guidance Series 1.1.1 (TOGS 1.1.1) entitled Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

Few VOCs and SVOCs (including 1,4 dioxane) were detected but the concentrations were below the surface water criteria. Other leachate indicator compounds were also below criteria. PFAs were detected in the samples at concentrations ranging from 1 to 540 ng/L. The only surface water criteria currently in place for PFAS is for PFOS at a concentration of 160,000 ng/L. The concentration of PFOS in the samples ranged from 64 ng/L to 540 ng/L. Aluminum, iron and in one instance each, cobalt and lead, were the only inorganics with concentrations above their respective surface water criteria.

2.5 Soil gas

LMS and CHA completed a soil gas survey in March 2000 to evaluate if methane gas was still being produces from the waste. The evaluation was completed by driving a steel probe into the ground and then measuring atmosphere from the resulting hole using a Scott D-15 gas tester. Testing was completed across the entire site at an approximately 200 ft by 200 ft grid.

Soil gas survey results indicated that methane was present in low concentrations in the eastern portion of the site. Some elevated readings were observed within the limits of the Arson Area. There were two locations west of the hardfill area where elevated levels of methane were recorded.

2.6 Wetlands

Existing wetlands were field-delineated by Ramboll in May 2022 and October 2023 pursuant to Work Assignment (WA) D009810-19. These wetlands generally consist of the following palustrine habitats as defined by the Cowardin, et al (1979) classification system[1]:

1. Shallow emergent marsh dominated by a mix of graminoids and forbs, including cattail (*Typha* spp.), common reed (*Phragmites australis*), reed canary grass (*Phalaris arundinacea*), and lake sedge (*Carex lacustris*).
2. Scrub-shrub wetland dominated by a mix of deciduous shrubs, including European alder (*Alnus glutinosa*), common buckthorn (*Rhamnus cathartica*), and boxelder (*Acer negundo*), with an understory of graminoids and forbs, including curled dock (*Rumex crispus*), blue flag (*Iris versicolor*), and grass-leaved goldenrod (*Euthamia graminifolia*).
3. Forested wetland dominated by a mix of deciduous trees, including black willow (*Salix nigra*), green ash (*Fraxinus pennsylvanica*), and boxelder with an understory of grasses and forbs,

[1] Cowardin, L. M., Carter, V., Golet, F. C., LaRoe, E. T. 1979. *Classification of wetlands and deepwater habitats of the United States*. U.S. Department of the Interior, Fish and Wildlife Service.

including moneywort (*Lysimachia nummularia*), goldenrod (*Solidago* spp.), and aster (*Symphyotrichum* spp.).

These areas are hydrologically supported by surface water input from the Mohawk River and groundwater influence from the contributing drainage area. The substrate generally consists of loam that appears to have been influenced by previous disposal activities as municipal waste was observed throughout the study area. Details of the existing resources identified on-site are provided in the Wetland Delineation Report included herein as **Appendix 4**.

2.7 Sensitive species evaluation

Ramboll evaluated the potential presence of federally-listed, proposed, or candidate species in the vicinity of the project area by consulting the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) tool. The IPaC Official Species List (OSL) indicates that the monarch butterfly (*Danaus plexippus*), a candidate species, is locally present, however, no critical habitat is designated for this species, and on-site suitable habitat is marginal. Pursuant to the USFWS' *Northern Long-eared Bat and Tricolored Bat Voluntary Environmental Review Process for Development Projects* (dated October 15, 2024), the most recent iteration of the IPaC tool did not identify the northern long-eared bat (*Myotis septenrionalis* [NLEB]) or the tricolored bat (*Perimyotis subflavus* [TCB]) on the OSL due to updates to the consultation range of each species.

Further, records of state-listed rare, threatened, or endangered species present within the project area were evaluated using the Environmental Resource Mapper (ERM). The ERM indicates that bald eagles (*Haliaeetus leucocephalus*) may be present on, or in the vicinity of, the site. Communication from NYSDEC Fish & Wildlife personnel confirmed that there is a nest in the vicinity of the project area. However, given its location and proximity to the Site, they concluded that the remedial activities would not present an adverse effect.

2.8 Cultural resources

A project information request was submitted to the New York State Office of Parks, Recreation, and Historic Preservation (NYSOPRHP) inquiring about potential impacts to structural and archaeological resources associated with project implementation. Based on a review of the site information and materials in accordance with the New York State Historic Preservation Act of 1980 (section 14.09 of the New York State Parks, Recreation and Historic Preservation Law) the NYSOPRHP issued a "No Effect" letter dated March 20, 2024. The NYSOPRHP letter is provided in **Appendix 5**.

2.9 Canal dredge material

Dredge material from NYSCC UDS 4-26 and Sterling Creek were sampled by Ramboll for geotechnical and chemical analysis to evaluate suitability for use as cover soils for the proposed cover system. The sampling was completed on May 24, 2023, and consisted of collecting material at five locations within the UDS and one location of the Sterling Creek material pile. The sample locations are shown on Figure 1, provided as **Appendix 6**.

Sample were collected at each location utilizing a long reach excavator. Two bulk samples were collected from each location. The first of the sediment at depths ranging from the surface to approximately 4 feet below grade, and the second being from the approximately 4 feet below surface to the reach limit of the excavator, estimated to be approximately 8 feet below the surface. Details of the geotechnical and analytical laboratory testing are provided below.

2.9.1 Geotechnical laboratory testing

Geotechnical laboratory testing was completed by Atlantic Laboratory Testing. Bulk samples were delivered to their lab on May 24, 2023. The geotechnical laboratory testing included testing for the following:

- Natural Moisture Content (ASTM D2216)
- Particle Size Distribution (ASTM D422)
- Compaction Characteristics (ASTM D1557)
- Hydraulic Conductivity (ASTM D5084)

Below is a summary of each of the laboratory tests. The detailed lab reports are provided in **Appendix 6**.

Natural Moisture Content

Natural moisture content analysis was performed on the ten samples collected from the UDS and one from Sterling Creek. Testing was performed in accordance with ASTM D2216 *Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass*. The results are summarized in Table 1.

Table 1: Natural Moisture Content Summary

Sample No.	Moisture Content (%)
01D	53.1
01S	66.2
02D	32.7
02S	53.9
03D	34.5
03S	58.1
04D	39.8
04S	47.6
05D	45.7
05S	47.3
SC-01	7.5

Particle Size Analysis

Particle Size Analysis was performed on the ten soil samples obtained from the UDS and one from Sterling Creek. The analysis was performed in accordance with ASTM D422 *Standard Test Method for Particle-Size Analysis of Soils*. The results are summarized below in Table 2.

Table 2: Particle Size Analysis Summary

Sample No	Percent Gravel (%)	Percent Sand (%)	Percent Silt (%)	Percent Clay (%)
01D	0	1	63	36
01S	0	1	52	47

Sample No	Percent Gravel (%)	Percent Sand (%)	Percent Silt (%)	Percent Clay (%)
02D	0	2	73	12
02S	0	14	39	47
03D	0	6	66	28
03S	0	2	60	38
04D	0	12	74	14
04S	0	5	77	18
05D	0	5	72	23
05S	0	22	66	12
SC-01	17	73	10	

Compaction Characteristics

Compaction testing was performed on the ten soil samples obtained from the UDS and one from Sterling Creek. Testing was completed in accordance with ASTM D1557 *Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort*. The test results are summarized in Table 3.

Table 3: Compaction Characteristics Summary

Sample No.	Maximum Dry Density (pcf[1])	Optimum Moisture Content (%)
01D	106.7	18.1
01S	105.3	17.0
02D	109.9	14.8
02S	114.1	12.8
03D	113.6	11.6
03S	106.5	16.8
04D	112.8	16.6
04S	110.8	13.8
05D	112.0	13.3
05S	114.4	12.9
SC-01	134.2	7.0

Notes: 1. Pounds per Cubic Foot

Hydraulic Conductivity

The ten samples collected from the UDS were analyzed for Hydraulic Conductivity. Testing was completed in accordance with ASTM D5084 *Standard Test Methods for Measurement of Hydraulic*

Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter. The test results are summarized in Table 4.

Table 4: Hydraulic Conductivity Summary

Sample No.	Average Hydraulic Conductivity (cm/sec)
01D	1.10E-07
01S	3.90E-07
02D	1.90E-07
02S	4.40E-07
03D	6.10E-07
03S	1.80E-07
04D	5.00E-07
04S	2.00E-07
05D	6.70E-07
05S	7.30E-07

2.9.2 Analytical laboratory testing

UDS 4-26

Chemical analysis completed on 2 samples (1 shallow and 1 deep) from 5 locations from the UDS 4-26. The samples were analyzed for the following:

- PFAS and SPLP PFAS
- 1,4 dioxane
- VOCS
- SVOCs
- Inorganics
- Cyanide
- PCBs
- Pesticides

The laboratory reports are provided in Appendix 4 and the detected constituents compared to regulatory criteria are summarized on Table 4-1 also provided in Appendix 4. The applicable regulatory screening criteria identified for this material was Restricted Residential Use Soil Cleanup Objectives (RRUSCOs) for Imported fill as summarized in Appendix 5 of the *DER-10-Technical Guidance for Site Investigation and Remediation* dated May 10, 2010. PFAS were compared to soil guidance values provided in the NYSDEC document *Sampling, Analysis and Assessment of Per- and Polyfluoroalkyl Substances (PFAS)* dated April 2023.

Review of the results reveals that no PCBs or pesticides were detected. PFAS were detected in some of the samples but at concentrations below the respective guidance values. Low concentrations of several VOCs and SVOCs were present but concentrations were below the RRUSCOs. Similarly, metals and cyanide were detected in some of the samples but at concentrations below RRUSCOs.

Sterling Creek

One sample was collected from the pile of dredge material that was removed from the adjacent Sterling Creek. This material was previously approved for reuse under a Beneficial Use Determination (BUD). The sample collected from this material was analyzed for the constituents required by the BUD which included SVOCs, and metals. In addition, this sample was analyzed for emerging contaminants, PFAS and SPLP PFAS and 1,4 dioxane. The results are included in **Appendix 6** and a summary is provided as Table 4-2 that is also included in **Appendix 6**.

The analyses results were compared to the same criteria as the UDS 4-26 material. Review of the results reveals that none of the detected constituents were greater than the RRUSCOs. Approximately 6,500 cu yds of this material were subsequently approved via an updated BUD for use at the site in the Summer of 2024. An additional approximately 6,500 cu yds of this material was transported to the site in the Summer of 2025.

3. Basis of Remedial Design

3.1 General

This section presents the BOD for the proposed remedial actions. The remedial design and remedial actions (RD/RA) for the Site must meet the applicable requirements of the ESD that has been developed and approved for the Utica City Dump Site. In this document, the NYSDEC identified remedial goals include the following:

- A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Any uncertainties identified during the RI/FS will be resolved.
- Landfill closure (52 acres east of the Hardfill Area) according to the 1999 NYS Part 360 Regulations, to prevent exposure to surface soils and reduce the generation of landfill leachate.
- Solid waste excavation and consolidation by placement of waste under the cap, to limit exposure to waste. Any consequential amount of hazardous waste found will be removed off-site for the disposal at a permitted facility.
- Demolition and disposal of the onsite incinerator and surrounding structure.
- Fencing along Leland Ave., to prevent trespassing.
- An institutional control will be imposed, in such form as the Department may approve, that will prevent disturbance to the landfill cap and prevent the use of the untreated groundwater as a drinking water source. The institutional control will be imposed in the form of existing use and development restrictions to prevent the use of groundwater as a source of potable or process water without necessary water quality treatment as determined by the New York State Department of Health. The institutional control will also be imposed to prevent disturbance of the cap, so that the constructed cap would stay in place and prevent the infiltration of precipitation into the landfill.

The property owner will complete and submit to the Department an annual certification until the NYSDEC notifies the property owner in writing that this certification is no longer needed. This submittal will contain certification that the institutional controls and engineering controls put in place, pursuant to the Record of Decision, are still in place, have not been altered, and are still effective.

- Sediment removal (with replacement of clean fill) along the eastern banks of the landfill (includes submerged portion of banks), to prevent the exposure of fish and wildlife to levels of PCBs and metals above standards/guidance values and background.
- Monitoring, to evaluate the remedial actions. Since the remedy will result in untreated hazardous waste remaining at the site, a long-term monitoring program will be instituted. Monitoring locations will be selected according to previous sampling results, the grade and topography of the land, and to address particular areas of concern. The purpose of monitoring will be to evaluate leachate/groundwater quality over time and to assess the degree to which the remedial actions were meeting the established remedial goals. In addition to the environmental monitoring, manual monitoring of the landfill cap will be necessary to check that the waste is constantly covered. Any repairs to the damaged portions of the cap should be performed as soon as possible. This program will allow the effectiveness of the landfill cap to be monitored and will be a component of the operation and maintenance for the site.

To achieve these goals, the NYSDEC selected the following remedy:

- Consolidation of the dump waste materials from 126 acres to 103 acres to reduce the ET cover system limits
- Implementing an ET cover system utilizing NDM from the NYSCC UDS 4-26 to prevent exposure to surface soils and to reduce the generation of leachate
- Demolition and disposal of the onsite incinerator stack and surrounding structure(s) in order to construct the cover
- Fencing to prevent trespassing
- Implementation of a Community Air Monitoring Program (CAMP) during construction
- Monitoring to confirm the effectiveness of the remedial actions

3.2 Staging areas and site controls

Areas for the temporary staging of materials and equipment will be established on-site, outside the work area. Material stockpiles will be maintained to prevent erosion and release of sediment to the surrounding environment. Also, erosion and sediment controls will be installed in accordance with the Technical Specification Section 31 25 00 – Erosion and Sediment Controls to minimize erosion and prevent sediment migration. A Stormwater Pollution Prevention Plan (SWPPP) for coverage under the NYSDEC State Pollutant Discharge Elimination System (SPDES) Permit No. GP-0-25-001 for Construction Activity will be developed and submitted separately prior to construction.

Construction vehicles exiting the exclusion zone will be inspected and decontaminated before leaving the site. Decontamination liquid will be disposed in accordance with the Technical Specification section 01 57 23 – Construction Water Management. Also, the RA Contractor will manage stormwater coming in contact with exposed waste (if any) in accordance with the Construction Water Management Technical Specification Section 01 57 23 and the SWPPP.

Other site controls include safety meetings and air monitoring. These activities will be performed in accordance with the site-specific Health and Safety Plan (HASP) prepared for the RA. The site will be posted to advise of potential hazards in accordance with the HASP, and where necessary temporary construction fence will be installed as part of the RA to protect workers or the public.

3.3 Evapotranspiration cover evaluation

Summary

The Utica City Dump cover alternatives were evaluated with the Simultaneous Heat and Water (SHAW) Model.[2] The modeled alternatives included a traditional 48”-thick cover, a geosynthetic clay liner (GCL) cover and two ET covers that include native plant species that would have a high success rate of survival and maintain a well vegetated cover system. These cover alternatives were evaluated using 20 years of local weather data from 2000 to 2020. **See Appendix 7** for the SHAW Model results.

Model results showed the optimal native grassland ET cover functioned within the range of the traditional and GCL covers, signifying equivalency among the alternatives. The optimal ET cover had a percolation rate of 7% of precipitation, which fell between the GCL cover (3%) and the traditional cover (9%). The equivalent modeled performance of the optimal ET cover compared to the traditional cover system can be achieved with half of the earthen material usage, which is consistent with the intent of NYSDEC DER-31 (NYSDEC 2010). An ET cover provides benefit to the local community through the reduced greenhouse gas (GHG) emissions and associated, improved

[2] https://www.ars.usda.gov/ARSUserFiles/20520000/shawdocumentation.pdf

air quality, aesthetic value, and alternative wildlife habitat. Therefore, the optimal modeled ET cover profile was as follows and is recommended as the alternative for this site:

- 6" topsoil
- 0" barrier protection layer
- 18" locally imported dredged spoils

Background

ET covers are natural systems designed to reduce percolation through the coordinated functions of vegetation and soil. The soil component provides a reservoir for moisture storage that is filled by precipitation and is drawn down by transpiration and evaporation. Typically, during the growing season ET exceeds precipitation which creates capacity in the soil pore spaces to store offseason precipitation. ET cover vegetation often consists of native grassland species and/or fast-growing woody species (Hauser 2009[3]). The soil profile of ET covers varies depending on site and underlying conditions and may include compacted layers to enhance storage and reduce percolation rates (EPA 2003[4]). ET covers can satisfy requirements to protect human health and the environment and support NYSDEC's and USEPA's guidance for sustainable remedies.
ET cover systems continue to be developed and deployed throughout the Northeastern US, including the following sites:

- General Electric's Main Plant Landfill – Schenectady, NY
- Radioactive Waste Disposal Area – West Valley, NY
- Clearview Landfill – Darby Township, PA
- Walsh Landfill – Honeybrook, PA
- College Park Landfill – Beltsville, MD

Cover Alternatives

The Utica City Dump cover alternatives evaluated with the SHAW model included a traditional cover consistent with 6 NYCRR Part 360 cover requirements, and two ET covers of varying thicknesses and a GCL cover.

Table 5: Several Different Cover Alternatives were Evaluated with SHAW Model

Scenario*	Topsoil Thickness (in)	Barrier Protection Thickness (in)	Low Permeability Thickness (in)	Ks of Low Permeability Layer (cm/s)
Traditional cover, consistent with Part 365	6	24	18	10^{-7}
GCL	6	12	0.25	10^{-9}
ET cover scenarios	0	0	42**	10^{-7}
	6	0	18**	10^{-7}

*All scenarios were assumed to have a slope of at least 5% in accordance with the part 360 cap design requirements.

**Assumed to be locally dredged material from the Erie canal system. Hydraulic conductivity of the dredged material was based on laboratory analysis provided in Appendix 6.

3 Hauser, Victor. 2009. Evapotranspiration Covers for Landfills and Waste Sites. CRC Press: Boca Raton, FL.

4 Environmental Protection Agency (EPA). 2003. Fact Sheet: Evapotranspiration Landfill Cover Systems. EPA 542-F-03-015.

Modeling Conducted

The SHAW model was used to conduct a water budget modeling to compare the effectiveness of the cover options due to its ability to:

- Model unsaturated flow
- Provide percolation as a key output parameter
- Model snowmelt as well as soil freeze and thaw cycles
- Provide detailed estimates of plant and soil processes in the model output, and
- Model a wide variety of vegetation types and compositions

The SHAW model's accuracy in predicting the water balance has been demonstrated by the research of others and is the type of model recommended by the Interstate Technology and Regulatory Council (ITRC) for modeling natural cover systems (ITRC 2003[5]).

The SHAW model was run from 1999 through 2020 by using actual weather data as input (detailed below). Model results from 1999 were not included in the results as this year allows for model "spin up", which reduces the influence of assumed initial conditions in the modeled cover profiles.

In general, the SHAW model was set up using recommended parameters and procedures outlined in the SHAW User Guide.[6] The SHAW model was customized to the cover scenarios by specifying the soil physical parameters for the various cover profile alternatives, evaluating local weather conditions, and – for the ET cover scenarios – using data from local dredge material sources and for native herbaceous plant species growing in landfill situations.

For the traditional cover scenario, it was assumed that the topsoil would have a grainsize distribution of 50% sand, 30% silt and 20% clay. Barrier protection material was assumed to have a grainsize distribution of 80% sand, 14% silt and 1% clay. Low permeability layer soils would have a grainsize distribution of 25% sand, 15% silt, and 60% clay with a hydraulic conductivity of 10^{-7} cm/sec. Similar assumptions were used for the GCL scenario, with the exception that they hydraulic conductivity was 10^{-9} cm/sec.

For the ET cover scenarios, the same topsoil assumptions were used. However in lieu of a low permeability layer, locally dredged material from the Erie Canal system was assumed in the model. Average physical parameters across sediment borings and test pits were used when creating the soil profiles within the model: fractions of sand, silt and clay where 7, 64, and 28% respectively. Laboratory-measured hydraulic conductivity of 10^{-7} cm/sec was used in the model for this portion of the cover profile.

Across the modeled scenarios, additional values for additional soil/sediment physical parameters required by the SHAW model were estimated from grainsize distribution values as per Saxton and Rawls 2006.[7]

Local weather data for the city of Utica, New York was compiled from two sources, the National Renewable Energy Laboratory (NREL) National Solar Radiation Database (NSRDB)[8], and the

[5] Interstate Technology and Regulatory Council. 2003. Technical and Regulatory Guidelines for Alternative Final Covers.

[6] https://www.ars.usda.gov/ARSUserFiles/20520000/ShawUsersManual.pdf

[7] Saxton, K.E. and Rawls, W.J. 2006. Soil Water Characteristic Estimates by Texture and Organic Matter for Hydrologic Solutions. Soil Science Society of America Journal. 70:1569-1578.

[8] NSRDB (nrel.gov)

National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information (NCDC)[9]. Data was compiled from 1999-2020, in order to evaluate a range of conditions.

Model set up and result files are provided in **Appendix 7**.

Following completion of the SHAW model runs, the output was compared against potential ET calculated with the Thornthwaite equation. In all cases, modeled ET was less than potential ET, which indicates that the models were conservative and not over-predicting this important cover system function.

Model Results

SHAW modeling results for the traditional, GCL and ET covers are summarized in **Table 6**. Over the modeling time period annual precipitation averaged 45 inches and ranged from a low of 35 inches to a high of 58 inches. Across the modeling time period the optimal ET cover (6 inches of topsoil with an 18-inch dredged material layer hydraulic conductivity of 10^{-7}) functioned better than the traditional cover and similarly to the GCL cover, with annual average percolation equivalent to 6% of precipitation.

Table 6 details the average annual rates of precipitation, evapotranspiration, percolation, runoff, and remaining model components from years 2000 through 2020. Percentages are calculated against precipitation. The optimal ET cover is shaded in gray. Abbreviations as follows: P (precipitation), ET (evapotranspiration), perc (percolation), R (runoff), I (interception), S (storage), E (model error).

Table 6: SHAW Model Results

Scenario	P (in)	ET (in)	ET (%)	Perc (in)	Perc (%)	R (in)	R (%)	I, S, E (%)
GCL	45	25	57	1	3	8	18	23
Traditional	45	24	55	5	11	7	15	18
ET (6 in topsoil, 18 in dredged material)	45	25	56	3	6	17	37	0
ET (42 in dredged material)	45	21	48	0.1	0.2	24	53	-1

Benefits of an ET Cover

The equivalent modeled performance of the ET covers compared to the traditional cover can be achieved with half of the earthen material usage, which is consistent with the intent of NYSDEC DER-31 (NYSDEC 2010). The ET cover also provides an opportunity to avoid using oil-based geomembrane materials. These efficiencies result in important reductions in ancillary environmental impacts of construction. For example, compared to the traditional cover, the ET cover would result in reduced GHG emissions of approximately 1,184 metric tons, as shown in **Appendix 12** (less excavation, hauling and placement of earthen materials; avoided used of and placement of petroleum-based liner materials) and impacts to soil borrow sites. Further, the ET cover provides alternative aesthetic and habitat options relative to a traditionally maintained grass system.

[9] Climate Data Search Results - Daily Summaries | Climate Data Online (CDO) | National Climatic Data Center (NCDC) (noaa.gov)

Recommendation
Construction of an ET cover at the Utica City Dump is supported by the SHAW modeling results, which indicate that the optimal ET cover is equivalent to the cover required by 6 NYCRR Part 360 regulations and is also supported by the ancillary benefits described herein.

The native grassland vegetation envisioned for the ET cover is recommended because:

- Periodic mowing of the grassland vegetation could be readily performed by using traditional means.
- Grassland establishment can be done via broadcast or drill seeding as equipment is available.
- Grassland vegetation provides increased habitat diversity and provides a complement to the surrounding vegetation.
- Grassland vegetation is relatively robust to variable climate conditions.

The soil profile recommended for further design development as an ET cover alternative is:

- 6” topsoil (Amended, if required, with locally mined dredge material)
- 0” barrier protection layer
- 18” locally dredged material

3.4 Dredge material loading platforms
A design has been developed for loading and unloading the UDS 4-26 materials. Platforms will be constructed along the shoreline of the canal at both the UDS 4-26 Site and the Dump Site. The loading/unloading platforms have been designed to accommodate both equipment and UDS dredge materials. These platforms will be used to load and unload the UDS dredge materials from the barges that are transported to the site along the Erie Canal system. The BOD for the loading/unloading platforms is detailed in **Appendix 8**.

3.5 Cover design and stability
In accordance with the ESD, the dump will be covered with an ET cover that will consist of the following from the bottom up:

- A non-woven geotextile indicator layer placed on top of prepared subgrade
- 18-inches of dredge material
- A 6-inch vegetative cover

Waste will be consolidated to a total area of approximately 103 acres, which will be covered with an ET cover in accordance with the ESD that is being develop by the NYSDEC. The 18-inch-thick cover layer and 6-inch vegetative cover are proposed to consist of dredged material from UDS 4-26.

Technical specifications presenting the requirements for each cap component are provided in the Contract Documents submitted as a separate document.

The proposed grades and details showing the proposed cover details are detailed in the Final Contract Drawings submitted as a separate document. Based on the drawings, the dump will be graded to have slopes that range 5% (1v:20h) on the cover system that will transition to off cover slopes as steep as 33% (1v:3h) on the steepest portions of the side slopes.

In accordance with NYSDEC Part 363-4.3, the global slope stability was analyzed based on available information and anticipated material properties using Slope/W 2012 by Geo-Slope International Ltd.

Using SLOPE/W, the following three slopes were evaluated on the longest side of the landfill: the top slope of the cap (5%), the perimeter drainage swale (33% side slopes), and the side slope of the cap (33%). The most critical slope was 33% side slope of the landfill. The factor of safety for static slope stability of the most critical slope was 1.838 compared to the required minimum 1.5 factor of safety as specified in the NYSDEC Part 363-4.3 regulations. The seismic slope stability analysis, using an acceleration value of 0.0477g, which is one-half of the free field peak ground acceleration at the former Utica City Dump, based on the United States Geological Survey (USGS) Unified Hazard Tool, was conducted on the same section and the safety factor against failure of the most critical slope was 1.552 compared to the required 1.0 minimum factor of safety.

The slope stability calculations with supporting data and documentation are provided in **Appendix 9**.

3.6 Passive gas ventilation

The installation of the ET cover system in accordance with the ESD will allow for gas ventilation to continue passively without the installation of a designated system or vents.

3.7 Stormwater conveyance

Stormwater will be conveyed through the site by vegetative swales to fifteen smooth interior HDPE culverts (2 in the north, 1 in the east, and 12 in the south of the site). Stormwater passing through the culverts will be released onto rip-rap aprons that exit the site into the engineered wetlands (east and south) as shown in the Final Contract Drawings.

The dimensions of the lined vegetative swales, HDPE culverts, and rip-rap aprons were sized to accommodate a projected high representative concentration pathway (RCP) 8.5 100-year, 24-hour storm for the year 2070. The high RCP 8.5 represents one of the four projected greenhouse gas emission scenarios developed by the Intergovernmental Panel on Climate Change (IPCC). The IPCC predicts that increases in greenhouse gas emissions will result in climate change that will cause more severe storm events in the future. High RCP 8.5 is the largest greenhouse gas emission scenario and was the most conservative projection for the stormwater management system. Details regarding the BOD of the lined vegetative swales, HDPE culverts, and rip-rap aprons are provided in **Appendix 10**.

3.8 Climate resiliency evaluation

The Climate Resiliency Assessment provides an overview of site conditions and contaminants of concern, a description of the post remedial action conceptual site plan, projected impacts of climate change, possible climate-associated sensitivities and vulnerabilities on the site, and possible adaptation measures that could be undertaken to address these vulnerabilities. Due to the evolving understanding about climate hazards and projected changes over time, the information in this report should be revisited in the future, as projected changes in climate hazards are updated.

Impacts of climate hazards are projected to increase in the future due to climate change. The climate hazards evaluated in the Climate Resiliency Assessment include precipitation, riverine flooding, temperature, and wind. As the impacts of climate change lead to more extreme weather in the future, increased monitoring of the remedial actions of this site may be needed post construction.

Several components of the design will help to prevent extreme weather events from causing contaminants on site to impact the surroundings. These include consolidating and capping the limits of waste, expanding wetlands along the shoreline, installing vegetated swales and buffers, and planting resilient native species. The Climate Resiliency Assessment is provided as **Appendix 11**.

3.9 Wetland restoration

The remedial action for the site includes the *restoration* of approximately 1.58 acres of disturbed wetland and aquatic habitats on the site perimeter. Additionally, the remedial action for the site includes the *creation* of approximately 16.63 acres of wetland and aquatic habitat. Wetland restoration zones are described below:

- Zone A – Emergent wetland that supports a mix of vegetative species that thrive in intermittently exposed and shallow (0 to 6-inches of water) emergent areas
- Zone B – Wet meadow that supports a mix of vegetative species that thrive in intermittently flooded, seasonally saturated areas
- Zone C – Scrub-shrub wetland that supports a mix of shrub and vegetative species that thrive in intermittently exposed and shallow (0 to 6-inches) water
- Zone D – Floodplain forest wetland that supports a mix of vegetative and deciduous tree species that thrive in intermittently exposed and shallow (0 to 6-inches) water
- Zone E – Submerged aquatic habitat that transitions from shallow emergent habitat to an approximate water depth of 4 ft.

The following seed and plant mixtures shall be applied to areas indicated below based on the habitat type indicated on Sheets C-213 through C-218 of the Final Contract Drawings. The actual aquatic plants to be planted will be selected based on commercial availability at the time of planting. Prior to finalization of the wetland restoration plan, consideration will also be given to the preferred planting season for each species. Modification to the planting plan proposed herein (including species type) will be coordinated with NYSDEC prior to modification.

3.9.1 Zone A – Emergent

Table 7: Zone A - Emergent Seed Mix

Content (%)	Common Name	Botanical Name
20	Virginia Wild Rye	*Elymus virginicus*
10	American Bur Reed	*Sparganium americanum*
10	Water Smartweed	*Polygonum amphibium*
5	Soft-stem Bulrush	*Scirpus validus*
5	Duck potato	*Sagitaria latifolia*
5	Lurid (Shallow) Sedge	*Carex lurida*
5	Fox Sedge	*Carex vulpinoidea*
5	Water Plantain	*Alisma subcordatum*
5	Soft Rush	*Juncus effusus*
5	Wool Grass	*Scirpus cyperinus*

Content (%)	Common Name	Botanical Name
5	Eastern Bur Reed	*Sparganium americanum*
5	Dark Green Bulrush	*Scirpus atrovirens*
5	Hard-stem bulrush	*Schoenoplectus acutus*
5	Rattlesnake Grass	*Glyceria canadensis*
5	Rice Cutgrass	*Leersia oryzoides*
Source: Ramboll		

Note: Apply seed at 40 lbs. per acre to Zone A areas

Table 8: Zone A - Emergent Plant Mix

Common Name	Botanical Name
American Bur Reed	*Sparganium americanum*
Duck potato	*Sagitaria latifolia*
Water Plantain	*Alisma subcordatum*
Sensitive Fern	*Onoclea sensibilis*
Source: Ramboll	

Notes: Individual 2-inch diameter plugs or 1-gallon containers shall be planted at a density of 3 plants per 10 square feet in the area indicated as Zone A.

3.9.2 Zone B – Wet meadow

Table 9: Zone B - Wet Meadow Seed Mix

Content (%)	Common Name	Botanical Name
15	Red Top Grass	*Agrostis alba*
12	Virginia Wild Rye	*Elymus virginicus*
5	Soft Rush	*Juncus effusus*
5	Spotted touch me not	*Impatiens capensis*
5	Pale touch me not	*Impatiens pallida*
5	Beggar Ticks	*Bidens frondosa*
5	Umbrella Sedge	*Cyperus strigosus*
5	Blue Vervain	*Verbena hastata*
5	Jerusalem Artichoke	*Helianthus tuberosus*
5	Grass Leaved Goldenrod	*Euthamia graminifolia*
5	Swamp Milkweed	*Asclepias incarnata*
5	Purple Stemmed Aster	*Aster puniceus*
5	Joe Pye Weed	*Eupatorium maculatum*

Content (%)	Common Name	Botanical Name
5	Boneset	*Eupatorium perfoliatum*
2	Fox Sedge	*Carex vulpinoidea*
2	Field Horsetail	*Equisetum arvense*
2	Rough Horsetail	*Equisetum hyemale*
2	Nodding Bur Marigold	*Bidens cernua*
1	Indian Hemp	*Apocynum cannabinum*
1	Water Horehound	*Lycopus americanus*
1	Monkey Flower	*Mimulus ringens*
1	Awl Sedge	*Carex stipata*
1	False Nettle	*Boehmaria cylindrica*
Source: Ramboll		

Note: Apply seed at 40 lbs. per acre to Zone B areas

Table 10: Zone B - Wet Meadow Plant Mix

Common Name	Botanical Name
Cinnamon Fern	*Osmunda cinnamomea*
Sensitive Fern	*Onoclea sensibilis*
Joe Pye Weed	*Eupatorium maculatum*
Boneset	*Eupatorium perfoliatum*
Source: Ramboll	

Notes: Individual 2-inch diameter plugs or 1-gallon containers shall be planted at a density of 3 plants per 10 square feet in the area indicated as Zone B.

3.9.3 Zone C – Scrub-shrub

Table 11: Zone C - Scrub Shrub Seed Mix

Content (%)	Common Name	Botanical Name
42	Virginia Wild Rye	*Elymus virginicus*
25	Fox Sedge	*Carex vulpinoidea*
11	Soft rush	*Juncus effusus*
5	Hop Sedge	*Carex lupulina*
5	Grass Leaved Goldenrod	*Euthamia graminifolia*
5	Umbrella Sedge	*Cyperus strigosus*
3	Pennsylvania smartweed	*Polygonum pensylvanicum*
2	Awl Sedge	*Carex stipata*

Content (%)	Common Name	Botanical Name
1	Cosmos (Bristly) Sedge	*Carex comosa*
1	Nodding Bur Marigold	*Bidens cernua*
Source: Ramboll		

Note: Apply seed at 20 lbs. per acre to Zone C areas

Table 12: Zone C - Scrub Shrub Plant Mix

Common Name	Botanical Name
Buttonbush	*Cephalanthus occidentalis*
Red Osier Dogwood	*Cornus sericea*
Speckled Alder	*Alnus rugosa*
Arrowwood	*Viburnum dentatum*
Elderberry	*Sambucus canadensis*
Black Willow	*Salix nigra*
Source: Ramboll	

Note: No. 2 size pots of shrubs shall be planted at a density of 1 per 16 square feet, alternating species such that equal numbers of each species are planted.

3.9.4 Zone D – Floodplain forest

Table 13: Zone D - Floodplain Forest Seed Mix

Content (%)	Common Name	Botanical Name
34	Big Bluestem	*Andropogon gerardii*
20	Switchgrass	*Panicum virgatum*
15	Virginia Wildrye	*Elymus virginicus*
10	Purpletop	*Tridens flavus*
5	Coastal Panicgrass	*Panicum amarum*
5	Partridge Pea	*Chamaecrista fasciculata*
3	Blackeyed Susan	*Rudbeckia hirta*
3	Fowl Bluegrass	*Poa palustris*
2	Showy Ticktrefoil	*Desmodium canadense*
2	Oxeye Sunflower	*Heliopsis helianthoides*
1	Plains Coreopsis	*Coreopsis tinctoria*
Source: Ramboll		

Note: Apply seed at 20 lbs. per acre to Floodplain Forest areas

Table 14: Zone D - Floodplain Forest Plant Mix

Common Name	Botanical Name
Slippery Elm	*Ulmus rubra*
Eastern Cottonwood	*Populus deltoides*
American Sycamore	*Platanus occidentalis*
Swamp White Oak	*Quercus bicolor*
American Hornbeam	*Carpinus caroliniana*
Black Willow	*Salix nigra*
Source: Ramboll	

Note: No. 2 size pots of trees shall be planted at a density of 1 per 64 square feet, alternating species such that equal numbers of each species are planted.

3.9.5 Zone E – Subaqueous habitat

Table 15: Zone E - Subaqueous Plant Mix

Common Name	Species
White waterlily	*Nymphaea odorata*
Yellow waterlily	*Nuphar lutea*
American elodea	*Elodea americanum*
Long-leaved pondweed	*Potamogeton nodosus*
Clasping-leaved pondweed	*Potamogeton perfoliatus*
Duck potato	*Sagittaria rigida*
Wild celery	*Vallisneria americana*
Wild rice	*Zizania aquatia*
Source: Ramboll	

Note: Plugs shall be planted at 4-ft spacing, alternating species such that equal numbers of each species are planted.

4. Regulatory Permitting

Fill or disturbance of the delineated wetland areas will be subject to regulatory approval from both the NYSDEC and the USACE via a Joint Application for Permit (JAP)/Pre-Construction Notification (PCN).

Ramboll has prepared a JAP/PCN on behalf of the NYSDEC to:

1. Request a jurisdictional determination (JD) from the USACE for wetlands and waters of the U.S. delineated within the project area.
2. Obtain authorization under the following:

Table 16: Potential Permits, Approvals & Reviews

Permit	Activity	Agency
Federal		
Section 404 of the Clean Water Act (Joint Application)	Work within waters of the United States. Work may be authorized under a Nationwide Permit (e.g., NWP No. 38 [Cleanup of Hazardous and Toxic Waste]) vs. an Individual Permit.	USACE
Section 10 of the Rivers & Harbors Act of 1899 (Joint Application)	Work within federally designated navigable waters of the United States.	USACE
State		
Article 24 of the Environmental Conservation Law (ECL)	6 NYCRR Parts 663 – 664 for impacts to New York State Freshwater Wetland (NYSFW) and/or it's 100-ft buffer that are regulated pursuant to Article 24 of the Environmental Conservation Law	NYSDEC
Section 401 of the Clean Water Act (401 Water Quality Certification) (Joint Application)	Certification is used to ensure that federal agencies issuing permits or carrying out direct actions, which may result in a discharge to waters of the United States, do not violate New York State's water quality standards or impair designated uses.	NYSDEC
Protection of Waters (6 NYCRR Part 608; Article 15 of the ECL) (Joint Application)	Work within protected water bodies (bed and banks). Excavation or placement of fill in navigable waters. Construction, reconstruction, or expansion of docking and mooring facilities.	NYSDEC
SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-25-001)	Stormwater discharges from construction phase activities disturbing one-acre or greater. Includes preparation of SWPPP for Stormwater Discharge under SPDES General Permit.	NYSDEC
Highway Work Permit[1]	Work within highway rights-of-way (highway and utility improvements).	NYSDOT and/or local DOT
Federal & State Preservation Laws (36 CFR 800; 9 NYCRR Part 428; Sections 3.09 and 14.09 of the	Activities affecting historic, architectural, archaeological, and cultural resources. Involved State agency determines need for consultation	NYSOPRHP – Field Services Bureau

Permit	Activity	Agency
NYS Parks, Recreation and Historic Preservation Law)	with NYSOPRHP. Initial consultation via NYSOPRHP's Cultural Resource Information System (CRIS) included submission of project description and location, photographs, and documentation of prior disturbance.	
ESA (Section 7 of ESA)	Consultation process to identify whether a Federally- or State-listed, proposed or candidate species and/or critical habitat may occur within the proposed project area.	USFWS, NYSDEC NHP
Canal Permit, Real Property Occupancy and Work Permits	Work within lands owned and maintained by the NYS Canal Corporation.	NYS Canal Corporation
Local (Municipal)		
Floodplain Development Permit[2]	Work within 100-year floodplain. Approval process is typically delegated to local floodplain administrator.	Municipality (typical)
Site Plan Approval[2]	Approval of Site modifications. Coordinate with municipal Code Enforcement Officer to identify process).	Municipal Planning Board (typical)
GML 239-m[2]	County Planning Board review of activities located within 500-feet of State or County highway, municipal boundary or park.	County Planning Board

Notes: [1] Permits to be obtained by the contractor, if required.
[2] Permits to be obtained by municipality, if required.
Source: Ramboll

The JAP/PCN package includes the following:

- Wetland and Aquatic Resource Delineation Report
- Description and photographs of the area to be impacted, including qualitative habitat descriptions
- Description of proposed materials, equipment, and methods to be used during site activities
- Description of best management practices that will be employed during construction to avoid and minimize potential wetland impacts
- Description of why the proposed project is necessary and alternatives that have been considered to avoid and minimize impacts to wetlands and aquatic resources
- Wetland and aquatic resource impact figures that illustrate the proposed facilities, existing wetlands and aquatic resources, and proposed temporary and permanent impacts
- Information from the USFWS and NYNHP regarding the potential presence of rare, threatened, or endangered species on-site

5. Green and Sustainable Remediation Metrics Assessment

NYSDEC's DER-31 Green Remediation Program Policy (DER-31; NYSDEC, 2011) states that green remediation concepts and techniques be considered during all stages of the remedial program including remedy design and action, with the goal of improving the sustainability of the cleanup. DER-31 defines green remediation as "the practice of considering all environmental effects of remedy implementation and incorporating options to minimize the environmental footprint of cleanup actions." Efforts will be taken to conduct the remedy in a sustainable manner and selected green and sustainable best management practices (BMPs) recommended for implementation during remedial design and construction are presented below.

5.1 Environmental footprint analysis

An environmental footprint analysis was completed using the SiteWise™ environmental footprint tool to evaluate the selected design with respect to green and sustainable remediation. SiteWise™ calculates several common environmental metrics of interest including GHG, energy use, criteria air pollutants, water use and more. The emissions factors in SiteWise™ are reflective of the full life cycle of materials and waste and their impacts are inclusive of material production and management of waste at the landfill, even though these activities are conducted offsite. The SiteWise™ tool provides results that compare the individual activities/components of the remedy (e.g., consumables and transportation) as well as a summary for the overall project. Remedial program elements incorporated in the environmental footprint analysis include equipment operation, material handling, raw materials usage, transportation of equipment, and other site-specific activities such as brush clearing, demolition of the on-site trash incinerator, drainage swales and discharge system installation, activities associated with transportation of dredged material, and wetland construction. Where possible, site-specific data was utilized for the inputs for the environmental footprint assessment, and when specific data was not available, estimates and assumptions based on previous experience and best management practices were incorporated. Transportation of personnel to/from the Site was not included in this analysis due to lack of information available regarding the number of personnel and distance traveled. For this analysis, remedial actions associated with the landfill closure performed on-site were evaluated in component 1 of the SiteWise™ tool and activities associated with transportation of dredge material were evaluated in component 2; detailed results are provided in **Appendix 12**.

Component 1 encompasses activities associated with site preparation, remediation, and restoration within and directly adjacent to the Site. This includes clearing of the Site, preparation, installation, and raw materials for the contractor staging area, perimeter access road, incinerator road improvements, and stormwater infrastructure. In addition, component 1 accounts for material handling associated with demolition of the on-site trash incinerator and surrounding structures, excavation, relocation, compaction, and grading of existing landfilled material, as well as installation and grading of the evapotranspiration cover system and excavation and restoration of the wetlands. Transportation of raw materials and equipment is included in this assessment. Component 1, remedial action activities, is estimated to generate approximately 1,447 metric tons of GHG emissions and utilize approximately 28,012 metric million British thermal units (MMBTU) of energy. In addition, the total NOx, SOx, and PM10 that will be generated as a result of the remedial activities is approximately 7.1 metric tons, 4.7 metric tons and 1.58 metric tons, respectively.

Component 2 includes activities associated with transportation of dredged material to the Site via the adjacent barge canal. This consists of material handling of dredge material from the UDS to the Site and installation of the dredge material loading platforms. Transportation of raw materials and equipment is included in this assessment. Component 2, transportation activities, is

estimated to generate approximately 1,979 metric tons of GHG emissions and utilize approximately 29,999 MMBTU of energy. In addition, the total NOx, SOx, and PM10 that will be generated as a result of the transportation of the dredge material is approximately 16.72 metric tons, 4.99 metric tons and 1.24 metric tons, respectively.

The total projected environmental footprint for completion of the remedial action as described in this Final BOD is estimated to generate approximately 3,427 metric tons of GHG emissions and utilize approximately 58,011 MMBTU of energy. In addition, the total NOx, SOx, and PM10 that will be generated as a result of the project is approximately 23.82 metric tons, 9.69 metric tons and 2.81 metric tons, respectively.

The SiteWise™ model results create a baseline estimate for the environmental footprint of the project. As construction progresses, data gathered during implementation will replace estimated quantities for a more accurate representation of project related environmental impact. NYSDEC Form A is the recommended means for contractor environmental footprint tracking during construction.

This environmental footprint assessment identified which remedy components had the highest projected environmental footprint. Applicable BMPs have been selected and are recommended to be applied during the project's implementation phase to enable environmental footprint reduction. This list of selected applicable BMPs is presented below:

- Locally source cover materials, to the extent practicable
- Use local labor resources, including local unions and subcontractors
- Reuse onsite organic matter (e.g., trees from clearing activities)
- Prioritize use of properly sized efficient equipment
- Prioritize use of equipment with emission control technologies
- Limit Site visits to only relevant personnel, carpool when possible, and conduct online meetings when appropriate
- Sequence remedial work phases to reduce or limit multiple handlings of materials
- Prioritize the use of products/materials made with recycled, rapidly renewable, and bio-based components
- Actively monitor and record water/energy/greenhouse emissions throughout the lifespan of the project and continually evaluate opportunities to minimize usages and impacts.
- Limit project related engine idling and excess starting/stopping of engines, to the extent practicable
- Use clean energy alternatives to power field equipment when reasonable ex.) photovoltaic panels, wind turbines, etc.Select materials that are environmentally preferrable with respect to raw material consumption, packaging, recycling capabilities, and maintenance needs
- Protect environmental receptors from site-related contamination by implementing stormwater and dust controls
- Regularly review site status with respect to the conceptual site model and the site vulnerability assessment to evaluate if changing site conditions require changes to BMPs

Throughout the project implementation, environmental metrics should be documented in a metrics tracking report card which will be provided to the NYSDEC.

5.2 Canal dredge material transportation – evaluation of transportation options

The design includes use of locally mined dredge material for use in the ET cover. The use of this material provides a great sustainability benefit to the project as the material is local, and that the dredge spoils are a waste product that is being put to beneficial reuse. While the distance from

the local source of dredge material to the Site is only approximately 5-10 miles, the large quantity of dredge material to be moved warranted consideration of the environmental footprint of the various transportation methods. An environmental footprint evaluation was performed during the 60% design phase using the SiteWise™ tool of three potential transportation options for relocating the dredged material to the Site; on-road trucking, off-road trucking, and barge transportation. Results of the environmental footprint evaluation indicated that the barge transport option had the lowest overall environmental footprint for most metrics while the off-road trucking option had the highest environmental footprint. The off-road trucking option is estimated to produce 75% more greenhouse gas emissions and require 91% more energy use than the barge transportation option. Since the footprint evaluation of transportation options has been conducted the design team has slightly changed the expected dock area from construction of bulkheads to use of steel docks which are anticipated to lower the amounts of total raw materials and transportation of materials needed to install the dock.

The Final basis of design environmental footprint assessment included the consideration of these design changes and Component 2, transportation activities, includes installation and construction of steel docks, no sheet piling materials and processes, placement and importation of stone for protection of the loading/unloading areas. Furthermore the Final design includes increased volume of dredge material anticipated to be needed for installation of the ET Cover System. Transportation via barge along the adjacent canal will greatly reduce the amount of trucking required for the implementation of this project and therefore minimize the associated environmental burden as compared to other dredge material transportation options.

5.3 Disadvantaged communities considerations

According to section 7(3) of the Climate Leadership and Community Protection Act (CLCPA), disadvantaged communities (DAC) are identified based on a combination of environmental, economic, and health criteria. An evaluation was conducted for the Utica City Dump to determine the proximity of the site to a DAC and whether the proposed remediation places a disproportionate burden on a DAC. Based upon this evaluation, the Utica City Dump is located directly adjacent to a DAC. The closure design will incorporate elements to minimize the environmental footprint generated associated with the implementation of the required remedy and therefore reduce the associated overall environmental burden that may affect the identified DACs located near the site. This project incorporates many sustainable design elements including local sourcing of materials from New York State Canals, beneficial reuse of Navigable Dredge Material (NDM) minimizing the of use of virgin natural resources, and integration of natural design elements by using an ET Cover design and transporting material via barge along the canal to minimize impacts associated with the remediation. It will also include implementation of a more extensive Community Air Monitoring Program (CAMP). Additionally, while the majority of the environmental burden will occur within a relatively short time frame, the long-term benefits—such as the reduction of exposure to hazardous wastes and the creation of new wetlands and habitat areas—are expected to bring lasting, positive effects to the surrounding communities. Based upon data from the 2023 Establishing the Cost of Carbon, the social costs of carbon[1] for this remedial action is determined to be approximately $430,000 with a total energy of approximately 56,000 metric million British thermal units (MMBTU). This remedial alternative has the lowest social cost of carbon when compared to other transportation alternatives.

[1] The social cost of carbon is an estimate, in dollars, of the present discounted value of the future damage caused by a metric ton increase in emissions of a specific greenhouse gas into the atmosphere in that year or, equivalently, the benefits of reducing emissions of that gas by the same amount in that year. It is intended to provide a comprehensive measure of the net damages—that is, the monetized value of the net impacts—from global climate change that result from an additional ton of emissions. *(National Academies of Sciences, Engineering, and Medicine. 2017. Valuing Climate Damages: Updating Estimation of the Social Cost of Carbon Dioxide. Washington, DC: The National Academies Press. https://doi.org/10.17226/24651.)*

6. Institutional Control Requirements

As part of the remedy, the ESD specifies that institutional controls consisting of existing use and development restrictions will be implemented to prevent the use of groundwater as a source of potable or process water without necessary water quality treatment as determined by the New York State Department of Health, and to prevent disturbance of the cap to prevent infiltration of precipitation into the landfill.

To meet these requirements, the site Owner will need to provide an annual certification in accordance with an approved Site Management Plan to the NYSDEC that the institutional controls and engineering controls installed are still in place, have not been altered, and are still effective.

7. References

CHA/LMS, 2000 Remedial Investigation and Feasibility Study, Utica City Dump (Site No. 6-33-015), August 2000

NYSDEC, 2003 Record of Decision, Utica City Dump (Site No. 6-33-015), August 2003

NYSDEC, 2025 Explanation of Significant Differences (ESD) (Site No. 6-33-015), April 19, 2025.