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Level 4

# Long-Term Stewardship Plan for the Colonie, New York, Site

## August 2023

U.S. DEPARTMENT OF ENERGY | Legacy Management

*This document has been designed for online viewing.*

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# Abbreviations

| | |
|---|---|
| AEC | U.S. Atomic Energy Commission |
| bgs | below ground surface |
| cDCE | *cis*-1,2-dichloroethene |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CFR | *Code of Federal Regulations* |
| COC | contaminant of concern |
| CP | Commissioner Policy |
| CSX | CSX Transportation |
| DER | Division of Environmental Remediation |
| DOE | U.S. Department of Energy |
| DU | depleted uranium |
| EDGE | EQuIS Data Gathering Engine |
| EE/CA | engineering evaluation/cost analysis |
| EPA | U.S. Environmental Protection Agency |
| EQuIS | Environmental Quality Information System |
| ERF | *Environmental Review Form* |
| ESDM | Environmental and Spatial Data Management |
| FIMS | Facilities Information Management System |
| ft | feet |
| FUSRAP | Formerly Utilized Sites Remedial Action Program |
| GAC | granular activated carbon |
| GEP | General Emergency Plan |
| GSA | U.S. General Services Administration |
| HHRA | human health risk assessment |
| IC | institutional control |
| IDW | investigation-derived waste |
| ISO | International Organization for Standardization |
| IWCP | Integrated Work Control Process |
| LM | Office of Legacy Management |
| LMS | Legacy Management Support |
| LTS | long-term stewardship |
| µg/L | micrograms per liter |

| | |
|---|---|
| MED | Manhattan Engineer District |
| MNA | monitored natural attenuation |
| NCP | National Oil and Hazardous Substances Pollution Contingency Plan |
| NEPA | National Environmental Policy Act |
| NRC | U.S. Nuclear Regulatory Commission |
| NTU | nephelometric turbidity units |
| NYCRR | *New York Codes, Rules and Regulations* |
| NYECL | *New York Environmental Conservation Law* |
| NYSDEC | New York State Department of Environmental Conservation |
| OSWER | Office of Solid Waste and Emergency Response |
| OU | operable unit |
| PCE | tetrachloroethene |
| QA | Quality Assurance |
| QAM | *Quality Assurance Manual* |
| RI | Remedial Investigation |
| ROD | Record of Decision |
| SAP | Sampling and Analysis Plan |
| SMP | Site Management Plan |
| TCE | trichloroethene |
| TCG | target cleanup goal |
| USACE | U.S. Army Corps of Engineers |
| USC | *United States Code* |
| UU/UE | unlimited use and unrestricted exposure |
| VC | vinyl chloride |
| VOC | volatile organic compound |
| VP | vicinity property |

# 1.0 Introduction

This Long-Term Stewardship (LTS) Plan describes the processes and requirements for the management of the U.S. Department of Energy (DOE) Colonie, New York, Site. The U.S. Army Corps of Engineers (USACE) completed remedial actions at the site under the Formerly Utilized Sites Remedial Action Program (FUSRAP) (USACE 2018a). The site was transferred to the DOE Office of Legacy Management (LM) on September 30, 2019.

## 1.1 Purpose and Scope

This LTS Plan documents the activities and processes required to maintain and ensure the effectiveness of the selected remedies for the Colonie site. These activities and processes include the following:

- Ensuring onsite actions are conducted safely
- Understanding the institutional controls (ICs)
- Conducting the groundwater monitoring program
- Identifying and complying with the applicable federal and state regulations
- Ensuring that risks, funding needs, and personnel requirements are identified for the life-cycle baseline
- Ensuring that outreach (websites, public databases, and written communications) informs the public about site conditions
- Ensuring that data and records are maintained and accessible
- Ensuring that the wells are maintained and secure, including planning for contingencies

## 1.2 Plan Organization

**Section 1.0 "Introduction":** Provides the purpose of the plan and the site's history, geologic setting, and regulatory requirements.

**Section 2.0, "Site Conditions":** Describes the environmental conditions and real property and personal property assets.

**Section 3.0, "Long-Term Stewardship":** Describes plans for community outreach, environmental monitoring, long-term periodic reviews, contingencies, and emergency response.

**Section 4.0, "References":** Includes all references used in the report, including appendixes.

## 1.3 FUSRAP Background

During World War II, USACE set up the Manhattan Engineer District (MED), or the 'Manhattan Project', to win the race to create the world's first atomic bombs. Because the government did not have the capability to develop this technology on its own, MED contracted out certain tasks to private enterprises. These tasks included storing and processing uranium ore and other radioactive materials, performing metallurgical research, and providing production and

machining services. In 1946, following the end of World War II, President Harry Truman signed the Atomic Energy Act, which created the civilian U.S. Atomic Energy Commission (AEC). Congress abolished MED in 1947 and transferred responsibility for the atomic weapons program to the AEC. The AEC's work also included the peacetime missions of atomic energy research and the establishment of the National Laboratory system. As the government developed its own research and production facilities, the services of the contracted companies were no longer needed, and they were cleaned up to the standards of the day.

In the early 1970s, the government strengthened cleanup requirements. Radiological contamination that remained at some of the formerly contracted sites exceeded the new standards. The Formerly Utilized Sites Remedial Action Program (FUSRAP) was established in 1974 to identify, investigate, and clean up or control sites that were contaminated above the new guidelines. FUSRAP personnel reviewed the radiological conditions at more than 600 sites that were potentially involved in early atomic weapon and energy activities, and they identified 46 sites for cleanup. The DOE, a descendent of the AEC, began cleanup projects in 1979 and completed 25 sites.

In 1997 responsibility for the cleanup of FUSRAP sites was transferred to USACE. A memorandum of understanding between USACE and DOE defined the roles of each agency in administering and executing FUSRAP. DOE retains responsibility to determine the eligibility of new FUSRAP sites and for the long-term care of sites after USACE cleanups are completed. USACE has responsibility for remediating the FUSRAP sites within the framework of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan, also called the National Contingency Plan (NCP). USACE retains responsibility for the site for 2 years after completion of the cleanup and then transfers the site to DOE for LTS. DOE completed 7 additional sites from 1997 to 2008, where cleanup work had already begun. USACE assumed responsibility for the cleanup of the 21 remaining FUSRAP sites and has subsequently received 8 additional sites. In 2003, LM was created and assigned responsibility for DOE FUSRAP activities (i.e., LTS).

## 1.4 FUSRAP Eligibility

DOE was directed to remediate the site by Congress under the authority of the Energy and Water Appropriations Act of 1984 (Public Law 98-50 [PL 98-50]).

## 1.5 Authorities

This section describes the applicable regulation authorities that affect the LTS program for the site.

From 1958 to 1962, the Colonie site was owned by the National Lead Company and licensed by AEC, the predecessor of the U.S. Nuclear Regulatory Commission (NRC). In 1962, when New York State became an Agreement State, regulatory oversight of licensed activities transferred to New York (Travers 2000). NRC and New York State licenses were terminated or allowed to expire when the site was sold to the United States and assigned to DOE, due to DOE's independent authorities granted under the Atomic Energy Act of 1954 (PL 83-703) (Judd 1999).

As a result of the Energy and Water Development Appropriations Act of 1984 (PL 98-50), the site became eligible for FUSRAP by congressional mandate. DOE performed investigations and removal actions at vicinity properties (VPs) under the authorities granted under the Atomic Energy Act of 1954. In the Energy and Water Development Appropriations Act of 1998 (PL 105-62) and the Energy and Water Development Appropriations Act of 1999 (PL 105-245), USACE was designated as the lead federal agency for performing FUSRAP Remedial Investigations (RIs) and response actions. USACE was directed to use the administrative, procedural, and regulatory provisions of CERCLA and the NCP. The site is neither on the National Priorities List, nor is there a Federal Facility Agreement with the U.S. Environmental Protection Agency (EPA).

DOE performed initial removal actions at the site and finalized an Action Memorandum in 1997 (DOE 1997), hereafter called the 1997 Action Memorandum. USACE issued a Final Action Memorandum in 2001 (USACE 2001a).

USACE has issued the following three Records of Decision (RODs) for the operable units (OUs) that were established:

- *Colonie FUSRAP Site Record of Decision, Colonie Site Groundwater* (USACE 2010), hereafter called the Groundwater ROD
- *Colonie FUSRAP Site, Colonie Main Site Soils Record of Decision* (USACE 2015), hereafter called the Soil ROD
- *Colonie FUSRAP Site, Vicinity Property Operable Unit Record of Decision* (USACE 2017c), hereafter called the VP ROD

The RODs summarize site conditions and the risks posed to human health and the environment from FUSRAP contaminants of concern (COCs). The RODs state the determinations made by USACE regarding the current and potential future use of the site and its resources. The selected remedies are stated, followed by determinations that the remedies satisfy the statutory requirements of CERCLA and the NCP.

The New York State Department of Environmental Conservation (NYSDEC) has concurred with all three RODs. Both the Soil ROD and the Groundwater ROD require long-term periodic reviews (known as Five-Year Reviews for CERCLA sites). Those reviews are required after CERCLA corrective actions where hazardous substances remain above levels that allow for unlimited use and unrestricted exposure (UU/UE). The CERCLA requirement is stated in Title 42 *United States Code* 9621(c) (42 USC 9621[c]), and the NCP requirement is found in Title 40 *Code of Federal Regulations* Section 300.430(f)(4)(ii) (40 CFR 300.430[f][4][ii]). The term “hazardous substance” is defined in CERCLA Section 101(14).

The Soil ROD specified that an environmental easement would be emplaced for three areas of inaccessible soil contamination. Environmental easements in New York attached to the land in favor of the state, subject to the provisions of Article 71 *New York Environmental Conservation Law* Title 36 (NYECL 71-36). Under certain provisions of the NYECL, NYSDEC has enforcement authority over the environmental easements. The NYECL also requires the use of the Site Management Plan (SMP), which describes the use, monitoring, and reporting requirements for the three soil easement areas and is a separate, stand-alone document describing the ICs established for the soil easement areas.

The Groundwater ROD specified that an environmental easement would be emplaced to prevent human exposure to vapors from volatile organic compounds (VOCs) emanating from groundwater beneath the site. The ICs include a groundwater monitoring program, a temporary requirement for vapor-intrusion controls if residences are built above the VOC plume, and the permanent prohibition of groundwater use for potable purposes.

USACE stated in the Groundwater ROD that NYSDEC is the lead regulatory agency. New York cleanup requirements are codified in Title 6 *New York Codes, Rules and Regulations* Part 375, "Environmental Remediation Programs" (6 NYCRR 375). NYSDEC guidance on the technical standards for site investigations and cleanup is given in the NYSDEC Division of Environmental Remediation (DER) program policy *Technical Guidance for Site Investigation and Remediation* (DER-10).

The VP ROD states that no further action is required for the VPs under CERCLA (USACE 2017c). However, the VP ROD described the presence of inaccessible soil beneath the utility rail spur on the CSX Transportation Inc. (CSX) VP. LM used USACE sampling data to perform a dose assessment of potential exposure under residential-use assumptions. The dose assessment showed that the area meets the dose limit for unrestricted release even under the most conservative assumptions (DOE 2018a).

In September 2019, USACE transferred responsibility for LTS of FUSRAP responsibilities to LM, in accordance with the guidance in the March 1999 Memorandum of Understanding between USACE and DOE (DOE and USACE 1999), which states that LM will assume the LTS responsibilities 2 years after USACE issues the Site Closeout Report. LM performed the first annual site inspection (DOE 2020a) and the first LM round of groundwater sampling under the long-term monitoring program (DOE 2020b) in July 2020.

LM made the site available for beneficial reuse opportunities in cooperation with the U.S. General Services Administration (GSA) in March 2020. GSA auctioned the property in May 2022 and closed the real estate transaction on January 5, 2023.

## 1.6 Accountabilities

In addition to LM, certain long-term care accountabilities are assigned to USACE, NYSDEC, and other stakeholders, as described below.

### 1.6.1 Role of LM

LM is responsible for providing stewardship of the site and ensuring that DOE's postclosure responsibilities are met, including LTS, records management, property management, and beneficial reuse planning. The FUSRAP LTS program is guided by the *Legacy Management Program Management Plan for Formerly Utilized Sites Remedial Action Program* (LMS/POL/S16063). LM will perform these duties:

- Periodic groundwater monitoring to protect human health because residual groundwater contamination remains above target cleanup goals (TCGs).

- Acting as custodian of site records and being responsible for responding to inquiries from the public, NYSDEC, and other stakeholders.
- Performing long-term periodic reviews of the remedies for as long as residual soil or groundwater contamination exceeds levels greater than UU/UE.

### 1.6.2 Role of Site Owner

Site ownership recently transferred from LM to a private party in cooperation with GSA through an auction process; the real estate transaction was completed on January 5, 2023.

The site is owned by Asian Center Mall Limited Liability Corporation, a New York State limited liability company, having a mailing address at 2055 Niagara Falls Boulevard, Amherst, New York, 14228. The site owner is responsible for enforcing, maintaining, monitoring, and reporting on the ICs required under the environmental easement, as stipulated in the SMP.

As of the date of this LTSP (August 2023), the site owner's future redevelopment plans for this site are unknown.

### 1.6.3 Role of USACE

USACE is responsible for any additional cleanup actions that would be required under CERCLA (DOE and USACE 1999). For example, USACE would be responsible for response actions for inaccessible soils should they become accessible.

### 1.6.4 Role of NYSDEC

NYSDEC provides regulatory oversight for the remaining soil and groundwater remedies. The agency reviews proposed changes to the long-term groundwater monitoring program, SMP, and environmental easement. NYSDEC will provide input and review in annual site management reports and long-term periodic reviews. NYSDEC executes its oversight roles through a DOE grant or cooperative agreement.

### 1.6.5 Role of Stakeholders

Stakeholders may view public documents, attend public meetings, and direct questions and concerns to LM or NYSDEC. Community outreach documents are discussed in Section 3.3.

## 1.7 Location

The Colonie main site is in the town of Colonie and in the county of Albany (Figure 1). The southern property line is on the border of the city of Albany. The main site comprises 11.2 acres of federally owned land. There are 56 privately owned VPs, which are identified in Figure 2 and in Table 1. DOE acquired the 9.2-acre National Lead site in 1984 and the adjacent 2-acre parcel to the west from Niagara Mohawk Power Corporation in 1985. The municipal address is 1130 Central Avenue, and Central Avenue forms its northern boundary (Figure 3). Commercial properties, including a restaurant and automotive repair shop, are due east. National Railroad Passenger Corporation (Amtrak) and CSX Transportation Inc. rail lines are on the southern boundary, and residences are on the southern side of the railroad tracks. Commercial and municipal properties are on the western boundary of the site.

### 1.7.1 Current Land Use

Site ownership recently transferred from LM to a private party, Asian Center Mall Limited Liability Corporation, in cooperation with GSA through an auction process; the real estate transaction was completed on January 5, 2023. As of the date of this LTSP (August 2023), the site owner's future redevelopment plans for this site are unknown.

As of August 2023, the site consists of vacant land located in an urban area consisting of both residential and commercial properties. The site itself is in a Town of Colonie "Industrial F" municipal zoning district. The Industrial F District prohibits uses that include "any use which produces radiation, light, smoke, fumes, or odors of a noxious or harmful nature carrying beyond the limits of the premises" (Colonie 2007).

U.S. Census Bureau data in 2010 indicated that, in 2009, approximately 81,000 people lived in the Town of Colonie and 304,000 people lived in Albany County (USACE 2015).

Homes and businesses in the area around the site are provided with public water from the Latham Water District in the Town of Colonie. Water sources are the Mohawk River, five supply wells on Onderdonk Avenue, and the Stony Creek Reservoir (Colonie 2018). All these sources are greater than 4 miles away and upgradient of the site.

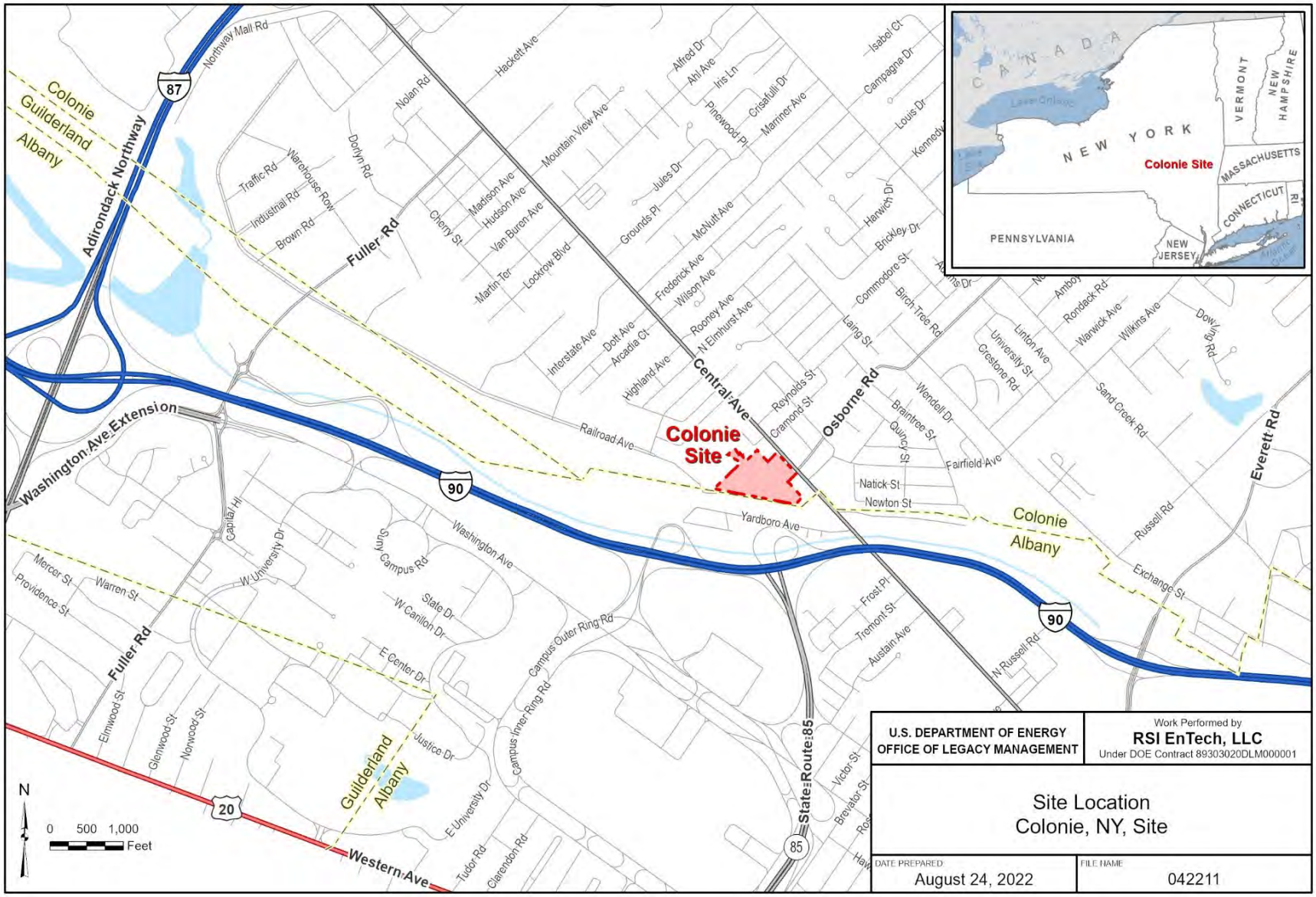


*Figure 1. Site Location Map*


*Figure 2. Colonie Site VP Map*


*Figure 3. Colonie Site Base Map*

*Table 1. Addresses of the Colonie Site VPs*

| VPs Listed in the *Colonie FUSRAP Site, Vicinity Property Operable Unit Record of Decision* (USACE 2017c) | | | | | |
|---|---|---|---|---|---|
| **VP ID** | **Property** | **Comment** | **VP ID** | **Property** | **Comment** |
| **AL084** | 1100 Central Avenue (Ave) | | **AL106** | 1200 Central Ave | |
| | 1101 Central Ave | | **AL217** | Crannell Property, Railroad Ave | 7 Railroad Ave |
| | 1104 Central Ave | | | | 7C Railroad Ave |
| **AL215** | 1110 Central Ave | | **AL068** | 10 N Elmhurst Ave | |
| | 1114 Central Ave | | **AL212** | Exit 4, 190 Right-of-Way Property | Boundary not defined |
| | 1118 Central Ave | | | 10 Garden Lane | |
| | 1129 Central Ave | | **AL148** | 10/14 Kraft Ave | **10 Kraft Ave** |
| **AL098** | 1143 Central Ave | | | | 14 Kraft Ave |
| | 1144/1144A Central Ave | 1144 Central Ave | **AL143** | 4 Maplewood Ave | |
| | | 1144A Central Ave | **AL218** | Niagara Mohawk (NiMo) Property, Railroad Ave | 2 Railroad Ave |
| **AL100** | 1145 Central Ave | | | | |
| | 1146 Central Ave | | | 7 Palmer Ave | |
| **AL102** | 1149 Central Ave | | | 33 Palmer Ave | |
| | 1150 Central Ave | | **AL033** | 1 Reynolds Ave | |
| | 1152 Central Ave | | | 5 Yardboro Ave | |
| | **1159 Central Ave** | | **AL137** | 16 Yardboro Ave | |
| **AL021** | 1160 Central Ave | | **AL136** | 20 Yardboro Ave | |
| | **1161 Central Ave** | | | 24 Yardboro Ave | |
| **AL020** | 1160/1162 Central Ave | 1160 Central Ave | | 25/27 Yardboro Ave | |
| | | **1162 Central Ave** | | 27/29 Yardboro Ave | |
| | **1166 Central Ave** | | | 50 Yardboro Ave | |
| | 1167 Central Ave | | | 52 Yardboro Ave | |
| | **1168 Central Ave** | | | 68 Yardboro Ave | |
| | 1170 Central Ave | | | 74 Yardboro Ave | |
| **AL130** | 1177 Central Ave | | | 78 Yardboro Ave | |
| **AL105** | 1178 Central Ave | | | 80 Yardboro Ave | |
| | **1185 Central Ave** | | **AL151** | 80–110 Yardboro | |
| | **1195 Central Ave** | | | | |

**Note:** Addresses in red were not found in the 2018 Albany County parcel data.

### 1.7.2 Future Land Use

In accordance with EPA guidance for selecting a site's potential future land use, USACE examined current land use, site setting, zoning laws and maps, and comprehensive community master plans. The Soil ROD states that the most probable future land use is urban residential. The town's master plan indicates future commercial use for properties along Central Avenue. Use of the urban residential cleanup criteria is supported by the residential property use to the south. USACE assumed that future residents will not use groundwater because the productivity of the shallow aquifer is too low to support domestic use (USACE 2015). The three easement areas are safe for restricted residential use, whereas the balance of the site is safe for residential use (DOE and USACE 2020).

## 1.8 Site History

Industrial operations at the site began in 1923, when the Embossing Company built a factory for wooden products. In 1927, Magnus Metal purchased the site and operated a brass foundry for manufacturing railroad components, including parts cast in sand molds and brass-bearing housings with surfaces of babbitt metal (an alloy of lead, copper, and antimony). In 1937, National Lead purchased the site and continued to operate the brass foundry.

Before 1941, National Lead began filling a lake on the western side of the site with used casting sand. The lake was used for additional waste disposal through 1961. The used casting sands contained high concentrations of heavy metals, primarily lead, copper, and arsenic. The filled-in lake was identified as a source of metal contamination.

In 1958, the nuclear division of National Lead began producing items manufactured from uranium and thorium under a license issued by AEC. The plant handled enriched uranium from 1960 to 1972. During that time, National Lead also held several contracts to manufacture nuclear fuel components. Depleted uranium (DU), along with metal contamination from other processes, was later remediated in soil. National Lead also converted DU tetrafluoride to DU metal, which was then fabricated into both commercial and military components (Dufek et al. 2006). Some of the processes produced DU powder as a waste, which is pyrophoric. National Lead oxidized these powders in an onsite incinerator to eliminate the fire hazard, which resulted in aerial emission of DU particulates onto the site and VPs (Lloyd et al. 2009). The AEC contract was terminated in 1968, and work at the plant afterward was devoted to fabricating shielding components, aircraft counterweights, and artillery projectiles from DU.

The New York State Supreme Court shut down the National Lead plant in 1984 due to the violation of air emissions regulations, and the site was sold to DOE. As part of the Energy and Water Appropriations Act of 1984 (PL 98-50), DOE was directed to remediate the site. DOE purchased the Niagara Mohawk property bordering the National Lead site to the west in 1985 to assist the cleanup (USACE 2003). DOE performed investigation and cleanup activities until remediation responsibilities were transferred by the U.S. Congress to USACE in 1997. USACE completed remediation and transfer responsibility for LTS to LM on September 19, 2019. Site ownership recently transferred from LM to a private party, Asian Center Mall Limited Liability Corporation, in cooperation with GSA through an auction process; the real estate transaction was completed on January 5, 2023. Accountability roles are identified in Section 1.6. A timeline of the history of the site is presented as Figure 4.

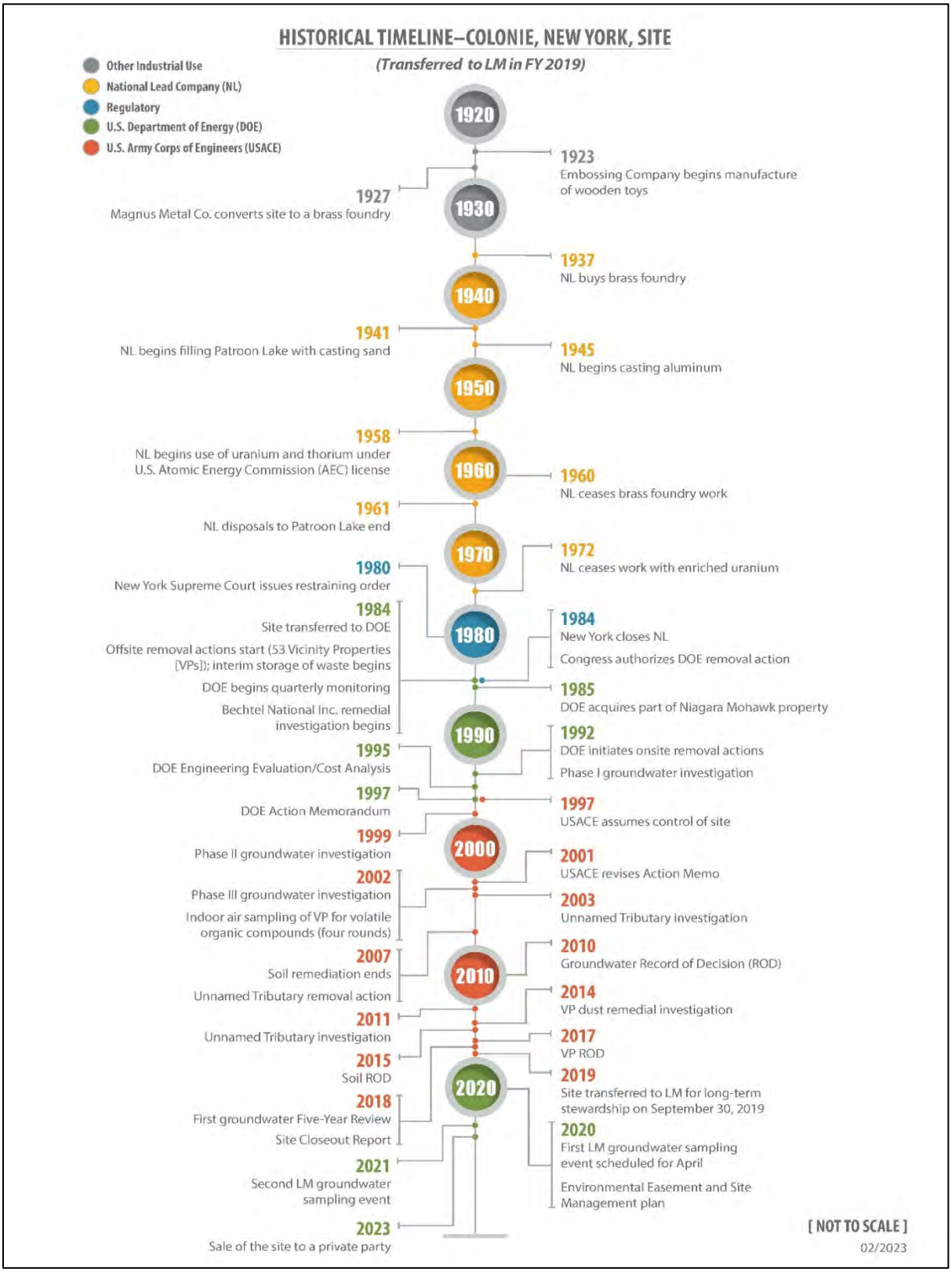


*Figure 4. Colonie Site Historical Timeline*

## 1.9 Remedial Actions

From 1984 to 1997, DOE investigated the site and 56 VPs (Figure 2) and initiated the remediation process. During that time, DOE remediated 53 of the VPs and demolished the buildings onsite under the authority of the 1997 Action Memorandum (DOE 1997). The remaining three VPs were remediated by USACE.

In 1997, USACE assumed responsibility for the site cleanup, and in 2001 issued a revised Final Action Memorandum (USACE 2001a). USACE divided the site into the following three OUs. Cleanups were completed in each OU in the following manner:

- **Soil OU:** By the end of 2007, USACE completed the removal of contaminated soil at the site under the revised Action Memorandum. The Soil Feasibility Study and the Proposed Plan were completed in 2014 (USACE 2014a; USACE 2014b). The Soil ROD was executed in 2015 (USACE 2015).
- **Groundwater OU:** USACE continued groundwater investigations that were initiated by DOE. The Groundwater ROD was signed in 2010 (USACE 2010). USACE conducted 16 sampling events to demonstrate that natural attenuation of groundwater contaminant is occurring. The most recent USACE reports on groundwater monitoring were issued in 2016 (USACE 2016a) and in 2017 (USACE 2017a).
- **VP OU:** DOE remediated 53 VPs, and USACE completed cleanups in the remaining 3 VPs in 2007 (USACE 2008). An evaluation of the DOE-remediated VPs was completed in 2012, and additional contaminated soil was removed from one property in 2013. Indoor dust sampling was performed at several VPs in 2014. A *Draft Final Colonie FUSRAP Site, Vicinity Property Operable Unit Remedial Investigation Summary Report* was completed in 2016 (USACE 2016b). The *Colonie FUSRAP Site Vicinity Property Operable Unit Proposed Plan* (USACE 2017b) and the *Colonie FUSRAP Site, Vicinity Property Operable Unit Record of Decision* (USACE 2017c) were both issued in 2017.

The *Site Closeout Report for the Colonie FUSRAP Site* (USACE 2018a) was finalized in June 2018.

## 1.10 Regulations, Requirements, and Guidance Affecting LTS

This section addresses applicable or relevant and appropriate requirements that affect the site's LTS program. The Legacy Management Support (LMS) Environmental Compliance group conducts regular reviews of changes to federal and state regulations and DOE orders that could impact LM programs.

### 1.10.1 CERCLA and the NCP

In accordance with the processes of CERCLA (42 USC 9601) Section 121(c) and NCP (40 CFR 300) Section 300.430(f)(4)(ii), if a remedial action is selected that results in any hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for UU/UE, the lead agency must review such action every 5 years after the initiation of the selected remedial action.

The completion of remedial actions can serve as the triggering event for the timing of long-term periodic reviews. USACE completed removal actions for the Soil OU in 2007 and completed the Soil ROD, which was signed in March 2015. USACE completed its *First Five-Year Review Report of the Groundwater Operable Unit* in October 2017 (USACE 2017d). These long-term periodic reviews are the functional equivalent of the Five-Year Reviews required under CERCLA and the NCP. LM will complete a long-term periodic review for both the Soil OU and the Groundwater OU in 2023.

### 1.10.2 National Environmental Policy Act (NEPA)

NEPA (PL 91-190) requires federal agencies to assess the impacts that federal actions may have on the quality of human health and the environment. USACE relies on the CERCLA process for review of remedial actions to be taken under FUSRAP. No separate NEPA document or NEPA review process is performed for a FUSRAP site transitioning to LM from USACE because NEPA values are incorporated into the CERCLA investigation and cleanup process (DOE 2002). NEPA may apply for a federal action that is not a part of ongoing maintenance. DOE procedures for implementing NEPA are contained in DOE NEPA Implementing Procedures (10 CFR 1021), CEQ NEPA Implementing Regulations (40 CFR 1500–1508), and DOE Policy 451.1, *National Environmental Policy Act Compliance Program*. LM-specific procedures for implementing the DOE regulations and the DOE policy are contained in *Environmental Planning and NEPA Compliance Procedures* (LM-Procedure-3-20-4.0) and *Office of Legacy Management National Environmental Policy Act Handbook: Guidance on Applying the National Environmental Policy Act Process to Office of Legacy Management Actions* (LM-Guide-4-24-1.0, LMS/POL/S37618), which describe the legal and policy requirements and considerations related to the NEPA and contains the information necessary to comply with and conduct sound environmental planning.

LM uses an *Environmental Review Form* (ERF) to identify applicable environmental planning requirements and screen for potential environmental impacts (physical, cultural, social, and economic) of proposed actions early in the planning process. Completing the ERF results in the identification of site-specific environmental requirements, including a need for NEPA documentation, specific resource management plans, regulatory permits, and regulatory consultations.

### 1.10.3 New York Environmental Conservation Law

An environmental easement is used as an IC to protect humans from the risk of exposure to residual subsurface contamination. The environmental easement was recorded by the Albany County Clerk on June 12, 2020. NYECL 71-36 provides the requirements for environmental easements. The easement is granted to the State of New York through NYSDEC by the United States through LM, and will convey with the deed upon transfer of site ownership. An SMP is required by the NYECL for the monitoring and maintenance of the environmental easement. The SMP is described in Section 2.5.

### 1.10.4 New York Environmental Remediation Regulations

The Soil and Groundwater RODs state that NYSDEC provides oversight of long-term groundwater monitoring and soil easement. The groundwater long-term monitoring program (Section 3.5.1) is designed to conform with the NYSDEC program policy *Technical Guidance*

*for Site Investigation and Remediation* (DER-10). A crosswalk to compare DER-10 guidance to this plan is included as Appendix A.

### 1.10.5 New York Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations

New York ambient water quality standards are codified in 6 NYCRR 703. These standards do not apply to the Colonie site groundwater remedy because USACE developed risk-based TCGs in compliance with CERCLA.

New York standards are relevant to produced groundwater, such as excess water generated from groundwater sampling and purged well redevelopment water. NYSDEC allows release of produced groundwater to the ground surface if it meets the ambient groundwater quality standards and if it is not allowed to run into surface water or storm drains. The *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites* (LMS/PRO/S04351), also called the Sampling and Analysis Plan (SAP), includes a program directive for the site that specifies how purge water is to be filtered through granular activated carbon (GAC) to achieve the discharge standards before releasing it to the ground surface. The white paper *Onsite Treatment and Recharge of Monitoring Well Purge Water, Colonie, NY Site* (DOE 2020c) confirms that the GAC treatment system is effective for the contaminant concentrations at the seven groundwater locations. The proposed method for purge water was approved by NYSDEC on May 6, 2020 (Johnson 2020).

#### *1.10.5.1 New York Monitoring Well Requirements*

There is no New York regulation or guidance that is applicable to the installation of groundwater monitoring wells. If a monitoring well will be installed (or replaced), then a work plan will be written that describes the procedures to be used. The procedures will include the SAP, the consensus guidelines of the ASTM International *Standard Practice for Design and Installation of Ground Water Monitoring Wells* (ASTM D5092-15), and the relevant federal guidelines described in the EPA *Groundwater Monitoring Technical Enforcement Guidance Document* (EPA 1986).

The decommissioning of groundwater monitoring wells is regulated in New York by NYSDEC guidance. Monitoring well decommissioning is required when a well is no longer needed or when its integrity is suspect or compromised. When appropriate, all site monitoring wells will be decommissioned in accordance with NYSDEC Commissioner Policy (CP)-43, *Groundwater Monitoring Well Decommissioning Policy* (NYSDEC 2009).

# 2.0 Site Conditions

The Colonie site is designated as an LM Category 2 site. Category 2 activities typically include routine inspection, monitoring, maintenance, recordkeeping, and stakeholder support, in accordance with the LM *Site Management Guide* (LM-Guide-3-20.0-1.0).

The selected remedy in the Soil ROD stipulates the need for ICs due to the presence of inaccessible contaminated soil in three discrete areas. An environmental easement has been

attached to the deed and the accompanying SMP describes the ICs that are required under the easement.

The selected remedy in the Groundwater ROD stipulates the use of monitored natural attenuation (MNA) with the use of ICs. The Groundwater ROD mandates periodic groundwater monitoring until cleanup criteria are met. Cleanup criteria are discussed in Section 2.4 and summarized in Table 2. There is currently a biennial (once every 2 years) schedule of monitoring and sampling. There are also ICs to restrict the use of groundwater and protect against the intrusion of VOC vapors into residences.

*Table 2. TCGs*

| Contaminants of Concern | TCGs |
|---|---|
| **Soil[1]** | |
| Uranium-238 | 35 picocuries per gram (pCi/g) |
| Thorium-232 | 2.8 pCi/g |
| Lead | 450 milligrams per kilogram (mg/kg) |
| Copper | 1912 mg/kg |
| Arsenic | 7.4 mg/kg |
| **Groundwater[2]** | |
| Tetrachloroethene (PCE) | 5.5 micrograms per liter (µg/L) |
| Trichloroethene (TCE) | 18 µg/L |
| *cis*-1,2-Dichloroethene (cDCE) | 1800 µg/L |
| Vinyl chloride (VC) | 1.4 µg/L |

**Notes:**
[1] Soil TCGs were issued in the Final Action Memorandum (USACE 2001a).
[2] Groundwater TCGs were issued in the Groundwater ROD (USACE 2010).

## 2.1 Site Description

The site is a vacant lot that is traversed by a gravel and asphalt road (Figure 5). Sewer, water, and electric utilities are available along Central Avenue. A stand of aspen trees exists in the southeastern portion of the site. There is a network of seven monitoring wells, as shown in Figure 6. Monitoring well boring logs and construction details are included in Appendix D.

## 2.2 Geology and Hydrology

The Colonie site is on the eastern edge of the Central Plateau physiographic province, with the Adirondack province to the north and the northern extension of the Valley and Ridge provinces to the east. The site is on relatively flat, slightly rolling terrain in the Pine Bush ecological zone within the Mohawk-Hudson lowland (USACE 2003).

The maximum topographic relief across the 11.2-acre site is 15 feet (ft). The highest point on the property, the northwest corner, has an elevation of approximately 235 ft above mean sea level. The land slopes gently (at approximately 2%) from the northwest toward the south-southeast. There is a steep embankment between the CSX and Amtrak rail lines, which parallel the southern site boundary, and the properties along Yardboro Avenue.

*Figure 5. View Across Colonie Site from Parking Area Looking South*

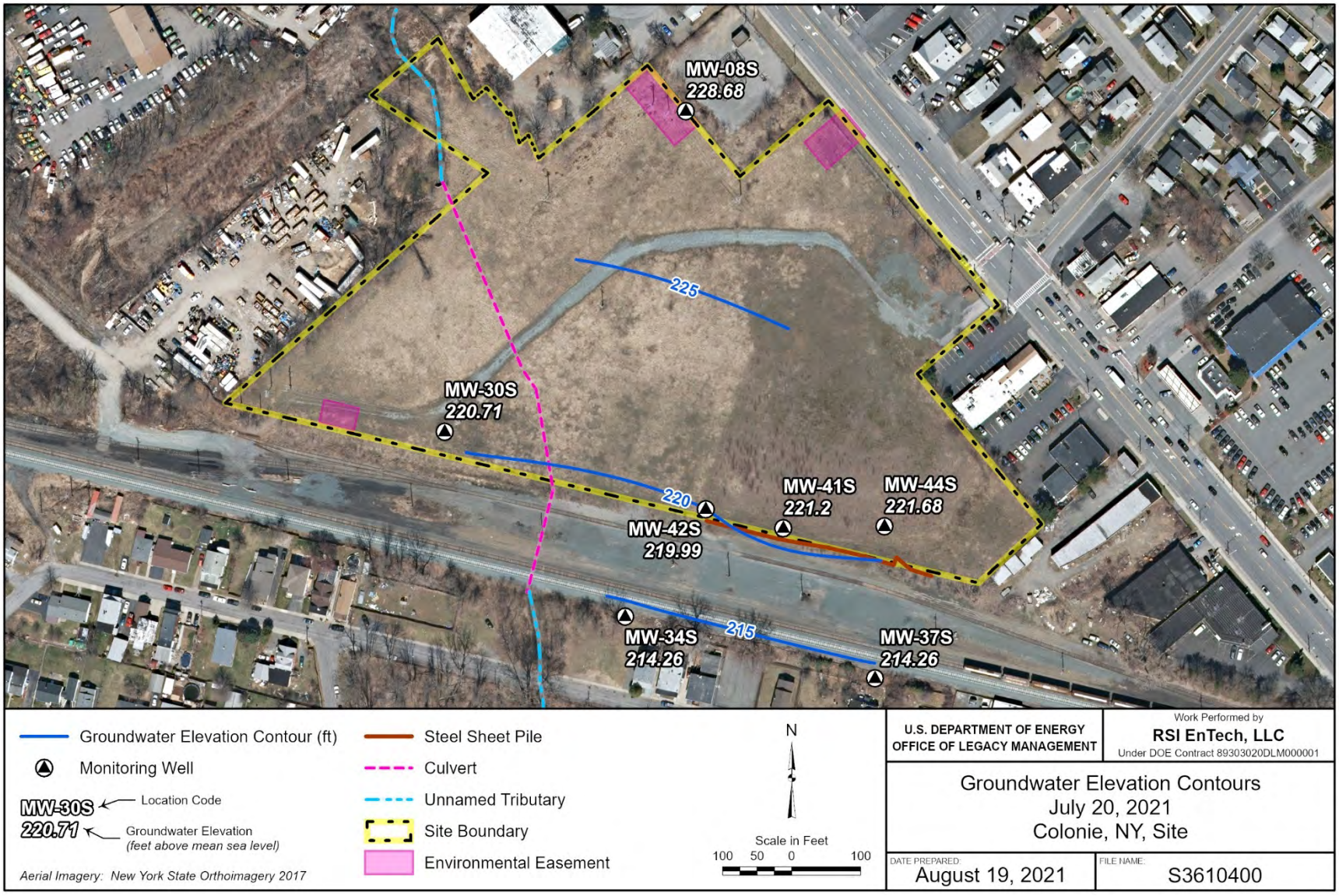


*Figure 6. Groundwater Elevation Contour Map, July 2021*

An unnamed tributary of Patroon Creek crosses the site from the west to the south and east, a portion of which is in an underground culvert, ultimately discharging into Patroon Creek. The unnamed tributary (Figure 3) drains an area of approximately 300 acres in the Town of Colonie; it is in an urban area and has been significantly channeled into culverts. Patroon Creek is a perennial stream that drains an area of approximately 13 square miles in Colonie and Albany. The drainage basin is mostly urban and includes both commercial and residential properties. The creek is approximately 7 miles long, from its headwaters to where it discharges into the Hudson River (USACE 2003).

The geologic units at the Colonie site include two notable water-bearing zones named the upper silt (also referred to as the upper aquifer) and the lower silt (or lower aquifer) (Figure 7). The upper aquifer is composed of lacustrine silt and sand, and the lower aquifer consists predominantly of silty sand with some clay. These two water-bearing zones are typically separated by unit known as the upper aquitard that consists of a varied sequence of clay and silt that is 12–15 ft thick (Moore et al. 2014).

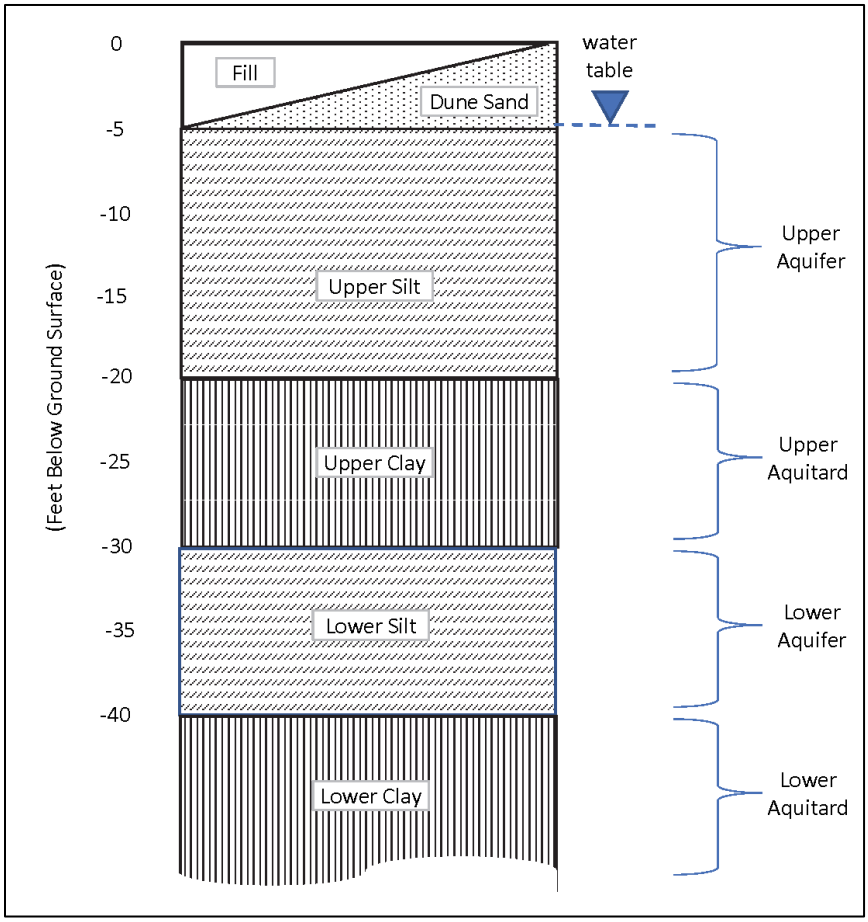


*Figure 7. Generalized Cross Section*

The upper aquifer is generally encountered at a depth of less than 10 ft below ground surface (bgs). The water table is at or near ground surface in the northwestern part of the site during the spring. The saturated thickness of this zone ranges from over 20 ft in the north portion of the site to less than 15 ft in the south near the property line. The thickness of the lower aquifer ranges from 10 to 15 ft. Groundwater level data provided in a 2003 groundwater RI report (USACE 2003) indicate that the hydraulic gradient and general direction of groundwater flow in the lower aquifer closely resemble those in the upper aquifer. Groundwater flow direction is generally to the south-southwest in both groundwater zones, as shown in Figure 6. There is a downward hydraulic gradient over the northern portion of the site, with localized upward hydraulic gradients near the unnamed tributary and Patroon Creek (USACE 2003).

## 2.3 Soil Contamination

From 1992 to 1996, DOE removed the buildings on the site and developed the 1995 engineering evaluation/cost analysis (EE/CA) and the 1997 Action Memorandum (DOE 1997). The EE/CA and the 1997 Action Memorandum document the selected Alternative 3B, "Moderate Excavation and Capping." Due to site constraints and the community's resistance, the alternative was reevaluated when USACE assumed responsibility. The Action Memorandum was revised based on this reevaluation. A Technical Memorandum (USACE 2001b) and the Final Action Memorandum (USACE 2001a) document the subsequent selection of Alternative 2B, "Large-Scale Excavation and Disposal." USACE conducted removal activities between 2000 and 2007, which resulted in the removal and offsite disposal of more than 135,000 cubic yards of soil contaminated with radionuclides and metals. The Technical Memorandum established the TCGs for the COCs in soil, which are shown in Table 2.

The Technical Memorandum established that radiological contamination would be excavated regardless of depth, but that metal-contaminated soil would be excavated to a maximum depth of 9 ft bgs. Contaminated soil from deeper than 9 ft bgs would not be removed because no completed exposure pathway was anticipated and, therefore, leaving that soil in place would be protective of human health and the environment. There are three discrete areas with metal-impacted soil that were inaccessible to excavation due to the presence of utilities, and these areas are protected under the environmental easement. The easement areas are further discussed in Section 2.5. With the completion of the removal action, the vast majority of contaminated soil was removed, disposed of offsite, and replaced with certified-clean backfill soil. No soil with radiological contamination above removal action goals was left on the site (Shaw 2010).

The inaccessible metals contamination is limited to three survey units in the shallow subsurface and an area of the deeper subsurface (greater than 12 ft in depth). The shallow subsurface areas were not excavated due to the presence of physical obstructions, including high-voltage power line support poles, a rail line, and a water main. The easement areas are shown in Figure 3. A summary of each survey unit is provided in Table 3.

*Table 3. Summary of the Easement Areas*

| Easement Area | Location | Surface Area | Depth to Contamination | Contaminants |
|---|---|---|---|---|
| North Lawn | North property line | 2500 $ft^2$ | 3.9 ft bgs | • **Copper:** 4,340 mg/kg (cleanup goal 1912 mg/kg)<br>• **Lead:** 3,370 mg/kg (cleanup goal 450 mg/kg) |
| Survey Unit 104 | Northwest corner | 5171 $ft^2$ | 1.8 ft bgs | • **Arsenic:** 85.4 mg/kg (cleanup goal 7.4 mg/kg) |
| Survey Unit 124 | Southwest corner | 1716 $ft^2$ | 5.3 ft bgs | • **Copper:** 2,450 mg/kg (cleanup goal 1912 mg/kg)<br>• **Lead:** 734 mg/kg (cleanup goal 450 mg/kg) |

**Abbreviation:**
mg/kg = milligrams per kilogram

Soil sample results for six locations in deeper subsurface soils (shallowest is 12 ft bgs) exceeded the metals cleanup goals applicable to soil less than 9 ft bgs. The six locations are confined to a single portion of the site where past National Lead landfilling occurred in the former Patroon Lake. These deep subsurface soils were not removed because there is not a complete exposure pathway. In other words, these deep soils pose no harm to future residents or workers because future excavation to these depths is not anticipated.

## 2.4 Groundwater Contamination

Since 1984, multiple studies have been performed to investigate hydrogeological conditions and evaluate the nature and extent of groundwater impacted by past operations. The upper aquifer has been impacted by historical releases of tetrachloroethene (PCE). A lower aquifer was investigated and found to be uncontaminated. Information presented in the 2003 groundwater RI report (USACE 2003) indicated that the areas of impact had expanded southward from the source areas toward the railroad tracks, nearby buildings, and the unnamed tributary of Patroon Creek, consistent with the natural direction of groundwater flow. A decrease in the extent of groundwater contamination has been observed since 2003, with significantly lower levels of contaminants being observed in the areas where excavation and dewatering were performed during the soil removal action (USACE 2010).

The soil removal actions removed VOC source material and have been shown to improve groundwater quality. Groundwater sampling results have indicated a consistent decrease in VOC concentrations. The presence of the PCE breakdown products trichloroethene (TCE), *cis*-1,2-dichloroethene (cDCE), and vinyl chloride (VC) indicates that natural degradation processes are progressing. As a result, MNA of the remaining contamination is considered a viable means of achieving the TCGs (USACE 2016a; USACE 2017a; USACE 2017d).

The groundwater remedy includes a long-term groundwater monitoring program for the upper aquifer that will continue until natural environmental processes reduce the contamination to concentrations below the groundwater TCGs (USACE 2017d). In 2017, USACE estimated that contaminants would reach the TCGs in 15 years based on modeling using the Monitoring and Remediation Optimization System (MAROS) software (USACE 2017d). As described in Section 1.3, ICs were developed to limit potential future residential exposure to VOCs.

Four VOCs were identified as COCs; radiological COCs no longer need to be monitored. The COCs and their TCGs are summarized in Table 2. Wells with exceedances of the TCGs have decreased from three wells in 2010 to a single well in 2021. On average, PCE concentrations have decreased by approximately 50% since the ROD was issued in 2010. PCE concentrations are 33% of 2010 concentrations, whereas VC concentrations are 62% of 2010 concentrations. Average cDCE concentrations have increased by a factor of nearly 2 since 2010 but remain less than 1% of the cDCE TCG. The following is a summary of groundwater conditions at each well:

**Well MW-08S:** To date there has been no detection of VOCs at this upgradient well during the long-term monitoring program.

**Well MW-30S:** This onsite well from near the filled-in former Patroon Lake had a PCE concentration of 2.88 micrograms per liter (µg/L) in July 2021 compared to 6.67 µg/L in July 2020. TCE, cDCE, and VC were not detected in July 2021.

**Well MW-34S:** This offsite downgradient well had detections of PCE, cDCE, and VC near their detection limits in July 2021 and TCE was not detected. This well had previous exceedances for VC until 2017. VOC concentrations in July 2021 were on average 50% lower than in November 2010.

**Well MW-37S:** This offsite downgradient well had PCE, TCE, and VC concentrations either at or near their detection limits. The 2021 cDCE concentration is higher than the 2010 concentration by a factor of approximately 2, but the 2021 concentration is only 2% of the TCG.

**Well MW-41S:** This onsite well near the former building location had PCE and TCE concentrations in 2021 that were approximately 50% of 2010 concentrations, while cDCE and VC concentrations were stable or elevated compared to the 2010 concentrations. Well MW-41S has the only remaining analyte in exceedance of the TCGs; the PCE concentration was 12.7 µg/L in July 2021 compared to the TCG of 5.5 µg/L. The PCE concentration was 26.0 µg/L in November 2010.

**Well MW-42S:** No COCs exceeded the TCGs in this onsite well near the former building in July 2021. cDCE was detected at a at a low concentration, while PCE, TCE, and VC were not detected. The cDCE concentration was 5.31 µg/L in July 2021 compared to 4.3 µg/L in November 2010. The cDCE concentration exceeded the New York groundwater quality standard of 5 µg/L but was well below the 1800 µg/L TCG.

**Well MW-44S:** In July 2021, concentrations of PCE, TCE, cDCE, and VC were not detected in both the primary and duplicate sample collected from this onsite well near the former building location. The well was installed in 2015 and had PCE concentrations above the TCG in 2016 and 2017. However, PCE was not detected in 2020 and 2021.

The conclusion is that only one well in the seven-well monitoring well network currently has concentrations of a VOC above its TCG. The TCG of 5.5 µg/L for PCE is exceeded at monitoring well MW-41S (12.7 µg/L in 2021) as shown in Figure 8.

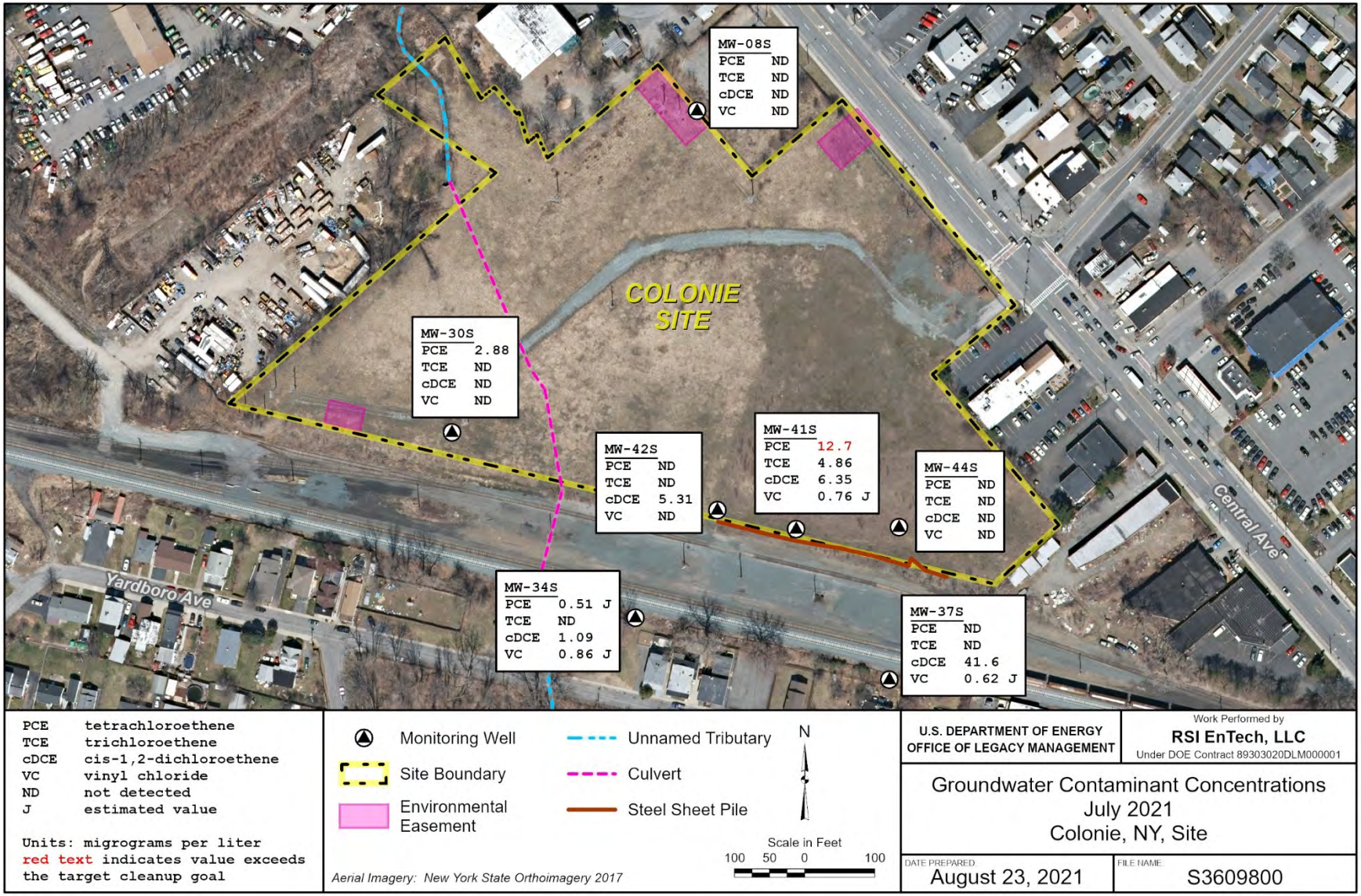


*Figure 8. Monitoring Wells and VOC Concentrations*

## 2.5 Institutional Controls

The Soil ROD mandates the placement ICs in the form of an environmental easement on the three easement areas shown in Figure 3 and described in Section 2.3. The human health risk assessment (HHRA) that was performed during the RI determined that these areas contained soil that poses excess risk to human health (URS 2004). The HHRA determined that North Lawn and Unit 124 subsurface soil poses excess risk to children and Unit 104 subsurface soil poses excess risk to residents. The residual contamination poses no unacceptable risk to a future worker.

The Groundwater ROD mandates that ICs are to be used to ensure that the property is safe for future residential land use by limiting potential exposure of hypothetical future onsite residents to groundwater contamination via the vapor intrusion pathway.

ICs are incorporated into an environmental easement to ensure that the property is safe for its intended future use. The ICs are also detailed in the SMP. LM prepared the first SMP; however, the new site owner is responsible for preparing and submitting a new SMP to NYSDEC for approval. In accordance with 6 NYCRR Part 375-6.1 Site Management (a)3: A site will have only one SMP which will encompass all site management activities identified by the remedy or remedies … selected for the site." The site owner is responsible for enforcing, maintaining, monitoring, and reporting on the ICs required under the environmental easement, as stipulated in the SMP." (See Appendix A - Crosswalk to the New York Code of Rules and Regulations)

The environmental easement contains the following nine ICs:

1. The Soil Easement Areas, as further identified in Appendix D, Schedule A (of the SMP), may be used for Restricted Residential as described in 6 NYCRR 375-1.8(g)(2)(ii), Commercial as described in 6 NYCRR Part 375-1.8(g)(2)(iii), and Industrial as described in 6 NYCRR 375-1.8(g)(2)(iv).
2. No digging or excavation shall be permitted in the Soil Easement Areas without prior written approval of DOE and NYSDEC.
3. Vegetable gardens and farming are prohibited in the Soil Easement Areas.
4. The use of groundwater underlying the site, as described in Appendix D, Schedule B (of the SMP), is prohibited without necessary water quality treatment as determined by the New York State Department of Health or the Albany County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from NYSDEC.
5. The potential for vapor intrusion must be evaluated for any buildings designed for occupancy on the site, as described in Appendix D, Schedule B (of the SMP), and appropriate actions to address exposures must be implemented.
6. Data and information pertinent to site management must be reported at the frequency and in a manner as defined in the SMP.
7. All future activities that will disturb remaining contaminated material must be conducted in accordance with the SMP.

8. Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP.
9. Maintenance, monitoring, inspection, and reporting of any physical component of the remedy shall be performed as defined in the SMP.

Two of the ICs (4 and 5) concern groundwater but become the responsibility of the site owner to comply with the environmental easement. The SMP prepared by LM includes references to the long-term monitoring program. The site owner could cite the LTSP by reference regarding the conduct of the long-term monitoring program.

## 2.6 Vicinity Properties

Remedial goals for each of the 56 VPs (Figure 2 and Table 1) have been achieved. There is an area of inaccessible soil beneath an active rail line in the CSX VP. USACE has assessed the level of residual radiological contamination in this area and has determined that the residual dose to a hypothetical future resident would be below federal guidelines (USACE 2008). Therefore, no further action is required for the VPs.

## 2.7 Real Property Assets

Real property assets are tracked in the LM Facilities Information Management System (FIMS). The site is inspected in a condition assessment survey for FIMS database updates every 5 years and there is an annual validation of the condition of those assets. The most recent condition assessment survey was conducted in May 2017 (DOE 2018b). The new condition assessment was performed in July 2023 but only applied to assessment of the well network since all other assets have been sold. The only remaining DOE-owned asset is the monitoring well system.

### 2.7.1 Monitoring Well System

There are seven groundwater monitoring wells in the network. See Table 4 for well construction details and their purposes in the network. Two wells (MW-34S and MW-37S) are on Amtrak property. Those offsite wells cannot be accessed without prior notification and approval (Appendix C). The other five wells are onsite. See Figure 6 for monitoring well locations. All seven wells were installed in the upper aquifer and have nominal 2-inch diameters and depths of 13–23 ft bgs. Monitoring well construction details are summarized in Table 4. All seven wells are enclosed in protective casings set in 2 ft diameter pads (Figure 9). Monitoring well boring logs and construction details are included as Appendix D. An additional offsite monitoring well (MW-32S) was in the right-of-way of CSX Transportation (CSX) as shown in Figure 3 but was decommissioned in 2022. The access agreement with CSX has been allowed to expire.

*Figure 9. Monitoring Well MW-30S*

*Table 4. Monitoring Well Construction Information*

| Well ID | Well Installation Date | Coordinates [1] | | Well Diam-eter | Top of Casing (TOC) Elevation (ft msl) | Ground Surface Elevation (ft msl) | Top of Screen | | Pump Intake | | Bottom of Screen | | Well Total Depth [2] | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Northing | Easting | | | | Depth (ft from TOC) | Elevation (ft msl from TOC) | Depth (ft from TOC) | Elevation (ft msl from TOC) | Depth (ft from TOC) | Elevation (ft msl from TOC) | Depth (ft from TOC) | Elevation (ft msl from TOC) |
| MW-08S | 7/28/1988 | 1406050.14 | 679397.21 | 2" | 230.90 | 228.90 | 8.00 | 222.90 | 10.50 | 220.40 | 13.00 | 217.90 | 15.00 | 215.90 |
| MW-30S | 8/2/2000 | 1405591.48 | 679047.79 | 2" | 226.74 | 225.24 | 6.00 | 220.74 | 10.00 | 216.74 | 16.00 | 210.74 | 16.00 | 210.74 |
| MW-34S | 12/20/2001 | 1405327.12 | 679309.35 | 2" | 219.84 | 218.33 | 10.01 | 209.83 | 15.01 | 204.83 | 20.01 | 199.83 | 20.01 | 199.83 |
| MW-37S | 1/27/2002 | 1405238.84 | 679671.42 | 2" | 219.96 | 218.05 | 12.91 | 207.05 | 17.91 | 202.05 | 22.91 | 197.05 | 22.91 | 197.05 |
| MW-41S | 12/11/2006 | 1405453.53 | 679538.46 | 2" | 224.82 | 223.15 | 11.67 | 213.15 | 16.67 | 208.15 | 21.67 | 203.15 | 23.67 | 201.15 |
| MW-42S | 12/12/2006 | 1405480.59 | 679426.27 | 2" | 225.77 | 224.23 | 11.54 | 214.23 | 16.54 | 209.23 | 21.54 | 204.23 | 24.54 | 201.23 |
| MW-44S [3] | 7/13/2020 | 1405455.84 | 679685.19 | 2" | 225.11 | 223.36 | 13.91 | 211.20 | 18.91 | 206.20 | 23.91 | 201.20 | 23.91 | 201.20 |

**Notes:**

Abbreviations - TOC: top of casing, ft: feet, msl: mean sea level

[1] Coordinates Reference: New York State Plane NAD83 East Zone, US survey feet.

[2] Well total depths are from boring logs/wellconstruction diagrams prepared at the time of well construction.

[3] Well MW-44S was damaged in 2019 and repaired on July 13, 2020. Coordinates and elevation were re-surveyed on July 18, 2020.

### 2.7.2 Pneumatic Pumps

Each well is equipped with a dedicated QED Well Wizard pneumatic submersible bladder pump. The pumps are constructed of stainless steel and Teflon and have a diameter of 1.66 inches. The installation depths of the pumps are shown in Table 4. The pumps are suspended in the wells with high-density polyethylene air and water tubing.

### 2.7.3 Locks

There are seven government-issued Best (brand) padlocks issued to the site and installed at each well. Each lock has a 2-inch-long shank and rubber jacket. LM uses a common key for monitoring wells across all sites. LM Asset Management maintains control of site keys as part of the LMS umbrella *Site Security Plan* (LMS/POL/S11558). Keys are issued to personnel on an as-needed basis.

# 3.0 Long-Term Stewardship

The LTS Plan implements DOE-authorized procedures, identifies and assigns responsibilities, and presents the documentation required for the monitoring, inspection, review, and reporting requirements.

## 3.1 Plan Revisions

LM is responsible for preparing, updating, and implementing this plan. LM will periodically review the plan and update it as necessary, based on changes in site conditions or changes in laws, regulations, or guidance.

## 3.2 Project Organization

The LTS activities described in this plan are managed by a project team, as shown in Figure 10. Specific roles are described below.

The LM site manager is responsible for overall scope, schedule, and budget decisions and serves as the point of contact with all regulators, stakeholders, and the public.

The LMS contractor site lead coordinates project support activities from LMS functional groups and is responsible for implementing the scope, schedule, and budget decisions that are made by the LM site manager. Site contacts are shown in Table 5.

The LMS site lead will involve the LMS Environmental Compliance point of contact and other support groups (e.g., Real Property, Environmental Monitoring and Sciences) early in the planning stages for groundwater compliance monitoring events (*Environmental Instructions Manual* [LMS/POL/S04338]).

## 3.3 Stakeholder Engagement

LM seeks to keep the community informed and involved in site activities and accomplishments through media announcements, fact sheets and newsletters, and attendance, when warranted, at public meetings. The following subsections describe site-specific community outreach activities.

### 3.3.1 Public Webpage

LM maintains a public webpage specific to the site. The webpage is reviewed annually on the same schedule as the other completed FUSRAP sites. The webpage can be found at https://www.energy.gov/lm/colonie-new-york-site. The webpage includes a site description, contact information, and access to key site documents. The webpage includes a link to the Administrative Record, which can be found at https://lmpublicsearch.lm.doe.gov/SitePages/CERCLA.aspx.

### 3.3.2 Fact Sheet

LM protective measures include the production of a site fact sheet. The fact sheet is reviewed each spring for updates on the same schedule as other completed FUSRAP sites. The fact sheet is linked on the public webpage.

### 3.3.3 Stakeholder Inquiries

Stakeholder inquiries should be directed to the LM site manager. Media inquiries should be directed to the DOE Public Affairs Office at media@lm.doe.gov.

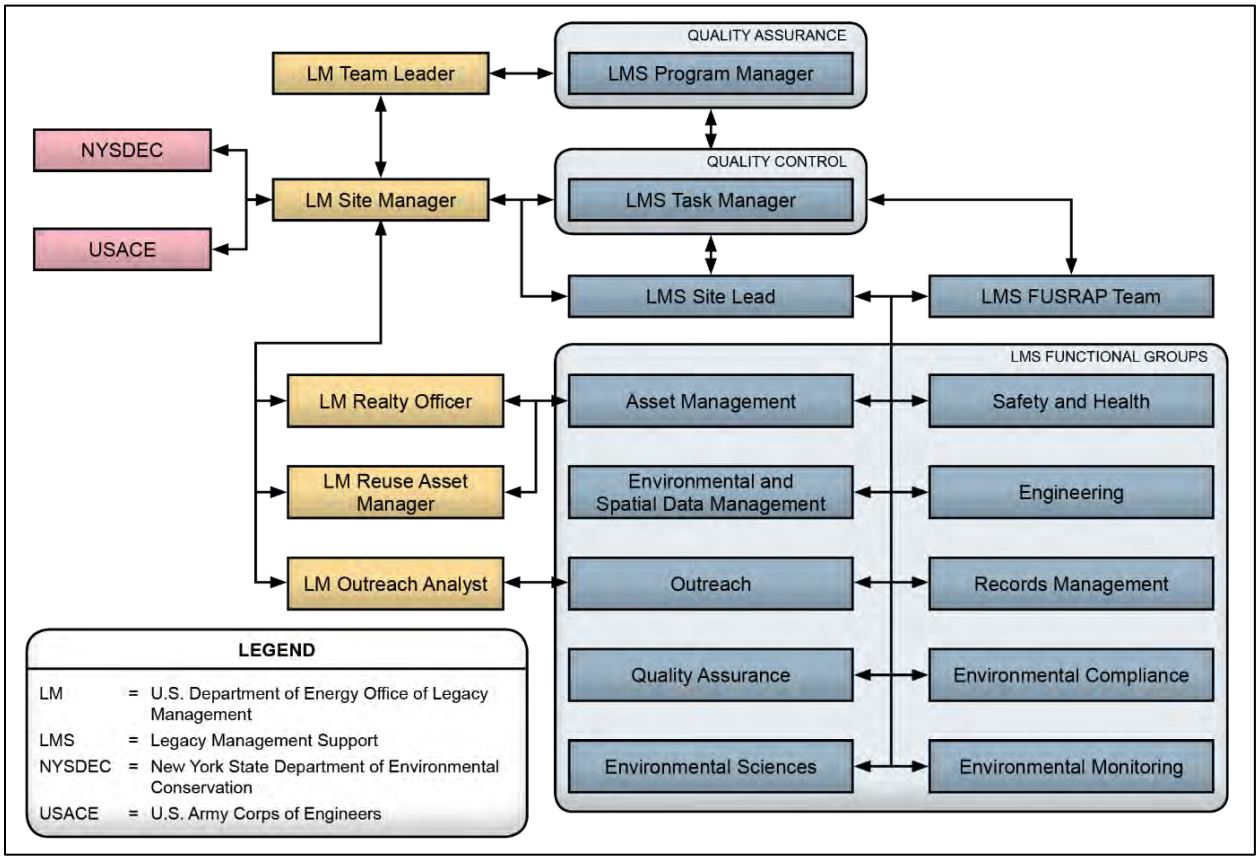


*Figure 10. Site LTS Organizational Chart*

*Table 5. Colonie Site Contacts*

| Name | Phone/Email Address |
|---|---|
| LM emergency contact: | 877-695-5322 |
| LM site manager:<br>Shawn Eichelberger | (720) 377-3823<br>Shawn.Eichelberger@lm.doe.gov |
| DOE realty officer:<br>Polly Robinson | (970) 248-6039<br>Polly.Robinson@lm.doe.gov |
| NYSDEC DER project manager:<br>Paul Armani | (518) 402-5822<br>Paul.Armani@dec.ny.gov |
| LMS site lead and qualified environmental professional:<br>Carl Young | (410) 816-4029<br>Carl.Young@lm.doe.gov |

## 3.4 Inspection of ICs

The ICs for the soil environmental easement (listed in Section 2.5) are monitored through annual site inspections in accordance with the SMP. The environmental easement attached to the land, therefore upon the transfer of the site, the new owner became responsible for inspection of soil ICs.

## 3.5 Groundwater Monitoring

Groundwater sampling and analysis activities are conducted according to the SAP. Site-specific sampling instructions are stated in the SAP; the latest revision is available at https://www.energy.gov/lm/downloads/sampling-and-analysis-plan-us-department-energy-office-legacy-management-sites.

Plans for monitoring should note the following conditions:

- Monitoring and sampling are Type 3 Procedure-Based Activities under the LMS *Integrated Work Control Process Manual* (LMS/POL/S11763), also known as the IWCP Manual.
- There are two monitoring wells on Amtrak property: MW-34S and MW-37S. Amtrak property cannot be accessed without prior approval granted through their right-of-entry permit systems. See Appendix C for offsite property access procedures.
- LM has a right-of-entry agreement with a neighboring property owner to allow access to Amtrak property from Yardboro Avenue.
- The offsite wells can also be accessed from Railroad Avenue through the CSX spur, pending compliance with Amtrak railroad permit requirements.

### 3.5.1 Frequency of Groundwater Monitoring

USACE established biennial (once every 2 years) sampling in the 2016–2017 Annual Long-Term Groundwater Monitoring report (USACE 2017a). LM reevaluates the sampling schedule after reviewing the data from each sampling event. LM uses trend analysis to evaluate MNA effectiveness. Trend analysis (1) includes optimization routines to help determine the appropriate number of sample locations, sampling frequency, and laboratory analytes and (2) uses statistical analysis tools to evaluate the plume stability condition and remedy performance. Trend analysis including the July 2021 sampling data indicated that a biennial (once every 2 years) sampling schedule was optimal.

### 3.5.2 Well Redevelopment

LMS contractor guidance for well redevelopment found in the SAP recommends that redevelopment should be performed if there is excessive sedimentation, significant decline in well capacity, or excessive biological growth. Wells MW-30S, MW-41S, MW-42S, and MW-44S are screened in a lacustrine silt unit and wells MW-41S and MW-42S were found to contain significant sediment thicknesses before the July 2020 sampling event. All wells were redeveloped in July 2020.

### 3.5.3 Groundwater Elevation Measurements

Groundwater elevations are measured in accordance with the procedures of Section 3.1.1.4 of the SAP. Groundwater elevations will be measured during each groundwater sampling event. Groundwater flow direction has consistently been to the south-southwest as indicated in Figure 6.

### 3.5.4 Groundwater Sampling

Each of the wells is equipped with a dedicated pneumatically operated bladder pump. In the event that a bladder pump is malfunctioning and cannot be fixed, the sampler may opt to either replace the pump or to attach a peristaltic pump to the discharge port of the dedicated bladder pump. New York regulations in 6 NYCRR Part 375 are silent on the use of peristaltic pumps, but New York Guidance permits their use (NYSDEC 2023).

Groundwater is sampled for VOCs as specified in the SAP and summarized in Table 6. Groundwater sample collection is conducted according to the low-flow sampling protocols described in Section 3.1.1.1 of the SAP. The monitoring wells are classed as Category 1 in Table 1 of the SAP, meaning that the wells will maintain a stable water level at a 100 milliliters per minute flow rate. Sample analysis is coordinated by the LMS Environmental Monitoring group, which has contracts with accredited commercial laboratories. Environmental sampling should be scheduled 6 months in advance with the LMS Environmental Monitoring group. The LMS site lead will coordinate the sampling schedule and confirm the requirements of the program directive with the Environmental Monitoring group at least 2 months in advance of field work.

*Table 6. Analysis Summary*

| Parameters (all are aqueous) | Analytical Method [a] | Field or Lab | Primary Samples | Field Duplicate | Equipment Rinsate[b] | Trip[c] Blank | Number of Samples |
|---|---|---|---|---|---|---|---|
| VOCs: PCE, TCE, cDCE, VC | SW 8260B | lab | 7 | 1 | 2 | 1 | 11 |
| Dissolved oxygen | SM 4500-O | field | 7 | 0 | 0 | 0 | 7 |
| Temperature | SM 2550 | field | 7 | 0 | 0 | 0 | 7 |
| Oxidation-reduction potential | ASTM D1498-00 | field | 7 | 0 | 0 | 0 | 7 |
| pH | EPA 9045C | field | 7 | 0 | 0 | 0 | 7 |
| Specific conductance | SM 2510 | field | 7 | 0 | 0 | 0 | 7 |
| Turbidity | EPA 2130 | field | 7 | 0 | 0 | 0 | 7 |
| | | **Totals** | **49** | **1** | **2** | **1** | **53** |

**Notes:**
[a] Test methods are described in EPA SW-846 test methods for hazardous waste (EPA 2015).
[b] One rinsate blank will be collected if any nondedicated equipment needs to be used.
[c] One trip blank will be used for each shipment of VOC samples.

**Abbreviations:**
ASTM = ASTM International
SM = Standard Method
SW = solid waste

### 3.5.5 Investigation-Derived Waste (IDW)

IDW groundwater is generated during each sampling event when wells are redeveloped and purged. Approximately 200 gallons of wastewater were generated during the July 2021 sampling event.

NYSDEC and DOE guidelines allow the release of waste groundwater onto unpaved surfaces onsite if contaminant levels are below regulatory standards. Waste groundwater must not be allowed to directly enter storm drains. The applicable regulatory standards (Table 7) are NYSDEC *Technical & Operational Guidance Series* 1.1.1, "Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations" (TOGS 1998). The same standards are codified in New York Law under 6 NYCRR 703.

*Table 7. New York Standards for Discharge of Groundwater*

| COC (CAS No.) | TCG [a] | New York Standard [b] |
|---|---|---|
| Uranium (7440-61-1) | Not applicable | $3 \times 10^{-7}$ microcuries per mL[c] |
| PCE (127-18-4) | 5.5 µg/L | 5 µg/L |
| TCE (79-01-6) | 18 µg/L | 5 µg/L |
| cDCE (156-59-2) | 1800 µg/L | 5 µg/L |
| VC (75-01-4) | 1.4 µg/L | 2 µg/L |

**Notes:**
[a] Colonie Groundwater ROD (USACE 2010).
[b] NYSDEC standards for discharge of groundwater are listed in NYSDEC *Technical & Operational Guidance Series* 1.1.1 (TOGS 1998).
[c] 6 NYCRR 380-11.7 Table II: (natural uranium); equivalent to 450 µg/L.

**Abbreviations:**
CAS = Chemical Abstracts Service
mL = milliliters

IDW groundwater generated during well redevelopment and sampling events is filtered onsite using a GAC filter medium. This filtration method was approved by NYSDEC on May 6, 2020 (Johnson 2020). The filtrate is sampled after each sampling event for signs of breakthrough. Once the filter media begins to show breakthrough, the used GAC and the used sand from the system's pre-filter will be disposed of appropriately as specified by state and federal regulations. Calculations show that the GAC can be used for dozens of sampling events before breakthrough (DOE 2020c).

### 3.5.6 Criteria for Terminating Monitoring

The Groundwater ROD specifies that cleanup will be achieved when COC concentrations are below TCGs over four consecutive quarters. However, these monitoring events no longer occur on a quarterly basis. Accordingly, LM will perform trend analysis to evaluate the effectiveness of MNA and to provide statistical justification for any proposal to NYSDEC to alter sampling frequencies or cease monitoring.

## 3.6 Reporting Requirements

Reporting requirements are listed in the following sections and summarized in Table 8.

### 3.6.1 Long-Term Groundwater Monitoring Reports

The long-term groundwater monitoring program will continue until the TCGs for COCs are achieved. The sampling interval approved by NYSDEC is biennial (once every 2 years). A long-term monitoring report will be completed to document each groundwater sampling event and will be submitted to NYSDEC for review.

### 3.6.2 Electronic Data Deliverables

NYSDEC requires that long-term monitoring data be submitted electronically by upload to their Environmental Information Management System. The NYSDEC system uses an Environmental Quality Information System (EQuIS) database like the LMS EQuIS database. The electronic data deliverable must be formatted by the LMS Environmental and Spatial Data Management (ESDM) group according to guidelines specified by NYSDEC. The ESDM group has developed an operating procedure to describe the upload process, as described in the *ESDM Environmental Data Management Team Work Procedures* (LMS/PRO/S13473).

### 3.6.3 Long-Term Periodic Reviews

Long-term periodic reviews are required under CERCLA and the NCP as long as residual contamination remains above UU/UE conditions. Long-term periodic reviews will be required every 5 years for as long as any ICs are in place. USACE completed the first Five-Year Review for the Groundwater OU in 2017 (USACE 2017d). The next long-term periodic review is scheduled to be finalized in fall 2023. Instructions for preparing the next Colonie long-term periodic review are included as Appendix E.

### 3.6.4 Notifications to NYSDEC

Notifications will be made to NYSDEC before each sampling event.

There are several notification requirements stipulated in the SMP that will be the responsibility of the new site owner. Prior notifications will be submitted to NYSDEC for the following reasons:

- Excavation in the easement areas will require prior notification to NYSDEC
- Advance notice (60 days) of any proposed changes in site use that are required under the terms of 6 NYCRR 375 or the NYECL
- Advance notice (7 days) of any field activity associated with the remedial program
- Advance notice (15 days) of any proposed ground-intrusive activity in the easement areas, with the exception of emergency utility work, pursuant to the submission of an excavation work plan
- Any failure of the ICs will require the submission of a Corrective Measures Work Plan to NYSDEC (DOE and USACE 2020)

Any change in ownership or responsibility for implementing the SMP will include the following notifications:

- At least 60 days before the change, NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser or lessee and the LMS Real Property group have been provided a copy of the SMP and all final copies of plans and reports required under the SMP.
- Within 15 days after the transfer of all or part of the site, the new owner's name, contact representative, and contact information will be confirmed in writing to NYSDEC.

*Table 8. Summary of Colonie Site Reporting and Notification Requirements*

| Document | Frequency or Triggering Event | Accountability | Site Inspection Required | Responsible Party |
|---|---|---|---|---|
| **Actions** | | | | |
| Vapor intrusion study | Prior to building a habitable space | NYSDEC/SMP | No | Site Owner |
| Water treatment study | Prior to use of groundwater | NYSDEC/NYSDOH/ Albany County Health Dept /SMP | No | Site Owner |
| Corrective Measures Work Plan | Failure of an IC | NYSDEC/SMP | No | Site Owner |
| Long-term groundwater monitoring report | Biennially | NYSDEC/ROD | Yes | LM |
| Electronic data deliverable | Sampling event | NYSDEC/SMP | No | LM |
| Long-term periodic review | Every 5 years | NYSDEC/ROD | Yes | LM |
| Annual Site Inspection | Annually | NYSDEC/SMP | Yes | Site Owner |
| Periodic Review Report | Annually | NYSDEC/SMP | Yes | Site Owner |
| **Notifications** | | | | |
| Excavation notification (soil easement) | 15 days advance notice | NYSDEC/SMP | No | Site Owner |
| Field activity associated with the remedial program | 7 days advance notice | NYSDEC/SMP | No | Site Owner and/or LM |
| Proposed changes in site use | 60 days advance notice | NYSDEC/SMP | No | Site Owner |
| Corrective Measures Work Plan | IC failure | NYSDEC/SMP | No | |
| Notification to NYSDEC of potential change of ownership | 60 days before change in ownership | NYSDEC/SMP | No | Site Owner |
| Notification to NYSDEC of change of ownership | 15 days after change in ownership | NYSDEC/SMP | No | Site Owner |
| Certification to NYSDEC that the environmental easement is still in place and has been complied with | Delisting from NYSDEC registry of inactive hazardous waste disposal sites | NYSDEC/SMP | No | Site Owner |
| Damage to remedial components | As soon as possible | NYSDEC/SMP | No | Site Owner or LM |

## 3.7 Safety and Health

The safety and health program that applies to LTS activities is based on 10 CFR 851, "Worker Safety and Health Program"; 10 CFR 835, "Occupational Radiation Protection"; DOE Order 458.1, *Radiation Protection of the Public and the Environment*; and other requirements as specified in the LMS contract. LTS activities are conducted in accordance with the *LMS Safety and Health Program* (LMS/POL/S20043) and implementing procedures, established for LM sites. These procedures are consistent with DOE orders, regulations, codes, and standards.

Emergency management information specific to DOE work at the site are found in Appendix B, "Supplemental Emergency Response Information." This plan contains a list of emergency telephone numbers and addresses for local fire departments, hospitals, ambulances, and police or sheriff departments, as well as a map to the nearest emergency medical facility. LM inspectors will carry a copy of the site-specific emergency plan and conduct and document a site safety briefing before conducting an inspection, sampling event, or other activities. A job safety analysis will be developed by the subcontractors to address hazards and mitigation methods for the work they will perform on the site.

## 3.8 Emergency Response

Emergency management requirements for DOE sites, facilities, and activities are governed by DOE Order 151.1D, *Comprehensive Emergency Management System*. The DOE order is implemented by **t**he joint *LM/LMS All Hazards Emergency Management Plan* (LM-Procedure-3-20-17.0, LMS/POL/S37643), *LM/LMS Emergency Categorizations and Notifications EPIP*, (LM-Procedure-3-20-14.0, LMS/POL/S30907), and *LM/LMS Worker Emergency Response EPIP*, (LM/3-20-21.0, LMS/POL/S37549), as well as by site-specific emergency response information found in Appendix B.

An emergency, as defined in the GEP, includes any incident, whether natural or man-made, that could endanger or adversely affect people, property, or the environment and that requires responsive action beyond normal operations. There are no potential events that would be classified as operational emergencies because there are no hazardous or radiological materials present.

A *Supplemental Emergency Response Information (SERI)* form (LMS 1415) was completed for the Colonie site, and a copy is included as Appendix B.

## 3.9 Records Management

DOE maintains site surveillance and maintenance records in a central location at the LM Business Center at Morgantown, West Virginia. These records have been selected because they contain critical information needed to ensure the continued management and follow-on actions and controls (including property management) required to protect public health and the environment and demonstrate compliance with applicable legal requirements. This surveillance and maintenance record collection does not include information pertaining to employee or public safety and health issues with respect to former site operations.

LM will preserve the Administrative Record and Permanent Record. The Administrative Record is accessible to the public through the site-specific webpage. Select permanent record files such as LTS Plans, site inspections, and monitoring reports will be available via the webpage. Important stewardship records such as monitoring reports and LTS Plans are posted on the Colonie site webpage.

Environmental monitoring data that are collected onsite are placed into electronic format using the EQuIS Data Gathering Engine system, also called the EDGE system. Site inspection forms will be scanned and stored electronically in compliance with the *Quality Assurance Manual* (LMS/POL/S04320), hereafter called the QAM. Electronic copies of site inspection forms will be submitted to Records Management for archiving and will be saved on the project SharePoint site for reference.

## 3.10 Environmental Data Management

LM stores laboratory and field-acquired electronic data deliverables in an EQuIS database. Electronic data deliverables will be supplied to NYSDEC in EQuIS format as specified on the NYSDEC website at https://www.dec.ny.gov/chemical/62440.html. An LMS contractor electronic data deliverable upload operating procedure has been developed and is included in *ESDM Environmental Data Management Team Work Procedures* (LMS/PRO/S13473).

## 3.11 Quality Assurance

The LTS of the site will comply with the QAM, which is based on DOE Order 414.1D, and on the current version of the International Organization for Standardization (ISO) 9001, *Standard for Quality Management Systems*. These requirements include project organization; a quality assurance program; a document control system; the identification and control of items; inspections; the control of measuring and test equipment; handling, storage, and shipping of quality-affecting items; a program for implementing and verifying corrective action; a program for maintaining quality assurance records; and a routine assessment program.

The quality of the environmental monitoring program is maintained and documented through a number of measures that are documented in the SAP in accordance with the current version of the ISO 14001, *Standard for Environmental Management*. The measures include: the use of standard operating procedures; the collection, analysis, and evaluation of quality control samples and performance evaluation samples; the use of standardized analytical methods; data management activities and data quality evaluations (data validation); maintaining quality assurance records; and evaluating analytical laboratory data, sample collection activities, and programmatic procedures.

### 3.11.1 Quality Assurance Reviews

Quality Assurance (QA) representatives perform multiple types of reviews of projects and work activities as part of the work planning process. All planned work is reviewed by QA representatives to ensure that work is planned and executed in accordance with the LMS *IWCP Manual* (LMS/POL/S11763).

QA manages the assessment program as described in the QAM, which establishes methods to assess whether internal or external products and services have been planned, managed, and performed in a compliant and effective manner that achieves intended results. Assessments identify issues, opportunities for improvement, noteworthy practices, lessons learned, and problems that hinder the organization from achieving its objectives.

IWCP reviews and planned assessments apply to personnel involved in the scheduling, planning, conducting, reporting, or tracking of internal or external independent assessments, management assessments, surveillances, and site visits. It does not apply to oversight bodies conducting assessments of LMS program activities.

### 3.11.2 Issues Reporting and Management

Issues refer to any condition or occurrence (planned or unplanned) that affects the staff, visitors, public property, environment, or organizational mission. Issues refer to all issues, events, observations, concerns, and deficiencies and are reported and managed according to the issues reporting and management processes described in the QAM. Issues identified during sampling, inspections, or sites visits are submitted to an electronic tracking system, described in the QAM, which is used by QA to track responsible managers, corrective action plans, and issue status through closure.

## 3.12 Monitoring Wells

Programmatic guidance and standard operating procedures for monitoring well inspection and maintenance are found in the *Inspection and Maintenance of Groundwater Monitoring and Extraction Wells* (LMS/PRO/S18459).

### 3.12.1 Well Redevelopment

Monitoring wells will be redeveloped periodically as needed. The need for well redevelopment will be evaluated during sampling events by monitoring the purge water for biological growth and turbidity levels. Procedures for redevelopment are discussed in the SAP and in the *Inspection and Maintenance of Groundwater Monitoring and Extraction Wells* (LMS/PRO/S18459).

### 3.12.2 Well Inspection

Monitoring wells will be inspected during each sampling event for signs of silting-in, damage, corrosion, or infiltration. Surface aspects of the monitoring wells will be inspected during condition assessments conducted every 5 years and during annual site inspections. Inspectors will use the *Monitoring Well Condition Assessment Survey* form (LMS 1591) to document well conditions, note any signs of damage, provide photographs of each well, and indicate whether vegetation impedes access.

### 3.12.3 Well Decommissioning

Monitoring wells may be decommissioned when they are no longer needed, pending agreement with NYSDEC. LM will review the efficacy of the well system when preparing each long-term monitoring report. Monitoring wells will be decommissioned in accordance with NYSDEC Guidance CP-43 (NYSDEC 2009).

# 4.0 References

10 CFR 835. U.S. Department of Energy, "Occupational Radiation Protection," *Code of Federal Regulations.*

10 CFR 851. U.S. Department of Energy, "Worker Safety and Health Program," *Code of Federal Regulations.*
10 CFR 1021. U.S. Department of Energy, "National Environmental Policy Act Implementing Procedures," *Code of Federal Regulations*.

40 CFR 300. U.S. Environmental Protection Agency, "National Oil and Hazardous Substances Pollution Contingency Plan," *Code of Federal Regulations*.

40 CFR 1500–1508. Council on Environmental Quality, "Regulations for Implementing the Procedural Provisions of the National Oil and Hazardous Substances Pollution Contingency Plan," *Code of Federal Regulations*.

6 NYCRR 375 et seq. "Environmental Remediation Programs," as amended, *New York Codes, Rules and Regulations*.

6 NYCRR 703 et seq. "Surface Water and Groundwater Quality Standards," as amended, *New York Codes, Rules and Regulations*.

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*Environmental Instructions Manual*, LMS/POL/S04338.

*ESDM Environmental Data Management Team Work Procedures*, LMS/PRO/S13473.

*Inspection and Maintenance of Groundwater Monitoring and Extraction Wells*, LMS/PRO/S18459.

*Integrated Work Control Process Manual*, LMS/POL/S11763.

*Legacy Management Program Management Plan for Formerly Utilized Sites Remedial Action Program*, LM-Plan-3-22-1-1.0, LMS/S16063.

*LM/LMS All Hazards Emergency Management Plan*, LM-Procedure-3-20-17.0, LMS/POL/S37643

*LM/LMS Emergency Categorizations and Notifications EPIP*, LM-Procedure-3-20-14.0, LMS/POL/S30907

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# Appendix A

# NYSDEC Requirements Crosswalk

*Table A.1. NYSDEC Requirements Crosswalk*

| **NYSDEC DER-10/*Technical Guidance for Site Investigation and Remediation*, codified in 6 NYCRR 375 et seq.** | **Equivalents in This Plan** |
|---|---|
| **2.1(a)5:** Analysis must be conducted by a laboratory that is accredited pursuant to the New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP) for the category of parameters analyzed. | Included in the program directive. All three LM-contract laboratories have overlapping certifications. |
| **2.1(a)5b:** Laboratory analytical methods: Samples collected by the remedial party will be analyzed by an analytical method included in the most current DEC Analytical Services Protocol (ASP)… | All three LM-contract laboratories have approved methods that are anticipated for use. |
| **2.1(a)5b3:** The method selected must achieve a detection limit or minimum reporting limit that is below the applicable cleanup level for all contaminants … | Analytical detection limits are specified in the SAP. |
| **2.1(a)5c(g)**: Alteration of groundwater samples collected for metals analysis.<br>**1.** Provision for the alteration of groundwater samples (filtration as defined in Section 2.4) for metals analysis is only acceptable when the rationale for any proposed filtration is prepared in accordance with this subdivision and, if a field decision, must be reviewed and approved in accordance with subdivision 1.6(d) by the DER project manager prior to any filtration of samples.<br>**2.** Alteration of groundwater samples will not be approved unless the following conditions can be documented:<br>**i.** the target turbidity level of 50 NTUs for development and sampling of groundwater monitoring well is or will be exceeded;<br>**ii.** the well(s) being sampled was (were) properly designed, installed, constructed, developed, maintained and sampled;<br>**iii**. attempts have been made to repurge and/or redevelop the well; and<br>**iv.** replacement of the well(s) with documentation of proper well construction and installation where necessary, has been considered and is not justified. | Not applicable: there are no longer any metals analyses |
| **6.** The procedures (including quality control and quality assurance) specified in the ASP analytical method must be followed unless an alternate procedure is included in the approved work plan. | The DOE contract laboratories will have Department of Energy Consolidated Audit Program (DOECAP) certification and will have New York State certification for the analyses used. |
| **2.1(a)5 (g):** Alteration of groundwater samples collected for metals analysis…<br>**5.** When analyzing the samples:<br>**i.** if the unfiltered sample does not exceed Site Cleanup Goals (SCGs), there is no need to analyze the filtered sample; and<br>**ii.** if there is a question whether metal contaminants are naturally occurring or were introduced through human-made activities, upgradient and background wells may be sampled using the same procedure, with best efforts made to obtain an uncontaminated sample of the horizon which is being screened, to allow a comparison. | Not applicable: there are no longer any metals analyses |
| **2.2 (a)1.(4)** samples to determine closure of a system pursuant to sections 6.4 and/or 6.5… ii. must include the preparation of a Data Usability Summary Report (DUSR) prepared by a party independent from the laboratory performing the analysis for all samples when Category B data deliverables are provided. This party must also be independent from any direct involvement with the project, e.g. Project Manager or property owner. The required content of a DUSR and qualifications for the person preparing the DUSR are detailed in Appendix 2B. | Not applicable; these are provisions for requiring the use of an independent third party to prepare a data usability summary report before closing a remediation system. |

*Table A.1. NYSDEC Requirements Crosswalk (continued)*

| **NYSDEC DER-10/*Technical Guidance for Site Investigation and Remediation*, codified in 6 NYCRR 375 et seq.** | **Equivalents in This Plan** |
|---|---|
| **2.1(a)5:** Analysis must be conducted by a laboratory that is accredited pursuant to the New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP) for the category of parameters analyzed. | Included in the program directive. All three LM-contract laboratories have overlapping certifications. |
| **2.3(c)2.** Duplicate and matrix/matrix-spike duplicates are required at a frequency of 1 per 20 samples. Aqueous trip blanks are required at the same frequency for samples that are to be analyzed for volatiles. Field and/or rinsate blanks **may** also be required at the same frequency. | Quality control samples and splits are all used at 5% frequency. Aligns with the LM SAP. |
| **2.4 Quality Assurance Project Plan**<br>**(a)2i.** the project scope and project goals as well as how the project relates to the overall site investigation or remediation strategy;<br>**ii.** project organization, including the designation of a project manager, quality assurance officer (QAO) and field analyst (if field analysis is planned). Resumes of these individuals must be included;<br>**iii.** sampling procedures, data quality usability objectives and equipment decontamination procedures;<br>**iv.** site map showing sample locations;<br>**v.** an "Analytical Methods/Quality Assurance Summary Table" which must include the following information for all environmental, performance evaluation and quality control samples: (1) matrix type; (2) number or frequency of samples to be collected per matrix; (3) number of field and trip blanks per matrix; (4) analytical parameters to be measured per matrix; (5) analytical methods to be used per matrix with minimum reporting requirements; (6) number and type of matrix spike and matrix spike duplicate samples to be collected; (7) number and type of duplicate samples to be collected; (8) sample preservation to be used per analytical method and sample matrix; (9) sample container volume and type to be used per analytical method and sample matrix; and (10) sample holding time to be used per analytical method and sample matrix; and<br>**vi.** a detailed description of sampling methods to be used and sample storage in the field. | The LTS Plan addresses quality assurance issues, supported by the LM SAP and LM QAM.<br>**i:** See Section 1.1.<br>**ii:** See Section 3.2.<br>**iii:** These are addressed in the SAP.<br>**iv:** See Figure 7.<br>**v**: See Tables 4, 5, 6, and 7.<br>**vi:** These are addressed in the SAP. |
| **2.4(c)** Analytical data must be provided in an electronic format in accordance with section 1.15. | Electronic deliverables will be submitted using the EQuIS format. |
| **2.4(d)** Quality assurance glossary. Quality assurance terms and definitions presented in this subdivision must be used in preparing all documents related to quality assurance or control. | The terms and definitions used in the guidance are the same as those used in this plan and in the SAP. |
| **3.3(e)5** Investigation generated water/fluid handling and disposal. Water/fluid generated during an investigation:<br>**ii**. … may be stored on-site in labeled containers in an area with secondary containment awaiting treatment and/or disposal, in accordance with applicable DEC waste management regulations (e.g., 6 NYCRR Parts 360, 364 and the 370 series) or other provisions approved by DER. The contents of the containers will be (1) properly treated or disposed of when any of the following are observed:<br>(A) visual evidence of contamination, consisting of discoloration, sheens, free product or non-aqueous phase liquid; (B) olfactory evidence of contamination; or (C) concentrations of contaminants above groundwater standards at levels of concern are known to be present in the monitoring wells, based on previous sampling of the groundwater; or<br>**(2)** if none of the conditions described in clause ii. (1) apply, the containerized water may be: (A) recharged to unpaved ground into the same groundwater unit, within or directly adjacent to a source area in a manner which does not result in surface water runoff, with DER approval; | Both Section 3.4.5 of the plan and the site-specific program directive address IDW, and these sections conform with the listed guidance. |
| **6.1 Site Management (a)3.** A site will have only one SMP which will encompass all site management activities identified by the remedy or remedies (including interim remedial measures) selected for the site. The only | A single SMP addresses ICs. The SMP is supplemented by the LTS Plan. |

*Table A.1. NYSDEC Requirements Crosswalk (continued)*

| **NYSDEC DER-10/*Technical Guidance for Site Investigation and Remediation*, codified in 6 NYCRR 375 et seq.** | **Equivalents in This Plan** |
|---|---|
| **2.1(a)5:** Analysis must be conducted by a laboratory that is accredited pursuant to the New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP) for the category of parameters analyzed. | Included in the program directive. All three LM-contract laboratories have overlapping certifications. |
| exception would be a BCP site remedial program implemented by a volunteer, where off-site contamination has been determined to represent a significant threat as set forth in 6 NYCRR 375-3.7. | |
| **6.2.2. Monitoring Plan (a)1.** The plan should identify the requirements for:… iii. assessing achievement of remedial action objectives; iv. evaluating site information periodically, to confirm that the remedy continues to be effective protecting public health and the environment; v. sampling and analysis of appropriate media; and vi. preparing the necessary reports of the results of this monitoring. | Section 3.4.6 addresses the criteria for achievement of the remedial action objectives. Long-term monitoring reports will evaluate site information and the effectiveness of the SAP. Long-term periodic reviews are specified to evaluate the effectiveness of the remedy, adequacy of the sampling design, and necessary reporting. |
| **6.2.2(a)2.** For specific remedies, as described in paragraphs (c) 3 through 6 below, the plan may also need to include provision for: i. evaluating monitored natural attenuation; ii. plume management monitoring; … and iv. trend analysis. | Long-term monitoring reports evaluate MNA effectiveness, plume management, and trend analysis. |
| **6.2.2(c)1.** Effectiveness monitoring requirements:… iii. groundwater should be characterized as to its temperature, pH, conductivity, turbidity and, where appropriate, indicator parameters for monitored natural attenuation at the site… | The six well stability parameters are measured but MNA parameters no longer need to be collected. |
| **6.2.2(c) 3. Effectiveness monitoring requirements for monitored natural attenuation (MNA).** For a remedy with an MNA component, a groundwater monitoring program should be implemented to monitor groundwater plume characteristics, horizontal and vertical contaminant migration and related controlling processes, in accordance with the USEPA guidance for MNA, OSWER Directive 9200.4-17 Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites (November 1997). | The plan includes MNA evaluation requirements that conform with the EPA Office of Solid Waste and Emergency Response (OSWER) Directive 9200.4-17. |
| **6.2.2(d)1.** A monitoring plan should include the: **i.** identification of the sampling points; **ii.** analytical method(s) protocol; **iii.** qualifications of the laboratory; **iii.** frequency of sampling; **iv.** sample collection protocols; **v.** sampling, reporting and quality assurance/quality control requirements pursuant to Chapter 2; **vi.** process for reporting and addressing migration of contaminants to sentinel wells or other compliance monitoring points; **vii.** protocols for modifying the plan by expanding or removing monitoring points; and **viii.** protocols for determining when or if, the required monitoring of media subject to the plan may be terminated. | **i:** See SAP and the program directive. **ii:** Sample collection methods are in the SAP. **v:** Quality assurance/quality control requirements are contained in the Quality Systems Manual. |
| **6.2.2(d)2**. **A HASP** for the monitoring identified in paragraph 6.2.1(b)4 is required and is to be prepared in accordance with subdivision 1.9(c). | LM uses the *LMS Safety and Health Program* (LMS/POL/S20043) as specified in Section 3.6. A task-specific job safety analysis is included as Appendix C of the SAP. Site-specific emergency response is addressed in the emergency response plan, included in Appendix B of this plan. |
| **6.2.2(d)3. 3.** The monitoring plan should also include provision for: **i.** the inspection and maintenance of groundwater monitoring wells, extraction wells or other permanent compliance monitoring points (e.g., soil vapor probes); and | Inspections, maintenance, and decommissioning of monitoring wells are addressed in Section 3.11. |

*Table A.1. NYSDEC Requirements Crosswalk (continued)*

| **NYSDEC DER-10/*Technical Guidance for Site Investigation and Remediation*, codified in 6 NYCRR 375 et seq.** | **Equivalents in This Plan** |
|---|---|
| **2.1(a)5:** Analysis must be conducted by a laboratory that is accredited pursuant to the New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP) for the category of parameters analyzed. | Included in the program directive. All three LM-contract laboratories have overlapping certifications. |
| **ii.** decommissioning of groundwater monitoring wells, extraction wells or other permanent compliance monitoring points, by the remedial party or site owner:<br>**(1)** when DER determines they are no longer necessary for monitoring the remedy; and **(2)** in accordance with the procedures set forth in the applicable guidance, CP-43, *"Commissioner Policy on Groundwater Monitoring Well Decommissioning*." | |
| | |

**Note:**
Abbreviations used in this appendix are defined in the "Abbreviations" section at the beginning of this LTS Plan.

# Appendix B

# Supplemental Emergency Response Information

# Supplemental Emergency Response Information (SERI)

*Colonie, New York, Site*

**Date Issued: March 15, 2023**

This document shall be implemented in accordance with the *LM/LMS All Hazards Emergency Response Plan* (LM-Procedure-3-20-17, LMS/POL/S37643) to provide emergency response information specific to the Office of Legacy Management (LM) center, facility, project, or site. The LMS site lead, facility lead, subtask manager, or site emergency coordinator is responsible for submitting updates to Emergency Management annually or as needed. Updates can be emailed to EmergencyManagement@lm.doe.gov.

1. Address or GPS information. GPS information should be included for projects and sites that do not have a street address to help emergency responders locate workers.
2. First responder contact information includes telephone numbers for responders nearest to the center, facility, project, or site.
3. Center and facility maps display locations for assembly areas, shelter-in-place locations, and emergency resource locations.
   **OR**
   Site or project maps display evacuation routes and shelter-in-place locations, where appropriate, for buildings.
4. Accountability area zones or designations for centers, facilities, projects, or sites that have more than one assembly area.
5. Additional conditions include information unique to the center, facility, project, or site that may impact emergency response. This information cannot supersede any Emergency Management program procedure.

**DIAL 911 IN AN EMERGENCY.**
**AFTER CALLING 911, CALL THE WATCH OFFICE AT 303-404-100.**

## 1. ADDRESS OR GPS COORDINATES

1130 Central Avenue
Colonie, NY 12205

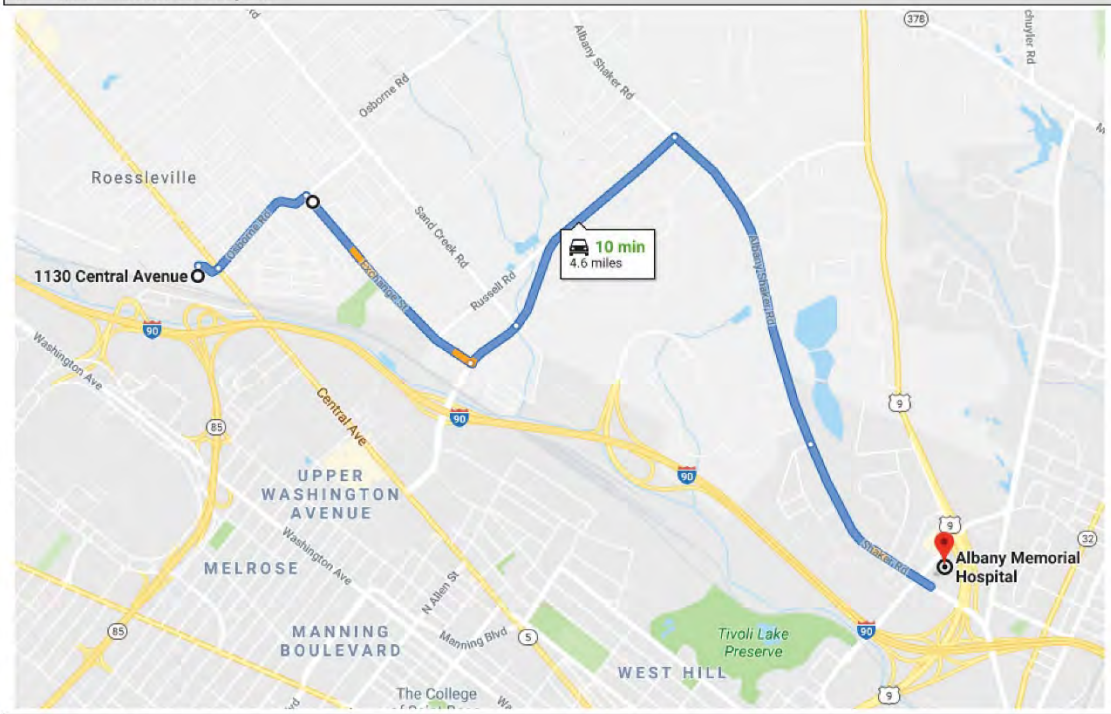
## 2. FIRST RESPONDER CONTACT INFORMATION

| Type | Name | First Call | Direct Number |
|---|---|---|---|
| Fire | West Albany Fire Department | 911 | 518-459-6311 |
| Emergency Medical Technician | West Albany Fire Department | 911 | 518-459-6311 |
| Non-medical Emergencies | Albany Police Department | 911 | 518-458-9148 |
| Urgent Car Facility | Albany Med EmUrgent Care<br>98 Wolf Road, Suite 16<br>Albany, NY 12205 | 518-264-9000 | 518-264-9000 |
| Emergency Room | Albany Memorial Hospital<br>600 Northern Boulevard<br>Albany, NY 12204 | 911 | 518-471-3221 |

# Supplemental Emergency Response Information (SERI)

*Colonie, New York, Site*

**3. MAP – Route to Hospital**




**4. ACCOUNTABILITY AREAS**

<Only applicable to Category 3 sites and centers or facilities with capacity to hold more than 10 occupants.>

| BUILDING | ZONE OR DESIGNATION | ASSEMBLY AREA |
|---|---|---|
| Not applicable | All areas | Front gate |

**5. ADDITIONAL CONDITIONS**

<Add considerations specific to the center, facility, or site, excluding pandemic response requirements. Considerations cannot supersede Emergency Management program requirements.>

| | | | | | |
|---|---|---|---|---|---|
| ☐ | No cellular service | ☒ | Rough terrain | ☐ | Public access to site |
| ☐ | Radiological hazards (describe): | | | | |
| ☐ | Chemical hazards (describe): | | | | |
| ☒ | Natural hazards (describe): **ticks** | | | | |
| ☐ | Other (describe): | | | | |

## Supplemental Emergency Response Information (SERI)

*Colonie, New York, Site*

| |
|---|
| **<REQUIRED> Methods available to communicate emergency messages to occupants/workers:**<br>The Colonie site is unoccupied. Each person that is on the Site must notify the site lead about visiting in advance. During site visits, the Operations Lead, lead inspector, sampler, or maintenance site safety supervisor is responsible for contacting emergency response entities. Accountability, reporting, and documentation requirements are specified in the Comprehensive Emergency Management System.<br><br>Workers who are not located nearby shall rely on telephones. In the event of an emergency, three horn blasts shall be used to notify workers that an emergency exists and to assemble. The preferred assembly area is the front gate. |
| **Emergency considerations:** |

**Safety and Health Reference:** WorkCare (formerly AllOne Health): 800-350-4511

# Appendix C

# Entry Procedure for Offsite Properties

# C1. Entry Procedure for Offsite Properties

LMS personnel cannot perform work on offsite properties without prior written agreement with the offsite property owners.

In order to gain access to the two offsite wells, right-of-entry agreements are needed. Two agreements are with Amtrak and one agreement is with a private property owner. Complete copies of the rights-of-entry and contact information for each are stored in the project and Asset Management support files. Key details related to each right-of-entry are summarized in Table C-1. The agreements contain additional details and should be carefully reviewed while planning site work.

Access by NYSDEC representatives is not addressed in the rights-of-entry granted to the LMS contractor or to the United States. NYSDEC and Amtrak have a cooperative agreement that allows NYSDEC representatives to make unannounced inspections on Amtrak property.

The SMP requires that NYSDEC receive notification at least 7 days before any remedial program-related field activity, which includes both the annual site inspection and periodic groundwater sampling. The LM site manager and LMS site lead coordinate site access requirements with NYSDEC at least 7 days in advance and provided plans about activities for each day of field work. The NYSDEC project manager may make periodic unannounced visits to the site to observe the work.

*Table C-1. Key Details Related to Each Right-of-Entry*

| Grantor/ Grantee | Purpose | Terms and Requirements | Notifications | Notes |
|---|---|---|---|---|
| Amtrak and RSI EnTech, LLC, expiring June 5, 2024 | Access by the LMS contractor to sample offsite monitoring wells MW-34S and MW-37S, which are on Amtrak property | • 1-year term<br>• Annual fee and insurance coverage<br>• Prior safety training on the Amtrak website and issuance of worker ID cards<br>• A copy of agreement required while onsite<br>• High-visibility vest, hearing protection, safety glasses with side shields, hard hats, and steel-toed safety shoes<br>• Onsite entry meeting with Amtrak district engineer or track foreman<br>• Oversight by Amtrak engineer or foreman<br>• After sampling, Amtrak will receive analysis results | • 10 working days written prior notification to Amtrak<br>• Coordinate with district engineer 2 weeks in advance<br>• Document notifications on the *Landowner/ Stakeholder Notification Form* (LMS 1013) | • Amtrak foreman requests reminder 1 week before fieldwork began<br>• Required that a track foreman be present for the sampling work |
| Amtrak and the United States of America, expiring June 5, 2024 | Access by federal employees for MW-34S and MW-37S, which are on Amtrak property | • Annual fee and insurance coverage<br>• Prior safety training on the Amtrak website and issuance of worker ID cards<br>• A copy of agreement required while onsite<br>• High-visibility vest, hearing protection, safety glasses with side shields, hard hats, and steel-toed safety shoes<br>• Coordinate with Amtrak district engineer at least 2 weeks before fieldwork<br>• Onsite entry meeting with Amtrak district engineer or track foreman<br>• Oversight by Amtrak engineer or foreman<br>• After sampling, Amtrak will receive analysis results | • 10 working days written prior notification to Amtrak<br>• Coordinate with district engineer 2 weeks in advance<br>• Document notifications on the *Landowner/ Stakeholder Notification Form* | • Amtrak foreman requests reminder 1 week before fieldwork began<br>• Required that a track foreman be present for the sampling work |
| Owner of 82 Yardboro Avenue, Albany, New York, and the United States of America, expiring July 31, 2024 | Cross private property to gain access to offsite wells MW-34S and MW-37S | • 5-year term, expiring July 31, 2029 | • At least 24 hours<br>• Document notifications on the *Landowner/ Stakeholder Notification Form* | • Prior notifications of property owners are documented on a landowner notification form by the Environmental Monitoring Operations team |

# Appendix D

# Well Boring Logs and Construction Diagrams

# GEOLOGIC DRILL LOG

| | | | | |
|---|---|---|---|---|
| PROJECT: Colonie Interim Storage Site | JOB NO.: 4501-139 | SHEET NO.: 1 OF 1 | HOLE NO.: B39W08S | |
| SITE: CISS | COORDINATES: N 1776 E 1122 | ANGLE FROM HORIZ: Vertical | BEARING: ------ | |
| BEGUN: 11-7-84 | COMPLETED: 11-7-84 | DRILLER: Empire Soils | DRILL MAKE AND MODEL: Acker AD-2 | SIZE: 7-1/2" |
| OVERBURDEN: | ROCK (FT.): | TOTAL DEPTH: 14.0 | | |
| CORE RECOVERY (FT./%): / | CORE BOXES: | SAMPLES: | EL. TOP CASING: 231.45 | GROUND EL.: 229 |
| DEPTH/EL. GROUND WATER: / | DEPTH/EL. TOP OF ROCK: / | | | |
| SAMPLE HAMMER WEIGHT/FALL: | CASING LEFT IN HOLE: DIA./LENGTH: | LOGGED BY: E. W. Lundeen | | |

| SAMP. TYPE AND DIAM. | SAMP. ADV. LEN. CORE | SAMPLE REC. CORE REC. | SAMPLE BLOWS N-VALUE % CORE RECOVERY | WATER PRESSURE TESTS: LOSS IN G.P.M. | WATER PRESSURE TESTS: PRESS. P.S.I. | WATER PRESSURE TESTS: TIME MIN. | ELEV. | DEPTH | GRAPHICS | SAMPLE | DESCRIPTION AND CLASSIFICATION | NOTES ON: WATER LEVELS, WATER RETURN, CHARACTER OF DRILLING, ETC. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 228.8 226.8 | | | | 0.0 - 0.3 Ft. TOPSOIL. | |
| | | | | | | | | 5 | | | 0.3 - 10.8 Ft. SAND (SP). Light brown, medium- to coarse-grained, well sorted, rounded to subangular, frosted particles, 10% silt. Noncohesive. Dry to saturated at 3.5 Ft. (DUNE SAND) | |
| | | | | | | | | 10 | | | | |
| | | | | | | | 218.1 | | | | 10.8 - 14.0 Ft. Clayey SILT (ML). Gray to dark gray noncohesive to slightly cohesive, slightly plastic material. Rapid to moderate dilatancy. (UPPER SAND) | |
| | | | | | | | 214.9 | | | | Bottom of borehole at 14.0 Ft. Monitor well installed and screened at 6.0 to 11.0 Ft., 11/7/84. | |

S = SPLIT SPOON; ST = SHELBY TUBE; = DENNISON; P = PITCHER; O = OTHER

SITE: CISS

HOLE NO.: B39W08S

# Drilling Log

IT CORPORATION
A Member of the IT Group

Monitoring Well 30-S

Project Colonie FUSRAP Site  Owner USACE
Location Colonie, NY  Proj. No. 866724
Surface Elev. ____  Total Hole Depth 14.5 ft.  Diameter ____
Top of Casing 225.74 ft.  Water Level Initial 6 ft.  Static ____
Screen: Dia 2 in.  Length 10 ft.  Type/Size Sch 40PVC in.
Casing: Dia 2 in.  Length 6 ft.  Type Sch 40PVC
Fill Material ____  Rig/Core ____
Drill Co. Maxim Technology  Method HSA
Driller C. DiNova  Log By T. Maynard  Date 08/01/00  Permit # ____
Checked By ____  License No. ____

See Site Map For Boring Location

COMMENTS:

Atmosphere & samples monitored by ECL

| Depth (ft.) | Well Completion | PID (ppm) | Sample ID | Blow Count/ % Recovery | Graphic Log | USCS Class. | Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50% |
|---|---|---|---|---|---|---|---|
| -2 | | | | | | | |
| 0 | | | | | | | 0-10': Dark brown-brown, medium grained sand, increased silt content w/depth, increased moisture-wetness w/depth, trace boulder, cobble, gravel, fine gravel, content decreases w/depth. |
| 2 | | | | | | | |
| 4 | | | | | | | |
| 6 | | | | | | SM | |
| 8 | | | | | | | |
| 10 | | | | | | | 10-12': Brown, saturated, sandy silt;60-80% silt, very fine-fine grained sand, trace clay, medium dense. |
| 12 | | | | 2/2/2/2 80% | | SM | |
| 14 | | | | | | SM | |
| 16 | | | | | | | |
| 18 | | | | | | | |
| 20 | | | | | | | |
| 22 | | | | | | | |
| 24 | | | | | | | |

Page: 1 of 1

| Colonie FUSRAP Site | DISTRICT: Baltimore | BORING NUMBER: MW – 34S |
|---|---|---|
| COMPANY NAME: IT Corporation | DRILL SUBCONTRACTOR: Parratt Wolff | SHEET: 1 of 2 |
| PROJECT NAME: TERC CONTRACT NO. DACA31-95-D-0083 | SITE LOCATION: 1130 Central Ave. Albany, NY | |
| NAME OF DRILLER: Mickey Marshall | HOLE LOCATION: See site map | |
| NAME OF GEOLOGIST: Marc Flanagan | SIGNATURE OF GEOLOGIST: | |
| TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT: Hollow Stem Auger / Split spoon sampler | DATE STARTED: 12/20/2001 | DATE COMPLETED: 12/20/2001 |
| | SURFACE ELEVATION: 218.33 | |
| | DEPTH TO FIRST ENCOUNTERED WATER: NA | |
| DEPTH TO REFUSAL: NA | DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA | |
| DEPTH DRILLED INTO BEDROCK: NA | OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA | |
| TOTAL DEPTH OF HOLE: 18.5' | TOTAL FLUID LOSSES: NA | |

| GEOTECHNICAL SAMPLES | SAMPLE DEPTH | UNDISTURBED/DISTURBED | TOTAL NUMBER OF CORE BOXES |
|---|---|---|---|
| | | | |

| ENVIRONMENTAL SAMPLES | SAMPLE DEPTH | ANALYTES | TOTAL CORE RECOVERY % |
|---|---|---|---|
| | | | |

| DISPOSITION OF HOLE | BACKFILLED | MONITORING WELL | CASING TYPE | WELL DEPTH | SCREENED INTERVAL |
|---|---|---|---|---|---|
| Monitoring well installed | #0 Morie | MW – 34S | 2" PVC | 18.5' | 8.5'-18.5' |

| DATE | START TIME | FINISH TIME | DRILLING DEPTH | DESCRIPTION |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |

SKETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS SCALE:

| PROJECT TO 33, DC SCHOOLS | BORING. |
|---|---|
| NOTE: ATTACH WELL CONSTRUCTION DIAGRAM | MW – 34S |

IT DRILLING LOG (CONTINUATION SHEET) | BORING NUMBER MW – 34S

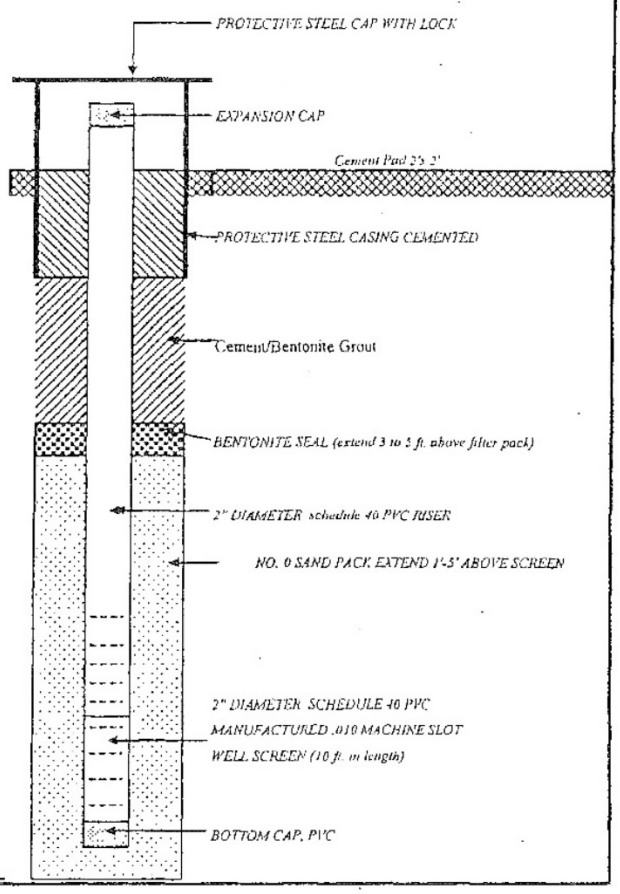
OJECT NAME: COLONIE FUSRAP SITE | GEOLOGIST: M.Flanagan | SHEET: 2

| DEPTH | BLOW COUNT | USCS SYMBOL | DESCRIPTION OF MATERIALS | FIELD SCREENING RESULTS | SAMPLE ID/DEPTH | REMARKS |
|---|---|---|---|---|---|---|
| | | | | | | Augered down to 8'. No split spoons collected. |
| 8--- | 5 | ML | Brown to brown-gray silt, trace clay content, slight density, Wet | 7.0 | | |
| - | 3 | | | | | |
| - | 4 | | | | | |
| - | 2 | | | | | |
| 10--- | 3 | ML | Gray-brown silt, trace clay content, slight density, Wet. | 6.0 | | |
| - | 3 | | | | | |
| - | 2 | | | | | |
| - | 3 | | | | | |
| 12--- | 2 | ML | Gray-brown silt, trace clay content, slight density, Last ~4" gray silt, some clay, medium density, Wet. | 10.0 | | |
| - | 3 | | | | | |
| - | 2 | | | | | |
| - | 2 | | | | | |
| 14--- | 2 | | | | | |
| - | 2 | CL | Gray-brown clay, medium density, some silt interbedded, Wet. | 15.0 | | |
| - | 3 | | | | | |
| - | 3 | | | | | |
| 16--- | 3 | | | | | |
| - | 3 | CL | Gray-brown clay, medium density, trace silt in 2 horizons, Wet. | 15.0 | | |
| - | 3 | | | | | |
| - | 5 | | | | | |
| 18--- | | | | | | |

# FIELD FORM
# STICK-UP WELL CONSTRUCTION DIAGRAM
# COLONIE FUSRAP (to be completed in the field)
# WELL ID (MW - 34S)

| | DEPTH (RECORD ON THIS FORM) |
|---|---|
| SURFACE | |
| DEPTH BOTTOM STEEL CSG- | 1.80 |
| DEPTH TOP BENTONITE- | 3.5 |
| DEPTH BOTTM BENTONITE- | 6.5 |
| DEPTH TOP SAND- | 6.5 |
| DEPTH TOP OF SCREEN- | 8.5 |
| DEPTH BOTTOM SCREEN- | 18.5 |
| TOTAL DEPTH- | 18.5 |

CONSTRUCTION DETAILS




GEOLOGIST: M.Flanagan
DATE INSTALLED: 12-20-01
DATE COMPLETED:12-20-01
BOREHOLE DIAMETER: 8 in.
TYPE OF DRILLING:Hollow Stem Auger
DRILLER/RIG: M.Marshall/Parrat Wolff

LOCATION DESCRIPTION: "C"

| Colonie FUSRAP Site | DISTRICT: Baltimore | BORING NUMBER: MW – 37S |
|---|---|---|
| COMPANY NAME: IT Corporation | DRILL SUBCONTRACTOR: Parratt Wolff | SHEET: 1 of 2 |

| | |
|---|---|
| PROJECT NAME: TERC CONTRACT NO. DACA31-95-D-0083 | SITE LOCATION: 1130 Central Ave. Albany, NY |
| NAME OF DRILLER: Mickey Marshall | HOLE LOCATION: See site map |
| NAME OF GEOLOGIST: Marc Flanagan | SIGNATURE OF GEOLOGIST: |
| TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT: Hollow Stem Auger / Split spoon sampler | DATE STARTED: 1/27/2002 — DATE COMPLETED: 1/27/2002 |
| | SURFACE ELEVATION: 220 (est.) |
| | DEPTH TO FIRST ENCOUNTERED WATER: NA |
| DEPTH TO REFUSAL: NA | DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA |
| DEPTH DRILLED INTO BEDROCK: NA | OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA |
| TOTAL DEPTH OF HOLE: 22' | TOTAL FLUID LOSSES: NA |

| GEOTECHNICAL SAMPLES | SAMPLE DEPTH | UNDISTURBED/DISTURBED | TOTAL NUMBER OF CORE BOXES |
|---|---|---|---|
| | | | |

| ENVIRONMENTAL SAMPLES | SAMPLE DEPTH | ANALYTES | TOTAL CORE RECOVERY % |
|---|---|---|---|
| | | | |

| DISPOSITION OF HOLE | BACKFILLED | MONITORING WELL | CASING TYPE | WELL DEPTH | SCREENED INTERVAL |
|---|---|---|---|---|---|
| Monitoring well installed | #0 Morie | MW – 37S | 2" PVC | 22' | 10'-20' |

| DATE | START TIME | FINISH TIME | DRILLING DEPTH | DESCRIPTION |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

SKETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS SCALE:

| PROJECT TO 33, DC SCHOOLS | BORING |
|---|---|
| NOTE: ATTACH WELL CONSTRUCTION DIAGRAM | MW – 37S |

# IT DRILLING LOG (CONTINUATION SHEET)

BORING NUMBER MW-37S

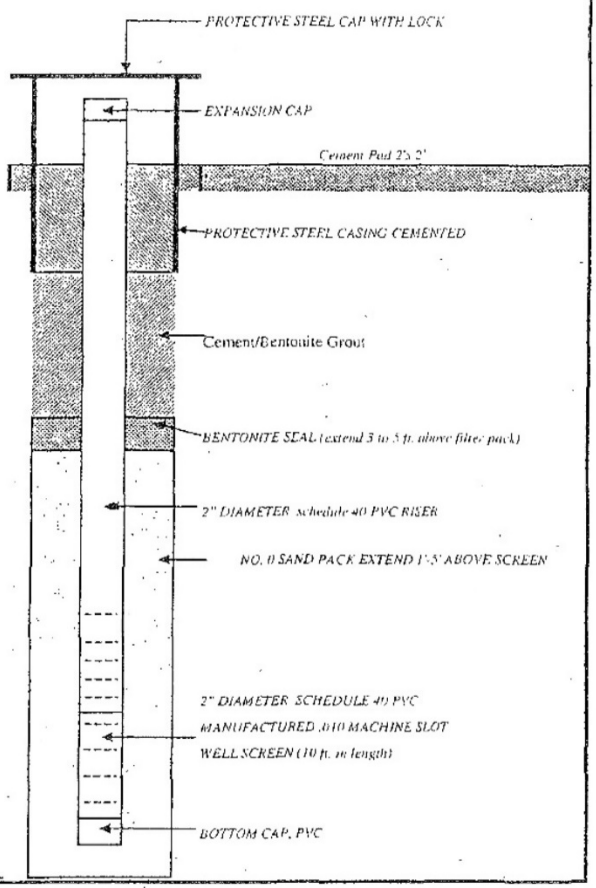
PROJECT NAME: COLONIE FUSRAP SITE | GEOLOGIST: M. Flanagan | SHEET: 2

| DEPTH | BLOW COUNT | USCS SYMBOL | DESCRIPTION OF MATERIALS | FIELD SCREENING RESULTS | SAMPLE ID/DEPTH | REMARKS |
|---|---|---|---|---|---|---|
| | | | | | | Augered down to 10'. No split spoons collected. |
| 10--- | 4 | ML | Brown-gray silt, trace fine grain sand, slight density, Wet. | <1.0 | | |
| - | 4 | | | | | |
| - | 6 | | | | | |
| - | 4 | | | | | |
| 12--- | 4 | ML | Brown-gray silt, slight density, Wet. | <1.0 | | |
| - | 4 | | | | | |
| - | 4 | | | | | |
| - | 5 | | | | | |
| 14--- | 1 | ML | Brown-gray silt, slight density, Wet. | <1.0 | | |
| - | 3 | | | | | |
| - | 3 | | | | | |
| - | 2 | | | | | |
| 16--- | 3 | ML | Brown-gray silt, slight density, trace brown-gray clay in 2" lens at bottom of spoon, Wet. | <1.0 | | |
| - | 3 | | | | | |
| - | 2 | | | | | |
| - | 3 | | | | | |
| 18--- | 2 | CL | Brown-gray silt, some clay, interbedded throughout spoon, medium density, Wet. | <1.0 | | |
| - | 3 | | | | | |
| - | 2 | | | | | |
| - | 3 | | | | | |
| 20--- | 3 | ML | Brown-gray silt, slight density, ~1" brown-gray clay lens, interbedded at bottom of spoon, Wet. | <1.0 | | |
| - | 5 | | | | | |
| - | 4 | | | | | |
| - | 5 | | | | | |
| 22--- | | | | | | |

# FIELD FORM
# STICK-UP WELL CONSTRUCTION DIAGRAM
# COLONIE FUSRAP (to be completed in the field)
# WELL ID (MW - 37S)

| | DEPTH (RECORD ON THIS FORM) |
|---|---|
| SURFACE | |
| DEPTH BOTTOM STEEL CSG- | ~2.0 |
| DEPTH TOP BENTONITE- | 3.0 |
| DEPTH BOTTM BENTONITE- | 8.0 |
| DEPTH TOP SAND- | 8.0 |
| DEPTH TOP OF SCREEN- | 11.0 |
| DEPTH BOTTOM SCREEN- | 21.0 |
| TOTAL DEPTH- | 22.0 |

CONSTRUCTION DETAILS




GEOLOGIST: M. Flanagan
DATE INSTALLED: 1-27-02
DATE COMPLETED:1-27-02
BOREHOLE DIAMETER: 8 in.
TYPE OF DRILLING:Hollow Stem Auger
DRILLER/RIG: M.Marshall/Parrat Wolff

LOCATION DESCRIPTION: "F"

# Drilling Log

Monitoring Well **MW-41S**

Page: 1 of 1

Project Colonie FUSRAP Site — Owner Shaw Environmental, Inc.

Location Central Ave., Colonie, NY — Proj. No. 837935

Surface Elev. 223.0 ft. — Total Hole Depth 23.0 ft. — North ____ East ____

Top of Casing NA — Water Level Initial ▽ 14.0 ft. — Static NA — Diameter 6.25 in.

Screen: Dia 2 in. — Length 10 ft. — Type/Size PVC Sch 40/0.010 in.

Casing: Dia 2 In. — Length 11 ft. — Type PVC Sch 40

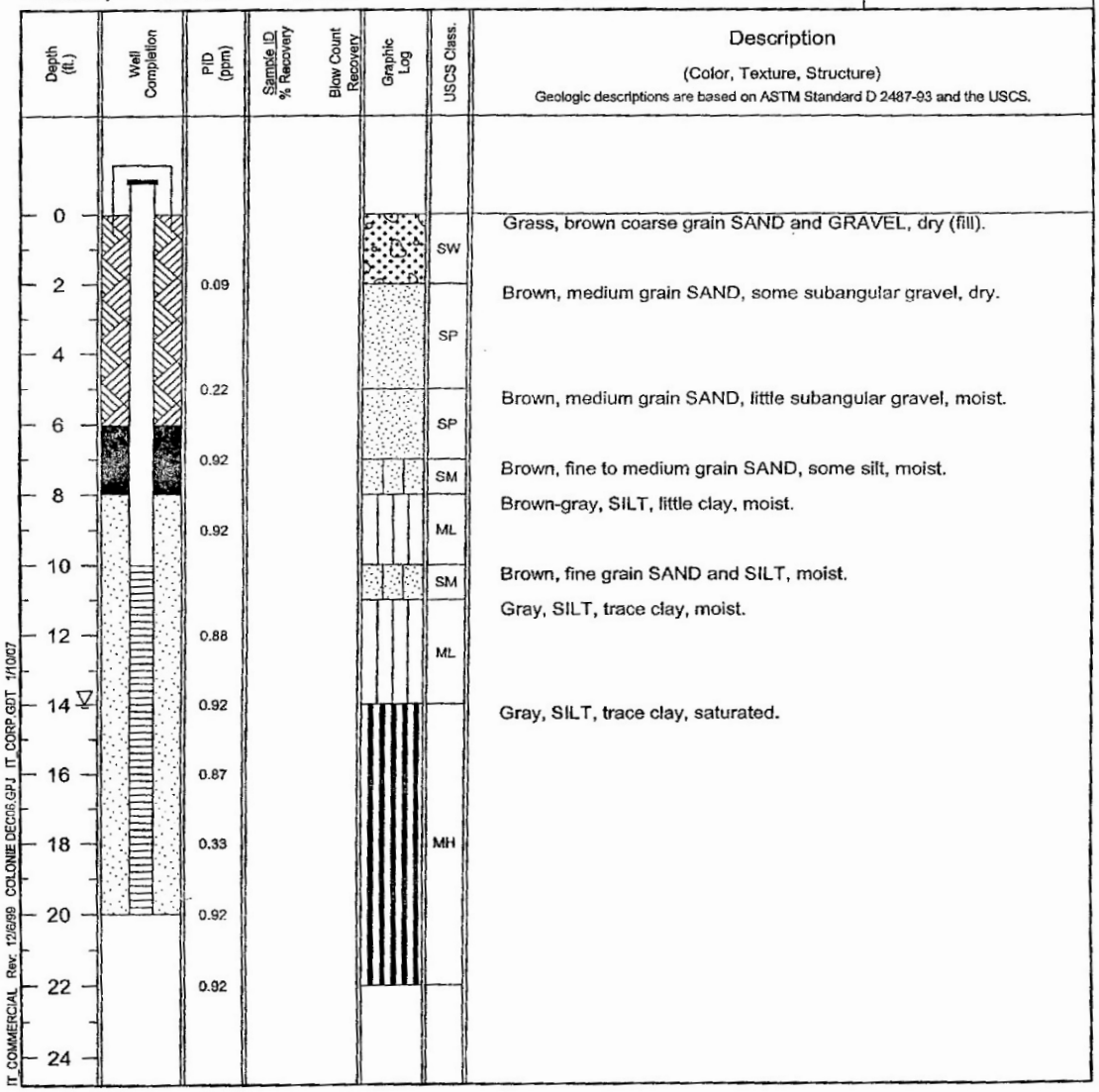
Fill Material Morie Sand #1 — Rig/Core ____

Drill Co. ADT — Method HSA

Driller R.Comfort — Log By R.Adams — Date 12/11/06 — Permit # NA

Checked By ____ — License No. ____

COMMENTS



| Depth (ft.) | PID (ppm) | USCS Class. | Description (Color, Texture, Structure) |
|---|---|---|---|
| 0 | | SW | Grass, brown coarse grain SAND and GRAVEL, dry (fill). |
| 2 | 0.09 | SP | Brown, medium grain SAND, some subangular gravel, dry. |
| 4 | 0.22 | SP | Brown, medium grain SAND, little subangular gravel, moist. |
| 6 | 0.92 | SM | Brown, fine to medium grain SAND, some silt, moist. |
| 8 | 0.92 | ML | Brown-gray, SILT, little clay, moist. |
| 10 | | SM | Brown, fine grain SAND and SILT, moist. |
| 12 | 0.88 | ML | Gray, SILT, trace clay, moist. |
| 14 ▽ | 0.92 | | |
| 16 | 0.87 | | |
| 18 | 0.33 | MH | Gray, SILT, trace clay, saturated. |
| 20 | 0.92 | | |
| 22 | 0.92 | | |
| 24 | | | |

Geologic descriptions are based on ASTM Standard D 2487-93 and the USCS.

IT_COMMERCIAL Rev: 12/9/99 COLONIE DEC06.GPJ IT_CORP.GDT 1/10/07

# Drilling Log

Monitoring Well **MW-42S**

Page: 1 of 1

Project Colonie FUSRAP Site — Owner Shaw Environmental, Inc.

Location Central Ave., Colonie, NY — Proj. No. 837935

Surface Elev. 223.0 ft. — Total Hole Depth 23.0 ft. — North ____ East ____

Top of Casing NA — Water Level Initial ▽ 10.0 ft. — Static NA — Diameter 6.25 in.

Screen: Dia 2 in. — Length 10 ft. — Type/Size PVC Sch 40/0.010 in.

Casing: Dia 2 in. — Length 10 ft. — Type PVC Sch 40

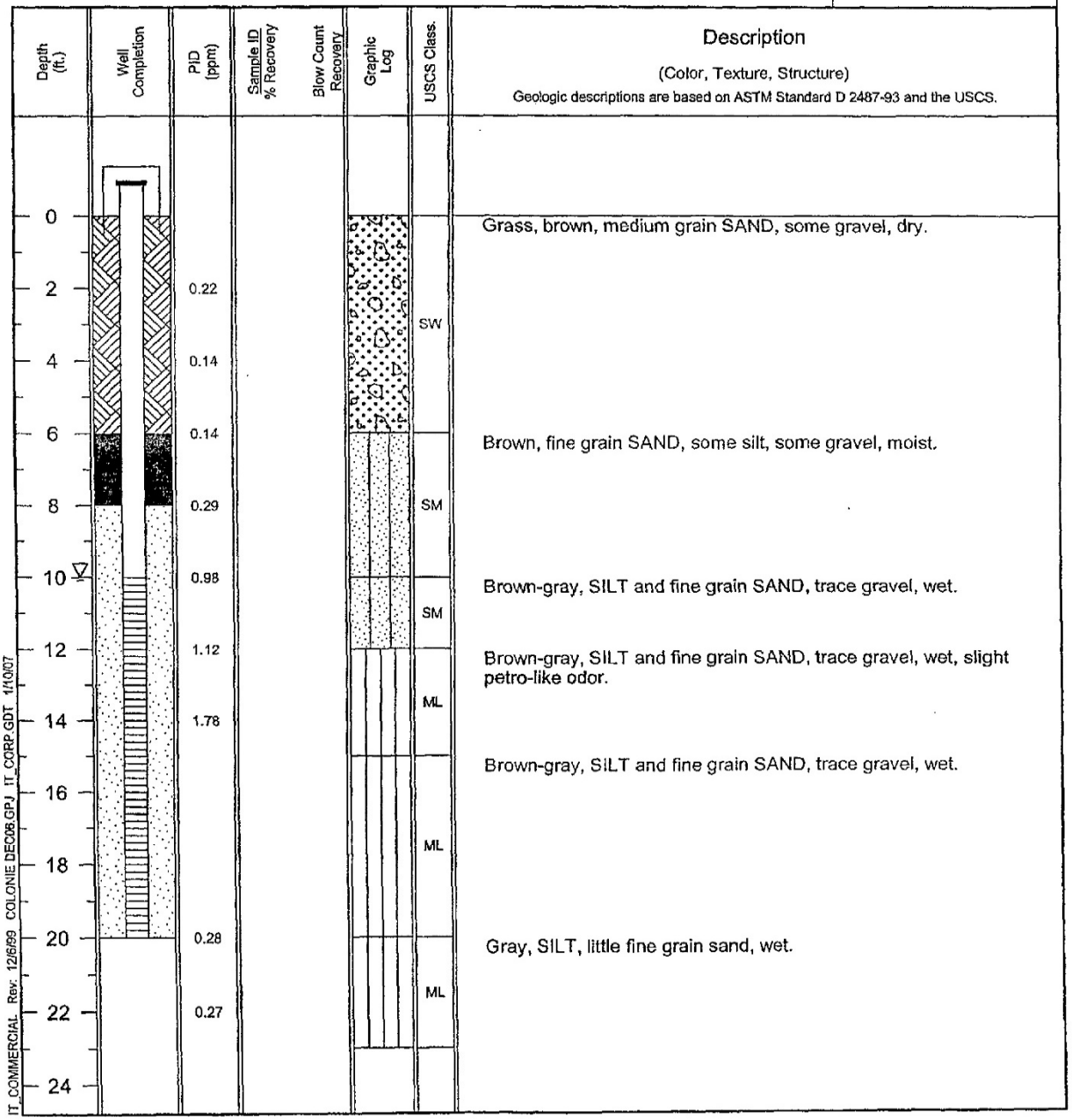
Fill Material Morie Sand #1 — Rig/Core ____

Drill Co. ADT — Method HSA

Driller R.Comfort — Log By R.Adams — Date 12/12/06 — Permit # NA

Checked By ____ — License No. ____

COMMENTS



# VISUAL CLASSIFICATION OF SOILS

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| BORING NUMBER | **MW44S** | PROJECT NAME | Colonie FUSRAP | | | | | DATE | |
| PROJECT NUMBER | 500304 | COORDINATES | Northing 1405456.27, Easting 679685.18 | | | | | STARTED | 7/27/2015 |
| ELEVATION | Ground: 223.20 ft msl | TOC: 224.65 ft msl | | | | | | COMPLETED | 7/27/2015 |
| GEOLOGIST | B. Squire | GWL | Depth | | Date/Time | | | PAGE/PAGES | 1/2 |
| DRILLING METHOD | HSA & Split Spoon | | | | | | | | |

| DEPTH (ft) | SAMPLE NUMBER | RECOVERY ( ft ) | PID (ppm) | DESCRIPTION | USCS SYMBOL | REMARKS |
|---|---|---|---|---|---|---|
| 1<br>2<br>3<br>4<br>5 | | | | Brown f-c SAND, little silt, little rock, damp | | Hand auger, log from cuttings |
| 6<br>7 | 1 | 1 | 0.0 | Brown silty SAND, some gravel, loose, damp | SM | |
| 8<br>9 | 2 | 1.5 | 0.0 | As above, grading to gray-brown | | |
| 10<br>11 | 3 | 1.0 | 0.0 | As above, moist | | |
| 12<br>13 | 4 | 1.5 | 0.0 | As above<br>Brown f SAND, few to little silt, loose, wet | SP/SM | |
| 14<br>15 | 5 | 0.0 | 0.0 | As above (trace recovery) | | |
| 16<br>17 | 6 | 1.0 | 0.0 | As above<br>Gray vf-f SAND, some silt, loose, saturated | SM | |
| 18<br>19 | 7 | 1.5 | 0.0 | As above, | | |
| 20 | 8 | NR | 0.0 | As above | | |

Continued on page 2

NOTES:

c = coarse
m = medium
f = fine
vf = very fine

ft = feet
NA= not applicable
NR= not recorded
ppm = parts per million

Drilling Contractor: Parratt-Wolffe
Drilling Equipment: HSA and split spoon
Driller: M. Eaves

# VISUAL CLASSIFICATION OF SOILS

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BORING NUMBER | | **MW44S** | | PROJECT NAME | | Colonie FUSRAP | | | | | |
| PROJECT NUMBER | | 500304 | | COORDINATES | | Northing 1405456.27, Easting 679685.18 | | | | DATE | |
| ELEVATION | | Ground: 223.20 ft msl | | TOC: 224.65 ft msl | | | | | | STARTED | 7/27/2015 |
| GEOLOGIST | | B. Squire | | GWL | Depth | | Date/Time | | | COMPLETED | 7/27/2015 |
| DRILLING METHOD | | HSA & Split Spoon | | | | | | | | PAGE/PAGES | 2/2 |
| DEPTH (ft) | SAMPLE TYPE & NUMBER | RECOVERY ( ft ) | PID / Oil Screen (ppm / pos-neg) | DESCRIPTION | | | | | USCS SYMBOL | REMARKS | |
| 21 | 8 (cont.) | NR | 0.0 | As above | | | | | SM | | |
| 22 | | | | Drilled interval | | | | | | | |
| 23 | | | | | | | | | | | |
| 24 | | | | | | | | | | | |
| 25 | | | | | | | | | | | |
| 26 | | | | | | | | | | | |
| 27 | | | | | | | | | | | |
| 28 | | | | | | | | | | | |
| 29 | | | | | | | | | | | |
| 30 | | | | | | | | | | | |
| 31 | | | | | | | | | | | |
| 32 | | | | | | | | | | | |
| 33 | | | | | | | | | | | |
| 34 | | | | | | | | | | | |
| 35 | | | | | | | | | | | |
| 36 | | | | | | | | | | | |
| 37 | | | | | | | | | | | |
| 39 | | | | | | | | | | | |
| 39 | | | | | | | | | | | |
| 40 | | | | | | | | | | | |

End of boring = 22 ft.

NOTES:

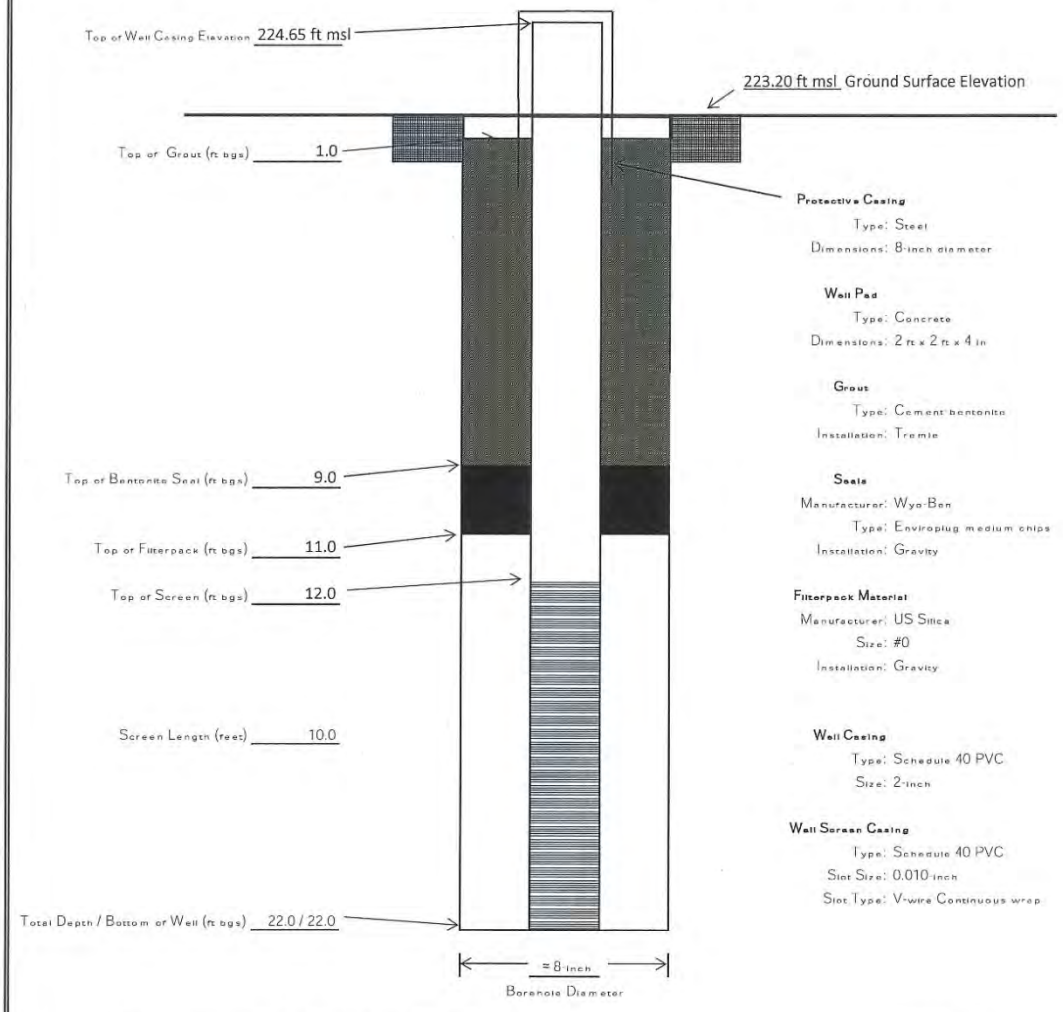
c = coarse
m = medium
f = fine
vf = very fine

ft = feet
NA= not applicable
NR= not recorded
ppm = parts per million

Drilling Contractor: Parratt-Wolffe
Drilling Equipment: HSA and split spoon
Driller: M. Eaves

## MONITORING WELL CONSTRUCTION LOG

| | | | | | |
|---|---|---|---|---|---|
| PROJECT | Colonie FUSRAP | WELL NUMBER | MW44S | | |
| LOCATION | Colonie, NY | SITE LOCATION | Main Site | | |
| CLIENT | USACE | DATE INSTALLED | 7/27/2015 | | |
| SUBCONTRACTOR | Parratt Wolff | NORTHING | 1405456.27 | | |
| DRILLER | M. Eaves | EASTING | 679685.18 | | |
| SHAW FIELD REPRESENTATIVE | B. Squire | NAD | | NGVD | |




NOTES: Elevations are feet above mean sea level
ft bgs = feet below ground surface

*Not to Scale*

# Appendix E

# Long-Term Periodic Review Instructions

# Instructions for Preparing the Colonie Long-Term Periodic Review

## E1. Scope

- Approach the Long-Term Periodic Review (LTPR) as a project rather than a report.
- Although LM has responsibility to conduct LTPRs, management of the soil easement is now the responsibility of the site owner. It is anticipated that LM will continue to report on the effectiveness of the soil remedy and incorporate information prepared by the site owner.
- Develop the Project Team:
  - The LMS project team will consist of the program manager; site lead; supporting geologists, scientists, and engineers; Geographic Information Systems (GIS) support, the appropriate subject matter experts (SMEs) (e.g., risk assessor); and Document Management.
    - The site lead has overall responsibility for the LTPR scope, schedule, and budget.
    - The selected SME(s) should remain on the project team and appropriately engaged throughout the lifecycle of the document (e.g., Draft, Draft Final, and Final versions) for technical consistency.
- Develop a Project Charter:
  - A brief project charter (or equivalent) should be developed for review and consensus by the LM/LMS project team.
- Meetings:
  - A project kickoff meeting should be held with the LM/LMS project team to review the project charter, and ensure that the schedule, budget, LTPR outline, SMEs required, and review process are discussed. Additional topics should be discussed as appropriate.
  - During preparation of the Draft LTPR, periodic status meetings should be conducted to ensure the scope, schedule, and budget are proceeding in accordance with the project charter.
  - During or following NYSDEC review of the Draft Final LTPR, the LM/LMS project team should meet with NYSDEC to discuss any major comments or issues before responding to comments and preparing the Final LTPR.
- LTPR Outline and Format:
  - The Colonie site is not on the National Priorities List, and EPA review of the LTPR is not required. Regulatory review of the LTPR is completed by NYSDEC. The LTPR template should be based on the *Draft Final Long-Term Periodic Review Report, Colonie, New York Site* dated June 2023 (DOE 2023), which used the following as guidance:
    - EPA's Comprehensive Five-Year Review Guidance (EPA 2001) and
    - EPA's Five-Year Review Recommended Template (EPA 2016)
    - *First Five-Year Review Report for Colonie FUSRAP Site Groundwater Operable Unit* (USACE 2018), which meets EPA's recommended template requirements for a Five-Year Review (FYR).

- For the Colonie site, public notices were previously published in a newspaper for record. USACE has begun to post notices on webpages only; for example, the Deepwater, New Jersey, Site's first FYR.
- Interview(s) have typically been from the regulator.
- A physical inspection of the site is expected for preparation of the LTPR, which may coincide with the inspection performed during the long-term monitoring event.
- LTPR Versions:
  - Draft, Draft Final, and Final versions of the LTPR are required.
  - LM comments will be addressed between the Draft and Draft Final versions and can be accomplished using the track changes and comment features in Microsoft Word.
  - NYSDEC comments will be addressed during between the Draft Final and Final versions. A formal response to comment matrix (e.g., table or document) will be used for this process.
- LTPR Review Process:
  - Each version of a deliverable should be submitted to LM free of errors and adequately reviewed from a technical, quality control, and editorial perspective as if the document is being submitted to an outside party.
  - All data and calculations generated for the report to include tables, referenced data in text, risk calculations, and figures should undergo a technical and quality assurance/quality control (QA/QC) review during preparation of the Draft by LMS personnel other than who generated or input the information.
  - All technical interpretations, recommendations, and conclusions generated for the report should undergo a technical review by the appropriate SME.
  - The following reviewers and sequence should be followed for the Draft version of the LTPR.
    - Site lead review (if not the author)
    - Technical or SME review
    - Editorial review
    - QA/QC review
    - Program manager review
  - The Draft Final and Final versions of the LTPR should be subject to reviews as determined by the LMS site lead based on the complexity and extent of the required revisions.

## E2. Schedule

- Budget 6 to 12 months for the LTPR project (Table E-1).
- Anticipate long review times of a month or longer by both LM and the regulator.

## E3. Budget

- Personnel should be included from LMS contractor staff from the following LMS functional groups: Applied Studies and Technology, Education, Communications, History, and Outreach (ECHO), Document Management, Environmental Compliance, and Asset Management.
- The approximate level of effort for the LMS participants is summarized in Table E-2.
- Ensure that adequate budget is allocated for the review process identified in Section E1.
- Budget hours for LMS ECHO contractor staff to assist with public notices.

## E4. Selected Guidance

The following guidance should be reviewed in preparation for the LTPR.

DOE (U.S. Department of Energy), 2023. *Draft Final Long-Term Periodic Review Report, Colonie, New York Site*, Office of Legacy Management, June.

EPA (U.S. Environmental Protection Agency), 2001. *Comprehensive Five-Year Review Guidance OSWER Directive 9355.7-03B-P*, June.

EPA (U.S. Environmental Protection Agency), 2011. *Recommended Evaluation of Institutional Controls: Supplement to the "Comprehensive Five-Year Review Guidance,"* OSWER Directive 9355.7-18, September.

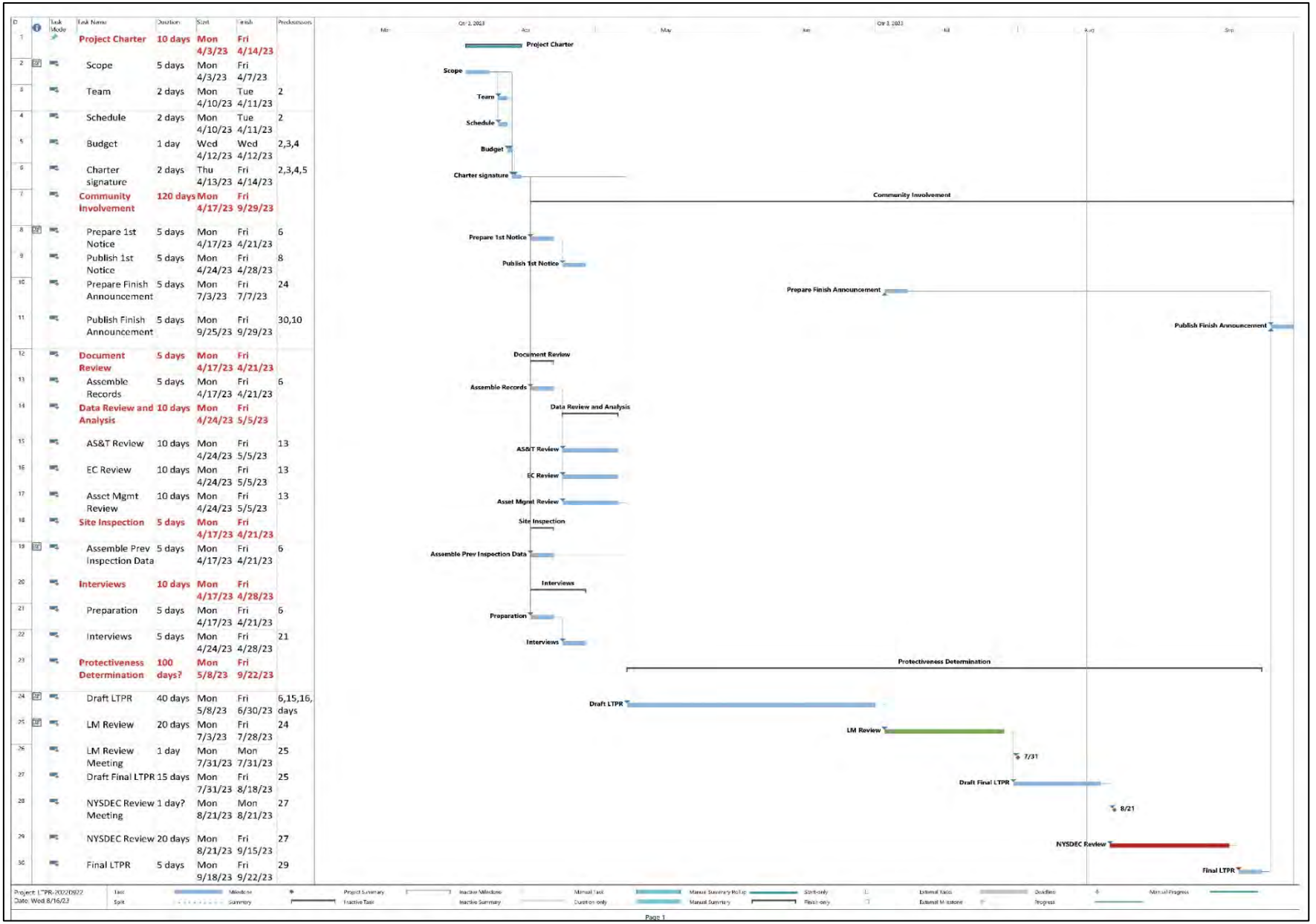
EPA (U.S. Environmental Protection Agency), 2016. *Five-Year Review Recommended Template*, OLEM 9200.0-89, January.

USACE (U.S. Army Corps of Engineers), 2014. *Formerly Utilized Sites Remedial Action Program*, Engineer Regulation (ER) 200-1-4, August 2014.

USACE (U.S. Army Corps of Engineers), 2018. *First Five-Year Review Report for Colonie FUSRAP Site Groundwater Operable Unit Town of Colonie Albany County, New York*, October.

USACE (U.S. Army Corps of Engineers), 2020. *Formerly Utilized Sites Remedial Action Program (FUSRAP) Five-Year Review Policy*, June.

*Table E-1. LTPR Schedule*



| ID | Task Mode | Task Name | Duration | Start | Finish | Predecessors |
|---|---|---|---|---|---|---|
| 1 | | **Project Charter** | **10 days** | **Mon 4/3/23** | **Fri 4/14/23** | |
| 2 | | Scope | 5 days | Mon 4/3/23 | Fri 4/7/23 | |
| 3 | | Team | 2 days | Mon 4/10/23 | Tue 4/11/23 | 2 |
| 4 | | Schedule | 2 days | Mon 4/10/23 | Tue 4/11/23 | 2 |
| 5 | | Budget | 1 day | Wed 4/12/23 | Wed 4/12/23 | 2,3,4 |
| 6 | | Charter signature | 2 days | Thu 4/13/23 | Fri 4/14/23 | 2,3,4,5 |
| 7 | | **Community Involvement** | **120 days** | **Mon 4/17/23** | **Fri 9/29/23** | |
| 8 | | Prepare 1st Notice | 5 days | Mon 4/17/23 | Fri 4/21/23 | 6 |
| 9 | | Publish 1st Notice | 5 days | Mon 4/24/23 | Fri 4/28/23 | 8 |
| 10 | | Prepare Finish Announcement | 5 days | Mon 7/3/23 | Fri 7/7/23 | 24 |
| 11 | | Publish Finish Announcement | 5 days | Mon 9/25/23 | Fri 9/29/23 | 30,10 |
| 12 | | **Document Review** | **5 days** | **Mon 4/17/23** | **Fri 4/21/23** | |
| 13 | | Assemble Records | 5 days | Mon 4/17/23 | Fri 4/21/23 | 6 |
| 14 | | **Data Review and Analysis** | **10 days** | **Mon 4/24/23** | **Fri 5/5/23** | |
| 15 | | AS&T Review | 10 days | Mon 4/24/23 | Fri 5/5/23 | 13 |
| 16 | | EC Review | 10 days | Mon 4/24/23 | Fri 5/5/23 | 13 |
| 17 | | Asset Mgmt Review | 10 days | Mon 4/24/23 | Fri 5/5/23 | 13 |
| 18 | | **Site Inspection** | **5 days** | **Mon 4/17/23** | **Fri 4/21/23** | |
| 19 | | Assemble Prev Inspection Data | 5 days | Mon 4/17/23 | Fri 4/21/23 | 6 |
| 20 | | **Interviews** | **10 days** | **Mon 4/17/23** | **Fri 4/28/23** | |
| 21 | | Preparation | 5 days | Mon 4/17/23 | Fri 4/21/23 | 6 |
| 22 | | Interviews | 5 days | Mon 4/24/23 | Fri 4/28/23 | 21 |
| 23 | | **Protectiveness Determination** | **100 days?** | **Mon 5/8/23** | **Fri 9/22/23** | |
| 24 | | Draft LTPR | 40 days | Mon 5/8/23 | Fri 6/30/23 | 6,15,16, days |
| 25 | | LM Review | 20 days | Mon 7/3/23 | Fri 7/28/23 | 24 |
| 26 | | LM Review Meeting | 1 day | Mon 7/31/23 | Mon 7/31/23 | 25 |
| 27 | | Draft Final LTPR | 15 days | Mon 7/31/23 | Fri 8/18/23 | 25 |
| 28 | | NYSDEC Review Meeting | 1 day? | Mon 8/21/23 | Mon 8/21/23 | 27 |
| 29 | | NYSDEC Review | 20 days | Mon 8/21/23 | Fri 9/15/23 | 27 |
| 30 | | Final LTPR | 5 days | Mon 9/18/23 | Fri 9/22/23 | 29 |

*Table E-2. Resource Loading for LTPR*

| LMS Participants | Functional Group | Resource Code | Community Resource Involvement | Records Review | Data Review | Site Inspection | Interviews | Protectiveness Determination | Report Preparation | Subtotal | Description |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Site lead | FUSRAP | SCI5 | 16 | 4 | 24 | 20 | 16 | 40 | 60 | **180** | Site lead/author |
| Program manager | FUSRAP | ENG5 | | 4 | 4 | | 1 | 8 | 16 | **33** | Coordination, review |
| Peer reviewer | FUSRAP | SCI5 | | 2 | 10 | | | | 16 | **28** | Technical review |
| AS&T manager | AS&T | SCI6 | | | 2 | | | | | **2** | AS&T oversight review |
| Risk assessor | AS&T | SCI5 | | 4 | 8 | | | 60 | 8 | **80** | Risk Evaluation: Review risk assessment and final conditions |
| Hydrogeologist | AS&T | SCI5 | | 8 | 15 | | | | 8 | **31** | Groundwater evaluation: Review hydrology and groundwater model |
| Asset manager | Asset Management | WPM S | | 4 | 8 | | | | 4 | **16** | Real Property review |
| Editor | DocMan | COM4 | | | | | | | 20 | **20** | Document production |
| Formatter | DocMan | COM4 | | | | | | | 16 | **16** | Technical/support services and document production |
| EC POC | EC | SCI5 | | 4 | 8 | | | | 8 | **20** | Environmental Compliance review |
| NEPA reviewer | EC | WPM S | | | 4 | | | | 8 | **12** | Land use controls efficacy review |
| GIS Spc | ESDM | IFS3 | | | | | | | 16 | **16** | Graphics |
| EQuIS Spc | ESDM | SYS4 | | | | | | | 16 | **16** | Technical/support services GEMS/IT |
| Writer | Outreach | COM4 | | | | | | | 16 | **16** | Technical/support services graphics |
| Records Spc | Records | RMS5 | | 4 | 4 | | | | 2 | **10** | Technical/support services, records management |
| ECHO POC | ECHO | SYS3 | 16 | | | | | | 8 | **24** | Fact sheet and webpage: writing, notifications, and stakeholder support |
| | | **Hours** | **32** | **34** | **87** | **20** | **17** | **108** | **222** | **520** | |

**Abbreviations:** AS&T = Applied Studies and Technology, DocMan = Document Management, EC = Environmental Compliance, ESDM = Environmental and Spatial Data Management, GEMS = Geospatial Environmental Mapping System, IT = Information Technology, POC = point of contact, Spc = specialist