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

March 2025

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
Amtrak	National Railroad Passenger Corporation
ASTM	ASTM International
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 Inc.
DER	Division of Environmental Remediation
DOE	U.S. Department of Energy
DU	depleted uranium
EE/CA	engineering evaluation/cost analysis
EGDM	Environmental and Geospatial Data Management
EPA	U.S. Environmental Protection Agency
EQuIS	Environmental Quality Information System
ERDA	U.S. Energy Research and Development Administration
ERF	*Environmental Review Form*
FIMS	Facilities Information Management System
ft	feet
FUSRAP	Formerly Utilized Sites Remedial Action Program
GAC	granular activated carbon
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
LTPR	long-term periodic review
LTS	long-term stewardship

LTS Plan	Long-Term Stewardship Plan
MED	Manhattan Engineer District
µg/L	micrograms per liter
MNA	monitored natural attenuation
MOU	Memorandum of Understanding
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEPA	National Environmental Policy Act
NPL	National Priorities List
NRC	U.S. Nuclear Regulatory Commission
NYCRR	*New York Codes, Rules and Regulations*
NYECL	*New York Environmental Conservation Law*
NYSDEC	New York State Department of Environmental Conservation
OU	operable unit
PCE	tetrachloroethene
PL	Public Law
QA	Quality Assurance
QAM	*Quality Assurance Manual*
RI	Remedial Investigation
ROD	Record of Decision
SAP	Sampling and Analysis Plan
SERI	Supplemental Emergency Response Information
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

Forms Referenced in This Manual

LMS forms are accessible on the **Document Management** homepage > **LMS Forms**.

Landowner/Stakeholder Notification Form	LMS 1013
Supplemental Emergency Response Information (SERI)	LMS 1415

LM forms and templates are accessible at
LM Portal > **Employee Resources** > **LM (Federal)** > **Controlled Documents**.

Environmental Review Form	LM-Form-4-20.3-4.0

1.0 Introduction

This Long-Term Stewardship Plan (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 2018). 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

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 (LTPRs), contingencies, and emergency response.

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

1.3 FUSRAP Background

In 1942, under the jurisdiction of the U.S. Army, USACE established the Manhattan Engineer District (MED), also known as the Manhattan Project, as the agency responsible for early atomic weapons research and development. On January 1, 1947, in accordance with the Atomic Energy Act of 1946, all atomic energy activities transferred to the newly created U.S. Atomic Energy Commission (AEC). From 1942 to 1946, more than 10 contractors and several hundred subcontractors were involved in MED production, research, and development operations, and

AEC continued the MED practice of contracting with industry, private contractors, and academic institutions to perform many of the actual operations.

FUSRAP was established in 1974 by AEC to evaluate and remediate sites where radioactive contamination remained from MED and AEC operations. In early 1974, AEC initiated the survey program to identify all formerly utilized sites involved with radioactive materials and to determine their radiological status. This survey program became FUSRAP. The responsibility for this survey was assigned to the AEC Division of Operational Safety. At that time, all divisions and field offices of AEC were required to search their files to identify any former government-owned or government-leased sites and facilities that had been used in MED and AEC research or production activities. In addition, the files were searched for records identifying the radiological conditions at the termination of MED or AEC activities, the transfer (in some cases) of custodial responsibility for such sites, the current radiological conditions of the sites, and the land use and ownership data. This effort identified many sites for which pertinent information was lacking or was insufficient to determine their radiological conditions. During the initial records review, FUSRAP personnel assessed the radiological conditions at more than 600 sites that were potentially involved in early atomic weapons and energy activities and identified 46 sites for cleanup.

Later in 1974, AEC was abolished, and its responsibilities were divided among the newly established U.S. Nuclear Regulatory Commission (NRC) and the U.S. Energy Research and Development Administration (ERDA). NRC assumed AEC's licensing and regulatory roles, and ERDA assumed other programmatic AEC responsibilities, including FUSRAP. ERDA and DOE, which became its successor agency in 1977, began identifying and characterizing sites under FUSRAP.

DOE began remediating sites under FUSRAP in 1979. The initial remediation activities focused on sites where conditions were relatively straightforward in terms of size, nature, and extent of contamination rather than sites with more challenging and complex conditions, where remediation extended for several years or decades or may be in progress now. DOE implemented a multiphase approach to characterize sites, identify appropriate remedial activities, conduct remediation and waste disposal, prepare a final report, and assemble materials for a certification docket. DOE established programmatic guidelines for the cleanup of residual concentrations of radionuclides in soil, concentrations of airborne radon and radon decay products, external gamma radiation levels, surface contamination levels, and residual radionuclide concentrations in air and water. Certification was performed to verify that final site conditions met cleanup objectives, to assemble and document the data used in final decisions, and to archive the documentation in a format that permitted public availability. Both the remedial action contractor (or subcontractor) and an independent verification contractor reviewed final site radiological conditions to ensure that remedial objectives were achieved. To document completion of activities, a notice was typically placed in the *Federal Register*.

In 1997, Congress transferred responsibility for the administration and execution of FUSRAP remediation activities to USACE. In 1999, the *Memorandum of Understanding Between the U.S. Department of Energy and the U.S. Army Corps of Engineers Regarding Program Administration and Execution of the Formerly Utilized Sites Remedial Action Program* (DOE and USACE 1999), hereafter referred to as the MOU, was signed, and it defined the roles of DOE and USACE in administering and executing FUSRAP. From 1974 to 1997, DOE completed the remediation of 25 FUSRAP sites. Of the initial list of 25 sites, several sites

required further remediation by USACE in subsequent years. Since 1997, DOE has maintained responsibility for identifying FUSRAP sites and for long-term stewardship (LTS) of remediated sites.

This LTS Plan complies with the criteria outlined in the MOU and the *Joint U.S. Army Corps of Engineers and U.S. Department of Energy Office of Legacy Management Information Transfer/Transition Protocol for Formerly Utilized Sites Remedial Action Program* (DOE and USACE 2023). The MOU addresses program administration and execution of FUSRAP and includes two supporting letters of agreement between the two agencies. The MOU stated that USACE would administer and execute cleanup at FUSRAP sites pursuant to the Energy and Water Development Appropriations Act of 1998 (Public Law 105-62 [PL 105-62]) and the Energy and Water Development Appropriations Act of 1999 (PL 105-245). Cleanup would be subject to regulation under Title 42 *United States Code* Section 9601 et seq. (42 USC 9601 et seq.), "Comprehensive Environmental Response, Compensation, and Liability Act" (CERCLA); Title 40 *Code of Federal Regulations* Section 300 (40 CFR 300), "National Oil and Hazardous Substances Pollution Contingency Plan," also called the National Contingency Plan (NCP); and any subsequent laws specifically relating to FUSRAP, CERCLA, and the NCP. CERCLA Section 121(d) also requires that site cleanup follow state and federal applicable or relevant and appropriate requirements, unless exempted by a waiver.

With the 1997 change in remediation responsibilities, the MOU between DOE and USACE established a 2-year maintenance and monitoring period following remediation, after which FUSRAP sites would transfer back to DOE for LTS responsibilities. DOE established LM in December 2003. LM is responsible for LTS of remediated FUSRAP sites. After transfer, it manages sites based on the requirements of the Records of Decision (RODs), the authority of the Atomic Energy Act of 1954 as amended (42 USC 2011 et seq.), and other applicable laws and regulations under an LTS Plan.

FUSRAP sites on the National Priorities List (NPL) are regulated by state and federal environmental regulatory authorities. Sites that are not on the NPL are subject to the NCP but not regulated by additional authorities. If a site is not on the NPL, then USACE acts as the lead agency and develops cleanup criteria (PL 105-62).

1.4 FUSRAP Eligibility

DOE was directed to remediate the site by Congress under the authority of the Energy and Water Development Appropriation Act of 1984 (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 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 Appropriation Act of 1984 (PL 98-50), the site became eligible for FUSRAP by congressional mandate. DOE performed investigations and removal actions at 53 of the 56 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 NPL, 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 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 LTPRs (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 42 USC 9621(c), and the NCP requirement is found in 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 put in place for three areas of inaccessible soil contamination. Environmental easements in New York are 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 NYECL 71-36, NYSDEC has enforcement authority over the environmental easements. NYECL 71-36 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, standalone document describing the ICs established for the soil easement areas.
The Groundwater ROD specified that an environmental easement would be put in place 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 (6 NYCRR 375), "Environmental Remediation Programs." 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 2018).

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 2020) and the first LM round of groundwater sampling under the long-term monitoring program (DOE 2021) 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.

An LTPR was performed in 2023 and accepted by NYSDEC in 2024. The LTPR determined that the remedies for the Main Site Soils and Groundwater OUs are protective of human health and the environment because ICs are in place and functioning as intended. The monitored natural attenuation (MNA) remedy for groundwater is functioning because groundwater contaminant concentrations are declining as anticipated.

1.6 Accountabilities

In addition to LM, USACE, NYSDEC, and other stakeholders are assigned certain long-term care accountabilities, 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* (DOE 2024c). LM will perform the following 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 LTPRs of the remedies for as long as residual soil or groundwater contamination exceeds levels allowing for UU/UE

1.6.2 Role of Site Owner

The site was purchased by Asian Center Mall LLC. The deed was then transferred to Ren Garden Group Inc. on January 31, 2024. Both entities have the same mailing address, which is 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. Ownership information was confirmed as part of a desktop assessment in January 2025. See Section 3.4 for details about the desktop assessment.

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. However, it would become the responsibility of the site owner to remedy any excavations into the inaccessible soils easements and to notify LM and NYSDEC.

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 LTPRs. 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, New York, 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 privately 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 acquired 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 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.

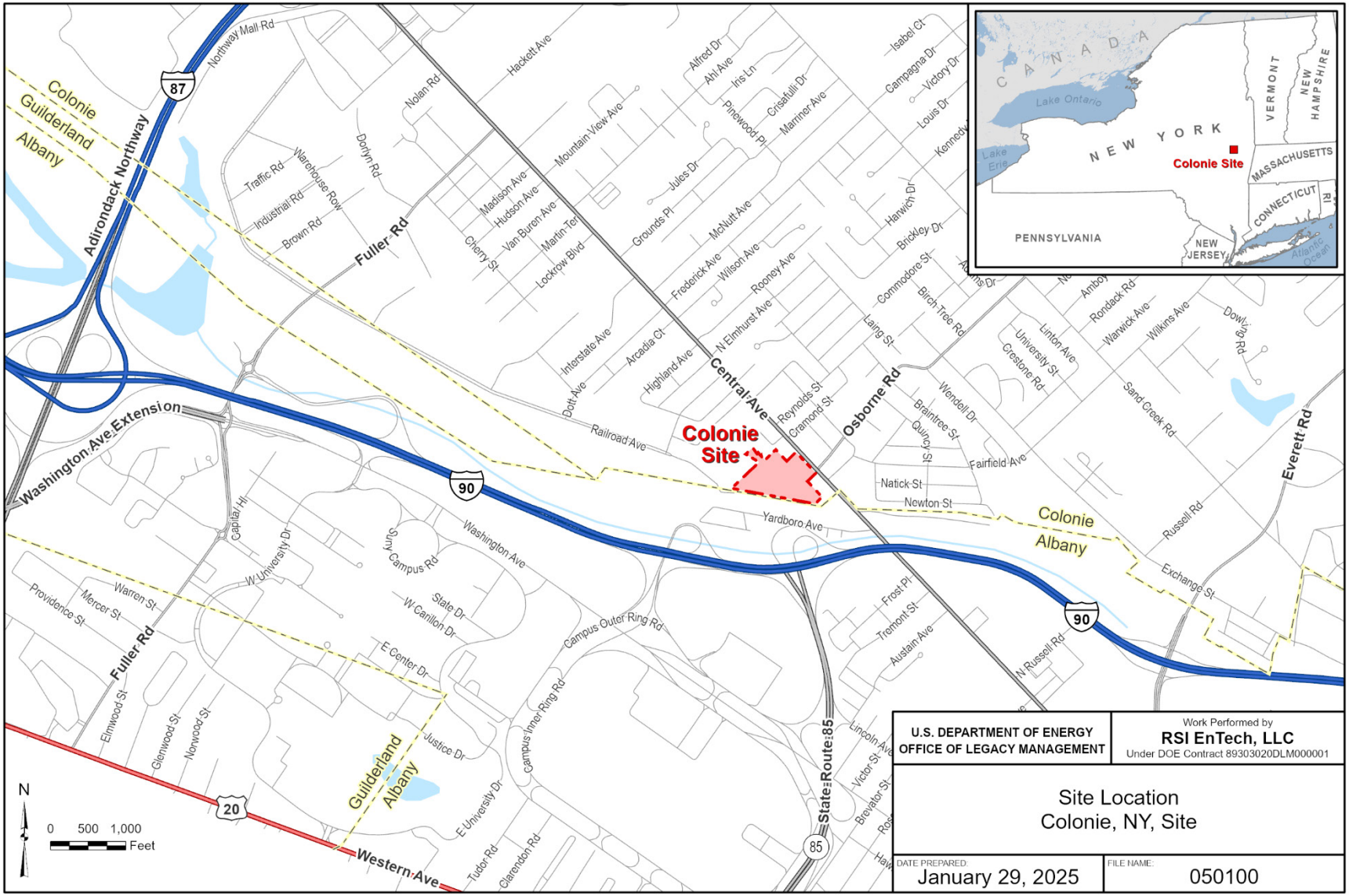


Figure 1. Site Location Map

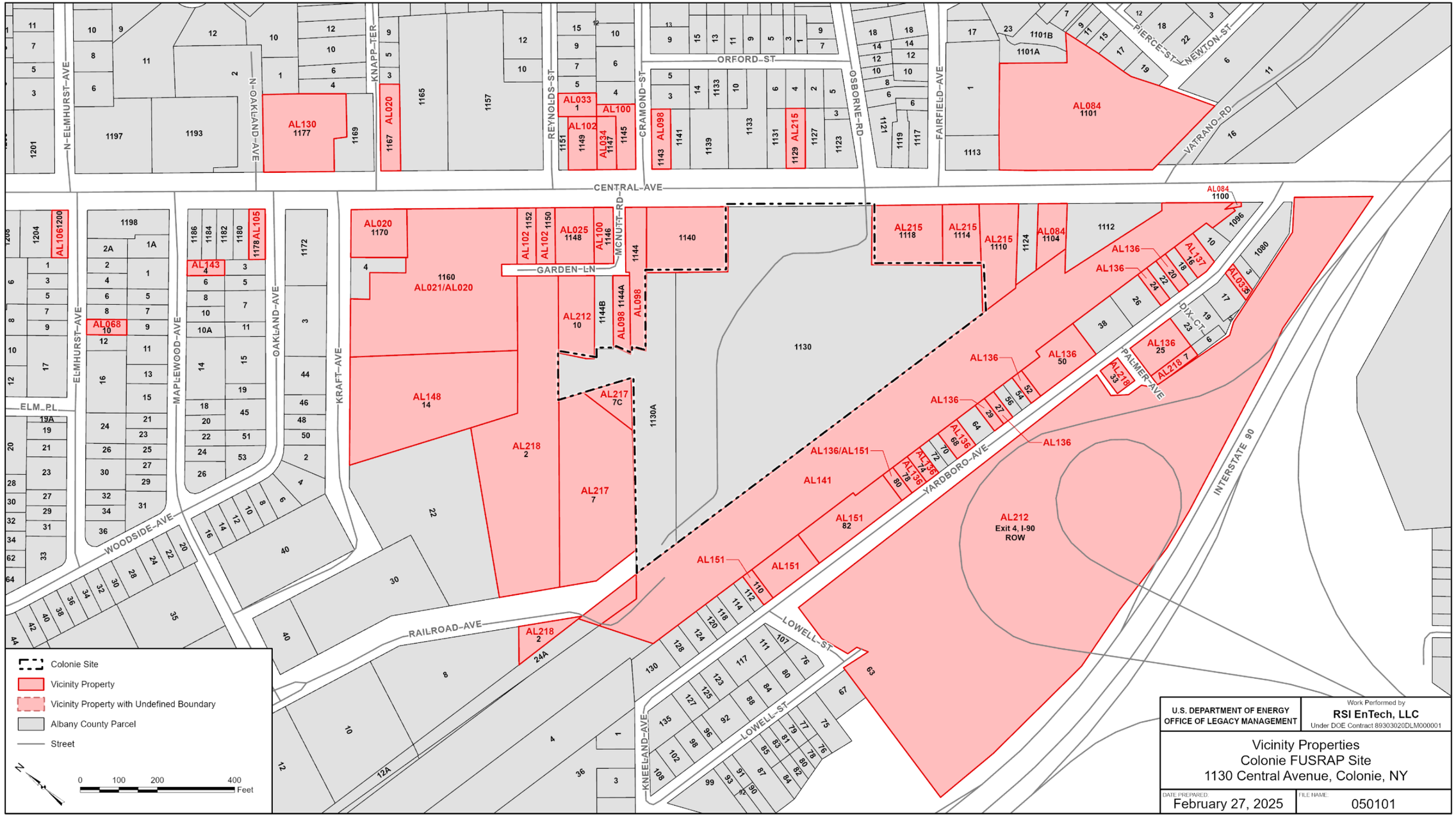


Figure 2. Colonie Site VP Map

Table 1. Addresses of the Colonie Site VPs

VPs Listed in the VP ROD (USACE 2017c)					
VP ID	**Property**	**Comment**	**VP ID**	**Property**	**Comment**
AL084	1100 Central 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 Power 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			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 Ave	
	1195 Central Ave				

Note: Addresses in red were not found in the 2025 Albany County parcel data.

Abbreviations: CCP = concrete cylinder pipe, RCP = reinforced concrete pipe

Figure 3. Colonie Site Base Map

1.7.1 Current Land Use

As of the date of this LTS Plan, the site owner's development plans for this site have been presented for county zoning review. A review of county records was performed during a January 2025 desktop assessment, and no construction permits or zoning amendment applications were made for the site.

As of January 2025, the site consisted of vacant land in an urban area comprising both residential and commercial properties. The site itself is in a Town of Colonie "Industrial F" municipal zoning district. The Industrial F District prohibits "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 from 2020 indicated that, in April of that year, approximately 85,590 people lived in the Town of Colonie, and 314,848 people lived in Albany County (U.S. Census Bureau 2025a; U.S. Census Bureau 2025b).

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 more than 4 miles away and upgradient of the site.

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, the 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.

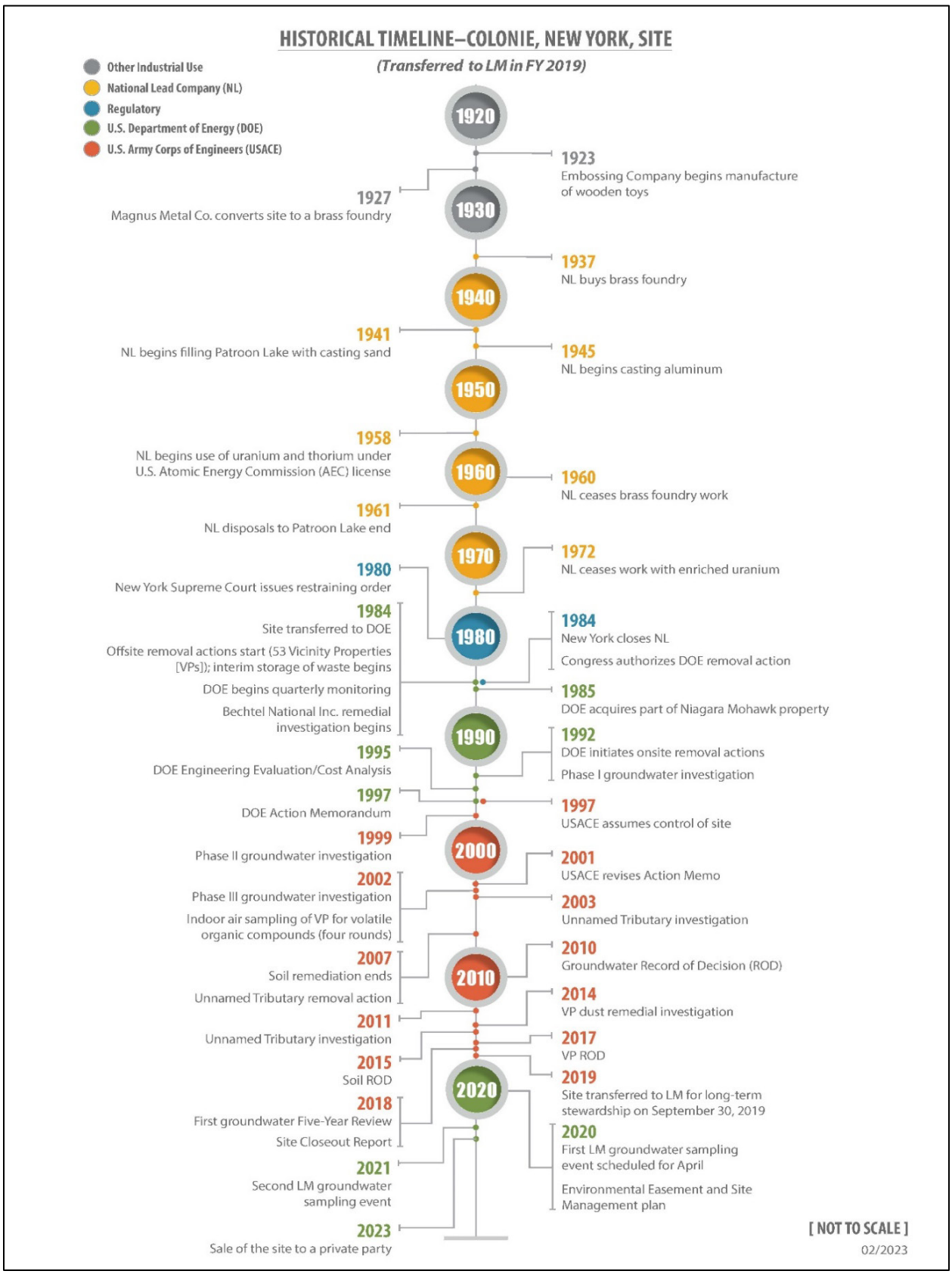
Before 1941, National Lead began filling a lake on the western side of the site with used casting sand. The lake was used for additional waste disposal through 1961. The used casting sands contained high concentrations of heavy metals, primarily lead, copper, and arsenic. The filled-in lake was identified 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 Development Appropriation Act of 1984 (PL 98-50), DOE was directed to remediate the site. DOE remediated 53 of the 56 VPs between 1984 and 1988. The three remaining VPs were adjacent to the main site and were addressed during its remediation.

DOE purchased the Niagara Mohawk Power 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 of the main site and three adjacent VPs and transferred responsibility for LTS to LM on September 19, 2019. Accountability roles are identified in Section 1.6. A timeline of the history of the site is presented in Figure 4.



Abbreviation: FY = fiscal year

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. DOE remediated 11 VPs in 1984, 24 VPs in 1985, and 18 VPs in 1988, for a total of 53 VPs. DOE remediated 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 three OUs listed below. 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 Final Action Memorandum (USACE 2001a). 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 three 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 USACE *Final Site Closeout Report for the Colonie FUSRAP Site* (USACE 2018) 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 et seq.) 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 LTPRs. 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 for Colonie FUSRAP Site, Groundwater Operable Unit, Town of Colonie, Albany County, New York* in September 2017 (USACE 2017d). These LTPRs are the functional equivalent of the Five-Year Reviews required under CERCLA and the NCP. LM will complete an LTPR 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. DOE procedures for implementing NEPA are contained in DOE's "National Environmental Policy Act Implementing Procedures" (10 CFR 1021), Council on Environmental Quality 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* (DOE 2019) 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* (DOE 2022c), which describe the legal and policy requirements and considerations related to NEPA and contain the information necessary to comply with and conduct sound environmental planning.

LM uses an *Environmental Review Form* (LM-Form-4-20.3-4.0) (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 the need for NEPA documentation, specific resource management plans, regulatory permits, and regulatory consultations. The activities anticipated in the ERF are well sampling and maintenance.

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 and by the United States through LM and was conveyed with the deed at the transfer of site ownership. An SMP is required by NYECL 71-36 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 3.7.1) 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 in previous revisions of this plan.

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* (DOE 2024f), 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 it is released to the ground surface. 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 ASTM International (ASTM) D5092/D5092M-16, *Standard Practice for Design and Installation of Groundwater Monitoring Wells*, and the relevant federal guidelines described in the EPA *RCRA Ground-Water 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* (DOE 2024g).

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 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. The current schedule is

for biennial monitoring and sampling (once every 2 years). There are ICs in the easement to restrict the use of groundwater and protect against the intrusion of VOC vapors into residences.

Table 2. TCGs

COCs	TCGs
Soil[a]	
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[b]	
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:
[a] Soil TCGs were issued in the Final Action Memorandum (USACE 2001a).
[b] 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). A 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 A.

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

Abbreviation: ft = feet

Figure 6. Groundwater Elevation Contour Map, July 2021

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.

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).

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).

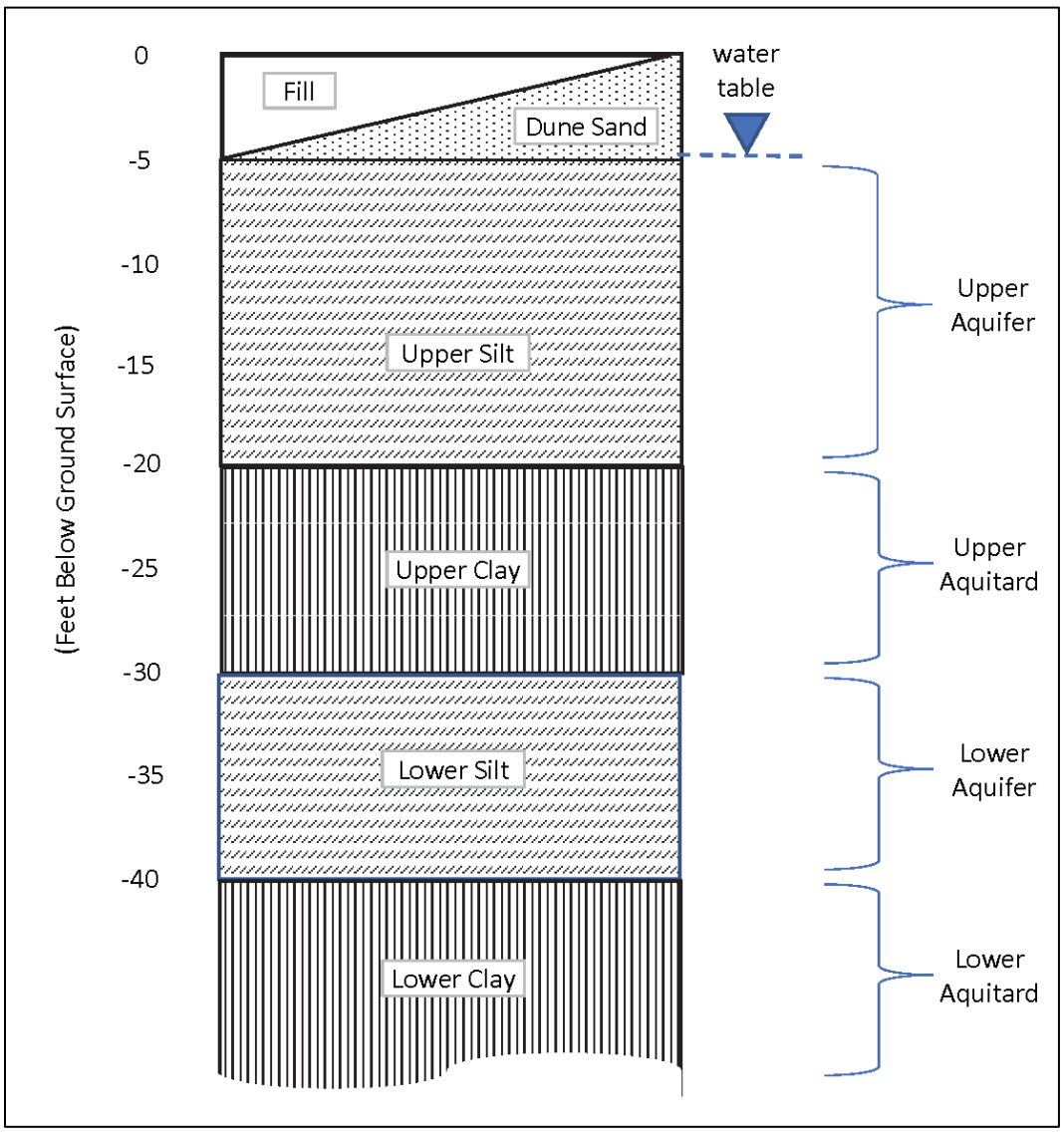


Figure 7. Generalized Cross Section

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 1997 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, most of the 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:** 4340 mg/kg (cleanup goal = 1912 mg/kg) • **Lead:** 3370 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:** 2450 mg/kg (cleanup goal = 1912 mg/kg) • **Lead:** 734 mg/kg (cleanup goal = 450 mg/kg)

Abbreviations:
ft^2 = square feet
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 radiological COCs no longer need to be monitored. Wells with exceedances of the TCGs have decreased from three wells in 2010 to a single well in 2023. The COCs and their TCGs are summarized in Table 2.

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 (i.e., 2032) based on modeling using the Monitoring and Remediation Optimization System software (USACE 2017d). Data from the 2023 long-term monitoring event indicate that COC concentrations could drop below TCGs by 2025 (DOE 2024d).

The following is a summary of the purpose of each monitoring well:

- **MW-08S:** This upgradient well serves to indicate potential upgradient influences and defines much of the gradient across the site. Analysis results have been nondetectable from all sampling events.
- **MW-30S:** This onsite well shows groundwater conditions near the former landfill location.
- **MW-34S:** This offsite downgradient well serves as a sentinel to demonstrate that contaminant migration is not occurring.
- **MW-37S:** This is another sentinel well downgradient from the former building location. There has not been a TCG exceedance at this well.
- **MW-41S:** This well indicates contaminant concentrations from the former building's source zone. It exhibits the single PCE exceedance at the site, but it is decreasing.
- **MW-42S:** This well indicates contaminant concentrations from the former building's source zone. The four VOCs are below their TCGs here, and concentrations continue to decrease.
- **MW-44S:** This well indicates groundwater contaminant concentrations from the former building's source zone. Contaminant concentrations have been nondetectable during the last three sampling events.

To summarize, only one well in the seven-well network currently has concentrations of a VOC above its TCG. The TCG of 5.5 micrograms per liter (µg/L) for PCE is exceeded at monitoring well MW-41S (8.63 µg/L in 2023) as shown in Figure 8.

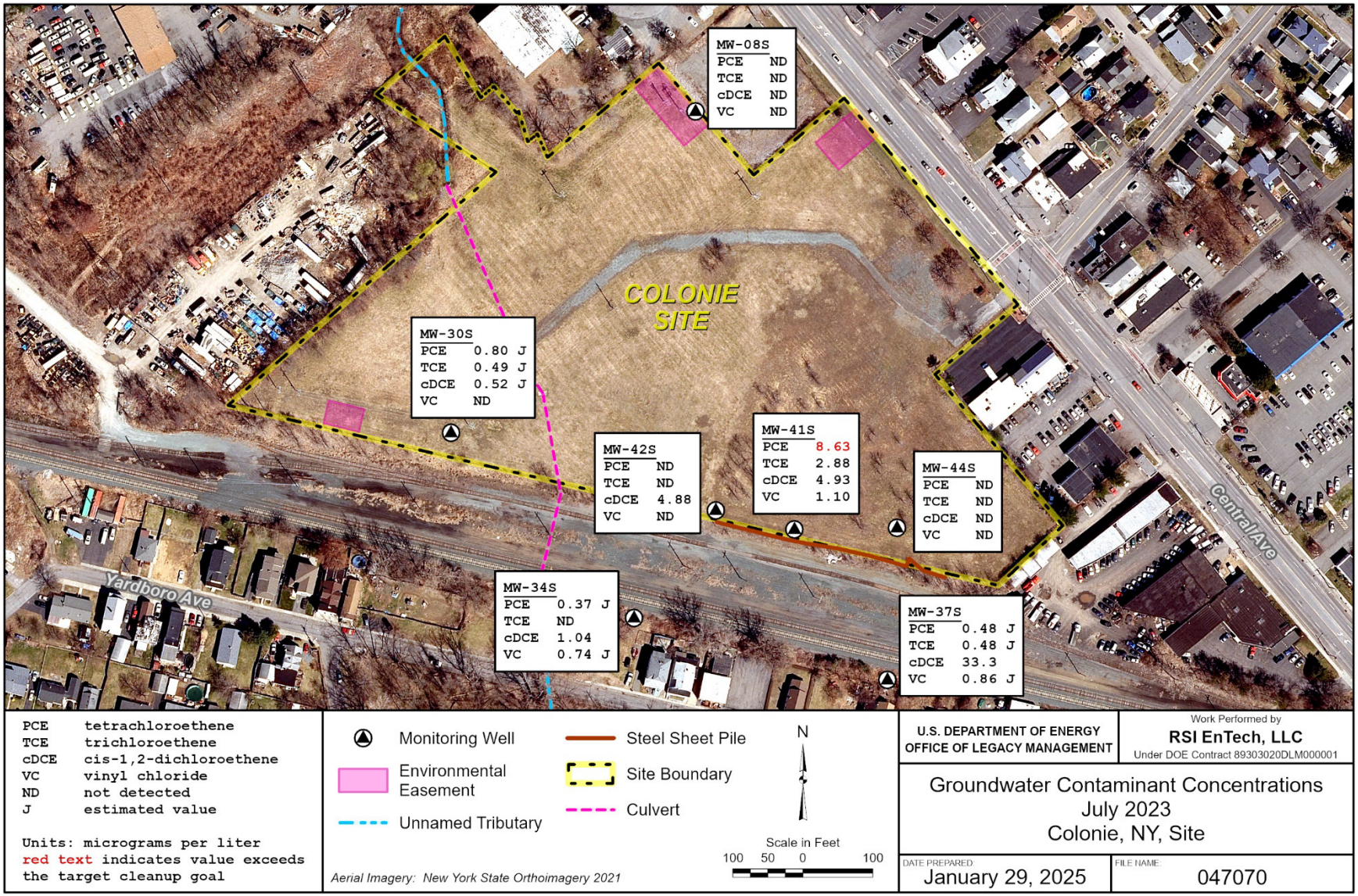


Figure 8. Monitoring Wells and VOC Concentrations

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, which transferred with the deed and easement to the current site owner. In accordance with 6 NYCRR 375-1.2 (av), "Site management is conducted in accordance with a site management plan, which identifies and implements the institutional and engineering controls required for a site, as well as any necessary monitoring and/or operation and maintenance of the remedy."

The environmental easement contains the following nine ICs:

1. The Soil Easement Areas, Schedule A (of the SMP), may be used for restricted residential purposes as described in 6 NYCRR 375-1.8(g)(2)(ii), commercial purposes as described in 6 NYCRR 375-1.8(g)(2)(iii), and industrial purposes 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, 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 carry out the treatment from NYSDEC
5. The potential for vapor intrusion must be evaluated for any buildings designed for occupancy on the site, 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 the manner 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 LTS Plan 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). Due to the sale of the site, the only remaining DOE-owned asset is the monitoring well system. The condition of the monitoring well network was assessed during the July 2023 sampling visit.

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 B). 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 A. An additional offsite monitoring well (MW-32S) was in the right-of-way of CSX, as shown in Figure 3, but was decommissioned in 2022. The access agreement with CSX has been allowed to expire.

Table 4. Monitoring Well Construction Information

Well ID	Well Installation Date	Coordinates[a]		Well Diameter (inches)	Top of Casing (TOC) Elevation (ft msl)	Ground Surface Elevation (ft msl)	Top of Screen		Pump Intake		Bottom of Screen		Well Total Depth[b]	
		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[c]	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:
[a] Coordinates reference: New York State Plane Coordinate System NAD 83 East Zone, U.S. survey feet.
[b] Well total depths are from boring logs and well construction diagrams prepared at the time of well construction.
[c] Well MW-44S was damaged in 2019 and repaired on July 13, 2020. Coordinates and elevation were resurveyed on July 18, 2020.

Abbreviations:
msl = mean sea level
NAD 83 = North American Datum of 1983

Figure 9. Monitoring Well MW-30S

2.7.2 Pneumatic Pumps

Each well is equipped with a dedicated QED Environmental Systems 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 padlocks on the site, one 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 *Site Security Plan* (DOE 2023c). 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. LTS requirements for the Colonie site include:

- Preparing an LTPR every 5 years.
- Performing groundwater sampling every 2 years.
- Managing records.
- Responding to stakeholder inquiries.

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 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.

The LMS site lead will involve the LMS Environmental Compliance point of contact and other support groups (e.g., Asset Management, Environmental Monitoring Operations and Sciences) early in the planning stages for groundwater compliance monitoring events (*Environmental Instructions Manual* [DOE 2024a]).

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 those for 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, including the Administrative Record and the Geospatial Environmental Mapping System (GEMS).

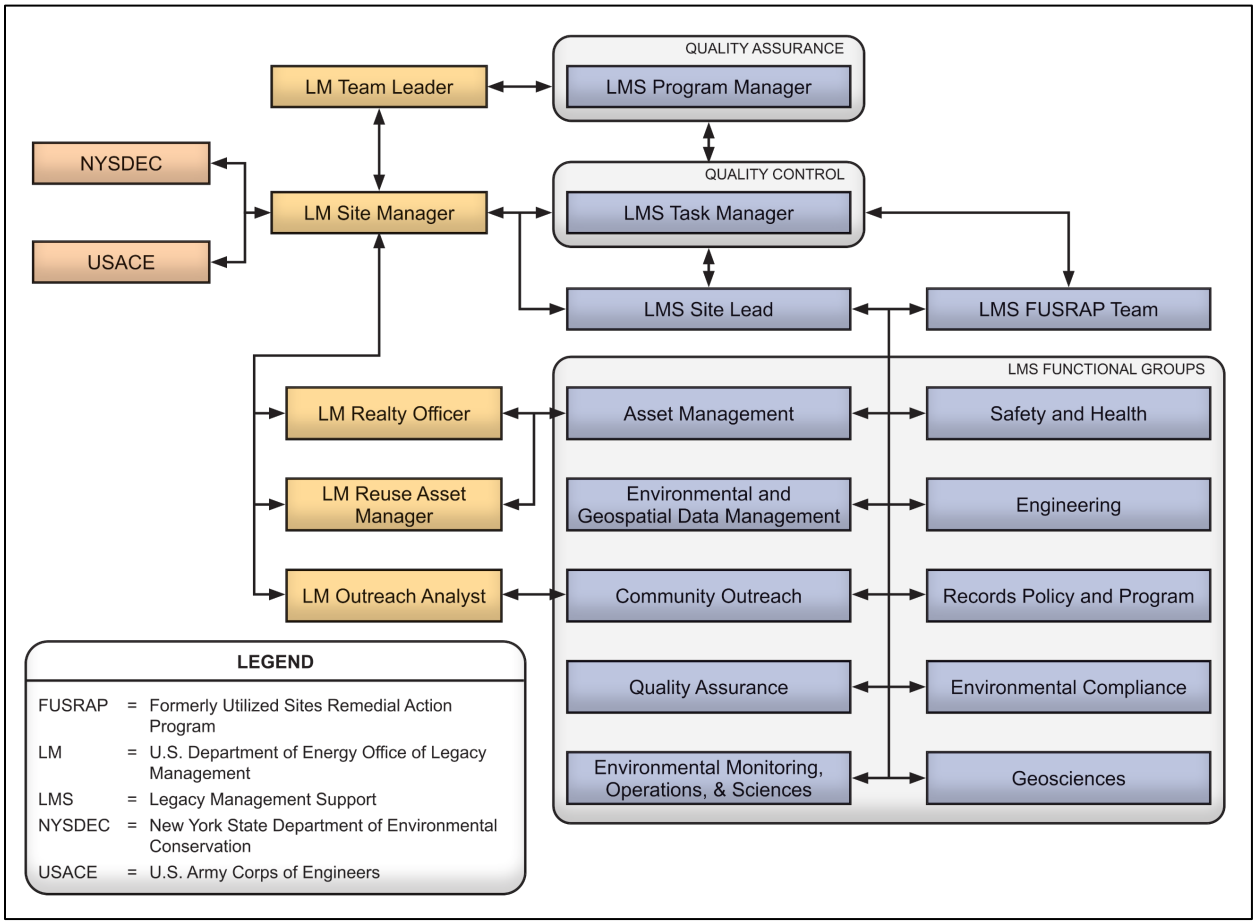


Figure 10. Site LTS Organizational Chart

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 Office of Public Affairs at Public.Affairs@lm.doe.gov or (970) 248-6070.

3.4 Desktop Assessments

Desktop assessments are a formal method to document a records search for any change in land use, regulations, or stakeholder interest that may impact a remedy at a FUSRAP completed site and to document that any existing ICs are still in place. The assessments were designed to ensure that LM is aware of potential changing conditions related to Category 1 and 2 LTS sites and to ensure ICs are maintained for the continued protection of human health and the environment. A

well-documented cursory assessment of potential changes will be performed annually, and the results will be used to determine if the LTS Plan for a site needs to be adjusted.

3.5 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 is attached to the land; therefore, upon the transfer of the site, the current owner is responsible for site inspection.

3.6 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://documentmanagement.share.lm.doe.gov/ControlledDocuments/Controlled%20Documents/S04351.pdf.

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* (DOE 2024b), also known as the IWCP Manual.
- The "Entry Procedure for Offsite Properties," which is included as Appendix B, should be followed. There are two monitoring wells on Amtrak property: wells MW-34S and MW-37S. Amtrak property cannot be accessed without prior approval granted through its right-of-entry permit systems.
- LM has a nonexpiring right-of-entry agreement with the New York State Department of Transportation to allow access to the wells through state-owned property at 80–100 Yardboro Avenue (DOE and NYSDOT 1992).
- The offsite wells are most easily accessed from Railroad Avenue through the CSX spur, pending compliance with Amtrak railroad permit requirements.

3.6.1 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. Trend analysis, including the July 2023 sampling data, indicated that a biennial sampling schedule was optimal.

3.6.2 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.

3.6.3 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.

3.6.4 Groundwater Sampling

Each of the wells is equipped with a dedicated pneumatically operated bladder pump. If a bladder pump malfunctions and cannot be fixed, the sampler may opt to either replace the pump or attach a peristaltic pump to the discharge port of the dedicated bladder pump. New York regulations in 6 NYCRR 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 5. 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 fieldwork.

Table 5. 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:
SM = Standard Method
SW = solid waste

3.6.5 Investigation-Derived Waste (IDW)

IDW groundwater is generated during each sampling event when wells are redeveloped and purged. Approximately 50 gallons of wastewater were generated during the July 2023 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 6) are NYSDEC Division of Technical and Operational Guidance Series 1.1.1, "Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations" (NYSDEC 1998). The same standards are codified in New York law under 6 NYCRR 703.

Table 6. New York Standards for Discharge of Groundwater

COC (CAS No.)	TCG[a]	New York Standard[b]
Uranium (7440-61-1)	Not applicable	3×10^{-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 and Operational Guidance Series* 1.1.1 (NYSDEC 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 medium begins to show breakthrough, the used GAC and the used sand from the system's prefilter will be disposed of appropriately as specified by state and federal regulations. The filtrate was sampled during the 2023 sampling event and was nondetectable for VOC concentrations.

3.6.6 Criteria for Terminating Monitoring

The Groundwater ROD specifies that cleanup will be achieved when COC concentrations are below TCGs over 4 consecutive quarters. However, these monitoring events no longer occur on a quarterly basis. Once COC concentrations reach TCGs in all wells, the sampling frequency will revert to a quarterly schedule for a total of 4 quarters. LM will submit sampling results to NYSDEC in the form of a letter report for 3 quarters and a long-term monitoring report after the fourth quarterly event. If VOC concentrations remain below TCGs during the four events, then LM will petition NYSDEC for closure of the monitoring program.

3.7 Reporting Requirements

Reporting requirements are listed in the following sections and summarized in Table 7.

3.7.1 Long-Term Groundwater Monitoring Reports

The long-term groundwater monitoring program will continue until the TCGs for COCs are achieved. The current 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.

3.7.2 Electronic Data Deliverables

NYSDEC requires that long-term monitoring data be submitted electronically by upload to its 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 Geospatial Data Management (EGDM) group according to guidelines specified by NYSDEC. The EGDM group has developed an operating procedure to describe the upload process, as described in the *ESDM Environmental Data Management Team Work Procedures* (DOE 2022a). The site lead will coordinate with EGDM data analysts to monitor progress of data conversion and submission. EGDM may need to contact NYSDEC if there are issues with the process. NYSDEC maintains a webpage for environmental data submission at https://dec.ny.gov/environmental-protection/site-cleanup/environmental-data-submission.

3.7.3 Long-Term Periodic Reviews

LTPRs are required under CERCLA and the NCP as long as residual contamination remains above UU/UE conditions. LTPRs 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 first sitewide LTPR was prepared in fall 2023. The next LTPR will be due in 2028.

3.7.4 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 current site owner. Prior notifications will be submitted to NYSDEC under the following circumstances:

- 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 NYECL 71-36
- 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, except for 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)

Table 7. Summary of Colonie Site Reporting and Notification Requirements

Document	Frequency or Triggering Event	Accountability	Site Inspection Required	Responsible Party
Actions				
Vapor intrusion study	Before building a habitable space	NYSDEC/SMP	No	Site owner
Water treatment study	Before use of groundwater	NYSDEC/NYSDOH/ Albany County Department of Health/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
Long-term groundwater monitoring report (sampling results)	Biennially	Amtrak	No	LM
Electronic data deliverable	Sampling event	NYSDEC/SMP	No	LM
LTPR	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 Required Under the Easement				
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	Site owner and/or LM
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
Notifications Under ROE Agreements				
Entry onto private property	Access to offsite wells	ROE agreement	No	LM
Entry onto Amtrak property	Access to offsite wells	ROE agreement	No	LM

Abbreviations:
NYSDOH = New York State Department of Health
ROE = right-of-entry

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 Asset Management group have been provided with 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.

3.8 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, Chg 5 (Admin Chg), *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* (DOE 2023b) 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 is found in Appendix C, "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's 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 activity. 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.

3.9 Emergency Response

Emergency management requirements for DOE sites, facilities, and activities are governed by DOE Order 151.1E, *Comprehensive Emergency Management System*. The DOE order is implemented by the joint *LM/LMS All Hazards Emergency Management Plan* (DOE 2023a) and the joint *LM/LMS Worker Emergency Response Procedure* (DOE 2025). The site's *Supplemental Emergency Response Information (SERI)* form (LMS 1415) is in Appendix C.

If there is an emergency at any time while LM and LMS personnel are onsite, they should follow the steps outlined in the *LM/LMS Worker Emergency Response Procedure*, Section 3.1, "Immediate Actions for Emergencies," as well as any additional steps in the SERI.

- Stop what you are doing and alert nearby workers.
  - If time permits, ensure safe shutdown of equipment and secure flammable liquids and hazardous materials.
- Take appropriate actions to minimize exposure to any hazards (e.g., get away from a fire, get upwind of a release).

- Call **911** and follow the 911 dispatcher's instructions. Then, call the Watch Office at **(303) 404-6100**.
- Ask others to call 911 and the Watch Office if you are unable to do so in a timely manner due to immediate life-safety needs (e.g., administering CPR or evacuating due to a fire).
- Workers may address immediate life-safety needs (e.g., administering CPR, suppressing an incipient stage fire with a fire extinguisher).
- Remain calm and follow instructions issued by an emergency response organization member or offsite emergency responder.

3.10 Records Management

DOE maintains analog FUSRAP records at the LM Business Center at Morgantown, West Virginia, and digital records in LM's Enterprise Content Management system. These records contain critical information required to protect public health and the environment, manage land and assets, protect the legal interests of DOE and the public, and mitigate community impacts resulting from the cleanup of legacy waste. Site historical records about the environmental remediation and stewardship are included in these collections.

All LM records will be managed in accordance with the following requirements:

- 36 CFR 1220–1239, "Records Management"
- 44 USC 29, "Records Management by the Archivist of the United States and by the Administrator of General Services"
- 44 USC 31, "Records Management by Federal Agencies"
- 44 USC 33, "Disposal of Records"
- DOE Order 243.1C, *Records Management Program*
- LM Records Management Program procedures

3.11 Environmental Data Management

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* (DOE 2024e), hereafter called the QAM. Electronic copies of site inspection forms will be submitted to the Records Policy and Program group for archiving and will be saved on the project website on the LM Portal for reference. See Section 3.7.2 for information concerning electronic data deliverables that are submitted to NYSDEC.

3.12 Quality Assurance

The LTS of the site will comply with the QAM, which is based on DOE Order 414.1E, *Quality Assurance*, and on the current version of International Organization for Standardization (ISO) 9001:2015, *Quality Management Systems — Requirements*. 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 ISO 14001:2015, *Environmental Management Systems — Requirements with Guidance for Use*. 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.

3.12.1 Quality Assurance (QA) Reviews

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.

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. They do not apply to oversight bodies conducting assessments of LMS program activities.

3.12.2 Issues Reporting and Management

Issues refer to any conditions or occurrences (planned or unplanned) that affect the staff, visitors, public property, the environment, or the 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 site 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.

3.13 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* (DOE 2022b) procedure.

3.13.1 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* procedure.

3.13.2 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, and personnel will note any signs of damage, provide photographs of each well, and indicate whether vegetation impedes access. The last inspection was performed during the July 2023 sampling event.

3.13.3 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

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10 CFR 1021. U.S. Department of Energy, "National Environmental Policy Act Implementing Procedures," *Code of Federal Regulations*.

36 CFR 1220–1239. National Archives and Records Administration, "Records Management," *Code of Federal Regulations*, https://www.gpo.gov/fdsys/granule/CFR-2011-title36-vol3/CFR-2011-title36-vol3-chapXII-subchapB, accessed March 6, 2025.

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, "National Environmental Policy Act Implementing Regulations," *Code of Federal Regulations*.

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

6 NYCRR 380. "Prevention and Control of Environmental Pollution by Radioactive Materials," as amended, *New York Codes, Rules and Regulations*.

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

42 USC 9601 et seq. "Comprehensive Environmental Response, Compensation, and Liability Act," *United States Code*.

42 USC 2011 et seq. "Atomic Energy Act of 1954," *United States Code*.

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Appendix A

Well Boring Logs and Construction Diagrams

GEOLOGIC DRILL LOG

PROJECT	JOB NO.	SHEET NO.	HOLE NO.
Colonie Interim Storage Site	4501-139	1 OF 1	B39W08S

SITE	COORDINATES	ANGLE FROM HORIZ	BEARING
CISS	N 1776 E 1122	Vertical	------

BEGUN	COMPLETED	DRILLER	DRILL MAKE AND MODEL	SIZE	OVERBURDEN	ROCK (FT.)	TOTAL DEPTH
11-7-84	11-7-84	Empire Soils	Acker AD-2	7-1/2"			14.0

CORE RECOVERY (FT./%)	CORE BOXES	SAMPLES	EL. TOP CASING	GROUND EL.	DEPTH/EL. GROUND WATER	DEPTH/EL. TOP OF ROCK
/			231.45	229	/	/

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" % 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.
							228.9 220.6				0.0 - 0.3 Ft. TOPSOIL. 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)	
								5				
								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 — Proj. No. 866724
Location Colonie, NY
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 ECA

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 to 0							
0 to 14				2/2/2/2 80%		SM / SM / SC	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. 10-12': Brown, saturated, sandy silt;60-80% silt, very fine-fine grained sand, trace clay, medium dense.
14 to 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

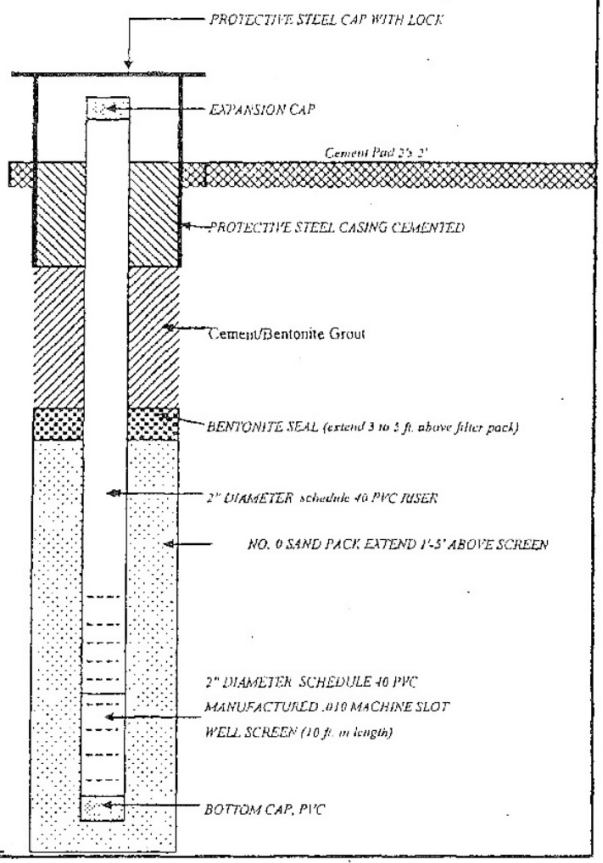
OJECT NAME: COLONIE FUSRAP SITE | GEOLOGIST: M.Flanagan | SHEET: 2

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	CL	Gray-brown clay, medium density, some silt interbedded, Wet.	15.0		
-	2					
-	3					
-	3					
16---	3	CL	Gray-brown clay, medium density, trace silt in 2 horizons, Wet.	15.0		
-	3					
-	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:

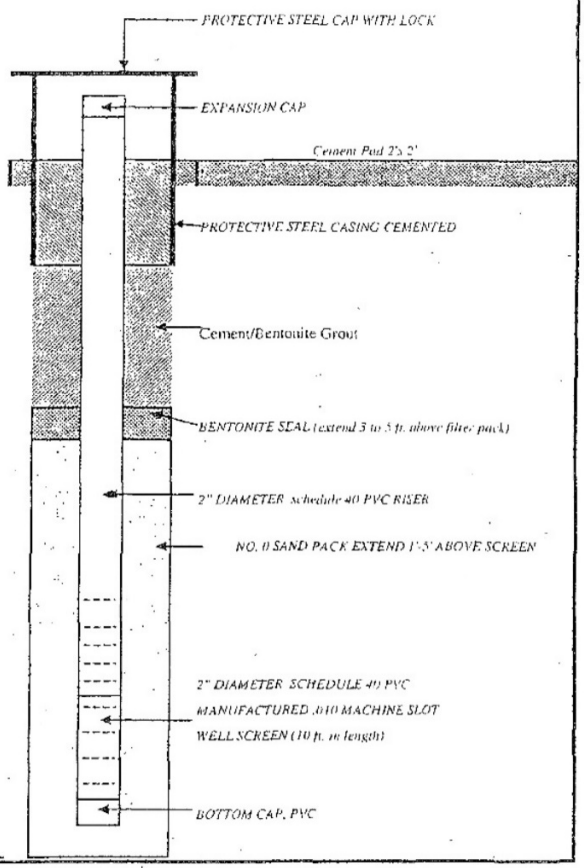
PROJECT TO 33, DC SCHOOLS	BORING
NOTE: ATTACH WELL CONSTRUCTION DIAGRAM	MW – 37S

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--- - - - 12--- - - - 14--- - - - 16--- - - - 18--- - - - 20--- - - - 22---	4 4 6 4 4 4 4 5 1 3 3 2 3 3 2 3 2 3 2 3 3 5 4 5	ML	Brown-gray silt, trace fine grain sand, slight density, Wet.	<1.0		
		ML	Brown-gray silt, slight density, Wet.	<1.0		
		ML	Brown-gray silt, slight density, Wet.	<1.0		
		ML	Brown-gray silt, slight density, trace brown-gray clay in 2" lens at bottom of spoon, Wet.	<1.0		
		CL	Brown-gray silt, some clay, interbedded throughout spoon, medium density, Wet.	<1.0		
		ML	Brown-gray silt, slight density, ~1" brown-gray clay lens, interbedded at bottom of spoon, Wet.	<1.0		

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

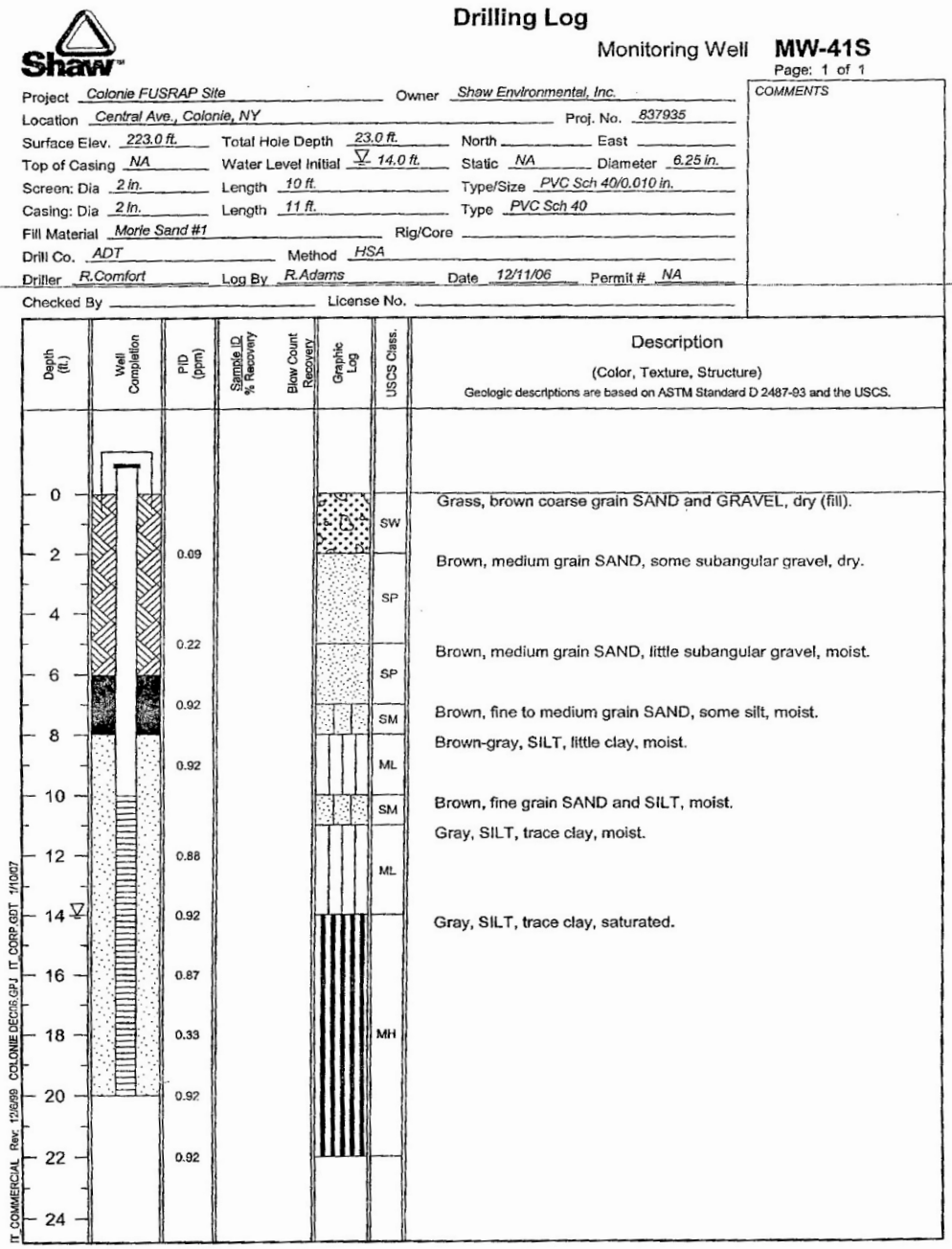
	DEPTH (RECORD ON THIS FORM)
SURFACE	
DEPTH BOTTOM STEEL CSG-	~2.0
DEPTH TOP BENTONITE-	3.0
DEPTH BOTTM BENTONITE-	8.0
DEPTH TOP SAND-	8.0
DEPTH TOP OF SCREEN-	11.0
DEPTH BOTTOM SCREEN-	21.0
TOTAL DEPTH-	22.0

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.)	Well Completion	PID (ppm)	Sample ID / % Recovery	Blow Count / Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) — Geologic descriptions are based on ASTM Standard D 2487-93 and the USCS.
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					Gray, SILT, trace clay, saturated.
16		0.87					
18		0.33				MH	
20		0.92					
22		0.92					
24							

IT_COMMERCIAL Rev. 12/9/99 COLONIE DEC05.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

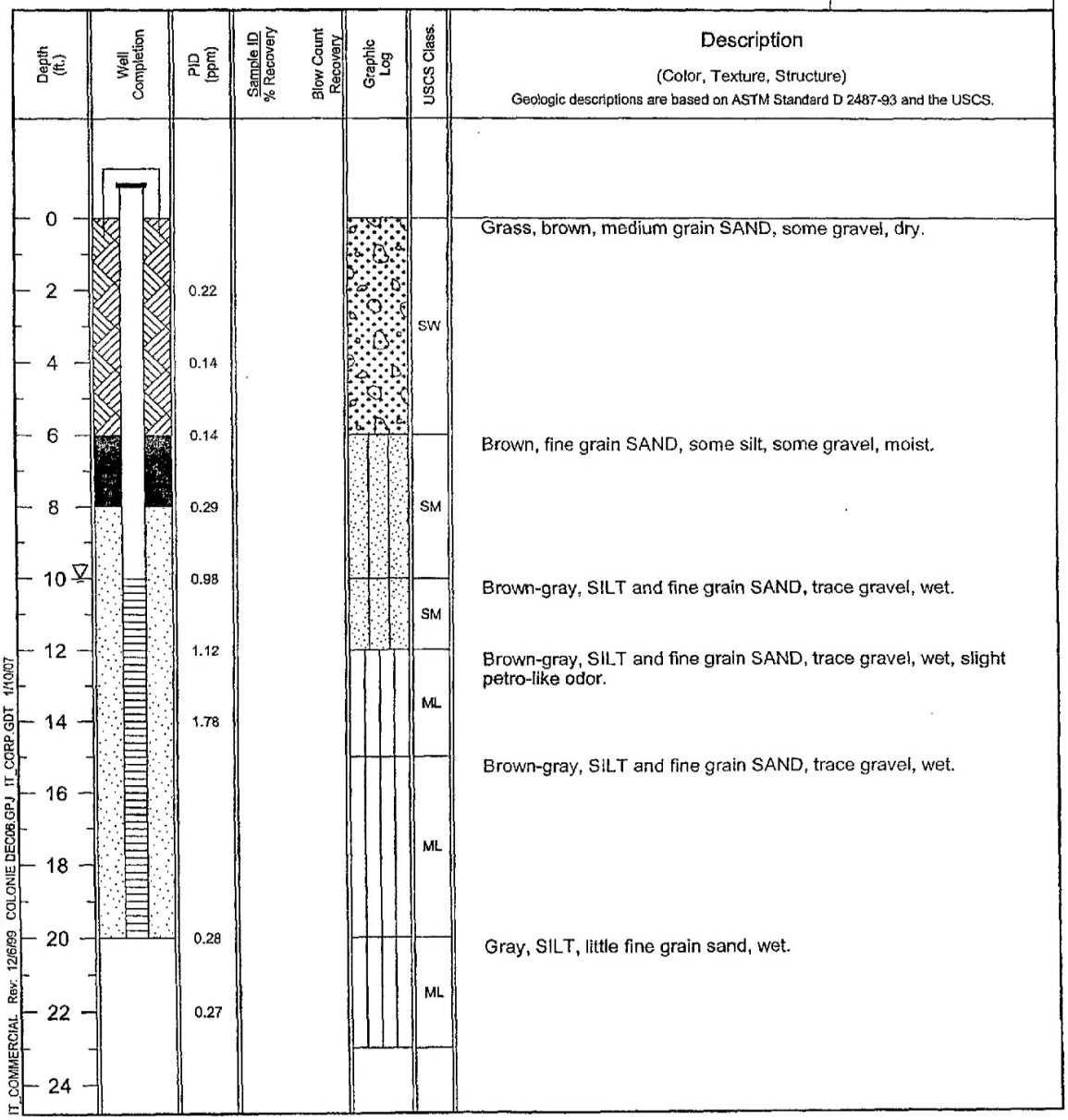
Fill Material Morie Sand #1 — Rig/Core ____

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 2 3 4 5				Brown f-c SAND, little silt, little rock, damp		Hand auger, log from cuttings
6 7	1	1	0.0	Brown silty SAND, some gravel, loose, damp	SM	
8 9	2	1.5	0.0	As above, grading to gray-brown		
10 11	3	1.0	0.0	As above, moist		
12 13	4	1.5	0.0	As above Brown f SAND, few to little silt, loose, wet	SP/SM	
14 15	5	0.0	0.0	As above (trace recovery)		
16 17	6	1.0	0.0	As above Gray vf-f SAND, some silt, loose, saturated	SM	
18 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:

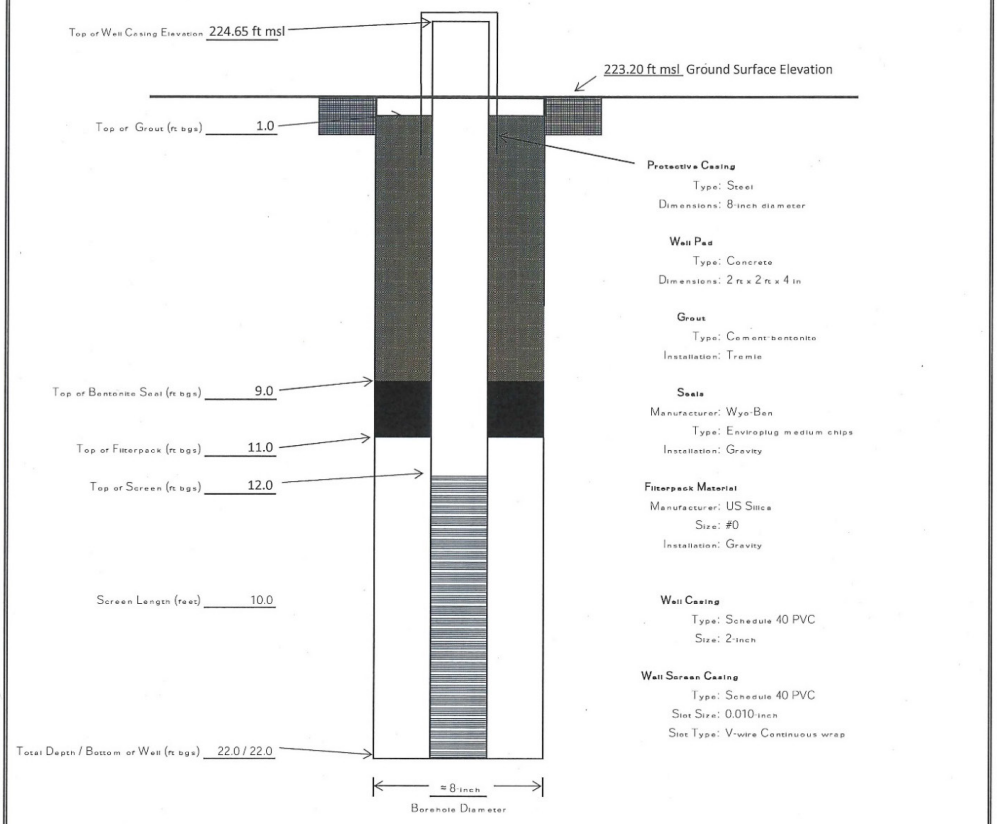
c = coarse
m = medium
f = fine
vf = very fine

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 B

Entry Procedure for Offsite Properties

B1.0 Entry Procedure for Offsite Properties

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

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 B-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 provide plans about activities for each day of fieldwork. The NYSDEC project manager may make periodic unannounced visits to the site to observe the work.

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

Grantor/ Grantee	Purpose	Terms and Requirements	Notifications	Notes
Amtrak and RSI EnTech, LLC, expiring November 30, 2025	Access by the LMS contractor (and LM as sponsor) to sample offsite monitoring wells MW-34S and MW-37S, which are on Amtrak property	• 1-year term • Annual fee and insurance coverage • Prior safety training on the Amtrak website and issuance of worker ID cards • A copy of agreement required while onsite • High-visibility vests, hearing protection, safety glasses with side shields, hardhats, and steel-toed safety shoes • Coordination with Amtrak district engineer at least 2 weeks before fieldwork • Onsite entry meeting with Amtrak district engineer or track foreman • Oversight by Amtrak engineer or foreman • After sampling, Amtrak will receive analysis results	• 10 working days written prior notification to Amtrak • Coordinate with district engineer 2 weeks in advance • Document notifications on the *Landowner/ Stakeholder Notification Form* (LMS 1013)	• Amtrak foreman requests reminder 1 week before fieldwork begins • Requires that a track foreman be present for the sampling work
United States and New York State Department of Transportation	Crossing state property at 80-108 Yardboro Avenue	• https://ecm.lm.doe.gov/?uri=4020565&t=record • Nonexpiring	• None	• The right-of-entry dates from 1992, and allows DOE to access the vacant property that the unnamed tributary flows through in a culvert

Appendix C

Supplemental Emergency Response Information

Supplemental Emergency Response Information (SERI)

Colonie, New York, Site

Date Issued: March 23, 2024

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

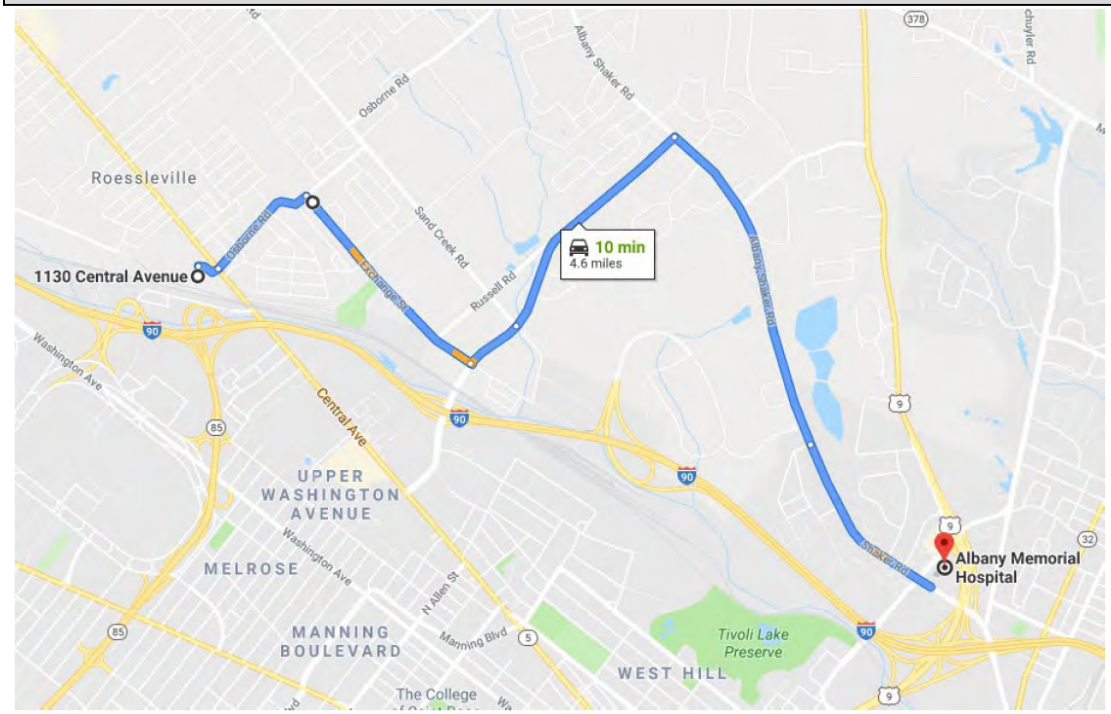
2. FIRST RESPONDER CONTACT INFORMATION

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 98 Wolf Road, Suite 16 Albany, NY 12205	911	518-264-9000
Emergency Room	Albany Memorial Hospital 600 Northern Boulevard Albany, NY 12204	911	518-471-3221

Supplemental Emergency Response Information (SERI)

Colonie, New York, Site

3. MAPS



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

Methods available to communicate emergency messages to occupants/workers: 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. 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