

# Long-Term Surveillance and Maintenance Plan for the Colonie, New York, FUSRAP Site

February 2019



U.S. DEPARTMENT OF  
**ENERGY**

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**Long-Term Surveillance and Maintenance Plan for the  
Colonie, New York, FUSRAP Site  
Document History**

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Approved:

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Date

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## **Abbreviations**

AEC	U.S. Atomic Energy Commission
ASER	annual site environmental report
bgs	below ground surface
CAS	Chemical Abstracts Service
cDCE	<i>cis</i> -1,2-dichloroethene
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR	<i>Code of Federal Regulations</i>
COC	contaminant of concern
CP	Commissioner Policy
DER	Division of Environmental Remediation
dia	diameter
DO	dissolved oxygen
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy
DU	depleted uranium
EDGE	EQUS Data Gathering Engine
EE/CA	Engineering Evaluation/Cost Analysis
EPA	U.S. Environmental Protection Agency
EQUS	Environmental Quality Information System
FIMS	Facilities Information Management System
ft	feet
FUSRAP	Formerly Utilized Sites Remedial Action Program
HCl	hydrochloric acid
HDPE	high-density polyethylene
HNO <sub>3</sub>	nitric acid
H <sub>2</sub> SO <sub>4</sub>	sulfuric acid
IC	institutional control
IDW	investigation-derived waste
L	liters
LM	Office of Legacy Management
LMS	Legacy Management Support
LTS&M	long-term surveillance and maintenance



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LUC	land use control
MAROS	Monitoring and Remediation Optimization System
mg/kg	milligrams per kilogram
µg/L	micrograms per liter
µS/cm	microsiemens per centimeter
mL	milliliters
MNA	monitored natural attenuation
MS	matrix spike
MSD	matrix spike duplicate
mV	millivolts
n/a	not applicable
NaOH	sodium hydroxide
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NELAC	National Environmental Laboratory Accreditation Conference
NEPA	National Environmental Policy Act
NPL	National Priorities List
NRC	U.S. Nuclear Regulatory Commission
NYCRR	<i>New York Codes, Rules and Regulations</i>
NYECL	<i>New York Environmental Conservation Law</i>
NYSDEC	New York State Department of Environmental Conservation
ORP	oxidation–reduction potential
OU	operable unit
PCE	tetrachloroethene
pCi/g	picocuries per gram
QAM	Quality Assurance Manual
QSM	<i>Quality Systems Manual for Environmental Laboratories</i>
RCP	reinforced concrete pipe
RCRA	Resource Conservation and Recovery Act
RI	remedial investigation
ROD	Record of Decision
SAP	Sampling and Analysis Plan
SMP	Site Management Plan
SU	standard units
TC	toxicity characteristic

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TCE	trichloroethene
TCG	target cleanup goal
TOC	top of casing
TOGS	Technical & Operational Guidance Series
U	uranium
USACE	U.S. Army Corps of Engineers
USC	<i>United States Code</i>
UU/UE	unlimited use and unrestricted exposure
VC	vinyl chloride
VOA	volatile organic analysis
VOC	volatile organic compound
VP	vicinity property
ZnOAc	zinc acetate

## **Referenced Forms and Worksheets**

Forms and worksheets are uncontrolled unless they are downloaded from the LM SharePoint Site at: <http://sp.lm.doe.gov/Contractor/ControlledDocuments/LMSForms/default.aspx>

<i>Digital Photograph and Video Log</i>	LMS 2609
<i>Job Safety Analysis</i>	LMS 1748
<i>Monitoring Well Condition Assessment Survey</i>	LMS 1591
<i>Waste Profile Worksheet</i>	LMS 1968
<i>Water Sampling Field Data</i>	LMS 1805

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## **1.0 Introduction**

This Long-Term Surveillance and Maintenance (LTS&M) Plan has been developed to document the processes and requirements for the long-term care of the U.S. Department of Energy (DOE), Colonie, New York, Site (the “site” or “main site” in some document titles). The U.S. Army Corps of Engineers (USACE) has completed remedial actions at the site under the Formerly Utilized Sites Remedial Action Program (FUSRAP) (USACE 2018). The site transfers to the DOE Office of Legacy Management (LM) at the end of the 2-year transition period described in 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* (including two supporting letters of agreement between the two agencies) (DOE/USACE 1999), hereafter called the Memorandum of Understanding. Upon transfer, active sites become “completed” FUSRAP sites and enter into the LM program for long-term care.

### **1.1 Purpose and Scope**

This LTS&M Plan documents the activities and operations required to maintain and ensure the effectiveness of the selected remedies at the Colonie, New York, site, which includes the Main Site and its vicinity properties (VPs), as follows:

- Ensuring onsite actions are conducted safely
- Implementing and complying with institutional controls (ICs)
- Implementing and operating the monitoring program, including planning, sampling, and reporting
- Identifying and complying with applicable federal, state, and municipal regulations for site stewardship
- 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 information and records management are maintained and accessible
- Ensuring that real and personal property are maintained and secure, including planning for emergencies and contingencies

### **1.2 Plan Organization**

**Section 1, Introduction:** provides the purpose of the plan and the site’s history, geologic setting, and regulatory requirements.

**Section 2, Site Conditions:** describes the environmental conditions and real property and personal property assets.

**Section 3, Long-Term Surveillance:** describes plans for community outreach, environmental monitoring, the Site Management Plan (SMP) (DOE/USACE 2018), long-term periodic reviews, contingencies, and emergency response.

**Section 4, Site Inspection and Maintenance:** describes the plans for upkeep of the site and site assets.

**Section 5, References:** includes all references used in the report, including appendixes.

### **1.3 Authorities**

The following section describes the applicable regulation authorities that affect the LTS&M program for the site.

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

As a result of the House–Senate Conference Report and the Energy and Water Appropriations Act of 1984 (PL 98-50), the site became eligible for FUSRAP by congressional mandate. DOE performed investigations and removal actions at the Vicinity Properties 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 the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (Title 42 *United States Code* Section 9601 et seq. [42 USC 9601 et seq.]) and the National Oil and Hazardous Substances Pollution Contingency Plan, also called the National Contingency Plan (NCP) (Title 40 *Code of Federal Regulations* Section 300 [40 CFR 300]). The site is not on the NPL, nor is there a Federal Facilities Agreement with the U.S. Environmental Protection Agency (EPA).

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

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

The RODs summarize the 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 and has been recognized as the lead regulatory agency. Both the Soil ROD and the Groundwater ROD require long-term periodic reviews (known as Five-Year Reviews for CERCLA sites), reviews required after CERCLA corrective actions where hazardous substances remain above levels that allow for unlimited use and unrestricted exposure (UU/UE). This 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 environmental easements would be emplaced for three areas of inaccessible soil contamination. Environmental easements in New York run with the land in favor of the State, subject to the provisions of Article 71 *New York Environmental Conservation Law* Title 36 (NYECL 71-36). Under certain provisions of the NYECL, NYSDEC has enforcement authority over the environmental easements. The NYECL also requires the use of the SMP, which describes the use, monitoring, and reporting requirements for the three soil easements and is a separate, stand-alone document describing the protective measures established for the soil easements.

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

It is notable that USACE stated in the Groundwater ROD that NYSDEC is the lead regulatory agency. Site cleanup requirements are codified in Title 6 *New York Codes, Rules and Regulations* Part 375, “Environmental Remediation Programs (6 NYCRR 375).” NYSDEC guidance on the technical standards for site investigations and cleanup is given in program policy DER-10, *Technical Guidance for Site Investigation and Remediation*, which contains references to additional potentially applicable New York laws and guidance.

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

Once the site transitions to DOE, the Memorandum of Understanding between USACE and DOE (DOE/USACE 1999) states that LM will assume the LTS&M responsibilities 2 years from the date of the Site Closeout Report.

There are Town of Colonie code and zoning regulations concerning the upkeep of property and designated use, and these are described in Section 1.8.4.

## **1.4 Accountabilities**

In addition to LM, USACE, NYSDEC, and other stakeholders will play a role in the long-term care of the site.

### **1.4.1 Role of USACE**

USACE is responsible for site surveillance, operation, and maintenance until the end of the transition period and the site's official transfer back to DOE. The transition period is scheduled to end in June 2020. USACE is responsible for any additional cleanup actions that would be required under CERCLA (DOE/USACE 1999).

### **1.4.2 Role of LM**

LM will maintain protection of human health and the environment after the site's transfer from USACE. LM is responsible for providing stewardship of the site and ensuring that DOE's post-closure responsibilities are met, including LTS&M, records management, property management, and beneficial reuse planning. The FUSRAP LTS&M program is guided by the *Legacy Management Program Management Plan for the Formerly Utilized Sites Remedial Action Program* (LMS/S16063).

- LM (or potentially its successors in case of site disposal) is responsible for implementing, reporting on, monitoring, maintaining, and enforcing the LUCs. LM will periodically review land use for signs of noncompliance with the LUCs. These reviews are conducted in annual site inspections and long-term periodic reviews.
- Because residual groundwater contamination remains above target cleanup goals (TCGs), LM will perform periodic groundwater monitoring to protect human health and the environment.
- LM is a custodian of site records and is responsible for responding to inquiries from the public, NYSDEC, and other stakeholders.
- Because ownership of the site is no longer needed to fulfill the mission of LM, LM will pursue disposition of the site.

### **1.4.3 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 easements. NYSDEC will provide input and review in annual site management reports and periodic regulatory reviews for the soil easements and will be provided a draft final copy of the long-term periodic review for the groundwater OU for comment. NYSDEC will execute its oversight roles through a DOE grant/cooperative agreement.

### **1.4.4 Role of Stakeholders**

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



## **1.5 Location**

The Colonie main site is in the Town of Colonie and on the border of the City of Albany, New York, and in the County of Albany (Figure 1). The FUSRAP site comprises 11.2 acres of federally owned land. There are 56 privately owned VPs (Figure 2 and Table 1). DOE acquired the 9.2-acre National Lead site in 1984 and an 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, are due east. A CSX rail line is on the southern boundary, and residences are on the southern side of the railroad tracks. Commercial and municipal properties are on the western boundary of the site.

### **1.5.1 Current Land Use**

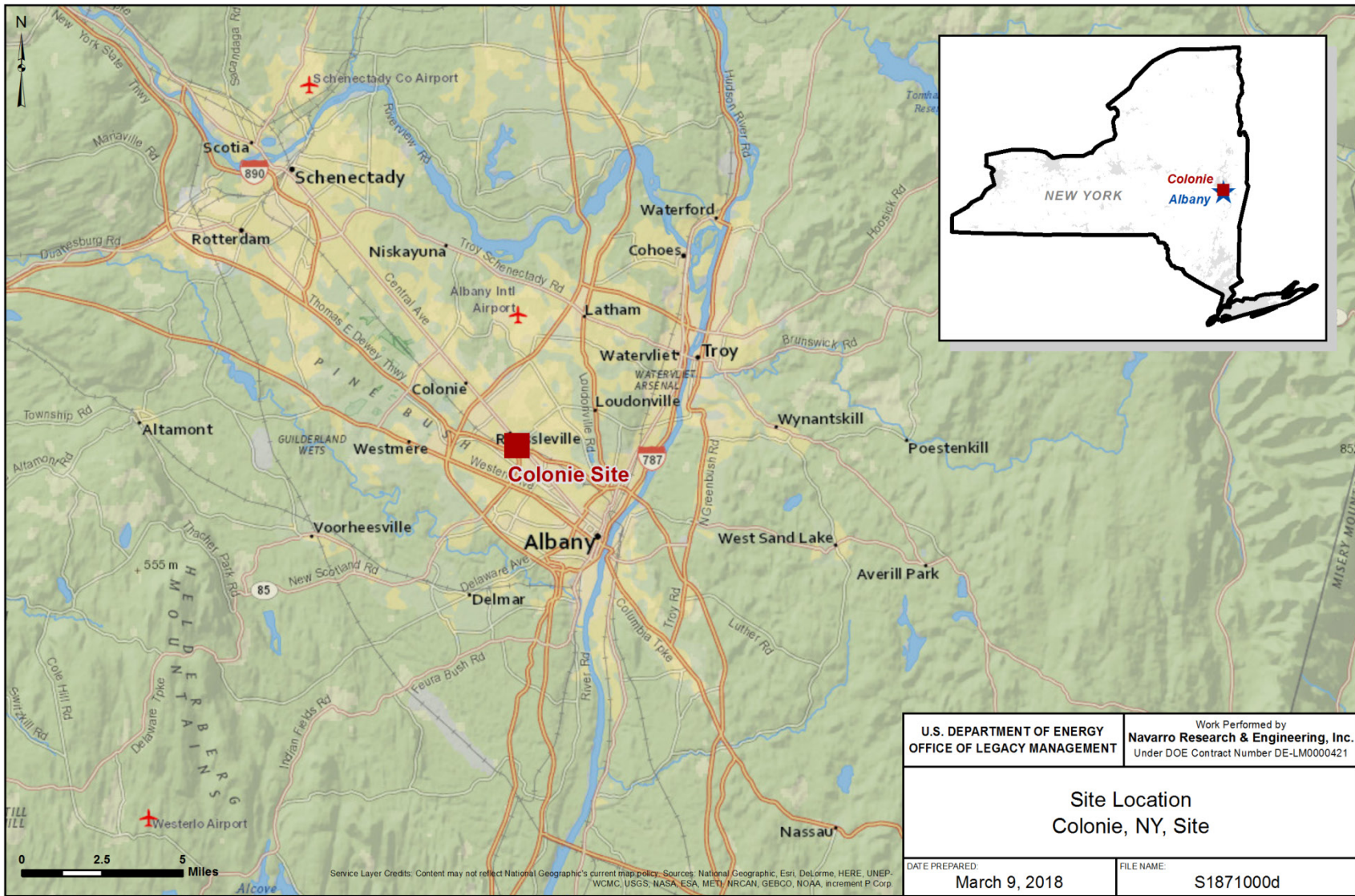
The site is in an urban area consisting of both residential and commercial properties in the Town of Colonie's municipal zoning district "Industrial F" (Colonie 2007). The Industrial F District has prohibited uses that include "any use which produces radiation, light, smoke, fumes, or odors of a noxious or harmful nature carrying beyond the limits of the premises." The site was historically used for industrial operations and is currently composed of vacant land (USACE 2015).

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

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

### **1.5.2 Future Land Use**

In accordance with EPA guidance for selecting a site's potential future land use, USACE examined current land use, site setting, zoning laws and maps, and comprehensive community master plans. The Soil ROD states that the most probable future land use is urban residential. The town's master plan indicates future commercial use for properties along Central Avenue. Use of the urban residential cleanup criteria is supported by the residential property use to the south. USACE assumed that future residents will not use groundwater because the productivity of the shallow aquifer is too low to support domestic use (USACE 2015). The three easement areas are safe for restricted residential use, whereas the balance of the site is safe for residential use (DOE/USACE 2018).



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Figure 1. Site Location Map

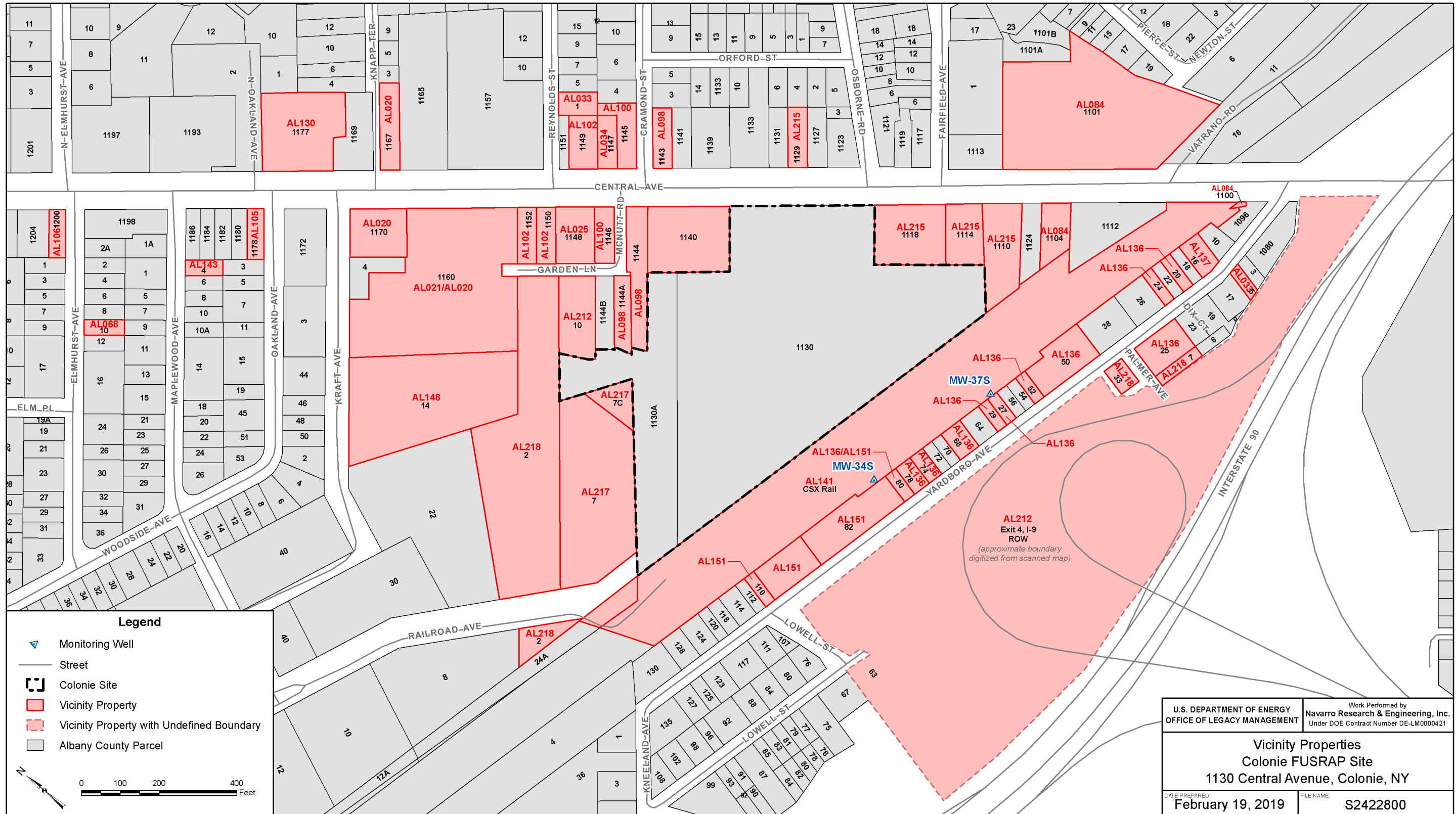


Figure 2. Vicinity Properties Map



Figure 3: Colonie Site Base Map

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Table 1: Addresses of the Colonie Site Vicinity Properties

Vicinity Properties Listed in the Colonie FUSRAP Site Vicinity Property Operable Unit Record of Decision					
Vicinity Property ID	Property	Comment	Vicinity Property 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.	<b>10 Kraft Ave.</b>
1143 Central Ave.				14 Kraft Ave.	
AL098	1144/1144A Central Ave.	1144 Central Ave. 1144A Central Ave.	AL143	4 Maplewood Ave.	
	AL100	1145 Central Ave.	AL218	Niagara Mohawk (NiMo) Property, Railroad Ave.	2 Railroad Ave.
1146 Central Ave.		7 Palmer Ave.			
AL102	1149 Central Ave.			AL033	33 Palmer Ave.
	1150 Central Ave.		1 Reynolds Ave.		
	1152 Central Ave.		AL137	5 Yardboro Ave.	
	<b>1159 Central Ave.</b>			16 Yardboro Ave.	
AL021	1160 Central Ave.		AL136	20 Yardboro Ave.	
	<b>1161 Central Ave.</b>			24 Yardboro Ave.	
AL020	1160/1162 Central Ave.	1160 Central Ave.		25/27 Yardboro Ave.	
		<b>1162 Central Ave.</b>		27/29 Yardboro Ave.	
	<b>1166 Central Ave.</b>			50 Yardboro Ave.	
	1167 Central Ave.			52 Yardboro Ave.	
	<b>1168 Central Ave.</b>			68 Yardboro Ave.	
	1170 Central Ave.			74 Yardboro Ave.	
AL130	1177 Central Ave.			78 Yardboro Ave.	
AL105	1178 Central Ave.				80 Yardboro Ave.
	<b>1185 Central Ave.</b>		AL151	80-110 Yardboro	
	<b>1195 Central Ave.</b>				

\* Addresses in **bold red** font are not found in the 2018 Albany County parcel data.

## **1.6 Site History**

Industrial operations at the site began in 1923, when the Embossing Company built a factory for wood products and toys. In 1927, Magnus Metal purchased the site and operated a brass foundry for manufacturing railroad parts, including components 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 (percent levels) of heavy metals, primarily lead, copper, and arsenic. These metals contaminated the soil and required remediation. The filled-in lake was identified as the most likely source of metal contamination.

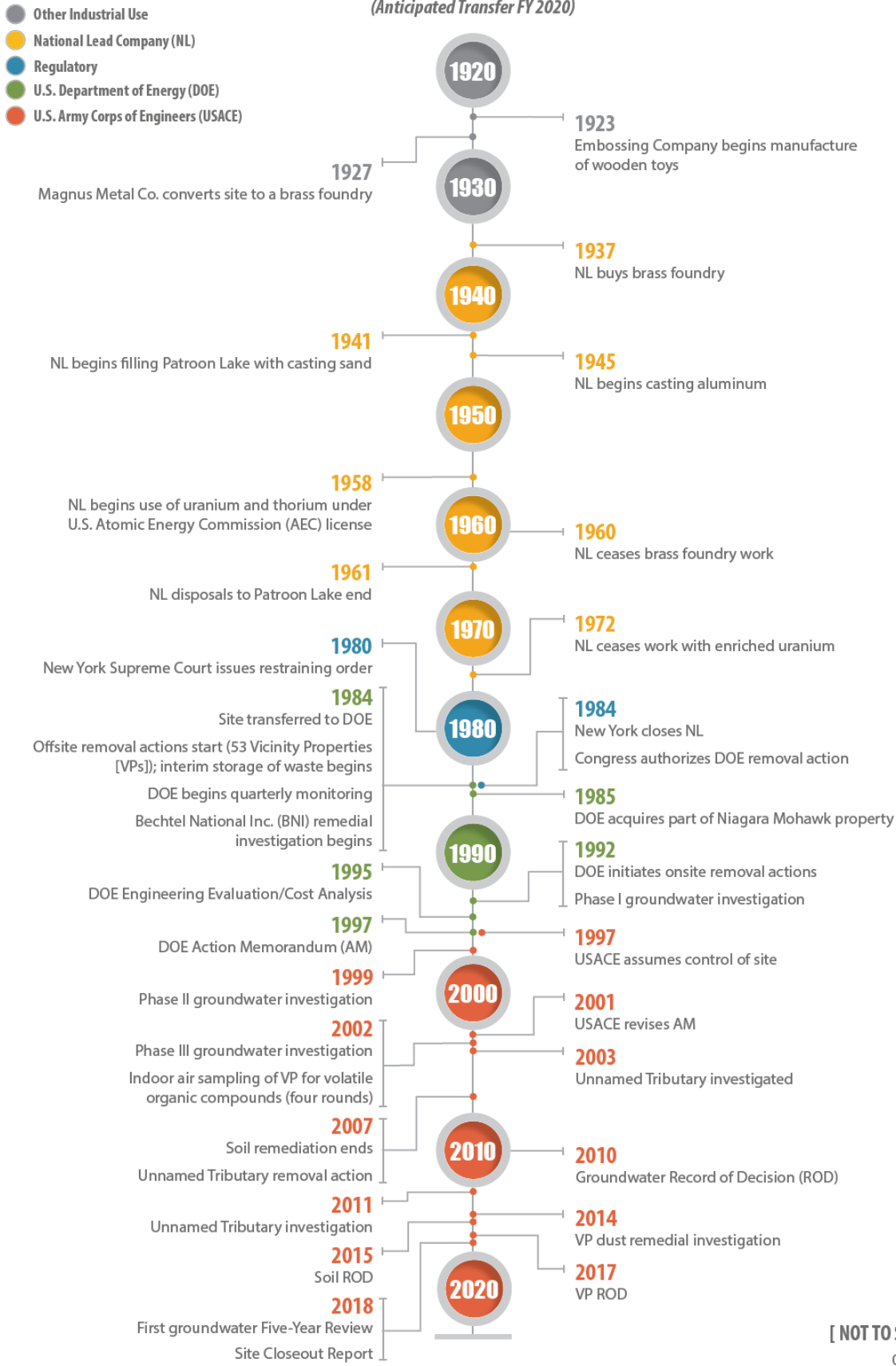
In 1958, the nuclear division of National Lead began producing items manufactured from uranium and thorium under a license issued by AEC. The plant handled enriched uranium from 1960 to 1972; during that time, National Lead held several contracts to manufacture fuel from enriched uranium for use in nuclear reactors. Uranium, along with collocated metal contamination from other processes, was later remediated in soil. National Lead also converted depleted uranium tetrafluoride to depleted uranium (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 incinerator to eliminate the fire hazard, which caused the aerial emission of DU particulates onto the site and vicinity properties (Lloyd et al. 2009). The AEC contract was terminated in 1968, and work at the plant afterwards was devoted to fabricating shielding components, aircraft counterweights, and artillery projectiles from depleted uranium.

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 a result of the Energy and Water Appropriations Act of 1984 (PL 98-50), the site was made eligible for FUSRAP. DOE purchased a portion of the Niagara Mohawk property bordering the National Lead site to the west in 1985 to assist the cleanup (USACE 2003). A timeline of the history of the site is presented as Figure 4.

## **1.7 Remedial Actions**

From 1984 through 1997, DOE investigated the site and 56 VPs (shown in Figure 2) and initiated the remediation process. During this time, DOE remediated 53 of the VPs and demolished the buildings onsite under the authority of the *Colonie Site Action Memorandum for Removal Action* (DOE 1997), hereafter called the Action Memorandum. The remaining three VPs were remediated by USACE.

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**HISTORICAL TIMELINE—COLONIE, NEW YORK, SITE**  
*(Anticipated Transfer FY 2020)*



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Figure 4. Historical Timeline

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

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

The *Site Closeout Report for the Colonie FUSRAP Site* (USACE 2018) was finalized in June 2018. The history of the site is presented on a timeline in Figure 4.

## **1.8 Environmental Regulations and Requirements That Govern LTS&M Activities**

### **1.8.1 CERCLA and the NCP**

USACE completed removal actions for the Soil Operable Unit in 2007 and completed the Soil ROD, which was signed in March 2015. The first long-term periodic review for the soil OU would be due by March 2020. LM is emplacing soil environmental easements and creating the SMP for the Soil OU. The periodic regulatory review of the soil easement, which is to be performed every 5 years, will be prepared as the functional equivalent of a Five-Year Review required under CERCLA and the NCP.

Section 121(c) of CERCLA (42 USC 9601) and Section 300.430(f)(4)(ii) of the NCP (40 CFR 300) require that remedial actions resulting in any hazardous substances, pollutants, or contaminants remaining at a site above levels that allow for UU/UE be reviewed every five years to ensure protection of human health and the environment. Therefore, long-term periodic reviews are required by statute. USACE completed its *First Five-Year Review Report of the Groundwater Operable Unit* in October 2017. The next long-term periodic review for the groundwater OU will be due in October 2022.



## **1.8.2 National Environmental Policy Act**

The National Environmental Policy Act (NEPA) (PL 91–190) requires federal agencies to assess the impacts that federal actions may have on the quality of human health and the environment. USACE relies on the CERCLA process for review of remedial actions to be taken under FUSRAP. No separate NEPA document or NEPA review process will be performed for a FUSRAP site transitioning to LM from USACE because NEPA values are incorporated into the CERCLA investigation and cleanup process (DOE 2002). For a federal action that is not a part of ongoing maintenance, NEPA may apply. DOE procedures for implementing NEPA are contained in 10 CFR 1021, 40 CFR 1500–1508, and DOE Policy 451.1. LM-specific procedures for implementing the DOE regulations and the DOE order are contained in the *National Environmental Policy Act Planning and Compliance Procedure* (DOE LM Procedure 451.1C).

## **1.8.3 New York State Laws and 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 comply with the intent of NYSDEC program policy established in NYSDEC’s Division of Environmental Remediation (DER) *Technical Guidance for Site Investigation and Remediation* (DER-10). A crosswalk to compare DER-10 guidance to this plan is included as Appendix A.

### **1.8.3.1 Environmental Easements**

The Soil ROD specifies that environmental easements will be used as LUCs. NYECL 71-36 provides the requirements for environmental easements. An SMP is required by the NYECL for the monitoring and maintenance of environmental easements. The SMP describes the ICs and the inspections, monitoring, maintenance, and reporting activities that have been established to protect against health risks posed by the three easement areas with residual metal contamination in subsurface soil. The SMP will be updated as necessary by the site owner. One requirement of the SMP is that site records will be annually inspected for completeness.

### **1.8.3.2 Monitoring Well Requirements**

There is no New York State 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 *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites* (SAP) (LMS/PRO/S04351), the consensus guidelines of the ASTM International *Standard Practice for Design and Installation of Ground Water Monitoring Wells* (ASTM D 5092-04), and the relevant and appropriate federal guidelines described in the EPA *Groundwater Monitoring Technical Enforcement Guidance Document* (EPA 1986).

The decommissioning of groundwater monitoring wells is regulated in New York by NYSDEC. 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 applicable Commissioner Policy (CP)-43, NYSDEC’s “Groundwater Monitoring Well Decommissioning Policy” (NYSDEC 2009).

### **1.8.3.3 Hazardous Waste Requirements**

Investigation-derived waste (IDW) groundwater that will be generated during initial well redevelopment for the seven monitoring wells will be containerized and temporarily stored on site. An initial waste characterization will be conducted on the IDW groundwater to determine the applicable requirements that direct the proper management and disposition of the water. The analytical results will be used to verify that the IDW groundwater does not meet the definition of a Resource Conservation and Recovery Act (RCRA) Toxicity Characteristic (TC) hazardous waste as defined at Title 6 NYCRR Part 371.3e. Should the IDW groundwater meet the definition of a TC hazardous waste, this requirement would be applicable and the IDW groundwater will be managed in accordance with all applicable hazardous waste generator requirements at 6 NYCRR 372, which address accumulation, shipping, transportation, treatment, and disposal requirements.

### **1.8.4 Local Regulations**

Town of Colonie zoning regulations (Colonie 2007) apply to the site. As discussed in Section 1.4.1, the site is in the Industrial F municipal zoning district. The definition of the Industrial F District states that prohibited uses include “any use which produces radiation, light, smoke, fumes, or odors of a noxious or harmful nature carrying beyond the limits of the premises.” The following regulations from the *Code of the Town of Colonie* also apply to the site:

- Chapter 62-38 has prohibitions against blighted conditions, including unkempt lawns and overgrowth.
- Chapter 62-45 contains general requirements that include the maintenance of fencing, vegetation, and proper drainage:
  - All land must be kept free of dead or dying trees and accumulations of brush, shrubs, weeds, grass, stumps, roots, excessive and/or noxious growths, garbage, grass cuttings, trimmings, refuse or debris which would either tend to start a fire or increase the intensity of a fire already started or cause an unsightly condition, cause poisoning or irritation to people or animals or cause or tend to cause or enhance an unhealthy or dangerous or obnoxious condition on said property or on any adjacent or neighboring property. Grounds maintenance requirements for the site are described in Section 4.2.
  - Fences need to be kept in a “safe and substantial manner.” Site-specific fence maintenance requirements are described in Section 4.1.1.
  - Erosion control is mandated. All land shall be maintained so as not to alter the existing flow rates, peaks, quantities, or direction of storm drainage. The topography or surface quantities of an area shall not be modified so as to alter the water retention characteristics of the property. Maintenance of the storm drain system is described in Section 4.6.
  - Landowners are prohibited from allowing visibly turbid water from running into storm drains. Bare ground shall be vegetated to prevent the spread of dust. Waste water disposal is discussed in Section 3.6.6.
- Chapter 177 limits the cutting of mature trees (Colonie 2007). The term “mature” is not defined in the code and has no standardized definition.

## **2.0 Site Conditions**

The Colonie site has been identified as an LM Category 2 site. Category 2 sites typically include routine inspection, monitoring, maintenance, recordkeeping, and stakeholder support, in accordance with the *Legacy Management Site Management Guide* (DOE 2018c).

The Soil ROD stipulates the need for protective measures due to the presence of residual contamination. LM has completed environmental easements and a SMP due to the presence of inaccessible contaminated soil in three discrete areas. The SMP mandates the performance of annual site inspections and reporting.

The Groundwater ROD stipulates monitored natural attenuation (MNA) with the use of LUCs. The Groundwater ROD mandates periodic groundwater monitoring until cleanup criteria are met. Cleanup criteria are discussed in Section 2.5 and summarized in Table 2. There is currently a biennial (2-year) schedule of monitoring and sampling. Permanent LUCs are also mandated to restrict the use of groundwater and protect against the intrusion of VOC vapors into residences.

### **2.1 Site Description**

The site is currently a vacant lot, traversed by a gravel and asphalt road (Figure 5). Sewer, water and electric connections are available. A stand of aspen trees colonizes the southeastern corner of the site. There is a network of eight monitoring wells, one of which is inactive (Figure 6).

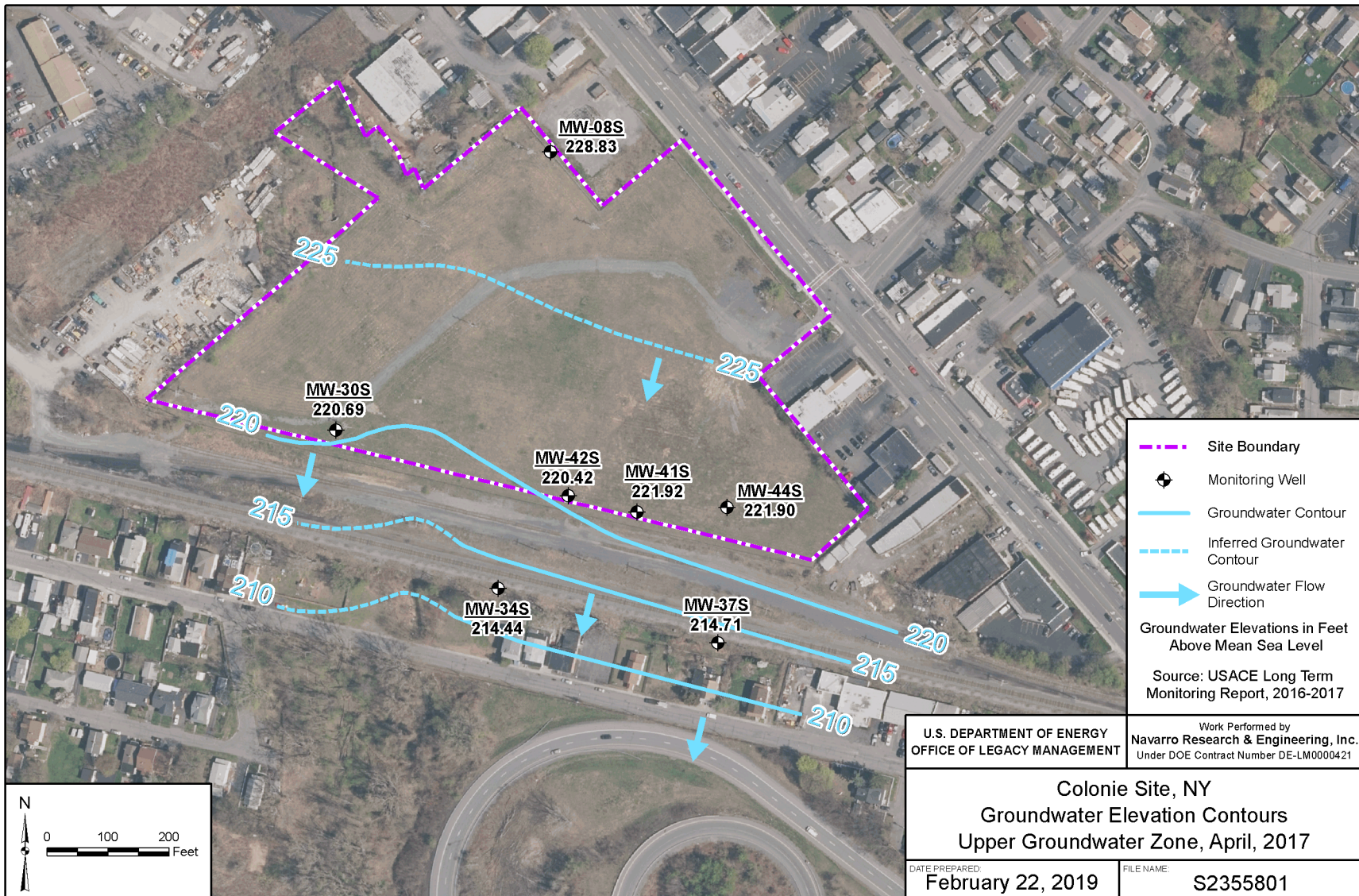


*Figure 5. View Across Site from Parking Area Looking South*

### **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 province 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).

Maximum topographic relief across the 11.2-acre site is about 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 from the northwest toward the south–southeast. A steep embankment exists between the CSX rail line, which parallels the southern site boundary, and the properties along Yardboro Avenue.

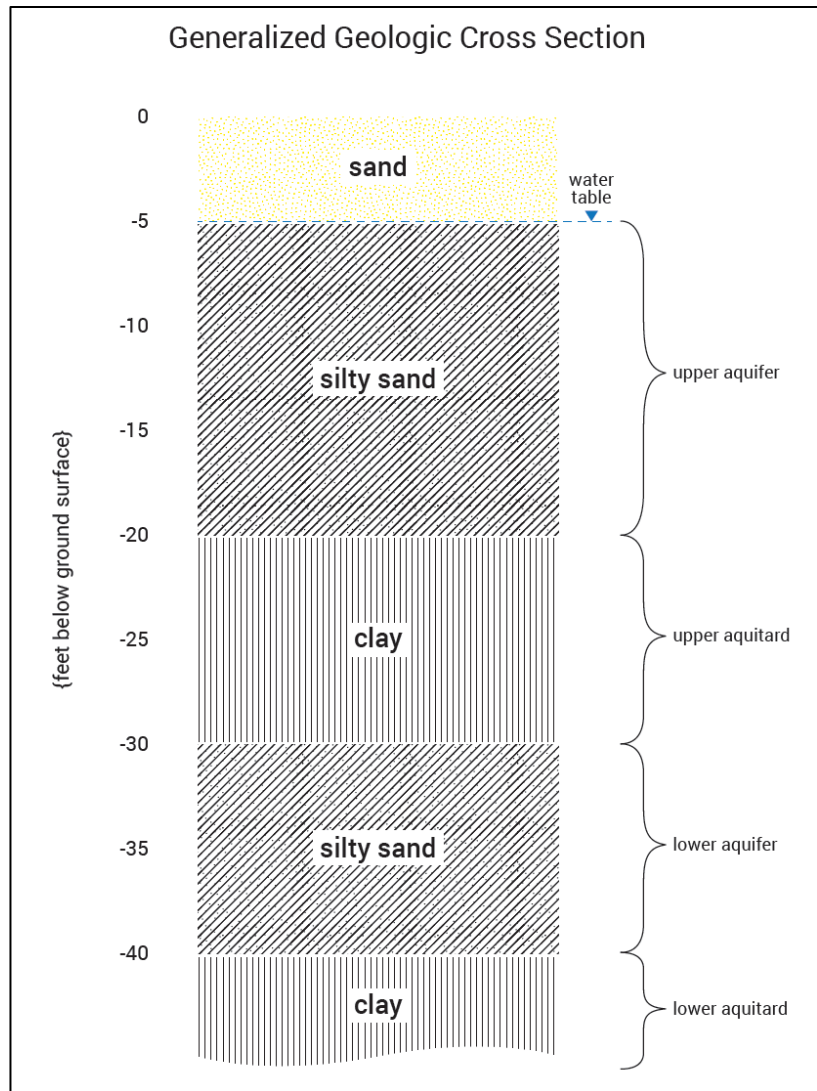


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Figure 6. Groundwater Elevation Contour Map

An unnamed tributary of Patroon Creek (a portion of which is in an underground culvert) crosses the site from the west to the south and east, ultimately discharging into Patroon Creek. The unnamed tributary (shown in 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 with 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 unit (also referred to as the upper aquifer) and the 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 an easily identified clay layer known as the upper aquitard that consists of a varied sequence of clay and silt that is 12–15 ft thick (Moore et al. 2014).



*Figure 7: Generalized Colonie Site Geologic Cross Section*

The upper aquifer is generally encountered at a depth of less than 10 ft below ground surface (bgs). 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 flow is generally to the southeast in both groundwater zones, as shown in Figure 6. There is an observable downward hydraulic gradient over the northern portion of the site, with localized upward hydraulic gradients near the unnamed tributary and Patroon Creek (USACE 2003).

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. The upper aquifer drains to the southeast toward the unnamed tributary of Patroon Creek.

### 2.3 Soil Contamination

In 1999, DOE initiated excavation work on the site, acting on plans developed in the 1995 Engineering Evaluation/Cost Analysis (EE/CA) report and the original Action Memorandum (DOE 1997). The EE/CA report and the 1997 Action Memorandum document selected Alternative 3B, “Moderate Excavation and Capping.” Due to site constraints and the local community’s resistance, the alternative was reevaluated when USACE assumed responsibility. The 1997 Action Memorandum was revised based on this reevaluation. The Revised Action Memorandum was finalized in October 2001 to document the subsequent selection of Alternative 2B, “Large-Scale Excavation and Disposal” (USACE 2001a). Removal activities were performed in accordance with the Revised Action Memorandum (USACE 2001a) and a Technical Memorandum (USACE 2001b), resulting 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 following cleanup criteria for the COCs in soil, which are shown in Table 2.

*Table 2. Target Cleanup Goals*

Contaminants of Concern	Target Cleanup Goals
<b>Soil</b>	
Uranium-238	35 pCi/g
Thorium-232	2.8 pCi/g
Lead	450 mg/kg
Copper	1912 mg/kg
Arsenic	7.4 mg/kg
<b>Groundwater</b>	
PCE	5.5 µg/L
TCE	18 µg/L
cDCE	1800 µg/L
VC	1.4 µg/L

**Note:**

Abbreviations are defined in the “Abbreviations” section in the front matter.

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. The areas where the metal-impacted soil was left in place are the areas where easements are required. The easement areas are further discussed in Section 2.4. With the completion of the removal action, the vast majority of contaminated soil was removed, disposed of offsite, and replaced with certified-clean backfill soil. No soil with radiological contamination was left above removal action goals after the cleanup (Shaw 2010).

### 2.4 Environmental Easement Areas

Inaccessible metal contamination remains in onsite soil in discrete areas, whereas the radionuclides of concern have been removed from the site entirely. The inaccessible metals contamination is limited to three small areas 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. Deep subsurface soils were not removed because there is not a complete exposure pathway to those soils.

The easement areas in the shallow subsurface with inaccessible soil contamination are survey units 104, 124, and North Lawn, as shown in Figure 3. The results of the January 2013 post-removal action sampling indicate that the layer of contamination at each of these shallow subsurface locations is less than a few feet thick (USACE 2013). A brief summary of each survey unit is provided below:

- **Survey Unit 104** (1.8 ft bgs) – arsenic at 85.4 milligrams per kilogram (mg/kg) (cleanup goal 7.4 mg/kg). The soil sample was located between active power poles. Additional vertical and horizontal excavation would impact power pole support soils.
- **Survey Unit 124** (5.3 ft bgs) – copper at 2450 mg/kg (cleanup goal 1912 mg/kg) and lead at 734 mg/kg (cleanup goal 450 mg/kg). The soil sample was located adjacent to an active power pole. Additional vertical and horizontal excavation would impact the power pole support soils.
- **North Lawn** (3.9 ft bgs) – copper at 4340 mg/kg (cleanup goal 1912 mg/kg) and lead at 3370 mg/kg (cleanup goal 450 mg/kg). The soil sample was located adjacent to the main fire hydrant for commercial and residential properties along Central Avenue. The local fire chief stated that full-time access to the hydrant was required, and additional excavation would impact the stability of the hydrant.

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 landfill operations occurred in the former Patroon Lake. These deep subsurface soils were not removed because there is no complete exposure pathway to those soils. In other words, these deep soils pose no harm to future residents or workers because future excavations into those soils are unlikely. The results of the January 2013 post-removal action sampling indicate that the layer of contamination at each of these deep subsurface locations ranges from less than a few feet thick to an approximate maximum thickness of 10 ft.

## **2.5 Groundwater Contamination**

Since 1984, multiple studies have been performed at the site to investigate hydrogeological conditions and evaluate the nature and extent of groundwater impacted by past operations. The upper (unconfined) groundwater zone has been impacted by historical releases of tetrachloroethene (PCE). A lower (confined) groundwater zone was investigated and determined to be uncontaminated. Information presented in the groundwater RI (USACE 2003) indicates that the areas of impact have expanded laterally 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 generally being reported in the areas where excavation and dewatering were performed during the soil removal action (USACE 2010).

The soil removal actions removed VOC source material from the site, which has been shown to improve groundwater quality. Groundwater sampling results have indicated a decrease in VOC

concentrations in groundwater subsequent to the soil removal action. The presence of 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 2016b; USACE 2017c; USACE 2017d).

The groundwater remedy includes a long-term groundwater monitoring program for the upper groundwater zone that will continue until natural environmental processes reduce the contamination to concentrations below cleanup levels (USACE 2017c). In 2017, USACE estimated that contaminants would achieve cleanup standards in 15 years based on Monitoring and Remediation Optimization System (MAROS) software modeling (USACE 2017c). LUCs will be developed to limit potential future residential exposure to VOCs, including deed restrictions against using groundwater for potable use.

Four chlorinated VOCs have been identified as COCs. Radiological COCs are no longer being monitored in site groundwater. The COCs and their TCGs are summarized in Table 2.

Currently, PCE concentrations are above the TCGs at only two onsite monitoring wells, MW-41S and MW-44S. The plume is stationary, encompasses a total area of roughly 1 acre, and has a leading edge that has receded over time. The ROD specifies that groundwater monitoring and sampling will continue until the concentrations recede to the TCG. The well network is primarily in the southeast portion of the site, as shown in Figure 8.

## **2.6 Vicinity Properties**

Remedial goals for each of the 56 VPs (shown in 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 Land Use Controls for Soil**

The LUCs are incorporated into an environmental easement that establishes the land use restrictions to be employed to ensure that the property is safe for its intended future use. The ICs for the Soil OU are also detailed in the SMP (DOE/USACE 2018). The SMP lists the following eight ICs:

1. The easement area may be used for restricted residential use.
2. Excavation restriction: No digging or excavation shall be permitted on the three easement areas without prior written approval of DOE and NYSDEC.
3. Data and information pertinent to site management must be reported at the frequency and in a manner as defined in the SMP.
4. All future activities that will disturb remaining contaminated material must be conducted in accordance with the SMP.





Figure 8. Monitoring Well Locations

5. Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP.
6. Maintenance, monitoring, inspection, and reporting of any physical component of the remedy shall be performed as defined in the SMP.
7. Access to the site must be provided to agents, employees, or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the environmental easement.
8. Vegetable gardens and farming are prohibited in the easement area.

## **2.8 Land Use Controls for Groundwater**

The selected remedy for the Groundwater OU is for MNA combined with LUCs (USACE 2010). The Groundwater ROD mandates that LUCs will be implemented with deed restrictions describing the LUCs that will be used to ensure that the property is safe for its intended future use. These controls would be designed to account for the potential future onsite residential land use by limiting potential exposure of hypothetical future onsite residents to contamination via the vapor intrusion pathway.

LM intends to emplace a permanent deed restriction to prohibit groundwater use for human consumption or irrigation.

Certain temporary deed restrictions will be needed before disposition of the site if the groundwater quality has not reached all of the TCGs. The temporary LUCs suggested in the groundwater ROD include:

- Mandating the installation of a subslab ventilation system for a residence built above the plume where any VOC exceeds its TCG.
- Mandating the periodic monitoring of indoor air.

## **2.9 Real Property Assets**

Real property and 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 has an annual validation of the condition of those assets. The most recent condition assessment survey was conducted in May 2017 (DOE 2018b). Prior to the transfer of the site from USACE, LM requests that USACE validate the list of real property assets that are present on an annual basis.

The site will be dispositioned for beneficial reuse. After disposition, only the wells and supporting fixtures will remain as government owned.

### **2.9.1 Real Property**

The main site located at 1130 Central Avenue in the Town of Colonie is owned by the United States of America and managed by LM. The main site consists of two adjacent lots that are designated on the tax map of the county clerk of Albany as tax map parcel numbers 53.11-1-13.2

and 53.11-1-14, which were conveyed to the United States of America by the two deeds: (1) an indenture dated February 28, 1984, and recorded in the Albany County Clerk's Office in Liber 2256 and Page 590; and (2) an indenture dated August 28, 1984, recorded in the Albany County Clerk's Office in Liber 2268, page 141.

**2.9.2 Other Structures and Facilities**

Other Structures and Facilities (OSFs) are any fixed real property improvements to land that are not classifiable as a building or real property trailer, for example, bridges, towers, roads, and fences. It also includes site utility systems used to generate or distribute any services such as heat, electricity, sewage, gas, and water (DOE 2019). There is a shed on the site, but it is not fixed to the ground, so it does not fit the definition of a fixed improvement and is included in this plan as personal property in Section 2.10. The LM Asset Management group currently tracks five OSF assets in FIMS. The real property assets are summarized below in Table 3 and are discussed in the following subsections.

*Table 3. Real Property Assets in the Facilities Information Management System*

<b>Property Name</b>	<b>Property ID</b>	<b>Year Built</b>	<b>Status</b>	<b>Overall Asset Condition</b>	<b>Mission Dependency</b>	<b>Usage Code</b>
Fence	CIS-OSFS-FENCE	2003	Operating	Adequate	Mission dependent, not critical	2429 Fencing
Monitoring Well System	CIS-OSFS-MWS	2012	Operating	Adequate	Mission critical	5007 Monitoring Well(s)
Parking Lot	CIS-OSFS-PARKINGLOT	1984	Operating	Adequate	Mission dependent, not critical	1789 Parking (Vehicular)
Road Tertiary	CIS-OSFS-ROADTERT	1984	Operating	Adequate	Mission dependent, not critical	1749 Tertiary Roads
Storm Drain System	CIS-OSFS-STORMDRNSYS	1984	Operating	Adequate	Mission dependent, not critical	8629 Piping, Gravity (Storm water)

**Source:** *Colonie Condition Assessment Summary Report* (DOE 2018d)

**2.9.2.1 Fence**

A total of 3720 linear ft of chain-link fence surrounds the site. The fence is on the property line on all sides except for along Central Avenue, where the fence is set 20 ft back from the property line. A total of 3440 linear ft of fencing is 6 ft high with three-strand barbed wire at the top; the remaining 280 linear ft of fencing is 8 ft high. The main entrance gate is 20 ft wide and 6 ft high; it is a sliding gate set along the west side of the north fence line (Figure 9). The site has two additional gates that are 6 ft high, one on the southwest fence line and one on the west side.



*Figure 9. Main Entrance Looking South from Central Avenue*

### **2.9.2.2 Monitoring Well Network**

There are seven active groundwater monitoring wells and one inactive monitoring well in the network (Table 4). Two of the active wells (MW-34S and MW-37S) and the inactive well (MW-30S) are on CSX property and cannot be accessed without prior notification and approval under an access agreement; the other five wells are onsite. (See Figure 6 for monitoring well locations.) All eight wells access the water-table aquifer and have nominal 2-inch diameters and depths of 13–22 ft. Monitoring well construction details are summarized in Table 4. All eight wells are enclosed in protective casings set in 2 ft diameter pads (Figure 10).

### **2.9.2.3 Parking Lot**

The parking lot is near the main entrance at the northeast corner of the site and consists of approximately 78 square yards of asphalt paving.

### **2.9.2.4 Road**

One 12-foot-wide tertiary road leads from the parking lot into the site toward the back gate. The road is 1050 ft long: The surface is gravel for about 900 ft and asphalt for about 150 ft. The gravel portion of the road is not elevated from the adjacent grade and is overgrown with weeds, and the paved portion has some deterioration. Both sections of the road were found to be in adequate condition, given the road's infrequent use. No maintenance needs were identified. The total size of paved areas is estimated to be approximately 0.5 acre.



*Figure 10. Monitoring Well MW-30S*

### **2.9.2.5 Storm Drain System**

A buried storm water drainage system on the west half of the site connects to a buried storm drain culvert that drains a portion of the town of Colonie. The system consists of 750 ft of buried water transmission pipelines and two catch basins (see Figure 3). There are two additional lines across the site: One is a 460-foot-long, 18-inch diameter line with a catch basin at its inlet on the north side of the site; the other is a 290-foot-long, 18-inch pipe with a catch basin at its inlet on the south side (Figure 11). Both secondary lines flow into a 4-foot-wide × 14-foot-long catch basin on the south side of the site.



*Figure 11. Catch Basin (7 ft × 14 ft)*

**UNCONTROLLED IF PRINTED**

Table 4. Colonie Site Monitoring Well Construction Information

Well ID	Well Installation Date	Coordinates <sup>a</sup>		Well Dia.	Top of Casing (TOC) Elevation (ft msl)	Ground Surface Elevation (ft msl)	Top of Screen		Pump Intake		Bottom of Screen		Well Total Depth <sup>b</sup>	
		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-32S <sup>c</sup>	12/11/2001	1405404.13	679670.41	2"	224.10	222.20	10.90	213.20	15.90	208.20	20.90	203.20	20.90	203.20
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	7/27/2015	1405456.27	679685.18	2"	225.09	223.20	13.89	211.20	18.89	206.20	23.89	201.20	23.89	201.20

**Notes:**

Abbreviations are defined in the "Abbreviations" section in the front matter.

<sup>a</sup> Coordinates Reference: New York State Plane NAD83 East Zone, US Foot.

<sup>b</sup> Well total depths are from boring logs/well construction diagrams prepared at the time of well construction.

<sup>c</sup> Well MW-32S exists but is no longer a part of the sampling program.

The storm drain system includes the unnamed tributary, which is an open drainage ditch that enters the northwest corner of the site in the “keyhole area” on the western boundary of the site. The ditch enters a culvert on town of Colonie property, and the culvert traverses underneath the site as a 320-foot-long, 48-inch diameter reinforced concrete pipe. This line continues underneath the CSX VP and daylight south of the railroad tracks. There are two unrecorded drainage easements that encompass the area of the town-owned storm drain; one easement is for the former Niagara Mohawk parcel and one is for the former National Lead parcel. The easements are described in Section 2.9.3.4.

### **2.9.3 Other Site Assets**

The following section describes real property site assets that are not entered in FIMS. Any operation and maintenance considerations are discussed in Section 4.0.

#### **2.9.3.1 Waterline**

There is a buried 6-inch waterline connected to the municipal water supply that runs in a southerly direction from Central Avenue onto the site for a distance of approximately 200 ft and ending at a hydrant. The hydrant was manufactured in 1998 and appears to be in good condition. The location of the hydrant is shown in Figure 3. The waterline traverses the North Lawn environmental easement area. These assets will be assessed during the next condition assessment.

#### **2.9.3.2 Mailbox**

A mailbox marked with the site’s municipal address is outside the fence at the main entrance. The mailbox is not actively used for mail delivery.

#### **2.9.3.3 Sheet Pile Wall**

A sheet pile wall was installed near the southerly property line by USACE during the remedial action. The location is shown in Figure 3. The approximate length is 150 ft. The sheet wall extends through the upper aquifer; it was installed to allow excavation to proceed as close as possible to the CSX rail line. It has no current use, needs no inspection or maintenance, and is not included in FIMS as an asset.

#### **2.9.3.4 Utility Easements**

There are six known utility easements associated with the site, which have been documented on the site survey. The list does not include the environmental easement for the soil OU since it is not a utility easement. The known utility easements are listed below:

- A telephone easement, 10 ft corridor along Central Avenue (recorded).
- A fencing and drainage easement for the former Niagara Mohawk parcel dated June 6, 1973, in favor of the Town of Colonie (unrecorded).
- A drainage easement for the former National Lead parcel, circa 1974, in favor of the Town of Colonie (unrecorded). The draft of the easement requires prior approval from the town before building in the easement area. The width of the easement area is 30 ft.

- A waterline easement along Central Avenue in favor of the Town of Colonie (unrecorded). There is a tee in the Town's waterline outside the fence line and a branched 6-inch waterline running in a southerly direction onto the site for a distance of approximately 200 ft and ending at a hydrant. Deed records indicate that the branching waterline and hydrant belong to the U.S. government.
- A power transmission line easement along Central Avenue (unrecorded).
- A power transmission easement traversing the site (unrecorded).

## **2.10 Personal Property Assets**

Personal property includes all property owned, rented, or leased by the government, such as office supplies, furniture, tools, equipment, and vehicles, except real property (land, rights to land, and permanent improvements to land). Accountable personal property is an asset with an acquisition cost of \$10,000 or more or is regarded as pilferable. Accountable personal property must be managed in the DOE property management system. There is no accountable personal property at the site. To ensure that government property is secure and controlled, a periodic inventory (e.g., wall-to-wall, random sampling, statistical sampling) will be performed of all accountable personal property including property identified as sensitive, high-risk, accountable, and other accountable will be performed (DOE Order 580.1-1A).

The following sections describe the personal property assets associated with the site.

### **2.10.1 Storage Shed**

A storage shed is near the main entrance, as shown in Figure 3. The shed is not fixed to the ground, which defines the asset as personal property rather than real property. It is constructed of wood and has an asphalt shingle roof. The dimensions are 8 ft × 10 ft. A disused pneumatic pump control panel is attached to the interior wall. The door is secured with a padlock. The shed will be used to store sampling supplies, and a spare submersible pump is in the shed. IDW storage drums will be kept in the shed when they are not in use.

### **2.10.2 Pneumatic Pumps**

Each well is equipped with a pneumatic submersible bladder pump. The pumps are constructed of polyvinyl chloride and have a nominal diameter for 2-inch wells. The installation depths of the pumps are shown in Table 4. The pumps are suspended in the wells with high-density polyethylene (HDPE) air and water tubing. A spare pneumatic bladder pump is stored in the shed.

### **2.10.3 Keys**

Asset Management maintains control of keys as part of the LTS&M umbrella *Site Security Plan* (LMS/POL/S11558). As discussed in Section 4.3, upon site transition, DOE locks will be installed on gates, wells, and shed. Security controls are described in Section 3.9.

#### **2.10.4 Signs**

USACE-emplaced signs on site fences identify the site as U.S. government property. There is also a sign at the entrance identifying the site as a USACE FUSRAP site. The U.S. government signs will be kept in place. Section 4.2 discusses the placement of DOE signage.



## **3.0 Long-Term Surveillance**

The LTS&M Plan has been developed to implement DOE-authorized procedures; identify and assign responsibilities; and present the documentation required for the monitoring, inspection, review, and reporting requirements.

### **3.1 Plan Revisions**

LM is responsible for the preparation, update, and implementation of 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&M activities described in this plan are managed by a project team, as shown in Figure 12. 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 Legacy Management Support (LMS) contractor site lead coordinates project support activities from the LMS functional groups and is responsible for implementing the scope, schedule, and budget decisions that are made by the site manager. Site contacts are shown in Table 5.

### **3.3 Community Outreach**

LM seeks to keep the community informed and involved in site activities and accomplishments through newspaper announcements, DOE fact sheets and newsletters, and attendance, when warranted, at public meetings. Below are site-specific community outreach activities.

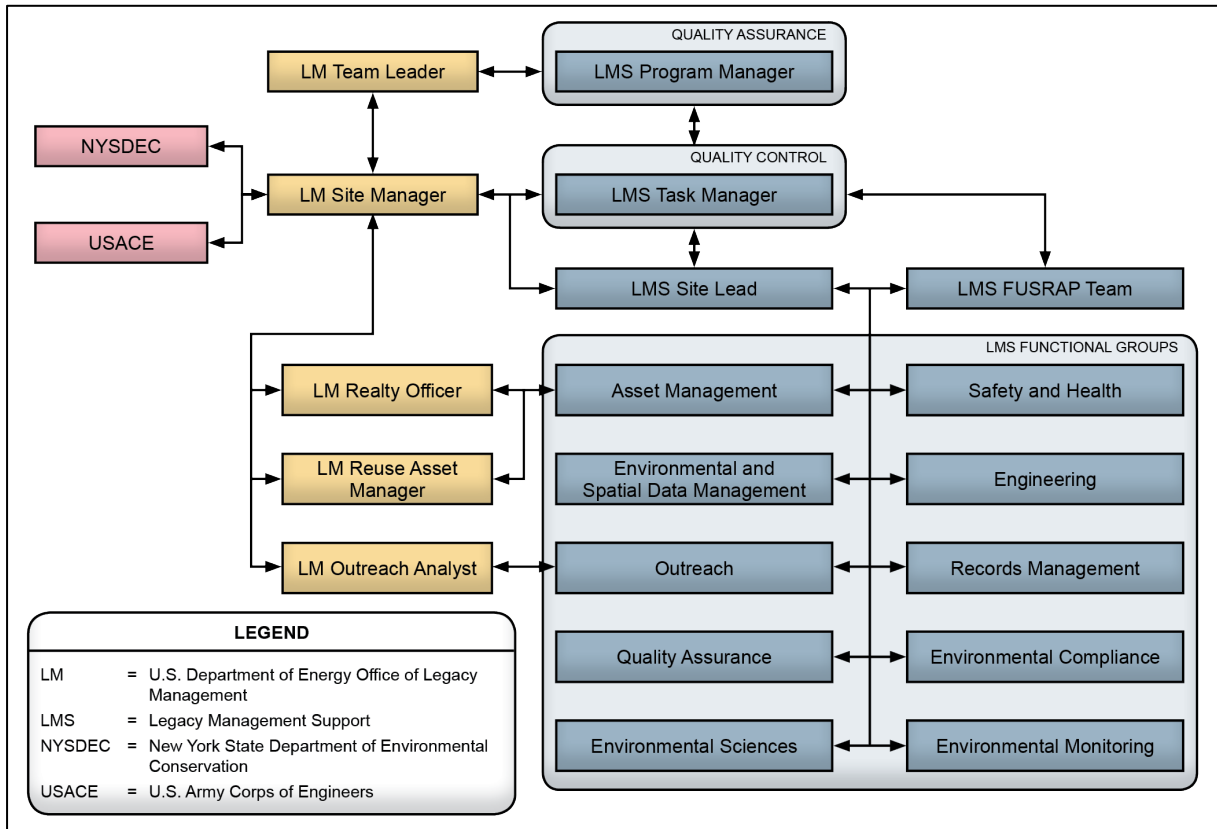
#### **3.3.1 Public Webpage**

LM's public webpage specific to the site will be published at the time of transfer and will be reviewed at least once a year. This webpage can be found at <https://www.energy.gov/lm/sites/lm-sites> and will include descriptive information, contact information, and access to site documents, including this plan.

#### **3.3.2 Information Sheets**

Protective measures for sites transitioning to LM can be identified to fulfill DOE's post-closure responsibilities and ensure the future protection of human health and the environment. The LM protective measures include the production of an LM site fact sheet. The fact sheet will be reviewed annually for updates.

The LMS contractor has produced information sheets describing the site disposition processes that are available to DOE.



*Figure 12. Colonie Site LTS&M Organizational Chart*

*Table 5. Colonie Site Contacts*

Name	Phone/Email Address
Site owner: DOE (LM)	970-248-6070 or 877-695-5322 <b>(emergency contact numbers)</b>
Site manager; Darina Castillo (LM)	720-377-3824 Darina.Castillo@lm.doe.gov
DOE realty officer: Bud Sokolovich	303-410-4810 Bud.Sokolovich@lm.doe.gov
Remedial party's representative: James T. Moore (USACE)	917-790-8230 James.T.Moore@usace.army.mil
NYSDEC DER project manager: John Abunaw	518-402-8776 John.Abunaw@dec.ny.gov
NYSDEC regional hazardous waste engineer: Andrew Fleck	518-357-2045 Andrew.Fleck@dec.ny.gov
Site lead/qualified environmental professional: Carl Young (LMS)	410-456-3415 Carl.Young@lm.doe.gov

### **3.4 Inspection of Institutional Controls**

The ICs for the soil environmental easement (listed in Section 2.7) will be monitored through annual site inspections. The inspector will use the checklist included in Appendix D to review site conditions. It is anticipated that the annual inspection will take place at the same time that other site visits or sampling events take place. The inspector will document and photograph any observed deficiencies or changes in site conditions, including the use of sketches or maps. Section I is for reporting about the inspection conditions and identifying the inspectors. Section II.1 of the inspection form is for reporting on changes in property use. Section II.2 is for reporting on any signs of excavation or contamination in the easement areas. Section II.3 is for reporting damage to the monitoring wells. Section III is for the evaluation of LUCs.

### **3.5 Groundwater Monitoring**

Groundwater sampling and analysis activities will be conducted according to the SAP. Consult the following website to obtain the latest revision: <https://www.energy.gov/lm/downloads/sampling-and-analysis-plan-us-department-energy-office-legacy-management-sites>. Site-specific sampling instructions are stated in a program directive that is included in a SAP appendix.

Plans for a monitoring event should note the following conditions:

- Monitoring and sampling are Type 3 Procedure-Based Activities under the LMS *Integrated Work Control Process* (LMS/POL/S11763).
- There are two actively monitored wells and one inactive well that are on CSX property. CSX property cannot be accessed without prior approval granted by CSX through its right-of-entry permit system. The procedure for entering CSX property is included as Appendix E.

#### **3.5.1 Frequency of Groundwater Monitoring**

USACE proposed biennial sampling in the 2016–2017 Annual Long-Term Groundwater Monitoring Report (USACE 2017d). LM will reevaluate the sampling schedule after reviewing the data from each sampling event. LM will use MAROS (or similar) software to evaluate MNA effectiveness. This software provides optimization routines to help determine the appropriate number of sample locations, sampling frequency, and laboratory analytes and uses statistical analysis tools to evaluate the plume stability condition and remedy performance. MAROS modeling indicates that a biennial (2-year) sampling schedule is optimal.

#### **3.5.2 Field Observations and Data Acquisition**

LM uses a paperless system, called the EQUIS (Environmental Quality Information System) Data Gathering Engine (EDGE) data collection software, to capture all information needed to document water sampling activities. EDGE data will be used at each water sampling location to record and document sample collection and identification, water level measurements, purge stability, field measurement data, sampling equipment used, field test-kit results, chain of custody information, and sampling personnel. EDGE will also be used to document instrument calibration and operational checks, daily safety meetings, well inspection and maintenance, and

well redevelopment. If EDGE cannot be used in the field, the appropriate hard-copy form (e.g., water sampling field data sheet) will be completed, and information will be transferred to the applicable EDGE form in the office. Desk instructions for the use of EDGE are found in the SAP.

Deviations from the procedures specified in this plan will be documented as a field variance comment in EDGE and included in the sampling trip report.

### **3.5.3 Laboratory Qualifications**

Analytical services are procured from commercial laboratories via a statement of work for analytical services as specified in the *Sample Management Plan* (LMS/PLN/S15849).

Commercial laboratories provide these analytical services in accordance with the DOD (Department of Defense) and DOE *Quality Systems Manual for Environmental Laboratories* (QSM) (DOE/DOD 2018) to ensure that data are of known, documented quality. The QSM provides specific technical requirements, clarifies DOE requirements, and conforms to DOE Order 414.1D Chg 1, *Quality Assurance*. The QSM is based on *Management and Technical Requirements for Laboratories Performing Environmental Analysis* (NELAC 2009).

The contract laboratory must additionally be certified by the National Environmental Laboratory Approval Program to perform environmental analyses on samples originating from New York state.

### **3.5.4 Groundwater Elevation Measurements**

Groundwater elevations will be measured in accordance with the procedures of the SAP (Section 3.1.1.4). This section summarizes those procedures.

- Groundwater elevations will be measured during each groundwater sampling event, at a minimum.
- Measurements will be recorded using EDGE software, as discussed in Section 3.5.2.
- Measurements will be made in decimal feet, with precision to the nearest 0.01 ft.
- Water level indicators will be decontaminated before and after use in each well, using the Level 2 decontamination protocol discussed in Section 3.1.5.2 of the SAP.

## **3.6 Groundwater Sampling**

Groundwater will be sampled for a combination of analytes, including VOCs, field parameters, and MNA parameters, as shown in Table 6, Table 7, and Table 8. Groundwater sample collection will be 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 I in Table 1 of the SAP, meaning that the wells will maintain a stable water level at a 100 milliliters per minute (mL/min) flow rate.

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Table 6. Well IDs and Analysis Parameters

Well ID	VOCs <sup>a</sup>	Stability Parameters <sup>b</sup>	MNA Parameters <sup>b</sup>
MW-08S	X	X	X
MW-30S	X	X	X
MW-32S	Not sampled		
MW-34S	X	X	X
MW-37S	X	X	X
MW-41S	X	X	X
MW-42S	X	X	X
MW-44S	X	X	X

**Notes:**

<sup>a</sup> The VOC parameters are PCE, TCE, cDCE, and VC.

<sup>b</sup> Field and MNA parameters are listed in Table 7.

Table 7. Analytical Methods/Quality Assurance Summary

Parameters (All are aqueous)	Analytical Method	Field or Lab	Primary Samples	Field Duplicate	MS	MSD	Equip <sup>a</sup> Rinsate	Trip <sup>b</sup> Blank	Number of Samples
<b>Contaminants of Concern</b>									
VOCs: PCE, TCE, cDCE, VC	SW 8260B	Lab	7	1	1	1	2	1	13
<b>MNA Parameters</b>									
Nitrate/nitrite	EPA 353.2	Lab	7	1	0	0	0	0	8
Nitrite	Hach 8153	Field	7	1	0	0	0	0	8
Iron(II)	Hach 8146	Field	7	1	0	0	0	0	8
Sulfate	EPA 300.0	Lab	7	1	0	0	0	0	8
Sulfide	SM 4500 S2 D	Lab	7	1	0	0	0	0	8
Methane	RSK-175	Lab	7	1	0	0	0	0	8
Total org carbon	SM 5310B	Lab	7	1	0	0	0	0	8
DO	SM 4500-O	Field	7	0	0	0	0	0	7
Temperature	SM 2550	Field	7	0	0	0	0	0	7
ORP	ASTM D1498-00	Field	7	0	0	0	0	0	7
<b>Well Stability Parameters</b>									
pH	EPA 9045C	Field	7	0	0	0	0	0	7
Specific conductance	SM 2510	Field	7	0	0	0	0	0	7
Turbidity	EPA 2130	Field	7	0	0	0	0	0	7
<b>Investigation-Derived Waste Parameters<sup>c</sup></b>									
RCRA list VOCs	EPA 8260B	Lab	1	0	0	0	0	0	1
RCRA list semiVOCs	EPA 8270B	Lab	1	0	0	0	0	0	1
RCRA list metals + U	EPA 6020A	Lab	1	0	0	0	0	0	1
<b>Totals</b>			<b>101</b>	<b>8</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>114</b>

**Notes:**

Abbreviations are defined in the "Abbreviations" section in the front matter.

<sup>a</sup> One rinsate blank will be collected if any nondedicated equipment needs to be used.

<sup>b</sup> One trip blank will be used for each shipment of VOC samples.

<sup>c</sup> Required by DOD/DOE Quality Systems Manual (2018), Table B-4.

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Table 8. Containers and Hold Times

Parameters (All are aqueous)	Analytical Method	Field or Lab	Number of Samples	MDL -or- Precision	Containers	Preser- vation	Hold Time
<b>Contaminants of Concern</b>							
VOCs: PCE, TCE, cDCE, VC	SW 8260B	Lab	13	1 µg/L	[3] 40 mL VOAs	HCl 4° C	14 days
<b>MNA Parameters</b>							
Nitrate/nitrite	EPA 353.2	Lab	8	±10%	[1] HDPE 250 mL	H <sub>2</sub> SO <sub>4</sub>	28 days
Nitrite	Hach 8153	Field	8	±10%	n/a	n/a	n/a
Iron(II)	Hach 8146	Field	8	±10%	[1] HDPE 125 mL	4° C	28 days
Sulfate	EPA 300.0	Lab	8	±10%	[1] HDPE 500 mL	NaOH/ ZnOAc	28 days
Sulfide	SM 4500 S2 D	Lab	8	±10%	n/a	n/a	n/a
Methane	RSK-175	Lab	8	10 µg/L	[3] 20 mL VOAs	HCl 4° C	14 days
Total org carbon	SM 5310B	Lab	8	1 mg/L	[1] HDPE 250 mL	H <sub>2</sub> SO <sub>4</sub> 4° C	28 days
DO	SM 4500-O	Field	7	±10%	n/a	n/a	n/a
Temperature	SM 2550	Field	7	±0.2° C	n/a	n/a	n/a
ORP	ASTM D1498-00	Field	7	±20 mV	n/a	n/a	n/a
<b>Well Stability Parameters</b>							
pH	EPA 9045C	Field	7	±0.2 SU	n/a	n/a	n/a
Specific conductance	SM 2510	Field	7	1 µS/cm	n/a	n/a	n/a
Turbidity	EPA 2130	Field	7	±2 %	n/a	n/a	n/a
<b>Investigation-Derived Waste Parameters</b>							
RCRA list VOCs	EPA 8260B	Lab	1	1 µg/L	[3] 40 mL VOAs	HCl 4° C	14 days
RCRA list semiVOCs	EPA 8270B	Lab	1	10 µg/L	[2] 1 L amber glass	4° C	7 days
RCRA list metals + U	EPA 6020A	Lab	1	4–40 µg/L	[1] 500 mL plastic	HNO <sub>3</sub> 4° C	180 days

**Note:**

Abbreviations are defined in the “Abbreviations” section in the front matter.

### **3.6.1 Investigation-Derived Waste**

IDW groundwater will be generated during each sampling event and when wells are redeveloped and purged before sampling. LM samplers have estimated that approximately seven drums of waste water will be generated during a 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 will not be allowed to enter storm drains. The applicable regulatory standards are NYSDEC *Technical & Operational Guidance Series 1.1.1: "Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations"* (TOGS 1998). The same standards are codified in New York Law under 6 NYCRR 703.

Process knowledge indicates that the IDW water will contain dissolved concentrations of uranium, PCE, TCE, cDCE, and VC. All of these contaminants occur at concentrations that are below the characteristics of hazardous waste. The IDW water will need to be stored temporarily onsite pending waste characterization and determination of disposition.

- IDW water will be stored in 55-gallon drums, which in turn will be stored in 85-gallon overpack drums as secondary containment. Drums will be stored on pallets to inhibit corrosion.
- The IDW water storage 85-gallon overpack drums will be labeled to identify them as IDW groundwater awaiting analysis and disposition. Labels must include the accumulation date. LM contact information will be placed on the drum (6 NYCRR 375-3.3[e]5).
- IDW water will not be stored onsite for longer than 90 days; otherwise, a waste storage permit may be required under New York law (6 NYCRR 373-1.1).
- LM will collect a composite grab sample of the IDW water and send it for analysis for the IDW parameters listed in Table 7. The LMS site lead or designee will complete a *Waste Profile Worksheet* form (LMS 1968) to document the sampling results.

The concentrations of one or more of the COCs may preclude its release to the ground surface. If the IDW contaminant concentration or any waste characteristic exceeds any of the standards in TOGS 1.1.1, it will be transported offsite for treatment and disposal by a licensed waste operator. The groundwater quality standards for the COCs are listed in Table 9. LM will provide a full account of the sampling, storage, and disposition of IDW in each long-term groundwater monitoring report.

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Table 9. New York Standards for Discharge of Groundwater

COC (CAS No.)	Target Cleanup Goal <sup>a</sup>	New York Standard <sup>b</sup>
Uranium (7440-61-1)	Not applicable	$3 \times 10^{-7}$ microcuries per mL <sup>c</sup>
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:**

Abbreviations are defined in the “Abbreviations” section in the front matter.

<sup>a</sup> Colonie Groundwater ROD (USACE 2010)

<sup>b</sup> NYSDEC standard for discharge of groundwater are listed in TOGS 1.1.1.

<sup>c</sup> 6 NYCRR 380-11.7 Table II: (natural uranium); equivalent to 450 µg/L.

LM will evaluate all of the waste characteristics against federal and state guidance. DOE Order 435.1 Chg 1, *Radioactive Waste Management*, ensures that all DOE radioactive waste is managed in a manner that is protective of worker and public health and safety and the environment. DOE Manual 435.1-1 Chg 2, *Radioactive Waste Management Manual*, further describes the requirements and establishes specific responsibilities for implementing DOE Order 435.1 for the management of DOE high-level waste, transuranic waste, low-level waste, and the radioactive component of mixed waste. By complying with New York State law for handling IDW water containing uranium, LM will also be in compliance with DOE orders. The uranium concentration in the IDW is not expected to exceed the federal maximum contaminant level.

### 3.6.2 Criteria for Terminating Monitoring

New York guidance explains that the monitoring plan should state when monitoring should be terminated (DER-10). The Groundwater ROD specifies that cleanup will be achieved when COC concentrations are below TCGs over four consecutive quarters, but these events no longer occur on a quarterly basis. LM will use MAROS software to evaluate the effectiveness of MNA and to provide statistical justification to propose altering sampling frequencies or ceasing monitoring.

### 3.7 Reporting Requirements

Reporting requirements are listed in the sections below and summarized in Table 10. A schedule for site inspections, sampling events, and reports is included as Figure 13.



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*Table 10. Summary of Colonie Site Reporting and Notification Requirements*

<b>Document</b>	<b>Frequency or Triggering Event</b>	<b>Accountability</b>	<b>Site Inspection Required</b>
<b>Reports</b>			
SMP update	As needed	NYSDEC/SMP	No
Site management report (soil ICs)	Annual	NYSDEC/SMP	Yes
Periodic review report (soil ICs)	5 years	NYSDEC/ROD/SMP	No
Long-term periodic review (groundwater)	5 years	NYSDEC/ROD	Yes
Long-term groundwater monitoring report (groundwater)	2 years	NYSDEC/ROD	Yes
<b>Notifications</b>			
Excavation notification (soil easement)	15 days advance notice	NYSDEC/SMP	No
Field activity associated with the remedial program	7 days advance notice	NYSDEC/SMP	No
Proposed changes in site use	60 days advance notice	NYSDEC/SMP	No
Corrective measures work plan	IC failure	NYSDEC/SMP	No
Notification to NYSDEC of potential change of ownership	60 days prior to change in ownership	NYSDEC/SMP	No
Notification to NYSDEC of change of ownership	15 days after change in ownership	NYSDEC/SMP	No
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
Notification to NYSDEC	Damage to remedial components	NYSDEC/SMP	No

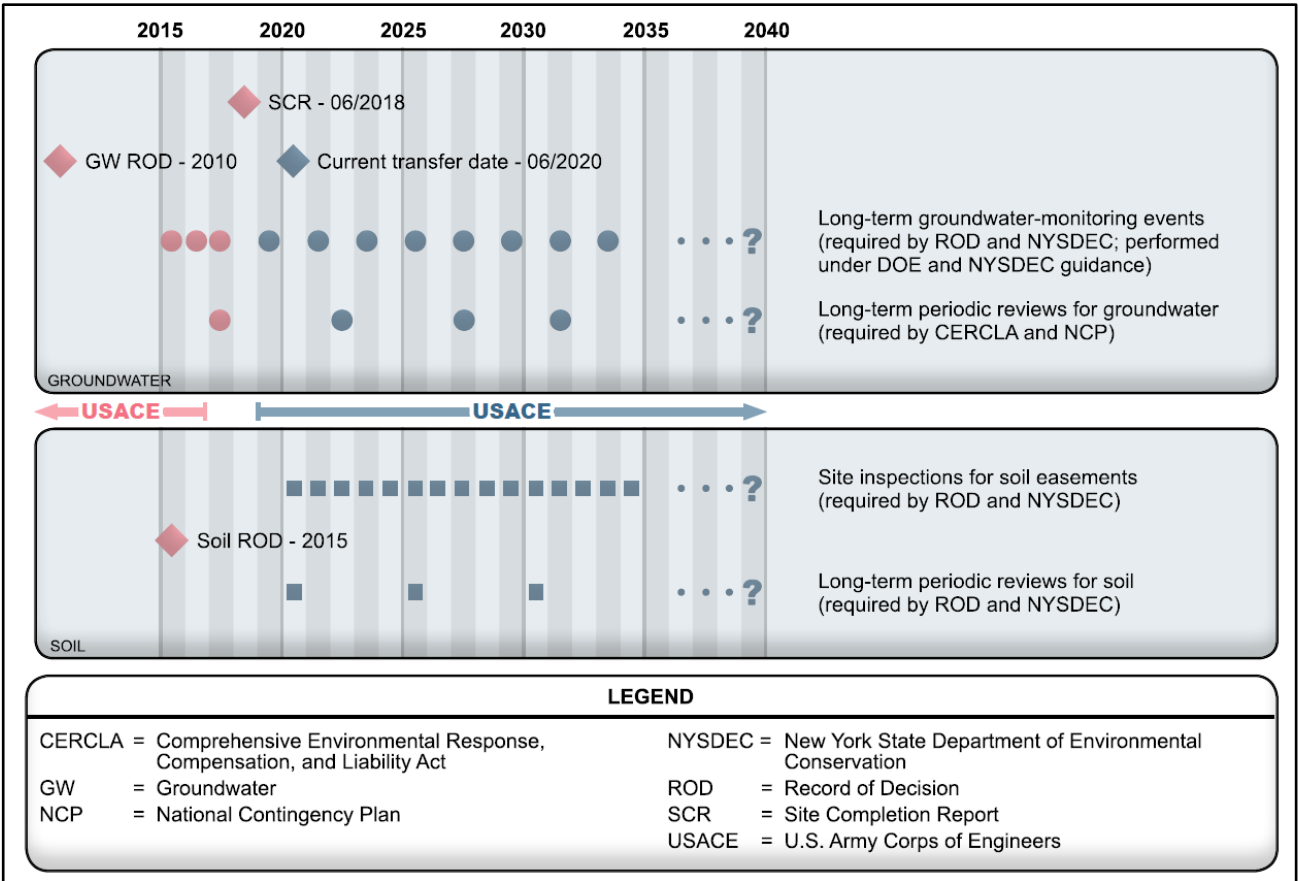


Figure 13. Colonie Site Schedule of Events

### **3.7.1 Long-Term Groundwater Monitoring Reports**

The long-term groundwater monitoring program will continue until the TCGs for COCs are achieved, as defined in the Groundwater ROD. The sampling interval approved by NYSDEC as of the date of transfer is biennial (once every 2 years). A long-term monitoring report will be completed to document each groundwater sampling event.

### **3.7.2 Long-Term Periodic Reviews for the Groundwater OU**

Long-term periodic reviews are required under CERCLA and the NCP as long as residual contamination remains above UU/UE conditions. Long-term periodic reviews will be required every 5 years for as long as any LUCs are in place. USACE completed the first Five-Year Review for the Groundwater OU in 2017 (USACE 2017c). The next long-term periodic review for the groundwater unit will be due in October 2022.

### **3.7.3 Notifications to NYSDEC**

Prior notifications will be submitted to NYSDEC, as needed, in accordance with NYECL for the following reasons:

- Excavation in the easement areas will require prior notification to NYSDEC
- 60-day advance notice of any proposed changes in site use that are required under the terms of 6 NYCRR 375) or the NYECL
- 7-day advance notice of any field activity associated with the remedial program
- 15-day advance notice of any proposed ground-intrusive activity in the easement areas, with the exception of emergency utility workers, 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/USACE 2018)

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 Real Property group have been provided a copy of the SMP and all final copies of plans and reports required under the SMP.
- Within 15 days after the transfer of all or part of the site, the new owner's name, contact representative, and contact information will be confirmed in writing to NYSDEC.

### **3.7.4 Site Management Reports**

Sitewide inspections will be performed annually and submitted to NYSDEC as site management reports. Modification to the frequency or duration of the inspections will require approval from NYSDEC. During these inspections, an inspection form will be completed as provided in the SMP (see Appendix D). Inspections of all physical components of the site will be conducted. Deficiencies will be photographed. Photographs will be logged using a *Digital Photograph and*

*Video Log* (LMS 2609) to locate and identify the feature of interest. A comprehensive sitewide inspection will be conducted and documented according to the SMP schedule, regardless of the frequency of the long-term periodic review. The inspections will determine and document the following:

- Compliance with requirements of the SMP and the environmental easement
- Compliance with LUCs
- Site conditions at the time of inspection
- Status of site records (whether they are complete and up to date)

### **3.7.5 Long-Term Periodic Reviews**

LM will inspect the site and review the soil easement ICs as part of a long-term periodic review that will be submitted to NYSDEC. The report will be prepared in accordance with NYSDEC's DER-10 and submitted within 30 days of the end of each reporting period. Media sampling results will be incorporated into the long-term periodic review. The report will include the following:

- Identification, assessment, and certification of all ICs required by the remedy
- Results of the required annual site inspections
- All applicable site management forms and other records generated for the site during the reporting period in NYSDEC-approved electronic format, if not previously submitted
- A site evaluation that includes the following:
  - The compliance of the remedy with the requirements of the site-specific ROD
  - Any new conclusions or observations regarding site contamination based on inspections
  - Recommendations on any necessary changes
  - An assessment of the overall performance and effectiveness of the remedy

### **3.7.6 Annual Site Environmental Reports**

Annual site environmental reports (ASERs) are required for sites that are under the stewardship of DOE (DOE Order 231.1B); therefore, an ASER will be required when LM assumes stewardship responsibilities for the Colonie site. ASERs are prepared annually for a calendar year and are due October 1 of the following year. LM does a scaled-down ASER that covers all applicable LM sites, projects, and programs together, and Colonie will be included in that document.

### **3.7.7 Asset Condition Assessments**

LM performs condition assessments of DOE-owned facilities on a 5-year periodic basis in conformance with DOE Order 430.1C. Condition assessments are managed and performed by the Asset Management team using a FUSRAP-assigned LMS engineer, who is supported by the LMS site lead. The last inspection before this plan was May 4, 2017. The next inspection would be performed in 2022. Inspections will need to be performed as long as the site is owned by DOE.

### **3.8 Health and Safety**

The Safety and Health Program that applies to LTS&M activities is based on 10 CFR 851, “Worker Safety and Health Program”; 10 CFR 835, “Occupational Radiation Protection”; DOE Order 458.1 Chg 3, *Radiation Protection of the Public and the Environment*; and other requirements as specified in the LMS contract. LTS&M activities are conducted in accordance with the *LMS Health and Safety Plan* (LMS/POL/S20043) and implementing procedures, established for LM sites. These procedures are consistent with DOE orders, regulations, codes, and standards.

Emergency management information specific to DOE work at the site are found in Appendix B, “Site-Specific Emergency Plan.” This plan contains a list of emergency telephone numbers and addresses for local fire departments, hospitals, ambulances, and police or sheriff departments, as well as a map to the nearest emergency medical facility. LM inspectors will carry a copy of the site-specific emergency plan and conduct and document a site safety briefing before conducting an inspection, sampling event, or other activities. A *Job Safety Analysis* form (LMS 1748) will be completed by the subcontractors to address hazards and mitigation methods for the work they will perform on the site.

LMS maintenance subcontractors are advised of health and safety requirements through appropriate procurement documents. Subcontractors are required to have a health and safety program that complies with U.S. Occupational Safety and Health Administration standards.

### **3.9 Security**

DOE Order 470.4B, Admin Chg 1, *Safeguards and Security Program*, Attachment 1, specifies that DOE offices and facilities must be protected. Minimum security standards for federally owned and leased facilities are specified in the Interagency Security Committee *Risk Management Process for Federal Facilities: An Interagency Security Committee Standard* (ISC 2016).

DOE directives do not require that site perimeters be fenced or that gates be installed at access points for security interests present at LM complex sites, but the *Site Security Plan* restricts access to DOE sites to authorized personnel only.

Section 229 of the Atomic Energy Act of 1954 as amended (42 USC 2278a), as implemented by 10 CFR 860, prohibits “unauthorized entry and unauthorized carrying, transporting, or otherwise introducing or causing to be introduced any dangerous weapon, explosives, or other dangerous instrument or matter likely to produce substantial injury to persons or damage to property into or upon any facility, installation, or real property subject to the jurisdiction, administration, or in the custody of DOE” (DOE Order 473.3A Chg 1).

The lock and key control requirements in DOE Order 473.3A Chg 1 require the Level IV categories be adhered to. These guidelines specify that keys must meet the American National Standards Institute standards and that a plan must be in place to quickly rekey or replace affected locks if a key is lost or stolen. A lock and key control procedure has been developed for the LM complex as a best management practice, and the following procedures must be followed:

- Site security representatives shall appoint key custodians responsible for all facility keys.

- Key custodians will store and secure all facility keys and maintain an accountability log. All keys will be numbered for accountability purposes.
- Keys will be signed out upon issue and signed in upon return, regardless of the length of issuance.
- Master keys will be issued only to authorized personnel by site security representatives.
- When keys must be made (due to loss or damage), key custodians will have the new keys numbered appropriately and then entered on the accountability log.
- If a key is lost or stolen, site security representatives must be notified within 24 hours.
- In the case of lost or stolen keys, site security representatives will determine whether or not the lock should be replaced.

Site-specific key control procedure is described in Section 4.1.3. LM uses a single key to secure most of its unoccupied sites and wells, and this key will be used at the Colonie site. The LMS site lead is the custodian of the site keys.

### **3.10 Emergency Response**

Emergency management requirements for DOE sites, facilities, and activities are governed by the *Comprehensive Emergency Management System* (DOE Order 151.1D). The order is implemented by the joint LM/LMS *Emergency Management Program Description* (LMS/POL/S14748). Unoccupied sites are served by the *General Emergency Plan for Unoccupied Sites and Activities* (LMS/POL/S20013), also called the General Emergency Plan, as well as by site-specific emergency response information found in Appendix B.

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

Damaging weather events could result in damage to real property assets, compromised security due to fence damage, or potential flooding caused by obstructions in the ditch on the west side of the site. As a contingency, if a damaging weather event occurs, LMS personnel or a local contractor will be sent to the site to inspect for damage. The inspection would take place only when travel in the area can be safely made.

Site-Specific Emergency Response Information has been developed, and a copy is included as Appendix B. The controlled copy of the plan is kept on the SharePoint site at <http://sp.lm.doe.gov/em/SitePages/Home.aspx>.

### **3.11 Records Management**

DOE maintains site surveillance and maintenance records in a central location at the Legacy Management Business Center located at Morgantown, West Virginia. These records have been selected because they contain critical information needed to ensure the continued management and follow-on actions and controls (including property management) required to protect public

health and the environment and demonstrate compliance with applicable legal requirements. This surveillance and maintenance record collection does not include information pertaining to employee or public safety and health issues with respect to former site operations.

Site records pertaining to the soil easement and associated inspections and reporting must be submitted to NYSDEC for periodic review as specified in the SMP (DOE/USACE 2018). LM will preserve the Administrative Record and Permanent Record. The Administrative Record will be accessible to the public through the site-specific webpage. The Permanent Record will only be accessible to the public through the process established to comply with the Freedom of Information Act and subject to limitations designed to protect personally identifiable information.

Most environmental monitoring data will be collected directly into electronic format onsite using the EDGE system. As a contingency, the *Water Sampling Field Data* form (LMS 1805) may be used. Site inspection forms will be scanned and stored electronically in compliance with the *Quality Assurance Manual (QAM)* (LMS/POL/S04320). Electronic copies of site inspection forms will be submitted to Records Management for archiving and also will be saved on the project SharePoint site for reference.

### **3.12 Environmental Data Management**

LM stores laboratory and field-acquired electronic data deliverables in an EQuIS database. Electronic data deliverables will be supplied to NYSDEC in EQuIS format as specified on the NYSDEC website: <https://www.dec.ny.gov/chemical/62440.html>.

### **3.13 Quality Assurance**

The LTS&M of the site will comply with the *Quality Assurance Program Description* (LMS/POL/S13806), which is based on DOE Order 414.1D, and on the International Organization for Standardization (ISO) 9001 *Quality Management Systems – Requirements*. Quality assurance requirements are transmitted to subcontractors through procurement documents when appropriate.

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## **4.0 Site Inspection and Maintenance**

The site will be inspected on an annual basis to assess the condition of all of the real property and personal property assets and the condition of the grounds. The site lead will prepare an annual site management report (Section 3.7.4) describing the results of the inspection, including a summary of site conditions and recommendations to resolve any deficiencies.

A site inspection form is included in the SMP (and a copy of included as Appendix D of this plan) that will be completed to comply with the soil easement requirements.

### **4.1 Fencing**

As part of the annual site inspection, the fencing will be inspected annually. Inspectors will walk along the entire length of the fence from the interior of the site. Deficiencies will be described and photographed. Deficiencies include the following:

- Missing or damaged fence components, including gates and locks
- Excessive corrosion of fence components
- Trees or vegetation either contacting or damaging any fence component
- Erosion or other soil loss that would allow human access
- Indications of vandalism or unauthorized entry

As a real property asset, the fence will be inspected by an LMS engineer as part of the condition assessments.

### **4.2 Signs**

Signs will be placed at the two drive-in entrances that identify the site and show the DOE 24-hour phone number. Additionally, signs will be posted at all other entrances prohibiting entry by unauthorized personnel, identifying unauthorized activities, and describing general security and safety requirements. Signs will be inspected annually. Inspectors will describe and photograph any indications of damage, corrosion, or vandalism. The plan for the placement of signage is shown in Figure 14, and pictures of the signs are shown in Appendix C.

### **4.3 Locks**

LM uses a common key for gate padlocks across multiple sites and a separate common key for monitoring wells. The storage shed will be secured with the same padlock that is used on the monitoring wells. An additional padlock will be attached to the chain locking the front gate for the use of maintenance vendors. Vendors cannot be issued an LM common key. Contractors will be given site-specific keys.

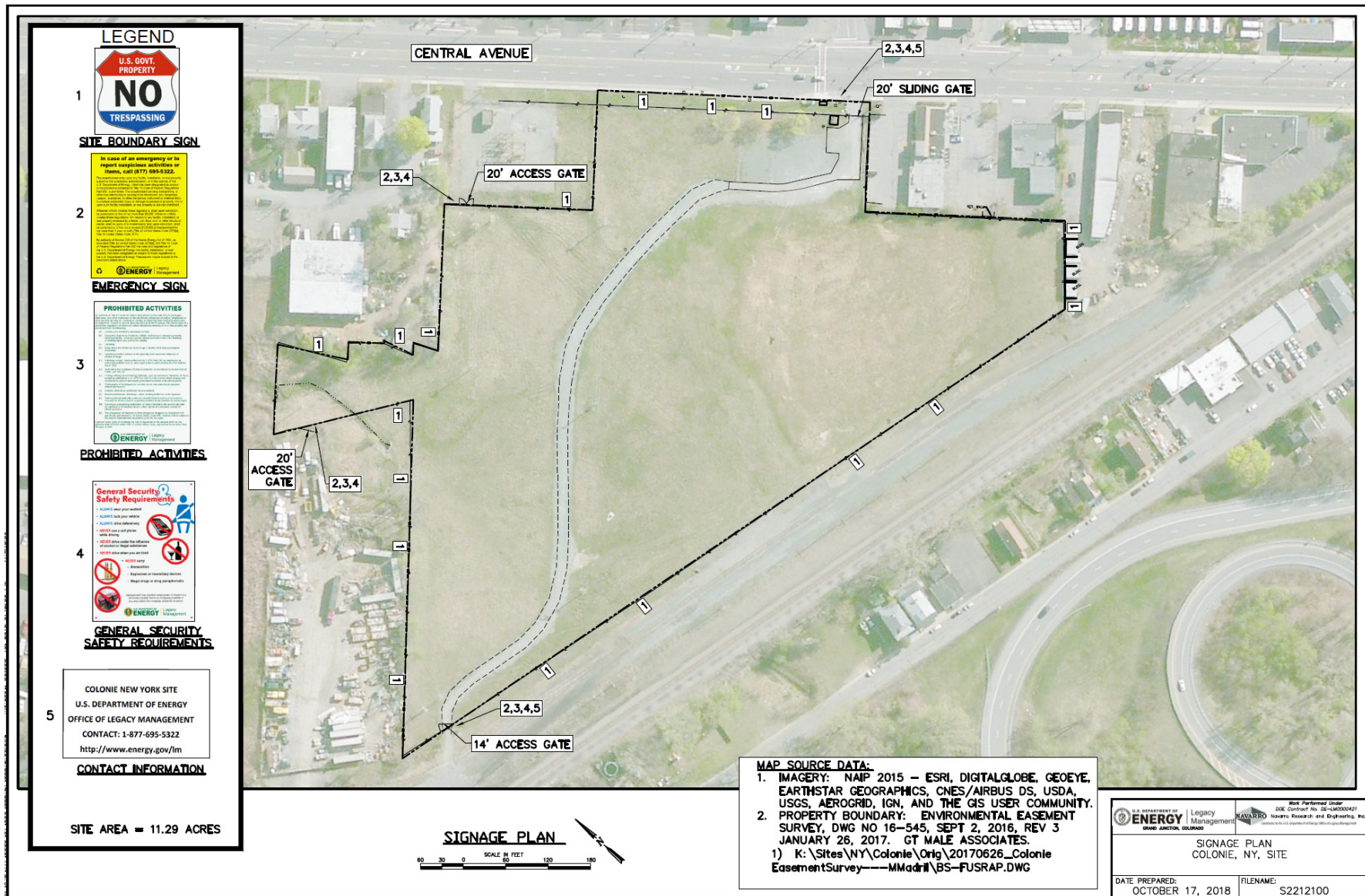


Figure 14. Signage Plan for the Colonie, New York, Site

#### **4.4 Vegetation**

The site is in an urban setting in view of a major street (Central Avenue) and nearby residences. USACE reports that the Colonie Fire Department has asked that the grass be mowed periodically as a precaution against fires. In consideration of these factors, the grass areas will be mowed monthly during the growing season, which is April through October (7 months).

The grass on the outside of the fence along Central Avenue will be mowed as well, since the fence is set 20 ft back from the property line there, as shown in Figure 3. The fence is set on the property line in all other locations; there can be no mowing outside the fence at any other location. On a twice-monthly basis the grass along Central Avenue will be mown and the fence line will be trimmed. Any trash from this area will be picked up and disposed of at a licensed landfill. The grass within the fence line will be mown on a monthly basis, and the areas around the monitoring wells will be trimmed. No herbicides or pesticides may be applied.

#### **4.5 Roads**

The roads are in fair to poor condition. No maintenance activities are anticipated for the roads.

#### **4.6 Storm Drain System**

The storm drain system consists of three catch basins connected by buried 18-inch reinforced concrete pipe (Figure 3). The storm drain system drains to the town's buried culvert. The storm drain system will be inspected annually by observing the inlets for blockage or signs of damage or misplaced or missing grates. Any deficiencies will be logged and photographed.

#### **4.7 Onsite Water Service and Fire Hydrant**

The water service consists of a buried waterline terminating in a fire hydrant on the northeast part of the property, shown in Figure 3. The fire hydrant will be inspected yearly for signs of leakage, damage, or corrosion. Inspections will be logged and photographed, and appropriate corrective action will be performed as necessary.

#### **4.8 Environmental Easement Areas**

The easements areas will be inspected at least once a year to verify that no unauthorized excavation, including gardening, has occurred and that the usage otherwise complies with the limitations of the LUCs. The inspector will use the form provided in the SMP, a copy of which is included in Appendix D of this plan.

In accordance with the SMP, if an institutional or engineering control fails within easement areas, the owner will propose follow-up actions to correct the deficiencies. If such failure is identified, a corrective measures work plan will be submitted to NYSDEC for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency exists, no work will be performed pursuant to the corrective measures work plan until it has been approved by NYSDEC. However, nothing in this

section shall limit or otherwise affect DOE's rights to take response actions under CERCLA, NCP, or other federal law, whether DOE is owner or not, pursuant to FUSRAP.

## **4.9 Monitoring Wells**

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

### **4.9.1 Well Redevelopment**

Monitoring wells will be redeveloped periodically. The need for well redevelopment will be evaluated during sampling events by monitoring the purge water for biological growth and turbidity levels. Because the history of well network redevelopment is unknown, all of the wells in the active network will be redeveloped before the first LM sampling event. Procedures for redevelopment are discussed in the *Guidance for the Inspection and Maintenance of Groundwater Monitoring and Extraction Wells*.

### **4.9.2 Well Inspection**

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

### **4.9.3 Well Decommissioning**

Monitoring wells may be decommissioned when they are damaged or 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 CP-43 (NYSDEC 2009).

## **4.10 Other Assets**

This section concerns the maintenance of minor assets or personal property that is not accountable to LM. These assets will be tracked on a Personal Property Inventory workbook that is stored on the site SharePoint directory. None currently exist.

### **4.10.1 Submersible Pumps**

The status of the submersible pumps will be tracked in the Personal Property Inventory workbook. Sampling technicians will note the condition of the pumps during well development and sampling events. The objective of tracking the pumps is to anticipate maintenance and replacement requirements. The LMS site lead will be responsible for updating the inventory after each field event.

#### **4.10.2 Storage Shed**

The storage shed houses spare parts and consumable items used for sampling or site maintenance. The status of the storage shed is tracked in the Personal Property Inventory workbook.

#### **4.10.3 Mailbox**

Vacant lots do not require mailboxes and the site is not occupied; therefore, the mailbox serves no purpose. From the standpoint of sustainability, the mailbox could be left in place so that its disposal does not generate waste. The mailbox may also be useful for a future owner. The U.S. Postal Service will be directed to forward mail to the LM site manager.

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

6 NYCRR 703 et seq., “Water Quality Standards,” as amended, *New York Codes, Rules and Regulations*.

6 NYCRR 803 et seq., “Prevention and Control of Environmental Pollution by Radioactive Materials,” as amended, *New York Codes, Rules and Regulations*.

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

10 CFR 851. U.S. Department of Energy, “Worker Safety and Health Program,” *Code of Federal Regulations*.

10 CFR 860. U.S. Department of Energy, “Trespassing on Department of Energy Property,” *Code of Federal Regulations*.

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

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

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

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*General Emergency Plan for Unoccupied Sites and Activities*, LM-Plan-3-20-11.0, LMS/POL/S20013.

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

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

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**Appendix A**

**NYSDEC Requirements Crosswalk**

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<p align="center"><b>NYSDEC DER-10/Technical Guidance for Site Investigation and Remediation, codified in 6 NYCRR 375 et seq.</b></p>	<p align="center"><b>Equivalents in This Plan</b></p>
<p><b>2.1(a)5:</b> Analysis must be conducted by a laboratory that is accredited pursuant to the New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP) for the category of parameters analyzed.</p>	<p>Included in the program directive. All three LM-contract labs have overlapping certifications.</p>
<p><b>2.1(a)5b:</b> Laboratory analytical methods: Samples collected by the remedial party will be analyzed by an analytical method included in the most current DEC Analytical Services Protocol (ASP)...</p>	<p>All three LM-contract labs have approved methods that are anticipated for use.</p>
<p><b>2.1(a)5b3:</b> The method selected must achieve a detection limit or minimum reporting limit that is below the applicable cleanup level for all contaminants ...</p>	<p>Analytical detection limits are specified in the plan.</p>
<p><b>2.1(a)5c(g):</b> Alteration of groundwater samples collected for metals analysis.  <b>1.</b> Provision for the alteration of groundwater samples (filtration as defined in Section 2.4) for metals analysis is only acceptable when the rationale for any proposed filtration is prepared in accordance with this subdivision and, if a field decision, must be reviewed and approved in accordance with subdivision 1.6(d) by the DER project manager prior to any filtration of samples.  <b>2.</b> Alteration of groundwater samples will not be approved unless the following conditions can be documented:  <b>i.</b> the target turbidity level of 50 NTUs for development and sampling of groundwater monitoring well is or will be exceeded;  <b>ii.</b> the well(s) being sampled was (were) properly designed, installed, constructed, developed, maintained and sampled;  <b>iii.</b> attempts have been made to repurge and/or redevelop the well; and  <b>iv.</b> replacement of the well(s) with documentation of proper well construction and installation where necessary, has been considered and is not justified.</p>	<p>(Former) wells MW-38S, MW-39S, and MW-41S often have turbidity exceeding 50 nephelometric turbidity units (NTU).</p>
<p><b>6.</b> The procedures (including quality control and quality assurance) specified in the ASP analytical method must be followed unless an alternate procedure is included in the approved work plan.</p>	<p>The DOE contract lab will have DOECAP certification and will have New York State certification for the analyses used.</p>
<p><b>2.1(a)5 (g):</b> Alteration of groundwater samples collected for metals analysis...  <b>5.</b> When analyzing the samples:  <b>i.</b> if the unfiltered sample does not exceed Site Cleanup Goals (SCGs), there is no need to analyze the filtered sample; and  <b>ii.</b> if there is a question whether metal contaminants are naturally occurring or were introduced through human-made activities, upgradient and background wells may be sampled using the same procedure, with best efforts made to obtain an uncontaminated sample of the horizon which is being screened, to allow a comparison.</p>	<p>Metals are not included in the analysis list. A filtered sample can be collected but needs to be compared to an unfiltered split.</p>

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<p align="center"><b>NYSDEC DER-10/Technical Guidance for Site Investigation and Remediation, codified in 6 NYCRR 375 et seq.</b></p>	<p align="center"><b>Equivalents in This Plan</b></p>
<p><b>2.2 (a)1.(4)</b> samples to determine closure of a system pursuant to sections 6.4 and/or 6.5... ii. must include the preparation of a Data Usability Summary Report (DUSR) prepared by a party independent from the laboratory performing the analysis for all samples when Category B data deliverables are provided. This party must also be independent from any direct involvement with the project, e.g. Project Manager or property owner. The required content of a DUSR and qualifications for the person preparing the DUSR are detailed in Appendix 2B.</p>	<p>Not applicable; these are provisions for requiring the use of an independent third party to prepare a data usability summary report before closing a remediation system.</p>
<p><b>2.3(c)2.</b> Duplicate and matrix/matrix-spike duplicates are required at a frequency of 1 per 20 samples. Aqueous trip blanks are required at the same frequency for samples that are to be analyzed for volatiles. Field and/or rinsate blanks <b>may</b> also be required at the same frequency.</p>	<p>QC samples and splits are all used at 5% frequency. Aligns with LM SAP.</p>
<p><b>2.4 Quality Assurance Project Plan</b>  <b>(a)2i.</b> the project scope and project goals as well as how the project relates to the overall site investigation or remediation strategy;  <b>ii.</b> project organization, including the designation of a project manager, QAO and field analyst (if field analysis is planned). Resumes of these individuals must be included;  <b>iii.</b> sampling procedures, data quality usability objectives and equipment decontamination procedures;  <b>iv.</b> site map showing sample locations;  <b>v.</b> an “Analytical Methods/Quality Assurance Summary Table” which must include the following information for all environmental, performance evaluation and quality control samples: (1) matrix type; (2) number or frequency of samples to be collected per matrix; (3) number of field and trip blanks per matrix; (4) analytical parameters to be measured per matrix; (5) analytical methods to be used per matrix with minimum reporting requirements; (6) number and type of matrix spike and matrix spike duplicate samples to be collected; (7) number and type of duplicate samples to be collected; (8) sample preservation to be used per analytical method and sample matrix; (9) sample container volume and type to be used per analytical method and sample matrix; and (10) sample holding time to be used per analytical method and sample matrix; and  <b>vi.</b> a detailed description of sampling methods to be used and sample storage in the field.</p>	<p>The LTS&amp;M Plan addresses quality assurance issues, supported by the LM SAP and LM QAM.  <b>i:</b> see Section 1.1  <b>ii:</b> see Section 3.2  <b>iii:</b> these are addressed in the SAP  <b>iv:</b> see Figure 7   <b>v:</b> see Tables 4, 5, 6 and 7  <b>vi:</b> these are addressed in the SAP</p>
<p><b>2.4(c)</b> Analytical data must be provided in an electronic format in accordance with Section 1.15.</p>	<p>Electronic deliverables will be submitted using the EQuIS format.</p>
<p><b>2.4(d)</b> Quality assurance glossary. Quality assurance terms and definitions presented in this subdivision must be used in preparing all documents related to quality assurance or control.</p>	<p>The terms and definitions used in the guidance are the same as those used in this plan and in the SAP.</p>



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<p align="center"><b>NYSDEC DER-10/Technical Guidance for Site Investigation and Remediation, codified in 6 NYCRR 375 et seq.</b></p>	<p align="center"><b>Equivalents in This Plan</b></p>
<p><b>3.3(e)5</b> Investigation generated water/fluid handling and disposal. Water/fluid generated during an investigation: ii. ... may be stored on-site in labeled containers in an area with secondary containment awaiting treatment and/or disposal, in accordance with applicable DEC waste management regulations (e.g., 6 NYCRR Parts 360, 364 and the 370 series) or other provisions approved by DER. The contents of the containers will be (1) properly treated or disposed of when any of the following are observed:                      (A) visual evidence of contamination, consisting of discoloration, sheens, free product or NAPL;                      (B) olfactory evidence of contamination; or (C) concentrations of contaminants above groundwater standards at levels of concern are known to be present in the monitoring wells, based on previous sampling of the groundwater; or                      (2) if none of the conditions described in clause ii.(1) apply, the containerized water may be:                      (A) recharged to unpaved ground into the same groundwater unit, within or directly adjacent to a source area in a manner which does not result in surface water runoff, with DER approval;</p>	<p>Both Section 3.6.1 of the plan and the site-specific program directive address IDW, and these sections conform with the listed guidance.</p>
<p><b>6.1 Site Management (a)3.</b> A site will have only one SMP which will encompass all site management activities identified by the remedy or remedies (including IRMs) selected for the site. The only exception would be a BCP site remedial program implemented by a volunteer, where off-site contamination has been determined to represent a significant threat as set forth in 6 NYCRR 375-3.7.</p>	<p>A single SMP addresses LUCs. The SMP is supplemented by the LTS&amp;M Plan.</p>
<p><b>6.2.2. Monitoring Plan (a)1.</b> The plan should identify the requirements for: ... iii. assessing achievement of remedial action objectives; iv. evaluating site information periodically, to confirm that the remedy continues to be effective protecting public health and the environment; v. sampling and analysis of appropriate media; and                      vi. preparing the necessary reports of the results of this monitoring.</p>	<p>Section 3.6.2 addresses the criteria for achievement of the remedial action objectives.                      Long-term monitoring reports will evaluate site information and the effectiveness of the SAP.                      Long-term periodic reviews are specified to evaluate the effectiveness of the remedy, adequacy of the sampling design, and necessary reporting.</p>
<p><b>6.2.2(a)2.</b> For specific remedies, as described in paragraphs (c) 3 through 6 below, the plan may also need to include provision for: i. evaluating monitored natural attenuation; ii. plume management monitoring; ... and iv. trend analysis.</p>	<p>Long-term monitoring reports will evaluate MNA effectiveness, plume management, and trend analysis.</p>
<p><b>6.2.2(c)1.</b> Effectiveness monitoring requirements: ... iii. groundwater should be characterized as to its temperature, pH, conductivity, turbidity and, where appropriate, indicator parameters for monitored natural attenuation at the site...</p>	<p>The plan requires characterization of the six well stability parameters plus MNA parameters.</p>

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<p align="center"><b>NYSDEC DER-10/Technical Guidance for Site Investigation and Remediation, codified in 6 NYCRR 375 et seq.</b></p>	<p align="center"><b>Equivalents in This Plan</b></p>
<p><b>6.2.2(c) 3. Effectiveness monitoring requirements for monitored natural attenuation (MNA).</b> For a remedy with an MNA component, a groundwater monitoring program should be implemented to monitor groundwater plume characteristics, horizontal and vertical contaminant migration and related controlling processes, in accordance with the USEPA guidance for MNA, OSWER Directive 9200.4-17 Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites (November 1997).</p>	<p>The plan includes MNA evaluation requirements that conform with OSWER Directive 9200.4-17.</p>
<p><b>6.2.2(d)1.</b> A monitoring plan should include the: <b>i.</b> identification of the sampling points; <b>ii.</b> analytical method(s) protocol; <b>iii.</b> qualifications of the laboratory; <b>iii.</b> frequency of sampling; <b>iv.</b> sample collection protocols; <b>v.</b> sampling, reporting and quality assurance/quality control requirements pursuant to Chapter 2; <b>vi.</b> process for reporting and addressing migration of contaminants to sentinel wells or other compliance monitoring points; <b>vii.</b> protocols for modifying the plan by expanding or removing monitoring points; and <b>viii.</b> protocols for determining when or if, the required monitoring of media subject to the plan may be terminated.</p>	<p><b>i.:</b> see Table 6  <b>ii.:</b> see Table 7. Sample collection methods are in the SAP.  <b>v.</b> Quality assurance/quality control requirements are contained in the QSM.</p>
<p><b>6.2.2(d)2. A HASP</b> for the monitoring identified in paragraph 6.2.1(b)4 is required and is to be prepared in accordance with subdivision 1.9(c).</p>	<p>LM uses the <i>LMS Health and Safety Plan</i> (LMS/POL/S20043) as specified in Section 3.8. A task-specific job safety analysis is included as Appendix C of the SAP. Site-specific emergency response is addressed in the emergency response plan, included in Appendix B of this plan.</p>
<p><b>6.2.2(d)3. 3.</b> The monitoring plan should also include provision for:  i. the inspection and maintenance of groundwater monitoring wells, extraction wells or other permanent compliance monitoring points (e.g., soil vapor probes); and  ii. decommissioning of groundwater monitoring wells, extraction wells or other permanent compliance monitoring points, by the remedial party or site owner:  <b>(1)</b> when DER determines they are no longer necessary for monitoring the remedy; and <b>(2)</b> in accordance with the procedures set forth in the applicable guidance, CP-43, “Commissioner Policy on Groundwater Monitoring Well Decommissioning.”</p>	<p>Inspections, maintenance, and decommissioning of monitoring wells are addressed in Section 4.9.</p>

**Note:**

Abbreviations used in this appendix are defined in the abbreviations section at the beginning of the LTS&M Plan.

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## **Appendix B**

### **Site-Specific Emergency Plan**

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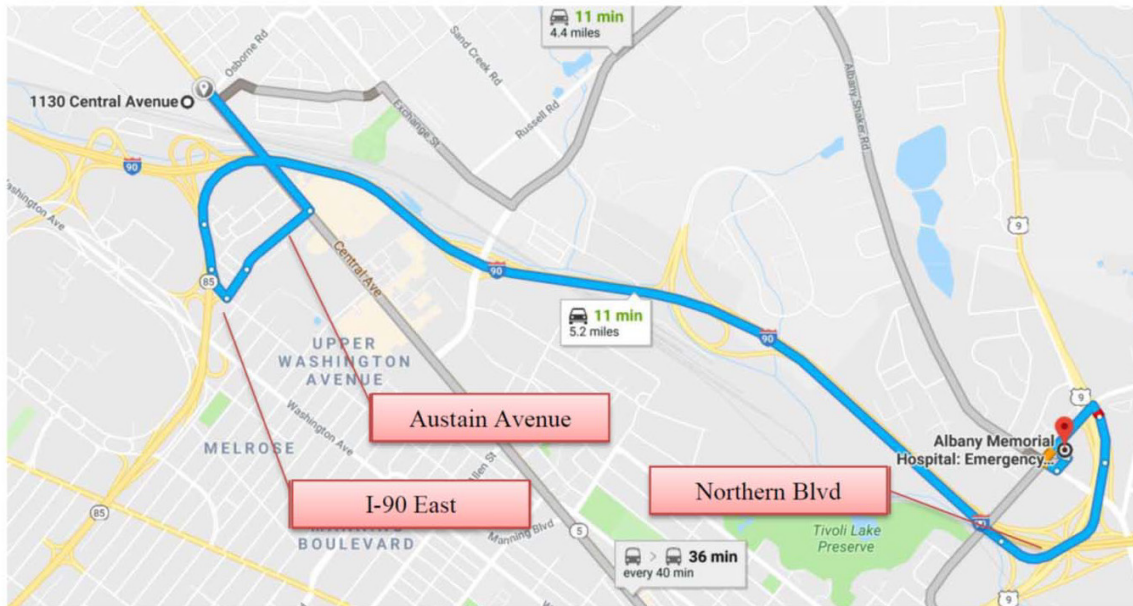
Contractor to the U.S. Department of Energy Office of Legacy Management

## Site-Specific Emergency Response Information

Emergency assembly area:  
Main Entrance

Evacuation warning system:  
Three horn blasts

Directions from site to emergency facility (including map):  
From 1130 Central Ave, turn RIGHT  
Turn RIGHT onto Austain Ave [3 min / 1.0 mi]  
Take I-90 E to Northern Blvd. Take exit 6 from I-90 E [4 min / 3.8 mi]  
Continue on Northern Blvd to your destination 4 min (0.4 mi)  
Albany Memorial Hospital Emergency Room 600 Northern Blvd, Albany, NY 12204





Contractor to the U.S. Department of Energy/ Office of Legacy Management

## Site-Specific Emergency Response Information

### **Personnel accountability process and responsible individuals**

Define how the accountability process will work at your site, who is responsible for performing the task, how it is documented, etc.:

The LMS Site Lead will determine that site workers are accounted for during field work. The LMS Site Lead will verify that the personnel accountability process is in place at the beginning of field work, and that the process will be documented by field personnel.

**Groundwater Sampling:** Use voice contact pairing. At least two workers will be paired for onsite work, and can communicate by voice, radio, or phone.

**Inspections, routine surveys, minor repairs, water level measurements:** Use accountability check-in. An office POC will be used to receive calls from the field worker and to respond if the field worker does not check in. The field worker calls the office POC on a predetermined schedule to include (1) site entry, (2) not to exceed 4 hours during time onsite, and (3) site exit. Missed check-ins should be recovered within an hour. The office POC will contact the LMS Site Lead or their manager if the field worker misses a check-in. The office POC will call the Albany Police Department if the field worker cannot be reached within an hour.

**Contracted field work:** Contractors must utilize an personnel accountability process, which will be verified by the LMS Site Lead.

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**Appendix C**  
**Signs to Be Posted**

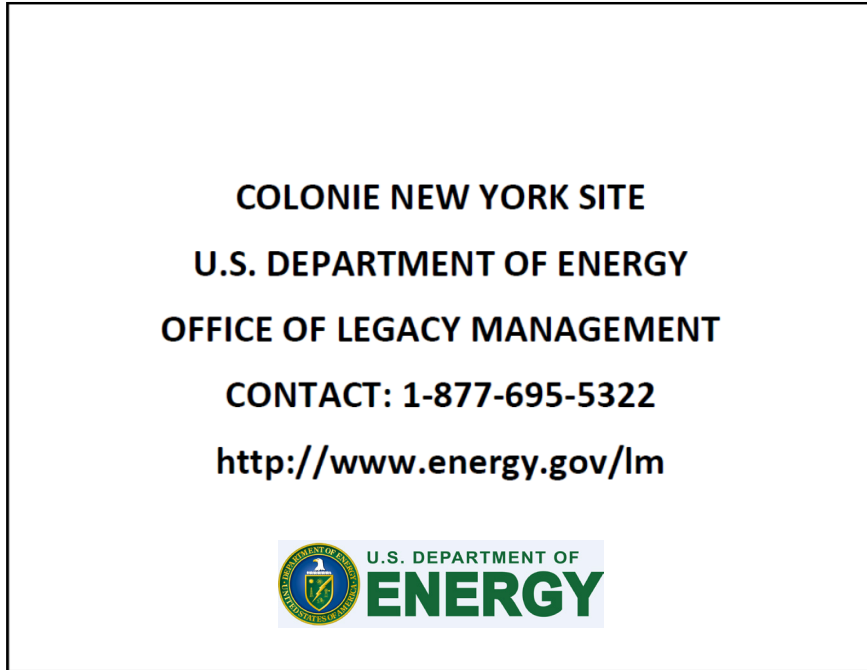
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These signs are currently in place on the fences and will be kept:



This sign will be placed at the main gate and rear gate.



This sign will be placed near each entrance:

**In case of an emergency or to report suspicious activities or items, call (877) 695-5322.**

The unauthorized entry upon any facility, installation, or real property subject to the jurisdiction, administration, or in the custody of the U.S. Department of Energy, which has been designated as subject to the provisions contained in Title 10 *Code of Federal Regulations* Part 860, is prohibited. The unauthorized carrying, transporting, or otherwise introducing or causing to be introduced, any dangerous weapon, explosives, or other dangerous instrument or material likely to produce substantial injury or damage to persons or property, into or upon such facility installation, or real property is likewise prohibited.

Whoever willfully violates these regulations, shall, upon conviction, be punishable by fine of not more than \$5,000. Whoever willfully violates these regulations with respect to any facility, installation, or real property enclosed by a fence, wall, floor, roof, or other structural barrier, shall be guilty of a misdemeanor and, upon conviction, shall be punished by a fine not to exceed \$100,000 or imprisonment for not more than 1 year, or both (Title 42 *United States Code* 2278[a]; Title 18 *United States Code* 3571)

By authority of Section 229 of the Atomic Energy Act of 1954, as amended (Title 42 *United States Code* 2278[a]) and Title 10 *Code of Federal Regulations* Part 860 the rules and regulations of the U.S. Department of Energy, this facility, installation, or real property has been designated as subject to those regulations by the U.S. Department of Energy. Trespassers may be subject to the provisions stated above.



U.S. DEPARTMENT OF  
**ENERGY**

Legacy  
Management

This sign will be placed near each entrance:

## **PROHIBITED ACTIVITIES**

By authority of Title 41 *Code of Federal Regulations* (CFR) Part 102-74, packages, briefcases, and other containers in the immediate possession of visitors, employees or other persons arriving on, working at, visiting, or departing from Federal property may be inspected. Persons in and on property must at all times comply with official signs of a prohibitory, regulatory, or directory nature. All persons entering in or on this property are prohibited from the following:

- (A) Loitering and exhibiting disorderly conduct
- (B) Improperly disposing of rubbish, willfully destroying or damaging property, stealing property, creating hazards, throwing articles from or at a building, or climbing upon any part of the building
- (C) Gambling
- (D) Being under the influence of any drug or alcohol other than prescription medication
- (E) Operating a motor vehicle on the property while under the influence of alcohol or drugs
- (F) Soliciting, except: funds authorized by 5 CFR Part 950; by employees on authorized bulletin boards; labor organizations authorized by the Civil Reform Act of 1978
- (G) Distributing free samples of tobacco products, as mandated by Section 636 of Public Law 104-52
- (H) Posting, affixing or distributing materials, such as pamphlets, handbills, or flyers, except as authorized in 41 CFR Part 102-74.410, or when these displays are conducted as part of authorized government activities or by official permit
- (I) Photographs of workspace for commercial or non-commercial purposes without permission
- (J) Animals, other than authorized service animals
- (K) Blocking entrances, driveways, walks, loading platforms, or fire hydrants
- (L) Parking without authority, parking in unauthorized locations or in locations reserved for other persons, or parking contrary to the direction of posted signs
- (M) Carrying or possessing explosives, or items intended to be used to fabricate an explosive or incendiary device, either openly or concealed, except for official purposes
- (N) The possession of firearms or other dangerous weapons by all persons not specifically authorized by 18 *United States Code* 930. Violators will be subject to fine and/or imprisonment for periods up to five (5) years

A person found guilty of violating any rule or regulation in this subpart while on any property shall be fined under Title 18 *United States Code*, imprisoned for not more than 30 days, or both.



This sign will be placed near each entrance:

## General Security & Safety Requirements

- **ALWAYS** wear your seatbelt
- **ALWAYS** lock your vehicle
- **ALWAYS** drive defensively
- **NEVER** use a cell phone while driving
- **NEVER** drive under the influence of alcohol or illegal substances
- **NEVER** drive when you are tired
- **NEVER** carry
  - Ammunition
  - Explosives or incendiary devices
  - Illegal drugs or drug paraphernalia

*Management may question employees or inspect any personal property that is on company property or any area where the company conducts business.*



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## **Appendix D**

### **Annual Inspection Checklist**

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**Annual Site-wide Inspection Form  
 Colonie FUSRAP Site  
 Town of Colonie, Albany County, New York**

(Page 1 of 2)

<b>I. COLONIE SITE INFORMATION</b>		
Date of Inspection:	Type of Inspection (site walk, windshield):	
General Site Conditions:	Inspection Team Names/Affiliation (print):	
Weather/Temperature:		
Deed Holder: DOE		
If the property is owned by the DOE, is it currently leased?	Yes	No
Site Records, Inspections, and Reports up to date?	Yes	No
Site LUCs: <ul style="list-style-type: none"> <li>• Excavation Restriction – No digging or excavation permitted in the Easement Areas (i.e., FSSUs 104, 124, and North Lawn) and the Additional Deed Restriction Area on the Colonie FUSRAP Site without prior written approval of DOE and NYSDEC.</li> <li>• Comply with the Land-Use Restrictions identified in the Site Management Plan.</li> <li>• Allowable uses of the site are residential, commercial, or industrial use.</li> </ul>		
Agency or company conducting the inspection: _____		
Primary Inspector _____		
Name	Title	Phone No.
_____		
Signature	Date	
Use the following to document current changed Site Conditions, include as Attachments:		
Photographs	Maps	Other (sketches, etc.)

**Annual Site-wide Inspection Form  
 Colonie FUSRAP Site  
 Town of Colonie, Albany County, New York  
 (Page 2 of 2)**

**II. COLONIE LAND-USE CONTROLS (LUCs)**

*\*If deficiencies are noted, the locations should be documented on a site map and photographed.*

**1. Property Use:**

Are all ICs being complied with?	Yes	No
Easement Areas disturbed in any manner?	Yes	No
Changes in Site Conditions?	Yes	No
Are there any new structures on the property?	Yes	No
Is the property used for industrial purposes?	Yes	No
Is the property used for commercial purposes?	Yes	No
Is the property currently vacant?	Yes	No
Any evidence of new construction?	Yes	No

Remarks: \_\_\_\_\_  
 \_\_\_\_\_

**2. Soil Conditions:**

Is there any evidence of digging or soil excavation?	Yes	No
Authorization/Permit #: _____		
Any signs of dumping, staining, or vegetative stress?	Yes	No

Remarks: \_\_\_\_\_  
 \_\_\_\_\_

**3. Monitoring Wells:**

Have existing wells been damaged or compromised?	Yes	No
Any activities with the potential to damage existing wells?	Yes	No

Remarks: \_\_\_\_\_  
 \_\_\_\_\_

**III. EVALUATION OF LAND-USE CONTROLS (LUCs)**

**1. Implementation and Enforcement:**

Site conditions imply LUCs have been properly implemented.	Yes	No
Site conditions imply LUCs are fully enforced.	Yes	No

Remarks: \_\_\_\_\_  
 \_\_\_\_\_

**2. Observations, Conclusions, Recommendations (including changes needed and overall performance and effectiveness of the remedy):**

Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Appendix E**

**Entry Procedure to the CSX Property**

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## **Scope of Work for Groundwater Sampling from Wells on CSX Property**

**Planning:** Contact CSX in advance of all field work. [Details to be added here]

**Objective:** LMS personnel will collect groundwater samples and measure water levels from two or three wells. The COCs are VOCs (PCE, TCE, cDCE, and VC). Sampling events are conducted biennially (every 2 years). A sampling event on CSX property will last for less than 4 hours using two to four personnel.

**Well Description:** There are three government-owned wells on CSX property. Samples will be collected from two or three wells, although only two of the wells are across the tracks. All three wells are at least 50 ft from the centerline of the tracks. The wells are 2-inch diameter and less than 20 ft deep, set in “stick-up” locked field boxes.

**Setup:** Personnel will hand-carry equipment to the wells from property lines directly to the wells, including meters, pump controllers, coolers, buckets, and miscellaneous hand tools. No vehicles will be used on CSX property. No personnel or equipment will approach within 15 ft of rail lines.

**Methods:** Water levels will be measured. A plastic sheet will be placed around each well before withdrawing water to prevent contamination of the ground. Occasionally one of the wells will be redeveloped using a hand-operated surge block plus a bailer or pump. Wells will be purged using the low-flow sampling method. Personnel will fill four to eight sample containers at each well. Single-use equipment will be collected for offsite disposal. Reusable equipment will be decontaminated before each use using a three-step process. All liquid and solid wastes (including decontamination fluids) will be collected and removed from CSX property. All work will be conducted according to state and federal guidelines.

**Geographic Features:** none

**Special Conditions:** none

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