

WATERVLIET ARSENAL

Army Cleanup Program

Installation Action Plan Final

June 2024

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STATEMENT OF PURPOSE

The Installation Action Plan (IAP) provides evidence that the Army is firmly committed to expeditious identification and cleanup of environmental contamination, and that the installation has a credible, organized program to carry out that commitment. The IAP provides an outline of the total multi-year environmental cleanup program for each site with ongoing or future planned restoration activity and includes the (1) environmental restoration requirements, (2) the rationale for the selected technical approach, and (3) foundation to develop corresponding financial needs for each cleanup site.

INSTALLATION OVERVIEW

Installation Name: WATERVLIET ARSENAL

Installation City: WATERVLIET

Installation County: Albany

Installation State: NY

Regulatory Participation - Federal: United States Environmental Protection Agency - Region 2

Regulatory Participation - State: New York State Department of Environmental Conservation

ACRONYMS

Acronym	Definition
AOI	Area of Interest
AOPI	Area of Potential Interest
CC	Compliance-related Cleanup
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CMI(C)	Corrective Measures Implementation-Construction
CMI(O)	Corrective Measures Implementation-Operations
CMS	Corrective Measures Study
CRL	Cleanup Restoration & Liabilities
CS	Confirmatory Sampling
CVOC	Chlorinated Volatile Organic Compound
DES	Design
ENV	Environmental
FS	Feasibility Study
HRS	Hazard Ranking Score
IAP	Installation Action Plan
IC	Institutional Controls
ID	Identification
IR	Installation Restoration
IRA	Interim Remedial Action
LTM	Long-Term Management
LUC	Land Use Controls
LUCIP	Land Use Control Implementation Plan
MMA	Main Manufacturing Area
MNA	Monitored Natural Attenuation
MR	Munitions Response
MRSP	Munitions Response Site Prioritization Protocol
NPL	National Priorities List
NY	New York
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OSD	Office of the Secretary of Defense
PA	Preliminary Assessment
PFAS	Per- and Polyfluoroalkyl Substances
PR	Periodic Review
RAB	Restoration Advisory Board

Acronym	Definition
RA(C)	Remedial Action (Construction)
RA(O)	Remedial Action (Operations)
RC	Response Complete
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RI	Remedial Investigation
RIP	Remedy-in-Place
RRSE	Relative Risk Site Evaluation
RSL	Regional Screening Level
SoB	Statement of Basis
SC	Site Closeout
SCO	Soil Cleanup Objective
SI	Site Inspection
SMP	Site Management Plan
SWMU	Solid Waste Management Unit
TAPP	Technical Assistance for Public Participation
TCE	Trichloroethylene
USEPA	US Environmental Protection Agency
UST	Underground Storage Tank
UU/UE	Unlimited Use / Unrestricted Exposure
VOC	Volatile Organic Compound

PHASE TRANSLATION TABLE

CERCLA Phase	RCRA Phase	RCRA UST Phase
Preliminary Assessment (PA)	RCRA Facility Assessment (RFA)	Initial Site Characterization (ISC)
Site Inspection (SI)	Confirmation Sampling (CS)	Investigation (INV)
Remedial Investigation/ Feasibility Study (RI/FS)	RCRA Facility Investigation/Corrective Measures Study (RFI/CMS)	Corrective Action Plan (CAP)
Remedial Design (RD)	Design (DES)	Design (DES)
Interim Remedial Action (IRA)	Interim Measure (IM)	Interim Remedial Action (IRA)
Remedial Action (Construction) (RA(C))	Corrective Measures Implementation (Construction) (CMI(C))	Implementation (Construction) (IMP(C))
Remedial Action (Operations) (RA(O))	Corrective Measures Implementation (Operations) (CMI(O))	Implementation (Operations) (IMP(O))
Long-Term Management (LTM)	Long-Term Management (LTM)	Long-Term Management (LTM)

PROGRAM SUMMARY

Number of Open Sites with Response Complete/Total Open IR Sites: 0/3

Number of Open Sites with Response Complete/Total Open MR Sites: 0/0

Number of Open Sites with Response Complete/Total Open CC Sites: 0/0

SITE-LEVEL INFORMATION

36990.1023_WVAA-25_SIBERIA (INCLUDES SWMUS #3 18, 2

Env Site ID: WVAA-25

Cleanup Site: SIBERIA (INCLUDES SWMUS #3 18, 2

Alias: 3,18,22-24

Regulatory Driver: RCRA-C

RIP Date: 6/30/2015

RC Date: 9/30/2054

RC Reason: Not assigned

SC Date: 9/30/2054

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: No

Hazardous Ranking Score: 0

RRSE:

MRSPP: N/A

Phase	Start	End
RFA:	6/30/1979	12/31/1987
CS:	9/30/1994	9/30/1995
RFI/CMS:	6/30/2002	9/30/2008
DES:	9/30/2008	10/30/2009
IRA:	12/1/1997	9/30/2008
CMI(C):	9/30/2008	6/30/2015
CMI(O):	6/30/2015	9/30/2054
LTM:	--	--

Site Narrative: The WVAA-25 Siberia area is a 15-acre storage plot purchased in 1942 and located to the west of the main manufacturing area (MMA) within the 140-acre Watervliet Arsenal. The current and reasonably anticipated future land use is industrial. There are three underground storage tanks (UST), and it was reported that mixtures of oils and solvents removed from USTs were sprayed on the ground for dust control, a practice no longer employed. As of 2021, the USTs are still in place but the practice of spraying oil for dust control is no longer employed. The area also includes an electrical substation. New York State Department of Environmental Conservation (NYSDEC) to remediate the site. A Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) report prepared by the NYSDEC in December 1986, and subsequently updated in December 1987, identified solid waste management units (SWMU) in the Siberia area and Watervliet Arsenal entered into an Order on Consent Docket No. II RCRA-3008-h-93-0210 on Oct. 12, 1993, with the US Environmental Protection Agency (USEPA) Region II. A RCRA facility investigation (RFI) was conducted from 1994-1997. Metal chips coated with cutting oils, salvaged scrap metals and scrap lumber stored directly on the ground surface in the past resulted in chlorinated volatile organic compounds (CVOC), petroleum hydrocarbons, polycyclic aromatic hydrocarbons, and metals detected in the groundwater and soil during the RFI. These data were presented in a corrective measures study (CMS) field data report dated October 1998 and the human health and ecological exposure assessment was completed in December 1998. Groundwater contamination in the Siberia area is generally limited to the northeast quadrant and consists of volatile organic compounds (VOC), which appear to migrate along the shallow groundwater flow path toward the sewer line. It is believed that the sewer system bedding material is acting as line sink and is transporting shallow groundwater contamination from the site to the north. The statement of basis (SoB) requires compliance with the site management plan (SMP) and all engineering and institutional controls (IC) placed on the site. ICs to restrict future use of the site and land use controls (LUC) are required to prevent exposure to contaminants above corrective action objectives. An SMP outlining the requirements for restrictions was completed In June 2015. The SMP provided a detailed description of all procedures required to manage remaining contamination at the site after completion of the remedial

action, including - (1) implementation and management of all engineering and ICs; (2) media monitoring; (3) operation and maintenance of all treatment collection containment or recovery systems; (4) performance of periodic inspections, certification of results, and submittal of periodic review reports; and (5) defining criteria for termination of treatment system. VOCs and total petroleum hydrocarbon are present in the groundwater above NYSDEC guideline parameters; however, the long-term groundwater monitoring program has shown that contaminant concentrations are stable or decreasing, presumably because there are no remaining sources of groundwater contamination. Groundwater contamination does not pose an immediate threat to human health as Watervliet Arsenal, and all surrounding properties are serviced by public potable water supplies provided by the city of Watervliet and the town of Colonie. Therefore, there is no pathway for ingestion or contact with contaminated groundwater for all receptors except for the potential for occasional contact exposure by construction workers in or around subsurface excavations. The SMP was prepared to manage remaining contamination at the site and will remain in effect to manage remaining contamination until unlimited use and unrestricted exposure (UU/UE) is met. Controls include asphalt cap maintenance to prevent exposure to soil contamination; groundwater restrictions, well maintenance, in situ reactive barrier and groundwater collection trench vicinity use restrictions to prevent exposure to groundwater contamination; and restrictions on new structure construction to prevent exposure to soil vapor contamination. The Army is responsible for implementation, maintenance, periodic reporting, and enforcement of LUCs. A land use control implementation plan (LUCIP) was finalized in 2019 and identifies the mechanisms that establish the LUCs and the groups responsible for maintaining them, strengthens the integrity of the controls and is part of mitigating the threat to human health and the environment posed by contaminants at the sites until unrestricted use is appropriate. Watervliet Arsenal will incorporate and maintain LUCs into existing land use planning and management systems routinely used for construction and planning activities. Exit Strategy - Because the future land use will remain industrial and hazardous substances, pollutants, or contaminants will remain at the site at concentrations exceeding levels that allow for UU/UE, five-year remedy reviews will continue indefinitely.

36990.1030_WVAA-32_DEGREASERS (B 20/25/40/110/120/130/121

Env Site ID: WVAA-32

MRSPP: N/A

Cleanup Site: DEGREASERS (B
20/25/40/110/120/130/121

Alias: #

Regulatory Driver: RCRA-C

RIP Date: 6/30/2015

RC Date: 9/30/2054

RC Reason: Not assigned

SC Date: 9/30/2054

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: No

Hazardous Ranking Score: 0

RRSE:

Phase	Start	End
RFA:	6/30/1979	3/31/1992
CS:	6/30/1987	3/31/1992
RFI/CMS:	10/31/1991	10/10/2012
DES:	10/31/2012	11/30/2012
IRA:	9/30/2002	10/31/2012
CMI(C):	10/31/2012	6/30/2015
CMI(O):	6/30/2015	9/30/2054
LTM:	--	--

Site Narrative: The WVAA-32 area is a 125-acre area where manufacturing and administrative operations occur referred to as the MMA. An on-site industrial wastewater treatment plant treats acidic rinse waters from chromium plating operations and soluble waste oils from machining operations. Watervliet Arsenal entered into an Order on Consent Docket No. II RCRA-3008-h-93-0210 on Oct. 12, 1993, with the USEPA Region II and NYSDEC to remediate the site. The current and reasonably anticipated future land use is industrial. An RFA report prepared by the NYSDEC in March 1992 identified 24 SWMUs within the MMA and areas of concern were categorized within the Vapor Degreaser Units SWMU. An RFI, approved in January 2001, defined five distinct and separate sources of groundwater contamination at Buildings 25, 40, 110, and 121 North and South. Investigations revealed high concentrations of chlorinated solvents (dense nonaqueous phase liquid) detected at the downgradient installation boundary in deep fractured bedrock. There are no known continuing surface sources of CVOCs in the groundwater in the Building 40 area. An exposure assessment was completed to evaluate the contaminated groundwater plume's risk to human health and the environment. An indoor air exposure pathway at Building 40 was identified and was mitigated. In February 2008, a full-scale investigation of all buildings and surrounding area where vapor degreasers were used was initiated upon the request of the NYSDEC and the New York State Department of Health (NYSDOH). A total of 26 buildings in the MMA were sampled during a vapor intrusion investigation. Based on the results of the investigations, corrective measures were found to be required for Buildings 20, 21, 22, 25, 114, 120, 121, and 130 due to the presence of CVOCs in soil vapor and/or indoor air at concentrations greater than guidance values. Watervliet Arsenal operates sub-slab depressurization units in manufacturing buildings where VOC levels were above NYSDOH guidance. Contaminants of concern in soil include metals (arsenic, chromium, lead, mercury) and semi-volatile organic compounds (benzo(a)anthracene, benzo(a)pyrene); however, no soil contamination requiring action was identified during the RFI. The presence of some metals at concentrations greater than soil cleanup objectives (SCO) is likely associated with historic manufacturing and fill activities at the site and no single point releases of hazardous constituents. Since Watervliet Arsenal is a limited access industrial facility that is not open to the general public, and since the majority of the samples exceeding SCOs were

either at depth and/or beneath areas of asphalt and/or concrete, no remedial alternatives were needed to be evaluated for soil. Soil sampling results did not indicate the presence of chlorinated VOCs above state guidance values. The remedial action objectives for soil vapor are to mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a facility. The sub-slab depressurization systems in the eight buildings (all but Building 40) were installed and activated in 2010. Due to the construction and age of the Building 40 foundation (field stone with partial basement), the use of subsurface depressurization was not applicable. Therefore, indoor air filtration was utilized as the mitigation measure for the Building 40 indoor air starting in 2007. The mitigation measure consisted of the installation of eight air filtration units in the impacted areas of the building. Arsenal monitors the operation of the units during monthly inspections and during semiannual filter media testing. The elements of the final corrective measures are (1) no further action with continued long-term monitoring of the ongoing monitored natural attenuation (MNA) for Building 25 groundwater; (2) no further action for Building 40 groundwater beyond MNA documented through groundwater monitoring; (3) continued operation and monitoring of the sub-slab depressurization systems for vapor intrusion in Buildings 20, 21, 22, 25, 114, 120, 121, and 130; (4) continued operation of the indoor air filtration units in building 40; and (5) site management and LUCs to protect public health and the environment for contamination remaining at the site. Watervliet Arsenal prepared the final SoB with the NYSDEC in October 2012. The Army is responsible for implementation, maintenance, periodic reporting, and enforcement of LUCs. Exit Strategy- Watervliet Arsenal will incorporate and maintain LUCs into existing land use planning and management systems routinely used for construction and planning activities. Because the future land use will remain industrial and hazardous substances, pollutants, or contaminants will remain at the site at concentrations exceeding levels that allow for UU/UE, five-year remedy reviews will continue indefinitely.

36990.1033_WVAA-34_PFAS

Env Site ID: WVAA-34

Cleanup Site: PFAS

Alias: #

Regulatory Driver: CERCLA

RIP Date: 2/2/2029

RC Date: 2/2/2029

RC Reason: Not assigned

SC Date: 2/3/2029

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: No

Hazardous Ranking Score: 0

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	5/21/2018	6/24/2019
SI:	6/25/2019	3/15/2022
RI/FS:	1/3/2022	2/2/2029
RD:	--	--
IRA:	--	--
RA(C):	--	--
RA(O):	--	--
LTM:	--	--

Site Narrative: Per direction from Deputy Chief of Staff G-9, the site created to account for all per- and polyfluoroalkyl substances (PFAS) costs at the installation. As part of the preliminary assessment (PA) for PFAS, a site visit was conducted in May 2019. Relevant data and documents were obtained, and areas were visually inspected to generate a list of areas of potential interest (AOPI). The PA identified 11 AOPIs for investigation during the site inspection (SI) phase conducted in April, May, and September 2020 as well as January 2021. Following the SI, and in accordance with the 2023 Office of the Secretary of Defense (OSD) Memorandum, seven AOIs were identified for further study in a remedial investigation (RI). The PA/SI recommended five AOPIs for further study in an RI based on exceedances of the 2022 OSD risk screening levels in groundwater and/or soil at that time. However, the data were re-screened using the updated USEPA regional screening levels (RSL). Two additional AOPIs had concentrations of select PFAS constituents that exceeded the applicable RSLs and were added to the scope of the RI. The seven areas with USEPA RSL exceedances are now designated areas of interest (AOI) instead of "AOPIs" and are the subject of the RI. The interim and/or final remedial action activities are beyond the funded SI and estimated RI/feasibility study (FS) until such time that the RI/FS is complete.

SITE SUMMARY

SITE CLOSEOUT SUMMARY

CRL ID	Site Name	Site Closeout Date
36990.1001	WVAA-01_BLDG 121 OIL SPILL	1/31/2000
36990.1002	WVAA-02_CHROMIC ACID RINSE WT SPILL NR B	1/31/2000
36990.1003	WVAA-03_BLDG136 (1976 SPILL DURING TRANS	1/31/2000
36990.1004	WVAA-04_INDUSTRIAL WASTE TRT PLANT AREA	1/31/2000
36990.1005	WVAA-05_CYANIDE TRT PLANT BUILDING 110	1/31/2000
36990.1006	WVAA-06_METAL PLATING SHOP BLDG 14 DEMOL	1/31/2000
36990.1007	WVAA-07_BUILDING 20 MAJOR COMPONENTS	1/31/2000
36990.1008	WVAA-08_BLDG 25 VAPOR DEGREASER (MINOR C	1/31/2000
36990.1009	WVAA-09_BUILDING 35 MEDIUM CALIBER GUN S	9/30/2001
36990.1010	WVAA-10_BUILDING 110 BIG GUN SHOP	1/31/2000
36990.1011	WVAA-12_BUILDING 123 PAINT SHOP	1/31/2000
36990.1012	WVAA-13_BUILDING 125	1/31/2000
36990.1013	WVAA-14_BUILDING 135 ROTARY FORGE	9/30/2002
36990.1014	WVAA-15_BUILDING 114 BENET LABS PILOT SC	1/31/2000
36990.1015	WVAA-16_BUILDING 115 BENET RESEARCH LABS	8/31/1987
36990.1016	WVAA-17_BUILDING 119	8/31/1987
36990.1017	WVAA-18_BUILDING 120 BENET RESEARCH LABS	1/31/2000
36990.1018	WVAA-20_UST LOCATIONS	12/31/1997
36990.1019	WVAA-21_AST LOCATIONS	8/31/1987
36990.1020	WVAA-22_ERIE CANAL SITE	6/30/2001
36990.1021	WVAA-23_SIBERIA AREA	4/30/1997
36990.1022	WVAA-24_INDUSTRIAL WASTE SEWER LINES	4/30/2001
36990.1024	WVAA-26_BLDG 36 SURFACE IMPOUNDMENT CLOS	5/31/1994
36990.1025	WVAA-27_INVESTIGATE OIL CONTAMINATION IN	9/30/2001
36990.1026	WVAA-28_FORMER CHIP HANDLING AREA BLDG 1	1/31/2000
36990.1027	WVAA-29_RCRA CONTAINER STORAGE FACILITY	4/30/1997
36990.1028	WVAA-30_OUTFALL TO HUDSON RIVER (OUTFALL	1/31/2000
36990.1029	WVAA-31_INCINERATOR (INACTIVE)	1/31/2000
36990.1031	WVAA-33_CHROME PLATING SUMPS	1/31/2000
36990.1032	WVA-001-R-01_MUSKET TESTING RANGE	5/31/2003

COMMUNITY INVOLVEMENT

Community Involvement Plan (Date Last Reviewed):	Solicitation is in process
Technical Review Committee Establishment Date:	N/A
Restoration Advisory Board (RAB) Establishment Date:	Solicitation is in process
RAB Adjournment Date:	N/A
RAB Adjournment Reason:	Lack of outstanding cleanup issues
Reasons for Not Establishing RAB:	Solicitation in process due to new PFAS site
RAB Date of Solicitation from Community:	N/A
RAB Results of Solicitation:	N/A
Current Technical Assistance for Public Participation (TAPP):	N/A
TAPP Title:	N/A
Potential TAPP:	N/A
Administrative Record Location:	Watervliet Arsenal - 1 Buffington Street, Building 10, Environmental Office Watervliet NY, 12189
Information Repository Location:	Watervliet Arsenal - 1 Buffington Street, Building 10, Environmental Office Watervliet NY, 12189

FIVE-YEAR / PERIODIC REVIEW SUMMARY

Status	Review Type	Start Date	End Date	Plans Narrative	Actions Narrative	Results Narrative
Completed	PR	11/19/2019	8/26/2021	Further information will be obtained by taking the following actions- reevaluating the risk from vapor intrusion at Building 23 on the MMA through additional sampling.	The following data was reviewed to assess the performance of the remedies over the last five years.	Reevaluate vapor intrusion risk at Bldg. 23 through indoor and sub-slab air monitoring to determine whether trichloroethylene (TCE) concentrations requiring mitigation are still occurring.
Planned	PR	9/30/2025	9/30/2026	N/A	N/A	N/A