FORT DRUM

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: FORT DRUM

Installation City: FORT DRUM

Installation County: JEFFERSON and LEWIS

Installation State: NY

Regulatory Participation - Federal: US Environmental Protection Agency (USEPA), Region II

Regulatory Participation - State: New York State Department of Environmental Conservation (NYSDEC)

ACRONYMS

Acronym	Definition
AAS	Aquifer Air Sparging
AFFF	Aqueous Film Forming Foam
AS	Air Sparging
ASL	Airfield Sanitary Landfill
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
CAP	Corrective Action Plan
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CC	Compliance-related Cleanup
CMI(C)	Corrective Measures Implementation (Construction)
CMI(O)	Corrective Measures Implementation (Operation)
CMS	Corrective Measures Study
CRL	Cleanup Restoration & Liabilities
CS	Confirmation Sampling
DD	Decision Document
DES	Design
DPE	Dual-Phase Extraction
DPW	Directorate of Public Works
ENV	Environmental
FS	Feasibility Study
FTA	Fire Training Area
FTD	Fort Drum
FTS	Focused Technical Selection
FY	Fiscal Year
FYR	Five-Year Review
HRS	Hazard Ranking System
IM	Interim Measure
IMP(C)	Implementation (Construction)
IMP(O)	Implementation (Operation)
IR	Installation Restoration
IRA	Interim Remedial Action
IRP	Installation Restoration Program
ISCO	In Situ Chemical Oxidation
HQAES	Headquarters Army Environmental System
IAP	Installation Action Plan
ID	Indentification

Acronym	Definition
IR	Installation Restoration
LNAPL	Light Non-Aqueous Phase Liquid
LTM	Long-Term Management
LUC	Land Use Control
LUCIP	Land Use Control Implementation Plan
MNA	Monitored Natural Attenuation
MPE	Multi-Phase Extraction
MR	Munitions Response
MRSPP	Munitions Response Site Prioritization Protocol
ND	Not Detected
ng/g	nanograms per gram
ng/L	nanograms per liter
NPL	National Priorities List
NY	New York
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
ORC	Oxygen Releasing Compound
OSL	Old Sanitary Landfill
PA	Preliminary Assessment
PBA	Performance-Based Acquisition
PCE	Tetrachloroethylene
PFAS	Per- and Polyfluoroalkyl Substance
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctanesulfonic Acid
POL	Petroleum, Oil and Lubricants
PR	Periodic Review
RA(C)	Remedial Action (Construction)
RA(O)	Remedial Action (Operations)
RA	Remedial Action
RAB	Restoration Advisory Board
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

Acronym	Definition
ROD	Record of Decision
RRSE	Relative Risk Site Evaluation
SC	Site Closeout
SI	Site Inspection
SMP	Site Management Plan
SVE	Soil Vapor Extraction
TAPP	Technical Assistance for Public Participation
TBD	To Be Determined
TMB	Trimethylbenzene
TRC	Technical Review Committee
USEPA	US Environmental Protection Agency
UST	Underground Storage Tank
UU/UE	Unrestricted Use/Unrestricted Exposure
VOC	Volatile Organic Compound
WSAAF	Wheeler Sack Army Airfield
WWII	World War II

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: 5/10

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

36205.1007_FTD-007_OLD SANITARY LANDFILL

Env Site ID: FTD-007

Cleanup Site: OLD SANITARY LANDFILL

Alias: FTD-007

Regulatory Driver: RCRA-C

RIP Date: 9/15/2007

RC Date: 9/15/2007

RC Reason: All Required Cleanup(s) Completed

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:	10/15/1980	7/15/1981
CS:	10/15/1981	9/15/1985
RFI/CMS:	2/15/1986	9/15/2006
DES:	6/15/2006	9/15/2007
IRA:	6/15/1985	9/15/1999
CMI(C):	3/15/2007	9/15/2007
CMI(O):	- -	- -
LTM:	10/15/2007	9/30/2054

Site Narrative: The Old Sanitary Landfill (OSL) is located along Route 26. The landfill covers about 50 acres and was operated from 1940 to 1973. It consists of two cells (which may extend to a depth of 40 feet) divided by a ravine. Debris is believed to have been dumped in low spots of the ravine area. The cells have a synthetic cap, soil, and vegetative cover. Leachate, primarily benzene, toluene, ethylbenzene, and xylene (BTEX), seeps out at points along the lower portions of the side slopes into a stream leading off-post at both landfill cells. The plume reconnaissance performed at Gasoline Alley (FTD-030F) indicated that Area 3805 was contributing to the contamination found at the landfill. Stream monitoring results show that the contamination is primarily limited to the stream bed adjacent to the cells. In fiscal year (FY)96 a landfill fence was installed, and the vents were upgraded. In FY97 an interim remedial action (IRA) was conducted to remove debris and drums from the site and stabilize slopes. Slope stabilization and erosion control were completed in FY99. The risk assessment was completed in FY00. In FY01, a pilot phytoremediation project was installed and was successful in addressing contaminants. Limited cap repairs were completed in FY02 and FY03. A corrective measures study (CMS) which included Area 3805 was completed in FY05 and approved by the New York State Department of Environmental Conservation (NYSDEC) in April 2006. In 2007 a full-scale phytoremediation system was installed on the northern slope of OSL Cell 2 and around the unnamed creek between Cell 1 and Cell 2 to attenuate seep contaminants, primarily from 3805 (FTD-030F). In 2007 cap improvements to the OSL Cell 2, including additional fill, new geomembrane, cover, topsoil, were initiated and completed in 2008. In 2012, erosion on the north perimeter was repaired and pipe slope drains augmented to prevent further erosion. On Feb. 12, 2014, Fort Drum (FTD) received an Order on Consent and Administrative Action identifying the OSL ongoing measures as in situ remediation by phytoremediation of the seeps landfill cap enhancements by maintenance, performance monitoring, and long-term operation and maintenance (Appendix B pages 51-52). In 2015, a pipe slope drain failure was discovered and repaired. 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 unrestricted use/unrestricted exposure (UU/UE), periodic reviews will continue indefinitely.

CLEANUP/EXIT STRATEGY - Planned future activities consist of continued inspection and maintenance of the cap, phytoremediation, groundwater monitoring, and periodic reviews will continue.

36205.1008_FTD-008_AIRFIELD SANITARY LANDFILL

Env Site ID: FTD-008

Cleanup Site: AIRFIELD SANITARY LANDFILL

Alias: FTD-008

Regulatory Driver: RCRA-C

RIP Date: 9/15/1999

RC Date: 9/15/1999

RC Reason: All Required Cleanup(s) Completed

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:	10/15/1980	7/15/1981
CS:	6/15/1986	7/15/1987
RFI/CMS:	2/15/1984	8/15/1987
DES:	9/15/1989	3/15/1990
IRA:	- -	- -
CMI(C):	10/15/1989	9/15/1999
CMI(O):	- -	- -
LTM:	10/15/1999	9/30/2054

Site Narrative: The Airfield Sanitary Landfill (ASL), formerly named Existing Landfill, is located just northeast of Wheeler Sack Army Airfield and covers approximately 37 acres. Reports indicate that paint wastes, pesticide containers, and petroleum, oil, and lubricants (POL) saturated wastes were disposed of at the ASL between 1973 and 1987. The ASL was capped in 1988 with a polyvinylchloride cover, soil, and vegetation. A draft closure plan was developed in 1991 which recommended upgrading some of the gas vents, adding cover material, and improving drainage. In 1994, monitoring well installation was required by the NYSDEC. The wells were installed, and quarterly monitoring was initiated and completed in 1995. A revised closure plan for the landfill was submitted in October 1995 and finalized in June 1997. A post closure operations and maintenance plan was finalized in September 1997. Cover improvements were completed in 1999. A trend analysis finalized in 2001 revealed no significant problems. Cover repairs were completed in 2009. Because hazardous substances, pollutants, or contaminants will remain at the site at concentrations exceeding levels that allow for UU/UE, periodic remedy reviews will continue until UU/UE is achieved. CLEANUP/EXIT STRATEGY - Long-term management (LTM) includes continued monitoring (every five years), inspection and maintenance activities and periodic reviews.

36205.1020_FTD-028_FIRE FIGHTER TRAINING AREA

Env Site ID: FTD-028

Cleanup Site: FIRE FIGHTER TRAINING AREA

Alias: FTD-028

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: Not Evaluated

MRSPP: N/A

Phase	Start	End
PA:	6/15/1986	7/15/1987
SI:	6/15/1986	12/15/2022
RI/FS:	12/31/1990	2/2/2029
RD:	- -	- -
IRA:	- -	- -
RA(C):	- -	- -
RA(O):	- -	- -
LTM:	- -	- -

Site Narrative: Investigation into environmental contamination at the Fire Training Area (FTA) began as a response to POLs in the late 1980s. A 1990 investigation, as part of the Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA), indicated no environmental impacts from operations POLs or related constituents and the site was closed. During the 1990 investigation, per- and polyfluoroalkyl substances (PFAS) had not yet been identified as a potential constituent of concern. For decades following, as part of routine training, firefighters poured fuel into an 80-foot diameter concrete basin (fire training pit) with a drainage system and underground storage tank (UST) and ignited the fuel. Firefighters would practice extinguishing the fires using Aqueous Film-Forming Foams (AFFF) containing PFAS as a principal compound. Both surface water and groundwater in the vicinity of the former fire training pit discharge into the Black River, which serves as the drinking water source for the City of Watertown. On June 9, 2016, Fort Drum Directorate of Public Works (DPW) conducted a soil sampling event at the fire training pit area after observing the Fire Department had discharged fuel onto gravel outside of the fire training pit during a training exercise. Soil samples were collected from various locations around and immediately under the eastern concrete rim of the fire training pit. The response to what began as an environmental investigation into a petroleum discharge to the environment subsequently included soil sampling for PFAS as PFAS was, at this time, an emerging constituent of concern. PFAS soil sample results showed levels of perfluorooctane sulfonate (PFOS) in the range of 150 nanograms per gram (ng/g) to 11,000 ng/g andperfluorooctanoic acid (PFOA) in the range of 1.3 ng/g to 200 ng/g. Due to the extensive amount of supporting soil removed for the POL excavation, the DPW demolished and disposed of the fire training pit materials as the pit could no longer maintain its structural integrity. Soil in this vicinity was removed to five feet below grade. Samples of the surface water in the pit had detections of PFOS at 28,000 nanograms per liter (ng/L) and PFOA at 30,000 ng/L. In August 2016, a groundwater sampling event was conducted at the FTA and demonstrated that PFOS concentrations ranged from greater than 1,500 ng/L to greater than 4,800 ng/L and PFOA from 150 ng/L (MW-4) to greater than 2,100 ng/L. In October 2016, the DPW removed the fire pit drainage system

including piping, a UST, and an oil/water separator with piping fragments abandoned in place. PFOS and PFOA groundwater samples taken immediately under the oil/water separator demonstrated PFOS concentrations of 100 ng/L and PFOA at 0.74 ng/L and Line Pit 2 (center of the drainage pipe) returned levels of PFOS at 68 ng/L and PFOA at 5.6 ng/L. Results of this effort lead to the Fire Training Area being reopened for PFAS contamination under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). Due to increasing concern over PFAS migration into Fort Drum's drinking water supply wells, and after permanent shutdown of drinking water wells 7 and 11 due to exceeding the USEPA's PFAS lifetime health advisory limits of 70 ng/L, an expanded site inspection (SI) commenced in September 2018 to investigate the FTA’s influence Fort Drum’s sources of drinking water, which serves 35,000 residents daily. SI groundwater sampling results returned PFOS results ranging from ND to 15,000 ng/L and PFOA from not detected (ND) to 2,000 ng/L. Seep sampling at the FTA returned PFOS detections ranging from 180 ng/L to 8,500 ng/L and PFOA detections ranging from 240 ng/L to 1,800 ng/L. Additionally, as part of the expanded SI, in July 2020, 36 surface water samples were collected from the Black River, adjacent to the FTA. Samples were collected at three depths; just under the river's surface depth, mid-column, and six inches above the river bottom. Results varied from ND to 2.4 ng/L for PFOS and ND to 1.3 J ng/L for PFOA. Additional seep sampling at the FTA returned results as high as 13,000 ng/L. Preliminary assessment (PA)/SI has been completed, advancing 27 areas of interest to the remedial investigation (RI) phase, which began in 2022. CLEANUP/EXIT STRATEGY - Future remedial actions (RA), if required, will be determined after the RI/FS is complete.

36205.1021_FTD-030A_GASOLINE ALLEY - AREA 1295

Env Site ID: FTD-030A

Cleanup Site: GASOLINE ALLEY - AREA 1295

Alias: FTD-030A

Regulatory Driver: RCRA-C

RIP Date: 7/15/2007

RC Date: 7/15/2017

RC Reason: All Required Cleanup(s) Completed

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:	10/15/1980	7/15/1981
CS:	10/15/1980	7/15/1981
RFI/CMS:	5/15/1990	4/15/2006
DES:	6/15/2006	12/15/2006
IRA:	1/1/1994	12/31/1995
CMI(C):	6/15/2006	7/15/2007
CMI(O):	6/15/2007	7/15/2017
LTM:	7/15/2017	9/30/2054

Site Narrative: Area 1295 is an approximately 1-acre site located along “Gasoline Alley” at Fort Drum between Second Street East and Euphrates River Valley Road. Gasoline Alley is a two-mile long former fuel dispensing location that housed nine fueling stations. During the course of use, the fuel-containing underground storage tanks and associated piping leaked to the subsurface environment. Constituents of concern at Area 1295 were determined to BTEX compounds, although 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene was also frequently detected at elevated concentrations. Between 1994 and 1995, 22 USTs and associated components were removed from the Gasoline Alley fueling stations and approximately 6,000 cubic yards of soil were thermally treated and disposed of off-site. In FY00 a pilot system (excavation and oxygen releasing compound [ORC]) was completed and ultimately determined to be ineffective. In FY06, a focused technical selection (FTS) study was completed and approved by the NYSDEC. The FTS recommended in situ chemical oxidation (ISCO) and monitored natural attenuation (MNA). Four rounds of ISCO injections were completed in 2006 and 2007 and were determined to be only partially effective. Further attempts at ISCO were conducted in 2009 and 2010. From 2011 through 2014 bioremediation efforts through nutrient enhancement and injection of oxygenated water were attempted. On Feb. 12, 2014, Fort Drum received an Order on Consent and Administrative Action referencing continuing investigation/operation of Interim Corrective Measures for Area 1295 (Appendix B pages 43-44). In 2015, new wells were installed targeting the residual dissolved phase and air sparging (AS) begun. The air sparge system was turned off for observation of rebound in February 2016. The state of New York issued a letter dated May 18, 2018, indicating there was no need for additional active remediation. Area 1295 was remediated to restricted residential use, with groundwater use restrictions in place as the site does not meet UU/UE criteria. 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. In March 2020, groundwater use restrictions at Area 1295 were added to Fort Drum’s real property master plan. A land use control implementation plan (LUCIP), containing a site management plan (SMP) for several

Installation Restoration Program (IRP) sites including Area 1295, governs continued management of this site including annual inspections. Area 1295 is included in Fort Drum's annual inspection of IRP sites with groundwater use restrictions in accordance with the SMP as well as five-year periodic reviews.
CLEANUP/EXIT STRATEGY – Annual land use control (LUC) monitoring and periodic reviews will continue.

36205.1024_FTD-030D_GASOLINE ALLEY - AREA 1595

Env Site ID: FTD-030D

Cleanup Site: GASOLINE ALLEY - AREA 1595

Alias: FTD-030D

Regulatory Driver: RCRA-C

RIP Date: 6/15/2006

RC Date: 8/15/2017

RC Reason: All Required Cleanup(s) Completed

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:	10/15/1980	7/15/1981
CS:	10/15/1980	7/15/1981
RFI/CMS:	5/15/1990	5/15/2005
DES:	5/15/2004	9/15/2005
IRA:	6/1/1992	6/1/2014
CMI(C):	6/15/2005	6/15/2006
CMI(O):	6/15/2006	8/15/2017
LTM:	8/15/2017	9/30/2054

Site Narrative: Area 1595 is located along “Gasoline Alley” at Fort Drum; a two-mile long former fuel dispensing location that housed nine fueling stations. During the course of use, the fuel-containing underground storage tanks and associated piping leaked to the subsurface environment. Contamination was discovered having pooled as a small pond and stream downgradient reaching about 300 feet downstream. The primary constituents of concern at Area 1595 were ethylbenzene, naphthalene, toluene 1,2,4-trimethylbenzene (1,2,4-TMB) 1,3,5-trimethylbenzene (1,3,5-TMB) and xylenes. Following a PA, an auto-skimmer was installed at the pond in 1990 and operated until 1994. During the SI free-product was discovered in Area 1595 wells, and a free-product recovery and contaminated water treatment facility was installed in February 1992. Upgrades to the treatment facility were completed in FY95 and FY97. During FY97, contaminated soil was excavated from the pond and two weirs were constructed for flow measurements. In FY99 additional recovery wells were installed, subsurface lines were replaced, and the treatment system was enhanced. In FY00 the pump-and-treat system was upgraded (air stripper), a system evaluation was completed, and the groundwater model was updated. A chemical oxidation pilot study in FY02 indicated that this technology would not be effective. In 2004 a decision document (DD) was signed. In April 2004 the final CMS was submitted and approved by the NYSDEC. A soil vapor extraction (SVE)/aquifer air sparging (AAS) was designed and constructed in FY05 to replace the pump-and-treat system and is currently operational. Bioremediation efforts through nutrient enhancement and injection of oxygenated water were attempted from 2011 through 2014. On Feb. 12, 2014, FTD received an Order on Consent and Administrative Action referencing corrective measures for Area 1595 as in situ remediation of subsurface soils and ex situ treatment of collected soil vapor, in situ remediation of groundwater, remediation of sediments in 1595 creek, performance monitoring, and long-term operation and maintenance (Appendix B pages 47-48). In 2015, AS and bioventing systems were started up. In 2019, based on the system performance data and groundwater analytical results, it was determined that the AS systems had addressed the residual impacts in the vadose/smear zone to a level at which AS no longer provided useful benefit. The AS system was then shut down to initiate post-

treatment monitoring. During this time, a localized area of elevated residual hydrocarbon remained in the area immediately upgradient from well 1595-MWS7. In response to the recalcitrant volatile organic compound (VOC) concentrations, two soil excavations were conducted in 2019 and 2020 to expedite site closure by removing petroleum contaminant mass that could not be addressed by the existing in situ remediation systems at the site. In March of 2020, Fort Drum placed groundwater use restrictions into the real property master plan. A letter from the state of New York indicating there is no need for additional active remediation was issued on October 28, 2021. Area 1595 was remediated to restricted residential use, with groundwater use restrictions in place as the site does not meet UU/UE criteria. 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, periodic remedy reviews will continue indefinitely. A LUCIP, containing a SMP for several IRP sites including Area 1595, governs continued management of this site including annual inspections. Area 1595 is included in Fort Drum's annual inspection of IRP sites with groundwater use restrictions in accordance with the SMP as well as periodic reviews. CLEANUP/EXIT STRATEGY - Groundwater monitoring, annual LUC monitoring, and periodic reviews will continue.

36205.1025_FTD-030E_GASOLINE ALLEY - AREA 1795/WWII

Env Site ID: FTD-030E

Cleanup Site: GASOLINE ALLEY - AREA 1795/WWII

Alias: FTD-030E

Regulatory Driver: RCRA-C

RIP Date: 6/15/2018

RC Date: 6/24/2024

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:	10/15/1980	7/15/1981
CS:	10/15/1980	7/15/1981
RFI/CMS:	5/15/1990	9/15/2004
DES:	5/15/2005	8/15/2007
IRA:	6/1/1996	6/1/2014
CMI(C):	5/15/2006	9/15/2007
CMI(O):	6/15/2018	6/24/2024
LTM:	6/25/2024	9/30/2054

Site Narrative: Area 1795 is located along “Gasoline Alley” at Fort Drum. Gasoline Alley is a two-mile long former fuel dispensing location that housed nine fueling stations. During the course of use, the fuel-containing underground storage tanks and associated piping leaked to the subsurface environment. In addition, the World War II (WWII) Landfill [formerly FTD- 078, environmental program requirements FTDR-029] was a surface dump within area 1795. The landfill, which was discovered in 1989, is approximately 6.5 acres and is heavily wooded. The plume reconnaissance performed on Gasoline Alley in 1994 linked the two sites together. Sampling of debris indicated limited polychlorinated biphenyl contamination. The primary constituents of concern at the site were ethylbenzene naphthalene toluene 1,2,4-trimethylbenzene (1,2,4-TMB) 1,3,5-trimethylbenzene (1,3,5-TMB) and xylenes. From FY96 to FY98 a pump-and-treat pilot system was operated for groundwater depression and separate phase product recovery. This system was discontinued due to limited thickness of the free-product layer. In FY98 a pilot AAS was tested and indicated that this technology would be appropriate as part of a final remedy. A pilot bio slurping system (free-product recovery enhancement) was operated from FY98 to FY00. This system was discontinued due to the high-water table. In June 2004 a final CMS was submitted and approved recommending SVE/AAS treatment systems and limited excavation of the WWII landfill. The design was funded in FY05, and construction of the remedial system was funded in FY06. Construction of the SVE/AAS systems was completed in 2007. Bioremediation efforts through nutrient enhancement and injection of oxygenated water were attempted from 2011 through 2014, with limited success. On Feb. 12, 2014, FTD received an Order on Consent and Administrative Action referencing corrective measures for Area 1795 as in situ remediation of subsurface soils and ex situ treatment of collected soil vapor, in situ remediation of groundwater, performance monitoring and long-term operation and maintenance (Appendix B pages 48-49). In summer 2015, bioventing began and in fall 2015 additional wells were added and AS began. In 2016 a groundwater recirculation system was added to address previously unknown contamination. During remediation activities, it was discovered that a previously unknown area of petroleum contamination, including light non-aqueous phase liquids (LNAPL), was present in the

western portions of the 1795 site. This area was delineated during a 2019 RCRA Facility Investigation. To facilitate regulatory closure of the previously known area of contamination, the site was administratively separated into two areas, 1795 A/B and 1795 C. The administrative separation of the sites was approved by the NYSDEC in a letter dated February 27, 2019. However, this separation was administrative only and the 1795 site remains a single site (FTD-030E) in the restoration database. On Dec. 1, 2020, the State of New York issued a letter to Fort Drum indicating there was no need for additional active remediation in the 1795 A/B portion of the site. Groundwater use restrictions for the A/B and C portions of the site were added to Fort Drum's real property master plan in December 2020 and May 2023, respectively, as they did not meet UU/UE criteria. 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 periodic reviews will continue indefinitely for 1795 A/B/C. A LUCIP, containing a SMP for several IRP sites including Area 1795 A/B/C, governs continued management of this site including annual inspections. CLEANUP/EXIT STRATEGY - Annual LUC monitoring and periodic reviews will continue.

36205.1026_FTD-030F_GASOLINE ALLEY - AREA 3805

Env Site ID: FTD-030F

Cleanup Site: GASOLINE ALLEY - AREA 3805

Alias: FTD-030F

Regulatory Driver: RCRA-C

RIP Date: 9/15/2007

RC Date: 6/24/2024

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:	10/15/1980	7/15/1981
CS:	10/15/1980	7/15/1981
RFI/CMS:	5/15/1990	4/15/2006
DES:	6/15/2001	9/15/2006
IRA:	- -	- -
CMI(C):	9/15/2002	9/15/2007
CMI(O):	10/15/2004	6/24/2024
LTM:	6/25/2024	9/30/2054

Site Narrative: Area 3805 included three former fuel storage and dispensing areas (1895, 1995, 3805), whose plumes commingled, located on Gasoline Alley in Fort Drum's Cantonment area. Impacted soil at Area 3805 was approximately 85,0000 cubic feet, the free-product plume was approximately 450,000 square feet, and the dissolved plume extended approximately 1,100 feet and exceeds 400 feet in width. The primary constituents of concern at the site were ethylbenzene, naphthalene, toluene, 1,2,4-trimethylbenzene (1,2,4-TMB), 1,3,5-trimethylbenzene (1,3,5-TMB), and xylenes. The plume extended under OSL; FTD-007 prior to discharging to the OSL creek. Starting in 1995, approximately 30,000 gallons of free-product were removed. A combined CMS for area 3805 and OSL was funded in FY00 and an FTS for the source area was completed in 2001. A multi-phase extraction (MPE) system was recommended for the source area. The remedial design (RD) for the source area was completed in 2002 and construction of an MPE and an AAS system was completed in FY04. In FY05 a combined CMS for Areas 3805/OSL was completed and was approved by the NYSDEC in April 2006. A supplemental sparging line was completed in 2007. In 2011, a five-month nutrient injection application trial was completed in conjunction with AS system operations. The vertical extraction wells were supplemented with horizontal extraction wells in 2012 to treat the shallower impacted soil. On Feb. 12, 2014, FTD received an Order on Consent and Administrative Action referencing corrective measures for Area 3805 (including 1895 and 1995) as in situ remediation of subsurface soils and ex situ treatment of collected soil vapor in situ remediation of groundwater, removal of LNAPL, performance monitoring, and long-term operation and maintenance (Appendix B page 50-51). In 2015, a more aggressive remedial strategy was implemented for Area 3805/1995 with the use of bioventing, AS, and SVE within the System A and B areas. From 2015 through 2019, nearly 170 AS wells were installed and operated some with supplemental heating from a small solar powered thermal in situ remediation system, captured waste heat from AS blowers, and industrial inline water heaters to increase microbial degradation. Twenty additional AS/heat exchange wells were installed in 2020 to focus remedial efforts to remaining areas of concern. One Building 3829 (inhabited at times) is present at the site, which has a sub-slab depressurization system in operation.

Nuisance odors, once an issue in Building were not anticipated to be of concern following remedial system decommissioning. The status of Area 3805 upon submittal of the remedial action completion report to the NYSDEC in 2023 was largely vacant, with waste oil and fuel aboveground storage tanks and vehicle maintenance in Building 3829. Current land use designation is Administrative/Instructional-Industrial. There are currently no plans to redevelop the site; however, groundwater use restrictions are still warranted as the site does not meet UU/UE exposure criteria. LUCs were added to Fort Drum's real property master plan in 2023. CLEANUP/EXIT STRATEGY - Groundwater monitoring, annual LUC monitoring, and periodic reviews will continue.

36205.1046_FTD-091_BLDG P-2140 USTS

Env Site ID: FTD-091

Cleanup Site: BLDG P-2140 USTS

Alias: FTD-091

Regulatory Driver: RCRA-C

RIP Date: 1/31/2002

RC Date: 8/15/2017

RC Reason: All Required Cleanup(s) Completed

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:	3/31/1994	9/30/1994
CS:	3/31/1994	9/30/1994
RFI/CMS:	3/31/1994	9/30/2001
DES:	- -	- -
IRA:	6/30/1995	6/1/2014
CMI(C):	9/30/2001	12/31/2001
CMI(O):	1/31/2002	8/15/2017
LTM:	8/15/2017	9/30/2054

Site Narrative: Building P-2140 was an active Army Air Force Exchange Service gas station located south of Gasoline Alley at the corner of Nash Boulevard and First Street West. In 1993 five fuel storage USTs were removed and three USTs were installed as replacements in a different area of the site. Contamination from prior activities was observed during excavation. An SI completed in 1994 showed the dissolved portion of the plume migrating toward the Installation boundary. An RA for free-product recovery and groundwater treatment was initiated in FY95. Approximately 1,400 gallons of free-product were recovered. That system was subsequently replaced by a dual phase extraction (DPE) system in the source area. In FY99 and FY00 the plume was further delineated, and additional wells were installed. An air sparge (with ozone) pilot system was installed in January 2001. Sampling at the boundary detected BTEX and methyl tertiary-butyl ether contamination. In January 2002 the full scale DPE pilot was installed to address separate phase contamination in the source area. A CMS was completed and approved by the NYSDEC in April 2004. In FY05 an AAS with ozone was added in the source area to augment the DPE. The downgradient AAS with ozone system was shut down in March 2009 with concurrence from NYSDEC. In 2009 AAS ozone technology was applied in the source area. Bioremediation efforts through nutrient enhancement and injection of oxygenated water were attempted from 2011 through 2014. On Feb. 12, 2014, FTD received an Order on Consent and Administrative Action referencing corrective measures for Building P- 2140 as in situ remediation of subsurface soils and ex situ treatment of collected soil vapor, in situ remediation of groundwater, removal of LNAPL, performance monitoring, and long-term operation and maintenance (Appendix B page 49-50). In 2015, five new AS wells were installed and AS and SVE systems started up, having been modified to allow the AS blower to be pulsed. On May 18, 2018, the state of New York issued a letter indicating there was no need for additional active remediation. However, groundwater use restrictions are still warranted as the site does not meet UU/UE criteria and five-year periodic reviews will continue indefinitely. In March 2020, Fort Drum placed groundwater use restrictions into the real property master plan. A LUCIP containing a SMP for several IRP sites including Area P-2140 governs continued management of this site including annual LUC inspections.

CLEANUP/EXIT STRATEGY - Annual LUC monitoring and periodic reviews will continue.

36205.1066_CCFD-030G_Gasoline Alley - 1800, 1900 &

Env Site ID: CCFD-030G

Cleanup Site: Gasoline Alley - 1800, 1900 &

Alias: CCFD-030G

Regulatory Driver: CERCLA

RIP Date: 6/15/2017

RC Date: 6/15/2033

RC Reason: Not assigned

SC Date: 9/30/2062

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: No

Hazardous Ranking Score: 0

RRSE: Low

MRSPP: N/A

Phase	Start	End
PA:	10/15/1991	1/15/2009
SI:	10/15/1996	10/15/2009
RI/FS:	3/15/2010	3/30/2016
RD:	- -	- -
IRA:	6/1/2010	7/28/2020
RA(C):	4/15/2015	11/15/2015
RA(O):	6/15/2017	6/15/2033
LTM:	6/16/2033	9/30/2062

Site Narrative: CCFD-030G is located on and near Oneida/Ontario Avenues in Fort Drum's Cantonment area. There has been documented storage and use of hazardous materials, including solvents, both upgradient and cross-gradient of the investigation area. An investigation of historical groundwater chemistry data associated with a BTEX plume at site FTD-030F indicated the presence of dissolved-phase chlorinated solvents (specifically tetrachloroethylene (PCE)) below the BTEX plume. In 2009, because the solvent contamination source was likely upgradient of the BTEX plume source and vertically separated from the BTEX plume and would require different remedial technologies, this IRP site was established, and in FY10 an SI to determine the nature and extent of the contamination was initiated. The identified contaminant of concern was PCE; however, related solvents and relevant breakdown products may have also been present. It is suspected that releases from the site contaminated soils and groundwater beneath the site and migrated northwesterly within FTD property. In addition, PCE contamination has been found at depth in the vicinity of the FTD-030F petroleum plume and FTD-007 OSL. An RI was funded in FY10 to determine the nature and extent of PCE contamination. An ISCO pilot study was completed in 2013. Another round of ISCO was conducted in summer 2015 and a feasibility study (FS) was completed in the fall of 2015. A proposed remedial action plan was completed by NYSDEC and released to the public for comment in February 2016. A public meeting took place on March 9, 2016. A record of decision (ROD) was issued by NYSDEC in March 2016. The selected remedy included ISCO, as needed, for hotspot treatment, institutional controls, and a SMP. MNA began in 2018. The March 2016 ROD indicated that it should take 16 years to reach remediation goals. The state of New York issued a letter dated July 28, 2020, approving the SMP and indicating there was no need for additional active remediation. In October 2020, Fort Drum placed land and groundwater use restrictions into the real property master plan. 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 in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan. A LUCIP, containing a SMP for site CCFD-030G,

governs continued management of this site including annual inspections. CLEANUP/EXIT STRATEGY - MNA was planned for 16 years and began in 2018. Groundwater monitoring, annual LUC monitoring, and periodic reviews will continue.

36205.1078_FTD-115_PFAS

Env Site ID: FTD-115

Cleanup Site: PFAS

Alias: #

Regulatory Driver: CERCLA

RIP Date: 2/2/2029

RC Date: 2/2/2029

RC Reason: Not assigned

SC Date: 2/2/2029

Program: ENV Restoration, Army

Subprogram: IR

NPL Status: No

Hazardous Ranking Score: 0

RRSE:

MRSPP: N/A

Phase	Start	End
PA:	5/14/2019	9/15/2019
SI:	3/15/2020	11/15/2022
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, Site FTD-115 was created to account for all PFAS costs at the installation. A PA/SI is complete, and RI/FS is underway to identify all releases of PFAS to the environment. However, per Department of Defense guidance given the limited experience gained through actual cleanup of PFAS sites, the Army only recognized the future costs through the study phase. CLEANUP/EXIT STRATEGY -The interim and/or final remedial action activities are beyond the funded SI and estimated RI/FS until such time that the RI/FS is complete. The SI has identified 27 areas of potential interest that will undergo RI/FS work.

SITE SUMMARY

SITE CLOSEOUT SUMMARY

CRL ID	Site Name	Site Closeout Date
36205.1001	FTD-001_HAZARDOUS WASTE STORAGE BLDG T-4	7/31/1987
36205.1002	FTD-002_DEFOLIENT TEST SITE	8/31/1986
36205.1003	FTD-003_SEWAGE TREATMENT PLANT	10/31/1994
36205.1004	FTD-004_NEW WASHRACK FACILITY	7/31/1987
36205.1005	FTD-005_GARBAGE CAN WASHOUT FACILITY	7/31/1987
36205.1006	FTD-006_WASHRACK HOLDING PONDS	7/31/1987
36205.1009	FTD-009_FIELD DUMPS (SWMU FTD-09,15,16,1	7/31/1987
36205.1010	FTD-010_LANDFILL (OPER 1978-80)	7/31/1987
36205.1011	FTD-011_LANDFILL (1950 LOCATION UNKNOWN)	7/31/1987
36205.1012	FTD-012_ABANDONED LANDFILL NEAR DEFERIET	5/31/1997
36205.1013	FTD-013_LANDFILL NEAR CARTHAGE CITY	7/31/1987
36205.1014	FTD-014_CLOSED LANDFILL (NEAR FTD-013)	7/31/1987
36205.1015	FTD-020_LANDFILL NEAR SOMERVILLE	7/31/1987
36205.1016	FTD-022_EOD DISPOSAL SITE, BURN PITS (RA	6/30/2003
36205.1017	FTD-024_U.S. AIR FORCE EOD SITE (RANGE 3	6/30/2003
36205.1018	FTD-025_OLD HOSFORD SWIMMING POOL	9/30/1995
36205.1019	FTD-027_POL SLUDGE BURIAL PIT	7/31/1987
36205.1022	FTD-030B_GASOLINE ALLEY - AREA 1395	12/30/2011
36205.1023	FTD-030C_GASOLINE ALLEY - AREA 1495	12/31/2011
36205.1027	FTD-031_BUILDING T-91	12/31/2011
36205.1028	FTD-032_POL STORAGE UST (2) BLDG T-93	7/31/1981
36205.1029	FTD-033_WASTE POL STORAGE UST BLDG T-198	7/31/1981
36205.1030	FTD-072_NEW JERSEY ANG POND	9/30/2003
36205.1031	FTD-073_NYANG MAINTENANCE SHOP	7/31/1987
36205.1032	FTD-074_DOL BATTERY SHOP BLDG P-44	9/30/1997
36205.1033	FTD-075_DOL MAINTENANCE SHOP	7/31/1987
36205.1034	FTD-076_PESTICIDE/HERBICIDE STORAGE BLDG	9/30/1999
36205.1035	FTD-077_HAZARDOUS WASTE STORAGE SITE BLD	10/31/1993
36205.1036	FTD-079_INFECTIOUS WASTE INCINERATOR	7/31/1987
36205.1037	FTD-081_SPRAY BOOTH BLDG T-197	3/31/1993
36205.1038	FTD-082_DRMO OFFICE (YARD)	7/31/1987
36205.1039	FTD-083_PAINT DUMP	6/30/1993
36205.1040	FTD-085_OLD POL DRYING BEDS	5/31/1997
36205.1041	FTD-086_OLD POL STORAGE YARD	3/31/1993
36205.1042	FTD-087_SAGE COMPLEX USTS	1/31/1996
36205.1043	FTD-088_BLDG T-4006 UST	9/30/2007
36205.1044	FTD-089_BLDG 1245 UST	12/31/2011
36205.1045	FTD-090_BLDG T-2180 UST	7/30/1994
36205.1047	FTD-092_BLDG T-2195 UST	6/30/1995
36205.1048	FTD-093_SAGE COMPLEX STORM SEWER OUTFALL	6/30/1997
36205.1049	FTD-094_FORMER PESTICIDE STORAGE BLDG S2	7/31/1997
36205.1050	FTD-110_AIRFIELD WATER TOWER	3/31/1995
36205.1051	FTD-111_T-2161 WATER TOWER	3/31/1995
36205.1052	FTD-112_TRAINING SITE POL CONTAM. NEAR R	9/30/2004

36205.1053	FTD-113_HAZARDOUS WASTE STORAGE BLDG 111	10/31/1994
36205.1054	PBA@FortDrum_PBA at Fort Drum	12/31/2015
36205.1055	CCFD4475E_4475 East	11/30/2009
36205.1056	CCFD10680W_P10680 West	11/30/2009
36205.1057	CCFD10470E_P-10470 East	11/30/2009
36205.1058	CCFD4482_4482	11/30/2009
36205.1059	CCFD10580_P-10580	11/30/2009
36205.1060	CCFD10660E_P-10660 East	11/30/2009
36205.1061	CCFD10660_P-10660	12/31/2009
36205.1062	CCFD10168_P-10168	11/30/2009
36205.1063	CCFD10470W_P-10470 West	6/30/2011
36205.1064	CCFD4485E_4485 East	11/30/2009
36205.1065	CCFD10170_P-10170	12/31/2009
36205.1067	CCFD-030H_Gasoline Alley Area 1700	12/31/2013
36205.1069	CCFD-114_WELL 9 CONTAMINATION	9/15/2017
36205.1070	FTD-114_LEAK OF PROPYLENE GLYCOL	10/1/2018
36205.1068	CCDRUM1_CC-01 Airfield Water Tower	1/31/2012
36205.1071	CCFD10480_P-10480	3/31/2008
36205.1072	CCFD10680E_P-10680 East	3/31/2008
36205.1073	CCFD4486W_4486 West	3/31/2008
36205.1074	CCFD10580W_P-10580 West	3/31/2008
36205.1075	CCFD10670W_P-10670 West	3/31/2008
36205.1076	CCFD10660W_P-10660 West	3/31/2008
36205.1077	CCFD10270_P-10270	3/31/2008
36205.1081	CCFD4530_4530	3/31/2008
36205.1084	CCFD4486E_4486 East	3/31/2008
36205.1085	CCFD4475W_4475 West	3/31/2008
36205.1088	CCFD10268_P-10268	3/31/2008
36205.1091	CCFD10680_P-10680	3/31/2008
36205.1092	CCFDWT02_Water Tower (T2161)	7/31/2012
36205.1093	CCFDOASIS_WSAAF Oasis Hydrant System	2/29/2012

COMMUNITY INVOLVEMENT

Community Involvement Plan (Date Last Reviewed):	06/1/2022
Technical Review Committee Establishment Date:	N/A
Restoration Advisory Board (RAB) Establishment Date:	N/A
RAB Adjournment Date:	N/A
RAB Adjournment Reason:	N/A
Reasons for Not Establishing RAB:	No sufficient, sustained community interest in a RAB has been expressed by the community.
RAB Date of Solicitation from Community:	06/13/2022
RAB Results of Solicitation:	A determination was made that a RAB was not needed at this time due to a lack of community interest.
Current Technical Assistance for Public Participation (TAPP):	N/A
TAPP Title:	N/A
Potential TAPP:	N/A
Administrative Record Location:	Environmental Division Public Works Building T-4838 Delahanty Ave, Fort Drum, NY 13602
Information Repository Location:	Environmental Division Public Works Building T-4838 Delahanty Ave Fort Drum, NY 13602

FIVE-YEAR / PERIODIC REVIEW SUMMARY

Status	Review Type	Start Date	End Date	Plans Narrative	Actions Narrative	Results Narrative
Completed	PR/FYR	11/1/2018	7/22/2019	N/A	N/A	This review determined that all remedies determined that all remedies are protective of human health and the environment.
Planned	PR/FYR	10/1/2023	9/30/2024	TBD	TBD	TBD