

United States Army Corps of Engineers
New England District

Final Land Use Control Implementation Plan, Area of Contamination 57

**Former Fort Devens Army Installation
Devens, Massachusetts**

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Final Land Use Control Implementation Plan, Area of Contamination 57

**Former Fort Devens Army Installation
Devens, Massachusetts**

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Acronyms and Abbreviations

| | |
|-----------------|---|
| 1,4-DCB | 1,4-Dichlorobenzene |
| ABB | ABB Environmental Services, Inc. |
| ADL | Arthur D. Little, Inc. |
| AOC | area of contamination |
| AREE | area requiring environmental evaluation |
| Army | U.S. Department of the Army |
| BRAC | Base Realignment and Closure |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| COC | contaminant of concern |
| Conti | Conti Environmental, Inc. |
| cy | cubic yard |
| DFAE | Directorate of Facilities and Engineering |
| EPH | extractable petroleum hydrocarbon |
| ESD | Explanation of Significant Differences |
| FFA | Federal Facility Agreement |
| Fort Devens | Former Fort Devens Army Installation |
| FS | feasibility study |
| ft | foot |
| HGL | HydroGeoLogic, Inc. |
| HLA | Harding Lawson Associates |
| IC | institutional control |
| KGS | KOMAN Government Solutions |
| LIFOC | Lease in Furtherance of Conveyance |
| LTMMP | Long-Term Monitoring and Maintenance Plan |
| LUC | land use control |
| LUCIP | Land Use Control Implementation Plan |
| MassDEP | Massachusetts Department of Environmental Protection |
| MassDevelopment | Massachusetts Development Finance Agency |
| MCL | maximum contaminant level |
| MCP | Massachusetts Contingency Plan |
| mg/kg | milligram per kilogram |
| MMCL | Massachusetts Maximum Contaminant Level |
| msl | mean sea level |
| NAUL | Notice of Activity and Use Limitation |

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| | |
|-----------|---|
| PAH | polycyclic aromatic hydrocarbon |
| PCB | polychlorinated biphenyl |
| PCE | tetrachloroethene |
| PRE | preliminary risk evaluation |
| PRG | preliminary remediation goal |
| RAO | remedial action objective |
| RI | remedial investigation |
| ROD | Record of Decision |
| S-A JV | SERES-Arcadis 8(a) Joint Venture 2, LLC |
| SI | site investigation |
| Sovereign | Sovereign Consulting, Inc. |
| SRI | Supplemental Remedial Investigation |
| SVOC | semivolatile organic compounds |
| TPH | total petroleum hydrocarbon |
| TCE | trichloroethene |
| USACE | U.S. Army Corps of Engineers – New England District |
| USEPA | United States Environmental Protection Agency |
| VOC | volatile organic compound |
| Weston | Roy F. Weston, Inc. |

1 Introduction

This Land Use Control Implementation Plan (LUCIP) was developed to guide the implementation of stand-alone land use controls (LUCs) (also referred to as institutional controls [ICs]) for Area of Contamination (AOC 57), the Building 3713 Fuel Oil Spill Site, at the former Fort Devens Army Installation (Fort Devens), located in Devens, Massachusetts (Figure 1). SERES-Arcadis 8(a) Joint Venture 2, LLC (S-A JV) prepared this LUCIP on behalf of the U.S. Army Corps of Engineers – New England District (USACE), under Contract Number W912WJ-19-D-0014. The United States Environmental Protection Agency (USEPA) and Massachusetts Department of Environmental Protection (MassDEP) are responsible for regulatory oversight of AOC 57, in accordance with the Federal Facility Agreement (FFA), signed pursuant to Section 120 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA; 42 United States Code §9601 et. seq.). The U.S. Department of the Army (Army) is responsible for carrying out remedy implementation in accordance with CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan (40 Code of Federal Regulations Part 300). This LUCIP was prepared in accordance with the approved Final Land Use Control Implementation Work Plan (S-A JV 2022a).

AOC 57 is located on the south side of Barnum Road, in an area of Fort Devens that was used primarily for the storage and maintenance of military vehicles. In addition, areas north of Barnum Road have historically been, and continue to be, used for rail yards and for freight handling and storage. AOC 57 consists of three subareas (Area 1, Area 2, and Area 3), located south to southeast of former Buildings 3713, 3756, 3757, and 3758 (Figure 2). These subareas historically received stormwater runoff and wastes from vehicle maintenance at former vehicle storage yards associated with these buildings. The vehicle storage yards were abandoned in 1998 and the pavement and fencing were removed. The vehicle storage yards are now grass-covered areas. Table 1 below presents the organization of this LUCIP.

Table 1 LUCIP Organization

| Section | Title | Purpose |
|-----------|---|---|
| Section 1 | Introduction | Identifies the site name and location, name of the organization that prepared the document, the agency responsible for oversight, and the organizational structure of the document. |
| Section 2 | Site Details | Summarizes the site characteristics, site history, property information, and stakeholder contacts. |
| Section 3 | Key Elements for All Planned/Implemented Institutional Controls | Develops an IC relationship matrix and identifies each IC, the substantive use restriction(s) achieved by each IC, and the legal description of the restricted area(s). |
| Section 4 | Institutional Control Maintenance Elements | Summarizes the assurance monitoring and reporting process of each IC and provides an implementation schedule. |
| Section 5 | Institutional Control Enforcement Elements | Discusses enforcement-related information for addressing various events including improper or |

| Section | Title | Purpose |
|------------|---|---|
| | | incomplete IC implementation or maintenance, and reports of an IC breach/violation. |
| Section 6 | Institutional Control Modification and Termination Elements | Provides information on modifying or terminating an IC. |
| Figures | | Figures 1 through 5 illustrate the site location, site features, residual contamination, IC boundaries, and engineering controls. |
| Appendices | | Appendix A provides a list of references used in the development of the LUCIP. Appendix B provides the Lease in Furtherance of Conveyance (LIFO) and any forthcoming enclosures. Appendix C presents the Record of Decision (ROD) and the Explanation of Significant Differences (ESD) for AOC 57. Appendix D presents a LUC checklist used for annual IC assurance monitoring. Appendix E presents the Responses to Regulatory Comments. |

2 Site Details

This section describes the site characteristics, summarizes the site history, and provides property information and IC stakeholder contacts.

2.1 Site Description

AOC 57 is part of the Bowers-Nonacoicus Brook subbasin, within the Nashua River Watershed, located south of former Building 3713, between Barnum Road and Cold Spring Road on the northeastern side of the former Main Post of Fort Devens in the Town of Harvard, Massachusetts. AOC 57 was used primarily for the storage and maintenance of military vehicles. In addition, areas north of Barnum Road have historically been, and continue to be, used as rail yards and for freight handling and storage. AOC 57 consists of three subareas; Area 1, Area 2, and Area 3, located south to southeast of former Buildings 3713, 3756, 3757, and 3758 (Figure 2). Areas 2 and 3 are located within lease Parcel A6a as defined in the ROD (Harding ESE 2001b) which comprises approximately 15.9 acres (Figure 2). The three subareas historically received stormwater runoff and wastes from vehicle maintenance at former vehicle storage yards associated with Building 3713 and former Buildings 3713, 3757, and 3758. These vehicle storage yards were abandoned in 1998, and the pavement and fencing were eventually redeveloped. Areas 1, 2, and 3 include upland areas (elevations between 228 and 240 feet [ft] mean sea level [msl]) that slope downward to a delineated wetland (elevation lower than 228 ft msl), which is part of the wetland system and feeder stream known as lower Cold Spring Brook. The ROD for AOC 57 (Harding ESE 2001b) identified the 228-ft elevation line as the border between the upland areas and the 100-year floodplain for Cold Spring Brook. The 100-year floodplain boundary is located approximately 260 ft from Cold Spring Brook in Area 2

and approximately 400 ft from Cold Spring Brook in Area 3 (Figure 2). The upland areas are forested with trees and scrub brush. The wetland is densely vegetated with brush and contains small areas of standing water.

Area 1 consists of a former stormwater outfall and drainage area for runoff from paved areas proximal to former Building 3713 (Figure 2). Area 2 is located approximately 700 ft north of Area 1 and adjacent to a former vehicle storage yard associated with the motor repair shops located in former Buildings 3757 and 3758 (Figure 2). The nearby former Building 3756 served as a mess hall and was later converted to a general storehouse. Area 2 grades down towards the wetland associated with Cold Spring Brook and formerly consisted of an eroded drainage ditch created by rainfall runoff from the vehicle storage yards. Area 3 is located approximately 600 ft to the northeast of Area 2, south of former vehicle maintenance motor pools (Figure 2). Area 3 was identified through historical photograph analysis indicating an area of soil staining.

2.2 Site History

Fort Devens was established in 1917 as Camp Devens, a temporary training camp for soldiers from the New England area. In 1931, the camp became a permanent installation and was redesignated as Fort Devens. Throughout its history, Fort Devens has served as a training and induction center for military personnel and a unit mobilization and demobilization site. All or portions of this function occurred during World Wars I and II, the Korean and Vietnam conflicts, and operations Desert Shield and Desert Storm. The primary mission of Fort Devens is to command, train, and provide logistical support for non-divisional troop units and to support and execute Base Realignment and Closure (BRAC) activities.

On December 21, 1989, Fort Devens was placed on the National Priorities List under CERCLA, as amended by the Superfund Amendments and Reauthorization Act, to evaluate and implement response actions to clean up past releases of hazardous substances, pollutants, and contaminants. A FFA to establish a procedural framework for ensuring that appropriate response actions are implemented at Fort Devens was developed and signed by the Army and USEPA Region 1 on May 13, 1991 and finalized on November 15, 1991. AOC 57 is considered a subsite to the entire installation. The history of the three areas that comprise AOC 57 is summarized in the following subsections.

2.2.1 Area 1 History

Area 1 consists of a stormwater outfall area and drainage ditch (identified as Storm Drainage System 6 in the Storm Sewer System Evaluation Report [Arthur D. Little, Inc. (ADL) 1994]) that receives precipitation collected from paved areas around former Building 3713 (Figure 2). The discharge to the storm drainage ditch eventually flows to Cold Spring Brook.

Fort Devens personnel at former Building 3713 on February 13, 1977 noticed No. 4 fuel oil flowing from an overfilled 30,000-gallon underground storage tank into a nearby storm drain (Argonne National Laboratory 1992; Directorate of Facilities and Engineering [DFAE] 1977). The storm drain discharged the spilled No. 4 fuel oil to a drainage ditch at the Area 1 outfall. The released oil flowed down the ditch to Cold Spring Brook. There was no evidence upon discovery of more than 50 to 100 gallons of fuel oil in the potentially affected water courses. Containment dikes and absorbent booms were set up across Cold Spring Brook adjacent to Area 2, and approximately 3,000 gallons of mixed oil and water were recovered (DFAE 1977).

Area 1 was investigated in 1992 as part of the site investigation (SI) as part of Groups 2 and 7 Historic Gas Stations (ABB Environmental Services, Inc. [ABB] 1993). Surface soil, surface water, and sediment samples were

collected, and analyses identified polycyclic aromatic hydrocarbons (PAHs) and total petroleum hydrocarbons (TPH) in surface soil. A preliminary risk evaluation (PRE) indicated no unacceptable risk for presumed commercial/industrial site reuse. The Army recommended further investigation of Area 1 as part of the installation-wide area requiring environmental evaluation (AREE) 70 storm sewer study.

The AREE 70 evaluation was conducted in 1994 and included AOC 57 Area 1 (Storm Drainage System 6) (ADL 1994). Analysis of surface water and sediment samples indicated elevated levels of arsenic and lead in surface water and elevated levels of arsenic, chromium, and lead in sediment. Semivolatile organic compounds (SVOCs) were also detected at a maximum total SVOC concentration of 59.8 milligrams per kilogram (mg/kg). Results of the sampling were incorporated into the lower Cold Spring Brook SI ecological PRE (ABB 1995b).

The lower Cold Spring Brook SI was conducted in 1994 and included sampling results from the AREE 70 report (ADL 1994) in its assessment of potential risks (ABB 1995b). The lower Cold Spring Brook SI produced no evidence that surface water contaminants posed risks to aquatic receptors (ADL 1994). No ecological risks were identified from exposure to contaminated media in several storm drain systems, including Storm Drainage System 6 (AOC 57 Area 1) (ABB 1995b). No further study was recommended for Area 1 (ABB 1995b).

Although there were no unacceptable risks, the Army performed a soil removal action in 1997 at the Area 1 outfall in response to newly promulgated Massachusetts Contingency Plan (MCP) standards to address soil contamination resulting from releases of petroleum (Roy F. Weston, Inc. [Weston] 1998). An area of approximately 22 by 22.5 ft was excavated to a maximum depth of 3 ft below ground surface. Approximately 25 cubic yards (cy) of contaminated soil were removed. Although some PAH contaminants at the limit of the excavation exceeded the MCP S-1/GW-1 soil and groundwater standards, statistical review of the data indicated that remaining contamination was consistent with that expected from asphalt-paved and traffic areas along Barnum Road. It was further concluded, based on the data review, that fuel oil contamination had been successfully removed. The Removal Action Report recommended no further action at Area 1 with the intent that the decision be formalized in the AOC 57 ROD (Weston 1998).

An assessment of risks was performed as part of the remedial investigation (RI) of AOC 57 (Harding Lawson Associates [HLA] 2000a) to demonstrate Area 1 does not pose unacceptable risk for future unrestricted land use. The assessment indicated that there were no unacceptable risks for future unrestricted land use and the RI Report recommended no further action at AOC 57 Area 1 (HLA 2000a).

The ROD (Harding ESE 2001b) was signed on September 28, 2001 for Areas 1, 2, and 3 at AOC 57. In the ROD, AOC 57 Area 1 required no further remedial action under CERCLA because there was no identified risk to human health or the environment. Further, because the limited nature of remaining contamination of Area 1 was typical of contamination at stormwater outfalls in Massachusetts, Area 1 was also exempt from MCP requirements.

2.2.2 Area 2 History

Area 2 (Figure 3) was originally thought to have been contaminated by the Area 1 No. 4 fuel oil spill. An investigation was performed at Area 2 to determine the presence or absence of contamination associated with a February 1977 No. 4 fuel oil spill (ABB 1993). A drainage ditch at Area 2 was investigated as part of the SI for Groups 2 and 7 Historic Gas Stations (ABB 1995a). Naphthalene and TPH were detected in surface soil. Fingerprint analysis of soil from Area 2 indicated that contaminants in the soil were most likely derived from lubricating oil and possibly vehicle crankcase oil, and not from the 1977 release of No. 4 fuel oil. Results of human health and ecological PREs indicated that the chemical hazards at Area 2 were not significant (ABB 1995b).

The Army performed a soil removal action at Area 2 in 1994 to address contamination found during the 1992 SI and in response to newly promulgated MCP standards (OHM Remediation Services Corp. 1996). Based on available data and a cleanup level for TPH of 500 mg/kg, it was estimated that 350 tons of soil would require excavation. The removal action concluded that there was not a significant risk to ecological receptors (OHM 1996). However, it was discovered that the extent of contamination at Area 2 was larger than expected and a RI/feasibility study (FS) should be conducted. The following RI Report (HLA 2000a) recommended that the Army perform a FS to evaluate alternatives to address risks to human health. The Army prepared an FS Report to evaluate remedial alternatives for control of risk from exposure to remaining contaminants at AOC 57 (Harding ESE 2000).

The Army collected additional soil samples at Area 2 in December 2000 from four locations at the southern end of the former excavation to further characterize the distribution of extractable petroleum hydrocarbons (EPHs) (Harding ESE 2001a). Sampling locations were selected to correspond to historical locations with the highest EPH concentrations. EPHs were detected in the samples at concentrations that would not pose unacceptable risk to human health. A Proposed Plan was issued in February 2001 for public comment on the Army's preferred remedial alternatives for Area 2.

The ROD (Harding ESE 2001b) identified "Excavation (for Possible Future Use) and Institutional Controls" as the preferred remedy for Area 2. The ROD estimated a removal of approximately 640 cy of soil to complete the remedy. The excavation would remediate the soil to a cleanup level of 600 mg/kg for lead and 3.5 mg/kg of the polychlorinated biphenyl (PCB) Aroclor 1260.

The Army completed additional soil removal in January and February 2002 at Area 2 (Conti Environmental, Inc. [Conti] 2002) and prepared to address the remedy for contaminated soils set forth in the ROD (Harding ESE 2001b). Additional contamination was identified during the soil excavation, and additional investigations and remedial activities (Conti 2003) were completed between February 2002 and September 2003 to meet the requirements of the ROD (Conti 2004). Contamination appeared to extend beyond the assumed limits of excavation. In addition, petroleum waste persistently seeped into the excavation. The excavation was left partially open to observe and remove the oil sheen and globules using absorbent pads and a belt-skimmer product recovery system. During 2003, the Army continued operation of the petroleum product recovery system at Area 2 following a winter shutdown. The Army conducted additional soil sampling to delineate the extent of contaminated soil and to identify the source of the petroleum waste. Based on the additional soil data, a work plan amendment was developed to complete remediation of the remaining contaminated soils (Conti 2003). The Army executed the work plan amendment, which included contaminated soil removal and removal of excavation water to allow access to contaminated soil beneath the groundwater table. The Army installed and operated a petroleum product recovery system in the open excavation and installed four collection sumps at Area 2 within a groundwater interception trench installed between the soil excavation area and the wetlands. Site restoration activities at AOC 57 Areas 2 and 3 were performed in October 2003. Transportation and disposal of remaining stockpiled contaminated soils were completed by the end of December 2003.

An Interim Remediation Action Completion Report was prepared in September 2004 (Conti 2004). According to the report, a total of 4,361 tons of contaminated material was excavated from Area 2. Twenty-four 55-gallon drums containing absorbent materials and personal protective equipment, and 80 gallons of petroleum-contaminated liquids were removed from the site. A total of 94,000 gallons of contaminated water from the excavations was discharged to the Fort Devens sewer system under a temporary discharge permit.

The original work plan (Conti 2002) did not include pumping and storage of contaminated groundwater. To address the differences between the remedial action and the remedy set forth in the ROD (Harding ESE 2001b), the Army prepared an ESD in 2003 (Army 2004). The differences between the updated remedy and the ROD were:

- Increased volume and cost of contaminated soil requiring removal to attain cleanup levels at Area 2;
- Inclusion of EPH as a contaminant of concern (COC) for soils at Area 2 to monitor the presence of petroleum waste encountered during contaminated soil removal; and
- Inclusion of EPH and PCBs as COCs for groundwater at Area 2.

2.2.3 Area 3 History

Area 3 is located approximately 600 ft to the northeast of Area 2 (Figure 2), south of the former vehicle maintenance motor pools. Four test pits were excavated in 1995 east of Area 2 where historical photos indicated soil staining. Sample analysis showed the presence of TPH and chlorinated volatile organic compounds (VOCs). The area was designated as AOC 57 Area 3 (Figure 4).

RI field investigations were conducted from 1996 to 1998 to better characterize the nature and extent of contamination (HLA 2000a). RI activities included collection of soil samples from test pits, TerraProbe points, soil borings, six monitoring well borings and two piezometers. Based on these results, 1,860 cy of material, comprising the majority of Area 3 soil contamination were removed. Cleanup goals were met in sidewall samples from the excavation except at the southern end of the excavation where exceedance of TPH, EPH, PCB Aroclor-1260, and dieldrin occurred. The Army prepared an FS Report to evaluate candidate remedial alternatives to control risk from exposure to remaining contaminants (Harding ESE 2000).

Two small-diameter groundwater screening points were installed at Area 3 in 2000 to characterize the presence of chlorinated compounds in groundwater (HLA 2000b; Harding ESE 2000). Samples were analyzed for VOCs. One sample had a concentration of trichloroethene (TCE) that exceeded the USEPA maximum contaminant level (MCL), but this exceedance was determined to originate from a source outside of Area 3 (Harding ESE 2001b).

USEPA and MassDEP collected groundwater samples on April 3, 2001 from six Area 3 monitoring wells. The samples were analyzed for USEPA target analyte list VOCs, and the inorganic compounds arsenic, barium, cadmium, and zinc. The analytical results showed one exceedance of drinking water standards for arsenic at one well.

A Proposed Plan was issued in February 2001 for public comment and detailed the Army's preferred alternative for Area 3. The ROD (Harding ESE 2001b) identified "Excavation (to Accelerate Groundwater Cleanup) and Institutional Controls" as the preferred remedy for Area 3. The ROD estimated a removal of approximately 120 cy of soil to complete the remedy. The excavation would remediate the soil to a cleanup level of 930 mg/kg for EPH C11-C12 aromatic fraction.

The Army completed additional soil removal in January and February 2002 at Area 3 (Conti 2002) to address the remedy for contaminated soils set forth in the ROD (Harding ESE 2001b). The Army successfully completed soil removal to depths of 2 to 4 ft at Area 3 to meet ROD requirements (Conti 2004). A total of 197 tons of contaminated soil was removed from Area 3 (Conti 2004).

2.2.4 Areas 2 and 3 - Monitoring

Wetlands that were damaged during the excavation activities in Areas 2 and 3 were restored in October 2003. Wetlands within AOC 57 are part of lower Cold Spring, Bowers, and Nonacoicus Brooks. Three years of wetland monitoring and maintenance was performed by USACE from 2004 through 2006. Afterwards, the wetland areas within AOC 57 were found to meet performance standards, and the monitoring program was terminated. A 2-year operation and maintenance phase was implemented by USACE from 2007 through 2008. The final report (USACE 2010) summarized the findings of these activities and concluded the wetlands monitoring, maintenance, and reporting activities for AOC 57.

The first long-term surface water and groundwater sampling event at AOC 57 was performed in December 2003. The monitoring program has been revised numerous times since it was initiated. Existing monitoring points and staff gauges within Area 2 and 3 are shown on Figures 3 and 4.

The current monitoring program (Sovereign Consulting, Inc. [Sovereign] and HydroGeoLogic, Inc. [HGL] 2015) consists of annual sampling of two monitoring wells (analyzed for total arsenic, iron, and manganese) at Area 3, gauging of Area 2 and Area 3 wells, and surface water sampling at one location in Area 3 (analyzed for dissolved arsenic, iron, and manganese). Additional supplemental samples for dissolved arsenic, iron, and manganese analyses were collected from an expanded number of wells and piezometers in the winter of 2019 to support the 2020 five-year review. The supplemental sampling was conducted in accordance with a supplemental work plan (KOMAN Government Solutions [KGS] 2020a).

The conceptual site model for AOC 57 (KGS 2020a) includes the following:

- VOC concentrations have been less than cleanup levels since 2011;
- Arsenic concentrations have been decreasing or stable;
- Arsenic concentrations are expected to attenuate over time as oxidation-reduction conditions become more oxidizing;
- Shallow groundwater discharges to Cold Spring Brook; and
- LUCs and current/future land use prevent human exposure to groundwater.

The Army conducted additional groundwater sampling in January and February 2020. COC concentrations in groundwater have attenuated since the source area removal; however, some metals concentrations (arsenic, manganese, iron) still remain above cleanup goals in a limited number of wells in Area 3 since completion of the source removal in 2002. These dissolved metals concentrations in groundwater are believed to be elevated due to the mobilization of naturally occurring metals in the site soils to groundwater, resulting from the reducing conditions (low dissolved oxygen, low oxidation-reduction potential) that occurs with the degradation of a carbon source such as the original hydrocarbon release at the site. The supplemental groundwater samples were collected from 15 monitoring wells and one well point at Area 2, and eight monitoring wells and three piezometers at Area 3. Samples collected during the supplemental sampling event were analyzed for select dissolved metals, arsenic, iron and manganese. The sampling results were consistent with the conceptual site model (KGS 2020a) for the site.

On March 18, 2019, while conducting temperature profiling along Cold Spring Brook, the USEPA identified areas of surface debris between AOC 57 Areas 2 and 3, in a wooded area between the walking trail and the wetlands associated with Cold Spring Brook. A supplemental field reconnaissance was completed on May 20, 2020. The debris were characterized mostly as a deteriorated vehicle and associated parts (metal debris, tires, and bumpers), smaller piles of scrap metal (empty drums and containers), and some large concrete slabs (likely from

former building foundations). Most of the metal debris was rusted and located on the ground surface. Containers and drums found partially buried or at ground surface ranged in size from approximately 1 to 55 gallons. The former contents of many of the drums and containers is unknown; however, some of the drum labels were legible enough to identify former bulk contents, with some labeled as containing antifreeze and gasoline. Additionally, some were noted to contain organic matter (i.e., soil, leaf matter). The debris identified during initial reconnaissance activities on March 18, 2019, were removed to the extent feasible and the activities are summarized in the Final Debris Removal Activities Summary Report (S-A JV 2022b).

Long-term monitoring has been conducted on AOC 57 since 2003 and the sampling network has been optimized over that time per USEPA guidance *Roadmap to Long-Term Monitoring Optimization* (USEPA 2005). Optimization updates were incorporated into the Long-Term Monitoring and Maintenance Plan (LT MMP; Sovereign and HGL 2015) which was finalized in accordance with the FFA (Army 1991), Section 7.8 "Finalization of Report(s)." The USEPA issued an additional work letter on September 29, 2020 where USEPA invoked Section 7.9 of the FFA, "Subsequent Modifications of Final Reports and Additional Work." The additional work is currently planned for 2023.

2.3 Property Information and Institutional Control Stakeholder Contacts

The contact information for each IC stakeholder is provided below.

Army (Landowner): NC3/Taylor Bldg/RM 1400, 2530 Crystal Drive, Arlington, VA 22202, Attn: BRAC Base Environmental Coordinator. The Army BRAC Base Environmental Coordinator can be contacted via the link provided on the Fort Devens website at <https://www.nae.usace.army.mil/Missions/Projects-Topics/Former-Fort-Devens-Environmental-Cleanup/>.

Massachusetts Development Finance Agency (MassDevelopment; Lessee): Massachusetts Development Finance Agency, 99 High Street, Boston, MA 02110, Attn: President & CEO. With copies to the following:

- Massachusetts Development Finance Agency, 33 Andrews Parkway, Devens, MA 01434, Attn: EVP, Devens Operations
- Massachusetts Development Finance Agency, 99 High Street, Boston, MA 02110, Attn: EVP, Real Estate
- Massachusetts Development Finance Agency, 99 High Street, Boston, MA 02110, Attn: General Counsel

USEPA: United States Environmental Protection Agency, Region 1, 5 Post Office Square, Federal Facilities Superfund Section, Suite 100 (HBT), Mail Code OSRR07-3, Boston, MA 02019, Attn: Remedial Project Manager.

MassDEP: Massachusetts Department of Environmental Protection, Bureau of Waste Site Cleanup, One Winter Street, Boston, MA 02108, Attn: Superfund Federal Facilities, Section Chief.

3 Key Elements for All Planned/Implemented Institutional Controls

LUCs in regard to real property are broadly interpreted to mean the following:

"any restriction or control, arising from the need to protect human health and the environment, that limits use of and/or exposure to any portion of that property, including water resources. This term encompasses

‘institutional controls,’ such as those involving real estate interests, governmental permitting, zoning, public advisories, deed notices, and other ‘legal’ restrictions. The term may also include restrictions on access, whether achieved by means of engineered barriers such as a fence or concrete pad, or by ‘human’ means, such as the presence of security guards. Additionally, the term may involve both affirmative measures to achieve the desired restriction (e.g., night lighting of an area) and prohibitive directives (e.g., no drilling of drinking water wells).” (Johnston 1998)

The LUCs for a property will provide a blueprint for how the property is to be used in order to maintain the level of protection intended by the remedial alternative.

3.1 General Elements

The following remedial action objectives (RAOs) were presented in the ROD (Harding ESE 2001b) to address contaminants remaining in 2001:

Area 2 floodplain:

- Protect possible future construction workers that might work within the Area 2 floodplain (recreational) areas from ingesting soils containing Aroclor-1260 and lead at concentrations that exceed preliminary remediation goals (PRGs) considered protective of human health.
- Prevent unrestricted use by residential receptors from coming in dermal contact with and ingesting Area 2 floodplain soils containing Aroclor-1260, arsenic, chromium, lead, and the EPH C11-C22 aromatic carbon range at concentrations that exceed PRGs considered protective of human health.
- Prevent unrestricted potable use of Area 2 floodplain groundwater containing arsenic and tetrachloroethene (PCE) at concentrations that exceed MCLs and Massachusetts MCLs (MMCLs) for drinking water.

Area 3 upland:

- Protect possible future commercial/industrial workers from ingesting Area 3 upland groundwater containing arsenic, cadmium, and 1,4-dichlorobenzene (1,4-DCB) at concentrations that exceed MCLs and MMCLs for drinking water.
- Prevent unrestricted residential potable use of Area 3 upland groundwater containing arsenic, cadmium, and 1,4-dichlorobenzene at concentrations that exceed MCLs and MMCLs for drinking water.

Area 3 floodplain:

- Prevent unrestricted use by residential receptors from coming in dermal contact with and ingesting Area 3 floodplain surface soils containing the EPH C11-C22 aromatic carbon range as concentrations that exceed PRGs considered protective of human health.
- Prevent unrestricted residential potable use of Area 3 floodplain groundwater containing arsenic and PCE at concentrations that exceed MCLs and MMCLs for drinking water.

The selected remedies for the three AOC 57 areas were presented in the ROD (Harding ESE 2001b) and subsequent ESD for AOC 57 (Army 2004). No further action was required for Area 1. The selected remedy for Area 2 was “Alternative II-3, Excavation (for Possible Future Use) and Institutional Controls.” Alternative II-3

contained components to reduce potential human health risks associated with contaminated soil and groundwater at the Area 2 floodplain. Key components of Alternative II-3 consisted of the following:

- Soil excavation and treatment/disposal at an off-site treatment, storage, or disposal facility;
- Wetlands protection;
- ICs – Upland portions of AOC 57 are located within an area zoned for Rail, Industrial, and Trade Related uses, while floodplain portions of AOC 57 are zoned for Open Space and Recreation (Vanasse Hangen Brustlin, Inc. 1994a and 1994b). Residential construction is not permitted under those designations. In the event of future property transfer, the Army will include deed covenants to prohibit unrestricted use of upland and floodplain property and potable use of Area 2 groundwater. All ICs will be stated in full or by reference within deeds, easements, mortgages, leases, or other instruments of property transfer. These controls will be drafted, implemented, and enforced in cooperation with federal, state, and local governments. These controls, or covenants, will be maintained as long as soil and groundwater contaminants remained at concentrations above protective cleanup levels. If future land use at AOC 57 is inconsistent with these ICs, then the site exposure scenarios for human health and the environment will be re-evaluated to assess whether this response action remains appropriate;
- Existing zoning that prohibits residential use of Area 2 property and proposed deed restrictions that prohibit potable use of Area 2 groundwater and residential use of floodplain property;
- Environmental monitoring;
- Long-term groundwater monitoring – Long-term groundwater sampling to assess groundwater COC (as listed in the ESD [Army 2004]) migration and to monitor for the decrease of the groundwater COCs to drinking water standards (i.e., MCLs/MMCLs);
- Long-term surface water monitoring – Surface water sampling to assess potential for off-site migration of human-health based COCs in excess of PRGs via the groundwater to surface water pathway. The purpose of the surface water sampling will not be to collect additional ecological risk assessment data;
- IC inspections; and
- Five-year site reviews.

The selected remedy for Area 3 was “Alternative III-2a, Excavation (to Accelerate Groundwater Cleanup) and Institutional Controls.” Alternative III-2a contained all the elements of Alternative III-2 plus soil removal to accelerate groundwater cleanup. Key components of Alternative III-2a consisted of the following:

- Soil excavation and treatment/disposal at an off-site treatment, storage, or disposal facility;
- Wetlands protection;
- ICs – Since the Property was not remediated to levels suitable for unrestricted use, LUCs are required to limit potential exposure to contaminated soil and groundwater under both the existing and future site conditions. The controls will ensure that future use of the Property is limited solely to commercial and industrial activities and that the extraction of Area 3 groundwater for industrial or potable water supply is prohibited. Upland portions of AOC 57 are located within an area zoned for Rail, Industrial, and Trade Related uses, while floodplain portions are zoned for Open Space and Recreation (Vanasse Hangen Brustlin, Inc. 1994a and 1994b). Residential construction would not be permitted under those designations. In the event of future property transfer, the Army would include deed covenants to prohibit residential use of floodplain property and prevent access to and use of Area 3 groundwater for any purpose, without the prior written approval of the Army, USEPA, and MassDEP. All ICs would be stated in full within deeds or other instruments of property

transfer. These covenants would be maintained as long as soil and/or groundwater contaminants remained at concentrations above protective cleanup levels;

- Existing zoning that prohibits residential use of Area 3 property and proposed deed restrictions that prohibit potable use of Area 3 groundwater and residential use of floodplain property;
- Environmental monitoring;
- Long-term groundwater monitoring – Long-term groundwater sampling to assess for decreases in the upland groundwater COC (arsenic, cadmium, and 1,4-DCB) and floodplain groundwater COC (arsenic and PCE) concentrations at or below cleanup levels; and for the need for continued groundwater ICs to protect human receptors;
- Long-term surface water monitoring – Surface water sampling to assess potential for off-site migration of human-health based COCs in excess of PRGs via the groundwater to surface water pathway. The purpose of the surface water sampling will not be to collect additional ecological risk assessment data;
- IC inspections; and
- Five-year site reviews.

Soil removal was performed in 2003 at Areas 2 and 3. In addition, the Army operated a petroleum product recovery system at Area 2. The Army installed and operated a petroleum product recovery system in an open excavation and installed four collection sumps at Area 2 within a groundwater interception trench installed between the soil excavation area the wetlands. Site restoration activities at Areas 2 and 3 were performed in October 2003. Transportation and disposal of remaining stockpiled contaminated soils were completed by the end of December 2003.

The original work plan (Conti 2002) did not include pumping and storage of contaminated groundwater. To address the differences between the remedial action and the remedy set forth in the ROD (Harding ESE 2001b), the Army prepared an ESD in 2003 (Army 2004). The differences between the updated remedy and the ROD were:

- Increased volume and cost of contaminated soil requiring removal to attain cleanup levels at Area 2;
- Inclusion of EPH as a COC for soils at Area 2 to monitor the presence of petroleum waste encountered during contaminated soil removal; and
- Inclusion of EPH and PCBs as COCs for groundwater at Area 2.

In 2015, the LTMMP (Sovereign and HGL 2015) discontinued the monitoring of groundwater and operation of the sumps at Area 2. The plan proposed long-term monitoring of two groundwater wells and one surface water sample location at Area 3 every 5 years (Sovereign and HGL 2015).

In September 2020, during discussions between the Army and the USEPA concerning the 2020 Final Five-Year Review Report for the Former Fort Devens (KGS 2020b), the Army and USEPA came to the conclusion that the two agencies would not be able to timely resolve outstanding comments to issue joint protectiveness statements.

The Army has prepared a Post-ROD Supplemental Remedial Investigation (SRI) Work Plan for AOC 57 (S-A JV 2023) to confirm the Army Protectiveness Statement in the 2020 Five-Year Review Report (KGS 2020b) and address items specified in the USEPA Additional Work Requirements Table. Specifically, the goals of the Post-ROD SRI are to:

- Collect sufficient site-specific data to accurately define/confirm the lateral and vertical extent of groundwater contamination.
- Evaluate possible off-site migration of contaminated groundwater and identify current impacts, if any, on downgradient public and/or private drinking water supply and irrigation wells.
- Monitor attainment of ROD/ESD-specified RAOs and cleanup goals.
- Assess short- and long-term protectiveness of the selected remedy.

In addition, the Post-ROD SRI will use historical and new data to evaluate the ROD-stipulated remedy for possible modification or site close-out.

Currently, the RAOs are being achieved through excavation and disposal of contaminated soil, reduction of VOCs and SVOCs in groundwater contamination through natural attenuation, and implementation of LUCs. Groundwater monitoring at AOC 57 has confirmed many of the COCs have decreased below cleanup levels. The five-year site inspection and interviews, and annual LUC inspections and interviews, confirmed that site use remains Rail Industrial Land Trade-Related and Open Space property (KGS 2020b).

3.2 Elements Specific to Instrument Category

The LUCs for AOC 57 consist of deed restrictions that prohibit access or use of groundwater for any purpose and residential use of AOC 57 property. The LUC restrictions for Areas 2 and 3 are depicted on Figure 5.

For purposes of this provision, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12. These LUCs are currently in effect at AOC 57. The Army has leased AOC 57 to MassDevelopment, along with other Fort Devens parcels, as documented in the 1996 LIFO (Appendix B). LUCs are included in the 1996 LIFO that is currently in effect for all leased Fort Devens parcels, including those in AOC 57. These LUC restrictions include a moratorium on subsurface excavation, drilling, digging or other disturbance of the surface of the ground, or construction, alterations, additions, modifications, improvements or installations that may adversely affect the clean-up of leased premises by the lessee without approval of the Army, USEPA, and MassDEP. The LIFO also stipulates that no groundwater will be extracted for any purpose. These restrictions are more stringent than the RAOs for Areas 2 and 3 as they do not designate separate objectives for commercial or residential use as presented in the ROD. The LUC checklist is presented in Appendix D and the following subsections describe the methodology used to perform LUC monitoring activities.

The Army prepared and submitted a LUC implementation and monitoring plan as part of the site LTMMMP. Institutional control inspections are conducted annually as stated in the LUC implementation and monitoring section of the LTMMMP (Sovereign and HGL 2015). The results of the inspections have been reported in the Main Post Annual Reports.

The key components of the Selected Remedy for Area 2, Excavation (for Possible Future Use) and ICs, are:

- Soil excavation and treatment/disposal at an off-site treatment, storage, or disposal facility;
- Wetlands protection;
- ICs (prohibiting access or use of groundwater for any purpose and residential use of AOC 57 property);
- Environmental monitoring (long term groundwater and surface water monitoring);

- IC inspections; and
- Five-year site reviews.

The key components of the Selected Remedy for Area 3, Excavation (to Accelerate Groundwater Cleanup) and ICs are:

- Soil excavation and treatment/disposal at an off-site treatment, storage, or disposal facility;
- Wetlands protection;
- ICs (prohibiting access or use of groundwater for any purpose and residential use of AOC 57 property);
- Environmental monitoring (long term groundwater and surface water monitoring);
- IC inspections; and
- Five-year site reviews.

These LUCs include preventing the use of this AOC for residential purposes and preventing the use of site groundwater. LUCs require establishment of ICs to prohibit potable use of groundwater in Areas 2 and 3 and residential use of floodplain property. The restrictions would be stated in full or by reference within deeds, easements, mortgages, leases, or other instruments of property transfer. If the property is transferred, a Notice of Activity Use Limitation (NAUL) will be drafted within 60 days by the property owner upon transfer. The LUC checklist is presented in Appendix D and the following subsections describe the methodology used to perform LUC monitoring activities.

3.2.1 Land-Use Control Inspection

Existing land use and site conditions will be assessed during annual LUC inspections to confirm that the LUC requirements are being met. If future proposed land uses are inconsistent with the LUCs, then site exposure scenarios to human health and the environment will be re-evaluated to confirm the selected response actions are appropriate.

3.2.2 Interviews

Telephone interviews will be conducted with the property manager or other designee familiar with the day-to-day activities at AOC 57. During the interviews, the representative will be asked about compliance with the existing LUCs. Specifically, the following items will be discussed during the interviews.

- The representative's familiarity with the LUCs imposed upon the property and documentation of compliance with these controls;
- Change to property use;
- Approved conditional exemptions, amendments, and/or releases;
- Unauthorized use and activities;
- Review of corrective action to resolve unauthorized uses and activities;
- Overall effectiveness of the LUCs;
- The source of public drinking water for the property; and

- Proposed plans for property sale, future redevelopment, and construction or demolition activities on the property.

Site-specific annual LUC checklists, including interview components, were developed in 2007 for use during LUC verification activities. The LUC checklist for AOC 57 is presented in Appendix D.

3.2.3 Physical On-Site Inspection

Field personnel will perform a physical inspection of AOC 57 during annual LUC inspections to confirm compliance with the LUCs. The physical inspection will include the area surrounding groundwater monitoring well locations and the path or route to them. The physical inspection of AOC 57 will include the following items:

- An examination for evidence that groundwater extraction wells have been installed on the premises;
- An examination for evidence that no harmful exposures to the public are evident regarding groundwater; and
- Any evidence of site use changes.

The annual LUC checklist, including physical on-site inspection components, is presented in Appendix D.

3.3 Institutional Control Relationship Matrix

Table 2 below provides a summary of LUCs, ICs, and other post-ROD restrictions for AOC 57.

Table 2 Summary of Land Use Controls, Institutional Controls, and Other Post-ROD Restrictions

| Affected Parcel | Media Affected | LUC/IC Goals/Objectives | Restriction | Use Restriction IC/Objective | IC Instruments (Planned or Implemented) | Site Controls | Other |
|-----------------------------|------------------------|--|---------------------------------|---|--|------------------------|-------------------|
| AOC 57 Area 2 Parcel A6a | Floodplain groundwater | Prohibit the unrestricted use of groundwater | No extraction of groundwater | Establishment of deed covenants to prohibit potable use of groundwater in floodplain. | Implemented: ROD (Harding ESE 2001b), ESD (Army 2004), LIFO (1996) Planned (upon transfer of property): Restrictive covenants documented in Quitclaim Deed and NAUL | Annual LUC inspections | Five-year reviews |
| | Floodplain soil | Prohibit dermal contact and ingestion of floodplain soil | No contact with floodplain soil | Establishment of deed covenants for land use restrictions within the floodplain for residential development. Contaminated soil area would be identified and contractors performing work would require a Soil Management Plan. | Implemented: ROD (Harding ESE 2001b), ESD (Army 2004), LIFO (1996) Planned (upon transfer of property): Restrictive covenants documented in Quitclaim Deed and NAUL | Annual LUC inspections | Five-year reviews |
| AOC 57 Area 3 Parcel A6a | Upland groundwater | Prohibit unrestricted use of groundwater | No extraction of groundwater | Establishment of deed covenants to prohibit potable use of groundwater in upland. | Implemented: ROD (Harding ESE 2001b), ESD (Army 2004), LIFO (1996) Planned (upon transfer of property): Restrictive covenants documented in Quitclaim Deed and NAUL | Annual LUC inspections | Five-year reviews |
| | Floodplain groundwater | Prohibit unrestricted use of groundwater | No extraction of groundwater | Establishment of deed covenants to prohibit potable use of groundwater in floodplain. | Implemented: ROD (Harding ESE 2001b), ESD (Army 2004), LIFO (1996) Planned (upon transfer of property): Restrictive covenants documented in Quitclaim Deed and NAUL | Annual LUC inspections | Five-year reviews |

| Affected Parcel | Media Affected | LUC/IC Goals/Objectives | Restriction | Use Restriction IC/Objective | IC Instruments (Planned or Implemented) | Site Controls | Other |
|--|-------------------------|--|---------------------------------|--|---|------------------------|-------------------|
| AOC 57 Area 3 Parcel A6a (continued) | Floodplain surface soil | Prohibit dermal contact and ingestion of floodplain surface soil | No contact with floodplain soil | Establishment of deed covenants for land use restrictions within the floodplain for residential development. | Implemented: ROD (Harding ESE 2001b), ESD (Army 2004), LIFOC (1996) Planned (upon transfer of property): Restrictive covenants documented in Quitclaim Deed and NAUL | Annual LUC inspections | Five-year reviews |

4 Institutional Control Maintenance Elements

The Army is responsible for implementing, maintaining, reporting, and enforcing the LUCs. Although the Army may delegate some or all of these duties required under this LUCIP to another entity (such as a future property owner) or through a third party by contract or through other means, it retains ultimate responsibility for ensuring the effectiveness and integrity of the AOC 57 remedy, as determined by the ROD and ESD, through the proper management of groundwater and implementation, maintenance, reporting, and enforcement of LUCs. Should another entity or third party cease to perform these duties, the Army shall implement the LUCs or propose modifications to this LUCIP that provide an equivalent level of protection, as determined by USEPA and MassDEP, in consultation with MassDevelopment or its successor municipal authority.

Upon approval this LUCIP by USEPA and MassDEP, the Army will undertake the following implementation actions identified in Table 3 to ensure compliance with requirements set forth in the ROD and ESD and set forth herein, and ensure that LUC objectives are met and maintained.

If the property is transferred, the Army shall ensure that a NAUL is recorded on the title to the property and a copy of the NAUL, prepared, recorded and inserted on the deed is included in Appendix B after recording in the Worcester County Registry of Deeds is complete. The Army, in consultation with USEPA and MassDEP, will work with the future property owner to ensure that the NAUL includes all ROD/ESD-required LUCs. Copies of subsequently executed NAULs should be inserted into Appendix B as they are recorded/executed.

4.1 Institutional Control Assurance Monitoring

The following monitoring and maintenance activities will occur annually to confirm the performance objectives of the LUCs are met:

- IC activities are the following:
 - Actively monitor the area of LUCs in accordance with the LUC checklist in Appendix D. Any required changes to the area of LUCs would be implemented through a LUCIP amendment with the approval of USEPA and MassDEP; and
 - Monitor and report on the implementation and enforcement of ICs to USEPA, MassDEP, and MassDevelopment.
- Affirmative measures include the following:
 - Distribution of the LUCIP to appropriate parties; and
 - Meeting amongst the stakeholders if there is a change in the area due to intrusive activities.

The following monitoring and maintenance activities will occur every five years:

- IC activities include conducting a five-year review in accordance with CERCLA, Section 121(c), so that human health and the environment are being protected by the remedy and to document maintenance of the LUCs; and
- Affirmative measures include distribution of the five-year review to appropriate parties.

4.2 Reporting

This section describes the reporting that will be completed to document IC activities and alternative measures.

4.2.1 Annual Reviews/Inspections

Annual reviews, physical inspections, and interviews with Army, MassDevelopment and current/future sublessees or future property owners shall be conducted to verify continued, effective implementation, enforcement, and compliance with the LUCs required per the ROD, ESD, and this LUCIP. The Army shall complete the annual LUC inspection checklist, included in Appendix D, to annually evaluate/verify compliance with the foregoing. The Army (or its designee) will provide results of the annual LUC inspection in an annual LUC inspection/compliance report for submittal to USEPA, MassDEP, and MassDevelopment. At a minimum, the annual report will include the completed annual LUC inspection checklist (Appendix D) and a narrative summary of work performed, discuss observations during physical site inspections, identify deviations from the LUCIP and whether they were caused by an implementation issue, a change in site conditions or land use, or some other issue. The report should also recommend corrective actions necessary or already undertaken to correct the infraction(s). If any deficiency(ies) are found during the annual inspection, a written explanation will be prepared indicating the deficiency and what efforts or measures have or will be undertaken to correct the deficiency, and a schedule to correct the same. The correction and enforcement of such deficiencies shall follow the requirements under Section 6, Institutional Control Modification and Termination Elements. If there is to be a delegation of performance of duties by the Army as permitted by Section 4 above, the Army, having ultimate responsibility for the remedy's integrity, will promptly notify USEPA, MassDEP, and MassDevelopment of such delegation.

The Army shall provide copies of the Final LUC Inspection/Compliance Report to USEPA, MassDEP, and MassDevelopment.

4.2.2 Five-Year Reviews

As part of the comprehensive five-year review process conducted at Devens under Section 121 of CERCLA, as amended by Superfund Amendments and Reauthorization Act of 1986, a review/inspection of the continued short- and long-term effectiveness of the LUCs will be conducted by the Army, with the cooperation of MassDevelopment and any current and future property lessees and/or owners. Public meetings will be held by the Army coincident with these five-year reviews to help keep the public informed of site status, including its general condition and effectiveness of the remedial action.

4.2.3 Institutional Controls

An annual LUC compliance review, using the LUC checklist presented in Appendix D, will be documented in an annual report and will be provided by the Army to USEPA, MassDEP, and MassDevelopment. The annual report will include a summary of the items reviewed from the checklist, identification of deviations from this LUCIP, necessary corrective actions due to implementation issues or as a result of changes in site conditions or land use, and proposed changes to this LUCIP and reporting frequency. If deficiencies, including violations of the LUCs, are found during the annual review, a written explanation will be prepared indicating the deficiency and what efforts or measures have been or will be undertaken to correct the deficiency. The correction and enforcement of such deficiencies will meet the requirements in Section 5 of this LUCIP. If the Army intends to delegate performance of duties, the Army will promptly notify USEPA, MassDEP, and MassDevelopment.

4.2.4 Affirmative Measures

The annual review will include items identified on the attached LUC checklist in Appendix D. This checklist will be followed as a guideline to review required tasks and updates that may be necessary because of changing circumstances throughout that year. The annual report will also address whether the Army, USEPA, MassDEP, and MassDevelopment were notified of the restrictions and controls affecting AOC 57, and whether use of the area has conformed to such restrictions and controls.

4.3 Implementation Schedule

The Army will implement all actions by the timeframes indicated in the table below.

Table 3 Milestone Activity Schedule

| Milestone Activity | Completion Date |
|--|--|
| Post the Final LUCIP to the Fort Devens website at https://www.nae.usace.army.mil/Missions/Projects-Topics/Former-Fort-Devens-Environmental-Cleanup/ | Within 30 days of USEPA and MassDEP concurrence of the LUCIP |
| Annual LUC inspection | Occurs annually as part of the inspections of the former Main Post sites |

5 Institutional Control Enforcement Elements

If the Army determines that the LUCs are not being complied with, its actions may range from informal resolutions with the owner or violator, to the institution of judicial action. Any activity that is inconsistent with the LUC objectives or use restrictions, or any other action that may interfere with the effectiveness of the LUCs will be addressed by the Army as soon as practicable, but in no case will the process be initiated later than 10 days after the Army becomes aware of the breach. The Army will notify USEPA and MassDEP as soon as practicable but no longer than 10 days after discovery of any activity that is inconsistent with the LUC objectives or use restrictions, or any other action that may interfere with the effectiveness of the ICs. The Army will notify USEPA and MassDEP regarding how the Army has addressed or will address the breach within 10 days of sending USEPA and MassDEP notification of the breach. Should the Army become aware that a user of AOC 57 has violated any LUC requirement where a local agency may have independent jurisdiction (local regulations and permits), the Army will also notify the agencies and MassDevelopment or future property owner of such violations and work cooperatively with them to re-establish owner/user compliance with the LUC. Without limiting the authority of the USEPA and MassDEP under applicable law, MassDEP shall have the authority to enforce the NAUL against the then current owner of the property(ies).

6 Institutional Control Modification and Termination Elements

If the Army can demonstrate based on currently available or newly acquired data, that site access restriction can be relaxed or removed while protection of human health is maintained, the Army may petition USEPA for such a relaxation or removal of restrictions. Until such time, the LUCs reflected in this LUCIP are expected to remain in place. If LUCs are no longer needed, the owner, if other than the Army, of the area of LUCs will be notified and LUCs will be discontinued.

6.1 Modification

The Army shall not modify or terminate LUCs, implementation actions, or modify restrictions regarding land use without approval by USEPA and the MassDEP and the concurrence of MassDevelopment; provided that Army determines, in its sole discretion, that the requirement for such concurrence shall not place the Army in violation of its legal obligations to the USEPA. The Army shall seek prior concurrence before any anticipated action that may disrupt the effectiveness of the LUCs or any action that may alter or negate the need for LUCs. This LUCIP may be amended only in accordance with Section VII of the FFA. Except as provided by Section 6.3 of this LUCIP, no changes shall be made without the prior approval of USEPA and MassDEP, and the concurrence of MassDevelopment; provided that Army determines, in its sole discretion, that the requirement for such concurrence shall not place the Army in violation of its legal obligations to the USEPA. In the latter case, the Army shall take reasonable steps to consult with MassDevelopment to minimize the impacts of the changes to these parties. Any modification or termination of LUCs required by the current remedy decision documents for AOC 57 (i.e., ROD or ESD) will also require a modification to the AOC 57 remedy to document such changes.

6.2 Termination

The LUCs will be maintained until the Army can demonstrate to USEPA, based on currently available or newly acquired data, that site access restriction can be relaxed or removed while protection of human health is maintained. If LUCs are no longer needed, as determined in an ESD or ROD Amendment, the Army will coordinate with the owner of the affected property(ies) and MassDEP to record releases of the relevant LUCs following applicable federal, state, and local regulations and will also advise MassDevelopment of that action. At that time, the specific LUCs that are no longer needed, and the associated responsibilities will be discontinued.

6.3 Approvals

Changes to the LUCIP can only be approved through the process set forth in Section 5 of this LUCIP. Where the approval of a party (hereafter, the "approval party") is required under this LUCIP for non-substantive changes that may be made without amendment of this LUCIP as provided herein, the Army (or its designee) shall give the approval party notice thereof, along with any information to be included in such notice pursuant to the terms of this LUCIP. If the approval party fails to respond to the request for approval within 30 days after said request is made, the Army (or its designee) will send the approval party a second request. If the approval party fails to respond to such second request within 10 days after said second request is made, the approval party will be deemed to have approved such request.

6.4 Notices

All notices, responses, requests, and approvals required or permitted under this LUCIP, between or among MassDevelopment (or its successor entity[ies]), USEPA, MassDEP and/or the Army, shall be sent by postage pre-paid certified or registered mail (return receipt requested) or by recognized overnight courier (such as DHL, Federal Express, UPS), with delivery charges prepaid, to the following respective addresses identified below unless all parties consent to the use of electronic mail:

Massachusetts Development Finance Agency: Massachusetts Development Finance Agency, 99 High Street, Boston, MA 02110, Attn: President & CEO. With copies to the following:

- Massachusetts Development Finance Agency, 33 Andrews Parkway, Devens, MA 01434, Attn: EVP, Devens Operations
- Massachusetts Development Finance Agency, 99 High Street, Boston, MA 02110, Attn: EVP, Real Estate
- Massachusetts Development Finance Agency, 99 High Street, Boston, MA 02110, Attn: General Counsel

USEPA: United States Environmental Protection Agency, Region 1, 5 Post Office Square, Federal Facilities Superfund Section, Suite 100 (HBT), Mail Code OSRR07-3, Boston, MA 02019, Attn: Remedial Project Manager.

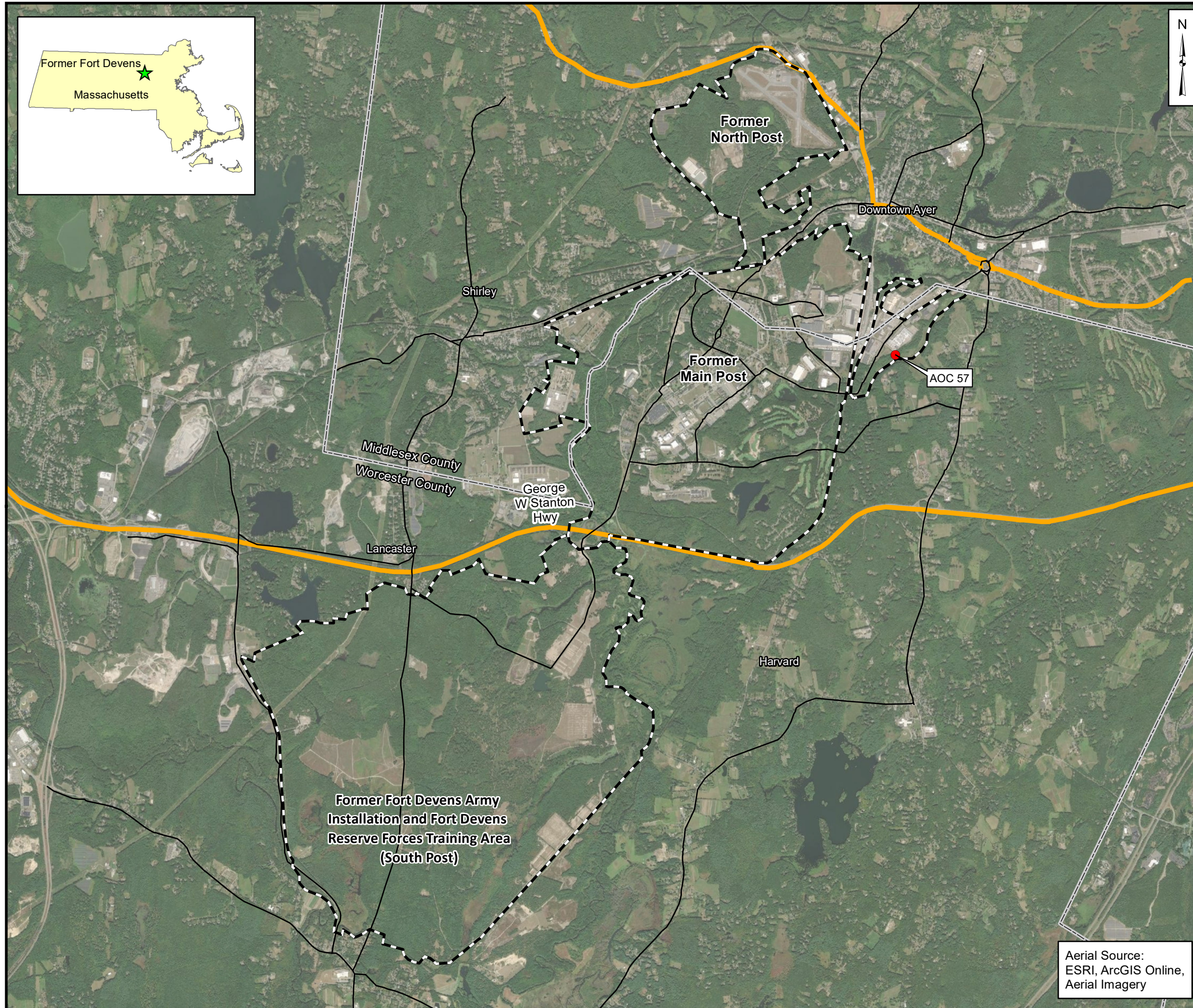
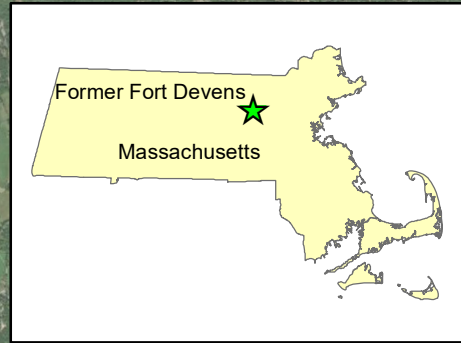
MassDEP: Massachusetts Department of Environmental Protection, Bureau of Waste Site Cleanup, One Winter Street, Boston, MA 02108, Attn: Superfund Federal Facilities, Section Chief.

Army: NC3/Taylor Bldg/RM 1400, 2530 Crystal Drive, Arlington, VA 22202, Attn: BRAC Base Environmental Coordinator.






A party may change its address for notice by notice to the other parties in accordance with this section. Notices shall be deemed given when delivered (or, if delivery is refused, when so refused).

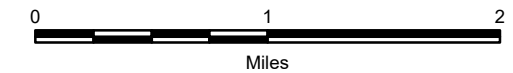
Figures

T:_ENV\Devens_RFTA\Seed_Task_Order\WXDs\AR2022 - AOC57\Final\Figure 1 - Site Location.mxd 8/7/2022 9:51:21 AM User Name: SharmayM4948



Legend

-  Former Fort Devens Boundary
-  Area of Contamination (AOC)
-  County Line
-  Highway
-  Major Road



Land Use Control Implementation Plan
AOC 57, Building 3713 Fuel Oil Spill Site
Former Fort Devens Army Installation
Devens, Massachusetts

Site Location

Aerial Source:
ESRI, ArcGIS Online,
Aerial Imagery










**Figure
1**

Path : T:\ENV\Devens_RFTA\Seed_Task_Order\MXDs\AR2022 - AOC57\Final\2022-12-12\Figure 2 - AOC57 Site Layout.mxd User : sk101076 Date: 12/21/2022



Legend

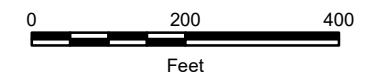
-  Former Building
-  AOC 57 Subarea
-  Parcel A6a Boundary
-  Irrigation Well (approximate location)
-  Stream
-  Walking Trail
-  Topographic Contour (ft AMSL)

Notes:

1. Boundaries and site features shown on the figure are approximate.
2. The entirety of AOC 57 lies within a MassDEP Zone II Wellhead Protection Area.

Abbreviations:

ft AMSL = feet above mean sea level
 MassDEP = Massachusetts Department of Environmental Protection



Land Use Control Implementation Plan
 AOC 57, Building 3713 Fuel Oil Spill Site
 Former Fort Devens Army Installation
 Devens, Massachusetts

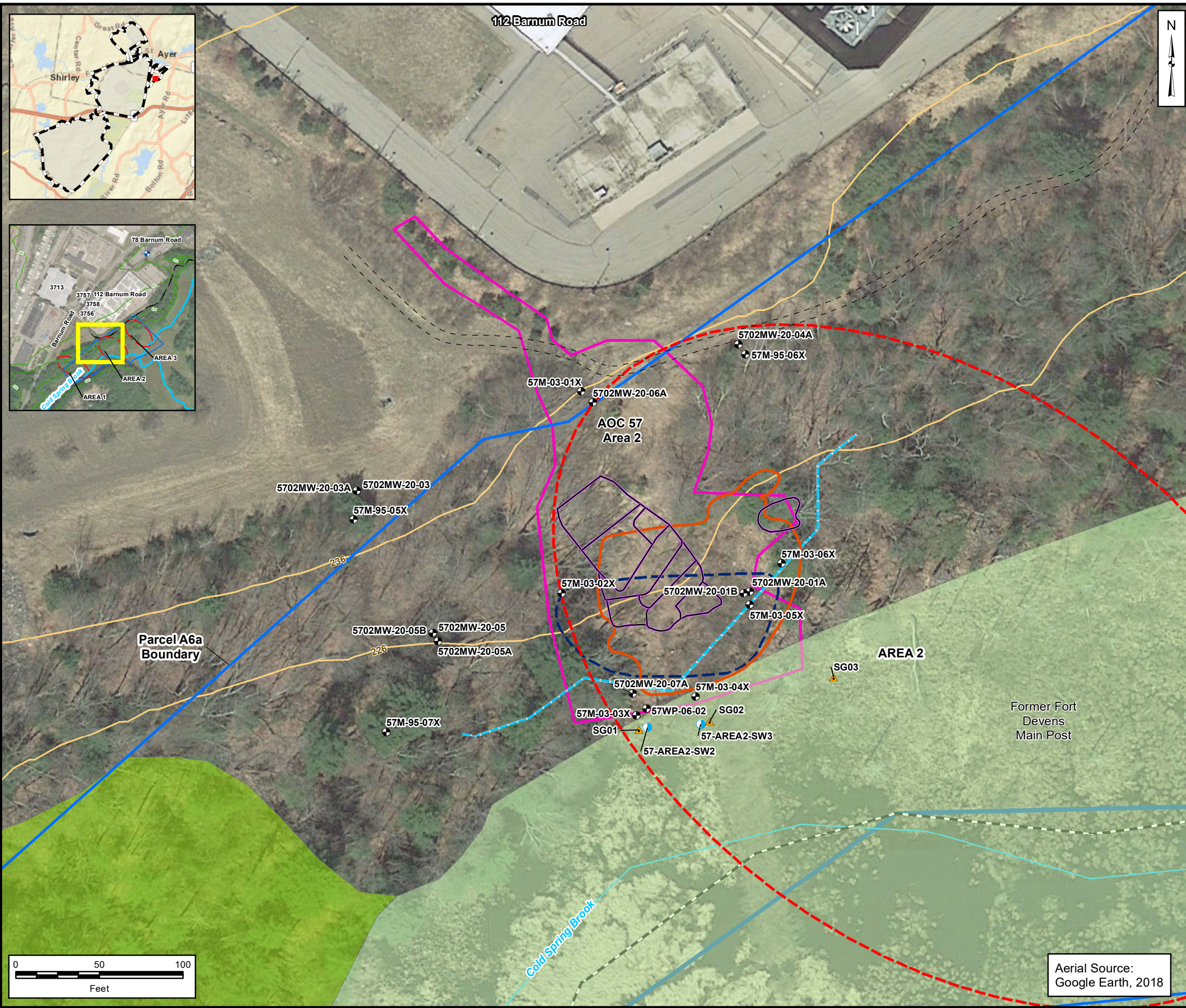
Site Layout

Aerial Source:
 ESRI, ArcGIS Online,
 Aerial Imagery



**Figure
 2**

Document Path: T:\ENVIDevens_RFTASeed_Task_Order\MXDs\AR2022 - AOC57\Final\2022-12-12\Figure 3 - Site Features - Area 2.mxd Date Saved: 12/22/2022 10:37:35 AM User Name: skt01076



Legend

- Former Fort Devens Boundary
- Area of Contamination (AOC)
- AOC 57 Subarea
- Final Excavation Limit (2003)
- Conti Excavation Limit (2002)
- Flagged Wetland Limits
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on Fall 2003 to Spring 2008 analytical data) (2008 Annual Report, HGL, 2009)
- Parcel A6a
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Stream
- Walking Trail
- Topographic Contour (ft AMSL)
- Monitoring Well
- Surface Water Sample Location
- Staff Gauge

Note:
1. Boundaries and site features shown on the figure are approximate.

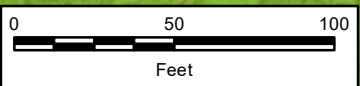
Abbreviations:
Conti = Conti Environmental, Inc.
ft AMSL = feet above mean sea level
HGL = HydroGeoLogic, Inc.

Land Use Control Implementation Plan
AOC 57, Building 3713 Fuel Oil Spill Site
Former Fort Devens Army Installation
Devens, Massachusetts

Site Features - Area 2

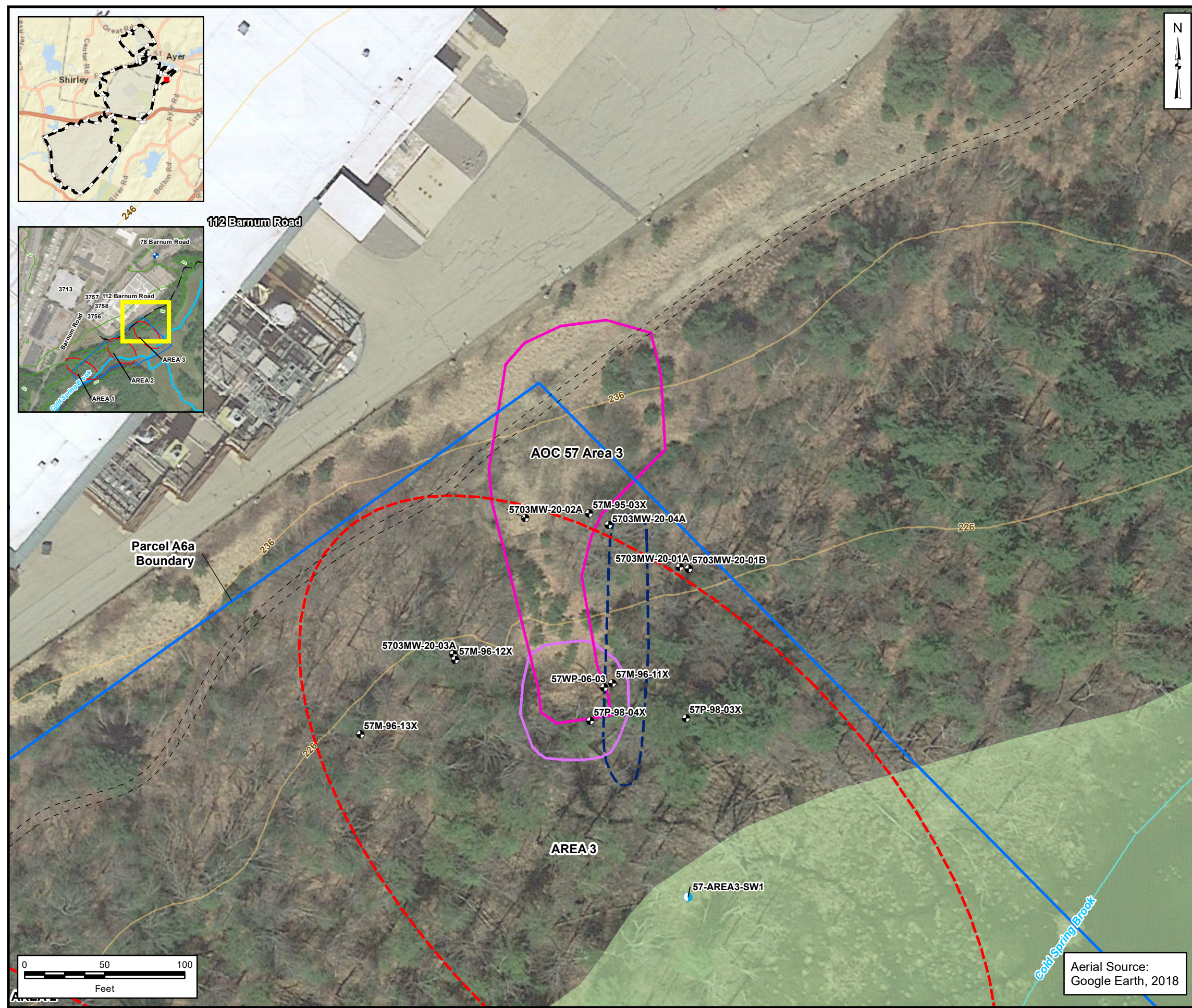


Figure 3



Aerial Source:
Google Earth, 2018

Document Path: T:\ENVIDevens_RFTASeed_Task_Order\MXDs\AR2022 - AOC57\Final\2022-12-12\Figure 4 - Site Features - Area 3.mxd Date Saved: 12/22/2022 11:00:35 AM User Name: sk01076



Legend

- Former Fort Devens Boundary
- Area of Contamination (AOC)
- AOC 57 Subarea
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on Fall 2003 to Spring 2008 analytical data) (2008 Annual Report, HGL, 2009)
- Alternate III-2a Estimated Soil Excavation Area
- Parcel A6a
- Freshwater Emergent Wetland
- Stream
- Walking Trail
- Topographic Contour (ft AMSL)
- Monitoring Well
- Surface Water Sample Location

Note:

1. Boundaries and site features shown on the figure are approximate.

Abbreviations:

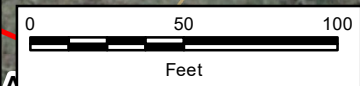
ft AMSL = feet above mean sea level
HGL = HydroGeoLogic, Inc.

Land Use Control Implementation Plan
AOC 57, Building 3713 Fuel Oil Spill Site
Former Fort Devens Army Installation
Devens, Massachusetts

Site Features - Area 3

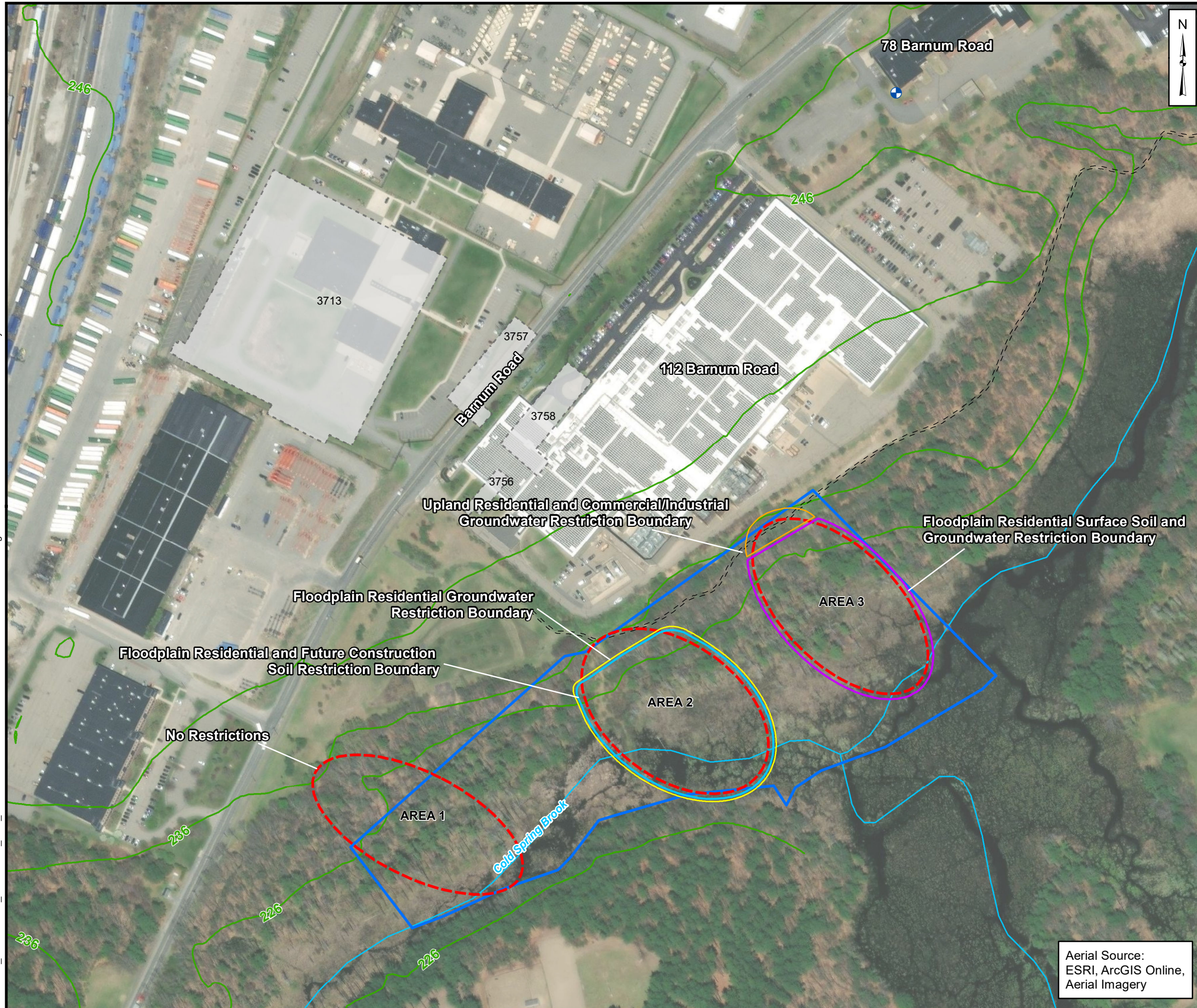


Figure 4




Aerial Source:
Google Earth, 2018

File: Figure 4 - Site Features - Area 3.mxd



Legend

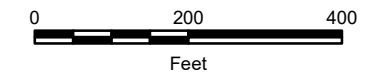
-  Former Building
-  AOC 57 Subarea
-  Parcel A6a Boundary
-  Floodplain Residential Groundwater Restriction Boundary
-  Floodplain Residential and Future Construction Soil Restriction Boundary
-  Floodplain Residential Surface Soil and Groundwater Restriction Boundary
-  Upland Residential and Commercial/Industrial Groundwater Restriction Boundary
-  Irrigation Well (approximate location)
-  Stream
-  Walking Trail
-  Topographic Contour (ft AMSL)

Notes:

1. Boundaries and site features shown on the figure are approximate.
2. The entirety of AOC 57 lies within a MassDEP Zone II Wellhead Protection Area.
3. Delineation between the Floodplain and Upland is the approximate 228 ft AMSL contour.

Abbreviations:

ft AMSL = feet above mean sea level
 MassDEP = Massachusetts Department of Environmental Protection



Land Use Control Implementation Plan
 AOC 57, Building 3713 Fuel Oil Spill Site
 Former Fort Devens Army Installation
 Devens, Massachusetts

Site Restrictions

Aerial Source:
 ESRI, ArcGIS Online,
 Aerial Imagery



**Figure
 5**

Appendix A

LUCIP References

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Appendix B

Enclosures

LEASE IN FURTHERANCE OF CONVEYANCE
OF REAL PROPERTY AND FACILITIES ON
THE FORT DEVENS, MASSACHUSETTS,
MILITARY RESERVATION

202-
529-1389

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EXHIBITS

| <u>Exhibit Number</u> | <u>Title</u> |
|---------------------------|---|
| A | Lease Premises |
| B | Memorandum of Agreement - Delivered at Closing ↳ MOA - Army and Landbank |
| C | Survey of Condition - Delivered at Closing |

DEPARTMENT OF THE ARMY
LEASE IN FURTHERANCE OF CONVEYANCE
UNDER
BASE REALIGNMENT AND CLOSURE (BRAC)
THE FORT DEVENS, MASSACHUSETTS,
MILITARY RESERVATION

WHEREAS, the United States, acting through the SECRETARY OF THE ARMY, hereinafter referred to as the "Army" or "Lessor", has made a final disposal or reuse decision with regard to property located at the Fort Devens, Massachusetts, Military Reservation (Fort Devens), dated May 9, 1996; and

WHEREAS, pursuant to the Defense Base Closure and Realignment Act of 1990 (PL 101-510), as amended, (Base Closure Law) Fort Devens must close not later than July 10, 1997; and

WHEREAS, pursuant to Chapter 498 of the Massachusetts Acts of 1993, as amended, the Government Land Bank (Land Bank), hereinafter referred to as the "Land Bank" or "Lessee", was granted the authority to oversee and implement the civilian reuse of Fort Devens in accordance with a locally-approved reuse plan; and

WHEREAS, on December 7, 1994, the Reuse Plan and associated Bylaws for Fort Devens (Reuse Plan) were approved by the towns of Ayer, Harvard and Shirley; and

WHEREAS, the Land Bank, a Local Reuse Authority, has made an application for an Economic Development Conveyance (EDC) to the

Department of the Army for the purchase of portions of the property that formerly comprised Fort Devens; and

WHEREAS, the Army, as authorized by the Base Closure Law, has determined that the Land Bank's application meets the criteria for conveyance to assist economic development and has accepted the application; and an offer to purchase/sell has been negotiated and accepted by Army and the Land Bank, in a Memorandum of Agreement (the MOA), dated May 9, 1996, regarding the transfer to the Land Bank of certain portions of Fort Devens not being retained by the Army or transferred to federal agencies, for the purpose of implementing the Reuse Plan; and

WHEREAS, due to the ongoing environmental cleanup and the unexploded ordnance (UXO) clearance process at Fort Devens being undertaken by the Army, in order to implement the intentions of the Army and the Land Bank as set forth in the MOA, certain parcels will be leased rather than conveyed pending completion of the environmental cleanup and UXO clearance by the Army, said parcels being more particularly described in Exhibit A, hereinafter referred to as the "Lease Premises."

WHEREAS, as soon as a Finding of Suitability to Transfer (FOST) is executed by the Army for the Leased Premises, or a portion of said Leased Premises, and said Leased Premises may be conveyed consistent with the requirements of the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. 9620 (h), as amended, and other legal and policy requirements, the Secretary of the Army intends to convey the same to the Land Bank by one or more quitclaim deeds, as provided for in the MOA, and the Land Bank agrees to accept such conveyance(s) as soon as the above-referenced conditions are met; and

WHEREAS, the Army and the Land Bank have agreed to a Lease pending conveyance(s) so as to provide immediate possession of the Lease Premises to the Land Bank; and

WHEREAS, the parties hereto find, acknowledge, and agree that: (a) the public interest will be served by this Lease because interim use of the Lease Premises will facilitate economic recovery and reuse of the property and create new jobs in the region, thereby helping to offset the impacts of the closure of Fort Devens in a manner that will not interfere with or delay the environmental remediation and UXO clearance of the Lease Premises; (b) the Lease will relieve the Secretary of the expense of continued care, custody, control, operation and maintenance of the property; and (c) under said circumstances obtaining fair market value for leasing the Lease Premises is not compatible with the public interest.

AND WHEREAS, the Secretary has determined in accordance with the authority contained in 10 U.S.C. 2667(f), that the surplus property hereby leased would facilitate state or local economic adjustment efforts; would be advantageous to the United States and be in the public interest; and that obtaining fair market value is not compatible with the public benefit;

NOW THEREFORE,

WITNESSETH

This lease (Lease) is made as of the 9th day of May, 1996, on behalf of the United States, between THE SECRETARY OF THE ARMY (Army), by the authority of Title 10, United States Code, Section 2667, having an address for purposes of the Lease at Department of the Army, C/O Commander and Division Engineer, United States

Army Corps of Engineers, New England Division, Frederick C. Murphy Federal Building, 424 Trapelo Road, Waltham, MA 02254-9149, and THE GOVERNMENT LAND BANK (Land Bank), a Massachusetts body corporate and politic created by Chapter 212 of the Acts of 1975, as amended, having its principal office at 75 Federal Street, 10th Floor, Boston, Massachusetts 02110.

THIS LEASE is granted subject to the following terms and conditions:

ARTICLE 1

LEASE; LEASE TERM; USE OF LEASE PREMISES

1.01 To have and to hold for a term commencing May 9, 1996 and ending on May 9, 2046 (Lease Term), unless sooner terminated or conveyed in fee pursuant to the terms hereof or of the Memorandum of Agreement between the United States of America and the Government Land Bank for the Conveyance of Fort Devens, Massachusetts, dated May 9, 1996 (MOA), attached as Exhibit B, the Army hereby leases to the Land Bank, and the Land Bank hereby leases from the Army, the Lease Premises (Exhibit A herein), including all buildings, facilities and improvements thereon and rights appurtenant thereto. If due to default by the Land Bank or termination of the MOA, the Land Bank is not entitled to conveyance of the Leased Premises at the time the Army is able to convey in fee, then the Lease shall terminate on the date of execution of a Finding of Suitability to Transfer (FOST) by the Army with respect to that portion of the Leased Premises covered by the FOST. The Lessor reserves the use and occupancy of the following buildings, including all facilities and areas currently used by the Lessor in connection therewith, and the right of ingress and egress thereto, until July 10, 1997: T-204, ASP

Operations; T-3701, Administrative; P-3748, Warehouse; T-3758, TASC Warehouse; P-3759, Warehouse; P-3773, Reserve Center; P-3774, Organization Maintenance Shop; P-3775, Oil Storage Building; P-3776 Dispatch Building; P-3631 thru 3642, 3644, 3647, 3649, 3653, collectively the ASP; and Housing Units at 80 Walnut St., 822 Plum Street, and 540 Oak St. The Lessor may vacate said buildings and facilities at any time prior to July 10, 1997, after 30 days written notice to the Lessee.

1.02 As provided in paragraph 1.03 of the MOA, the Lease Premises, or portions thereof, shall be conveyed in accordance with and pursuant to the terms of the MOA to the Land Bank upon execution of a FOST by the Army.

1.03 The Land Bank and any sublessees, subtenants or licensees under this Lease (collectively "sublessees") may use the Lease Premises for all uses as may be permitted by the Reuse Plan or, upon approval of the Army, amendments to the Reuse Plan. If the Army reasonably determines any such amendment of the Reuse Plan allows a use or uses not adequately analyzed in the Fort Devens Disposal/Reuse Environmental Impact Statement (EIS), the Land Bank shall provide additional environmental analysis and documentation, at the Land Bank's expense, to the Army as the Army deems necessary to comply with the National Environmental Policy Act of 1969 and implementing regulations and other applicable environmental laws and regulations, prior to any use under such amendment. The Land Bank shall be solely responsible for complying with the Massachusetts Environmental Policy Act (MEPA).

1.04 Except as otherwise specifically provided, any reference herein to "Lessor" or "Army" shall include their duly authorized representatives. Any reference to "Lessee" or "Land Bank" shall

include successors and assigns, and their duly authorized representatives.

ARTICLE 2

RENT

2.01 The Land Bank shall provide the Army as rent (Rent) hereunder, (a) protection, repair and maintenance of, and assumption of sole operating responsibility for the Lease Premises, except with regard to Army operations undertaken in furtherance of or related to the environmental clean-up or UXO clearance of the Lease Premises, and (b) payment of utility charges, as provided in the Utilities Agreement contained in the MOA. The Land Bank agrees that monetary rent received by the Land Bank from any Sublessee of the Land Bank under this Lease will be applied to costs incurred by the Land Bank for protection, maintenance, operation, repair and improvement of the Lease Premises, as may be necessary to cover such costs.

ARTICLE 3

CONDITION OF LEASE PREMISES; REPAIRS; UTILITIES; HISTORIC PRESERVATION

3.01 The Land Bank has inspected and knows and accepts the condition and state of repair of the Lease Premises. It is understood and agreed that the Lease Premises are leased in an "as is," "where is" condition, without any representation or warranty by the Army concerning the state of repair or condition of the Lease Premises, and without obligation on the part of the Army to make any alterations, repairs or additions, except as may be specifically provided herein. The Land Bank acknowledges that

the Army has made no representation or warranty concerning the condition and state of repair of the Lease Premises nor any agreement or promise to alter, improve, adapt or repair the Lease Premises which has not been fully set forth in this Lease or the MOA. The parties specifically agree that the provisions of this paragraph in no way alter the indemnification and other obligations of the Army set forth in Article 5 of the MOA.

3.02 The Army and the Land Bank will jointly conduct an inventory and condition survey of the Lease Premises, to include the environmental condition, prior to lease execution by either party. The inventory and condition survey will be documented in a survey report (Survey) prepared by the Army, signed by the duly authorized representatives of both parties, and attached as Exhibit C to this Lease. The Survey will refer to and incorporate by reference the Environmental Baseline Survey (EBS), dated March 8, 1996, prepared by the Army, as well as any other environmental conditions that may not be specifically identified in the EBS. The Land Bank hereby acknowledges receipt of a copy of the EBS. At the conclusion of the Lease Term, the Army and the Land Bank will jointly conduct a close-out survey. The Army will prepare a close-out report based upon the close-out survey. The close-out survey and report will include an updated EBS prepared in accordance with Article 16.11.a of this Lease. All significant variances from the initial Survey shall be clearly documented in the close-out report. The close-out survey and report will constitute the basis for settlement by the parties for any leased property shown to be lost, damaged, contaminated, or destroyed during the lease term and restoration of the property as required under this Lease.

3.03 The Land Bank shall keep the Leased Premises in good order and in a clean, safe condition at the Land Bank's sole cost and

expense. The Land Bank shall exercise due diligence in the protection of all property located on the Leased Premises against fire, casualty, or damage from any and all causes, excepting: (i) reasonable wear and tear, (ii) alterations, construction, site preparation or demolition undertaken pursuant to Article 12; and (iii) alterations or damage done in conjunction with environmental remediation or UXO clearance activities conducted by the Army or its contractors. For any Leased property that is not conveyed to the Land Bank upon termination or expiration of this lease; is not covered by the above exceptions; and that is damaged or destroyed by the Land Bank without written permission of the Army; the Land Bank shall be repair or replace said property to the reasonable satisfaction of the Army; or, in lieu of such repair or replacement, the Land Bank shall, at the Army's election, pay to the Army money in an amount sufficient to compensate for the loss sustained by the Army by reason of said damages or destruction. It is understood and agreed by the parties, however, that portions of the Lease Premises, as determined by the Land Bank, may be maintained at the minimal level necessary to prevent deterioration and diminution of value, pending reuse thereof by the Land Bank.

3.04 The Land Bank shall provide, at its sole cost and expense, janitorial, building maintenance and repair and grounds maintenance services at the Lease Premises, as may be required by the Land Bank in the operation of the Lease Premises.

3.05 In accordance with and if authorized by the Utilities Agreement contained in the MOA, the Land Bank may request, and the Army shall provide to the Lease Premises, electricity, natural gas, water, sewer, and telephone services, on a reimbursable basis during the period that the Army retains operation of said systems. Furthermore, if the Land Bank obtains

utility services from sources other than the Army, the charges and method of payment for each utility or service will be determined by the appropriate supplier of said utility or service in accordance with applicable laws or regulations, on such basis as the appropriate supplier and the Land Bank may agree.

3.06 The Lease Premises include historic buildings eligible for listing on the National Register of Historic Places, as described in the Programmatic Agreement attached to the MOA (Exhibit B herein). These buildings will be maintained by the Lessee in accordance with the Secretary of the Interior's Standards for Rehabilitation and Illustrated Guidelines for Rehabilitating Historic Buildings (U.S. Department of the Interior, National Park Service 1992) (hereinafter Secretary's Standards). Lessee will notify the Army and the State Historic Preservation Officer (SHPO) of any proposed rehabilitations, structural or landscape alterations to these buildings prior to undertaking said rehabilitations/ alterations. If the Lessee does not receive a written objection from the Army or SHPO within 30 days, the Lessee may proceed with the proposed rehabilitations or alterations. Any approved rehabilitations, structural or landscape alterations to these buildings must adhere to the Secretary's Standards.

ARTICLE 4

COMPLIANCE WITH LAWS

4.01 Throughout the term of the Lease, the Land Bank shall, with regard to the Lease Premises, at its own cost and expense, promptly observe and comply with all applicable laws, orders, regulations, rules, ordinances, and requirements of the federal, state, county and local governments and of all of their

administrative departments, bureaus and officials and of the Devens Enterprise Commission established pursuant to Chapter 498 of the Massachusetts Acts of 1993, as amended. The Land Bank shall pay all costs, expenses, claims, fines, penalties and damages that may in any manner arise out of or be imposed because of the failure of the Land Bank to comply with said laws. The provisions of this paragraph shall (a) in no way compromise the Army's obligation under applicable legal requirements to complete the environmental clean-up of the Lease Premises or the clearance of UXO thereon, or to indemnify the Land Bank, as provided for in the MOA; (b) not obligate the Land Bank to complete the environmental clean-up of the Lease Premises being undertaken by the Army as required under CERCLA, the National Contingency Plan (NCP), the FFA, the MOA, and deeds from the Army to the Land Bank.

ARTICLE 5

INDEMNIFICATION OF THE ARMY

5.01 The indemnification provided by the Land Bank to the Army under this Article 5 is subject to the indemnification provided by the Army to the Land Bank under Article 5 of the MOA and in the event of conflict or inconsistency between the provisions of Article 5 of this Lease and said provisions of Article 5 of the MOA, said provisions of Article 5 of the MOA shall control.

5.02 The Army shall not be responsible for damages to property or injuries or death to persons which may arise from or be attributable or incident to the condition or state of repair of the Lease Premises, or the use and occupation of them, or for damages to the property of the Land Bank, or for damages to the property or injuries or death to the person of the Land Bank's

officers, agents, contractors, servants or employees, or others who may be on the Lease Premises at their invitation or the invitation of any one of them. This paragraph shall not apply to damage to property or injuries or death to persons caused by or attributable to the actions of the United States in conducting environmental remediation or other activities on the Lease Premises.

5.03 The Land Bank agrees to assume all risks of loss or damage to property and injury or death to persons by reason of or incident to its possession and/or use of the Lease Premises or the activities conducted under this Lease. The Land Bank expressly waives all claims against the United States for any such loss, damage, personal injury or death caused by or occurring as a consequence of such possession and/or use of the Lease Premises by the Land Bank, or the conduct of activities or the performance of responsibilities under this Lease by the Land Bank. The Land Bank further agrees, to the extent permitted under state law, to indemnify and hold harmless the Army, its officers, agents and employees, from and against all suits, claims, demands or actions, liabilities, judgments, costs and attorneys' fees arising out of, or in any manner predicated upon, personal injury, death or property damage resulting from, related to, caused by or arising out of the possession and/or use of the Lease Premises by the Land Bank. The indemnification obligations of the Land Bank contained herein do not extend to damages, claims, suits, liabilities, judgments, costs and attorney's fees arising out of, caused by or predicated upon (a) the gross negligence or willful misconduct of the Army or its officers, agents or employees, without contributory fault on the part of the Land Bank or any other person, firm, or corporation, or (b) activities undertaken by the Army in relation to the CERCLA clean-up or UXO clearance of the Lease Premises. The Army will

give the Land Bank notice of any claim against it covered by this indemnity as soon after learning of such claim as practicable.

5.04 The Land Bank shall indemnify and hold harmless the United States from any costs, expenses, liabilities, fines, or penalties resulting from discharges, releases, emissions, spills, storage, disposal, or any other action by the Land Bank giving rise to United States liability, civil or criminal, or responsibility under Federal, state or local environmental laws.

5.05 This Article 5 and the obligations of the Land Bank hereunder shall survive the expiration or termination of the lease and the conveyance of the Leased Premises to the Land Bank. The Land Bank's obligation hereunder shall apply whenever the United States incurs costs or liabilities for the Land Bank's actions giving rise to liability under this Article.

ARTICLE 6

ASSIGNMENT; SUBLETTING

6.01 Without the prior written consent of the Army through the Corps of Engineers, New England Division, the Land Bank shall not sublease, license, or grant any interest under this lease, except as provided for in Article 9 (Mortgaging). The Army's consent shall not be unreasonably withheld or delayed and shall be deemed granted if a response is not received by the Land Bank within twenty-one (21) days of the receipt by the Army of a written request for consent. Every sublease shall specifically identify and require compliance with the Environmental Protection provisions set out in Article 16 of this Lease and shall state that it is subject to the terms and conditions of this lease and that, in case of any conflict between the instruments, this lease

will control. The Land Bank shall provide each sublessee with, and make available as appropriate to licensees, a copy of this Lease and MOA.

6.02 The Land Bank may not assign this Lease without the prior written consent of the Army, which consent shall not be unreasonably withheld or delayed, and no assignment shall be valid unless the assignee shall, by an instrument in a form sufficient for recording, enter into an assumption agreement and assume all of the Land Bank's obligations under this Lease. A duplicate original of that assumption agreement will be delivered to the Army within thirty (30) days after the making of the assignment. Upon compliance with the foregoing condition, but not otherwise, the Land Bank shall be released and discharged from any and all liability under the Lease that may accrue from and after the date of the assignment. The assignee shall have no rights under the MOA and shall not be entitled to a conveyance of the Leased Premises upon execution of a FOST by the Army for the Leased Premises or a portion thereof.

6.03 Upon request of the Lessee, the Lessor shall consider attorning to a particular sublease, where the terms of said sublease are consistent with standard Government lease terms and applicable law, regulation, and policy.

ARTICLE 7

TAXES

7.01 The Land Bank shall pay to the proper authority, when and as the same become due and payable, all taxes, assessments and similar charges, which at any time during the term of this Lease,

may be taxed, assessed or imposed upon the Property or interest of the Land Bank with respect to or upon the Lease Premises.

ARTICLE 8

DEFAULTS

8.01 The following shall be deemed a default by either the Army or the Land Bank and a breach of the Lease: a party's failure to observe or perform any of its obligations under the terms, covenants or conditions of the Lease, which failure persists after the expiration of ninety (90) days from the date the aggrieved party gives written notice to the party calling attention to the existence of that failure. However, if the default is one relating to a matter that exposes occupants or the public to an imminent danger to safety or health of which the public authorities have given due notice to the party, then such shorter notice to the party, whether written or otherwise, shall be sufficient notice of default under this Lease.

8.02 In the event of a default, as provided in 8.01, the aggrieved party may, at its option, following the expiration of applicable notice and grace periods: (a) seek injunctive relief, monetary damages, or both; (b) take such measures as the aggrieved party deems reasonable to mitigate the effects of or cure such default, and assess all costs incurred for such mitigation to the defaulting party; (c) terminate this Lease; or (d) avail itself of any combination of said remedies.

8.03 Any action taken by either party under this Article 8 shall not waive any right that the party would otherwise have against the other party who shall remain responsible for any loss and damage suffered by reason of the default or breach.

8.04 If the Land Bank shall have made any sublease hereunder and if any Sublessee thereunder shall have given to the Army a notice (Sublessee Notice), specifying the name and address of the Sublessee, the Army shall give to the Sublessee a copy of each notice of default by the Land Bank at the same time as and whenever any such notice of default shall thereafter be given by the Army to the Land Bank, addressed to the Sublessee at the address last furnished to the Army. No notice of default by the Army shall be deemed to have been given to the Land Bank unless and until a copy thereof shall have been so given to the Sublessee. The Sublessee shall then have a period of ten (10) days more, after service of the notice upon it, for remedying the default or causing it to be remedied, than is given the Land Bank hereunder after service of such notice upon it, except in the case of imminent danger to safety or health.

8.05 The Army will accept performance by any Sublessee hereunder of any covenant, condition or agreement to be performed under the Lease by the Land Bank, with the same force and effect as though performed by the Land Bank.

8.06 From and after receiving a Sublessee Notice, the Army and the Land Bank will not materially modify or amend the Lease without giving each Sublessee that gave a Sublessee Notice to the Army hereunder thirty (30) days written notice thereof.

8.07 Other than under the provisions of this Article 8, the Army shall have no legal responsibility or obligation to the Land Bank's sublessees or licensees.

ARTICLE 9
MORTGAGING

9.01 The Land Bank or any Sublessee may make a mortgage or mortgages on its interest in the Lease. The provisions of this Article 9 shall be fully applicable to Sublessees of the Land Bank.

9.02 If the Land Bank shall have made any mortgage (sometimes referred to as a Leasehold Mortgage) and if a Leasehold Mortgagee (the holder of any Leasehold Mortgage) shall have given to the Army a notice (Leasehold Mortgagee's Notice) specifying the name and address of the Leasehold Mortgagee, the Army shall give to the Leasehold Mortgagee a copy of each notice of default by the Land Bank at the same time as and whenever any such notice of default shall thereafter be given by the Army to the Land Bank, addressed to the Leasehold Mortgagee at the address last furnished to the Army. No notice of default by the Army shall be deemed to have been given to the Land Bank unless and until a copy thereof shall have been so given to the Leasehold Mortgagee. The Leasehold Mortgagee shall then have a period of ten (10) days more after service of notice upon it, for remedying the default or causing it to be remedied, than is given the Land Bank under paragraph 8.01 herein, except in case of imminent danger to safety or health. The Leasehold Mortgagee, in case the Land Bank shall be in default, shall, within the period provided for in this paragraph 9.02 and, if applicable, 9.04, have the right to remedy the default or cause it to be remedied.

9.03 The Army will accept performance by the Leasehold Mortgagee of any covenant, condition, or agreement to be performed under

the Lease by the Land Bank with the same force and effect as though performed by the Land Bank.

9.04 Except where the default is one relating to a matter that exposes occupants or the public to an imminent danger to safety or health of which the public authorities have given due notice to the Land Bank, whether written or otherwise, the time of the Leasehold Mortgagee to cure any default by the Land Bank that reasonably requires the Leasehold Mortgagee be in possession of the Lease Premises to do so, shall be deemed extended to include the period of time required by the Leasehold Mortgagee to obtain possession and foreclose expeditiously and with due diligence.

9.05 From and after receiving the Leasehold Mortgagee's Notice, the Army and the Land Bank will not materially modify or amend the Lease in any respect without the prior consent of the Leasehold Mortgagee, which consent shall not be unreasonably withheld or delayed. In the event the Leasehold Mortgagee fails to respond to a notice of material modification or amendment of the Lease within thirty (30) days after service of notice, the Leasehold Mortgagee will be deemed to have given its consent.

9.06 No Leasehold Mortgagee shall become liable under the Lease unless a Leasehold Mortgagee becomes the owner of the leasehold estate, and in such event shall be liable only for as long as such Leasehold Mortgagee remains the owner of the leasehold estate.

9.07 If a Leasehold Mortgagee acquires the Land Bank's interest in the Lease as a result of a sale under its Leasehold Mortgage pursuant to a judgment of foreclosure and sale, or through any transfer in lieu of foreclosure, or through settlement of or

arising out of any pending or contemplated foreclosure action, the following provisions of this paragraph shall apply, namely:

a. The Leasehold Mortgagee must assume the Lease and the Leasehold Mortgagee shall have no right with respect to the Lease Premises unless said Leasehold Mortgagee assumes and delivers to the Army a duplicate original of the assumption agreement (to be executed in form for recording) within ten (10) days after said Leasehold Mortgagee acquires title to all or a portion of the Land Bank's interest in the Lease.

b. The Leasehold Mortgagee may transfer its interest in the Lease to a nominee or a wholly-owned subsidiary corporation without the prior consent of the Army, provided, however, that the Leasehold Mortgagee shall deliver to the Army in due form for recording within ten (10) days after the date of the transfer a duplicate original of the instrument of assignment and an instrument of assumption by the transferee of all of the Land Bank's obligations under the Lease, and provided further that the Army shall be given prior written notice of such transfer, and that the transferee shall use the Lease Premises in a manner that conforms to the Reuse Plan. The Leasehold Mortgagee shall be relieved of any further liability under the Lease after the transfer.

9.08 Any purchaser at a foreclosure sale must assume the Lease and said purchaser shall have no right with respect to the Lease Premises unless said purchaser so assumes and delivers to the Army a duplicate original of the assumption agreement (to be executed in form for recording) within ten (10) days after said purchaser acquires title to all or a portion of the Land Bank's interest in the Lease.

ARTICLE 10
QUIET ENJOYMENT

10.01 The Land Bank, upon performing its obligations under the Lease shall and may, at all times during the Lease Term, peaceably and quietly have, hold, and enjoy the Lease Premises, subject to the rights of the Army under this Lease and the MOA.

ARTICLE 11
SUCCESSORS AND ASSIGNS

11.01 The covenants and agreements contained in the Lease inure to the benefit of and are binding upon the parties to the Lease, their successors and assigns, but this Article does not modify the provisions governing assignment, as elsewhere provided for in the Lease.

ARTICLE 12
IMPROVEMENTS; RESTORATION

12.01 The Land Bank shall have the right to make improvements to the Lease Premises, which improvements may include, without limitation, the demolition of existing buildings and the construction of new buildings and facilities, as provided for in the Reuse Plan and that do not violate the terms of this Lease. If the lease expires or terminates without conveyance of the Lease Premises to the Land Bank pursuant to the terms of the MOA, all improvements to the Lease Premises will become the property of the United States, and the Land Bank shall not be entitled to any compensation therefor.

12.02 If, on or before the date of expiration of this Lease or its termination by the Land Bank or the Army in accordance with the terms hereof, the Land Bank shall vacate the Lease Premises, the Land Bank will remove any personal property of the Land Bank therefrom, and restore the Lease Premises to as good order and condition as that existing upon the date of commencement of the term of this Lease, except for: (a) alterations, site preparation, improvements or demolition undertaken -- (i) pursuant to this Article 12, Article 16, or otherwise hereunder by the Army in conjunction with environmental remediation or UXO clearance activities, or (ii) with the permission of the Army; or (b) due to fair wear and tear. If this Lease is terminated by the Army in accordance with the terms hereof, the Land Bank shall vacate the Lease Premises, remove personal property therefrom, and restore the Lease Premises to the condition aforesaid within such reasonable time as the Army may designate. In either event, if the Land Bank does not remove said personal property and so restore the Lease Premises, then, at the option of the Army, said personal property shall either become the property of the United States, without compensation therefor, or the Army may cause it to be removed and the Lease Premises to be restored at the expense of the Land Bank, and no claim for damages against the United States or its officers or agents shall be created by or made on account of such removal and/or restoration work.

ARTICLE 13

NOTICES

13.01 All notices to the parties shall be addressed to them at the respective addresses first given for them in this Lease, or to such other address of which either of them, as the case may

be, shall notify the other in the manner stated in this Article 13 for giving notice. Notices must be given by either registered mail, return receipt requested, or by certified mail, return receipt requested. The service of the notice shall be deemed complete upon the receipt of said notice, or the refusal thereof, by the applicable party.

ARTICLE 14

NO WAIVER

14.01 The failure of the Army or the Land Bank to insist in any one or more instances, upon a strict performance of any of the covenants of the Lease, or to exercise any option contained in the Lease, shall not be construed as a waiver of or relinquishment for the future of the performance of that covenant, or the right to exercise that option, but the same shall continue and remain in full force and effect.

ARTICLE 15

REMEDIES CUMULATIVE

15.01 The rights and remedies given to the Land Bank or the Army upon the breach of any of the terms of the Lease are distinct, separate and cumulative remedies, and no one of them, whether exercised or not, shall be deemed to be in exclusion of any of the others.

ARTICLE 16
ENVIRONMENTAL AND SAFETY PROVISIONS

16.01 The parties acknowledge that Fort Devens has been identified as a National Priorities List Site under CERCLA. The Land Bank acknowledges that the Army has provided it with a copy of the FFA and will provide the Land Bank with a copy of any amendments thereto. The Land Bank agrees to abide by the applicable terms of the FFA and any documents originating therefrom, and further agrees that should any conflict arise between the terms of the FFA, as it may be amended, and the Lease, the FFA shall take precedence. The Land Bank further agrees that, except as provided in the provisions of Article 5 of the MOA, the Army assumes no liability to the Land Bank should implementation of the FFA interfere with the Land Bank's use of the Leased Premises, provided, however, that the Army shall, to the extent reasonable, practical, and without additional costs, minimize interference with such use. The Land Bank shall have no claim on account of any such interference against the Army or any officer, agent, employee or contractor thereof, other than for abatement of rent.

16.02 The United States' rights under this Lease specifically include the right for United States officials to inspect, upon reasonable notice, the Leased Premises for compliance with environmental, safety, and occupational health laws and regulations, whether or not the United States is responsible for enforcing them. Such inspections are without prejudice to the right of duly constituted enforcement officials to make such inspections. The United States normally will give the Lessee twenty-four (24) hours prior notice of its intention to enter the Leased Premises unless the United States determines earlier entry is required for safety, environmental, operations, or security purposes. The Lessee shall have no claim on account of any entries against the United States, the Commonwealth, or any officer, agent, employee, or contractor thereof.

16.03 The Land Bank shall not construct or make or permit its sublessees to construct or make any substantial alterations, additions, or improvements to or installations upon or otherwise modify or alter the Leased Premises in any way which may adversely affect the cleanup, human health, or the environment without the prior written consent of the Army. Such consent may include a requirement to provide the Army with a performance and payment bond satisfactory to it in all respects and other requirements deemed necessary to protect the interests of the United States. For construction or alterations, additions, modifications, improvements, or installations in the proximity of operable units that are part of a National Priorities List (NPL) site, such consent may include a requirement for written approval by the United States' Remedial Project Manager.

16.04 The Army, EPA and the Massachusetts Department of Environmental Protection (DEP), their officers, agents, employees, contractors and subcontractors have the right, upon reasonable notice to the Land Bank, and to parties in possession, to enter upon the Leased Premises for purposes consistent with the applicable provisions of the FFA, and for the following purposes:

a. to conduct investigations and surveys, including, where necessary, drilling, soil and water sampling, test pitting, soil boring tests and other activities required under the FFA;

b. to inspect field activities of the Army and its employees, agents, contractors and subcontractors in implementing the FFA;

c. to conduct any test or survey required by EPA or DEP relating to the implementation of the FFA or environmental conditions at the Leased Premises, or to verify any data submitted to the EPA or DEP by the Army relating to such conditions; and

d. to construct, operate, maintain or undertake any other response or remedial action as required or necessary under the FFA, including, but not limited to, monitoring wells, soil removal, pumping wells and treatment facilities;

provided that the Leased Premises are restored in a reasonable manner to their condition prior to the exercise of the above rights, and provided further that any such inspection, survey, investigation or other response or remedial action will, to the extent reasonable, practical and without significant additional cost, be coordinated with a representative of the Land Bank and be performed in a manner that will minimize interference with the operations of the Land Bank. The Land Bank agrees to comply with the provisions of any health or safety plan in effect during the course of the above-described response or remedial actions.

16.05 The Land Bank or any agent or contractor of the Land Bank shall not undertake subsurface excavation, drilling, digging or other substantial disturbance of the surface of the ground, or construction, alterations, additions, modifications, improvements or installations that may adversely affect the clean up being undertaken on the Leased Premises or other portions of the Fort Devens NPL site, without: (a) seven (7) days prior written notice to the Army, EPA and DEP; and (b) prior written consent of the Army, which consent shall not be unreasonably withheld or delayed, and which consent may include a requirement for written approval by the EPA and DEP. Such consent may involve a requirement to provide the Army with a performance and payment bond satisfactory to it in all respects and other requirements deemed necessary to protect the interests of the Army. No groundwater will be extracted for any purpose. Excavation of garbage or landfill materials is prohibited.

16.06 The Land Bank hereunder shall be solely responsible for obtaining, at its cost and expense, any environmental permits required for its operations under the Lease, independent of any

existing permits, provided however, that the Army shall, where permitted by applicable law or regulation, and at no cost to the Army, assign any such permits to the Land Bank, if so requested by the Land Bank, except where such assignment is prohibited by regulations or written policy of the Army.

16.07 The Land Bank shall have a plan approved by the Army for responding to hazardous waste, fuel and other chemical spills prior to commencement of operations on the Leased Premises, which approval shall not be unreasonably withheld or delayed. Such plan shall be independent of Fort Devens or its successors and shall not rely on use of installation personnel or equipment. Should the Army provide any personnel or equipment, spill containment, either on request of the Land Bank, or because the Land Bank was not, in the reasonable opinion of the Army, conducting timely cleanup actions, the Land Bank agrees to reimburse the Army for its costs.

16.08 The Land Bank shall comply with: (i) the requirement of 10 U.S.C. § 2692 to obtain the necessary Army approval for any storage of toxic or hazardous materials on the Leased Premises and (ii) the hazardous waste permit requirements under the Resource Conservation and Recovery Act (RCRA) and its Massachusetts equivalent. Except as specifically authorized by the Army in writing, the Land Bank must provide, at its own expense, any hazardous waste management facilities, required by applicable laws and regulations. Hazardous waste management facilities of the Army will not be available to the Land Bank.

16.09 Any Army accumulation points for hazardous and other wastes will not be used by the Land Bank. The Land Bank will not permit their hazardous waste to be commingled with hazardous waste of the Army.

16.10 The Land Bank acknowledges that the Leased Premises are being leased subject to a Finding of Suitability to Lease (FOSL), dated March 28, 1996, which has been provided to the Land Bank.

The parties hereto acknowledge and agree that the Leased Premises consist of parcels identified by the Army and EPA as parcels that require further environmental remediation, or documentation of the completion of remediation, by the Army, and include areas designated as Areas of Contamination, Study Areas, and Areas Requiring Environmental Evaluation.

16.11 Notices

a. Preceding expiration, revocation or termination of this lease, the Lessee shall fully fund the Army's preparation of an updated EBS that will document the environmental condition of the property at that time in conjunction with the close-out survey and report, as described in Article 3.02 of this Lease. The updated EBS will serve to support the FOST for the transfer or conveyance of the property or, if the termination is not for purposes of conveying said property, a comparison of the initial and close-out surveys will assist the Division Engineer in determining any environmental restoration requirements, to be completed by the Lessee in accordance with the condition Article 12 of this Lease.

b. NOTICE OF HAZARDOUS SUBSTANCES. To the extent such information is available on the basis of a complete search of Army files, notice regarding hazardous substances stored for one year or more, known to have been released, or disposed of on the Leased Premises is provided in the notice attached to the MOA (Exhibit B herein). The Land Bank should consult the EBS for more detailed information.

c. NOTICE OF THE PRESENCE OF ASBESTOS. The Leased Premises are known to contain certain amounts of asbestos, such as in, but not limited to, the floor tile, linoleum and associated mastic, asbestos-containing pipe and tank insulation, heating, ventilating and air conditioning vibration joint cloths, exhaust flues, acoustic ceiling treatment, siding, and roofing materials.

The Lessee covenants and agrees that in its use and occupancy of the property, it will comply with all applicable laws relating to asbestos, and the Army assumes no liability for damages for personal injury, illness, disability, or death to the Lessee, its successors or assigns, or to any other person including members of the general public, arising from or incident to the purchase, transportation, removal, handling, alteration, renovations, use, disposition or other activity causing or leading to contact of any kind whatsoever with asbestos on the property described in this Lease, regardless of whether the Lessee, its successors, or assigns, have properly warned or failed to properly warn the individual(s) injured.

d. NOTICE OF THE PRESENCE OF LEAD-BASED PAINT. The Lessee is hereby informed and does acknowledge that all buildings on the Lease Premises, which were constructed or rehabilitated prior to 1978, are presumed to contain lead-based paint. Lead from paint, paint chips, and dust can pose health hazards if not managed properly. Lead exposure is especially harmful to young children and pregnant woman. Before renting pre-1978 housing (target housing) lessors and sublessors must disclose to sublessees the presence of lead-based paint and/or lead-based paint hazards in the dwelling. "Target housing" means any housing constructed prior to 1978, except housing for the elderly or persons with disabilities (unless any child who is less than 6 years of age resides or is expected to reside in such housing) or any 0-bedroom dwelling.

(1) Available information concerning known lead-based paint and/or lead-based paint hazards, the location of lead-based paint and/or lead-based paint hazards, and the condition of painted surfaces is contained in the EBS, dated March 8, 1996, and the Finding of Suitability to Lease, dated March 28, 1996,

which have been provided to the Lessee. All lessees and sublessees must also receive the federally approved pamphlet on lead poisoning prevention. The Lessee hereby acknowledges receipt of the information described in this paragraph.

(2) The Lessee and its sublessees, successors, and assigns, shall not permit the occupancy of any target housing without complying with this section 16.07d and all applicable federal, state, and local laws and regulations pertaining to lead-based paint and/or lead-based paint hazards. Prior to permitting the occupancy of target housing, if required by law or regulation, the Lessee will abate and eliminate lead-based paint hazards by treating any defective lead-based paint surface in accordance with all applicable laws and regulations.

e. NOTICE OF THE PRESENCE OF RADON. Buildings on the Lease Premises may contain unhealthy levels of radon. Available and relevant radon assessment data pertaining to the Lease Premises are in the EBS. Prior to the use of any building for residential use or 24-hour per day occupancy, the Lessee, at its expense, must take appropriate measures to reduce the radon level to safe levels, in accordance with EPA guidelines.

f. NOTICE OF THE PRESENCE OF UXO. Certain portions of the Lease Premises, as designated as A2, A21, and A22 in Exhibit A herein (UXO Parcels), are subject to further UXO clearance by the Army, which clearance shall be undertaken by the Army promptly and at Army expense, subject to availability of funds. The Army will inform the Land Bank in writing when the clearance has been completed.

16.12 Each sublease, tenancy or license agreement made by the Land Bank hereunder shall contain provisions that will ensure the continuing compliance of the Land Bank, and the grantee

thereunder, with the FFA, CERCLA, and this Article 16.

Furthermore, the Land Bank shall provide to the EPA and DEP, by certified mail, a copy of each sublease or license of the Leased Premises (as the case may be) within fourteen (14) days after the effective date of such transaction. The Land Bank may delete the financial terms and any other proprietary information from the copy of any sublease or license furnished pursuant to this paragraph.

16.13 The Lessee shall not occupy or use parcels A.1 and A.20 of the Leased Premises as described in Exhibit A without the written consent of the Army.

16.14 As contemplated in 40 CFR 51.853 (c) (xix) and 93.153(c) (xix) governing the conduct of General Conformity determinations, implementing Clean Air Act § 176(c), this lease is in furtherance of the transfer of the property through an EDC application and, as soon as the Finding of Suitability to Transfer (FOST) is issued and said property can be conveyed in accordance the requirements of the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. 9620(h) (3), as amended, and other legal and policy requirements, the Army is legally obligated to convey to the Land Bank by one or more quitclaim deeds, the Lease Premises. The Army does not intend to and does not retain continuing authority to control air pollutant emissions associated with activities conducted on the Leased Premises pending the conveyance(s) within the meaning of 40 CFR 51.853 (c) (xix) and 91.153 (c) (xix).

ARTICLE 17
DISPUTES CLAUSE

17.01 Except as provided in the Contract Disputes Act of 1978 (41 U.S.C. 601-613) (the Act), all disputes arising under or relating to this lease shall be resolved under this clause and the provisions of the Act.

17.02 "Claim", as used in this clause, means a written demand or written assertion by the Land Bank seeking, as a matter of right, the payment of money in a sum certain, the adjustment of interpretation of lease terms, or other relief arising under or relating to this lease. A claim arising under this lease, unlike a claim relating to this lease, is a claim that can be resolved under a lease clause that provides for the relief sought by the Land Bank. However, a written demand or written assertion by the Land Bank seeking the payment of money exceeding \$100,000 is not a claim under the Act until certified as required by section 17.04 below.

17.03 A claim by the Land Bank shall be made in writing and submitted to the Division Engineer for a written decision. A claim by the United States against the Land Bank shall be subject to a written decision by the Division Engineer.

17.04 For Land Bank claims exceeding \$100,000, the Land Bank shall submit with the claim a certification that (i) the claim is made in good faith; and (ii) supporting data are accurate and complete to the best of the Land Bank's knowledge and belief; (iii) and the amount requested accurately reflects the lease adjustment for which the Land Bank believes the United States is liable.

17.05 The certification shall be executed by (i) a senior company official in charge of the Land Bank's location involved; or (ii) an officer or general partner of the Land Bank having overall responsibility of the conduct of the Land Bank's affairs.

17.06 For Land Bank claims of \$100,000 or less, the Division Engineer must, if requested in writing by the Land Bank, render a decision within 60 days of the request. For Land Bank-certified claims over \$100,000, the Division Engineer must, within 60 days, decide the claim or notify the Land Bank of the date by which the decision will be made.

17.07 The Division Engineer's decision shall be final unless the Land Bank appeals or files a suit as provided in the Act.

17.08 At the time a claim by the Land Bank is submitted to the Division Engineer or a claim by the United States is presented to the Land Bank, the parties, by mutual consent, may agree to use alternative means of dispute resolution. When using alternate dispute resolution procedures, any claim, regardless of amount, shall be accompanied by the certificate described in section 17.04 of this Article, and executed in accordance with section 17.05 of this clause.

17.09 The United States shall pay interest on the amount found due and unpaid by the United States from (1) the date the Division Engineer received the claim (properly certified if required), or (2) the date payment otherwise would be due, if that date is later, until the date of payment. Simple interest on claims shall be paid at the rate fixed by the Secretary of the Treasury as provided in the Act, which is applicable to the period during which the Division Engineer receives the claim and

then at the rate applicable for each 6-month period as fixed by the Treasury Secretary during the pendency of the claim.

17.10 The Land Bank shall proceed diligently with the performance of the lease, pending final resolution of any request for relief, claim, or action arising under the lease, and comply with any decision of the Division Engineer.

ARTICLE 18
MISCELLANEOUS

18.01 Both parties acknowledge and agree that a Notice of Lease will be recorded in the public records, which Notice shall be signed by the parties hereto and identify the Lease Premises.

18.02 The Lease is subject to all existing easements and rights of way of record.

18.03 The provisions of this Lease are not subject to 10 U.S.C. §2662.

18.04 This Lease contains the entire agreement between the parties regarding the lease of the Lease Premises to the Land Bank, and any agreement hereafter made shall not operate to change, modify or discharge this Lease in whole or in part unless that agreement is in writing and signed by the party sought to be charged with it.

18.05 No member or delegate to Congress or Resident Commissioner shall be admitted to any share or part of this Lease or to any benefit to arise therefrom. Nothing herein contained, however,

shall be construed to extend to any incorporated company, if the Lease be for the general benefit of such corporation or company.

18.06 Nothing contained in this Lease will make or will be construed to make the parties hereto partners or joint venturers with each other, it being understood and agreed that the only relationship between the Army and the Land Bank hereunder is that of lessor and lessee. Neither will anything in this Lease render or be construed to render either of the parties hereto liable to any third party for debts or obligations of the other party hereto.

18.07 The brief headings or titles preceding each Article are merely for purposes of identification, convenience and ease of reference and will be completely disregarded in the construction of this Lease.

18.08 This Lease is executed in two (2) counterparts, each of which is deemed an original of equal dignity with the others and which is deemed one and the same instrument as the other.

18.09 All personal pronouns used in this Lease, whether used in the masculine, feminine or neuter gender, will include all other genders.

18.10 This Lease shall terminate upon the transfer of all of the Lease Premises to the Land Bank in fee, or otherwise as provided for herein.

18.11 If any provision of this Lease is declared or found to be illegal, unenforceable or void, then both parties shall be relieved of all obligations under that provision. The remainder

of this Lease shall remain enforceable to the fullest extent permitted by law.

18.12 Discrimination.

a. The Lessee shall not discriminate against any person or persons or exclude them from participation in the Lessee's operations, programs or activities conducted on the Leased Premises, because of race, color, religion, sex, age, handicap, or national origin.

b. The Lessee, by acceptance of this lease, is receiving a type of Federal assistance and, therefore, hereby gives assurance that it will comply with the provisions of Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. § 2000d); the Age Discrimination Act of 1975 (42 U.S.C. § 6102); and the Rehabilitation Act of 1973, as amended (29 U.S.C. § 794). This assurance shall be binding on the Lessee, its agents, successors, transferees, sub-lessees and assignees.

Article 19

Insurance

19.01. At the commencement of this lease, the Land Bank shall obtain, from a reputable insurance company, or companies, comprehensive liability insurance. The insurance shall provide an amount not less than a combined single limit of \$1,000,000 for any number of persons or claims arising from any one incident with respect to bodily injuries or death resulting therefrom, property damage, or both, suffered or alleged to have been suffered by any person or persons resulting from the operations of the Lessee under the terms of this lease.

19.02 The liability insurance policy shall insure the hazards of the demised premises and operations conducted in and on the demised premises, independent contractors, contractual liability (covering the indemnity included in this leases agreement), and shall name the United States as an insured party. Each policy will provide that any losses shall be payable notwithstanding any act or failure to act or negligence of the Land Bank or the United States or any other person; provide that the insurer will have no right of subrogation against the United States; and be reasonably satisfactory to the United States in all respects. Under no circumstances will the Land Bank be entitled to assign to any third party rights of action that it may have against the United States arising out of this Lease. The Land Bank shall require that the insurance company give the Division Engineer thirty (30) days written notice of any cancellation or change in such insurance. The Division Engineer may require closure of any or all of the Lease Premises during any period for which the Lessee does not have the required insurance coverage. The Land Bank shall require its insurance company to furnish to the Division Engineer a copy of the policy or policies, or if acceptable to the Division Engineer, certificates of insurance evidencing the purchase of such insurance. The minimum amount of liability insurance coverage is subject to revision by the Division Engineer every three years or upon renewal or modification of this lease.

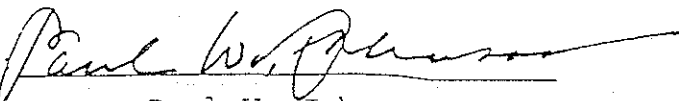
19.03 It is the Buyer/Lessee's option to obtain insurance on the structures and improvements of the Lease Premises, for such periods as the Lessee is in possession of the Lease Premises pursuant to this lease, to protect its interest. Nothing herein contained shall be construed as an obligation upon the United States to repair, restore or replace the Lease Premises or any

part thereof should it be diminished in value, damaged or destroyed. The purchase price will not be altered should such damage occur and the Lessee has failed to obtain insurance. Any proceeds paid to the United States shall be applied to the purchase price.

19.04 The Land Bank shall maintain worker compensation and employer's liability insurance as required by the Commonwealth of Massachusetts.

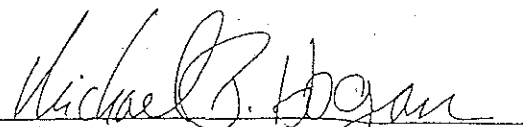
IN WITNESS WHEREOF, the parties have executed the Lease as of the day and year first above written.

UNITED STATES OF AMERICA

By 
Paul W. Johnson

Deputy Assistant Secretary of the Army
(Installations and Housing)

THE GOVERNMENT LAND BANK

By: 
Michael P. Hogan
Executive Director

Appendix C

Record of Decision, Area of Contamination 57, Devens Reserve Forces Training Area, Devens, Massachusetts *and*

Explanation of Significant Differences, Area of Contamination 57, Devens, Massachusetts

**RECORD OF DECISION
AREA OF CONTAMINATION 57
DEVENS RESERVE FORCES TRAINING AREA
DEVENS, MASSACHUSETTS**

*IN ACCORDANCE WITH U.S. ARMY REGULATION 200-2,
THIS DOCUMENT IS INTENDED BY THE U.S. ARMY TO COMPLY WITH THE
NATIONAL ENVIRONMENTAL POLICY ACT OF 1969.*

SEPTEMBER 2001

PRINTED ON RECYCLED PAPER

**RECORD OF DECISION
AREA OF CONTAMINATION 57
DEVENS RESERVE FORCES TRAINING AREA
DEVENS, MASSACHUSETTS**

SEPTEMBER 2001

**RECORD OF DECISION
AREA OF CONTAMINATION 57
DEVENS, MASSACHUSETTS**

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**DECLARATION
AOC 57 RECORD OF DECISION
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DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Area of Contamination 57
Devens Reserve Forces Training Area
Devens, Massachusetts
CERCLIS ID MA7210025154

STATEMENT OF PURPOSE AND BASIS

This decision document presents the U.S. Army's selected remedial action for Area of Contamination (AOC) 57 at the Devens Reserve Forces Training Area (RFTA) (formerly Fort Devens), Devens, Massachusetts. It was developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 USC §§ 9601 *et seq.*, as amended by the Superfund Amendments and Reauthorization Act of 1986, and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) 40 CFR Part 300, *et seq.*, as amended. The Devens Base Realignment and Closure (BRAC) Environmental Coordinator and the Director of the Office of Site Remediation and Restoration, U.S. Environmental Protection Agency (USEPA) Region 1, have been delegated the authority to approve this Record of Decision. AOC 57 comprises three subareas: Area 1, Area 2, and Area 3.

This decision is based on the Administrative Record that has been developed in accordance with Section 113(k) of CERCLA. The Administrative Record is available for public review at the Devens BRAC Environmental Office, Devens, Massachusetts, and at the Ayer Town Hall, Main Street, Ayer, Massachusetts. The Administrative Record Index (Appendix D of this Record of Decision) identifies each of the items considered during selection of the remedial action.

STATE CONCURRENCE

The Commonwealth of Massachusetts concurs with the selected remedies. Appendix E of this Record of Decision contains a copy of the Declaration of State Concurrence.

ASSESSMENT OF SITE

The response actions selected in this Record of Decision are necessary to protect public health or welfare or environment from actual or threatened releases of hazardous substances to the environment.

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DESCRIPTION OF THE SELECTED REMEDY

The selected remedies for AOC 57 are:

- Area 1 - No Further Action
- Area 2 - Alternative II-3: Excavation (For Possible Future Use) and Institutional Controls
- Area 3 - Alternative III-2a: Excavation (to Accelerate Groundwater Cleanup) and Institutional Controls

Area 1

Area 1 is a storm-drain outfall and drainage ditch that receives precipitation runoff from paved areas around Building 3713. The discharge to the storm drainage ditch eventually flows to Cold Spring Brook. An estimated 50 to 100-gallon spill of No. 4 fuel oil was discharged through the Area 1 outfall in 1977. Approximately 3,000 gallons of mixed oil and water were recovered through use of containment dikes and absorbent booms in 1977, and approximately 25 cubic yards (cy) of petroleum contaminated soil were removed in 1997. Review of available data indicates that contamination associated with the fuel oil spill has been removed, and a risk assessment indicates that there are no unacceptable risks for unrestricted use.

The selected remedy at Area 1 is No Further Action.

Area 2

At Area 2 the selected remedy is Alternative II-3: Excavation (For Possible Future Use) and Institutional Controls. This remedy is a comprehensive approach that addresses all current and potential future risks caused by soil and groundwater contamination. Area 2 is located adjacent to a former vehicle storage yard associated with motor repair shops at the former Fort Devens. Although the 1977 fuel oil spill at Building 3713 primarily affected Area 1, Area 2 was investigated because a portion of the spill was reported to have flowed to Area 2 via an eroded drainage ditch. Data gathered during the remedial investigation (RI) as well as preceding investigations suggests that Area 2 contamination is the result of the historical disposal of vehicle maintenance wastes along the break in slope between an upland and flood plain area. Removal of approximately 1,300 cy of contaminated soil from Area 2 in 1994 addressed what was considered a principal threat at Area 2. There are no principal threat wastes remaining at AOC 57 Area 2.

Subsequent investigations and risk assessment indicate human-health risks within or below the USEPA target cancer-risk range and noncancer threshold under current land use conditions, but indicate potential risks to construction workers exceeding the USEPA target risk threshold from exposure to soil under possible future use conditions. Further, under hypothetical unrestricted (i.e., residential) use conditions the risk assessment indicates potential risks to residents exceeding the USEPA target cancer-risk range and noncancer threshold for exposure to flood plain soil and groundwater.

The key components of the selected remedy at AOC 57 Area 2 consist of the following:

- Soil Excavation and treatment/disposal at an off-site treatment, storage, or disposal facility
- Wetlands Protection
- Institutional Controls

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- Existing zoning that prohibits residential use of Area 2 property and proposed deed restrictions that prohibit potable use of Area 2 groundwater and residential use of flood plain property
- Environmental Monitoring
 - Long-term groundwater monitoring
 - Long-term surface water monitoring
- Institutional Control Inspections
- Five-year Site Reviews

This remedy relies on excavation of soil exceeding cleanup levels to protect future use construction workers, and institutional controls in the form existing zoning and proposed deed restrictions to prevent potable use of groundwater. If future land use at AOC 57 is inconsistent with these institutional controls, then the site exposure scenarios for human health and the environment would be re-evaluated to assess whether this response action remains appropriate. To the extent practical, remedial activities will be performed with minimal alteration or disturbance of wetlands, and disturbed areas will be restored. Long-term environmental monitoring will be implemented to assess the success of restoration activities, maintenance of surface water quality, and to monitor for attainment of groundwater cleanup levels.

Area 3

At Area 3 the selected remedy is Alternative III-2a: Excavation (to Accelerate Groundwater Cleanup) and Institutional Controls. This remedy is a comprehensive approach that addresses all current and potential future risks caused by soil and groundwater contamination. Area 3 is located adjacent to a former vehicle storage yard associated with motor repair shops at the former Fort Devens. Data gathered during the RI, as well as preceding investigations, suggest that Area 3 contamination is the result of the historical disposal of vehicle maintenance wastes. Removal of approximately 1,800 cy of contaminated soil from Area 3 in 1999 addressed what was considered a principal threat at Area 3. There are no principal threat wastes remaining at AOC 57 Area 3.

Subsequent investigations and risk assessments indicate human-health risks within or below the USEPA target cancer risk range and noncancer threshold under current land use conditions, but indicate potential risks to commercial/industrial workers exceeding the USEPA target risk range from exposure to groundwater under possible future use conditions. Further, under hypothetical unrestricted (i.e., residential) use conditions, the risk assessment indicates potential risks to residents exceeding the USEPA target cancer risk range and noncancer threshold for exposure to soil and groundwater.

The key components of the selected remedy at AOC 57 Area 3 consist of the following:

- Soil Excavation and treatment/disposal at an off-site treatment, storage, or disposal facility
- Wetlands Protection
- Institutional Controls
 - Existing zoning that prohibits residential use of Area 3 property and proposed deed restrictions that prohibit potable use of Area 3 groundwater and residential use of flood plain property
- Environmental Monitoring
 - Long-term groundwater monitoring

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- Long-term surface water monitoring
- Institutional Control Inspections
- Five-year Site Reviews

This remedy relies on excavation of soil to accelerate restoration of aerobic (i.e., nonreducing) conditions to groundwater and reduce the release of naturally occurring arsenic from soil. Also included are institutional controls in the form of existing zoning and proposed deed restrictions to prohibit potable use of groundwater in both upland or flood plain areas. If future land use at AOC 57 is inconsistent with these institutional controls, then the site exposure scenarios for human health and the environment would be re-evaluated to assess whether this response action remains appropriate. Long-term environmental monitoring will be implemented to assess the success of restoration activities, maintenance of surface water quality, and to monitor for attainment of groundwater cleanup levels.

STATUTORY DETERMINATIONS

Area 1

The selected remedy for Area 1 is protective of human health and the environment, attains federal and state environmental and facility siting requirements that are applicable to the remedial action, is cost effective, and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable.

Because the No Action remedy at Area 1 will not result in hazardous substances, pollutants, or contaminants remaining on site above concentrations that allow for unrestricted exposure, a five-year review will not be required for this portion of the site.

Area 2

The selected remedy for Area 2 is protective of human health and the environment, attains federal and state environmental and facility siting requirements that are applicable to the remedial action, is cost effective, and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. To the extent that the treatment, storage, or disposal facility that receives the soil excavated from Area 2 provides treatment, the selected remedy will satisfy the statutory preference for treatment as a principal element. Removal/excavation of soil from Area 2 will reduce contaminant mobility in that environment and eliminate risk to future construction worker receptors.

Because the remedy for Area 2 will result in hazardous substances, pollutants, or contaminants remaining on site above concentrations that allow for unrestricted exposure and unlimited use, a statutory review will be performed within five years of initiation of remedial action to ensure that the remedy remains protective of human health and the environment. Subsequent five-year reviews will be performed as long as hazardous substances, pollutants, or contaminants remain on-site above concentrations that allow for unrestricted exposure and unlimited use.

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Area 3

The selected remedy for Area 3 is protective of human health and the environment, attains federal and state environmental and facility siting requirements that are applicable to the remedial action, is cost effective, and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. To the extent that the treatment, storage, or disposal facility that receives the soil excavated from Area 3 provides treatment, the selected remedy will satisfy the statutory preference for treatment as a principal element. Previous removal actions have reduced the mobility of site contaminants.

Because the remedy for Area 3 will result in hazardous substances, pollutants, or contaminants remaining on site above concentrations that allow for unrestricted exposure and unlimited use, a statutory review will be performed within five years of initiation of remedial action to ensure that the remedy remains protective of human health and the environment. Subsequent five-year reviews will be performed as long as hazardous substances, pollutants, or contaminants remain on-site above concentrations that allow for unrestricted exposure and unlimited use.

DATA CERTIFICATION CHECKLIST

The following information is contained in the Decision Summary section of this Record of Decision. Additional information can be found in the Administrative Record file.

- Chemicals of concern and their respective concentrations
- Baseline risk represented by the chemicals of concern
- Cleanup levels established for chemicals of concern and the basis for those levels
- How source materials constituting principal threats are addressed
- Current and reasonably anticipated future land use assumptions and the current and potential future beneficial uses of groundwater used in the baseline risk assessment
- Potential land and groundwater use that will be available at the site as a result of the selected remedy
- Estimated capital, annual operation and maintenance, and total present worth costs; discount rate; and the number of years over which the remedy cost estimates are projected
- Key factors that led to selection of the remedy

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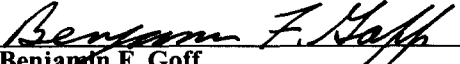
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AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS**

AUTHORIZING SIGNATURES

The foregoing represents the selection of a remedial action by the U.S. Department of the Army and the U. S. Environmental Protection Agency, with the concurrence of the Commonwealth of Massachusetts Department of Environmental Protection.

Concur and recommend for immediate implementation:

U.S. DEPARTMENT OF THE ARMY

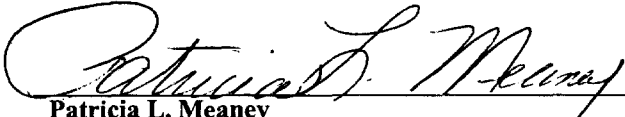


Benjamin F. Goff
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Devens Reserve Forces Training Area
Devens, Massachusetts

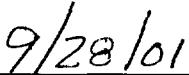


Date

U.S. ENVIRONMENTAL PROTECTION AGENCY



Patricia L. Meaney
Director,
Office of Site Remediation and Restoration
Region 1



Date

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**DECISION SUMMARY
AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS**

DECISION SUMMARY

1.0 SITE NAME, LOCATION, AND DESCRIPTION

This Record of Decision addresses past releases to soil and groundwater at Area of Contamination (AOC) 57 at Devens Reserve Forces Training Area (RFTA), Devens Massachusetts. The Devens RFTA, formerly Fort Devens, is located in the Towns of Ayer and Shirley (Middlesex County) and Harvard and Lancaster (Worcester County), approximately 35 miles northwest of Boston, Massachusetts. A Federal Facilities Agreement between the U.S. Department of the Army and the U.S. Environmental Protection Agency (USEPA) establishes the Army as the lead agency for developing, implementing, and monitoring response actions at Devens RFTA in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). Fort Devens is identified by the CERCLIS ID number MA7210025154.

AOC 57 is located between Barnum Road and Cold Spring Brook on the northeast side of what was formerly the Main Post of Fort Devens, in the town of Harvard, Massachusetts (Figure 1). It is in an area of the former Fort Devens that was used primarily for the storage and maintenance of military vehicles. AOC 57 was first investigated as Study Area (SA) 57 - Building 3713 Fuel Oil Spill.

2.0 SITE HISTORY AND ENFORCEMENT ACTIVITIES

This section provides a brief description of the historical land use at Devens RFTA, investigative and response history at AOC 57, and enforcement history.

2.1 LAND USE AND RESPONSE HISTORY

Fort Devens was established in 1917 as Camp Devens, a temporary training camp for soldiers from the New England area. In 1931, the camp became a permanent installation and was renamed Fort Devens. Throughout its history, Fort Devens served as a training and induction center for military personnel, and as a unit mobilization and demobilization site. All or portions of this function occurred during World Wars I and II, the Korean and Vietnam conflicts, and operations Desert Shield and Desert Storm. During World War II, more than 614,000 inductees were processed, and Fort Devens reached a peak population of 65,000.

The primary mission of Fort Devens was to command, train, and provide logistical support for nondivisional troop units and to support and execute Base Realignment and Closure (BRAC) activities. The installation also supported the Army Readiness Region and National Guard units in the New England area. Fort Devens was identified for cessation of operations and closure under Public Law 101-510, the Defense Base Realignment and Closure Act of 1990, and was officially closed in September 1996. Portions of the property formerly occupied by Fort Devens were retained by the Army for reserve forces training and renamed the Devens RFTA. Areas not retained as part of the Devens RFTA were, or are in the process of being, transferred to new owners for reuse and redevelopment.

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AOC 57 is located on the south side of Barnum Road in an area of the former Fort Devens that was used primarily for the storage and maintenance of military vehicles. In addition, areas north of Barnum Road have historically been, and continue to be, used as rail yards and for freight handling and storage. AOC 57 consists of three subareas (Area 1, Area 2, and Area 3) located south to southeast of Building 3713 and former buildings 3756, 3757 and 3758 (Figure 2). These subareas historically received stormwater runoff and wastes from vehicle maintenance at former vehicle storage yards associated with Building 3713 and former buildings 3757 and 3758. Former Building 3756 was a mess hall that was converted to a general storehouse. The vehicle storage yards were abandoned in 1998, and the pavement and fencing were removed. The former storage yards are now soil and grass-covered areas.

AOC 57 Areas 2 and 3 are located within Lease Parcel A6a that the Army plans to transfer to the Massachusetts Government Land Bank. This Record of Decision defines each area as an upland area (elevations greater than 228 feet (ft.) mean sea level [msl]) that slopes downward to a 100-year flood plain (elevations less than 228 ft. msl). This characterization more accurately describes AOC 57 than the Feasibility Study and Proposed Plan that used the term "wetland" to describe all areas at AOC 57 with an elevation less than 228 ft. msl. In fact, based on a 1993 wetland delineation, wetland conditions at Area 2 extend only up to approximately 222 ft. msl. This change in definition has not affected the selection of remedial actions at Areas 1, 2, or 3.

The upland area at AOC 57 is forested with trees and scrub brush. At Area 2 the flood plain boundary is located approximately 300 ft. from Cold Spring Brook, and at Area 3 the flood plain boundary is located approximately 400 ft. from Cold Spring Brook. The flood plain area is densely vegetated with brush and contains small areas of standing water. Based on a 1993 wetlands delineation, proposed remedial activities at Area 2 may extend into the Cold Spring Brook bordering vegetated wetland. The 1993 wetlands delineation did not include Area 3, but proposed remedial activities at Area 3 may also extend into the Cold Spring Brook bordering vegetated wetland. A portion of Area 1 is located outside of Lease Parcel A6a and outside of the 100-year flood plain (i.e., at an elevation greater than 228 ft. msl).

Lease Parcel A6a is located within 500 ft. of the Devens public water supply line that serves Barnum Road. The parcel is also located approximately 2,500 ft. southwest of the Devens Grove Pond well field and 3,000 ft. southwest of the Town of Ayer water supply wells on the south shore of Grove Pond. It is outside the Zone II for both the Devens Grove Pond Wellfield and the Ayer Grove Pond wells (see Figure 2). Groundwater elevation data indicate that the groundwater flow direction at AOC 57 is to the southeast and away from Grove Pond and the water supply wells.

According to Exhibit A of the Devens Zoning By-laws, Zoning District Parcel Maps (Vanasse Hangen Brustlin, 1994a), and the Devens Re-use Plan (Vanasse Hangen Brustlin, 1994b), land on the southeast side of Barnum Road is included either in Zoning District Parcel 17, which is zoned for Rail, Industrial, and Trade Related use, or in the Open Space and Recreation Zoning District. The narrative description accompanying the Zoning District Parcel Maps indicates that the boundary between these zones is the flood plain line. As shown on Figures 2 and 3, the 100-year flood plain crosses Lease Parcel A6a and bisects AOC 57 Areas 2 and 3. Therefore, Rail, Industrial, and Trade Related zoning applies to upland regions at AOC 57, while Open Space and Recreation zoning applies to flood plain regions.

Area 1. Area 1 consists of a stormwater outfall area and drainage ditch (Storm Drainage System 6 of the Storm Sewer System Evaluation [AREE 70] Report [ADL, 1994]) that receives precipitation collected from

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paved areas around Building 3713 (see Figure 3). The discharge to the storm drainage ditch eventually flows to Cold Spring Brook. The following items summarize the history of Area 1 at AOC 57.

1977. On February 13, 1977, Fort Devens personnel at Building 3713 noticed No. 4 fuel oil flowing from an overfilled 30,000 gallon underground storage tank (UST) into a nearby storm drain (Biang et al., 1992; DFAE, 1977). The storm drain discharged the spilled No. 4 fuel oil to a drainage ditch at the Area 1 outfall. The released oil flowed down the ditch to Cold Spring Brook. There was no evidence on February 13 and 14 of more than 50 to 100 gallons of fuel oil in the potentially affected water courses. Nevertheless, containment dikes and absorbent booms were set up across Cold Spring Brook adjacent to Area 2, and approximately 3,000 gallons of mixed oil and water were recovered (DFAE, 1977).

1992. Area 1 at AOC 57, then SA 57, was investigated as part of the Site Investigation (SI) of Groups 2 and 7 Historic Gas Stations (ABB-ES, 1995a). Surface soil, surface water, and sediment samples were collected, and analysis identified polycyclic aromatic hydrocarbons (PAHs) and total petroleum hydrocarbons (TPH) in surface soil. A Preliminary Risk Evaluation (PRE) indicated no unacceptable risk for presumed commercial/industrial site reuse. The Army recommended further investigation of Area 1 as part of the installation-wide AREE 70 storm sewer study.

1994. The AREE 70 evaluation included AOC 57 Area 1 (Storm Drain System 6) (ADL, 1994). Analyses of surface water and sediment samples indicated elevated levels of arsenic, chromium, and lead in sediment and arsenic and lead in surface water. Semivolatile organic compounds (SVOCs) were also detected at a maximum total SVOC concentration of 59.8 micrograms per gram ($\mu\text{g/g}$). Results of the sampling were incorporated into the Lower Cold Spring Brook SI ecological PRE.

1994. The Lower Cold Spring Brook SI included sampling results from the AREE 70 report in its assessment of potential risks (ABB-ES, 1995b). The Lower Cold Spring Brook SI produced no evidence that surface water contaminants posed risks to aquatic receptors. Furthermore, no ecological risks were identified from exposure to contaminated media in several storm drain systems, including Storm Drain System 6 (AOC 57 Area 1). No further study was recommended for Area 1.

1997. Although there were no unacceptable risks, the Army performed a soil removal action at the Area 1 outfall area in response to newly promulgated Massachusetts Contingency Plan (MCP) standards to address soil contamination resulting from releases of petroleum (Weston, 1998). An approximate 22- by 22.5- ft. area was excavated to maximum depth of 3 ft. In all, approximately 25 cubic yards (cy) of contaminated soil were removed. Although some PAH contaminants at the limit of the excavation exceeded the MCP S-1/GW-1 standards, statistical review of the data indicated that remaining contamination was consistent with that expected from asphalt paved and traffic areas along Barnum Road. It was further concluded based on data review that fuel oil contamination had been successfully removed. The removal action report recommended no further action at Area 1 with the intent that the decision be formalized in the AOC 57 Record of Decision (Weston, 1998).

2000. An assessment of risks was performed as part of the AOC 57 Remedial Investigation (RI) to demonstrate Area 1 does not pose unacceptable risk for future unrestricted land use. The assessment indicates that there are no unacceptable risks for future unrestricted land use (Refer to Appendix N-1 of the RI report [HLA, 2000a]), and the RI report recommended no further action at AOC 57 Area 1.

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Area 2. Area 2 is located approximately 700 ft. northeast of Area 1, and adjacent to a former vehicle storage yard associated with the motor repair shops located in former Buildings 3757 and 3758 (see Figure 3). The nearby former Building 3756 served as a mess hall and was later converted to a general storehouse. Area 2 was originally thought to have been contaminated by the Area 1 No. 4 fuel oil spill; however, area grading was such that overland flow to Area 2 would not have been possible. When initially investigated, this Area 2 consisted of an eroded drainage ditch created by periodic rainfall runoff from vehicle storage yards associated with Buildings 3757 and 3758. The area has since been regraded (following a soil removal action) and a permanent drainage swale has been installed. Runoff drains into the swale and discharges east to Cold Spring Brook. Portions of Area 2 are within the Cold Spring Brook 100-year flood plain (see Figures 2 and 3). Data gathered during the RI as well as preceding investigations suggests that Area 2 contamination is the result of the historical disposal of vehicle maintenance related wastes. Contaminant distributions indicate that the disposal occurred along the break in slope above the flood plain. The following items summarize the history of Area 2 at AOC 57.

1992. The drainage ditch at Area 2 was investigated as part of the SI for Groups 2 and 7 Historic Gas Stations (ABB-ES, 1995a). Naphthalene and TPH were detected in surface soil. Fingerprint analysis of soil from Area 2 indicated that contaminants in the soil were most likely derived from lubricating oil, possibly vehicle crankcase oil, and not the 1977 release of No. 4 fuel oil. Results of human-health and ecological PREs indicated that the chemical hazards at Area 2 were not significant.

1994. The Army performed a soil removal action at Area 2 in 1994 in response to newly promulgated MCP standards (OHM, 1996). Based on available data and a cleanup level for TPH of 500 milligrams per kilogram (mg/kg), it was estimated that 350 tons of soil would need excavation. The removal action

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concluded that there was not a significant risk to ecological receptors. The RI report recommended that the Army perform a FS to evaluate alternatives to address risks to human health.

2000. The Army prepared a FS report to evaluate candidate remedial alternatives for control of risk from exposure to remaining contaminants at AOC 57 (Harding ESE, 2000).

2000. During December 2000, the Army collected additional soil samples at Area 2 from four locations at the southern end of the former excavation to further characterize the distribution of extractable petroleum hydrocarbons (EPH) (Harding ESE, 2001). Sampling locations were selected to correspond to historical locations with the highest EPH concentrations. EPH were detected in the December 2000 samples at concentrations that would not pose unacceptable risk to human health.

Area 3. Area 3 is located approximately 600 ft. to the northeast of Area 2, south of former vehicle maintenance motor pools. Portions of Area 3 are within the Cold Spring Brook 100-year flood plain (see Figure 3). The site is characterized by a historic garage and vehicle waste disposal area. The following items summarize the history of Area 3 at AOC 57.

1995. Four test-pits were excavated east of Area 2 where historical photos indicated soil staining. Sample analysis showed the presence of TPH and chlorinated VOCs. The area was designated AOC 57 Area 3.

1996 through 1998. RI field investigations were performed to better characterize the nature and extent of contamination (HLA, 2000a). RI activities included collection of 40 soil samples from eight test pits; 87 soil samples from 20 TerraProbe points, six soil borings, and one monitoring well boring; collecting five

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shows that the MCP S-2/GW-3 cleanup goals were met in sidewall samples except at the southern end of the excavation where exceedance of the volatile petroleum hydrocarbon (VPH), EPH, Aroclor-1260, and dieldrin goals occurred. Comparison to the risk-based cleanup goals showed exceedance (4.3 µg/g vs. 2µg/g) of the Aroclor-1260 goal. In total, 1,860 cy of material, comprising the majority of Area 3 soil contamination, were removed (HLA, 2000a).

2000. The Army prepared a FS report to evaluate candidate remedial alternatives for control of risk from exposure to remaining contaminants at AOC 57 (Harding ESE, 2000).

2000. In response to regulatory agency concerns, the Army installed two small-diameter groundwater screening points at Area 3 to further characterize the presence of chlorinated compounds in groundwater (HLA, 2000b; Harding ESE, 2000). Each point consisted of nominal ½-inch inside diameter pipe with a five-ft. vertically slotted screen. The points were advanced and sampled at 10-ft. intervals beginning at the water table. Point 57N-00-01X was advanced to 58 ft. below ground surface (bgs) downgradient of the source area, and point 57N-00-02X was advanced to 79 ft. bgs upgradient of the source area. Groundwater samples were analyzed at an on-site laboratory for tetrachloroethene (PCE), trichloroethene (TCE), dichloroethene (DCE), 1,2-dichlorobenzene (1,2-DCB), and 1,4-dichlorobenzene (1,4-DCB). Massachusetts Department of Environmental Protection (MADEP) representatives collected split samples for off-site analysis of VOCs by USEPA Method 8260B.

Six samples were collected for on-site screening from the downgradient location 57N-00-01X. On-site analysis did not detect target compounds in any of these samples.

Seven samples were collected for on-site screening from 57N-00-02X located approximately 25 ft. upgradient of the previously excavated Area 3 source area. The only detection of PCE, 1 microgram per Liter (µg/L), was from the sample collected from 34 to 39 ft. bgs. TCE was detected at 12.4 µg/L in the sample collected at 54 to 59 ft. bgs. No other target compounds were detected. Based upon the depth of these detections and their upgradient location, these contaminants are not attributed to the Area 3 source area.

2001. On April 3, 2001, USEPA and MADEP collected groundwater samples from six Area 3 monitoring wells (57M-95-03X, 57M-96-09X, 57M-96-10X, 57M-96-11X, 57M-96-12X, and 57M-96-13X) to assess groundwater quality. The samples were analyzed for Target Analyte List VOCs and the inorganics arsenic, barium, cadmium, and zinc. The analytical results showed one exceedance of drinking water standards: arsenic at 80 to 91 µg/L in the sample from 57M-96-11X.

2.2 ENFORCEMENT HISTORY

On December 21, 1989, Fort Devens was placed on the National Priorities List (NPL) under CERCLA as amended by the Superfund Amendments and Reauthorization Act (SARA) to evaluate and implement response actions to cleanup past releases of hazardous substances, pollutants, and contaminants. A Federal Facilities Agreement to establish a procedural framework for ensuring that appropriate response actions are implemented at Fort Devens was developed and signed by the Army and the USEPA Region I on May 13, 1991, and finalized on November 15, 1991. AOC 57 is considered a sub-site to the entire installation.

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In 1995, the Army initiated a RI for AOC 57. The RI report was issued in June 2000. The purpose of the RI was to determine the nature and extent of contamination at the AOC, assess human-health and ecological risks, and provide a basis for conducting a FS.

An FS that evaluates remedial action alternatives for cleanup of groundwater was issued in November 2000. The FS identifies and screens remedial alternatives and provides a detailed analysis of seven of these remedial alternatives to allow decision-makers to select a remedy for cleanup of AOC 57.

The proposed plan detailing the Army's preferred remedial alternatives for Areas 2 and 3 at AOC 57 was issued in February 2001 for public comment. Technical comments presented during the public comment period are included in the Administrative Record. Appendix C of this Record of Decision, the Responsiveness Summary, contains a summary of these comments and the Army's responses, and describes how these comments affected the remedy selection.

3.0 COMMUNITY PARTICIPATION

The Army has held regular and frequent informational meetings, issued fact sheets and press releases, and held public meetings to keep the community and other interested parties informed of activities at AOC 57. Community interest in AOC 57 was low throughout this process until issuance of the Proposed Plan. At that time, several community members and local groups expressed strong concerns about the Army's preferred alternatives and time frames to achieve groundwater cleanup goals.

In February 1992, the Army released, following public review, a community relations plan that outlined a program to address community concerns and keep citizens informed about and involved in remedial activities at Fort Devens. As part of this plan, the Army established a Technical Review Committee (TRC) in early 1992. The TRC, as required by SARA Section 211 and Army Regulation 200-1, included representatives from USEPA, U.S. Army Environmental Center, Devens RFTA, MADEP, local officials, and the community. Until January 1994, when it was replaced by the Restoration Advisory Board (RAB), the committee generally met quarterly to review and provide technical comments on schedules, work plans, work products, and proposed activities for the SAs and AOCs at Devens RFTA. The AREE, SI, RI, and FS reports, Proposed Plan, and other related support documents were all submitted to the TRC or RAB for their review and comment.

The Army, as part of its commitment to involve the affected communities, forms a RAB when an installation closure involves transfer of property to the community. The Fort Devens RAB was formed in February 1994 to add members of the Citizen's Advisory Committee (CAC) to the TRC. The CAC had been established previously to address Massachusetts Environmental Policy Act/Environmental Assessment issues concerning the reuse of property at Devens RFTA. The RAB consists of 28 members (15 original TRC members plus 13 new members) who are representatives from the Army, USEPA Region I, MADEP, local governments and citizens of the local communities. It meets monthly and provides advice to the installation and regulatory agencies on the Devens RFTA cleanup programs. Specific responsibilities include: addressing cleanup issues such as land use and cleanup goals, reviewing plans and documents, identifying proposed requirements and priorities, and conducting regular meetings that are open to the public.

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On February 23, 2001, the Army issued the Proposed Plan, to provide the public with a brief explanation of the Army's proposal for remedial action at AOC 57. The Proposed Plan also described the opportunities for public participation and provided details on the upcoming public comment period and public meeting.

On February 23, 2001, the Army published a public notice announcing the Proposed Plan, the date for a public informational meeting, and the start and end dates of a 31-day public comment period in the Leominster Fitchburg Sentinel & Enterprise, Worcester Telegram, Harvard Post, and papers of the Nashoba Publishing Company (Groton Landmark, Harvard Hillside, Pepperell Free Press, The Public Spirit, Shirley Oracle, and Townsend Times). The Public Notice was published in the Lowell Sun on February 26, 2001. The public notices were republished by the Leominster Fitchburg Sentinel & Enterprise, Lowell Sun, Worcester Telegram and Harvard Post on March 5, 2001, and by Nashoba Publishing Company on March 7, 2001. Notice announcing a 30-day extension of the public comment was published in the Lowell Sun on March 28, 2001, Leominster Fitchburg Sentinel & Enterprise on March 28, 2001, Worcester Telegram on March 28, 2001, Harvard Post on March 30, 2001, and in the Groton Landmark, Harvard Hillside, Pepperell Free Press, The Public Spirit, Shirley Oracle, and Townsend Times on March 30, 2001. The Army also made the Proposed Plan available to the public at the public information repositories at the Ayer Public Library, the Hazen Memorial Library in Shirley, the Harvard Public Library, and the Lancaster Public Library, or by request from the Devens BRAC Environmental Office.

From February 23 through April 25, 2001, the Army held a 61-day public comment period to accept public comments on the Proposed Plan. On March 8, 2001, the Army held an informal public information meeting at Devens RFTA to present the Army's Proposed Plan to the public and to provide the opportunity for open discussion concerning the Proposed Plan. The Army also accepted formal verbal or written comments from the public during a public hearing held as part of the meeting. A transcript of this hearing, formal public comments, and the Army's response to comments are included in the attached Responsiveness Summary (see Appendix C).

All supporting documentation for the decision regarding AOC 57 is contained in the Administrative Record for review. The Administrative Record is a collection of all the documents considered by the Army in choosing the plan of action for AOC 57. On February 23, 2001, the Army made the Administrative Record available for public review at the Devens BRAC Environmental Office and at the Ayer Town Hall, Ayer, Massachusetts. An index to the Administrative Record is available at the USEPA Records Center, 90 Canal Street, Boston, Massachusetts and is provided as Appendix D of this Record of Decision.

4.0 SCOPE AND ROLE OF THE RESPONSE ACTION

This Record of Decision documents the selection of remedial actions proposed for control of site risks at Areas 2 and 3 of AOC 57. In addition, it formalizes the recommendations for No Further Action at Area 1 proposed in the Removal Action Report for *Study Area 57, Area 1, Storm Drain System No. 6 Outfall* (Weston, 1998) and in the final RI report (HLA, 2000a). There is no identified risk to human health or the environment at Area 1, and no further remedial action is required under CERCLA. Further, because the

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limited nature of remaining contamination at Area 1 is typical of contamination at stormwater outfalls in Massachusetts, it is exempt from MCP requirements.

Implementation of Alternative II-3 (Excavation [For Possible Future Use] and Institutional Controls) at Area 2 will protect possible future use construction workers from the threat of exposure to contaminated flood plain soil by removal of soil exceeding cleanup criteria. The presence of flood plain and wetland conditions and existing zoning currently prevent residential use of the area and potential residential exposure to contaminated soil and groundwater. In addition, Alternative II-3 will protect potential future area residents from the threat of direct contact exposure to flood plain soil and exposure to contaminated groundwater by establishing institutional controls that prohibit residential use of flood plain property and potable use of groundwater.

Implementation of Alternative III-2a at Area 3 will protect possible future commercial workers and unrestricted use residents from exposure to groundwater and protect future unrestricted use residents from exposure to contaminated flood-plain soil by establishing institutional controls that prohibit potable use of Area 3 groundwater and residential use of flood plain property. In addition, groundwater cleanup will be accelerated by excavation of soil containing contaminants that cause reducing conditions which result in release of naturally occurring arsenic from soil to groundwater. The presence of flood plain and wetland conditions and existing zoning currently prevent residential use of the area and potential residential exposure to contaminated soil. To protect future unrestricted use residents from exposure to contaminated flood-plain soil and groundwater in the event of future property transfer, the Army would include deed covenants to prohibit residential use of flood plain property and potable use of groundwater in flood plain.

Implementation of the selected remedial actions at Areas 2 and 3 will address all remaining identified threats at AOC 57.

5.0 SUMMARY OF SITE CHARACTERISTICS

The following subsections summarize the nature and distribution of contamination presented in the AOC 57 RI report (HLA, 2000). The discussion of soil contamination represents conditions following soil removal actions performed at Areas 2 and 3 in 1994 and 1999, respectively.

5.1 AOC 57 AREA 2 CONTAMINANT CHARACTERIZATION

Contaminated media at AOC 57 Area 2 include surface and subsurface soil, groundwater, sediment, and surface water. The nature and extent of contamination is described in detail in the final RI report and is summarized in the FS report and in the following subsections.

5.1.1 Area 2 Soil Characterization

Soil contamination at Area 2 can be divided into two types: 1) petroleum hydrocarbons found in surface and subsurface soil in both upland and flood plain area, and 2) VOCs, SVOCs, PCBs, and pesticides found along the southern portion of the 1994 soil removal excavation and within the floodplain.

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The most significant contamination encountered during the 1995 RI efforts was in five test pits (57E-95-07X, -12X, -15X, -16X, and -17X) located within the flood plain around the southern portion of the soil removal excavation from at depths ranging from the ground surface to the water table at 4 to 5 ft. bgs. Detected VOCs include toluene, ethylbenzene, and xylenes (TEX), 1,2-DCE (cis- and trans- isomers), TCE, and PCE. The highest off-site laboratory concentrations of VOCs were observed in 57E-95-07X in the 4-ft.-bgs sample with 0.344 mg/kg of total TEX, 0.0039 mg/kg of 1,2-DCE, 0.011 mg/kg of TCE, and 0.0059 mg/kg of PCE. The primary SVOCs encountered were naphthalene and methylnaphthalene. The 4-ft.-bgs sample from 57E-95-07X contained the highest concentration of total SVOCs at 12 mg/kg. Elevated concentrations of pesticides and PCBs were also observed. Detected pesticides included dieldrin at a maximum observed concentration of 0.032 mg/kg in the surficial sample from 57E-95-17X, 2,2-bis(para-chlorophenyl)-1,1-dichloroethene (DDE) at 0.00928 mg/kg in the same sample, and Endosulfan I at 0.081 mg/kg in the 2-ft.-bgs sample from 57E-95-16X. Maximum observed concentrations of PCBs were 3.2 mg/kg of Aroclor-1248 and 12 mg/kg of Aroclor-1260, both from the 2-ft.-bgs sample from 57E-95-16X. High concentrations of TPH were coincident with the VOC detections. Notable off-site laboratory detections included 31,800 mg/kg in the 4-ft.-bgs sample from 57E-95-07X, 5,110 mg/kg in the surficial sample from 57E-95-12X, 26,100 mg/kg in the 2-ft.-bgs sample from 57E-95-15X, 30,000 mg/kg in the 2-ft.-bgs sample from 57E-95-16X, and 2,390 mg/kg in the surficial sample from 57E-95-17X.

Additional soil sampling in 1998 aided in defining the extent of the petroleum hydrocarbon contamination south of the removal action excavation. TPH and/or EPH results from 57S-98-04X, 57S-98-08X, 57S-98-09X, and 57S-9810X all showed lower concentrations than upgradient explorations. Elevated EPH concentrations were observed in the area southwest of the removal action and at 57S-98-06X.

A comparison of 1998 EPH and TPH results showed that EPH results were much lower than TPH results from the same sample. This suggests that the TPH data may be artificially high because of interference by organic material in the soils or potential biogenic sources.

Elevated concentrations of arsenic were detected in surficial samples coincident with the petroleum hydrocarbon contamination. The arsenic concentration was highest, at 61.2 mg/kg, in the zero-ft.-bgs sample from 57S-98-07X.

Data gathered during the RI as well as previous investigations suggest that the soil contamination resulted from the historical disposal of vehicle maintenance related wastes. Contaminant distributions indicate that the disposal occurred along the break in slope above the flood plain. Contaminants in surficial soils then percolated/leached into subsurface soils and groundwater where they were transported hydrogeologically downgradient and resorbed to subsurface soils. Contaminants to the south and southeast of the removal action excavation do not appear to be migrating toward the wetland. Contaminant distributions do show that petroleum hydrocarbons and chlorinated VOCs appear to have migrated toward the wetland southwest of the excavation.

5.1.2 Area 2 Groundwater Characterization

During the RI field investigation the Army collected two rounds of groundwater samples from 11 monitoring wells at Area 2 (G3M-92-02X, G3M-92-07X, 57M-95-01X, 57M-95-02X, 57M-95-04A, 57M-95-04B, 57M-95-05X, 57M-95-06X, 57M-95-07X, 57M-95-08A, and 57M-96-08B). Figure 4 shows the location of

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these monitoring wells. Groundwater samples were analyzed for VOCs, SVOCs, total and filtered inorganics, pesticides/PCBs, TPH, total dissolved solids (TDS), and water quality parameters.

Several inorganic analytes were detected above the calculated Devens background concentrations in groundwater. Arsenic, barium, calcium, copper, lead, manganese, potassium, sodium, and zinc were detected above background concentrations in the unfiltered samples, and barium, lead, manganese, potassium, and sodium were detected above background concentrations in filtered samples. The greatest number of background exceedances were observed in the Round 1 unfiltered samples from 57M-95-01X, located over 500 ft. west of the 1994 soil excavation area, and 57M-95-04A, located just south of the excavation area. The highest arsenic concentration, 24.5 µg/L, was reported in the Round 1 sample from 57M-95-01X. The Round 2 samples from these wells showed only one background exceedance: sodium in 57M-95-01X. The Round 2 unfiltered samples also showed a dramatic decrease in total suspended solids (TSS) from Round 1.

Several VOCs were detected in Round 1 and Round 2 groundwater samples. The Round 1 sample from 57M-95-01X contained 1,1,1-TCA at 0.5 µg/L, toluene at 0.63 µg/L, TCE at 0.56 µg/L, and TPH at 356 µg/L, while the Round 2 sample contained only toluene at 1.2 µg/L. The Round 2 sample from the other upgradient wells, 57M-95-02X and G3M-92-07X, contained 1.6 µg/L and 0.89 µg/L, respectively, of toluene.

Groundwater samples from the vicinity of the soil removal excavation contained lower concentrations of toluene than the upgradient samples. However, Round 1 and Round 2 samples from monitoring wells 57M-95-04A, 57M-95-07X, and 57M-95-08B contained chlorinated solvents. The highest concentrations were detected in 57M-95-04A: 1,2-DCE (3.6 µg/L, total cis- and trans-) in the Round 1 sample, TCE (1.9 µg/L) in the Round 2 sample, and PCE (16 µg/L) in the Round 2 sample. PCE was detected in Rounds 1 and 2 at 57M-95-07X, located approximately 140 ft. west of the excavation, at 4.0 and 3.0 µg/L, respectively. The maximum concentration in 57M-95-08B was 1.8 µg/L.

Diethylphthalate and bis(2-ethylhexyl)phthalate were the only SVOCs detected in the Round 1 and 2 groundwater samples from Area 2. The presence of both these compounds was attributed to laboratory contamination.

Endosulfan I was the only pesticide detected in Area 2 groundwater. The Round 1 sample from 57M-95-06X contained 0.0271 µg/L. No PCBs were detected in Area 2 groundwater. The only Area 2 TPH detection, 356 µg/L, occurred in the Round 1 sample from the upgradient well 57M-95-01X.

One groundwater sample was collected in 1998 from the piezometer 57P-98-02X, located approximately 50 ft. downgradient of the excavation area, and submitted for off-site analysis for VOCs, SVOCs, select inorganics, pesticides/PCBs, and EPH/VPH.

The inorganics, arsenic, lead, and manganese were detected at levels in excess of established Devens background concentrations in the 1998 sample. Arsenic was detected at 54.5 µg/g and lead at 16 µg/L in the unfiltered samples. The filtered sample contained 73 µg/L of arsenic and 4.4 µg/L of manganese.

Three VOCs were detected in the sample, 1,2-DCE at 13 µg/L (total cis- and trans-); TCE at 0.71 µg/L; and toluene at 0.54 µg/L. The only detected SVOC was bis(2-ethylhexyl)phthalate at 6.4 µg/L.

No pesticides, PCBs, or EPH/VPH carbon ranges were detected in the 1998 sample.

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5.1.3 Area 2 Sediment Characterization

Background concentrations for inorganics in sediment have not been established for the Devens area; therefore, inorganic concentrations in 1995 sediment samples 57D-95-03X through 57D-95-10X were compared to established background concentrations for Devens soils. Exceedances of background concentrations were noted for arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, selenium, sodium, vanadium, and zinc. The surficial sediment samples had far more exceedances of background concentrations than the deeper sediment samples. There was no apparent correlation between sample locations and the number of background exceedances. However, the greatest number of maximum observed concentrations occurred at the upstream sample 57D-95-03X. Maximum concentrations and their respective sample locations are as follows: arsenic, 180 µg/g at 57D-95-03X; barium, 159 µg/g at 57D-95-07X; beryllium, 2.8 µg/g at 57D-95-04X (2 ft. bgs); cadmium, 2.33 µg/g at 57D-95-05X; calcium, 18,400 µg/g at 57D-95-07X; chromium, 98.8 µg/g at 57D-5-05X (2 ft. bgs); cobalt, 29.9 µg/g at 57D-95-03X; copper, 201 µg/g at 57D -95-04X (1 ft. bgs); iron, 31,500 µg/g at 57D-95-03X; lead, 410 µg/g at 57D-95-04X (1 ft. bgs); manganese, 3,940 µg/g at 57D-95-07X; mercury, 0.36 µg/g at 57D-95-06X; nickel, 46.8 µg/g at 57D-95-03X; selenium, 3.24 µg/g at 57D-95-03X; sodium, 3,610 µg/g at 57D-95-04X (1 ft. bgs); vanadium, 46.4 µg/g at 57D-95-03X; and zinc, 468 µg/g at 57D-95-09X.

Additional samples collected in 1998 contained three compounds that exceeded background concentrations. The sediment sample CSD-98-01X, located on the edge of the marsh on the upstream side of the containment dike, contained 14.3 µg/g of copper and 220 µg/g of arsenic. This was the highest concentration of arsenic detected in Cold Spring Brook sediments. The other background exceedance occurred in 57D-98-02X, located on the edge of the marsh on the downstream side of the containment dike. This sample contained lead at 88.9 µg/g. There were no background exceedances in the most downgradient sample, 57D-98-03X.

The 1995 and 1998 sediment data are consistent with the results of the Lower Cold Spring Brook SI (ABB-ES, 1995), which concludes that inorganic concentrations tend to be highest in the upstream sample CSD-98-13X and Area 2 marsh samples CSD-98-14X, CSD-94-20X, and CSD-94-35X. The downstream samples CSD-94-17X, SSD-93-92G, and CSD-94-19X generally contained lower inorganic concentrations than the upstream samples. The lowest concentrations were in CSD-94-19X, the most downstream of the Lower Cold Spring Brook SI samples collected for AOC 57.

The inorganic results show that elevated concentrations of arsenic are present at the edge of the Area 2 marsh on the upstream side of the containment dike. However, arsenic concentrations in sediment collected from the marsh between Area 2 and the stream channel (e.g., CSD-94-14X, CSD-94-20X, CSD-94-35X, 57D-95-04X, and 57D-95-05X) showed much lower arsenic concentrations, all below the MCP S-1/GW-1 standard. This indicates that arsenic contamination in sediment within the stream channel is the result of upstream sources or conditions, as evidenced in the upgradient samples G3D-92-01X and 57D-95-03X. Results of the Lower Cold Spring Brook SI and RI sampling showed arsenic concentrations in sediment decrease in the downstream direction. Historical photographs show that between 1920 and 1960 there were apple orchards adjacent to the south side of Cold Spring Brook southwest (upstream) of Area 2. The orchards and railroad tracks, which cross Barnum Road, are potential sources of the observed upstream arsenic contamination.

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The common laboratory contaminants acetone, dichloromethane (methylene chloride), toluene, and trichlorofluoromethane (Freon) were detected in several of the 1995 sediment samples. Toluene was detected in six of the sediment samples and is consistent with soil and groundwater contamination at AOC 57 Area 2. One of the toluene detections occurred at an upstream sampling location, 0.0028 µg/g in the 2-ft.-bgs sample from 57D-95-03X. The maximum concentration of 0.02 µg/g was observed in sediments in the 1-ft.-bgs sample from 57D-95-04X, located in the marsh area upstream of the containment dike. PCE and chlorobenzene were detected in only one of the 1995 RI sediment samples. The 2-ft.-bgs sample from the upstream location 57D-95-03X contained 0.0046 µg/g of PCE and 0.0016 µg/g of chlorobenzene.

The 1998 sediment samples from Area 2 contained two VOCs, PCE and TCE. 57D-98-01X, located on the upstream side of the containment dike contained, 0.078 µg/g of PCE. 57D-98-02X, located on the downstream side of the containment dike contained, 0.01 µg/g of PCE and 0.027 µg/g of TCE. There were no VOC detections in 57D-98-03X. The 1995 and 1998 data show that AOC 57 Area 2 is contributing small amounts of chlorinated VOCs (PCE and TCE) to near-shore sediments. PCE and TCE were not detected in stream channel sediments. The data also suggest that Area 2 may be a source of toluene contamination in sediments, although toluene was detected in upstream sediments.

The SVOCs benzo(k)fluoranthene, chrysene, fluoranthene, phenanthrene, and pyrene were detected in 1995 RI sediment samples. Chrysene was detected in only one of the samples, the 2-ft.-bgs sample from the downstream location 57D-95-07X at 0.46 µg/g, while the rest of the compounds were found in both upstream and downstream samples. The highest concentrations of total SVOCs were observed in the duplicate surficial sample from the upstream location 57D-95-03X and the surficial sample from 57D-95-07X, located downstream from the containment dike. Respective SVOC concentrations were 19 µg/g at 57D-95-03X and 18 µg/g in 57D-95-07X.

Benzo(k)fluoranthene, chrysene, fluoranthene, phenanthrene, and pyrene were detected in the 1998 sediment samples. The highest total concentration of SVOCs as well as the highest individual concentrations were found in 57D-98-02X, which contained a total of 6.65 µg/g of SVOCs. 57D-98-01X had 3.05 µg/g of SVOCs and 57D-98-03X contained 2.20 µg/g. These data suggest that Area 2 is contributing small amounts of SVOCs to the wetland. However, the 1995 RI sampling and the Lower Cold Spring Brook SI showed that much higher concentrations were detected in the upstream samples 57D-95-03X and CSD-94-13X, indicating an upstream source.

Ten of the 1995 RI sediment samples contained pesticides. The surficial sediment samples contained higher concentrations than the deeper sediment samples. The highest concentrations of total pesticides as well as the maximum observed concentrations of individual analytes were observed in the upstream samples. The upstream surficial samples from locations 57D-95-08X and 57D-95-03X both contained 2,2-bis(para-chlorophenyl)-1,1-dichloroethane (DDD), DDE, and 2,2-bis(para-chlorophenyl)-1,1,1-trichloroethane (DDT) at total concentrations of 0.79 µg/g and 1.165 µg/g, respectively. The deeper sample (2 ft. bgs) at 57D-95-03X contained DDD and DDE at a total concentration of 0.0719 µg/g. Surficial samples from the area immediately upstream of the containment dike had concentrations of total pesticides of 0.7081 (57D-95-05X) and 0.678 µg/g (57D-95-06X). The only detection of the pesticide dieldrin, at 0.0183 µg/g, was found in the surficial sample from 57D-95-05X. Sample locations downstream of the containment dike contained the lowest concentrations of total pesticides.

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Pesticides were detected in two of the three 1998 sediment samples. 57D-98-02X contained 0.091 µg/g of DDD and 57D-98-03X contained 0.0418 µg/g of DDD and 0.046 µg/g of dieldrin. No pesticides were detected on the upstream side of the containment dike at 57D-98-01X. As with many of the previous analytes, the highest concentrations were found at the upstream locations and not adjacent to AOC 57 Area 2.

PCBs were found in only one 1995 RI sediment sample. The surficial sediment sample from 57D-95-05X contained 0.301 µg/g of Aroclor-1260.

None of the 1998 sediment samples contained PCBs.

TPH concentrations in 1995 RI sediment samples from Cold Spring Brook ranged between 106 µg/g in the deep sediment sample from 57D-95-07X and 3170 µg/g in the surficial sample from 57D-95-05X. The highest observed TPH concentrations were observed in the surficial samples located immediately upstream of the containment dike adjacent to AOC 57 Area 2. Petroleum fingerprinting of the sediment samples indicated that the upstream and downstream samples were comprised of both the diesel and gasoline patterns while the samples collected adjacent to Area 2 were predominately of the diesel pattern.

TPH concentrations in the samples collected in 1998 ranged between 103 µg/g in 57D-98-01X and 452 µg/g in 57D-98-02X. EPH/VPH carbon ranges for these samples were all below detection levels.

5.1.4 Area 2 Surface Water Characterization

During the 1995 RI field activities, nine surface water samples, including a duplicate sample, were collected at the eight sediment sample locations (57D-95-03X through 57D-95-10X) in Cold Spring Brook and its associated wetlands in the vicinity of AOC 57 Area 2. Filtered surface water samples were also collected at the toxicity testing locations 57D-95-04X, 57D-95-05X, 57D-95-06X, 57D-95-08X, and 57D-95-10X. Surface water samples were analyzed for select VOCs, SVOCs, inorganics, pesticides, PCBs, TPH, and water quality parameters.

Background concentrations for inorganics in surface water have not been established for the Devens area; therefore, inorganic concentrations in the 1995 surface water samples 57D-95-03X through 57D-95-10X were compared against established background concentrations for Devens groundwater. Calcium, iron, manganese, sodium, and zinc were shown to be in excess of background concentrations in the filtered surface water samples. The unfiltered surface water samples also showed exceedances of these compounds as well as aluminum, arsenic, barium, cadmium, chromium, copper, lead, magnesium, mercury, potassium, and vanadium. The bulk of the exceedances occurred in the unfiltered sample from 57D-95-04X. The filtered sample showed exceedances of only calcium and sodium. The large number of background exceedances are attributed to an elevated total suspended solids (TSS) concentration of 504,000 µg/g in the unfiltered sample. The greatest number of background exceedances in a filtered sample was observed at 57D-95-05X, located adjacent to Area 2. This sample contained calcium, iron, manganese, sodium and zinc all in excess of background concentrations.

Three additional surface water samples, 57W-98-01X through 57W-98-03X, were collected in 1998 to further characterize the impact of Area 2 on Cold Spring Brook and the associated wetlands. The samples were collected from the same locations as the 1998 sediment samples. The samples were submitted for off-site analysis for VOCs, SVOCs, select inorganics, select dissolved inorganics, pesticides, PCBs, EPH and

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volatile petroleum hydrocarbons (VPH). Water quality parameters were also measured at the time of sample collection.

All three of the unfiltered samples contained arsenic, barium, copper, lead, and zinc in excess of background concentrations. The highest concentrations of all inorganic analytes were observed in 57W-98-02X. None of the filtered samples contained inorganic analytes in excess of background.

In contrast to the sediments, toluene was found in only one of the 1995 Area 2 surface water samples: the upstream sample 57D-95-08X at 0.58 µg/L. The common laboratory contaminant dichloromethane (methylene chloride) was found in five of the surface water samples. The only other VOCs detections in the 1995 RI surface water samples occurred at 57D-95-05X. This sample was shown to contain 1.8 µg/L of PCE, 3.5 µg/L of TCE, and 26 µg/L of DCE (cis- and trans- isomers). This sample location is located in the groundwater discharge area southwest of the Area 2 soil removal excavation.

Similar results were found during the 1998 surface water sampling. 57W-98-01X, collected from a flowing seep on the upstream side of the containment dike, contained 2.6 µg/L of PCE and 0.6 µg/L of TCE. These data along with 57D-95-05X indicate that Area 2 is contributing chlorinated organic compounds to surface water. Two VOCs, chloroform at 0.72 µg/L and carbon disulfide at 1.1 µg/L, were detected in 57W-98-02X. Toluene, at 1.1 µg/L, was the only VOC detected in 57W-98-03X.

SVOCs were detected in one of the 1995 RI surface water samples. 57D-95-04X, located upstream of AOC 57 Area 2 contained 0.52 µg/L of phenanthrene and 24 µg/L of bis(2ethylhexyl) phthalate. This was also the sample exhibiting the highest TSS.

No SVOCs were detected in the 1998 Area 2 surface water samples.

No pesticides or PCBs were detected in either the 1995 or 1998 surface water samples.

TPH were found in two of the 1995 RI surface water samples. 57D-95-04X contained 924 µg/L and 57D-95-05X contained 247 µg/L. The detection at 57D-95-04X may be partially attributed to the elevated TSS concentrations observed in the sample.

No VPH carbon fractions were detected in the 1998 Area 2 surface water samples.

The C19-C36 aliphatic and C11-C22 aromatic EPH ranges were detected in all of the 1998 surface water samples. The highest concentrations were found in 57W-98-02X which contained 1,700 µg/L of the C19-C36 aliphatic range and 1,400 µg/L of the C11-C22 aromatic range.

5.2 AOC 57 AREA 3 CONTAMINANT CHARACTERIZATION

Contaminated media at AOC 57 Area 3 include surface and subsurface soil, groundwater, sediment, and surface water. The nature and extent of contamination is described in detail in the final RI report and is summarized in the FS report and in the following subsections.

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5.2.1 Area 3 Soil Characterization

Soil samples from test pits, TerraProbes™, and soil borings at Area 3 in 1995 and 1996 identified an elongated area encompassing test pit 57E-95-24X on the north, and the soil borings 57B-96-07X and 57B-96-12X on the south, characterized by high TPH and SVOC concentrations. A zero to 5-ft.-bgs zone defined by test pits 57E-95-24X and 57E-96-28X through 57E-96-31X was interpreted as an historic disposal site. Advective transport and sorption appear to have aided in the southerly migration of soil contamination.

The most significant observed soil contaminants included the SVOCs naphthalene, 1,2-DCB, and 1,4-DCB. Within soil borings, the 5-ft.-bgs sample from 57B-96-07X contained 31.3 mg/kg of total SVOCs including 8 mg/kg of 1,2-DCB, 2 mg/kg of 1,4-DCB, 9 mg/kg of 2-methylnaphthalene, and 9 mg/kg of naphthalene. Within the test pits, the bulk of the detections occurred in the 10-ft.-bgs sample from 57E-96-28X. Detected SVOC analytes consist of 1,2,4-trichlorobenzene at 0.5 mg/kg, 1,2-DCB at 6 mg/kg, 1,4-DCB at 4 mg/kg, 2-methylnaphthalene at 0.4 mg/kg, fluoranthene at 1 mg/kg, fluorene at 0.3 mg/kg, chrysene at 1 mg/kg, naphthalene at 2 mg/kg, phenanthrene at 0.4 mg/kg, and pyrene at 3 mg/kg.

Elevated concentrations of PCBs in soil were encountered in proximity to the source area. The highest observed concentrations of PCBs, 3.6 mg/kg of Aroclor-1248 and 10 mg/kg of Aroclor-1260, were found in 57E-95-24X at 4 ft. bgs.

Elevated concentrations of TPH were observed coincident with the SVOC contamination. TPH was detected in all of the Area 3 test pit soil samples at concentrations ranging between 64,900 mg/kg at 57E-95-24X and 262 mg/kg at 57E-96-29X. Petroleum fingerprinting performed on samples collected in 1996 showed that all samples were below detection limits for the gasoline, diesel, and aviation gas patterns. Five soil boring samples were shown to contain measurable concentrations of TPH. Three of these samples contained TPH concentrations in excess of 100 mg/kg; the surficial sample from 57B-96-07X contained 41,400 mg/kg, the 5-ft.-bgs sample from the same boring contained 31,600 mg/kg, and the 5-ft.-bgs sample from 57B-96-11X contained 4,250 mg/kg. Petroleum fingerprinting of the soil samples indicated that the TPH contamination was consistent with a motor oil pattern.

In May of 1998, two soil samples, one at the ground surface and one at the water table, were collected from each of six downgradient locations at Area 3 (57S-98-11X through 57S-98-16X) to better define downgradient soil contamination. Sample depths ranged between 0 and 3 ft. bgs. All 12 samples were screened at the on-site laboratory for TPHC.

TPH concentrations ranged between 2,900 µg/g at 0 ft. at 57S-98-14X to less than 260 µg/g at 2 ft. bgs at 57S-98-16X. The highest concentrations of TPH were found adjacent to monitoring well 57M-96-11X where 57S-98-14X at 0 ft. contained 2,900 µg/g. When compared to previous sample data, the 1998 data showed lower concentrations of petroleum hydrocarbons, VOCs, SVOCs, and arsenic.

The area identified by the above samples was the subject of the 1999 removal action that targeted soils with TPH and PCB concentrations exceeding MCP S-2/GW-3 soil standards. The majority of contamination described above was removed during the removal action, the exception being contamination at the south end of the excavation as defined by the 1998 samples.

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5.2.2 Area 3 Groundwater Characterization

Area 3 groundwater contamination occurs primarily from the source area located immediately north of 57M-95-03X to the most downgradient monitoring well, 57M-96-11X, as depicted on Figure 5. Contaminants observed in this area include inorganics, VOCs, and SVOCs.

During 1995 sampling event, arsenic was detected at 74 µg/L, exceeding the federal drinking water Maximum Contaminant Level (MCL) of 50 µg/L, in 57M-95-03X, but decreased to 33.2 µg/L in the 1996 sample. Cadmium was detected at 8.67 µg/L in the 1996 sample, exceeding the MCL of 5 µg/L. Arsenic was detected at 170 µg/L in 1996 in the primary and duplicate samples from 57M-96-11X.

Additional groundwater sampling was performed at Area 3 in May of 1998. Filtered and unfiltered samples were collected from monitoring well 57M-96-11X as well as the piezometers 57P-98-03X and 57P-98-04X, located slightly downgradient. The inorganic analytes arsenic, barium, copper, lead, and manganese were detected in the unfiltered samples from 57M-96-11X at concentrations in excess of established Devens background concentrations. The highest concentration of arsenic detected in an unfiltered sample was 84.4 µg/L in the duplicate sample collected from 57M-96-11X. The filtered samples collected from 57M-96-11X contained higher concentrations of arsenic: 138 µg/L in the duplicate sample. The primary sample from 57M-96-11X contained comparable arsenic concentrations: 84.4 µg/L in the unfiltered sample and 133 µg/L in the filtered sample. TSS in the unfiltered sample were 2,120,000 µg/L. The reason for the increase in arsenic concentrations from the unfiltered to the filtered samples is not known. All other inorganic analyte concentrations decreased from the unfiltered to the filtered samples. Arsenic concentrations in the piezometers were significantly lower: 13.4 µg/L and 20.9 µg/L in the unfiltered and filtered samples collected from 57P-98-03X and 7.7 µg/L and 12.7 µg/L in the unfiltered and filtered samples collected from 57P-98-04X.

During 1996 sampling, VOCs were detected in 57M-95-03X, 57M-96-11X, 57M-96-12X, and 57M-96-13X. Toluene was found in all of these samples with a maximum concentration of 19 µg/L in 57M-95-03X. Toluene, at 1.1 µg/L, was the only VOC detected in 57M-96-12X. 57M-96-13X contained toluene at 2.9 µg/L, ethylbenzene at 2.8 µg/L, and the only detection of styrene, 8 µg/L. Chlorinated solvents comprised the majority of the detections in 57M-95-03X and 57M-96-11X. 57M-95-03X contained 4.5 µg/L of carbon tetrachloride, 10 µg/L of chloroform, 2.9 µg/L of dichloromethane, 0.59 µg/L of TCE, 2.6 µg/L of PCE, as well as 46 µg/L of ethylbenzene and 200 µg/L of xylenes. 57M-96-11X contained 0.89 µg/L of 1,2-DCE (total cis- and trans-), 1.1 µg/L of TCE, and 4.8 µg/L of PCE. This sample also contained 0.86 µg/L of toluene, 4.6 µg/L of ethylbenzene, and 6.8 µg/L of xylenes. The majority of VOC detections occurred in 57M-96-11X during the 1998 sampling event. PCE was detected at 5.5 µg/L, TCE at 3.8 µg/L, ethylbenzene at 20 µg/L, and xylenes at 5.8 µg/L. Two VOCs were detected in 57P-98-03X, ethylbenzene at 3.2 µg/L, and xylenes at 5.7 µg/L. Chlorobenzene at 0.88 µg/L was the only VOC detected in 57P-98-04X.

SVOCs detected during 1996 sampling consisted of 1,2-DCB, 1,4-DCB, and naphthalene. The majority of SVOC detections occurred at 57M-95-03X and 57M-96-11X. 57M-95-03X, located immediately downgradient of the identified source area contained 9.8 µg/L of 1,2-DCB, 5.6 µg/L of 1,4-DCB, 4.4 µg/L of 2-methylnaphthalene, 1.5 µg/L of 4-methylphenol, and 20 µg/L of naphthalene. The duplicate sample from 57M-96-11X, the most downgradient well contained 3.4 µg/L of 1,2-DCB, 3.3 µg/L of naphthalene, and 6.7 µg/L of bis(2-ethylhexyl)phthalate. Other SVOC detections include 5 µg/L of

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methylphenol in 57M-96-13X and 12 µg/L of bis(2-ethylhexyl)phthalate in the sample from the upgradient well G3M-92-07X. Five SVOCs were detected in the 1998 Area 3 groundwater samples. The most detections occurred in 57P-98-03X which contained bis(2-ethylhexyl)phthalate at 52 µg/L, 1,2-DCB at 4.9 µg/L, 2-methylnaphthalene at 2 µg/L, and naphthalene at 13 µg/L. 57M-96-11X contained detectable concentrations of three SVOC compounds: 1,2-DCB at 6.4 µg/L, 1,4-DCB at 2.7 µg/L, and naphthalene at 6.2 µg/L.

No pesticides, PCBs, TPH, or EPH fractions were detected in Area 3 groundwater.

All three VPH carbon ranges were detected in the sample collected from 57M-96-11X during 1998 sampling. The C5-C8 aliphatic range was detected at 91 µg/L, the C9-C12 aliphatic range at 75 µg/L, and the C9-C10 aromatic range at 250 µg/L (duplicate sample). The highest concentration of aromatics, 310 µg/L, was detected in 57P-98-03X. This was the only VPH fraction detected in this sample

On April 3, 2001, USEPA and MADEP collected groundwater samples from 6 Area 3 monitoring wells (57M-95-03X, 57M-96-09X, 57M-96-10X, 57M-96-11X, 57M-96-12X, and 57M-96-13X) to assess groundwater quality. The samples were analyzed for Target Analyte List VOCs and the inorganics arsenic, barium, cadmium, and zinc. The analytical results showed one exceedance of drinking water standards: arsenic at 104 µg/L in the sample from 57M-96-11X.

5.2.3 Area 3 Sediment Characterization

Five sediment samples were collected in 1998 from the flood plain immediately south of AOC 57 Area 3, and approximately 350 ft. northwest of the Cold Spring Brook channel. Inorganics analysis of these samples showed that arsenic, barium, lead, manganese, and zinc were present at concentrations in excess of established Devens soil background concentrations. The greatest number of exceedances were found in 57D-98-05X, which contained arsenic at 37.1 µg/g, lead at 64.6 µg/g, and zinc at 90.8 µg/g. Barium at 59.8 µg/g, and copper at 459 µg/g, were above background concentrations in 57D-98-04X. Arsenic at 37 µg/g, was the only background exceedance in 57D-98-06X.

Several sediment samples were collected from the portion of Cold Spring Brook located hydrogeologically downgradient from Area 3 as part of the Lower Cold Spring Brook SI. These samples include CSD-94-16X and CSD-94-18X. CSD-94-26X represents conditions downstream of this area, and G3D-92-02X, CSD-94-19X, and the 1995 RI samples 57D-95-07X and 57D-95-10X, represent conditions upstream. A review of inorganic data from these locations indicates that Area 3 is not impacting sediment quality in Cold Spring Brook, located approximately 350 ft. to the southeast. The Lower Cold Spring Brook SI stated that inorganics concentrations were generally higher in upstream samples than in the downstream samples. Arsenic concentrations in this area follow a general trend of decreasing from the upstream locations (e.g., G3D-92-02X, CSD-94-19X, 57D-95-07X, and 57D-95-10X) to the downstream locations (CSD-94-26X and CSD-94-27X). One of the further downstream samples, G3D-92-03X, did exhibit an elevated arsenic concentration of 95.2 µg/g. This result is not corroborated by any sample results either immediately upstream or downstream.

The VOCs acetone, benzene, chlorobenzene, toluene, and xylene were detected in Area 3 sediment samples. Acetone was found in every sample at concentrations ranging between 0.21 and 0.057 µg/g. 57D-98-08X had the most detections: 0.037 µg/g of benzene, 0.0031 µg/g of chlorobenzene, 0.0048 µg/g of toluene, and 0.011

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µg/g of xylenes. 57D-98-06X was found to contain 0.007 µg/g of benzene, 0.013 µg/g of chlorobenzene, and 0.0047 of toluene. 57D-98-05X contained low concentrations of chlorobenzene and toluene, 0.019 µg/g and 0.0018 µg/g respectively. There is no evidence that Area 3 VOCs are adversely impacting wetlands or Cold Spring Brook sediments.

The SVOCs 1,2-DCB, 1,4-DCB, benzo(b)flouranthene, benzo(k)flouranthene, chrysene, flouranthene, naphthalene, phenanthrene, and pyrene were detected in Area 3 sediment samples. The highest concentration of total SVOCs was found in 57D-98-05X, at 3.27 µg/g. The SVOCs detected in sediment are consistent with those detected in source area and downgradient soils and groundwater. The SVOC concentrations decrease farther into the wetland; 57D-98-07X contained 1.86 µg/g, and 57D-98-08X contained 0.415 µg/g.

The Lower Cold Spring Brook SI samples collected from the portion of the brook downgradient of Area 3 (Bowers Brook area) showed that SVOCs decreased from the upstream samples to the downstream samples. Pyrene at 1 µg/g was the only SVOC detected at CSD-94-18X, and no SVOCs were detected in the downstream sample CSD-94-26X.

One pesticide was detected in Area 3 sediments. DDD was detected in 57D-98-05X at 0.048 µg/g and in 57D-98-06X at 0.15 µg/g. Pesticides were not detected in any other 1998 Area 3 sediment samples.

Of the samples included in the Lower Cold Spring Brook SI, only CSD-94-18X was analyzed for pesticides. DDD was found in this sample at 0.0498 µg/g. This pesticide was also found in upstream samples near Area 2.

PCBs were detected in one of the Area 3 sediment samples. 57D-98-05X contained 0.84 µg/g of Aroclor 1260. PCBs were not detected in Lower Cold Spring Brook SI samples.

TPH concentrations ranged between 3,540 µg/g at 57D-98-05X and 109 µg/g at 57D-98-08X. Besides 57D-98-05X, all other samples contained less than 250 µg/g of TPH. VPH analysis of these samples showed that 57D-98-06X contained small concentrations of all carbon fractions; 3.3 µg/g of C5-C8 aliphatics, 5.6 µg/g of C9-C12 aliphatics, and 4.3 µg/g of C9-C10 aromatics. The only other VPH detection occurred in 57D-98-05X, which contained 4.2 µg/g of C9-C12 aliphatics. EPH fractions were detected in only one sample, 57D-98-05X. 57D-98-05X contained 630 µg/g of the C19-C36 aliphatics and 280 µg/g of the C11-C22 aromatics. The TPH and EPH detections at 57D-98-05X correspond with the observed distribution of soil contamination at Area 3.

5.2.4 Area 3 Surface Water Characterization

Five surface water samples were collected in 1998 from the wetland/flood-plain immediately south of Area 3. Samples were submitted for off-site analysis for EPH/VPH, VOCs, SVOCs, select inorganics, select dissolved inorganics, pesticides, and PCBs.

Arsenic, antimony, barium, copper, lead, and zinc were all found in excess of established Devens background groundwater concentrations. 57W-98-05X contained exceedances of all of the above analytes and 57W-98-07X had the fewest exceedances with only barium and lead in excess of background. The filtered samples from 57W-98-04X (24 µg/L), 57W-98-05X (53.4 µg/L), and 57W-98-08X (12.5 µg/L)

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contained arsenic in excess of background concentrations. These were the only background exceedances in the filtered samples.

Two of the Area 3 surface water samples contained detectable concentrations of VOCs. 57W-98-05X contained 4.6 µg/L of chlorobenzene, 0.58 µg/L of carbon disulfide, and 1.6 µg/L of toluene. Toluene at 0.59 µg/L was the only VOC detected in 57W-98-08X.

Benzo[k]flouranthene at 0.94 µg/L in 57W-98-08X was the only SVOC detected in Area 3 surface water samples.

No pesticides or PCBs were detected in Area 3 surface water samples.

The C9-C10 aromatic range was the only VPH fraction detected at Area 3. The surface water sample 57W-98-05X contained 25 µg/L of the aromatic range.

The EPH C11-C22 aromatic ranges were detected in every surface water sample. The highest concentration was 650 µg/L in 57W-98-08X. The 57W-98-08X and 57W-98-04X samples also contained the C19-C36 aliphatic fraction at 1,100 µg/L and 1,000 µg/L, respectively.

5.3 CONCEPTUAL SITE MODEL

Figure 6 presents a simplified conceptual site model encompassing the essential features of AOC 57 Areas 2 and 3. The conceptual site model is a three-dimensional "picture" of site conditions that illustrates contaminant sources, release mechanisms, exposure pathways, migration routes, and potential human and ecological receptors. It documents current and potential future site conditions and shows what is known about human and environmental exposure through contaminant release and migration to potential receptors. The risk assessment and response action for Areas 2 and 3 is based on this conceptual site model

Based on the results of the RI, the primary site-related contaminants at AOC 57 are solvent and fuel-related contaminants in soil and groundwater. The interpreted Area 2 contaminant source was contaminated surface and near surface soils located in the vicinity of the soil removal excavation. The soil contamination is believed to be due to disposal of vehicle maintenance wastes. The Area 3 contaminant source is the historic disposal site identified by test pitting at 57E-95-24X.

The primary release mechanism at both areas was infiltration into groundwater from source area contaminants above the water table. The potential secondary release mechanism is the contaminated soil downgradient of the source areas. The contaminated soil downgradient of the source areas is believed to be the result of sorption of dissolved phase contaminants.

The primary migration pathway/transport mechanism is groundwater flow of dissolved contaminants.

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6.0 CURRENT AND POTENTIAL FUTURE LAND AND RESOURCE USES

Land at AOC 57 is currently idle. There are no active military operations or land-redevelopment activities near AOC 57. The vehicle storage yards associated with Buildings 3756, 3757, and 3758 were abandoned in 1998, and the pavement and fencing were removed. The majority of the AOC is forested and densely vegetated, and access is difficult. There is no specific reason to visit the AOC, and there are no nuisance or curiosity attractions. The wetland area is muddy; and standing surface water is not deep or aesthetically pleasing. Therefore, it is unlikely that any people would be present at AOC 57 under the existing land use conditions. Groundwater at and beneath AOC 57 is not used as a source of drinking or industrial water, and is not considered a groundwater resource by the Commonwealth of Massachusetts,

Upland portions of AOC 57 are located within an area zoned for Rail, Industrial, and Trade Related uses, while flood plain portions are zoned for Open Space and Recreation (Vanasse Hangen Brustlin, 1994a and 1994b). Because of poor soil and seasonal flooding, construction of buildings in the delineated flood-plain area or use of this area for anything other than open space is not realistic. However, the future use of the flood-plain area could include constructing designated trails for passive recreational use (e.g., bird watching).

Future residential use of land at AOC 57 is not likely; the Devens Reuse Plan does not include residential development of land in the vicinity of AOC 57, and construction of residential properties in the flood plain is not realistic because of poor soil and seasonal flooding.

7.0 SUMMARY OF RISK ASSESSMENT

The RI report contains baseline human-health and ecological risk assessments to evaluate the probability and magnitude of potential human-health and environmental effects associated with exposure to contaminated media remaining at AOC 57 following soil removal actions.

7.1 HUMAN-HEALTH RISK ASSESSMENT

The human-health risk assessment followed a four step process: 1) contaminant identification, which identified those hazardous substances that, given the specifics of the site, were of significant concern; 2) exposure assessment, which identified actual or potential exposure pathways, characterized the potentially exposed populations, and determined the extent of possible exposure; 3) toxicity assessment, which considered the types and magnitude of adverse health effects associated with exposure to hazardous substances, and 4) risk characterization, which integrated the three earlier steps to summarize the potential and actual risks posed by hazardous substances at the site, including carcinogenic and noncarcinogenic risks. A detailed discussion of the human-health risk assessment approach and results is presented in Section 9.0 of the RI report and summarized in Subsection 2.5 of the FS report.

Potential human-health effects associated with exposure to the contaminants of concern were estimated quantitatively or qualitatively through the development of several hypothetical exposure pathways. These pathways were developed to reflect the potential for exposure to hazardous substances based on the current uses, possible (i.e., assumed) future uses, and unrestricted (i.e., residential) future use. Although

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development/use of AOC 57 as residential property is considered unlikely, that possibility cannot be ruled out, especially if property ownership is transferred from the Army to a private entity. Therefore, to assess the need for land use restrictions and to maintain protectiveness if contamination remains on site above concentrations protective of unrestricted use, the Army included the residential scenario. Table 1 summarizes the human-health receptor and exposure scenarios evaluated at AOC 57 Areas 2 and 3.

For carcinogens, the excess lifetime cancer risks were calculated for each exposure pathway by multiplying the exposure concentration by the chemical-specific cancer slope factor. Cancer slope factors have been developed by USEPA from epidemiological or animal studies to reflect a conservative "upper bound" of the risk posed by potentially carcinogenic compounds. That is, the true risk is unlikely to be greater than the risk predicted. The resulting risk estimates are probabilities that are usually expressed in scientific notation (e.g., 1×10^{-6} for 1 in 1,000,000) and indicate (using this example) that an average individual is not likely to have greater than a one in a million chance of developing cancer over 70 years as a result of site-related exposure to the compound at the stated concentration. This is referred to as an "excess lifetime cancer risk" because it would be in addition to the risk individuals face from other causes such as smoking or exposure to too much sun. The chance of an individual's developing cancer from all other causes has been estimated to be as high as one in three. USEPA's generally acceptable risk range for site-related exposures is 1×10^{-4} to 1×10^{-6} . USEPA practice considers carcinogenic risks to be additive when assessing exposure to a mixture of hazardous substances.

The potential for noncarcinogenic effects was also calculated for each pathway by dividing the exposure concentration by the reference dose (RfD) or other suitable benchmark for noncarcinogenic health effects for an individual compound. RfDs have been developed by USEPA to protect sensitive individuals over the course of a lifetime and they reflect a daily exposure level that is likely to be without an appreciable risk of an adverse health effect. RfDs are derived from epidemiological or animal studies and incorporate uncertainty factors to help ensure that adverse health effects will not occur. The ratio of exposure to the toxicity benchmark is called a hazard quotient. The hazard quotient is often expressed as a single value (e.g., 0.3) indicating the ratio of the stated exposure as defined to the RfD value (in this example, the exposure as characterized is approximately one third of an acceptable exposure level for the given compound). The sum of hazard quotients for different contaminants is referred to as the hazard index (HI). However, hazard quotients are only considered additive for compounds that have the same or similar toxic endpoint. For example: the hazard quotient for a compound known to produce liver damage should not be added to a second whose toxic endpoint is kidney damage.

The RI risk assessment evaluated post-removal action conditions for surface soil and subsurface soil Areas 2 and 3. Chemicals of potential concern (CPCs) identified in surface soil and subsurface soil included aluminum, arsenic, chromium, iron, lead, manganese, Aroclor 1248 and 1260, dieldrin, TPH, and EPH and VPH fractions. CPCs identified in groundwater, surface water, and sediment were similar to those identified in soil, but also included chlorinated VOCs and SVOCs which were detected at low concentrations in site groundwater. Petroleum compounds and PCBs are interpreted to be directly associated with the release of oils and vehicle maintenance wastes to soils at the site. Inorganic constituents selected as CPCs were interpreted to be indirectly associated with the petroleum release. The natural degradation of petroleum contaminants had caused reducing conditions in the aquifer, which in turn resulted in enhanced leaching of naturally-occurring inorganics from source area soils. Tables 9-4 through 9-19 of the RI report list site contaminants, frequency of contaminant detection, maximum and average concentrations, and whether the contaminant was selected as a CPC.

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Table 2 summarizes numerical carcinogenic and noncarcinogenic risk estimates for current, possible future, and unrestricted land use scenarios. Tables 3 and 4 compare the numerical risk estimates to USEPA risk management criteria. Review of the tables shows that at Area 2 estimated excess cancer risks associated with current land use conditions at both upland and flood-plain areas are within the USEPA acceptable carcinogenic risk range of 1×10^{-4} to 1×10^{-6} . Noncancer risks associated with current land use are below the noncarcinogenic target HI of 1. Estimated cancer risks associated with possible future land use at the Area 2 upland and flood-plain areas of the site are also within USEPA's acceptable risk range. However, noncancer risks to a possible future construction worker associated with excavation of Area 2 flood plain subsurface soil exceeded an HI of 1. These noncancer risks were primarily attributable to PCBs (Tables 5 and 6).

For unrestricted exposure to upland and flood-plain soil at Area 2, cancer risks do not exceed the USEPA cancer risk range; however, noncancer risks associated with unrestricted exposure to both upland and flood-plain soil exceed an HI of 1. These noncancer risks were primarily attributable to PCBs, chromium, petroleum hydrocarbons, and arsenic. Following USEPA risk assessment guidance, when an HI exceeds 1, it is appropriate to consider the toxicological endpoints upon which the noncarcinogenic hazards are based and the target organs for toxicological effects. Hazard indices for individual compounds should properly be added together only if the toxicological endpoints or mechanisms of action of the compounds are similar. In the case with the upland Area 2 unrestricted child resident exposure scenario, the target-organ specific HIs are less than or equal to the USEPA target threshold value of 1 for noncancer risks, as calculated in Appendix N-6, Table 5 of the final RI report (HLA, 2000). Therefore, noncancer risks from unrestricted child resident exposure to surface soil at Area 2 upland areas are considered unlikely. Unrestricted (residential) exposure to Area 2 flood plain groundwater poses risks that exceed the USEPA acceptable cancer risk range and target HI of 1, due primarily to arsenic.

At Area 3 estimated excess cancer risks associated with current land use conditions at both upland and flood-plain areas are within the USEPA acceptable carcinogenic risk range. Noncancer risks associated with current land use are below the noncarcinogenic target HI of 1. Potential risks associated with possible future construction and commercial/industrial worker exposure to surface and subsurface soil are within the USEPA target cancer risk range and below an HI of 1. However, estimated cancer risks associated with possible future commercial/industrial worker ingestion of Area 3 upland groundwater exceed USEPA's acceptable risk range, and noncancer risks associated with possible future commercial/industrial worker ingestion of groundwater exceed an HI of 1. Because, however, the target-organ specific HIs are less than or equal to the USEPA target threshold value of 1, noncancer risks from commercial/industrial worker ingestion of Area 2 upland groundwater are considered unlikely. Cancer risks associated with unrestricted exposures to upland and flood-plain soil at Area 3 do not exceed the USEPA acceptable cancer risk range; however, noncancer risks associated with unrestricted exposure to flood plain soil exceed an HI of 1. Unrestricted exposure to both upland and flood-plain groundwater at Area 3 poses risks that exceed the USEPA acceptable cancer risk range and target HI of 1. These cancer risks result primarily from arsenic, while the noncancer risks result primarily from hydrocarbons.

Because groundwater at AOC 57 is not currently used for potable water and the area bordering Barnum Road is serviced by a public water supply, future potable use exposure to AOC 57 groundwater is unlikely to occur. A more realistic potential use of AOC 57 groundwater is for industrial non-potable

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process water. However, it is unlikely that non-potable industrial uses of groundwater would result in an exposure scenario which would result in levels of risk that exceed the USEPA risk range or target level.

Based on the preceding discussion, those areas and media that present cancer risk greater than 1×10^{-4} and noncancer risk with HI greater than 1 are listed below.

Area 2 – Upland Area

None

Area 2 Flood Plain Area

- Possible future construction worker exposure to subsurface soil (noncarcinogenic risk).
- Unrestricted use child residential exposure to flood plain surface soil (noncarcinogenic risk).
- Unrestricted use child residential exposure to flood plain subsurface soil (noncarcinogenic risk).
- Unrestricted use adult residential exposure to flood plain groundwater (carcinogenic and noncarcinogenic risks).

Area 3 Upland Area

- Possible future commercial/industrial worker exposure to upland groundwater (carcinogenic and noncarcinogenic risks).
- Unrestricted use adult residential exposure to flood plain groundwater (carcinogenic and noncarcinogenic risks).

Area 3 Flood Plain Area

- Unrestricted use child residential exposure to flood plain surface soil (noncarcinogenic risk).
- Unrestricted use adult residential exposure to flood plain groundwater (carcinogenic and noncarcinogenic risks).

7.2 ECOLOGICAL RISK ASSESSMENT SUMMARY

The Baseline Ecological Risk Assessment (BERA) evaluated potential risks for ecological receptors at AOC 57 for CPCs in surface soil, surface water, sediment, and groundwater using benchmarks from the literature and site-specific data (e.g., toxicity test results, bioaccumulation study results, and measurement of fish and crayfish tissue concentrations). The following exposure pathways were evaluated in the BERA:

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- food chain risks to terrestrial and semi-aquatic mammals and birds that occur in the upland, forested flood plain, and open stream/marsh areas;
- direct contact risks to aquatic receptors (e.g., plants, invertebrates, amphibians, and fish) exposed to surface water and sediment; and
- direct contact risks to terrestrial plants and soil invertebrates exposed to surface soil.

Based on the results of the AOC 57 BERA, there do not appear to be significant adverse effects to ecological receptors. Based on a comparison of surface water data with upgradient groundwater data, Cold Spring Brook surface water in the vicinity of Area 2 may be affected by groundwater discharge. However, there does not appear to be a risk to aquatic receptors from the chemicals common to both these media. Groundwater from Area 3 does not appear to be affecting downgradient surface water in the flood plain of Cold Spring Brook, based on the difference in chemicals detected in these media. Details of the BERA are contained in the RI report (HLA, 2000) and summarized in the FS report (Harding ESE, 2000).

8.0 PRINCIPAL THREAT WASTES

The NCP establishes an expectation that treatment will be used to address the principal threats at a site wherever practical, whereas engineering controls, such as containment, may be used for wastes that pose a relatively low long-term threat or where treatment is impractical. The concept of principal threat and low-level threat wastes is applied on a site-specific basis when characterizing source material. Source material is defined as material that includes or contains hazardous substances, pollutants, or contaminants that act as a reservoir for migration of contamination to groundwater, to surface water, to air, or acts as a source for direct exposure. Contaminated groundwater generally is not considered to be source material, although nonaqueous phase liquids (NAPLs) may be.

Principal threat wastes are those source materials considered to be highly toxic or highly mobile which cannot be reliably contained or that would present a significant risk to human health or the environment should exposure occur. The manner in which principal threats are addressed generally will determine whether the statutory preference for treatment as a principal element is satisfied. Although USEPA has not established a threshold level of toxicity/risk to identify a principal threat waste; toxicity and mobility must combine to pose a potential risk several orders of magnitude greater than is acceptable under current or reasonably expected future land use, given realistic exposure scenarios. Further, characterizing a waste as a principal threat does not necessarily mean that the waste poses the primary risk at a site. Examples of source materials that generally constitute principal threats include liquid wastes in drums, lagoons, or tanks; NAPLs floating on or under groundwater; soil, sediment, sludge, or debris containing high concentrations of mobile or potentially mobile contaminants; buried nonliquid wastes; and soil containing significant concentrations of highly toxic material.

Low-level threat wastes are those source materials that generally can be readily contained and that would present only a low risk in the event of a release or exposure. Examples of wastes generally considered to constitute low-level threats include soil containing contaminants that are relatively immobile in air or groundwater (i.e., nonliquid, low volatility, low leachability) in the specific environmental setting and soil

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lcontaining contaminants not greatly above RfD levels or presenting an excess cancer risk near the acceptable risk range.

At AOC 57 Area 2, a 1994 removal action resulted in the excavation and approved disposal of approximately 1,300 cy of soil considered a principal threat to groundwater at the site. RI investigations completed after the removal action did not identify extensive remaining contamination at AOC 57 Area 2, and no waste drums, tanks, or impoundments, or areas of high toxicity/concentration/mobility soil contamination are known to exist. The post-removal-action risk assessment calculated potential risks under current and possible future land use scenarios which are within USEPA's acceptable cancer risk range. Noncancer risks were generally below a target HI of 1, although an HI of 4 was calculated for a future construction worker exposed to surface and subsurface flood plain soil (see Table 2). For the future unrestricted use resident scenario, cancer risks for exposure to soil remained within the acceptable range, while noncancer risks increased to an HI of 23 for child resident exposure to subsurface flood plain soil. However, future residential use of the flood plain at AOC 57 is considered unlikely. Based on this assessment, the Army concludes that there are currently no principal threat wastes remaining at AOC 57 Area 2.

At AOC 57 Area 3, a 1999 removal action in response to contamination identified during the RI field program, resulted in the excavation and approved disposal of approximately 1,860 cy of soil considered a threat to public health and welfare and a principal threat to groundwater at the site. No waste drums, tanks, or impoundments, or areas of high toxicity/concentration/mobility soil contamination are known to remain at AOC 57 Area 3. A post-removal action risk assessment presented in the FS report calculated potential soil exposure risks under current and possible future land use scenarios which are within USEPA's acceptable cancer risk range. Noncancer risks were below a target HI of 1 (see Table 2). For the future unrestricted use resident scenario, cancer risks for exposure to soil remained within the acceptable range, while noncancer risks increased to an HI of 4 for child resident exposure to subsurface flood plain soil. However, future residential use of the flood plain at AOC 57 is considered unlikely. Based on this assessment, the Army concludes that there are currently no principal threat wastes remaining at AOC 57 Area 3.

9.0 GENERAL STATUTORY REQUIREMENTS AND REMEDIAL ACTION OBJECTIVES

Under its legal authorities, the Army's primary responsibility at Superfund sites is to undertake remedial actions that are protective of human health and the environment. In addition, Section 121 of CERCLA establishes several other statutory requirements and preferences, including the following:

- a requirement that the remedial action, when complete, must attain all federal and more stringent state environmental requirements, standards, criteria, or limitations that are applicable or relevant and appropriate to the action, unless a waiver is invoked;
- a requirement that a remedial action be cost-effective and use permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and
- a preference for remedies in which treatment permanently and significantly reduces the toxicity, mobility, or volume of hazardous substances as a principal element.

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9.1 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

As stated, applicable or relevant and appropriate requirements (ARARs) are federal or more stringent state environmental laws that are applicable or relevant and appropriate to the hazardous substances or circumstances at a site. Inherent in the interpretation of ARARs is the assumption that protection of human health and the environment is ensured.

Applicable requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site.

Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that, while not applicable to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site.

Requirements under federal or state law may be either applicable or relevant and appropriate to CERCLA cleanup actions, but not both. However, requirements must be both relevant and appropriate for compliance to be necessary. In the case where both a federal and a state ARAR are available, or where two potential ARARs address the same issue, the more stringent regulation must be selected. The final NCP states that a state standard must be legally enforceable and more stringent than a corresponding federal standard to be relevant and appropriate. However, CERCLA §121(d)(4) provides several ARAR waiver options that may be invoked, providing that the basic premise of protection of human health and the environment is not ignored. A waiver is available for state standards that have not been uniformly applied in similar circumstances across the state. In addition, CERCLA §121(d)(2)(C) forbids state standards that effectively prohibit land disposal of hazardous substances.

CERCLA on-site remedial response actions must only comply with the substantive requirements of a regulation and not the administrative requirements to obtain federal, state, or local permits [CERCLA §121(e)].

The MCP at 310 CMR 40.0000 is not considered an ARAR for CERCLA actions at Devens RFTA. The provisions of the MCP are mostly administrative in nature and, therefore, do not have to be complied with in connection with the response action selected for AOC 57. Further, the MCP contains a specific provision (310 CMR 40.0111) for deferring application of the MCP at CERCLA sites. 310 CMR 40.0111(1)(a) provides that response actions at CERCLA sites shall be deemed adequately regulated for purposes of compliance with the MCP, provided the MADEP concurs in the CERCLA Record or Decision.

9.2 RESPONSE AND REMEDIAL ACTION OBJECTIVES

Remedial response objectives are site-specific qualitative cleanup objectives used for defining remedial action objectives (RAOs) and for developing appropriate remedial alternatives. They are developed based

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on the nature and distribution of contamination, the resources currently or potentially threatened, and the potential for human and environmental exposure. Although current-use exposure scenario cancer risks were within USEPA's target risk range and below a noncancer HI threshold value of 1, the human-health risk assessment did identify a number of possible future and unrestricted use exposure scenarios with risk levels that exceeded these values. At AOC 57, remedial response objectives were developed for each medium of concern (i.e., soil and groundwater) based on the human-health risk assessment results for land use scenarios where the risk assessment revealed potential cancer risks greater than the target risk range of 1×10^{-4} to 1×10^{-6} and a noncancer HI greater than 1. As detailed in the RI report (HLA, 2000) and summarized in the FS report, the BERA revealed that there were no significant adverse affects to ecological receptors, and no ecological response objectives were developed.

Preliminary remediation goals (PRGs) for AOC 57 were developed following the USEPA guidance documents entitled *Risk Assessment Guidance for Superfund: Volume 1 - Human Health Evaluation Manual (Part B, Development of Risk Based Preliminary Remediation Goals)*, Interim, December 1991 (RAGS Part E) (USEPA, 1991a) and OSWER Directive 9355.0-30, *Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions* (USEPA, 1991b).

The first step in developing human-health PRGs was to identify those environmental media that, in the baseline human-health risk assessment, present either a cumulative current or future cancer risk greater than 1×10^{-4} or a noncarcinogenic target-organ based HI greater than 1, based on reasonable maximum exposure (RME) assumptions. The RI report discusses specific assumptions used in deriving the RME for each exposure scenario (HLA, 2000). The next step was to identify chemicals of concern (COCs) within the media that present cancer risks greater than 1×10^{-6} or a hazard quotient greater than 1. After identification of media of concern and COCs, PRGs were developed for each COC according to the following hierarchy:

- 1) Comparison to ARARs.
- 2) If no chemical-specific ARAR was available (i.e., such as for soils), risk-based concentrations were back-calculated to a target cancer risk of 1×10^{-6} and a target hazard quotient of 1 for each COC using the exposure assumptions employed in the RI report (HLA, 2000).

There are no federal chemical-specific ARARs for lead in soil; although, OSWER Directive 9355.4-12 (USEPA, 1994) specifies 400 mg/kg for a residential soil lead screening level. For this reason, the PRG for lead was based upon the MCP Method 1 Risk Characterization S-2/GW-1 Soil Standard of 600 mg/kg (MCP Sections 310 CMR 40.0940 and 40.0974-0975). The S-2 standard is applicable to the construction worker scenario where there is potentially accessible soil, the possibility of child receptors exists, and there is low frequency and high intensity for exposure for a construction worker. Additional detail on the development of PRGs is contained in Section 3.0 of the FS report.

RAOs are site-specific, quantitative goals defining the extent of cleanup required to achieve response objectives. RAOs specify contaminants of concern, exposure routes, receptors, and PRGs. RAOs are used as the framework for developing remedial alternatives. The RAOs are formulated to achieve the overall USEPA goal of protecting human health and the environment. RAOs for AOC 57 are listed below.

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Area 2 Flood Plain

- Protect possible future construction workers that might work within Area 2 flood plain (recreational) areas from ingesting soils containing Aroclor-1260 and lead at concentrations in excess of PRGs considered protective of human health, as presented in Table 7.
- Prevent unrestricted use residential receptors from coming in dermal contact with and ingesting Area 2 flood plain soils containing Aroclor-1260, arsenic, chromium, lead, and the EPH C11-C22 aromatic carbon range at concentrations in excess of PRGs considered protective of human health, as presented in Table 7.
- Prevent unrestricted potable use of Area 2 flood plain groundwater containing arsenic and PCE at concentrations that exceed MCLs and Massachusetts Maximum Contaminant Levels (MMCLs) for drinking water (Table 8).

Area 3 Upland

- Protect possible future commercial/industrial workers from ingesting Area 3 upland groundwater that contains arsenic, cadmium, and 1,4-DCB at concentrations that exceed MCLs and MMCLs for drinking water (see Table 8).
- Prevent unrestricted residential potable use of Area 3 upland groundwater containing arsenic, cadmium, and 1,4-DCB at concentrations that exceed MCLs and MMCLs for drinking water (see Table 8).

Area 3 Flood Plain

- Prevent unrestricted use residential receptors from coming in dermal contact with and ingesting surface soils containing the EPH C11-C22 aromatic carbon range at concentrations in excess of PRGs considered protective of human health, as presented in Table 7.
- Prevent unrestricted residential potable use of Area 3 flood plain groundwater containing arsenic and PCE at concentrations that exceed MCLs and MMCLs drinking water (see Table 8).

10.0 DESCRIPTION OF ALTERNATIVES

CERCLA and the NCP set forth the process by which remedial actions are evaluated and selected. In accordance with these requirements, the Army developed a range of candidate alternatives for AOC 57 Areas 2 and 3. Section 4.0 of the FS identified and screened a number of soil and groundwater treatment technologies and process options based on probable effectiveness and implementability. The technologies and process options remaining after screening were then combined into the candidate alternatives listed below.

Area 2

Alternative II-1: No Action

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Alternative II-2: Limited Action

Alternative II-3: Excavation (For Possible Future Use) and Institutional Controls

Alternative II-4: Excavation (For Unrestricted Use) and Institutional Controls

Area 3

Alternative III-1: No Action

Alternative III-2: Limited Action

Alternative III-3: Excavation (For Unrestricted Use) and Institutional Controls

In Section 5.0 of the FS, the technologies retained following screening were assembled into alternatives and then screened with respect to effectiveness, implementability, and cost to eliminate impractical alternatives or alternatives with significantly higher costs (i.e., order of magnitude differences).

Of the 7 alternatives identified in the FS, all were retained during the FS screening step and evaluated in detail in Section 6.0 of the FS report.

In addition, the Army developed Alternative III-2a: Excavation (to Accelerate Groundwater Cleanup) and Institutional Controls for Area 3 following the Public Comment period on the Proposed Plan. This alternative addresses public concern about the length of time required to cleanup groundwater at Area 3. A narrative summary of each of the alternatives is provided in the following paragraphs.

10.1 DESCRIPTION OF ALTERNATIVES FOR AOC 57 AREA 2

This section provides a summary description of the remedial alternatives evaluated for AOC 57 Area 2.

10.1.1 Alternative II-1: No Action

The No Action alternative for Area 2 does not contain any remedial action components to reduce or control potential risks. No monitoring, further investigation, or site reviews would be performed, and no institutional controls implemented. The No Action alternative was developed, as required by the NCP, to provide a baseline with which to compare other alternatives.

| | |
|---|----------------|
| Estimated Time for Design and Construction: | Not applicable |
| Estimated Time for Cleanup: | Not applicable |
| Estimated Capital Cost: | \$0 |
| Estimated Operation and Maintenance Cost : | \$0 |
| Estimated Total Cost | \$0 |

10.1.2 Alternative II-2: Limited Action

Alternative II-2 contains components to reduce potential human-health risks associated with contaminated soil and groundwater at the Area 2 flood plain. Key components of Alternative II-2 consist of following:

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- Institutional Controls
 - Institutional controls that protect possible future use construction workers by controlling excavation activities at the Area 2 flood plain
 - Existing zoning that prohibits residential use of Area 2 property and proposed deed restrictions that prohibit potable use of Area 2 groundwater and residential use of flood plain property
- Environmental Monitoring
 - Long-term groundwater monitoring
 - Long-term surface water monitoring
- Institutional Control Inspections
- Five-year Site Reviews

Institutional Controls. Alternative II-2 contains institutional controls to protect possible future-use construction workers from exposure to contaminated flood plain soil and future unrestricted use residents from exposure to contaminated flood plain soil and groundwater. The presence of flood plain and wetland conditions and existing zoning currently prevents residential use of the area and potential residential exposure to contaminated soil and groundwater. Upland portions of AOC 57 are located within an area zoned for Rail, Industrial, and Trade Related uses, while flood plain portions of AOC 57 are zoned for Open Space and Recreation (Vanasse Hangen Brustlin, 1994a and 1994b). Residential construction would not be permitted under those designations.

To protect possible future-use construction workers from exposure to contaminated soil, this alternative would require establishment of land use restrictions within the flood-plain area where soil contaminants exceed concentrations considered protective of human health under the possible future land use exposure scenario (Figure 7). As part of the land use restrictions, the contaminated soil area would be surveyed, marked with permanent survey markers, and identified as an Excavated Soils Management Area (ESMA). Contractors performing work within the ESMA would be required to prepare and follow an Excavated Soils Management Plan that would define precautionary measures to be taken to minimize risk to human health and the environment.

To protect future unrestricted use residents from exposure to contaminated flood-plain soil and groundwater in the event of future property transfer, the Army would include deed covenants to prohibit residential use of flood plain property and potable use of groundwater in flood plain. Groundwater beneath upland areas at Area 2 already meets groundwater cleanup levels; however, because the zone of influence of an upland well could draw contaminated groundwater from nearby wetland/flood-plain areas, use of upland groundwater as potable water prior to attaining cleanup levels in wetland/flood-plain areas would require careful evaluation. Because of the potential for Area 2 upland wells to be influenced by flood plain groundwater, potable use of Area 2 upland groundwater would also be prohibited.

All institutional controls would be stated in full or by reference within deeds, easements, mortgages, leases, or other instruments of property transfer. These controls would be drafted, implemented and enforced in cooperation with federal, state, and local governments. These controls would be maintained as long as soil and groundwater contaminants remained at concentrations above protective cleanup levels.

Environmental Monitoring. Environmental monitoring would consist of performing long-term groundwater and surface water sampling. Long-term groundwater sampling would be performed to assess

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for groundwater COCs (arsenic and PCE) migration and to monitor for the decrease of the groundwater COCs to concentrations that are protective of unrestricted use residential receptors.

Surface water sampling would also be a component of environmental sampling to assess for off-site migration of human-health COCs in excess of PRGs via the groundwater to surface water pathway. The purpose of the surface water sampling would not be to collect additional ecological risk assessment data.

Sampling frequency, location, analytes, sampling procedures, and action levels for environmental monitoring would be detailed in a long-term monitoring plan (LTMP) and submitted to USEPA and MADEP for review and concurrence prior to implementing the environmental monitoring component of this alternative. Following attainment of groundwater cleanup levels, monitoring would be discontinued in accordance with the time frame specified in the LTMP.

Institutional Control Inspections. The Army would prepare and submit an Institutional Control Monitoring Plan for regulatory agency review and concurrence as part of the site LTMP to detail the institutional controls to be incorporated/referenced within instruments of property transfer and ensure that the institutional control requirements are met. The plan would include a checklist of elements to be assessed during regularly scheduled on-site inspections and interviews with the site property owner, manager, or designee. If future land use at AOC 57 is inconsistent with these institutional controls, then the site exposure scenarios for human health and the environment would be re-evaluated to assess whether this response action remains appropriate.

Five-Year Site Reviews. Section 121c of CERCLA and NCP§300.430(f)(4)(ii) require that if a remedial action results in contaminants remaining on-site above concentrations that allow unrestricted and unlimited use, the lead agency must review the action at least every five years. During five-year site reviews, an assessment is made of whether the implemented remedy continues to be protective of human health and the environment or whether the implementation of additional remedial action is appropriate. Because Alternative II-2 would result in contaminants remaining on site above concentrations allowing unrestricted use, five-year reviews would be required. Subsequent five-year reviews will be performed as long as hazardous substances, pollutants, or contaminants remain on-site above concentrations that allow for unrestricted exposure and unlimited use.

| | |
|--|-----------|
| Estimated Time for Design and Construction: | 6 months |
| Estimated Time for Groundwater Cleanup: | 2 years |
| Estimated Capital Cost: | \$16,250 |
| Estimated Operation and Maintenance Cost (Present Worth*): | \$178,914 |
| Contingency | \$48,791 |
| Estimated Total Cost | \$243,955 |

*Present worth based on 7 percent discount rate and environmental monitoring, institutional controls inspections, and five-year reviews for 30 years.

10.1.3 Alternative II-3: Excavation (For Possible Future Use) and Institutional Controls

Alternative II-3 adds soil excavation and wetland protection components to the components of Alternative II-2 to reduce potential human-health risks associated with contaminated soil and groundwater at the Area 2 flood plain. Key components of Alternative II-2 consist of following:

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- Soil Excavation and treatment/disposal at an off-site treatment, storage, or disposal facility
- Wetlands Protection
- Institutional Controls
 - Existing zoning that prohibits residential use of Area 2 property and proposed deed restrictions that prohibit potable use of Area 2 groundwater and residential use of flood plain property
- Environmental Monitoring
 - Long-term groundwater monitoring
 - Long-term surface water monitoring
- Institutional Control Inspections
- Five-year Site Reviews

Soil Excavation and Treatment/disposal at an Off-site Treatment, Storage, or Disposal Facility.

Alternative II-3 includes excavation of flood plain soils with Aroclor-1260 and lead concentrations in excess of PRGs that are considered protective of possible future-use construction workers. The estimated areal extent of soil contamination to be excavated is shown in Figure 7, based on observed PRG exceedances. Based upon the depth of an organic soil layer observed during the RI, the estimated average depth of contaminated soil is 4 ft. bgs. The in-place volume of soil to be excavated is estimated to be approximately 640 cy. The actual extent of excavation and volume of soil removed would depend on the extent of PRG exceedances identified by field screening during excavation. The excavated soil will be treated/disposed at an approved off-site treatment, storage, or disposal facility.

An excavation work plan would be prepared to guide the excavation process; however, the FS assumption of excavation using conventional construction equipment such as tracked excavators, front-end loaders, and dump trucks would likely hold true. It is also assumed that the extent of excavation would be guided using on-site field-screening methods and final cleanup confirmed using off-site analytical methods. The excavation plan would detail how large pieces of debris or rocks would be separated from soil, cleaned of soil, and reused or disposed. It would also address groundwater management issues associated with excavation activities. Assumptions used in preparation of the FS report are described in Subsection 6.1.3.7 of that document.

Wetlands Protection. Soil excavation for Alternative II-3 would be within the 100-year flood plain (228 ft. msl) and possibly would be within the delineated bordering vegetated wetland based on a 1993 wetlands delineation (see Figure 7). Therefore, wetland protection would likely be required as a result of potential excavation activities. Protection would be provided in accordance with the Massachusetts Wetland Protection Act and Regulations at 310 CMR 10.55.

Prior to any excavation activities, a new wetlands delineation would be performed at Area 2. If the proposed construction area is confirmed to be within delineated vegetated wetlands, a pre-construction mitigation study would be performed to determine the impact to the affected area and the compensatory mitigation required as a result of the excavation activities. Once the extent of anticipated impacts is known, a mitigation/restoration plan would be prepared for regulatory agency review and concurrence.

The primary goal of wetland restoration activities would be to restore fresh-water wetlands within the excavation area which are disturbed during remedial activities. The surface area of the restored wetland

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would be equal to or greater than that of the altered wetland. Depending on federal and state regulatory guidance, as well as financial and temporal considerations, a number of diverse approaches exist to restore self-sustaining wetlands. At a minimum, wetland restoration would include backfilling with suitable material to achieve desired grade and controlling erosion and siltation. During construction, erosion control measures such as soil berms, silt fencing, and hay bales would be used to protect against erosion and siltation within the flood-plain area. Compensatory mitigation and monitoring would be implemented according to the mitigation plan. A wetland scientist would monitor wetland restoration for a period of five years, beginning the year after the wetlands creation.

Institutional Controls. Similar to Alternative II-2, this alternative would require establishment of institutional controls to prohibit potable use of Area 2 groundwater and residential use of flood plain property. Also similar to Alternative II-2, these restrictions would be stated in full or by reference within deeds, easements, mortgages, leases, or other instruments of property transfer. Unlike Alternative II-2, deed restrictions pertaining to invasive construction activities and identification of an ESMA at the Area 2 flood plain would not be required for Alternative II-3 because the soil excavation component would remove COCs that exceed possible-future-use PRGs for protection of construction workers.

Environmental Monitoring. Environmental monitoring would consist of performing long-term groundwater and surface water sampling as described for Alternative II-2.

Institutional Control Inspections. Institutional control inspections would be performed as described for Alternative II-2.

Five-Year Site Reviews. Five-year site reviews would be performed as described for Alternative II-2.

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| Estimated Time for Design and Construction: | 6 months |
| Estimated Time for Groundwater Cleanup: | 2 years |
| Estimated Capital Cost: | \$348,645 |
| Estimated Operation and Maintenance Cost (Present Worth*): | \$185,064 |
| Contingency | \$133,427 |
| Estimated Total Cost | \$667,137 |

*Present worth based on 7 percent discount rate and environmental monitoring, institutional controls inspections, and five-year reviews for 30 years.

10.1.4 Alternative II-4: Excavation (For Unrestricted Use) And Institutional Controls

Alternative II-4 contains components similar to those of Alternative II-3 to reduce potential human-health risks associated with contaminated soil and groundwater at the Area 2 flood plain. However, the scope of the components differs. Key components of Alternative II-4 consist of following:

- Soil Excavation and treatment/disposal at an off-site treatment, storage, or disposal facility
- Wetlands Protection
- Institutional Controls
 - Existing zoning that prohibits residential use of Area 2 property and proposed deed restrictions that prohibit potable use of Area 2 groundwater

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- Environmental Monitoring
 - Long-term groundwater monitoring
 - Long-term surface water monitoring
- Institutional Control Inspections
- Five-year Site Reviews

Soil Excavation and Treatment/disposal at an Off-site Treatment, Storage, or Disposal Facility. The major difference between this alternative and Alternative II-3 is the extent of proposed excavation. This alternative includes excavating flood plain soils that exceed unrestricted-use PRGs for protection of residential receptors (see Figure 7). Based upon the depth of an organic soil layer observed during the RI, the estimated average depth of contaminated soil is 4 ft. bgs. The in-place volume of soil to be excavated is estimated to be approximately 1,800 cy. The actual extent of excavation and volume of soil removed would depend on the extent of PRG exceedances identified by field screening during excavation. The excavated soil will be treated/disposed at an approved off-site treatment, storage, or disposal facility, or other approved facility, as appropriate.

Wetlands Protection. Wetlands protection activities would be similar to those described for Alternative II-3, although somewhat more extensive because of the greater anticipated extent of excavation.

Institutional Controls. Similar to Alternatives II-2 and II-3, this alternative would require establishment of institutional controls to prohibit potable use of Area 2 groundwater. Also similar to Alternative II-2, these restrictions would be stated in full or by reference within deeds, easements, mortgages, leases, or other instruments of property transfer. Unlike Alternatives II-2 and II-3, deed restrictions pertaining to invasive construction activities and residential use at the Area 2 flood plain would not be required, because the soil excavation component of Alternative II-4 would remove COCs that exceed PRGs for protection of possible future use construction workers and unrestricted use residents.

Environmental Monitoring. Environmental monitoring would consist of performing long-term groundwater and surface water sampling as described for Alternative II-2.

Institutional Control Inspections. Institutional control inspections would be performed as described for Alternative II-2.

Five-Year Site Reviews. Five-year site reviews would be performed as described for Alternative II-2.

| | |
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| Estimated Time for Design and Construction: | 6 months |
| Estimated Time for Groundwater Cleanup: | 2 years |
| Estimated Capital Cost: | \$871,882 |
| Estimated Operation and Maintenance Cost (Present Worth*): | \$185,064 |
| | \$264,237 |
| Estimated Total Cost | \$1,321,183 |

*Present worth based on 7 percent discount rate and environmental monitoring, institutional controls inspections, and five-year reviews for 30 years.

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10.2 DESCRIPTION OF ALTERNATIVES FOR AOC 57 AREA 3

This section provides a summary description of the remedial alternatives evaluated for AOC 57 Area 3.

10.2.1 Alternative III-1: No Action

The No Action alternative for Area 3 does not contain any remedial action components to reduce or control potential risks. No monitoring, further investigation, or site reviews would be performed, and no institutional controls implemented. The No Action alternative was developed, as required by the NCP, to provide a baseline with which to compare other alternatives.

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|---|----------------|
| Estimated Time for Design and Construction: | Not applicable |
| Estimated Time for Cleanup: | Not applicable |
| Estimated Capital Cost: | \$0 |
| Estimated Operation and Maintenance Cost: | \$0 |
| Estimated Total Cost | \$0 |

10.2.2 Alternative III-2: Limited Action

Alternative III-2 contains components to reduce potential human-health risks associated with contaminated soil (flood plain) and groundwater (upland and flood plain) at the Area 3. Key components of Alternative II-2 consist of following:

- Institutional Controls
 - Existing zoning that prohibits residential use of Area 3 property and proposed deed restrictions that prohibit potable use of Area 3 groundwater and residential use of flood plain property
- Environmental Monitoring
 - Long-term groundwater monitoring
 - Long-term surface water monitoring
- Institutional Control Inspections
- Five-year Site Reviews

Institutional Controls. Alternative III-2 would protect possible future-use commercial workers and future unrestricted use residents by requiring establishment of land use restrictions for both upland and flood plain portions of AOC 57 Area 3. The presence of flood plain and wetland conditions and existing zoning currently prevents residential use of the area and potential residential exposure to contaminated soil and groundwater. Upland portions of AOC 57 are located within an area zoned for Rail, Industrial, and Trade Related uses, while flood plain portions are zoned for Open Space and Recreation (Vanasse Hangen Brustlin, 1994a and 1994b). Residential construction would not be permitted under those designations.

To protect possible future commercial workers and unrestricted use residents from exposure to groundwater and future unrestricted use residents from exposure to contaminated flood-plain soil in the event of future property transfer, the Army would include deed covenants to prohibit potable use of Area 3 groundwater and residential use of flood plain property. All institutional controls would be stated in full or by reference within deeds, easements, mortgages, leases, or other instruments of property transfer.

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These controls would be drafted, implemented and enforced in cooperation with federal, state, and local governments. These covenants would be maintained as long as soil and/or groundwater contaminants remained at concentrations above protective cleanup levels.

Environmental Monitoring. Environmental monitoring would consist of performing long-term groundwater and surface water sampling. Long-term groundwater sampling would be performed to assess for decreases in arsenic, PCE, cadmium, and 1,4-DCB concentrations (upland and flood plain COCs), and for the need for continued groundwater institutional controls to protect human receptors.

Surface water sampling would also be a component of environmental sampling to assess for off-site migration of human-health COCs in excess of PRGs via the groundwater to surface water pathway. The purpose of the surface water sampling would not be to collect additional ecological risk assessment data.

Sampling frequency, location, analytes, sampling procedures, and action levels for environmental monitoring would be detailed in a LTMP and submitted to USEPA and MADEP for review and concurrence prior to implementing the environmental monitoring component of this alternative. Following attainment of groundwater cleanup levels, monitoring would be discontinued in accordance with the time frame specified in the LTMP.

Institutional Control Inspections. The Army would prepare and submit an Institutional Control Monitoring Plan for regulatory agency review and concurrence as part of the site LTMP to detail the institutional controls to be incorporated/referenced within instruments of property transfer and ensure that the institutional control requirements are met. The plan would include a checklist of elements to be assessed during regularly scheduled on-site inspections and interviews with the site property owner, manager, or designee. If future land use at AOC 57 is inconsistent with these institutional controls, then the site exposure scenarios for human health and the environment would be re-evaluated to assess whether this response action is appropriate.

Five-Year Site Reviews. Section 121c of CERCLA and NCP§300.430(f)(4)(ii) require that if a remedial action results in contaminants remaining on-site above concentrations that allow unrestricted and unlimited use, the lead agency must review the action at least every five years. During five-year site reviews, an assessment is made of whether the implemented remedy continues to be protective of human health and the environment or whether the implementation of additional remedial action is appropriate. Because Alternative III-2 would result in contaminants remaining on site above concentrations allowing unrestricted use, five-year reviews would be required. Subsequent five-year reviews will be performed as long as hazardous substances, pollutants, or contaminants remain on-site above concentrations that allow for unrestricted exposure and unlimited use.

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| Estimated Time for Design and Construction: | 6 months |
| Estimated Time for Groundwater Cleanup: | 8 years |
| Estimated Capital Cost: | \$15,750 |
| Estimated Operation and Maintenance Cost (Present Worth*): | \$222,972 |
| Contingency | \$59,681 |
| Estimated Total Cost | \$298,403 |

*Present worth based on 7 percent discount rate and environmental monitoring, institutional controls inspections, and five-year reviews for 30 years.

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10.2.3 Alternative III-3: Excavation (For Unrestricted Use) and Institutional Controls

Alternative III-3 adds soil excavation and wetland protection components to the components of Alternative III-2 to reduce potential human-health risks Area 3. Key components of Alternative III-3 consist of following:

- Soil Excavation and treatment/disposal at an off-site treatment, storage, or disposal facility
- Wetlands Protection
- Institutional Controls
 - Existing zoning that prohibits residential use of Area 3 property and proposed deed restrictions that prohibit potable use of Area 3 groundwater
- Environmental Monitoring
 - Long-term groundwater monitoring
 - Long-term surface water monitoring
- Institutional Control Inspections
- Five-year Site Reviews

Soil Excavation and Treatment/disposal at an Off-site Treatment, Storage, or Disposal Facility. Alternative III-3 includes excavation of flood plain soils with EPH C11-C22 aromatic range concentrations in excess of PRGs that are considered protective of future unrestricted use residents. The estimated areal extent of soil contamination to be excavated is shown in Figure 8 based on observed unrestricted use PRG exceedances. Based upon the depth of an organic soil layer observed during the RI, the estimated average depth of contaminated soil is 3 ft. bgs. The estimated in-place volume of soil to be excavated is 120 cy. The actual extent of excavation and volume of soil removed would depend on the extent of PRG exceedances identified by field screening during excavation. The excavated soil will be treated/disposed at an approved off-site treatment, storage, or disposal facility.

An excavation work plan would be prepared to guide the excavation process; however, the FS assumption of excavation using conventional construction equipment such as tracked excavators, front-end loaders, and dump trucks would likely hold true. It is also assumed that the extent of excavation would be guided using on-site field-screening methods and final cleanup confirmed using off-site analytical methods. The excavation plan would detail how large pieces of debris or rocks would be separated from soil, cleaned of soil, and reused or disposed. It would also address groundwater management issues associated with excavation activities. Assumptions used in preparation of the FS report are described in Subsection 6.1.3.7 of that document.

Wetlands Protection. Soil excavation for Alternative III-3 would be within the 100-year flood plain (228 ft. msl) and possibly would be within the delineated bordering vegetated wetland. Therefore, wetland protection would likely be required as a result of potential excavation activities. Protection would be provided in accordance with the Massachusetts Wetland Protection Act and Regulations at 310 CMR 10.55.

Prior to any excavation activities, a wetlands delineation would be performed at Area 3. If the proposed construction area is confirmed to be within delineated vegetated wetlands, a pre-construction mitigation study would be performed to determine the impact to the affected area and the compensatory mitigation

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required as a result of the excavation activities. Once the extent of anticipated impacts is known, a mitigation/restoration plan would be prepared for regulatory agency review and concurrence.

The primary goal of wetland restoration activities would be to restore affected fresh-water wetlands within the excavation area and disturbed during remedial activities. The surface area of the restored wetland would be equal to or greater than that of the altered wetland. Depending on federal and state regulatory guidance, as well as financial and temporal considerations, a number of diverse approaches exist to restore self-sustaining wetlands. At a minimum, wetland restoration would include backfilling with suitable material to achieve desired grade and controlling erosion and siltation. During construction, erosion control measures such as soil berms, silt fencing, and hay bales would be used to protect against erosion and siltation within the flood-plain area. Compensatory mitigation and monitoring would be implemented according to the mitigation plan. A wetland scientist would monitor wetland restoration for a period of five years, beginning the year after the wetlands creation.

Institutional Controls. Similar to Alternative III-2, this alternative would require establishment of institutional controls to prohibit potable use of Area 3 groundwater. Also similar to Alternative III-2, these restrictions would be stated in full or by reference within deeds, easements, mortgages, leases, or other instruments of property transfer and would be maintained as long as groundwater contaminants remained at concentrations above cleanup levels.

Environmental Monitoring. Environmental monitoring would consist of performing long-term groundwater and surface water sampling as described for Alternative III-2.

Institutional Control Inspections. Institutional control inspections would be performed as described for Alternative III-2.

Five-Year Site Reviews. Five-year site reviews would be performed as described for Alternative III-2.

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| Estimated Time for Design and Construction: | 6 months |
| Estimated Time for Cleanup: | 8 years |
| Estimated Capital Cost: | \$80,699 |
| Estimated Operation and Maintenance Cost (Present Worth*): | \$229,122 |
| Contingency | \$77,455 |
| Estimated Total Cost | \$387,276 |

*Present worth based on 7 percent discount rate and environmental monitoring, institutional controls inspections, and five-year reviews for 30 years.

10.2.4 Alternative III-2a: Excavation (to Accelerate Groundwater Cleanup) and Institutional Controls

Alternative III-2a combines elements of Alternatives III-2 and III-3. It contains all the elements of Alternative III-2, plus soil removal to accelerate groundwater cleanup. Key components of Alternative III-2a consist of the following:

- Soil Excavation and treatment/disposal at an off-site treatment, storage, or disposal facility

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- Wetlands Protection
- Institutional Controls
 - Existing zoning that prohibits residential use of Area 3 property and proposed deed restrictions that prohibit potable use of Area 3 groundwater and residential use of flood plain property
- Environmental Monitoring
 - Long-term groundwater monitoring
 - Long-term surface water monitoring
- Institutional Control Inspections
- Five-year Site Reviews

Soil Excavation and Treatment/disposal at an Off-site Treatment, Storage, or Disposal Facility.

Alternative III-2a includes excavation of flood plain soil with elevated concentrations of organics that are believed to contribute to reducing (i.e., anaerobic) conditions and the release of naturally occurring arsenic to groundwater. In lieu of other site-specific data that relate concentrations of soil organics to arsenic in groundwater, this Record of Decision assumes that EPH C11-C22 aromatic range concentrations will be used as an indicator of organic concentrations. Because this alternative relies on institutional controls to achieve protection of human health under anticipated future land use scenarios, this Record of Decision does not identify PRGs or cleanup criteria for the soil removal. These criteria will be developed during the design phase of the remedy. It is anticipated that the excavation will occur in the floodplain around the southern edge of the 1999 soil excavation where concentrations of organics are believed to be greatest. Based on observations of an organic soil layer during the RI, excavation depths could average 3 ft. and cover an area similar to the area shown in Figure 9. This corresponds to an estimated in-place soil volume of 120 cy. The actual extent of excavation and volume of soil removed would depend on the criteria developed during remedy design. The excavated soil will be treated/disposed at an approved off-site treatment, storage, or disposal facility, or other approved facility, as appropriate.

An excavation work plan would be prepared to guide the excavation process; however, it is assumed that excavation would proceed with conventional construction equipment such as tracked excavators, front-end loaders, and dump trucks. It is also assumed that the extent of excavation would be guided using on-site field-screening methods and final cleanup confirmed using off-site analytical methods. The excavation plan would detail how large pieces of debris or rocks would be separated from soil, cleaned of soil, and reused or disposed. It would also address groundwater management issues associated with excavation activities.

Wetlands Protection. Wetlands protection activities would be performed as described for Alternative III-3.

Institutional Controls. Institutional controls would be implemented as described for Alternative III-2.

Environmental Monitoring. Environmental monitoring would consist of performing long-term groundwater and surface water sampling as described for Alternative III-2.

Institutional Control Inspections. Institutional control inspections would be performed as described for Alternative III-2.

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Five-Year Site Reviews. Five-year site reviews would be performed as described for Alternative III-2.

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| Estimated Time for Design and Construction: | 6 months |
| Estimated Time for Cleanup: | 8 years |
| Estimated Capital Cost: | \$80,699 |
| Estimated Operation and Maintenance Cost (Present Worth*): | \$229,122 |
| Contingency | \$77,455 |
| Estimated Total Cost | \$387,276 |

*Present worth based on 7 percent discount rate and environmental monitoring, institutional controls inspections, and five-year reviews for 30 years.

11.0 SUMMARY OF THE COMPARATIVE ANALYSIS OF ALTERNATIVES

Section 121(b)(1) of CERCLA presents several factors that, at a minimum, the Army is required to consider in its assessment of remedial action alternatives. Building upon these specific statutory mandates, the NCP articulates nine evaluation criteria to be used in assessing the individual remedial alternatives. The nine criteria are used to select a remedy that meets the goals of protecting human health and the environment, maintaining protection over time, and minimizing untreated waste.

Section 6.0 of the FS report provides a detailed analysis of the alternatives using the first seven of the nine evaluation criteria. Definitions of the nine criteria are provided below:

Threshold Criteria

The two threshold criteria described below must be met in order for an alternative to be eligible for selection in accordance with the NCP.

- Overall Protection of Human Health and the Environment This criterion assesses whether a remedy will protect human health and the environment. This includes an assessment of how human-health and environmental risks posed through each pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.
- Compliance with Applicable or Relevant and Appropriate Requirements This criterion assesses whether a remedy complies with all federal and state environmental and facility-siting laws and requirements that apply or are relevant and appropriate to the conditions and cleanup options at a specific site. If an alternative can not meet an ARAR, the analysis of the alternative must provide the rationale for invoking a statutory waiver.

Primary Balancing Criteria

The following five criteria are used to compare and evaluate the elements of alternatives that meet the threshold criteria.

- Long-Term Effectiveness and Permanence This criterion assesses the effectiveness of the alternative in protecting human health and the environment after response objectives have been

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met. In addition, it includes consideration of the magnitude of residual risks and the adequacy and reliability of controls.

- Reduction of Toxicity, Mobility, or Volume Through Treatment This criterion evaluates the effectiveness of treatment processes used to reduce toxicity, mobility, or volume of hazardous substances. It also considers the degree to which treatment is irreversible, and the type and quantity of residuals remaining after treatment. SARA emphasizes that, whenever possible, a remedy should be selected that uses treatment to permanently reduce the toxicity of contaminants at the site, the spread of contaminants away from the source of contamination, and the volume or amount of contamination at the site.
- Short-Term Effectiveness This criterion evaluates the effectiveness of the alternative in protecting human health and the environment during the construction and implementation of a remedy until response objectives have been met. It considers the protection of the community, workers, and the environment during implementation of remedial actions.
- Implementability This criterion assesses the technical and administrative feasibility of an alternative and availability of required goods and services. Technical feasibility considers the ability to construct and operate a technology and its reliability, the ease of undertaking additional remedial actions, and the ability to monitor the effectiveness of a remedy. Administrative feasibility considers the ability to obtain approvals from other parties or agencies and extent of required coordination with other parties or agencies.
- Cost This criterion evaluates the capital and operation and maintenance costs of each alternative.

Modifying Criteria

The modifying criteria are used in the final evaluation of remedial alternatives, generally after the Army has received public comments on the FS and Proposed Plan.

- State Acceptance This criterion considers the state's preferences among or concerns about the alternatives, including comments on ARARs or the proposed use of waivers.
- Community Acceptance This criterion considers the community's preferences among or concerns about the alternatives.

Following the detailed analysis of each individual alternative, the Army performed a comparative analysis, focusing on the relative performance of each alternative with respect to the nine evaluation criteria. The purpose of the comparative analysis was to identify the advantages and disadvantages of the alternatives relative to one another and to aid in the eventual selection of a remedial alternative for soil at each AOC. Subsection 7.1 of the FS report presents the approach of the comparative analysis, and Subsections 7.2 and 7.3 of the FS report present the comparison of the alternatives for Areas 2 and 3, respectively.

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11.1 SUMMARY COMPARISON OF AREA 2 ALTERNATIVES

The following subsections provide a summary of the comparative analysis of alternatives for AOC 57 Area 2.

11.1.1 Overall Protection of Human Health and the Environment

This criterion addresses how an alternative as a whole will protect human health and the environment. According to CERCLA, this criterion must be met for a remedial alternative to be chosen as a final site remedy.

The risk assessment of the RI did not identify any current human-health risk at AOC 57 Area 2, therefore Alternative II-1 is protective of human health under current conditions. However, Alternative II-1 does not provide any action to reduce or control possible future exposure to site-related COCs and therefore is not protective of human health. No ecological risks were identified, so Alternative II-1 is protective of the environment.

Alternatives II-2, II-3, and II-4 are all protective of human health and the environment. Alternative II-2 would establish institutional controls to limit possible future construction-worker exposure to flood plain soils, prohibit residential use of flood plain property, and limit future unrestricted resident exposure to groundwater. Alternative II-3 would protect possible future construction workers by removing/excavating flood plain soils with contaminants exceeding protective concentrations. Similar to Alternative II-2, Alternative II-3 would protect future unrestricted use residents from exposure to soil and groundwater by establishing institutional controls. Alternative II-4 would protect possible future construction worker and unrestricted residents from exposure to flood plain soil by removing/excavating soils with contaminants exceeding protective concentrations. Similar to Alternatives II-2 and II-3, Alternative II-4 would protect future unrestricted use residents from exposure to groundwater by establishing institutional controls. Because no ecological risks were identified, Alternatives II-2, II-3, and II-4 are all protective of the environment.

11.1.2 Compliance with Applicable or Relevant and Appropriate Requirements

CERCLA also requires that the selected alternative meet the criterion of compliance with ARARs, or obtain a waiver if the criterion can not be met, for a remedial alternative to be chosen as a final site remedy. Table 9 provides a comparison of ARARs among the alternatives evaluated for AOC 57 Area 2.

Location-Specific ARARs. Portions of AOC 57 Area 2 are located within flood-plain and wetland areas, therefore federal and state regulations pertaining to the protection of wetland and flood-plain areas are potential ARARs. Alternative II-1, because it provides no action, will not trigger any location-specific ARARs. Similarly, Alternative II-2, which entails only implementing institutional controls and monitoring, would not trigger location-specific ARARs. The soil removal activities that are part of Alternatives II-3 and II-4 would need to meet federal and state ARARs pertaining to the protection of wetlands and flood plains. Protection of endangered species may also need to be considered during the design and implementation of both these alternatives.

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Chemical-Specific ARARs. Chemical-specific ARARs for AOC 57 Area 2 include MCLs, MMCLs, and the Massachusetts Groundwater Quality Criteria for arsenic and PCE. Chemical-specific ARARs would not be met by any of the alternatives in the short-term, but would be met by natural processes in the long-term. All the alternatives rely on the benefits of the former soil removal action that removed groundwater contaminant sources and groundwater diffusion and dispersion to meet chemical-specific ARARs within the two monitoring wells where ARARs have been marginally or sporadically exceeded. Alternative II-1 would not implement environmental monitoring to measure changes in contaminant concentrations; therefore, attainment of ARARs would not be confirmed. Alternatives II-2, II-3, and II-4 would use environmental monitoring to evaluate long-term effectiveness and the potential for COC migration off-site.

No chemical-specific ARARs were identified for soil.

Action-Specific ARARs. Alternative II-1, No Action, and Alternative II-2, which entails only implementing institutional controls and monitoring, would not trigger action-specific ARARs. Alternatives II-3 and II-4 would need to meet action-specific ARARs because of the soil excavation component. Federal and state regulations pertaining to the handling, transportation, and disposal of solid and hazardous wastes would be triggered because of the soil removal activities performed as a component of Alternative II-3. Construction activities would also be controlled to meet federal and state regulations pertaining to the control of surface water runoff, and protection of surface water and air quality.

11.1.3 Long-term Effectiveness and Permanence

This criterion assesses the effectiveness of the alternative in protecting human health and the environment after response objectives have been met. Also considered are the magnitude of residual risk and the reliability of controls. Alternative II-1 does not provide any long-term or permanent measures for protecting possible future construction worker from exposure to flood plain soil or unrestricted use residents from exposure to flood plain soil and groundwater at AOC 57 Area 2. Alternative II-2 relies on institutional controls to prevent human receptor exposure to soils and groundwater containing COCs that exceed PRGs. The long-term effectiveness of these controls depends on how well future property owners adhere to the controls and how well federal, state, and local governments enforce the controls. It is anticipated that these controls would be relatively easy to maintain to ensure long-term effectiveness given that the property is adjacent to and within a wetland area and is zoned for open space and recreational use.

Alternatives II-3 would effectively and permanently minimize risk to the possible future construction workers by excavating flood plain soil with contaminants exceeding concentrations protective of the workers. However, because COCs that exceed unrestricted-use PRGs would remain on-site, Alternative II-3 relies on existing institutional controls to prevent unrestricted residential exposure to flood plain soil. These controls would be relatively easy to maintain to ensure long-term effectiveness given that the property is adjacent to and within a wetland area and is zoned for open space and recreational use. The excavation component of Alternative II-4 would remove COCs that exceed both future construction worker and unrestricted resident use PRGs and would effectively and permanently minimize risk to the construction worker and residential receptors from exposure to contaminated soils, without reliance on institutional controls.

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Groundwater quality is expected to continue to improve at the site as a result of the former soil removal action at the source area, and as a result of additional soil removal as part of Alternatives II-3 and II-4. PRGs (currently exceeded in only two groundwater monitoring wells) will eventually be achieved through diffusion and dispersion processes (arsenic and PCE) and to a limited extent by volatilization and biodegradation processes (PCE). None of the alternatives for Area 2 provide active controls to reduce concentrations of COCs in groundwater. However, Alternative II-2, II-3, and II-4 provide institutional controls to prohibit potable use of groundwater and to perform long-term environmental monitoring to assess the effectiveness and permanence of groundwater cleanup. Alternative II-1 does not provide institutional controls to prohibit potable use of groundwater, or to perform monitoring to assess the effectiveness and permanence of groundwater cleanup. As is the case for the soil institutional controls, the long-term effectiveness of groundwater institutional controls depends on how well future property owners adhere to the controls and how well federal, state, and local governments enforce the controls. It is anticipated that these controls would be relatively easy to maintain to ensure long-term effectiveness given that the property is adjacent to and within a wetland area and is zoned for open space and recreational use.

Overall, the degree of effectiveness and permanence increases for each alternative (i.e., Alternative II-1 < Alternative II-2 < Alternative II-3 < Alternative II-4) because of the decreasing need to depend on institutional control enforcement.

11.1.4 Reduction of Toxicity, Mobility, or Volume Through Treatment

This criterion evaluates how well the alternatives meet the statutory preference under CERCLA for treatment that reduces the toxicity, mobility, or volume of contaminants. It also considers the type and quantity of treatment residuals.

Alternatives II-1 and II-2 do not employ active removal or treatment processes to address soil contamination, and therefore would not satisfy CERCLA's statutory preference for treatment as a principal component for soil remedial action. Alternatives II-3 and II-4 both employ active removal processes and treatment/disposal at an off-site treatment, storage, or disposal facility to address soil contamination and therefore satisfy CERCLA's statutory preference for treatment. Because the volume of soil to be excavated and treated as part of Alternative II-4 is greater than in Alternative II-3, would, Alternative II-4 provides the greatest degree of reduction of toxicity, mobility, and volume through treatment.

All the alternatives rely, to equal extents, on the completed upland soil removal action and natural groundwater processes of diffusion, dispersion, volatilization, and biodegradation to restore groundwater quality to upgradient conditions. Regaining upgradient groundwater quality will decrease the solubility of naturally occurring arsenic, the major risk contributor in groundwater at the site.

11.1.5 Short-term Effectiveness

CERCLA requires that potential adverse short-term effects to cleanup workers, the surrounding community, and the environment be considered during selection of a remedial action. Alternative II-2 provides the least adverse short-term effects of all the alternatives. Alternative II-2 includes applying institutional controls to minimize human exposure to site soils. Because this alternative does not provide

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active or intrusive remedial actions, this alternative would not pose a significant risk to the community, site workers, or the environment during implementation. Alternative II-1 does not provide any remedial actions; therefore, short-term risks to the community or environment would not result from implementation. However, soil exposure would not be restricted, and therefore, this alternative would not provide any short-term protection should construction work or residential development be permitted in the Area 2 flood plain.

Alternatives II-3 and II-4 both include excavation of site soils as a component, which increases the potential risks to cleanup workers. Personal protective equipment and engineering controls (dust control) would be required to minimize risk to workers and exposure to downwind receptors. Soils would be transported to the treatment, storage, or disposal facility following federal and state regulations. Both Alternative II-3 and Alternative II-4 would have adverse short-term impacts on wetlands; however, these adverse effects would be greater for Alternative II-4 because of the larger area that would be excavated.

All alternatives, except Alternative II-1, include performing long-term environmental monitoring and implementing deed restrictions to prohibit residential use of flood plain property and potable use of groundwater. If properly implemented and enforced, these actions will protect site workers and the community until PRGs in groundwater are achieved. Qualitatively, it is possible that groundwater PRGs may be achieved the earliest with Alternative II-4, given that this alternative includes removal of the greatest volume of soil.

11.1.6 Implementability

This criterion evaluates each alternative's ease of construction and operation, and availability of services, equipment, and materials to construct and operate the alternative. Also evaluated is the ease of undertaking additional remedial actions and administrative feasibility.

Although the engineering/implementation complexity increases for each alternative (i.e., Alternative II-1 < Alternative II-2 < Alternative II-3 < Alternative II-4), engineering and construction services, equipment, and materials are readily available to implement any of the alternatives. Alternative II-1 requires no remedial action. Alternative II-2 requires only the implementation of institutional controls. Alternatives II-3 and II-4 are each incrementally greater in complexity and wetland disruption because of additional soil excavation.

None of the alternatives would limit or interfere with the ability to perform future remedial actions.

11.1.7 Cost

Cost includes the capital (up-front) cost of implementing an alternative and the long-term cost of operating and maintaining the alternative. To facilitate the comparison of costs among alternatives, both operation and maintenance cost and total cost are typically expressed as net present worth (i.e., the amount of money that would need to be invested at a specific interest or discount rate now to pay future costs).

A comparison of the estimated total present worth costs (based on a 7 percent discount rate over 30 years) for each alternative evaluated in detail is presented in the following table. Capital, operation and

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maintenance, and present worth costs for each alternative were calculated with an estimated accuracy of -30 percent to +50 percent.

| Alternative | O&M Cost | | | Total Cost (net present worth) |
|------------------|--------------|---------------------|-------------|-----------------------------------|
| | Capital Cost | (net present worth) | Contingency | |
| Alternative II-1 | \$0 | \$0 | \$0 | \$0 |
| Alternative II-2 | \$16,250 | \$178,914 | \$48,791 | \$243,955 |
| Alternative II-3 | \$348,645 | \$185,064 | \$133,427 | \$667,137 |
| Alternative II-4 | \$871,882 | \$185,064 | \$264,237 | \$1,321,183 |

There are no costs associated with Alternative II-1. O&M costs for Alternatives II-2 through II-4 are approximately equal; however, capital costs increase significantly as excavation and treatment volumes increase. Total estimated costs for Alternative II-4 at \$1,321,183 are approximately five times greater than costs for Alternative II-2 (\$243,955) and two times greater than costs for Alternative II-3 (\$667,137).

Further comparison of the total costs shows that the benefit of achieving possible future-use PRGs in soil (difference between Alternatives II-2 and II-3), costs approximately \$423,000 while the benefit of achieving unrestricted use PRGs in soil (difference between Alternatives II-2 and Alternative II-4) costs approximately \$1,077,000.

11.1.8 State Acceptance

This criterion addresses whether, based on its review of the RI, FS, and proposed plan, the state concurs with, opposes, or has no comment on the alternative the Army is proposing as the remedy for AOC 57 Area 2. The Commonwealth of Massachusetts has reviewed the RI, FS, proposed plan, and this Record of Decision and concurs with the selected remedy.

11.1.9 Community Acceptance

The Army received verbal comments from five people during the public hearing on March 8, 2001, and written comments from 14 people during the public comment period (see Appendix C). A common thread of the comments was the desire to achieve groundwater cleanup goals in as short a time as possible. The Army believes that the Feasibility Study Report estimate of 1 to 2 years for Alternative II-3 to attain the arsenic drinking water standard at Area 2 following proposed soil removal is consistent with the goal of achieving cleanup goals in as short a time as possible.

A second common thread was the desire to cleanup AOC 57 such that it would be suitable for unrestricted (i.e., residential) use. Residential use is not planned or anticipated for Area 2 at AOC 57. Furthermore, wetland conditions and existing zoning both serve to prevent residential use. The Army believes that implementation of institutional controls (e.g., restrictive deed covenants prohibiting potable use of groundwater) in Alternative II-3, combined with existing zoning, will protect human health and the environment under both current and reasonable future land use conditions.

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11.2 Summary Comparison of Area 3 Alternatives

The following subsections provide a summary of the comparative analysis of alternatives for AOC 57 Area 3.

11.2.1 Overall Protection of Human Health and the Environment

This criterion addresses how an alternative as a whole will protect human health and the environment. According to CERCLA, this criterion must be met for a remedial alternative to be chosen as a final site remedy.

The risk assessment of the RI did not identify any current human-health risk at AOC 57 Area 3; therefore, Alternative III-1 is protective of human health under current conditions. However, Alternative III-1 does not provide any action to reduce or control possible future exposure to site-related COCs in soil and groundwater and therefore is not protective of human health. No ecological risks were identified, so Alternative III-1 is protective of the environment.

Alternatives III-2, III-3, and III-2a are protective of human health and the environment. Alternative III-2 would establish institutional controls to prevent future commercial-worker exposure to upland groundwater, unrestricted residential exposure to upland and flood plain groundwater, and residential exposure to flood plain soil. Alternative III-3 would protect future unrestricted use residents from exposure to flood plain soil by removing/excavating soils with contaminants exceeding protective concentrations. The excavation proposed in Alternative III-2a would accelerate groundwater cleanup and rely on institutional controls to protect future unrestricted use residents from direct contact soil exposure. Similar to Alternative III-2, Alternatives III-3 and III-2a would protect possible future commercial workers and unrestricted use residents from exposure to groundwater by establishing institutional controls. Because no ecological risks were identified, Alternatives III-2 and III-3 are both protective of the environment.

11.2.2 Compliance with Applicable or Relevant and Appropriate Requirements

CERCLA also requires that the selected alternative meet the criterion of compliance with ARARs, or obtain a waiver if the criterion can not be met, for a remedial alternative to be chosen as a final site remedy. Table 10 provides a comparison of ARARs among the alternatives evaluated for AOC 57 Area 3.

Location-Specific ARARs. Portions of AOC 57 Area 3 are located within flood-plain and wetland areas, therefore federal and state regulations pertaining to the protection of wetland and flood-plain areas are potential ARARs. Alternative III-1, because it provides no action, will not trigger any location-specific ARARs. Similarly, Alternative III-2, which entails only implementing institutional controls and monitoring, would not trigger location-specific ARARs. The soil removal activities that are part of Alternatives III-3 and III-2a would need to meet federal and state ARARs pertaining to the protection of wetlands and flood plains. Protection of endangered species may also need to be considered during the design and implementation of this alternative.

Chemical-Specific ARARs. Chemical-specific ARARs for AOC 57 Area 3 include MCLs, MMCLs, and the Massachusetts Groundwater Quality Criteria for 1,4-DCB and PCE. Chemical-specific ARARs

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would not be met by any of the alternatives in the short-term, but would be met by natural processes in the long-term. All the alternatives rely on the benefits of the former soil removal action that removed groundwater contaminant sources and groundwater diffusion and dispersion to meet chemical-specific ARARs. Alternative III-1 would not implement environmental monitoring to measure changes in contaminant concentrations; therefore, attainment of ARARs would not be confirmed. Alternatives III-2, III-3, and III-2a would use environmental monitoring to evaluate long-term effectiveness and the potential for COC migration off-site.

No chemical-specific ARARs were identified for soil.

Action-Specific ARARs. Alternative III-1, No Action, and Alternative III-2, which entails only implementing institutional controls and monitoring, would not trigger action-specific ARARs. Alternatives III-3 and III-2a would need to meet action-specific ARARs because of the soil excavation component. Federal and state regulations pertaining to the handling, transportation, and disposal of solid and hazardous wastes would be triggered because of the soil removal activities performed as a component of Alternatives III-3 and III-2a. Construction activities would also be controlled to meet federal and state regulations pertaining to the control of surface water runoff, and protection of surface water and air quality.

11.2.3 Long-term Effectiveness and Permanence

This criterion assesses the effectiveness of the alternative in protecting human health and the environment after response objectives have been met. Also considered are the magnitude of residual risk and the reliability of controls. Alternative III-1 does not provide any long-term or permanent measures for protecting possible future commercial workers or unrestricted use residents from exposure to upland groundwater or for protecting unrestricted use residents from exposure to flood plain soil and groundwater at AOC 57 Area 3. Alternative III-2 relies on institutional controls for protecting possible future commercial workers and unrestricted use residents from exposure to upland groundwater and for protecting unrestricted use residents from exposure to flood plain soil and groundwater at AOC 57 Area 3. The long-term effectiveness of these controls depends on how well future property owners adhere to the controls and how well federal, state, and local governments enforce the controls.

Alternatives III-3 and III-2a would effectively and permanently minimize risk to the unrestricted use residents by excavating flood plain soil with contaminants exceeding protective concentrations. However, Alternatives III-3 and III-2a rely on the same institutional controls as Alternative III-2 to protect possible future commercial workers and unrestricted use residents from exposure to upland groundwater and for protecting unrestricted use residents from exposure to flood plain groundwater at AOC 57 Area 3.

Groundwater quality is expected to continue to improve at the site as a result of the former soil removal action at the source area, and as a result of additional soil removal proposed as part of Alternatives III-3 and III-2a. None of the alternatives for Area 3 provide active controls to reduce concentrations of COCs in groundwater. However, Alternatives III-2, III-3, and III-2a provide institutional controls to prohibit potable use of groundwater and to perform long-term environmental monitoring to assess the effectiveness and permanence of groundwater cleanup.

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Overall, the effectiveness and permanence for Alternatives III-3 and III-2a are considered equal, but greater than that of Alternative III-2, which are greater than for Alternative III-1.

11.2.4 Reduction of Toxicity, Mobility, or Volume Through Treatment

This criterion evaluates how well the alternatives meet the statutory preference under CERCLA for treatment that reduces the toxicity, mobility, or volume of contaminants. It also considers the type and quantity of treatment residuals.

Alternatives III-1 and III-2 do not employ active removal or treatment processes to address soil contamination and therefore would not satisfy CERCLA's statutory preference for treatment as a principal component for soil remedial action. Alternatives III-3 and III-2a would use active removal processes and treatment/disposal at an off-site treatment, storage, or disposal facility to address soil contamination and therefore would satisfy CERCLA's statutory preference for treatment.

All the alternatives rely, to equal extents, on the completed upland soil removal action and natural groundwater processes of diffusion, dispersion, volatilization, and biodegradation to restore groundwater water quality to upgradient conditions. Regaining upgradient groundwater quality will decrease the solubility of naturally occurring arsenic, the major risk contributor in groundwater at the site.

11.2.5 Short-term Effectiveness

CERCLA requires that potential adverse short-term effects to cleanup workers, the surrounding community, and the environment be considered during selection of a remedial action. Alternative III-2 provides the least adverse short-term effects of all the alternatives. Alternative III-2 includes applying institutional controls to minimize human exposure to site soils. Because this alternative does not provide active or intrusive remedial actions, this alternative would not pose a significant risk to the community, site workers, or the environment during implementation. Alternative III-1 does not provide any remedial actions; therefore, short-term risks to the community or environment would not result from implementation. However, soil exposure would not be restricted, and, therefore, this alternative would not provide any short-term protection should construction work or residential development be permitted in the Area 3 flood plain.

Alternatives III-3 and III-2a include excavation of site soils as a component, which increases the potential risks to cleanup workers. Personal protective equipment and engineering controls (dust control) would be required to minimize risk to workers and exposure to downwind receptors. Soils would be transported to the treatment, storage, or disposal facility following federal and state regulations. Alternatives III-3 and III-2a have potential adverse short-term impacts on wetlands, while Alternatives III-1 and III-2 do not.

Alternatives III-2, III-3, and III-2a include performing long-term environmental monitoring and implementing deed restrictions to prohibit residential use of flood plain property and potable use of groundwater. If properly implemented and enforced these actions will protect site workers and the community until PRGs in groundwater are achieved.

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11.2.6 Implementability

This criterion evaluates each alternative's ease of construction and operation, and availability of services, equipment, and materials to construct and operate the alternative. Also evaluated is the ease of undertaking additional remedial actions and administrative feasibility.

Although the engineering/implementation complexity increases for each alternative, (i.e., Alternative III-2a = Alternative III-3 > Alternative III-2 > Alternative III-1), engineering and construction services, equipment, and materials are readily available to implement any of the alternatives. Alternative III-1 requires no remedial action. Alternative III-2 requires only the implementation of institutional controls. Alternatives III-3 and III-2a have the greatest complexity and wetland disruption because of soil excavation.

None of the alternatives would limit or interfere with the ability to perform future remedial actions.

11.2.7 Cost

Cost includes the capital (up-front) cost of implementing an alternative and the long-term cost of operating and maintaining the alternative. To facilitate the comparison of costs among alternatives, both operation and maintenance cost and total cost are typically expressed as net present worth (i.e., the amount of money that would need to be invested at a specific interest or discount rate now to pay future costs).

A comparison of the estimated total present worth costs (based on a 7 percent discount rate over 30 years) for each alternative evaluated in detail is presented in the following table. Capital, operation and maintenance, and present worth costs for each alternative were calculated with an estimated accuracy of -30 percent to +50 percent.

| Alternative | Capital Cost | O&M Cost (net present worth) | Contingency | Total Cost (net present worth) |
|--------------------|---------------------|---|--------------------|---------------------------------------|
| Alternative III-1 | \$0 | \$0 | \$0 | \$0 |
| Alternative III-2 | \$15,750 | \$222,972 | \$59,681 | \$298,403 |
| Alternative III-3 | \$80,699 | \$229,122 | \$77,455 | \$387,276 |
| Alternative III-2a | \$80,699 | \$229,122 | \$77,455 | \$387,276 |

There are no costs associated with Alternative III-1. O&M costs for Alternatives III-2, III-3, and III-2a are approximately equal. However, capital costs increase significantly in Alternatives III-3 and III-2a because of soil excavation and treatment. Total estimated costs for Alternatives III-3 and III-2a are about 1.3 times greater than costs for Alternative III-2.

Further comparison of the total costs shows that the benefit of achieving unrestricted residential use PRGs in soil (difference between Alternatives III-2 and III-3) costs approximately \$89,000.

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11.2.8 State Acceptance

This criterion addresses whether, based on its review of the RI, FS, and proposed plan, the state concurs with, opposes, or has no comment on the alternative the Army is proposing as the remedy for AOC 57 Area 3. The Commonwealth of Massachusetts has reviewed the RI, FS, proposed plan, and this Record of Decision and concurs with the selected remedy.

11.2.9 Community Acceptance

The Army received verbal comments from five people during the public hearing on March 8, 2001, and written comments from 14 people during the public comment period (see Appendix C). A common thread of the comments was the desire to achieve groundwater cleanup goals in as short a time as possible. The Feasibility Study Report estimated a range of 1 to 8 years for Alternative III-2 to attain the arsenic drinking water standard at Area 3. A second common thread was the desire to cleanup AOC 57 such that it would be suitable for unrestricted (i.e., residential) use.

Following review of the comments, the Army has decided it is appropriate to remove additional contaminated soil at Area 3 to accelerate the groundwater cleanup process. As discussed in this section and in Section 12.2, a new alternative, Alternative III-2a, which adds soil removal to Alternative III-2, has been developed and selected for AOC 57 Area 3.

Residential use is not planned or anticipated for AOC 57 Area 3. Furthermore, wetland conditions and existing zoning both serve to prevent residential use. The Army believes that implementation of institutional controls (e.g., restrictive deed covenants to prohibit residential use of property and potable use of groundwater) as proposed in Alternatives III-2 and III-2a, combined with existing zoning, will protect human health and the environment under both current and reasonable future land use conditions.

12.0 THE SELECTED REMEDY

The selected remedy for AOC 57 Area 2 is Alternative II-3: Excavation (For Possible Future Use) and Institutional Controls, and the selected remedy for AOC 57 Area 3 is Alternative III-2a: Excavation (to Accelerate Groundwater Cleanup) and Institutional Controls. The following sections summarize the selection rationale and a description of remedial components, cost, and expected outcome for each alternative. Changes in the selected remedies may occur a result of new information and data collected during the design of the alternative. Major changes will be documented in the form of a memorandum in the Administrative Record, an Explanation of Significant Changes, or an amendment to this Record of Decision, as appropriate.

12.1 DESCRIPTION OF REMEDY FOR AOC 57 AREA 2

This subsection provides a summary of the rationale for selecting Alternative II-3, describes the alternative and its costs, and describes the outcomes expected as a result of implementing the alternative.

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12.1.1 Summary of the Rational for Selection of Alternative II-3

The Army believes Alternative II-3 provides the best balance among the candidate alternatives for Area 2. Alternative II-3 is protective of human health under current and anticipated future land use scenarios. Existing and proposed institutional controls will prevent unrestricted use. It is also protective of the environment and attains ARARs. Alternative II-3 offers improved long-term effectiveness when compared to Alternative II-2, and has fewer short-term impacts and risks than Alternative II-4. The alternative is readily implementable at a reasonable cost.

12.1.2 Description of Alternative II-3

Alternative II-3 contains components to reduce potential human-health risks associated with contaminated soil and groundwater at the Area 2 flood plain. Key components of Alternative II-2 consist of following:

- Soil Excavation and treatment/disposal at an off-site treatment, storage, or disposal facility
- Wetlands Protection
- Institutional Controls
 - Existing zoning that prohibits residential use of Area 2 property and proposed deed restrictions that prohibit potable use of Area 2 groundwater and residential use of flood plain property
- Environmental Monitoring
 - Long-term groundwater monitoring
 - Long-term surface water monitoring
- Institutional Control Inspections
- Five-year Site Reviews

Soil Excavation and Treatment/disposal at an Off-site Treatment, Storage, or Disposal Facility.

Alternative II-3 includes excavation of flood plain soils with Aroclor-1260 and lead concentrations in excess of PRGs that are considered protective of possible future-use construction workers. The estimated areal extent of soil contamination to be excavated is shown in Figure 10 based on observed PRG exceedances. Based upon the depth of an organic soil layer observed during the RI, the estimated average depth of contaminated soil is 4 ft. bgs. The in-place volume of soil to be excavated is estimated to be approximately 640 cy. The actual extent of excavation and volume of soil removed will depend on the extent of PRG exceedances identified by field screening during excavation. The excavated soil will be treated/disposed at an approved off-site treatment, storage, or disposal facility, or other approved facility as appropriate.

An excavation work plan will be prepared to guide the excavation process; however, the FS assumption of excavation using conventional construction equipment such as tracked excavators, front-end loaders, and dump trucks will likely hold true. It is also assumed that the extent of excavation will be guided using on-site field-screening methods and final cleanup confirmed using off-site analytical methods. The excavation plan will detail how large pieces of debris or rocks will be separated from soil, cleaned of soil, and reused or disposed. It will also address groundwater management issues associated with excavation activities. Assumptions used in preparation of the FS report are described in Subsection 6.1.3.7 of that document.

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Wetlands Protection. Soil excavation for Alternative II-3 will be within the 100-year flood plain (228 ft. msl) and possibly will be within the delineated bordering vegetated wetland based on a 1993 wetlands delineation (see Figure 10). Therefore, wetland protection will likely be required as a result of potential excavation activities. Protection will be provided in accordance with the Massachusetts Wetland Protection Act and Regulations at 310 CMR 10.55.

Prior to any excavation activities, a new wetlands delineation will be performed at Area 2. If the proposed construction area is confirmed to be within delineated vegetated wetlands, a pre-construction mitigation study will be performed to determine the impact to the affected area and the compensatory mitigation required as a result of the excavation activities. Once the extent of anticipated impacts is known, a mitigation/restoration plan will be prepared for regulatory agency review and concurrence.

The primary goal of wetland restoration activities will be to restore fresh-water wetlands within the excavation area which are disturbed during remedial actions. The surface area of the restored wetland will be equal to or greater than that of the altered wetland. Depending on federal and state regulatory guidance, as well as financial and temporal considerations, a number of diverse approaches exist to restore self-sustaining wetlands. At a minimum, wetland restoration will include backfilling with suitable material to achieve desired grade and controlling erosion and siltation. During construction, erosion control measures such as soil berms, silt fencing, and hay bales will be used to protect against erosion and siltation within the flood-plain area. Compensatory mitigation and monitoring will be implemented according to the mitigation plan. A wetland scientist will monitor wetland restoration for a period of five years, beginning the year after the wetland creation.

Institutional Controls. The presence of flood plain and wetland conditions and existing zoning currently prevents residential use of the area and potential residential exposure to contaminated soil and groundwater. Upland portions of AOC 57 are zoned for Rail, Industrial, and Trade Related use while flood plain portions of AOC 57 are zoned for Open Space and Recreation (Vanasse Hangen Brustlin, 1994a and 1994b). Residential construction is not permitted under those designations.

Groundwater beneath upland areas at Area 2 already meets groundwater cleanup levels; however, because the zone of influence of an upland well could draw contaminated groundwater from nearby wetland/flood-plain areas, use of upland groundwater as potable water prior to attaining cleanup levels in wetland/flood-plain areas would require careful evaluation. Because of the potential for Area 2 upland wells to be influenced by flood plain groundwater, potable use of Area 2 upland groundwater would also be prohibited.

In the event of future property transfer, the Army will include deed covenants to prohibit potable use of Area 2 groundwater and unrestricted use of flood plain property. All institutional controls will be stated in full or by reference within deeds, easements, mortgages, leases, or other instruments of property transfer. These controls will be drafted, implemented and enforced in cooperation with federal, state, and local governments. These covenants will be maintained as long as soil and groundwater contaminants remained at concentrations above cleanup levels. If future land use at AOC 57 is inconsistent with these institutional controls, then the site exposure scenarios for human health and the environment would be re-evaluated to assess whether this response action remains appropriate.

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Environmental Monitoring. Environmental monitoring will consist of performing long-term groundwater and surface water sampling. Long-term groundwater sampling will be performed to assess for groundwater COC (arsenic and PCE) migration and to monitor for the decrease of the groundwater COCs to concentrations that are protective of residential receptors.

Surface water sampling will be a component of environmental sampling to assess for off-site migration of human-health COCs in excess of PRGs via the groundwater to surface water pathway. The purpose of the surface water sampling will not be to collect additional ecological risk assessment data.

Sampling frequency, location, analytes, sampling procedures, and action levels for environmental monitoring will be detailed in a LTMP and submitted to USEPA and MADEP for review and concurrence prior to implementing the environmental monitoring component of this alternative. Following attainment of groundwater cleanup levels, monitoring will be discontinued in accordance with the time frame specified in the LTMP.

Institutional Control Inspections. The Army will prepare and submit an Institutional Control Monitoring Plan for regulatory agency review and concurrence as part of the site LTMP to detail the institutional controls to be incorporated/referenced within instruments of property transfer and ensure that the institutional control requirements are met. The plan will include a checklist of elements to be assessed during regularly scheduled on-site inspections and interviews with the site property owner, manager, or designee. If future land use at AOC 57 is inconsistent with these institutional controls, then the site exposure scenarios for human health and the environment will be re-evaluated to assess whether this response action is appropriate.

Five-Year Site Reviews. Section 121c of CERCLA and NCP§300.430(f)(4)(ii) require that if a remedial action results in contaminants remaining on-site above concentrations that allow unrestricted and unlimited use, the lead agency must review the action at least every five years. During five-year site reviews, an assessment is made of whether the implemented remedy continues to be protective of human health and the environment or whether the implementation of additional remedial action is appropriate. Because Alternative II-3 will result in contaminants remaining on site above concentrations allowing unrestricted use and to the extent required by law, the Army will review the site at least once every five years to ensure that the remedial action remains protective of human health and the environment. Five-year reviews will be performed as long as hazardous substances, pollutants, or contaminants remain on-site above concentrations that allow for unrestricted exposure and unlimited use.

12.1.3 Summary of Costs for Alternative II-3

Table 11 contains a summary of estimated costs for implementing Alternative II-3. The estimate is based on the best available information regarding the anticipated scope of the remedial alternative; however, changes in cost elements may occur as a result of new information and data collected during design of the alternative. This is an engineering cost estimate that is expected to be within +50 to -30 percent of the actual project cost. Additional detail on the cost estimate is provided in the FS.

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Cost Estimate Assumptions. The following assumptions were used in estimating the baseline cost:

- Predesign sampling within the former excavation area will consist of collecting approximately 36 soil samples with a Geoprobe and analyzing the samples for the COCs.
- Excavating approximately 640 cy (1,152) tons of soil. The soil volume estimated to be excavated at Area 2 is based on the assumption that the COCs detected within the former excavation area will be below the PRGs.
- Disposing of approximately ¼ of the excavated soil as a hazardous waste and disposing ¾ of the excavated soil as MA99 waste under a MADEP Bill of Lading.
- The lined stockpile/dewatering area will be approximately 50 by 100 ft.
- Water in the excavation and leachate from the stockpiles will be collected and treated off-site.
- Using on-site field-screening methods to guide the extent of excavation, specifically USEPA Method 4020 immuno-assay testing for PCBs and x-ray fluorescence for lead.
- Collecting approximately 27 confirmation samples (one sample per 900 sq. ft. of floor area and one sample per 30 ft. of wall length) for off-site analysis.
- Off-site analytical costs are based on 3-day turn-around-time for USEPA Methods 6010 and 8082 for lead and PCBs, respectively.
- There will be minimal difficulty in implementing deed restrictions.
- Performing institutional control inspections once per year.
- Performing environmental sampling twice per year for the first three years and once per year thereafter. Environmental sampling will be terminated upon obtaining groundwater PRG concentrations for three consecutive sampling events.
- Collecting groundwater samples at five existing monitoring wells using low-flow sampling techniques.
- Collecting surface water samples from four locations in Cold Spring Brook.
- Analyzing groundwater and surface water samples for arsenic and PCE (VOCs by USEPA Method 8260). Both filtered and unfiltered samples will be collected for arsenic.
- Collecting QC samples at a frequency of one per ten regular samples (ten percent).

Cost-sensitivity Analysis. The greatest uncertainty in the cost estimate pertains to the duration that long-term environmental monitoring and groundwater-use deed restrictions will need to be maintained. To assess the effect of this uncertainty, costs for this alternative were evaluated for a 3-year and a 30-year environmental monitoring duration. A second significant uncertainty pertains to the volume of soil that will require excavation to achieve possible future-use PRGs, specifically in regard to excavation depth. If the average depth of excavation of the area varies by +/- 1 ft., the total volume excavated will change by +/- 25 percent, thereby affecting soil excavation, transportation, and disposal costs.

Decreasing the environmental sampling duration from 30 to 3 years decreases the total O&M present worth cost by approximately 44 percent, while varying the quantity of soil excavated by +/- 25 percent, changes the total capital cost by approximately 12 percent. The low range costs (25 percent less soil excavated and 3 years of environmental monitoring) and high range costs (25 percent greater soil excavated and 30-year cleanup duration) are presented in Table 11. Low-range and high-range costs (\$515,000 and \$719,000, respectively) varied from the baseline present worth cost by approximately 23 percent and 8 percent, respectively.

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Additional discussion of cost uncertainty is contained in Section 6.0 of the FS report.

12.1.4 Expected Outcome of Alternative II-3

This section presents the expected outcome of Alternative II-3 in terms of land and groundwater use and risk reduction as result of the response action. Five general categories of outcome are discussed:

- Final cleanup levels and basis
- Available uses of land upon achieving soil cleanup levels
- Available uses of groundwater upon achieving cleanup levels
- Anticipated socio-economic and community revitalization effects
- Anticipated environmental and ecological benefits

Final cleanup levels and basis. The purpose of this response action is to control risks posed by direct contact with soil and groundwater. The results of the baseline risk assessment indicate that existing contaminant concentrations in soil pose noncancer risks exceeding an HI of 1 to possible future use construction workers and unrestricted use residents. Contaminants in groundwater pose excess lifetime cancer risks exceeding the target risk range of 1×10^{-4} to 1×10^{-6} and an HI of 1 to future unrestricted use residents (see Tables 2 and 5).

Table 12 identifies cleanup levels by media for COCs at AOC 57 Area 2.

Available Uses of Land Upon Achieving Soil Cleanup Levels. Upon achieving soil cleanup levels, upland areas at Area 2 (i.e., areas with elevation greater than 228 ft. msl) will be suitable for commercial/industrial development or, in the absence of existing zoning, unrestricted use. Wetland/flood-plain areas (i.e., areas with elevation less than 228 ft. msl) at Area 2 will be suitable for construction of designated trails for passive recreational use (e.g., bird watching). Wetland/flood-plain soils will remain unsuitable for unrestricted (residential) use. The length of time to achieve soil cleanup goal is estimated to be 6 months.

Available Uses of Groundwater Upon Achieving Cleanup Levels. Groundwater beneath upland areas at Area 2 already meets groundwater cleanup levels; however, because the zone of influence of an upland well could draw contaminated groundwater from nearby wetland/flood-plain areas, use of upland groundwater as potable water prior to attaining cleanup levels in wetland/flood-plain areas would require careful evaluation. The Feasibility Study estimated that 1 to 2 years beyond the completion of excavation may be required for groundwater beneath wetland/flood-plain areas to attain cleanup levels. Upon achieving cleanup levels, groundwater will be suitable for potable water use.

Anticipated Socio-economic and Community Revitalization Effects. Implementation of Alternative II-3 will allow use of AOC 57 Area 2 in a manner that is consistent with current long-term plans for commercial/industrial use of the upland and open-space/recreational use of the wetland/flood-plain.

Anticipated Environmental and Ecological Benefits. Adverse environmental and ecological effects are not anticipated if Alternative II-3 is not implemented. Beneficial environmental and ecological effects are not anticipated if Alternative II-3 is implemented.

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12.2 DESCRIPTION OF REMEDY FOR AOC 57 AREA 3

This subsection provides a summary of the rationale for selecting Alternative III-2a: Excavation (to Accelerate Groundwater Cleanup) and Institutional Controls, describes the alternative and its costs, and describes the outcomes expected as a result of implementing the alternative.

12.2.1 Summary of the Rational for Selection of Alternative III-2a

The Army believes Alternative III-2a provides the best balance among the candidate alternatives for Area 3. Alternative III-2a is protective of human health under current and anticipated future land use scenarios. Existing and proposed institutional controls will prevent unrestricted use. It is also protective of the environment and attains ARARs. Alternative III-2a offers improved long-term effectiveness when compared to Alternatives III-1 and III-2. It has short-term impacts and risks greater than Alternatives III-1 and III-2, and similar to those of Alternative III-3. The alternative is readily implementable at a reasonable cost.

12.2.2 Description of Alternative III-2a

Alternative III-2a: Excavation (to Accelerate Groundwater Cleanup) and Institutional Controls contains components to reduce potential human-health risks associated with exposure to contaminated soil (flood plain) and groundwater (upland and flood plain) at the Area 3. It contains all the elements of Alternative III-2, plus soil removal to accelerate groundwater cleanup. Key components of Alternative III-2a consist of following:

- Soil Excavation and treatment/disposal at an off-site treatment, storage, or disposal facility
- Wetlands Protection
- Institutional Controls
 - Existing zoning that prohibits residential use of Area 3 property and proposed deed restrictions that prohibit potable use of Area 3 groundwater and residential use of flood plain property
- Environmental Monitoring
 - Long-term groundwater monitoring
 - Long-term surface water monitoring
- Institutional Control Inspections
- Five-year Site Reviews

Soil Excavation and Treatment/disposal at an Off-site Treatment, Storage, or Disposal Facility. Alternative III-2a includes excavation of flood plain soil with elevated concentrations of organics that are believed to contribute to reducing (i.e., anaerobic) conditions and the release of naturally occurring arsenic to groundwater. In lieu of other site-specific data that relate concentrations of soil organics to arsenic in groundwater, this Record of Decision assumes that EPH C11-C22 aromatic range concentrations will be used as an indicator of organic concentrations. Because this alternative relies on institutional controls to achieve protection of human health under anticipated future land use scenarios, this Record of Decision does not identify PRGs or cleanup criteria for the soil removal. These criteria will be developed during the design phase of the remedy. It is anticipated that the excavation will occur in the

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floodplain around the southern edge of the 1999 soil excavation where concentrations of organics are believed to be greatest. Based on observations of an organic soil layer during the RI, excavation depths could average 3 ft. and cover an area similar to the area shown in Figure 9. This corresponds to an estimated in-place soil volume of 120 cy. The actual extent of excavation and volume of soil removed would depend on the criteria developed during remedy design. The excavated soil will be treated/disposed at an approved off-site treatment, storage, or disposal facility, or other approved facility as appropriate.

An excavation work plan would be prepared to guide the excavation process; however, it is assumed that excavation would proceed with conventional construction equipment such as tracked excavators, front-end loaders, and dump trucks. It is also assumed that the extent of excavation would be guided using on-site field-screening methods and final cleanup confirmed using off-site analytical methods. The excavation plan would detail how large pieces of debris or rocks would be separated from soil, cleaned of soil, and reused or disposed. It would also address groundwater management issues associated with excavation activities.

Wetlands Protection. Soil excavation for Alternative III-2a will be within the 100-year flood plain (228 ft. msl) and possibly will be within the delineated bordering vegetated wetland. Therefore, wetland protection will likely be required as a result of potential excavation activities. Protection will be provided in accordance with the Massachusetts Wetland Protection Act and Regulations at 310 CMR 10.55.

Prior to any excavation activities, a wetlands delineation will be performed at Area 3. If the proposed construction area is confirmed to be within delineated vegetated wetlands, a pre-construction mitigation study will be performed to determine the impact to the affected area and the compensatory mitigation required as a result of the excavation activities. Once the extent of anticipated impacts is known, a mitigation/restoration plan will be prepared for regulatory agency review and concurrence.

The primary goal of wetland restoration activities will be to restore affected fresh-water wetlands within the excavation area and disturbed during remedial activities. The surface area of the restored wetland will be equal to or greater than that of the altered wetland. Depending on federal and state regulatory guidance, as well as financial and temporal considerations, a number of diverse approaches exist to restore self-sustaining wetlands. At a minimum, wetland restoration will include backfilling with suitable material to achieve desired grade and controlling erosion and siltation. During construction, erosion control measures such as soil berms, silt fencing, and hay bales will be used to protect against erosion and siltation within the flood-plain area. Compensatory mitigation and monitoring will be implemented according to the mitigation plan. A wetland scientist will monitor wetland restoration for a period of five years, beginning the year after the wetlands creation.

Institutional Controls. Alternative III-2a would protect possible future-use commercial workers and future unrestricted use residents by requiring establishment of land use restrictions for both upland and flood plain portions of AOC 57 Area 3. The presence of flood plain and wetland conditions and existing zoning currently prevents residential use of the area and potential residential exposure to contaminated soil and groundwater. Upland portions of AOC 57 are located within an area zoned for Rail, Industrial, and Trade Related uses, while flood plain portions are zoned for Open Space and Recreation (Vanasse Hangen Brustlin, 1994a and 1994b). Residential construction would not be permitted under those designations.

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To protect possible future commercial workers and unrestricted use residents from exposure to groundwater and future unrestricted use residents from exposure to contaminated flood-plain soil in the event of future property transfer, the Army would include deed covenants to prohibit potable use of Area 3 groundwater and residential use of flood plain property. All institutional controls would be stated in full or by reference within deeds, easements, mortgages, leases, or other instruments of property transfer. These controls would be drafted, implemented and enforced in cooperation with federal, state, and local governments. These covenants would be maintained as long as soil and/or groundwater contaminants remained at concentrations above protective cleanup levels.

Environmental Monitoring. Environmental monitoring will consist of performing long-term groundwater and surface water sampling. Long-term groundwater sampling will be performed to assess for decreases in arsenic; maintenance of PCE, cadmium, and 1,4-DCB concentrations (upland and flood-plain COCs) at or below cleanup levels; and for the need for continued groundwater institutional controls to protect human receptors.

Surface water sampling will also be a component of environmental sampling to assess for off-site migration of human-health COCs in excess of PRGs via the groundwater to surface water pathway. The purpose of the surface water sampling will not be to collect additional ecological risk assessment data.

Sampling frequency, location, analytes, sampling procedures, and action levels for environmental monitoring will be detailed in a LTMP and submitted to USEPA and MADEP for review and concurrence prior to implementing the environmental monitoring component of this alternative. Following attainment of groundwater cleanup levels, monitoring will be discontinued in accordance with the time frame specified in the LTMP.

Institutional Control Inspections. The Army will prepare and submit an Institutional Control Monitoring Plan for regulatory agency review and concurrence as part of the site LTMP to detail the institutional controls to be incorporated/referenced within instruments of property transfer and ensure that the institutional control requirements are met. The plan will include a checklist of elements to be assessed during regularly scheduled on-site inspections and interviews with the site property owner, manager, or designee. If future land use at AOC 57 is inconsistent with these institutional controls, then the site exposure scenarios for human health and the environment will be re-evaluated to assess whether this response action is appropriate.

Five-Year Site Reviews. Section 121c of CERCLA and NCP§300.430(f)(4)(ii) require that if a remedial action results in contaminants remaining on-site above concentrations that allow unrestricted and unlimited use, the lead agency must review the action at least every five years. During five-year site reviews, an assessment is made of whether the implemented remedy continues to be protective of human health and the environment or whether the implementation of additional remedial action is appropriate. Because Alternative III-2a will result in contaminants remaining on site above concentrations allowing unrestricted use and to the extent required by law, the Army will review the site at least once every five years to ensure that the remedial action remains protective of human health and the environment. Five-year reviews will be performed as long as hazardous substances, pollutants, or contaminants remain on-site above concentrations that allow for unrestricted exposure and unlimited use.

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12.2.3 Summary of Costs for Alternative III-2a

Table 13 contains a summary of estimated costs for implementing Alternative III-2a. The estimate is based on the best available information regarding the anticipated scope of the remedial alternative; however, changes in cost elements may occur as a result of new information and data collected during design of the alternative. This is an engineering cost estimate that is expected to be within +50 to -30 percent of the actual project cost. Additional detail on the cost estimate is provided in the FS.

Cost Estimate Assumptions. The following assumptions were used in estimating the baseline cost:

- Excavating approximately 120 cy (216 tons) of soil
- Disposing of all soil as MA99 waste under a MADEP BOL (i.e., no hazardous waste).
- The lined stockpile/dewatering area will be approximately 50 feet by 50 feet.
- Water in the excavation and leachate from the stockpiles will be collected and treated off-site.
- The extent of excavation will be guided by field screening methods.
- Collecting approximately 10 confirmation samples (one sample per 900 sq. ft. of floor area and one sample per 30 feet of wall length) for off-site analyses.
- Off-site soil analytical costs are based on 3-day turn-around-time (analysis by the MADEP EPH Method was assumed).
- There will be minimal difficulty in implementing deed restrictions.
- Institutional control inspections will be performed once per year.
- Environmental sampling will be performed twice per year for the first three years and once per year thereafter. Environmental sampling will be terminated upon obtaining groundwater PRG concentrations for three consecutive sampling events.
- Groundwater samples will be collected at five existing monitoring wells using low-flow sampling techniques.
- Surface water samples will be collected from four locations in Cold Spring Brook.
- Groundwater and surface water samples will be analyzed for arsenic and cadmium, 1,4-DCB, and PCE (assumed USEPA Methods 6010, 8270, and 8260, respectively). Both filtered and unfiltered samples would be collected for arsenic and cadmium.
- QC samples will be collected at a frequency of one per ten regular samples (ten percent).

Cost-sensitivity Analysis. The greatest uncertainty in the cost estimate pertains to the duration that long-term environmental monitoring, groundwater-use deed restrictions, and five-year reviews would need to be maintained. To assess the effect of this uncertainty, costs for this alternative were evaluated for 7-year and 30-year environmental monitoring durations. A second significant uncertainty pertains to the volume of soil that will require excavation, specifically in regard to excavation depth. If the average depth of excavation of the area varies by +/-1 ft., the total volume excavated will change by +/- 33 percent, thereby affecting soil excavation, transportation, and disposal costs.

Decreasing the environmental sampling duration from 30 to 7 years decreases the total O&M present worth cost by approximately 45 percent, while varying the quantity of soil excavated by +/- 33 percent, changes the total capital cost by approximately 8 percent. The low range costs (33 percent less soil excavated and 7 years of environmental monitoring) and high range costs (33 percent greater soil excavated and 30-years of environmental monitoring, institutional controls, and five-year site reviews) are

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presented in Table 13. Low-range and high-range costs (\$252,103 and \$395,077) varied from the baseline present worth cost by approximately 35 percent and 2 percent, respectively.

12.2.4 Expected Outcome of Alternative III-2a

This section presents the expected outcome of Alternative III-2a in terms of land and groundwater use and risk reduction as result of the response action. Five general categories of outcome are discussed:

- Final cleanup levels and basis
- Available uses of land upon achieving soil cleanup levels
- Available uses of groundwater upon achieving cleanup levels
- Anticipated socio-economic and community revitalization effects
- Anticipated environmental and ecological benefits

Final cleanup levels and basis. The purpose of this response action is to control risks posed by direct contact with soil and ingestion of groundwater. The results of the baseline risk assessment indicate that existing contaminant concentrations in soil pose noncancer risks exceeding an HI of 1 to possible future unrestricted use residents. Contaminants in groundwater pose excess lifetime cancer risks exceeding the target risk range of 1×10^{-4} to 1×10^{-6} and an HI of 1 to possible future use commercial workers and future unrestricted use residents (Tables 2 and 6).

Table 12 identifies cleanup levels by media for COCs at AOC 57 Area 3.

Available Uses of Land Upon Achieving Soil Cleanup Levels. Alternative III-2a provides excavation to accelerate groundwater cleanup. Upland areas at Area 3 (i.e., areas with elevation greater than 228 ft. msl) are presently suitable for commercial/industrial development, or, in the absence of existing zoning, unrestricted use. Wetland/flood-plain areas (i.e., areas with elevation less than 228 ft. msl) at Area 3 do not pose unacceptable risks to recreational child visitors or construction workers; however, institutional controls will be used to control potential risks to unrestricted use residential receptors from exposure to wetland/flood-plain soil. The length of time to complete soil excavation is estimated to be 6 months.

Available Uses of Groundwater Upon Achieving Cleanup Levels. The Feasibility Study estimated that 1 to 8 years beyond the completion of the 1999 excavation may be required for groundwater beneath wetland/flood-plain areas at Area 3 to attain cleanup levels. Upon achieving cleanup levels, groundwater would be suitable for potable water use.

Anticipated Socio-economic and Community Revitalization Effects. Implementation of Alternative III-2a will allow use of AOC 57 Area 3 in a manner that is consistent with current long-term plans for commercial/industrial use of the upland and open-space/recreational use of the wetland/flood-plain.

Anticipated Environmental and Ecological Benefits. Adverse environmental and ecological effects are not anticipated if Alternative III-2a is not implemented. Beneficial environmental and ecological effects are not anticipated if Alternative III-2a is implemented.

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13.0 STATUTORY DETERMINATIONS

Under CERCLA and the NCP, the Army must select remedies that are protective of human health and the environment, attain ARARs (unless a statutory waiver is justified), are cost effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In addition, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduces the volume, toxicity, or mobility of wastes as a principal element and a bias against off-site disposal of untreated wastes. The following subsections discuss how the selected remedies meet these statutory requirements.

13.1 STATUTORY DETERMINATIONS FOR ALTERNATIVE II-3

The selected remedy for AOC 57 Area 2 is consistent with CERCLA and, to the extent practicable, the NCP. The selected remedy is protective of human health and the environment, attains ARARs, and is cost-effective. The selected remedy utilizes alternative treatment technologies and resource recovery technologies to the maximum extent practicable for this site. However, the selected remedy does not satisfy the statutory preference for treatment that permanently and significantly reduces the toxicity, mobility, or volume of hazardous substances as a principal element.

13.1.1 The Selected Remedy is Protective of Human Health and the Environment

The selected remedy for AOC 57 Area 2, Alternative II-3, will protect human health and the environment by eliminating, reducing, or controlling exposures to human and environmental receptors through engineering and institutional controls. More specifically, human exposure to soil and groundwater will be limited through excavation of wetland/flood-plain soils with soil treatment/disposal at an approved facility and through establishment of institutional controls to limit exposure to groundwater.

The selected remedy will reduce potential human-health risk levels for soil exposure such that they do not exceed EPA's acceptable risk range of 10^{-4} to 10^{-6} for incremental carcinogenic risk and such that the non-carcinogenic hazard is below a HI of 1. It will reduce potential human-health risk levels for groundwater exposure to protective ARARs levels (*i.e.*, the remedy will attain ARARs).

Adverse ecological effects from exposure to site-related contaminants and media were not identified.

Implementation of the selected remedy will not pose any unacceptable short-term risks or cause any cross-media impacts.

13.1.2 The Selected Remedy Attains Applicable or Relevant and Appropriate Requirements

The selected remedy for AOC 57 Area 2 will attain all applicable or relevant and appropriate federal and state requirements. No waivers are required. ARARs for AOC 57 Area 2 were identified and discussed in the FS (Sections 3.0 and 6.0). Tables 14, 15, and 16 in Appendix B of this Record of Decision summarizes the ARARs for the selected remedy, including the regulatory citation, a brief summary of the requirement, and how it will be attained.

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As indicted in Table 16, excavated materials from AOC 57 Area 2 will be evaluated to determine whether the materials are subject to RCRA Land Disposal Restrictions. If so, the materials will be treated in accordance with the Land Disposal Restrictions prior to disposal at an off-post facility.

13.1.3 The Selected Remedial Action is Cost-Effective

In the Army's judgment, the selected remedy is cost-effective because the remedy's costs are proportional to its overall effectiveness (see 40 CFR 300.430(f)(1)(ii)(D)). This determination was made by evaluating the overall effectiveness of those alternatives that satisfied the threshold criteria (i.e., that are protective of human health and the environment and attain all federal and any more stringent state ARARs, or as appropriate, waive ARARs). Overall effectiveness was evaluated by assessing three of the five balancing criteria: long-term effectiveness and permanence; reduction in toxicity, mobility, and volume through treatment; and short-term effectiveness, in combination. The overall effectiveness of each alternative then was compared to the alternative's costs to determine cost-effectiveness. The relationship of the overall effectiveness of this remedial alternative was determined to be proportional to its costs and hence represents a reasonable value for the money to be spent.

The estimated costs of this remedial alternative are:

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| Estimated Capital Cost: | \$348,645 |
| Estimated Operation and Maintenance Cost (Present Worth*): | \$185,064 |
| Contingency: | \$133,427 |
| Estimated Total Cost: | \$667,137 |

*Present worth based on 7 percent discount rate, for 30 years.

13.1.4 The Selected Remedy Utilizes Permanent Solutions and Alternative Treatment or Resource Recovery Technologies to the Maximum Extent Practicable

After the Army identified those alternatives that attain or, as appropriate, waive ARARs and that are protective of human health and the environment, the Army determined which alternative made use of permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. This determination was made by deciding which one of the identified alternatives provides the best balance of tradeoffs among alternatives in terms of: (1) long-term effectiveness and permanence; (2) reduction of toxicity, mobility, or volume through treatment; (3) short-term effectiveness; (4) implementability; and (5) cost. The balancing test emphasized long-term effectiveness and permanence and the reduction of toxicity, mobility, or volume through treatment, and considered the preference for treatment as a principal element, the bias against offsite land disposal of untreated waste, and community and state acceptance. The Army believes the selected remedy provides the best balance of tradeoffs among the alternatives that are protective and attain ARARs.

13.1.5 The Selected Remedy Does Not Satisfy the Preference for Treatment as a Principal Element

The principal element of the selected remedy is excavation of contaminated soil. This element, in conjunction with previous removals, will complete addressing the primary threat at Area 2 which was contaminated soil that was contributing to groundwater contamination. More complex remedies utilizing treatment were not considered practical for Area 2.

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13.1.6 Five-Year Review Requirements

Because Alternative II-3 will result in contaminants remaining on-site above concentrations that allow for unrestricted use and unrestricted exposure, a statutory review will be performed within five years after initiation of remedial action to assess whether the remedy remains or will remain protective of human health and the environment. Subsequent five-year reviews will be performed as long as hazardous substances, pollutants, or contaminants remain on-site above concentrations that allow for unrestricted exposure and unlimited use.

The five-year reviews may be discontinued when no hazardous substances, pollutants, or contaminants remain at AOC 57 Area 2 above concentrations that allow for unrestricted use and unrestricted exposure. This determination will be made after a five-year review documents that contaminants are at acceptable levels.

13.2 STATUTORY DETERMINATIONS FOR ALTERNATIVE III-2A

The selected remedy for AOC 57 Area 3 is consistent with CERCLA and, to the extent practicable, the NCP. The selected remedy is protective of human health and the environment, attains ARARs, and is cost-effective. The selected remedy utilizes alternative treatment technologies and resource recovery technologies to the maximum extent practicable for this site. However, the selected remedy does not satisfy the statutory preference for treatment that permanently and significantly reduces the toxicity, mobility, or volume of hazardous substances as a principal element.

13.2.1 The Selected Remedy is Protective of Human Health and the Environment

The selected remedy for AOC 57 Area 3, Alternative III-2a will protect human health and the environment by eliminating, reducing, or controlling exposures to human and environmental receptors through engineering and institutional controls. More specifically, human exposure to contaminated groundwater will be limited through excavation of wetland/flood-plain soils that contribute to groundwater contamination, with soil treatment/disposal at an off-site treatment, storage, or disposal facility, and through establishment of institutional controls to limit exposure to groundwater.

The selected remedy will reduce potential human-health risk levels for groundwater exposure to protective ARARs levels (*i.e.*, the remedy will attain ARARs).

Adverse ecological effects from exposure to site-related contaminants and media were not identified.

Implementation of the selected remedy will not pose any unacceptable short-term risks or cause any cross-media impacts.

13.2.2. The Selected Remedy Attains Applicable or Relevant and Appropriate Requirements

The selected remedy for AOC 57 Area 3 will attain all applicable or relevant and appropriate federal and state requirements. No waivers are required. ARARs for AOC 57 Area 3 were identified and discussed in

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the FS (Sections 3.0 and 6.0). Tables 17, 18, and 19 in Appendix B of this Record of Decision summarizes the ARARs for the selected remedy, including the regulatory citation, a brief summary of the requirement, and how it will be attained.

As indicted in Table 19, excavated materials from AOC 57 Area 3 will be evaluated to determine whether the materials are subject to RCRA Land Disposal Restrictions. If so, the materials will be treated in accordance with the Land Disposal Restrictions prior to disposal at an off-post facility.

13.2.3 The Selected Remedial Action is Cost-Effective

In the Army's judgment, the selected remedy is cost-effective because the remedy's costs are proportional to its overall effectiveness (see 40 CFR 300.430(f)(1)(ii)(D)). This determination was made by evaluating the overall effectiveness of those alternatives that satisfied the threshold criteria (i.e., that are protective of human health and the environment and attain all federal and any more stringent state ARARs, or as appropriate, waive ARARs). Overall effectiveness was evaluated by assessing three of the five balancing criteria: long-term effectiveness and permanence; reduction in toxicity, mobility, and volume through treatment; and short-term effectiveness, in combination. The overall effectiveness of each alternative then was compared to the alternative's costs to determine cost-effectiveness. The relationship of the overall effectiveness of this remedial alternative was determined to be proportional to its costs and hence represents a reasonable value for the money to be spent.

The estimated costs of this remedial alternative are:

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| Estimated Capital Cost: | \$80,669 |
| Estimated Operation and Maintenance Cost (Present Worth*): | \$222,972 |
| Contingency: | \$77,455 |
| Estimated Total Cost: | \$387,276 |

*Present worth based on 7 percent discount rate, for 30 years.

13.2.4 The Selected Remedy Utilizes Permanent Solutions and Alternative Treatment or Resource Recovery Technologies to the Maximum Extent Practicable

After the Army identified those alternatives that attain or, as appropriate, waive ARARs and that are protective of human health and the environment, the Army determined which alternative made use of permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. This determination was made by deciding which one of the identified alternatives provides the best balance of tradeoffs among alternatives in terms of: (1) long-term effectiveness and permanence; (2) reduction of toxicity, mobility, or volume through treatment; (3) short-term effectiveness; (4) implementability; and (5) cost. The balancing test emphasized long-term effectiveness and permanence and the reduction of toxicity, mobility, or volume through treatment, and considered the preference for treatment as a principal element, the bias against off-site land disposal of untreated waste, and community and state acceptance. The Army believes the selected remedy provides the best balance of tradeoffs among the alternatives that are protective and attain ARARs.

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13.2.5 The Selected Remedy Satisfies the Preference for Treatment as a Principal Element

The principal element of the selected remedy is excavation of contaminated soil. This element, in conjunction with previous removals, will complete addressing the primary threat at Area 3 which was contaminated soil that was contributing to groundwater contamination. More complex remedies utilizing treatment were not considered practical for Area 3.

13.2.6 Five-Year Review Requirements

Because Alternative III-2a will result in contaminants remaining on-site above concentrations that allow for unrestricted use and unrestricted exposure, a statutory review will be performed within five years after initiation of remedial action to assess whether the remedy remains or will remain protective of human health and the environment. Subsequent five-year reviews will be performed as long as hazardous substances, pollutants, or contaminants remain on-site above concentrations that allow for unrestricted exposure and unlimited use.

The five-year reviews may be discontinued when no hazardous substances, pollutants, or contaminants remain at AOC 57 Area 3 above concentrations that allow for unrestricted use and unrestricted exposure. This determination will be made after a five-year review documents that contaminants are at acceptable levels.

14.0 DOCUMENTATION OF SIGNIFICANT CHANGES

The Army released a Proposed Plan for remedial action at AOC 57 Areas 2 and 3 in February 2001. The Proposed Plan identified Alternative II-3: Excavation (for Possible Future Use) and Institutional Controls as the Preferred Alternative for Area 2, and Alternative III-2: Limited Action as the Preferred Alternative for Area 3. The Proposed Plan also identified an excavation alternative for Area 3 (Alternative III-3: Excavation [For Unrestricted Use] and Institutional Controls). During the public comment period, the Army received numerous comments requesting that a more aggressive approach than limited action be implemented at Area 3 to speed up groundwater cleanup. In response to these comments, the Army developed, and has decided to implement, Alternative III-2a: Excavation (to Accelerate Groundwater Cleanup) and Institutional Controls at Area 3.

Alternative III-2a combines the institutional controls contained in Alternative III-2: Limited Action with excavation activities similar to those contained in Alternative III-3. This new alternative was named Alternative III-2a: Excavation (to Accelerate Groundwater Cleanup) and Institutional Controls because it was developed to speed groundwater cleanup, not to enable unrestricted/residential use.

There have been no significant changes made to Alternative II-3, the preferred alternative for AOC 57 Area 2, presented in the Proposed Plan.

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15.0 STATE ROLE

The Commonwealth of Massachusetts Department of Environmental Protection has reviewed the various alternatives and has indicated its support for the selected remedies. The Commonwealth has reviewed the RI and FS reports to determine if the selected remedies are in compliance with applicable or relevant and appropriate Commonwealth environmental and facility siting laws and regulations. A copy of the letter of concurrence from the Commonwealth of Massachusetts is attached as Appendix E of this Record of Decision.

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| ABB-ES | ABB Environmental Services, Inc. |
| ADL | Arthur D. Little, Inc. |
| AOC | Area of Contamination |
| AREE | area requiring environmental evaluation |
| ARAR | applicable or relevant and appropriate requirement |
| BERA | Baseline Ecological Risk Assessment |
| bgs | below ground surface |
| BRAC | Base Realignment and Closure |
| CAC | Citizens Advisory Committee |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CMR | Code of Massachusetts Regulations |
| COC | chemical of concern |
| CPC | chemical of potential concern |
| cy | cubic yard(s) |
| 1,2-DCB | 1,2-dichlorobenzene |
| 1,4-DCB | 1,4-dichlorobenzene |
| DCE | dichloroethene |
| DDD | 2,2-bis(para-chlorophenyl)-1,1-dichloroethane |
| DDE | 2,2-bis(para-chlorophenyl)-1,1-dichloroethene |
| DDT | 2,2-bis(para-chlorophenyl)-1,1,1-trichloroethane |
| EPH | extractable petroleum hydrocarbons |
| ESMA | Excavated Soils Management Area |
| ft. | feet or foot |
| FS | Feasibility Study |
| HI | hazard index |
| HLA | Harding Lawson Associates |
| LTMP | Long-term Monitoring Plan |
| MADEP | Massachusetts Department of Environmental Protection |
| MCL | Maximum Contaminant Level |
| MCP | Massachusetts Contingency Plan |
| mg/kg | milligrams per kilogram |
| MMCL | Massachusetts Maximum Contaminant Level |
| msl | mean sea level |
| NAPL | nonaqueous phase liquid |
| NCP | National Oil and Hazardous Substances Pollution Contingency Plan |
| NPL | National Priorities List |
| OHM | OHM Remediation Services Corp. |

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| PAH | polycyclic aromatic hydrocarbon |
| PCB | polychlorinated biphenyl |
| PCE | tetrachloroethene |
| PID | photoionization detector |
| PRE | preliminary risk evaluation |
| PRG | preliminary remediation goals |
| RAB | Restoration Advisory Board |
| RAO | remedial action objectives |
| RfD | reference dose |
| RFTA | Reserve Forces Training Area |
| RI | Remedial Investigation |
| RME | reasonable maximum exposure |
| SA | Study Area |
| SARA | Superfund Amendments and Reauthorization Act |
| SI | Site Investigation |
| SVOC | semivolatile organic compound |
| TCE | trichloroethene |
| TEX | toluene, ethylbenzene, and xylenes |
| TPH | total petroleum hydrocarbons |
| TRC | Technical Review Committee |
| TSS | total suspended solids |
| µg/g | micrograms per gram |
| µg/L | micrograms per liter |
| USEPA | U.S. Environmental Protection Agency |
| UST | underground storage tank |
| VPH | volatile petroleum hydrocarbons |
| VOC | volatile organic compound |

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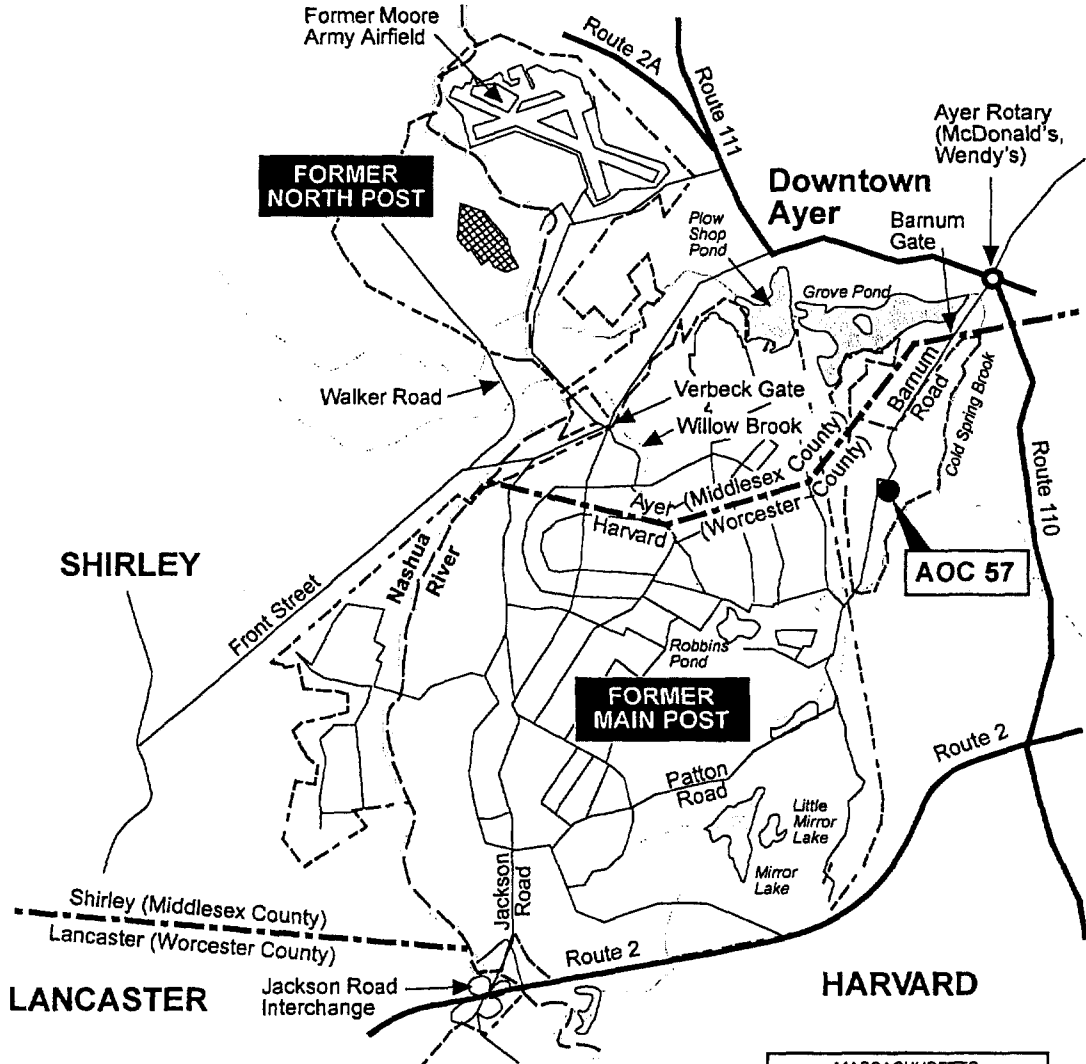
HARDING ESE

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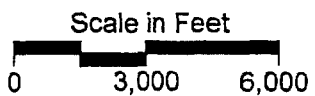
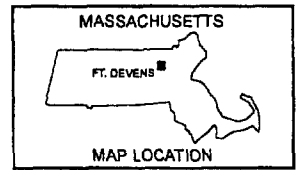
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APPENDIX A - FIGURES

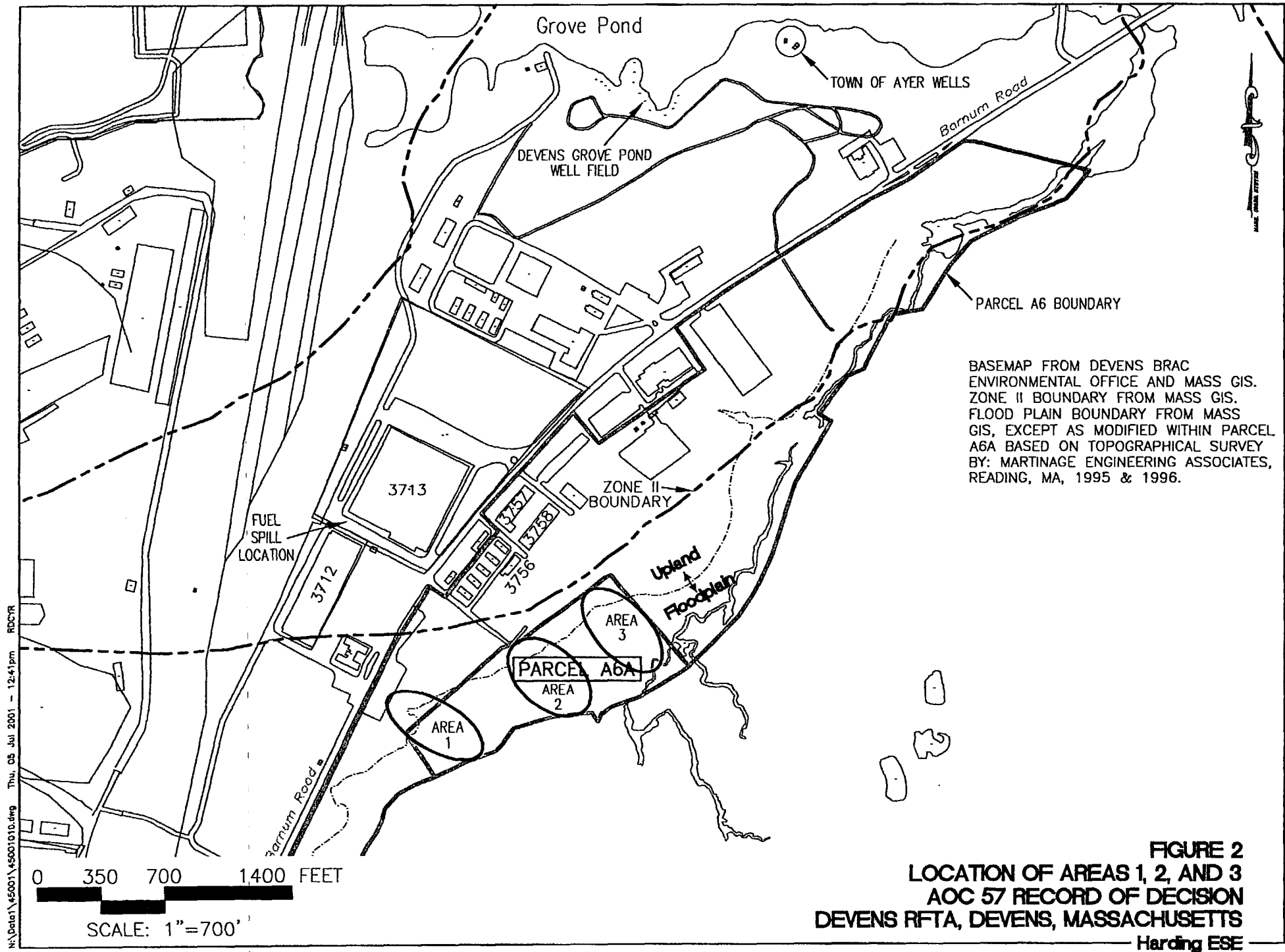


Legend

- Site Location
- Installation Boundary
- - - - - Town Line
- Pond/Lake
- Roads/Highway
- ~ Brook



**FIGURE 1
LOCATION OF AOC 57
AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS**



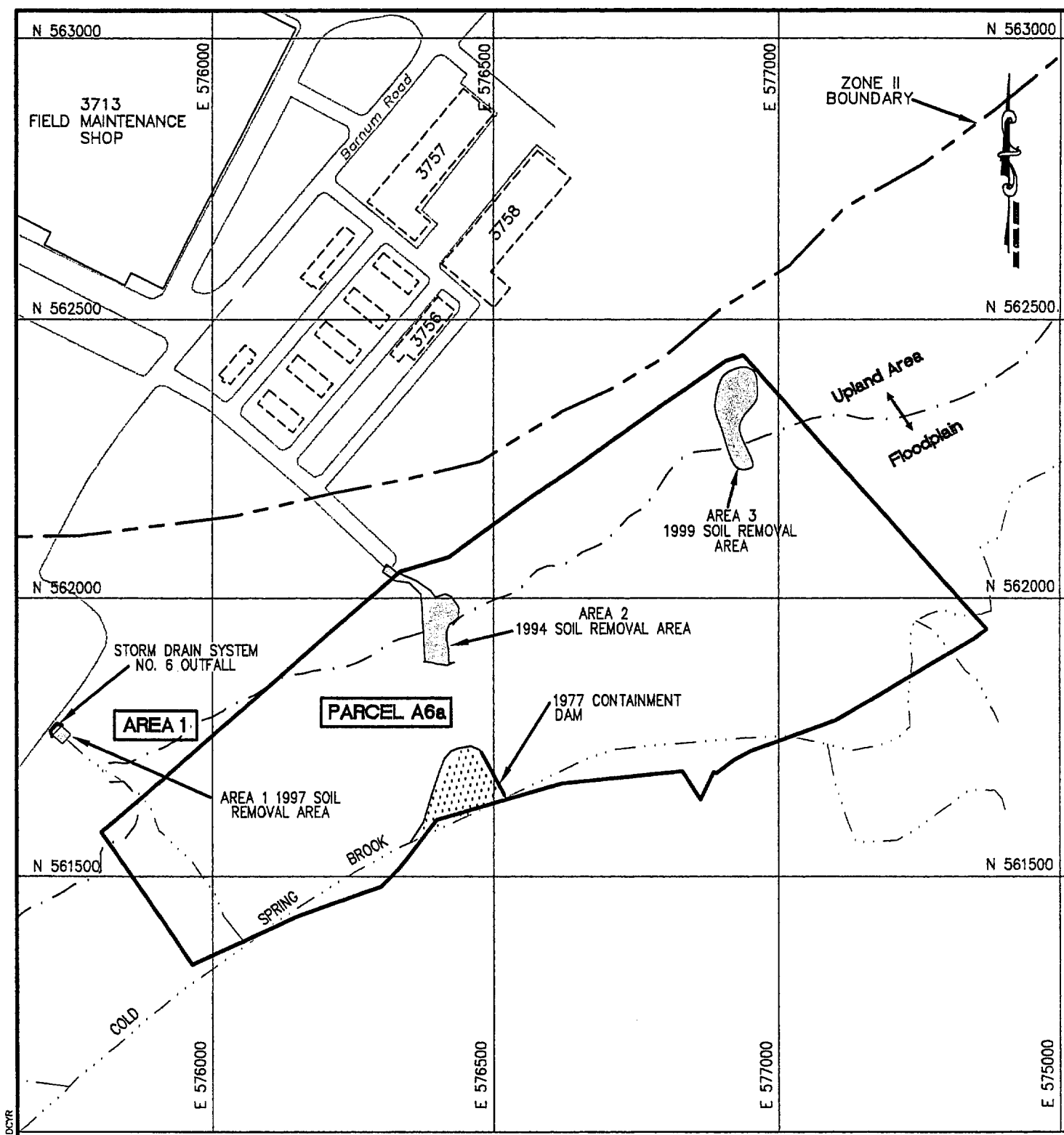
BASEMAP FROM DEVENS BRAC ENVIRONMENTAL OFFICE AND MASS GIS. ZONE II BOUNDARY FROM MASS GIS. FLOOD PLAIN BOUNDARY FROM MASS GIS, EXCEPT AS MODIFIED WITHIN PARCEL A6A BASED ON TOPOGRAPHICAL SURVEY BY: MARTINAGE ENGINEERING ASSOCIATES, READING, MA, 1995 & 1996.

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0 350 700 1400 FEET

SCALE: 1"=700'

FIGURE 2
LOCATION OF AREAS 1, 2, AND 3
AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS
 Harding ESE



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BASEMAP FROM DEVENS BRAC ENVIRONMENTAL OFFICE AND MASS GIS. ZONE II BOUNDARY FROM MASS GIS. FLOOD PLAIN BOUNDARY FROM MASS GIS, EXCEPT AS MODIFIED WITHIN PARCEL A6A BASED ON TOPOGRAPHICAL SURVEY BY: MARTINAGE ENGINEERING ASSOCIATES, READING, MA, 1995 & 1996. DEPICTED DATUM IS NAD 27.

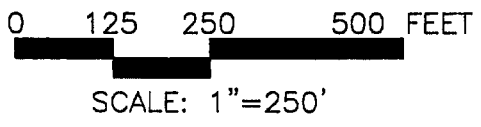
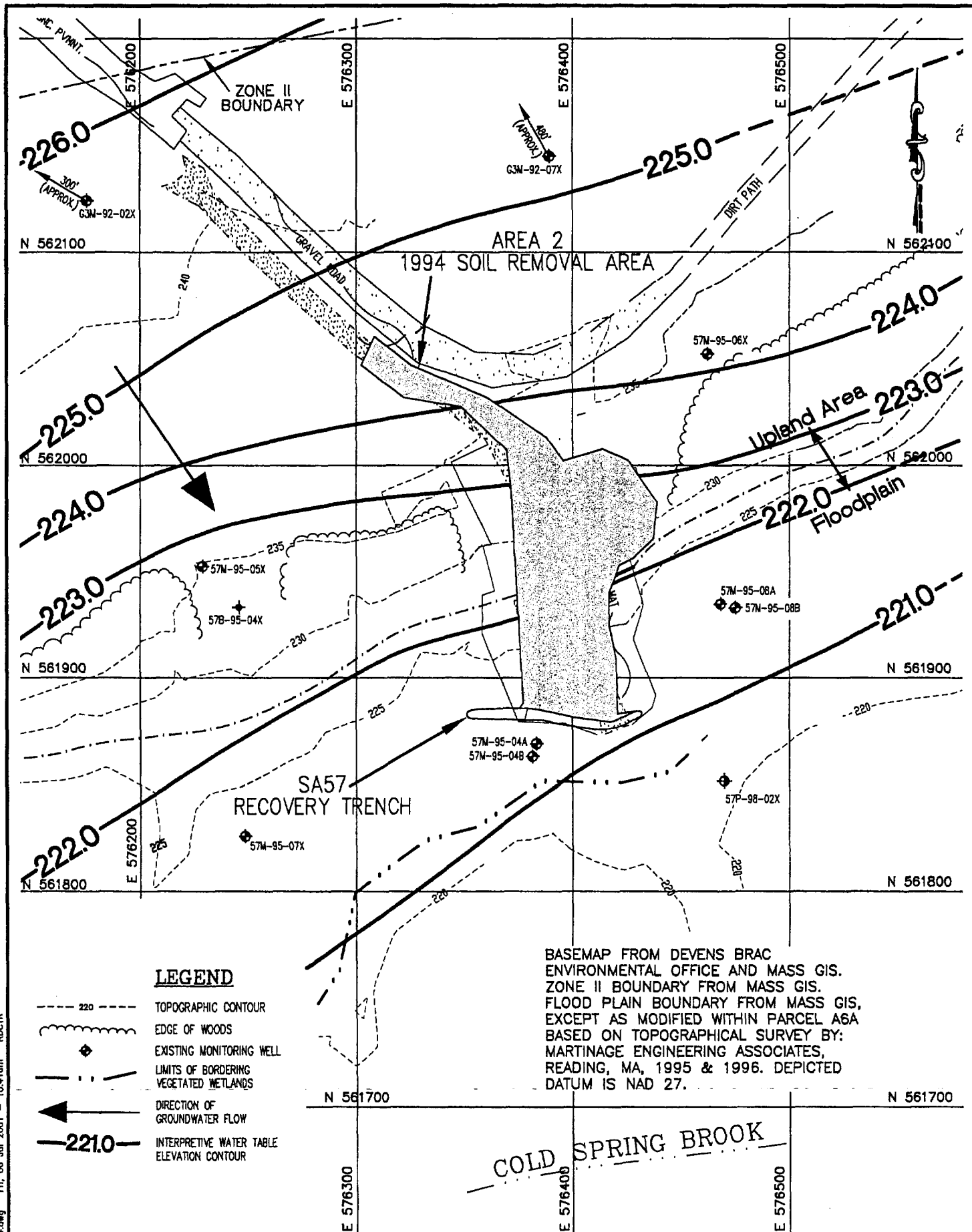


FIGURE 3
AREA 1, 2, AND 3 SITE MAP
AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS
 Harding ESE

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LEGEND

- TOPOGRAPHIC CONTOUR
- EDGE OF WOODS
- EXISTING MONITORING WELL
- LIMITS OF BORDERING VEGETATED WETLANDS
- DIRECTION OF GROUNDWATER FLOW
- INTERPRETIVE WATER TABLE ELEVATION CONTOUR

BASEMAP FROM DEVENS BRAC ENVIRONMENTAL OFFICE AND MASS GIS. ZONE II BOUNDARY FROM MASS GIS. FLOOD PLAIN BOUNDARY FROM MASS GIS, EXCEPT AS MODIFIED WITHIN PARCEL A6A BASED ON TOPOGRAPHICAL SURVEY BY: MARTINAGE ENGINEERING ASSOCIATES, READING, MA, 1995 & 1996. DEPICTED DATUM IS NAD 27.

COLD SPRING BROOK

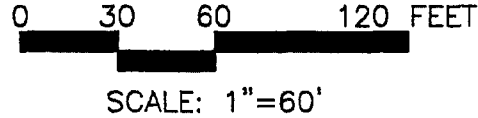
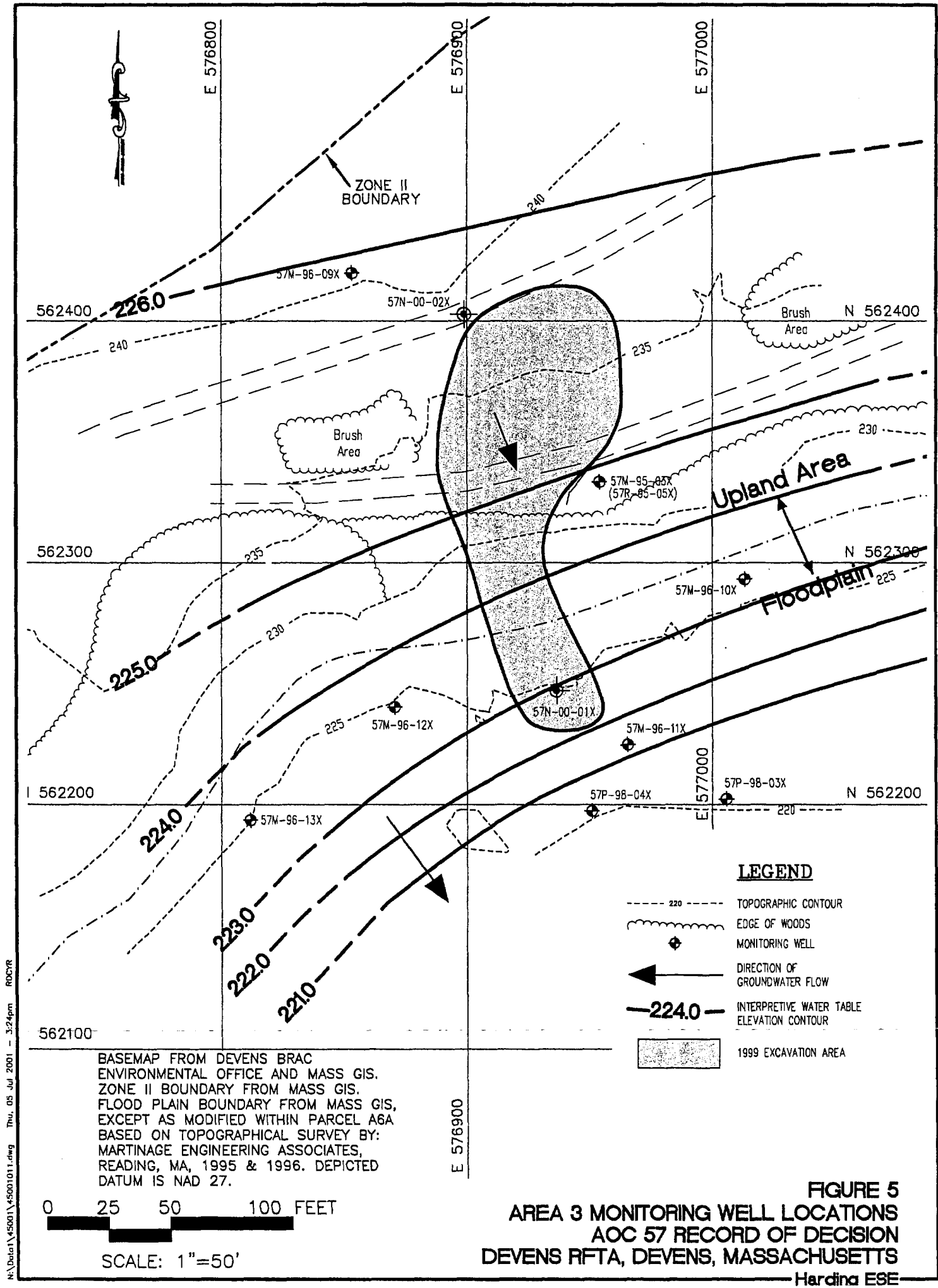


FIGURE 4
AREA 2 MONITORING WELL LOCATIONS
AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

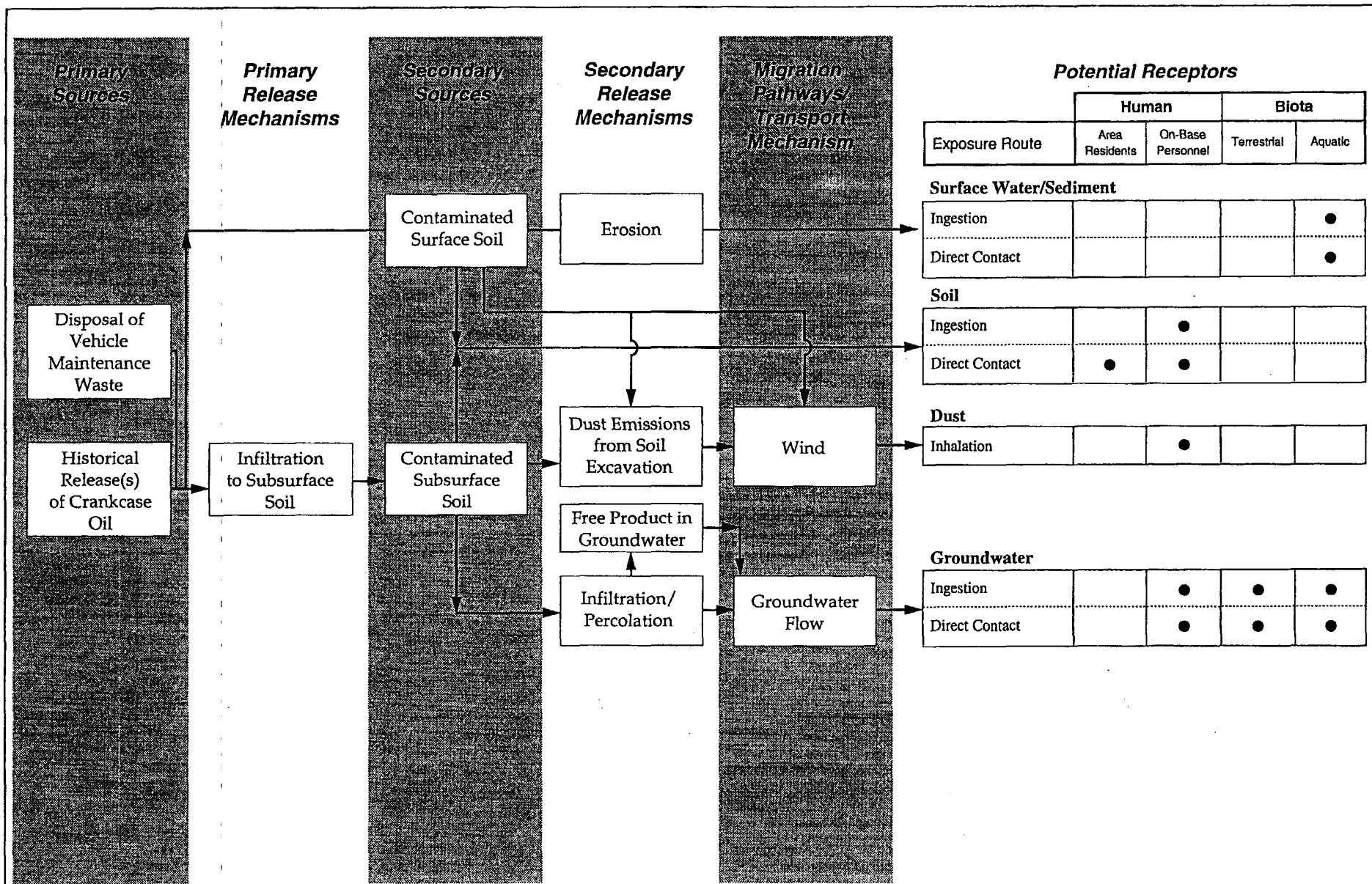


BASEMAP FROM DEVENS BRAC ENVIRONMENTAL OFFICE AND MASS GIS. ZONE II BOUNDARY FROM MASS GIS. FLOOD PLAIN BOUNDARY FROM MASS GIS, EXCEPT AS MODIFIED WITHIN PARCEL A6A BASED ON TOPOGRAPHICAL SURVEY BY: MARTINAGE ENGINEERING ASSOCIATES, READING, MA, 1995 & 1996. DEPICTED DATUM IS NAD 27.

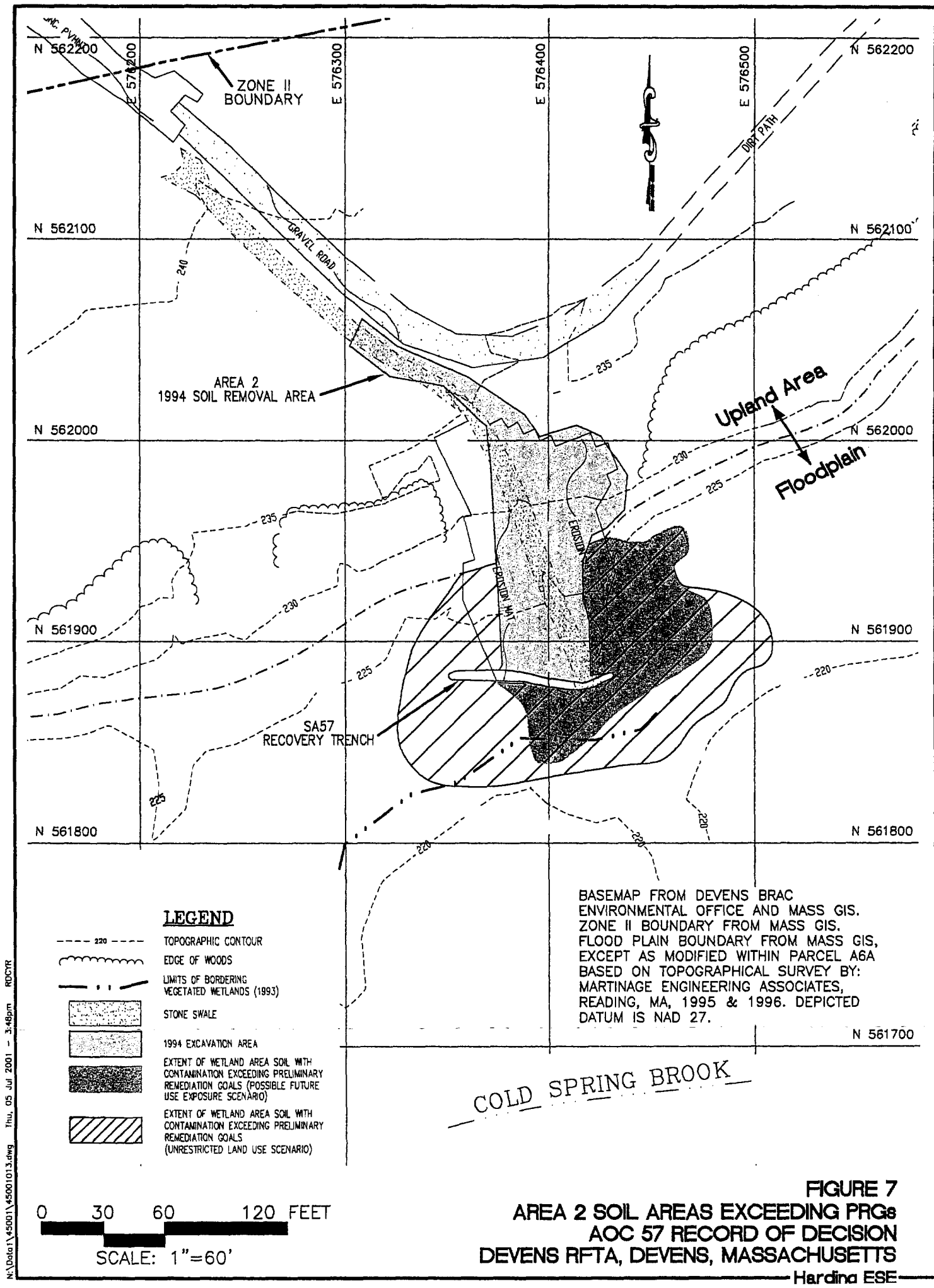
0 25 50 100 FEET
SCALE: 1"=50'

FIGURE 5
AREA 3 MONITORING WELL LOCATIONS
AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS
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**FIGURE 6
CONCEPTUAL SITE MODEL
AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MA**



LEGEND

- TOPOGRAPHIC CONTOUR
- EDGE OF WOODS
- LIMITS OF BORDERING VEGETATED WETLANDS (1993)
- STONE SWALE
- 1994 EXCAVATION AREA
- EXTENT OF WETLAND AREA SOIL WITH CONTAMINATION EXCEEDING PRELIMINARY REMEDIATION GOALS (POSSIBLE FUTURE USE EXPOSURE SCENARIO)
- EXTENT OF WETLAND AREA SOIL WITH CONTAMINATION EXCEEDING PRELIMINARY REMEDIATION GOALS (UNRESTRICTED LAND USE SCENARIO)

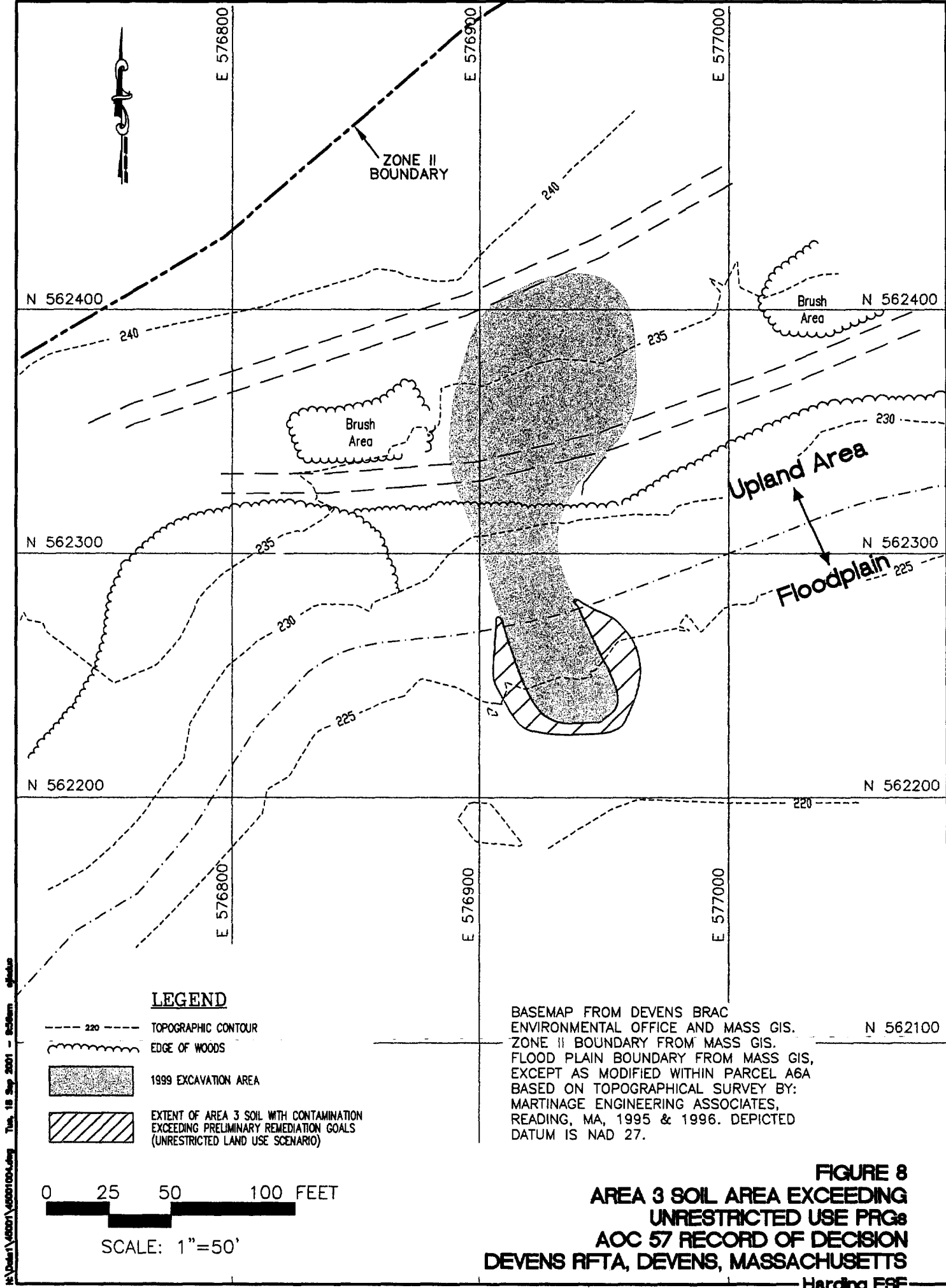
BASEMAP FROM DEVENS BRAC ENVIRONMENTAL OFFICE AND MASS GIS. ZONE II BOUNDARY FROM MASS GIS. FLOOD PLAIN BOUNDARY FROM MASS GIS, EXCEPT AS MODIFIED WITHIN PARCEL A6A BASED ON TOPOGRAPHICAL SURVEY BY: MARTINAGE ENGINEERING ASSOCIATES, READING, MA, 1995 & 1996. DEPICTED DATUM IS NAD 27.

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SCALE: 1"=60'

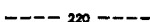



COLD SPRING BROOK

FIGURE 7
AREA 2 SOIL AREAS EXCEEDING PRGs
AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

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LEGEND

-  220 TOPOGRAPHIC CONTOUR
-  EDGE OF WOODS
-  1999 EXCAVATION AREA
-  EXTENT OF AREA 3 SOIL WITH CONTAMINATION EXCEEDING PRELIMINARY REMEDIATION GOALS (UNRESTRICTED LAND USE SCENARIO)

BASEMAP FROM DEVENS BRAC ENVIRONMENTAL OFFICE AND MASS GIS.
 ZONE II BOUNDARY FROM MASS GIS.
 FLOOD PLAIN BOUNDARY FROM MASS GIS, EXCEPT AS MODIFIED WITHIN PARCEL A6A
 BASED ON TOPOGRAPHICAL SURVEY BY: MARTINAGE ENGINEERING ASSOCIATES, READING, MA, 1995 & 1996. DEPICTED DATUM IS NAD 27.

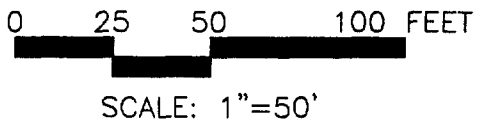
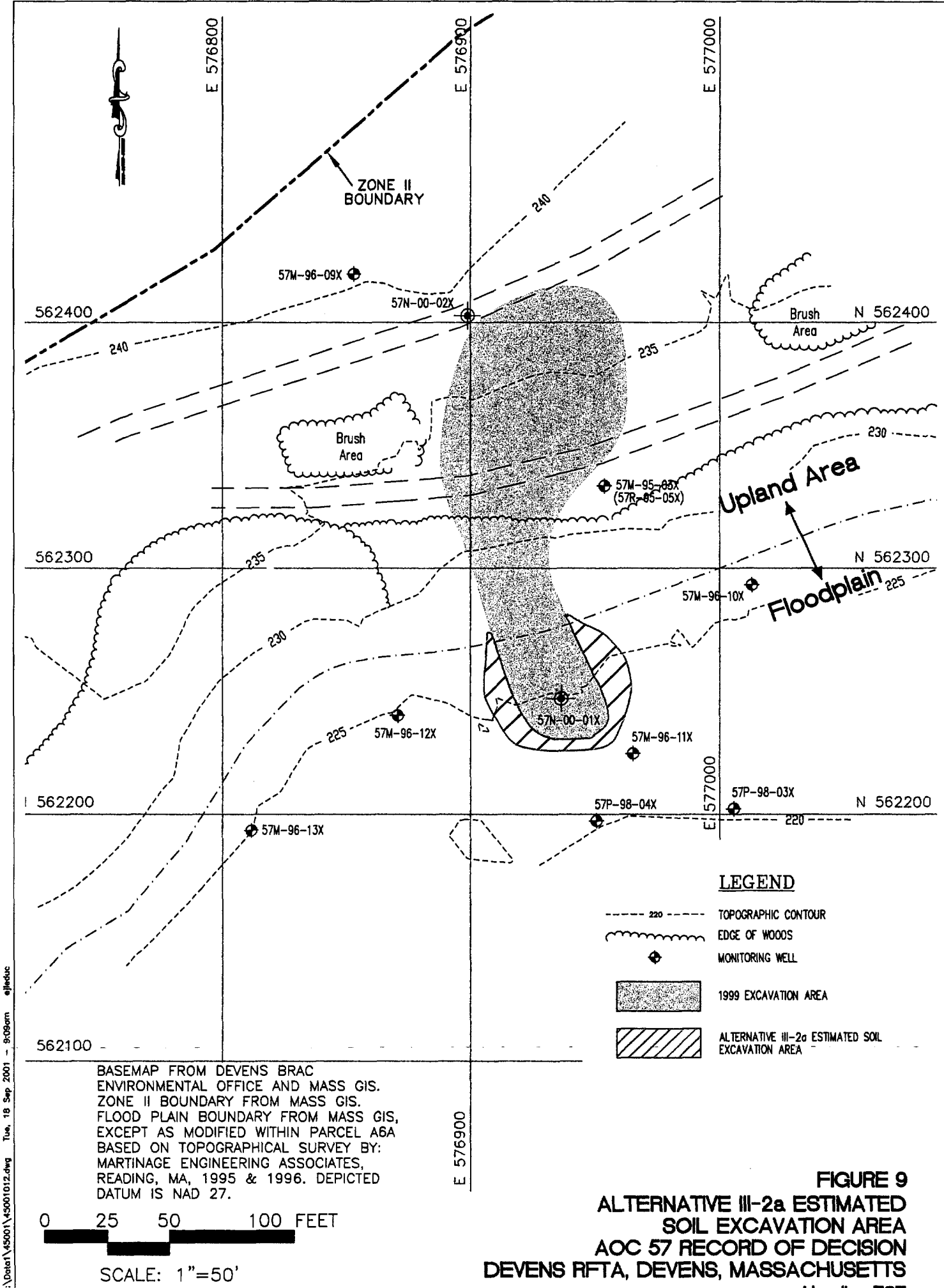


FIGURE 8
AREA 3 SOIL AREA EXCEEDING UNRESTRICTED USE PRGs
AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

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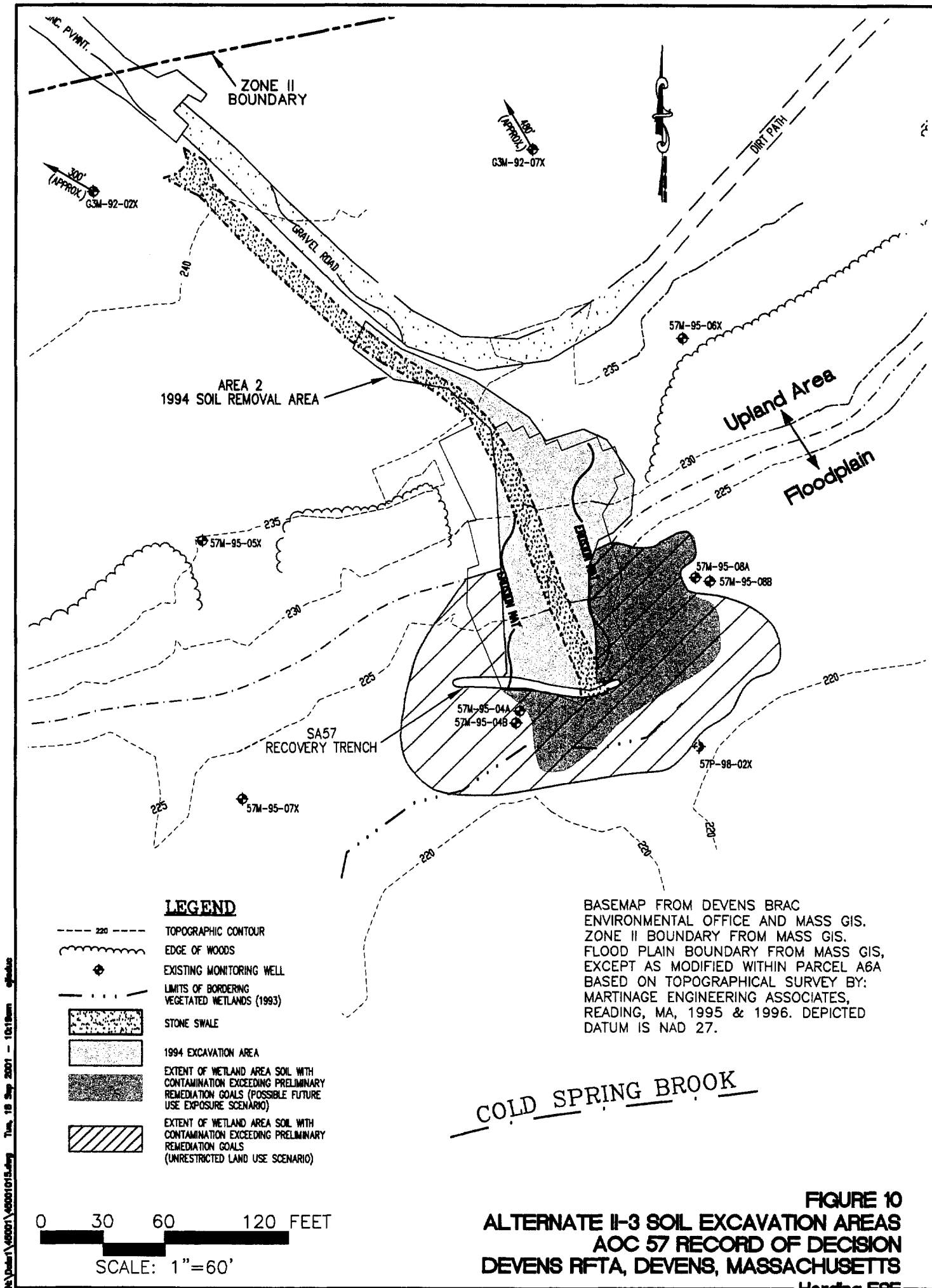


BASEMAP FROM DEVENS BRAC ENVIRONMENTAL OFFICE AND MASS GIS. ZONE II BOUNDARY FROM MASS GIS. FLOOD PLAIN BOUNDARY FROM MASS GIS, EXCEPT AS MODIFIED WITHIN PARCEL A6A BASED ON TOPOGRAPHICAL SURVEY BY: MARTINAGE ENGINEERING ASSOCIATES, READING, MA, 1995 & 1996. DEPICTED DATUM IS NAD 27.

- LEGEND**
- 220 --- TOPOGRAPHIC CONTOUR
 - ~~~~~ EDGE OF WOODS
 - ◆ MONITORING WELL
 - ▨ 1999 EXCAVATION AREA
 - ▩ ALTERNATIVE III-2a ESTIMATED SOIL EXCAVATION AREA

FIGURE 9
ALTERNATIVE III-2a ESTIMATED SOIL EXCAVATION AREA
AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS
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**FIGURE 10
ALTERNATE II-3 SOIL EXCAVATION AREAS
AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS**

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APPENDIX B - TABLES

**TABLE 1
SUMMARY OF AOC 57 AREAS 2 AND 3 RISK ASSESSMENT SCENARIOS**

**AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS**

| Subarea And Receptor | Evaluation Scenario | | | | | | | | |
|---|--------------------------------------|----------------------------------|--|---|-------------------------------------|---|--|--|--------------------------|
| | Incidental Ingestion of Surface Soil | Dermal Contact with Surface Soil | Inhalation of Particulates from Surface soil | Incidental Ingestion of Subsurface Soil | Dermal Contact with Subsurface Soil | Inhalation of Particulates from Subsurface Soil | Incidental Ingestion of Sediment and Surface Water | Dermal Contact with Sediment and Surface Water | Ingestion of Groundwater |
| <u>Upland (Industrial) Area</u> | | | | | | | | | |
| Current/Future Land Use | | | | | | | | | |
| Maintenance Worker | X | X | X | | | | | | |
| Possible Furture Land Use | | | | | | | | | |
| Construction Worker | X | X | X | X | X | X | | | |
| Commercial Worker | X | X | X | | | | | | X |
| Unrestricted Future Land Use | | | | | | | | | |
| Adult Resident | X | X | X | X | X | X | | | X |
| Child Resident | X | X | X | X | X | X | | | |
| <u>Flood Plain (Recreational) Area</u> | | | | | | | | | |
| Current/Future Land Use | | | | | | | | | |
| Recreational Child | X | X | | | | | X | X | |
| Possible Furture Land Use | | | | | | | | | |
| Construction Worker | X | X | X | X | X | X | | | |
| Unrestricted Future Land Use | | | | | | | | | |
| Adult Resident | X | X | X | X | X | X | | | X |
| Child Resident | X | X | X | X | X | X | | | |

**TABLE 2
QUANTITATIVE HUMAN-HEALTH RISK SUMMARY**

**AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS**

| | CENTRAL TENDENCY | | RME | |
|--|-------------------------|--------------------------|-------------------------|--------------------------|
| | Total Cancer Risk | Total Hazard Index | Total Cancer Risk | Total Hazard Index |
| AREA 2 UPLAND (INDUSTRIAL) AREA | | | | |
| CURRENT LAND USE | | | | |
| Maintenance Worker - Surface Soil | | | | |
| Incidental Ingestion of Surface Soil: Maintenance Worker | 2E-07 | 0.007 | 2E-06 | 0.03 |
| Dermal Contact with Surface Soil: Maintenance Worker | 8E-09 | 0.001 | 6E-08 | 0.002 |
| Inhalation of Particulates from Surface Soil: Maintenance Worker | <u>3E-10</u> | <u>0.0002</u> | <u>2E-09</u> | <u>0.0007</u> |
| Receptor Total: Maintenance Worker | 2E-07 | 0.008 | 2E-06 | 0.03 |
| POSSIBLE FUTURE LAND USE | | | | |
| Commercial/Industrial Worker - Surface Soil | | | | |
| Incidental Ingestion of Surface Soil: Commercial/Industrial Worker | 9E-07 | 0.04 | 7E-06 | 0.08 |
| Dermal Contact with Surface Soil: Commercial/Industrial Worker | 5E-08 | 0.01 | 2E-07 | 0.01 |
| Inhalation of Particulates from Surface Soil: Commercial/Industrial Worker | <u>2E-09</u> | <u>0.002</u> | <u>6E-09</u> | <u>0.002</u> |
| Total | 1E-06 | 0.05 | 7E-06 | 0.09 |
| Commercial/Industrial Worker - Groundwater | | | | |
| Ingestion of Groundwater: Commercial/Industrial Worker | <u>NE</u> | <u>0.07</u> | <u>NE</u> | <u>0.07</u> |
| Total | NE | 0.07 | NE | 0.07 |
| Receptor Total: Commercial/Industrial Worker | 1E-06 | 0.1 | 7E-06 | 0.2 |
| Construction Worker - Surface Soil | | | | |
| Incidental Ingestion of Surface Soil: Construction Worker | 5E-07 | 0.4 | 1E-06 | 0.4 |
| Dermal Contact with Surface Soil: Construction Worker | 5E-08 | 0.05 | 1E-07 | 0.05 |
| Inhalation of Particulates from Surface Soil: Construction Worker | <u>2E-10</u> | <u>0.007</u> | <u>4E-10</u> | <u>0.007</u> |
| Total | 6E-07 | 0.5 | 1E-06 | 0.5 |
| Construction Worker - Subsurface Soil | | | | |
| Incidental Ingestion of Subsurface Soil: Construction Worker | 2E-07 | 0.2 | 5E-07 | 0.2 |
| Dermal Contact with Subsurface Soil: Construction Worker | 2E-08 | 0.01 | 5E-08 | 0.01 |
| Inhalation of Particulates from Subsurface Soil: Construction Worker | <u>1E-10</u> | <u>0.003</u> | <u>2E-10</u> | <u>0.003</u> |
| Total | 2E-07 | 0.2 | 6E-07 | 0.2 |
| Receptor Total: Construction Worker | 8.E-07 | 0.6 | 2.E-06 | 0.7 |
| UNRESTRICTED LAND USE | | | | |
| Adult Resident - Surface Soil | | | | |
| Incidental Ingestion of Surface Soil: Adult Resident | | | 6E-06 | 0.09 |
| Dermal Contact with Surface Soil: Adult Resident | | | 9E-07 | 0.04 |
| Inhalation of Particulates from Surface Soil: Adult Resident | | | <u>2E-09</u> | <u>0.001</u> |
| Total | Not Evaluated* | | 7E-06 | 0.1 |
| Adult Resident - Subsurface Soil | | | | |
| Incidental Ingestion of Subsurface Soil: Adult Resident | | | 3E-06 | 0.02 |
| Dermal Contact with Subsurface Soil: Adult Resident | | | 4E-07 | 0.003 |
| Inhalation of Particulates from Subsurface Soil: Adult Resident | | | <u>1E-09</u> | <u>0.0004</u> |
| Total | Not Evaluated* | | 3E-06 | 0.02 |
| Adult Resident Total: Soil | | | 1.E-05 | 0.2 |
| Child Resident - Surface Soil | | | | |
| Incidental Ingestion of Surface Soil: Child Resident | | | 1E-05 | 0.8 |
| Dermal Contact with Surface Soil: Child Resident | | | 5E-06 | 0.8 |
| Inhalation of Particulates from Surface Soil: Child Resident | | | <u>6E-09</u> | <u>0.002</u> |
| Total | Not Evaluated* | | 2E-05 | 2 |
| Child Resident - Subsurface Soil | | | | |
| Incidental Ingestion of Subsurface Soil: Child Resident | | | 7E-06 | 0.2 |
| Dermal Contact with Subsurface Soil: Child Resident | | | 2E-06 | 0.1 |
| Inhalation of Particulates from Subsurface Soil: Child Resident | | | <u>7E-10</u> | <u>0.001</u> |
| Total | Not Evaluated* | | 9E-06 | 0.3 |
| Child Resident Total: Soil | | | 2.E-05 | 2 |
| Adult Resident - Groundwater | | | | |
| Ingestion of Groundwater: Adult Resident | | | <u>NE</u> | <u>0.2</u> |
| Total | Not Evaluated* | | NE | 0.2 |
| Receptor Total: Resident [a] | | | 3.E-05 | 0.4 |

**TABLE 2
QUANTITATIVE HUMAN-HEALTH RISK SUMMARY**

**AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS**

| | CENTRAL TENDENCY | | RME | |
|--|-------------------------|--------------------------|-------------------------|--------------------------|
| | Total Cancer Risk | Total Hazard Index | Total Cancer Risk | Total Hazard Index |
| AREA 2 - FLOOD PLAIN (RECREATIONAL) AREA | | | | |
| CURRENT LAND USE | | | | |
| Recreational Child - Surface Soil | | | | |
| Incidental Ingestion of Surface Soil: Recreational Child | 1E-06 | 0.04 | 5E-06 | 0.1 |
| Dermal Contact with Surface Soil: Recreational Child | <u>4E-06</u> | <u>0.3</u> | <u>8E-06</u> | <u>0.6</u> |
| Total | 5E-06 | 0.3 | 1E-05 | 0.7 |
| Recreational Child - Sediment | | | | |
| Incidental Ingestion of Sediment: Recreational Child | 2E-06 | 0.04 | 5E-06 | 0.1 |
| Dermal Contact with Sediment: Recreational Child | <u>1E-05</u> | <u>0.3</u> | <u>2E-05</u> | <u>0.6</u> |
| Total | 1E-05 | 0.3 | 3E-05 | 0.7 |
| Recreational Child - Surface Water | | | | |
| Incidental Ingestion of Surface Water: Recreational Child | 2E-06 | 0.04 | 5E-06 | 0.09 |
| Dermal Contact with Surface Water: Recreational Child | <u>5E-07</u> | <u>0.03</u> | <u>9E-07</u> | <u>0.06</u> |
| Total | 3E-06 | 0.07 | 6E-06 | 0.1 |
| Receptor Total: Recreational Child | 2E-05 | 0.7 | 5E-05 | 1 |
| POSSIBLE FUTURE LAND USE | | | | |
| Construction Worker - Surface Soil | | | | |
| Incidental Ingestion of Surface Soil: Construction Worker | 1E-06 | 1 | 3E-06 | 1 |
| Dermal Contact with Surface Soil: Construction Worker | 2E-07 | 0.3 | 4E-07 | 0.3 |
| Inhalation of Particulates from Surface Soil: Construction Worker | <u>5E-10</u> | <u>0.004</u> | <u>1E-09</u> | <u>0.004</u> |
| Total | 1E-06 | 1 | 3E-06 | 1 |
| Construction Worker - Subsurface Soil | | | | |
| Incidental Ingestion of Subsurface Soil: Construction Worker | 1E-06 | 2 | 2E-06 | 2 |
| Dermal Contact with Subsurface Soil: Construction Worker | 1E-07 | 0.3 | 1E-07 | 0.7 |
| Inhalation of Particulates from Subsurface Soil: Construction Worker | <u>7E-08</u> | <u>0.02</u> | <u>1E-07</u> | <u>0.02</u> |
| Total | 1E-06 | 3 | 2E-06 | 3 |
| Receptor Total: Construction Worker | 2.E-06 | 4 | 6.E-06 | 4 |
| UNRESTRICTED LAND USE | | | | |
| Adult Resident - Surface Soil | | | | |
| Incidental Ingestion of Surface Soil: Adult Resident | | | 2E-05 | 0.2 |
| Dermal Contact with Surface Soil: Adult Resident | | | 3E-06 | 0.1 |
| Inhalation of Particulates from Surface Soil: Adult Resident | | | <u>6E-09</u> | <u>0.0004</u> |
| Total | Not Evaluated* | | 2E-05 | 0.3 |
| Adult Resident - Subsurface Soil | | | | |
| Incidental Ingestion of Subsurface Soil: Adult Resident | | | 1E-05 | 1 |
| Dermal Contact with Subsurface Soil: Adult Resident | | | 5E-06 | 0.4 |
| Inhalation of Particulates from Subsurface Soil: Adult Resident | | | <u>8E-07</u> | <u>0.002</u> |
| Total | Not Evaluated* | | 2E-05 | 1 |
| Adult Resident Total: Soil | | | 4.E-05 | 2 |
| Child Resident - Surface Soil | | | | |
| Incidental Ingestion of Surface Soil: Child Resident | | | 4E-05 | 2 |
| Dermal Contact with Surface Soil: Child Resident | | | 2E-05 | 2 |
| Inhalation of Particulates from Surface Soil: Child Resident | | | <u>3E-09</u> | <u>0.001</u> |
| Total | Not Evaluated* | | 6E-05 | 4 |
| Child Resident - Subsurface Soil | | | | |
| Incidental Ingestion of Subsurface Soil: Child Resident | | | 3E-05 | 10 |
| Dermal Contact with Subsurface Soil: Child Resident | | | 3E-05 | 9 |
| Inhalation of Particulates from Subsurface Soil: Child Resident | | | <u>4E-07</u> | <u>0.005</u> |
| Total | Not Evaluated* | | 6E-05 | 19 |
| Child Resident Total: Soil | | | 1.E-04 | 23 |
| Adult Resident - Groundwater | | | | |
| Ingestion of Groundwater: Adult Resident | | | <u>1.E-03</u> | <u>7</u> |
| Total | Not Evaluated* | | 1E-03 | 7 |
| Receptor Total: Resident [a] | | | 1.E-03 | 9 |

**TABLE 2
QUANTITATIVE HUMAN-HEALTH RISK SUMMARY**

**AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS**

| | CENTRAL TENDENCY | | RME | |
|--|-----------------------|--------------------|-------------------|--------------------|
| | Total Cancer Risk | Total Hazard Index | Total Cancer Risk | Total Hazard Index |
| AREA 3 - UPLAND (INDUSTRIAL) AREA | | | | |
| CURRENT LAND USE | | | | |
| Maintenance Worker - Surface Soil | | | | |
| Incidental Ingestion of Surface Soil: Maintenance Worker | 3E-07 | 0.007 | 4E-06 | 0.03 |
| Dermal Contact with Surface Soil: Maintenance Worker | 2E-08 | 0.001 | 1E-07 | 0.001 |
| Inhalation of Particulates from Surface Soil: Maintenance Worker | <u>6E-10</u> | <u>0.0004</u> | <u>4E-09</u> | <u>0.0008</u> |
| Receptor Total: Maintenance Worker | 3E-07 | 0.008 | 4E-06 | 0.03 |
| POSSIBLE FUTURE LAND USE | | | | |
| Commercial/Industrial Worker - Surface Soil | | | | |
| Incidental Ingestion of Surface Soil: Commercial/Industrial Worker | 2E-06 | 0.04 | 1E-05 | 0.09 |
| Dermal Contact with Surface Soil: Commercial/Industrial Worker | 9E-08 | 0.002 | 3E-07 | 0.002 |
| Inhalation of Particulates from Surface Soil: Commercial/Industrial Worker | <u>3E-09</u> | <u>0.002</u> | <u>1E-08</u> | <u>0.002</u> |
| Total | 2E-06 | 0.04 | 1E-05 | 0.09 |
| Commercial/Industrial Worker - Groundwater | | | | |
| Ingestion of Groundwater: Commercial/Industrial Worker | <u>5E-05</u> | <u>2</u> | <u>2E-04</u> | <u>2</u> |
| Total | 5E-05 | 2 | 2E-04 | 2 |
| Receptor Total: Commercial/Industrial Worker | 5E-05 | 2 | 2E-04 | 2 |
| Construction Worker - Surface Soil | | | | |
| Incidental Ingestion of Surface Soil: Construction Worker | 1E-06 | 0.7 | 2E-06 | 0.7 |
| Dermal Contact with Surface Soil: Construction Worker | 1E-07 | 0.06 | 2E-07 | 0.06 |
| Inhalation of Particulates from Surface Soil: Construction Worker | <u>4E-10</u> | <u>0.008</u> | <u>9E-10</u> | <u>0.008</u> |
| Total | 1E-06 | 0.8 | 2E-06 | 0.8 |
| Construction Worker - Subsurface Soil | | | | |
| Incidental Ingestion of Subsurface Soil: Construction Worker | 2E-07 | 0.2 | 5E-07 | 0.2 |
| Dermal Contact with Subsurface Soil: Construction Worker | 2E-08 | 0.02 | 5E-08 | 0.02 |
| Inhalation of Particulates from Subsurface Soil: Construction Worker | <u>1E-10</u> | <u>0.0000001</u> | <u>2E-10</u> | <u>0.0000001</u> |
| Total | 3E-07 | 0.2 | 6E-07 | 0.2 |
| Receptor Total: Construction Worker | 1.E-06 | 1 | 3.E-06 | 1 |
| UNRESTRICTED LAND USE | | | | |
| Adult Resident - Surface Soil | | | | |
| Incidental Ingestion of Surface Soil: Adult Resident | | | 1E-05 | 0.09 |
| Dermal Contact with Surface Soil: Adult Resident | | | 2E-06 | 0.01 |
| Inhalation of Particulates from Surface Soil: Adult Resident | | | <u>5E-09</u> | <u>0.001</u> |
| Total | Not Evaluated* | | 1E-05 | 0.1 |
| Adult Resident - Subsurface Soil | | | | |
| Incidental Ingestion of Subsurface Soil: Adult Resident | | | 3E-06 | 0.02 |
| Dermal Contact with Subsurface Soil: Adult Resident | | | 4E-07 | 0.005 |
| Inhalation of Particulates from Subsurface Soil: Adult Resident | | | <u>1E-09</u> | <u>1E-07</u> |
| Total | Not Evaluated* | | 3E-06 | 0.03 |
| Adult Resident Total: Soil | | | 2.E-05 | 0.1 |
| Child Resident - Surface Soil | | | | |
| Incidental Ingestion of Surface Soil: Child Resident | | | 3E-05 | 0.8 |
| Dermal Contact with Surface Soil: Child Resident | | | 9E-06 | 0.2 |
| Inhalation of Particulates from Surface Soil: Child Resident | | | <u>3E-09</u> | <u>0.002</u> |
| Total | Not Evaluated* | | 4E-05 | 1 |
| Child Resident - Subsurface Soil | | | | |
| Incidental Ingestion of Subsurface Soil: Child Resident | | | 7E-06 | 0.2 |
| Dermal Contact with Subsurface Soil: Child Resident | | | 2E-06 | 0.1 |
| Inhalation of Particulates from Subsurface Soil: Child Resident | | | <u>6E-10</u> | <u>3E-07</u> |
| Total | Not Evaluated* | | 9E-06 | 0.3 |
| Child Resident Total: Soil | | | 5.E-05 | 1 |
| Adult Resident - Groundwater | | | | |
| Ingestion of Groundwater: Adult Resident | | | <u>6.E-04</u> | <u>5</u> |
| Total | Not Evaluated* | | 6E-04 | 5 |
| Receptor Total: Resident [a] | | | 7.E-04 | 5 |

**TABLE 2
QUANTITATIVE HUMAN-HEALTH RISK SUMMARY**

**AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS**

| | CENTRAL TENDENCY | | RME | |
|--|-----------------------|--------------------|-------------------|--------------------|
| | Total Cancer Risk | Total Hazard Index | Total Cancer Risk | Total Hazard Index |
| AREA 3 - FLOOD PLAIN (RECREATIONAL) AREA | | | | |
| CURRENT LAND USE | | | | |
| Recreational Child - Surface Soil | | | | |
| Incidental Ingestion of Surface Soil: Recreational Child | 6E-07 | 0.02 | 3E-06 | 0.09 |
| Dermal Contact with Surface Soil: Recreational Child | <u>2E-06</u> | <u>0.2</u> | <u>3E-06</u> | <u>0.4</u> |
| Total | 3E-06 | 0.2 | 6E-06 | 0.5 |
| Recreational Child - Sediment | | | | |
| Incidental Ingestion of Sediment: Recreational Child | 4E-07 | 0.003 | 8E-07 | 0.01 |
| Dermal Contact with Sediment: Recreational Child | <u>2E-06</u> | <u>0.07</u> | <u>5E-06</u> | <u>0.1</u> |
| Total | 2E-06 | 0.07 | 6E-06 | 0.1 |
| Recreational Child - Surface Water | | | | |
| Incidental Ingestion of Surface Water: Recreational Child | 2E-06 | 0.05 | 4E-06 | 0.1 |
| Dermal Contact with Surface Water: Recreational Child | <u>5E-07</u> | <u>0.01</u> | <u>1E-06</u> | <u>0.01</u> |
| Total | 3E-06 | 0.06 | 5E-06 | 0.1 |
| Receptor Total: Recreational Child | 9E-06 | 0.3 | 2E-05 | 0.7 |
| POSSIBLE FUTURE LAND USE | | | | |
| Construction Worker - Surface Soil | | | | |
| Incidental Ingestion of Surface Soil: Construction Worker | 4E-06 | 0.5 | 9E-06 | 0.5 |
| Dermal Contact with Surface Soil: Construction Worker | 7E-08 | 0.08 | 1E-07 | 0.08 |
| Inhalation of Particulates from Surface Soil: Construction Worker | <u>3E-10</u> | <u>0.002</u> | <u>6E-10</u> | <u>0.002</u> |
| Total | 4E-06 | 0.6 | 9E-06 | 0.6 |
| Construction Worker - Subsurface Soil | | | | |
| Incidental Ingestion of Subsurface Soil: Construction Worker | 7E-07 | 0.4 | 1E-06 | 0.4 |
| Dermal Contact with Subsurface Soil: Construction Worker | 7E-08 | 0.04 | 1E-07 | 0.04 |
| Inhalation of Particulates from Subsurface Soil: Construction Worker | <u>3E-10</u> | <u>=</u> | <u>6E-10</u> | <u>=</u> |
| Total | 8E-07 | 0.4 | 1E-06 | 0.4 |
| Receptor Total: Construction Worker | 5.E-06 | 1 | 1.E-05 | 1 |
| UNRESTRICTED LAND USE | | | | |
| Adult Resident - Surface Soil | | | | |
| Incidental Ingestion of Surface Soil: Adult Resident | | | 9E-06 | 0.1 |
| Dermal Contact with Surface Soil: Adult Resident | | | 1E-06 | 0.08 |
| Inhalation of Particulates from Surface Soil: Adult Resident | | | <u>3E-09</u> | <u>0.0003</u> |
| Total | Not Evaluated* | | 1E-05 | 0.2 |
| Adult Resident - Subsurface Soil | | | | |
| Incidental Ingestion of Subsurface Soil: Adult Resident | | | 9E-06 | 0.1 |
| Dermal Contact with Subsurface Soil: Adult Resident | | | 1E-06 | 0.01 |
| Inhalation of Particulates from Subsurface Soil: Adult Resident | | | <u>3E-09</u> | <u>=</u> |
| Total | Not Evaluated* | | 1E-05 | 0.1 |
| Adult Resident Total: Soil | | | 2.E-05 | 0.3 |
| Child Resident - Surface Soil | | | | |
| Incidental Ingestion of Surface Soil: Child Resident | | | 2E-05 | 1 |
| Dermal Contact with Surface Soil: Child Resident | | | 7E-06 | 2 |
| Inhalation of Particulates from Surface Soil: Child Resident | | | <u>2E-09</u> | <u>0.0006</u> |
| Total | Not Evaluated* | | 3E-05 | 3 |
| Child Resident - Subsurface Soil | | | | |
| Incidental Ingestion of Subsurface Soil: Child Resident | | | 2E-05 | 0.5 |
| Dermal Contact with Subsurface Soil: Child Resident | | | 7E-06 | 0.2 |
| Inhalation of Particulates from Subsurface Soil: Child Resident | | | <u>2E-09</u> | <u>=</u> |
| Total | Not Evaluated* | | 3E-05 | 0.7 |
| Child Resident Total: Soil | | | 5.E-05 | 4 |
| Adult Resident - Groundwater | | | | |
| Ingestion of Groundwater: Adult Resident | | | <u>1.E-03</u> | <u>8</u> |
| Total | Not Evaluated* | | 1E-03 | 8 |
| Receptor Total: Resident [a] | | | 1.E-03 | 8 |

**TABLE 2
QUANTITATIVE HUMAN-HEALTH RISK SUMMARY**

**AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS**

| | CENTRAL TENDENCY | | RME | |
|--|-------------------------|--------------------------|-------------------------|--------------------------|
| | Total Cancer Risk | Total Hazard Index | Total Cancer Risk | Total Hazard Index |
| | | | | |

NOTES:

[a] Cancer risk is the cumulative receptor cancer risk for child and adult contact with soil and adult ingestion of drinking water. Non-cancer risk is the cumulative adult non-cancer risk for contact with soil and ingestion of drinking water.

[b] Although the total screening HI for the Areas 2, Industrial, Child Resident exposure scenario to surface soil equals 2, target-organ specific HIs are less than or equal to the USEPA target threshold value of 1 for noncancer risks, as documented in the AOC 57 Final RI (see Appendix N-6):

- Total Skin HI: 0.7
- Total GI HI: 0.05
- Total Nervous System HI: 0.07
- Total Liver HI: 0.02
- Total Kidney HI: 1

RME = Reasonable Maximum Exposure

NE = Not evaluated because there were no carcinogenic CPCs.

NA = Not additive

Totals may not appear accurate due to rounding; but, in fact, are based on addition of individual cancer risks and hazard indices prior to rounding.

* Central tendency not evaluated because only RME risks are assessed for residential exposures.

-- Hazard Index not calculated because there was no inhalation RID available for the CPCs.

**TABLE 3
COMPARISON OF AREA 2 HUMAN-HEALTH RISK ESTIMATES TO USEPA RISK
ASSESSMENT THRESHOLDS**

**AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS**

| Subarea and Receptor | Exposure Medium | | | | Receptor Total |
|-------------------------------------|-----------------|-----------------|----------------------------|--------------|----------------|
| | Surface Soil | Subsurface Soil | Surface Water and Sediment | Ground-water | |
| Upland (Industrial) Area | | | | | |
| Current/Future Land Use | | | | | |
| Maintenance Worker | ○, □ | -- | -- | -- | ○, □ |
| Possible Future Land Use | | | | | |
| Construction Worker | ○, □ | ○, □ | -- | -- | ○, □ |
| Commercial Worker | ○, □ | -- | -- | --, □ | ○, □ |
| Unrestricted Future Land Use | | | | | |
| Adult Resident | ○, □ | ○, □ | -- | --, □ | ○, □ |
| Child Resident | ○, □ * | ○, □ | -- | -- | ○, □ * |
| Total Resident | -- | -- | -- | -- | ○, -- |
| F. Plain (Recreational) Area | | | | | |
| Current/Future Land Use | | | | | |
| Recreational Child | ○, □ | -- | ○, □ | -- | ○, □ |
| Possible Future Land Use | | | | | |
| Construction Worker | ○, □ | ○, ■ | -- | -- | ○, ■ |
| Unrestricted Future Land Use | | | | | |
| Adult Resident | ○, □ | ○, □ | -- | ●, ■ | ●, ■ |
| Child Resident | ○, ■ | ○, ■ | -- | -- | ○, ■ |
| Total Resident | -- | -- | -- | -- | ●, -- |

NOTES:

Risk estimates based on reasonable maximum exposure (RME) contaminant concentrations.

Total resident cancer risk equals the sum of surface soil and subsurface soil cancer risks for child and adult residents, plus adult cancer risk.

○ = cancer risk estimate is within USEPA acceptable range of 1×10^{-4} to 1×10^{-6}

● = cancer risk estimate exceeds USEPA acceptable range of 1×10^{-4} to 1×10^{-6}

□ = noncancer risk estimate is equal or less than HI of 1

■ = noncancer risk estimate exceeds an HI of 1

-- = not evaluated

* = Although the total screening hazard index exceeds 1, target-organ specific HIs are less than or equal to 1.

TABLE 4
COMPARISON OF AREA 3 HUMAN-HEALTH RISK ESTIMATES TO USEPA RISK
ASSESSMENT THRESHOLDS

AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

| Subarea and Receptor | Exposure Medium | | | | Receptor Total |
|-------------------------------------|-----------------|-----------------|----------------------------|--------------|----------------|
| | Surface Soil | Subsurface Soil | Surface Water and Sediment | Ground-water | |
| Upland (Industrial) Area | | | | | |
| Current/Future Land Use | | | | | |
| Maintenance Worker | ○, □ | -- | -- | -- | ○, □ |
| Possible Future Land Use | | | | | |
| Construction Worker | ○, □ | ○, □ | -- | -- | ○, □ |
| Commercial Worker | ○, □ | -- | -- | ●, □ * | ●, □ * |
| Unrestricted Future Land Use | | | | | |
| Adult Resident | ○, □ | ○, □ | -- | ●, ■ | ●, ■ |
| Child Resident | ○, □ | ○, □ | -- | -- | ○, □ |
| Total Resident | -- | -- | -- | -- | ●, -- |
| F. Plain (Recreational) Area | | | | | |
| Current/Future Land Use | | | | | |
| Recreational Child | ○, □ | -- | ○, □ | -- | ○, □ |
| Possible Future Land Use | | | | | |
| Construction Worker | ○, □ | ○, □ | -- | -- | ○, □ |
| Unrestricted Future Land Use | | | | | |
| Adult Resident | ○, □ | ○, □ | -- | ●, ■ | ●, ■ |
| Child Resident | ○, ■ | ○, □ | -- | -- | ○, ■ |
| Total Resident | -- | -- | -- | -- | ●, -- |

NOTES:

Risk estimates based on reasonable maximum exposure (RME) contaminant concentrations.

Total resident cancer risk equals the sum of surface soil and subsurface soil cancer risks for child and adult residents, plus adult cancer risk.

○ = cancer risk estimate is within USEPA acceptable range of 1×10^{-4} to 1×10^{-6}

● = cancer risk estimate exceeds USEPA acceptable range of 1×10^{-4} to 1×10^{-6}

□ = noncancer risk estimate is equal or less than HI of 1

■ = noncancer risk estimate exceeds an HI of 1

-- = not evaluated

* = Although the total screening hazard index exceeds 1, target-organ specific HIs are less than or equal to 1.

TABLE 5
AREA 2 PRIMARY RISK CONTRIBUTORS ^(a)

AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

| Subarea | Land Use | Medium | Cumulative Risk | | Major Risk Contributor ^(c) | Risk Contribution ^(d) (By Chemical) |
|--------------------|--|--|------------------|---------------------|---------------------------------------|---|
| | | | Central Tendency | RME ^(b) | | |
| Area 2 Upland | | | | | | |
| Cancer Risks | | Estimated risks do not exceed 1×10^{-4} | | | | |
| Area 2 Upland | | | | | | |
| Noncancer Risks | | Estimated risks do not exceed an HI of 1. | | | | |
| Area 2 Flood Plain | Unrestricted (Residential) | Groundwater | NA(e) | 1.0E-03 | Arsenic | 9.6E-04 (92.2 %) |
| Cancer Risks | | | | | Bis(2-ethylhexyl)phthalate | 6.6E-05 (6.3%) |
| | | | | | Tetrachloroethylene | 9.8E-06 (0.9 %) |
| | | | | | Aroclor -1260 | 5.2E-06 (0.5 %) |
| Area 2 Flood Plain | Possible Future (Construction Worker) | Subsurface Soil | 3 | 3 | Aroclor-1260 | 1.7 (immune system) |
| Noncancer Risks | | Unrestricted (Residential) | Surface Soil | NA(e) | 5 | Arsenic |
| | Subsurface Soil | | | | | NA(e) |
| | | | Aroclor-1260 | 9.2 (immune system) | | |
| | | | Groundwater | NA(e) | 7 | Arsenic |

Note:

- (a) Risk exposure scenarios presented in this table are those that present a cumulative cancer risk greater than 1×10^{-4} based on RME assumptions.
- (b) RME = Reasonable maximum exposure
- (c) Chemicals that present a cancer risk greater than 1×10^{-6} .
- (d) Cancer risks for individual chemicals at RME. Percent contribution to the total risk is shown in parentheses.
- (e) NA = Not applicable - Only RME risks are assessed for residential exposures
- (f) Reference dose (RfD) is based on no observed adverse effects level (NOAEL) dose. However, higher doses in study used to develop RfD were associated with effects on the GI system. Therefore, the HQ for this chemical was included in the segregated HI for effects to the GI system to provide a conservative estimate of the HI.

TABLE 6
AREA 3 PRIMARY RISK CONTRIBUTORS ^(a)

AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

| Subarea | Land Use | Medium | Cumulative Risk | | Major Risk Contributor ^(c) | Risk |
|--------------------------------------|--|--------------|------------------|---------------------|---------------------------------------|--|
| | | | Central Tendency | RME ^(b) | | Contribution ^(d) (By Chemical) |
| Area 3 Upland Cancer Risk | Possible Future (Commercial/Industrial) | Groundwater | 4.7E-05 | 1.7E-04 | Arsenic | 1.7E-04 (98.2%) |
| | | | | | Carbon tetrachloride | 2.0E-06 (1.2%) |
| | Unrestricted (Residential) | Groundwater | NA(e) | 5.9E-04 | Arsenic | 5.8E-04 (98.2 %) |
| | | | | | Carbon tetrachloride | 6.9E-06 (1.2%) |
| | | | | 1,4-dichlorobenzene | 1.6E-06 (0.3%) | |
| | | | | Tetrachloroethylene | 1.6E-06 (0.3%) | |
| Area 3 Upland Noncancer Risk | Possible Future (Commercial/Industrial) | Groundwater | 2 | 2 | Arsenic | 1.1 (skin) |
| | | | | | Unrestricted (Residential) | NA(e) |
| Area 3 Flood Plain Cancer Risk | Unrestricted (Residential) | Groundwater | NA(e) | 1.5E-03 | Arsenic | 1.5E-03 (99 %) |
| | | | | | Bis(2-ethylhexyl)phthalate | 8.5E-06 (0.6%) |
| | | | | | Tetrachloroethylene | 3.4E-06 (0.2%) |
| Area 3 Flood Plain Noncancer Risk | Unrestricted (Residential) | Groundwater | NA(e) | 8 | Arsenic | 7.7 (skin) |
| | | Surface Soil | NA(e) | 3 | C11-C22 | 1.7 (kidney) |

Note:

- (a) Risk exposure scenarios presented in this table are those that present a cumulative cancer risk greater than 1×10^{-4} based on RME assumptions.
- (b) RME = Reasonable maximum exposure
- (c) Chemicals that present a cancer risk greater than 1×10^{-6} .
- (d) Cancer risks for individual chemicals at RME. Percent contribution to the total risk is shown in parentheses.
- (e) NA = Not applicable - Only RME risks are assessed for residential exposures

TABLE 7
AOC 57 SOIL PRELIMINARY REMEDIATION GOALS

AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

| Land Use Scenario | Media | Chemical of Concern (a) | Maximum Background Detection (b) | | Human Health RBC (c) | MCP(d) | | PRG (mg/kg) |
|--------------------------|--------------------|-------------------------|----------------------------------|---------|----------------------|---------------------------|---------------------------|-------------|
| | | | (mg/kg) | (mg/kg) | | Method 1 S-1/GW-1 (mg/kg) | Method 1 S-2/GW-1 (mg/kg) | |
| Area 2 | | | | | | | | |
| Possible Future Land Use | <u>Flood Plain</u> | | | | | | | |
| | Subsurface Soil | Aroclor-1260 | 12 | ND | 3.5 | (f) | (f) | 3.5 |
| | | Lead | 5060 | 48 | 400 (e) | 300 | 600 | 600 (g) |
| Unrestricted Use | <u>Flood Plain</u> | | | | | | | |
| | Surface Soil | Aroclor-1260 | 4.2 | ND | 0.5 | (f) | (f) | 0.5 |
| | | Arsenic | 61.2 | 19 | 21 | (f) | (f) | 21 |
| | Subsurface Soil | Chromium | 2410 | 33 | 550 | (f) | (f) | 550 |
| | | Lead | 5060 | 48 | 400 (e) | (f) | (f) | 400 |
| | | Aroclor-1260 | 12 | ND | 0.5 | (f) | (f) | 0.5 |
| | | C11-C22 | 990 (h) | ND | 930 | (f) | (f) | 930 |
| Area 3 | | | | | | | | |
| Unrestricted Use | <u>Flood Plain</u> | | | | | | | |
| | Surface Soil | C11-C22 | 3100 | ND | 930 | (f) | (f) | 930 |

Notes:

- (a) CPCs that present cancer risks above 1E-06 or target-organ specific HI above 1.0 based on the baseline risk assessment.
- (b) Background concentrations for inorganic analytes based upon chemical data gathered from 20 soils samples collected as part of Group 1A and 1B investigations. (See Appendix L of the RI Report (HLA, 1999a))
- (c) PRGs are based on receptor risks to soil. Achieving the PRGs listed in this table should enable the residual receptor risks to be at or below a target-organ specific HI of 1 for soil and a cumulative receptor cancer risk at or below 1E-04 for soil.
- (d) Massachusetts Contingency Plan Method 1 Risk Characterization S-1/GW-1 and S-2/GW-1 Soil Standards (MADEP, 1997)
- (e) USEPA residential soil lead screening level per OSWER Directive 9355.4-12 (USEPA, 1994)
- (f) Risk characterization performed following USEPA guidance. Method 1 MCP methods are not applied.
- (g) No USEPA commercial/industrial soil lead screening level currently exists. PRG is based upon MCP Method 1 S-2/GW-1 standards (potentially accessible soil, children present, low frequency, and high intensity for construction worker).
- (h) Maximum C11-C22 aromatic concentration was 990 mg/kg. Maximum TPHC concentration was 31,800 mg/kg or an estimated 7,050 mg/kg C11-C22 by converting TPHC concentrations to EPH/VPH concentrations. The computed site-specific average composition of petroleum detected at this site is presented in Appendix N of the RI Report (HLA, 1999a).
- (i) Exceedance above 930 mg/kg C11-C12 or the equivalent calculated value 4,195 mg/kg TPHC for Area 2.

ACRONYMS

| | |
|---|------------------------------------|
| COC - Contaminant of Concern | ND - Not determined |
| CPCs- Contaminants of Potential Concern | PRG - Preliminary Remediation Goal |
| MCP - Massachusetts Contingency Plan | RBC - Risk-Based Concentration |
| PRGTAB.xls | |
| Soil PRGs | |

TABLE 8
AOC 57 GROUNDWATER PRELIMINARY REMEDIATION GOALS

AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS MASSACHUSETTS

| Land Use Scenario | Subarea | Chemical of Concern (a) | Maximum Detection (b) (µg/L) | Background (c) (µg/L) | Human Health RBC (d) (µg/L) | ARARs | | PRG (µg/L) |
|--------------------------|-------------|-------------------------|------------------------------|-----------------------|-----------------------------|----------------|-----------------|------------|
| | | | | | | MCL (e) (µg/L) | MMCL (f) (µg/L) | |
| Area 2 | | | | | | | | |
| Unrestricted Use | Flood Plain | Arsenic | 54.4 | 10.5 | ND | 50 | 50 | 50 |
| | | BEHP | 400 | ND | ND | 6 | 6 | --(h) |
| | | Tetrachloroethylene | 16 | ND | ND | 5 | 5 | 5 |
| | | Aroclor -1260 | 0.22 | ND | ND | 0.5 | 0.5 | --(g) |
| Area 3 | | | | | | | | |
| Possible Future Land Use | Upland | Arsenic | 74 | 10.5 | ND | 50 | 50 | 50 |
| | | Carbon Tetrachloride | 4.5 | ND | ND | 5 | 5 | --(g) |
| | | Cadmium | 8.67 | 4.01 | ND | 5 | 5 | 5 |
| | | 1,4-dichlorobenzene | 5.6 | ND | ND | 75 | 5 | 5 |
| Unrestricted Use | Upland | Arsenic | 74 | 10.5 | ND | 50 | 50 | 50 |
| | | Carbon tetrachloride | 4.5 | ND | ND | 5 | 5 | --(g) |
| | | Cadmium | 8.67 | 4.01 | ND | 5 | 5 | 5 |
| | | 1,4-dichlorobenzene | 5.6 | ND | ND | 75 | 5 | 5 |
| | | Tetrachloroethylene | 2.6 | ND | ND | 5 | 5 | --(g) |
| Unrestricted Use | Flood Plain | Arsenic | 84.4 | 10.5 | ND | 50 | 50 | 50 |
| | | BEHP | 52 | ND | ND | 6 | 6 | --(h) |
| | | Tetrachloroethylene | 5.5 | ND | ND | 5 | 5 | 5 |

Note:

- (a) CPCs that present cancer risks above 1E-06 or HQs above 1.0 as identified by the baseline risk assessment in the RI Report (HLA, 1999a) or exceedance of an ARAR.
- (b) All reported maximum concentrations are for unfiltered samples. Concentrations are for 1995, 1996 and 1998 analytical data.
- (c) Background concentrations for inorganic analytes based upon chemical data gathered as part of Group 1A and 1B investigations. (See Appendix L of the RI Report (HLA, 1999a).
- (d) RBCs are based on receptor risks to soil. These values were not computed unless no ARAR was available for the COC.
- (e) MCL - Maximum Contaminant Levels - USEPA Drinking Water Regulations and Health Advisories (USEPA, 1996)
- (f) MMCL - Massachusetts Maximum Contaminant Level - Massachusetts Drinking Water Standards and Guidelines for Chemicals in Massachusetts Drinking Waters. (MADEP/ORS, 1999)
- (g) No PRG because maximum detected concentration in the area did not exceed MCLs/MMCLs.
- (h) No PRG because BEHP identified as a lab/sampling contaminant.

ACRONYMS:

- BEHP - Bis(2-ethylhexyl)phthalate
- COC - Contaminant of Concern
- CPCs- Contaminants of Potential Concern
- ND - Not determined
- PRG - Preliminary Remediation Goal
- RBC - Risk-Based Concentration

**TABLE 9
SUMMARY OF ARARS FOR AOC 57 AREA 2**

**AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS**

| ARAR | ROLE OF ARAR | | | |
|---|------------------|------------------|--|--|
| | ALTERNATIVE II-1 | ALTERNATIVE II-2 | ALTERNATIVE II-3 | ALTERNATIVE II-4 |
| Federal Location-specific | | | | |
| Floodplain Management Executive Order 11988 [40 CFR Part 6, Appendix A] | Not triggered. | Not triggered. | Requires that adverse effects to floodplains be minimized and that beneficial values be restored to disturbed areas. | Requires that adverse effects to floodplains be minimized and that beneficial values be restored to disturbed areas. |
| Protection of Wetlands Executive Order 11990 [40 CFR Part 6, Appendix A] | Not triggered. | Not triggered. | Requires that adverse effects to wetlands be minimized and that beneficial values be restored to disturbed areas. | Requires that adverse effects to wetlands be minimized and that beneficial values be restored to disturbed areas. |
| Clean Water Act, Dredge or Fill Requirements Section 404 [40 CFR Part 230] | Not triggered. | Not triggered. | Prohibits the filling of wetland areas. | Prohibits the filling of wetland areas. |
| Fish and Wildlife Coordination Act [16 USC 661 et seq.] | Not triggered. | Not triggered. | Requires action to prevent, mitigate, or compensate for project related impacts to wetlands. | Requires action to prevent, mitigate, or compensate for project related impacts to wetlands. |
| Endangered Species Act [50 CFR Parts 17.11-17.12] | Not triggered. | Not triggered. | Requires action to avoid adverse impacts to endangered or threatened species and their habitat. | Requires action to avoid adverse impacts to endangered or threatened species and their habitat. |
| Migratory Bird Treaty Act [16 USC 703 et seq.] | Not triggered. | Not triggered. | Requires protection of migratory birds, their nests, eggs, and young. | Requires protection of migratory birds, their nests, eggs, and young. |

**TABLE 9 (continued)
SUMMARY OF ARARS FOR AOC 57 AREA 2**

**AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS**

| ARAR | ROLE OF ARAR | | | |
|---|---|---|---|---|
| | ALTERNATIVE II-1 | ALTERNATIVE II-2 | ALTERNATIVE II-3 | ALTERNATIVE II-4 |
| <u>State Location-specific</u> | | | | |
| Massachusetts Wetland Protection Regulations [310 CMR 10.00] | Not triggered. | Not triggered. | Sets limits on what activities may occur within 100-year floodplain and 100-ft buffer zone. | Sets limits on what activities may occur within 100-year floodplain and 100-ft buffer zone. |
| Massachusetts Endangered Species Regulations [321 CMR 8.00] | Not triggered. | Not triggered. | Requires action to minimize impacts to Massachusetts rare, threatened, or endangered species. | Requires action to minimize impacts to Massachusetts rare, threatened, or endangered species. |
| <u>Federal Chemical-specific</u> | | | | |
| Safe Drinking Water Act, National Primary Drinking Water Regulations, MCLs and MCLGs [40 CFR Parts 141.60 - 141.63 and 141.50 - 141.52] | Used to establish groundwater cleanup levels. | Used to establish groundwater cleanup levels. | Used to establish groundwater cleanup levels. | Used to establish groundwater cleanup levels. |
| <u>State Chemical-specific</u> | | | | |
| Massachusetts Groundwater Quality Standards [314 CMR 6.00] | Used to establish groundwater cleanup levels. | Used to establish groundwater cleanup levels. | Used to establish groundwater cleanup levels. | Used to establish groundwater cleanup levels. |
| Massachusetts Drinking Water Regulations [310 CMR 22.00] | Used to establish groundwater cleanup levels. | Used to establish groundwater cleanup levels. | Used to establish groundwater cleanup levels. | Used to establish groundwater cleanup levels. |

TABLE 9 (continued)
SUMMARY OF ARARS FOR AOC 57 AREA 2

AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

| ARAR | ROLE OF ARAR | | | |
|---|------------------|--|---|---|
| | ALTERNATIVE II-1 | ALTERNATIVE II-2 | ALTERNATIVE II-3 | ALTERNATIVE II-4 |
| <u>Federal Action-specific</u> | | | | |
| CWA, General Pretreatment Program (40 CFR Part 403) | Not triggered. | Not triggered. | Any wastewater discharge to Devens WWTP must comply with pretreatment standards. | Any wastewater discharge to Devens WWTP must comply with pretreatment standards. |
| Clean Water Act NPDES Permit Program [40 CFR 122,125] | Not triggered. | Not triggered. | Construction activities will be managed to comply with surface water discharge requires of these regulations. | Construction activities will be managed to comply with surface water discharge requires of these regulations. |
| Toxicity Characteristics (40 CFR 261.24) | Not triggered. | Not triggered. | Will be used to determine if soil/sediment is to be handled as hazardous waste. | Will be used to determine if soil/sediment is to be handled as hazardous waste. |
| RCRA, Land Disposal Restrictions (40 CFR 268) | Not triggered. | Not triggered. | Prohibits land disposal of RCRA hazardous waste without specified treatment. | Prohibits land disposal of RCRA hazardous waste without specified treatment. |
| TSCA (40 CFR Part 761 Subpart D) Storage and Disposal | Not triggered. | Not triggered. | Establishes requirements for the cleanup, storage, and disposal of PCBs. | Establishes requirements for the cleanup, storage, and disposal of PCBs. |
| TSCA (40 CFR Part 761 Subpart G) PCB Spill Cleanup Policy | Not triggered. | Not triggered. | Affects management of media containing 50 ppm or greater of PCBs. | Affects management of media containing 50 ppm or greater of PCBs. |
| USEPA OSWER Publication 9345.3-03FS, January 1992 | Not triggered. | Affects management of sampling wastes. | Affects management of sampling wastes. | Affects management of sampling wastes. |
| Hazardous Waste Management Systems; (RCRA 40 CFR 260) | Not triggered. | Not triggered. | Establishes procedures for managing hazardous waste. | Establishes procedures for managing hazardous waste. |
| Standards for Owners and | Not triggered. | Not triggered. | Defines requirements for the | Defines requirements for the |

TABLE 9 (continued)
SUMMARY OF ARARS FOR AOC 57 AREA 2

AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

| ARAR | ROLE OF ARAR | | | |
|---|------------------|------------------|--|--|
| | ALTERNATIVE II-1 | ALTERNATIVE II-2 | ALTERNATIVE II-3 | ALTERNATIVE II-4 |
| Operators of Hazardous Waste Treatment, Storage and Disposal Facilities (RCRA 40 CFR 264) | | | safe management of hazardous wastes. | safe management of hazardous wastes. |
| RCRA 40 CFR Part 262, Standards Applicable to Generators of Hazardous Waste | Not triggered. | Not triggered. | Establishes management standards for the treatment, storage, and disposal of hazardous wastes. | Establishes management standards for the treatment, storage, and disposal of hazardous wastes. |
| <u>State Action-specific</u> | | | | |
| Massachusetts Hazardous Waste Management Rules; 310 CMR 30.000 | Not triggered. | Not triggered. | Supplements RCRA rules used to determine if soil/sediment is to be handled as hazardous waste. | Supplements RCRA rules used to determine if soil/sediment is to be handled as hazardous waste. |
| Massachusetts Water Quality Certification and Certification for Dredging [314 CMR 9.00] | Not triggered. | Not triggered. | Wetland excavation must meet the substantive criteria and standards of these regulations. | Wetland excavation must meet the substantive criteria and standards of these regulations. |
| Massachusetts Air Pollution Control Regulations [310 CMR 7.00] | Not triggered. | Not triggered. | Remedial actions will be performed to prevent emissions in excess of these standards. | Remedial actions will be performed to prevent emissions in excess of these standards. |

TABLE 9 (continued)
SUMMARY OF ARARS FOR AOC 57 AREA 2

AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

Notes:

| | |
|--------------|---|
| AOC | = Area of contamination |
| ARAR | = Area or Relevant and Appropriate Requirements |
| CFR | = Code of Federal Regulations |
| CMR | = Code of Massachusetts Regulations |
| CWA | = Clean Water Act |
| IDW | = Investigation derived waste |
| LDR | = Land Disposal Restrictions |
| MCL | = Maximum Contaminant Level |
| MCLG | = Maximum Contaminant Level Goal |
| NCP | = National Contingency Plan |
| NPDES | = National Pollutant Discharge Elimination System |
| PCB | = Polychlorinated biphenyls |
| ppm | = parts per million |
| PRGs | = Preliminary remediation goals |
| RCRA | = Resource Conservation and Recovery Act |
| TSCA | = Toxic Substances Control Act |
| USEPA | = U.S. Environmental Protection Agency |
| USC | = United States Code |
| WWTP | = Wastewater treatment plant |

**TABLE 10
SUMMARY OF ARARS FOR AOC 57 AREA 3**

**AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS**

| ARAR | ROLE OF ARAR | | |
|---|-------------------|-------------------|--|
| | ALTERNATIVE III-1 | ALTERNATIVE III-2 | ALTERNATIVE III-3 |
| <u>Federal Location-specific</u> | | | |
| Floodplain Management Executive Order 11988 [40 CFR Part 6, Appendix A] | Not triggered. | Not triggered. | Requires that adverse effects to floodplains be minimized and that beneficial values be restored to disturbed areas. |
| Protection of Wetlands Executive Order 11990 [40 CFR Part 6, Appendix A] | Not triggered. | Not triggered. | Requires that adverse effects to wetlands be minimized and that beneficial values be restored to disturbed areas. |
| Clean Water Act, Dredge or Fill Requirements Section 404 [40 CFR Part 230] | Not triggered. | Not triggered. | Prohibits the filling of wetland areas. |
| Fish and Wildlife Coordination Act [16 USC 661 et seq.] | Not triggered. | Not triggered. | Requires action to prevent, mitigate, or compensate for project related impacts to wetlands. |
| Endangered Species Act [50 CFR Parts 17.11-17.12] | Not triggered. | Not triggered. | Requires action to avoid adverse impacts to endangered or threatened species and their habitat. |
| Migratory Bird Treaty Act [16 USC 703 et seq.] | Not triggered. | Not triggered. | Requires protection of migratory birds, their nests, eggs, and young. |

TABLE 10 (continued)
SUMMARY OF ARARS FOR AOC 57 AREA 3

AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

| ARAR | ROLE OF ARAR | | |
|---|---|---|---|
| | ALTERNATIVE III-1 | ALTERNATIVE III-2 | ALTERNATIVE III-3 |
| <u>State Location-specific</u> | | | |
| Massachusetts Wetland Protection Regulations [310 CMR 10.00] | Not triggered. | Not triggered. | Sets limits on what activities may occur within 100-year floodplain and 100-ft buffer zone. |
| Massachusetts Endangered Species Regulations [321 CMR 8.00] | Not triggered. | Not triggered. | Requires action to minimize impacts to Massachusetts rare, threatened, or endangered species. |
| <u>Federal Chemical-specific</u> | | | |
| Safe Drinking Water Act, National Primary Drinking Water Regulations, MCLs and MCLGs [40 CFR Parts 141.60 - 141.63 and 141.50 - 141.52] | Used to establish groundwater cleanup levels. | Used to establish groundwater cleanup levels. | Used to establish groundwater cleanup levels. |
| <u>State Chemical-specific</u> | | | |
| Massachusetts Groundwater Quality Standards [314 CMR 6.00] | Used to establish groundwater cleanup levels. | Used to establish groundwater cleanup levels. | Used to establish groundwater cleanup levels. |
| Massachusetts Drinking Water Regulations [310 CMR 22.00] | Used to establish groundwater cleanup levels. | Used to establish groundwater cleanup levels. | Used to establish groundwater cleanup levels. |

TABLE 10 (continued)
SUMMARY OF ARARS FOR AOC 57 AREA 3

AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

| ARAR | ROLE OF ARAR | | |
|--|-------------------|--|---|
| | ALTERNATIVE III-1 | ALTERNATIVE III-2 | ALTERNATIVE III-3 |
| Federal Action-specific | | | |
| CWA, General Pretreatment Program (40 CFR Part 403) | Not triggered. | Not triggered. | Any wastewater discharge to Devens WWTP must comply with pretreatment standards. |
| Clean Water Act NPDES Permit Program [40 CFR 122,125] | Not triggered. | Not triggered. | Construction activities will be managed to comply with surface water discharge requires of these regulations. |
| Toxicity Characteristics (40 CFR 261.24) | Not triggered. | Not triggered. | Will be used to determine if soil/sediment is to be handled as hazardous waste. |
| RCRA, Land Disposal Restrictions (40 CFR 268) | Not triggered. | Not triggered. | Prohibits land disposal of RCRA hazardous waste without specified treatment. |
| USEPA OSWER Publication 9345.3-03FS, January 1992 | Not triggered. | Affects management of sampling wastes. | Affects management of sampling wastes. |
| Hazardous Waste Management Systems; (RCRA 40 CFR 260) | Not triggered. | Not triggered. | Establishes procedures for managing hazardous waste. |
| Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities (RCRA 40 CFR 264) | Not triggered. | Not triggered. | Defines requirements for the safe management of hazardous wastes. |
| RCRA 40 CFR Part 262, Standards Applicable to Generators of Hazardous Waste | Not triggered. | Not triggered. | Establishes management standards for the treatment, storage, and disposal of |

**TABLE 10 (continued)
SUMMARY OF ARARS FOR AOC 57 AREA 3**

**AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS**

| ARAR | ROLE OF ARAR | | |
|---|-------------------|-------------------|--|
| | ALTERNATIVE III-1 | ALTERNATIVE III-2 | ALTERNATIVE III-3 |
| | | | hazardous wastes. |
| <u>State Action-specific</u> | | | |
| Massachusetts Hazardous Waste Management Rules; 310 CMR 30.000 | Not triggered. | Not triggered. | Supplements RCRA rules used to determine if soil/sediment is to be handled as hazardous waste. |
| Massachusetts Water Quality Certification and Certification for Dredging [314 CMR 9.00] | Not triggered. | Not triggered. | Wetland excavation must meet the substantive criteria and standards of these regulations. |
| Massachusetts Air Pollution Control Regulations [310 CMR 7.00] | Not triggered. | Not triggered. | Remedial actions will be performed to prevent emissions in excess of these standards. |

Notes:

AOC
ARAR

= Area of contamination
= Applicable or Relevant and Appropriate Requirements

CFR
CMR
CWA

= Code of Federal Regulations
= Code of Massachusetts Regulations
= Clean Water Act

IDW
LDR

= Investigation derived waste
= Land Disposal Restrictions

MCL
USEPA

= Maximum Contaminant Level
= U.S. Environmental Protection Agency

USC
WWTP

= United States Code
= Wastewater treatment plant

MCLG
NCP
NPDES

= Maximum Contaminant Level Goal
= National Contingency Plan
= National Pollutant Discharge Elimination System

PCB
ppm
PRGs
RCRA

= Polychlorinated biphenyls
= parts per million
= Preliminary remediation goals
= Resource Conservation and Recovery Act

**TABLE 11
COST SUMMARY FOR ALTERNATIVE II-3: EXCAVATION (FOR POSSIBLE FUTURE USE)
AND INSTITUTIONAL CONTROLS**

**AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS**

| ITEM | COST |
|---|------------------|
| <u>DIRECT COSTS</u> | |
| Pre-Design Investigation | \$5,670 |
| Setup, Excavation, Dewatering, Transport, Disposal, Restoration | \$211,475 |
| Confirmatory Sampling, Summary Data Report | \$12,879 |
| Waste Characterization | \$19,280 |
| Wetland Delineation, Boundary Survey, Institutional Controls | \$16,000 |
| Direct Subtotal | \$265,304 |
| <u>INDIRECT COSTS</u> | |
| Design/Permitting (@10% of direct cost) | \$26,530 |
| Wetland Restoration Plan, Health&Safety | \$14,765 |
| Pre-Construction Mtg, Construction Oversight (@5% of direct cost) | \$28,780 |
| Legal/Administrative Fees (@5% of direct cost) | \$13,265 |
| Indirect Subtotal | \$83,341 |
| TOTAL CAPITAL COSTS | \$348,645 |
| <u>OPERATION AND MAINTENANCE COSTS</u> | |
| Present Worth of GW/SW Sampling 2X/yr for 3 yrs @7% | \$43,412 |
| Present Worth of GW/SW Sampling 1X/yr for yrs 4 thru 30 @7% | \$80,931 |
| Present Worth of Wetland Restoration Monitoring for 5 yrs @ 7% | \$6,150 |
| Present Worth of Institutional Control Inspections for 30 years @ 7% | \$13,402 |
| Present Worth of Institut. Control Reviews (every 5 yrs for 30 years @ 7%) | \$41,169 |
| TOTAL O&M COSTS | \$185,064 |
| TOTAL CAPITAL AND O&M COSTS | \$533,709 |
| UNSPECIFIED DESIGN DETAILS (@25 PERCENT) | \$133,427 |
| TOTAL PRESENT WORTH OF ALTERNATIVE II-3 | \$667,136 |
| <u>COST SENSITIVITY ANALYSIS - MINIMUM ESTIMATE</u> | |
| Also assume that the soil requiring excavation is reduced by 25% (160 CY, 288 tons, or 1 foot). | |
| Assume groundwater will attain MCLs after one year. Add two extra years validation for a total of 3 years monitoring. | |
| Assume wetland monitoring will remain at 5 years and IC/site reviews will remain at 30 years. | |
| MINIMUM COST OF POSSIBLE FUTURE USE ALTERNATIVE - AREA 2 | \$514,521 |
| <u>COST SENSITIVITY ANALYSIS - MAXIMUM ESTIMATE</u> | |
| Assume that the soil requiring excavation is increased by 25% (160 CY, 288 tons, or 1 foot). | |
| MAXIMUM COST OF POSSIBLE FUTURE USE ALTERNATIVE - AREA 2 | \$718,585 |

Note: Detailed cost estimate is provided in Appendix B of FS report.

TABLE 12
AOC 57 CLEANUP LEVELS FOR CONTAMINANTS OF CONCERN

AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

| Subarea/Medium | Chemical of Concern | Cleanup Level | Basis for Cleanup Level | Risk at Cleanup Level |
|--------------------------|---------------------|---------------|-------------------------|-----------------------|
| F. Plain/Subsurface Soil | Aroclor-1260 | 3.5 mg/kg* | Risk-based | HQ=0.5 † |
| | Lead | 600 mg/kg* | MCP Method 1 S-2/GW-1 | Not calc. |
| Groundwater | Arsenic | 50 µg/L ** | MCL | Not calc. |
| | Cadmium | 5 µg/L ** | MCL | Not calc. |
| | 1,4-Dichlorobenzene | 5 µg/L ** | MMCL | Not calc. |
| | Tetrachloroethene | 5 µg/L ** | MCL/MMCL | Not calc. |

Notes:

* Cleanup levels for soil are protective of possible future use construction/commercial workers.

** Cleanup levels for groundwater are protective of possible future use construction/commercial workers and unrestricted use residents.

† = Residual risk back calculated so that noncancer risk endpoint does not exceed an HI of 1.

mg/kg = milligrams per kilogram

µg/L = micrograms per kilogram

MCL = Maximum Contaminant Level

MMCL = Massachusetts Maximum Contaminant Level

TABLE 13
COST SUMMARY FOR ALTERNATIVE III-2a:
EXCAVATION (TO ACCELERATE GROUNDWATER CLEANUP) AND INSTITUTIONAL CONTROLS

AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

| ITEM | COST |
|--|------------------|
| DIRECT COSTS | |
| Setup, Excavation, Dewatering, Transport, Disposal, Restoration | \$33,015 |
| Confirmatory Sampling, Summary Data Report | \$7,472 |
| Waste Characterization | \$4,820 |
| Wetland Delineation, Boundary Survey, Institutional Controls | \$14,750 |
| Direct Subtotal | \$60,057 |
| INDIRECT COSTS | |
| Design/Permitting (@10% of direct cost) | \$6,006 |
| Wetland Restoration Plan, Health&Safety (@5% of direct cost) | \$3,753 |
| Pre-Construction Mtg, Construction Oversight (@5% of direct cost) | \$7,881 |
| Legal/Administrative Fees (@5% of direct cost) | \$3,003 |
| Indirect Subtotal | \$20,642 |
| TOTAL CAPITAL COSTS | \$80,699 |
| OPERATION AND MAINTENANCE COSTS | |
| Present Worth of GW/SW Sampling 2X/yr for 3 yrs @7% | \$58,794 |
| Present Worth of GW/SW Sampling 1X/yr for yrs 4 thru 30 @7% | \$109,607 |
| Present Worth of Wetland Restoration Monitoring for 5 yrs @ 7% | \$6,150 |
| Present Worth of Institutional Control Inspections for 30 years @ 7% | \$13,402 |
| Present Worth of Institut. Control Reviews (every 5 yrs for 30 years @ 7%) | \$41,169 |
| TOTAL O&M COSTS | \$229,122 |
| TOTAL CAPITAL AND O&M COSTS | \$309,821 |
| UNSPECIFIED DESIGN DETAILS (@25 PERCENT) | \$77,455 |
| TOTAL PRESENT WORTH OF ALTERNATIVE III-3a | \$387,277 |
| COST SENSITIVITY ANALYSIS - MINIMUM ESTIMATE | |
| Assume that the soil requiring excavation is reduced by 33% (40 CY, 72 tons, or 1 foot). | |
| Assume groundwater will attain MCLs after 5 years. Add two extra years validation for a total of 7 years monitoring. | |
| Assume wetlands monitoring will remain at 5 years and institutional controls will cease after 7 years. | |
| MINIMUM COST OF UNRESTRICTED USED ALTERNATIVE - AREA 3 | \$252,103 |
| COST SENSITIVITY ANALYSIS - MAXIMUM ESTIMATE | |
| Assume that the soil requiring excavation is increased by 33% (40 CY, 72 tons, or 1 foot). | |
| MAXIMUM COST OF UNRESTRICTED USED ALTERNATIVE - AREA 3 | \$395,077 |

Note: Detailed cost estimate is provided in Appendix B of FS report.

TABLE 14
SYNOPSIS OF FEDERAL AND STATE LOCATION-SPECIFIC ARARS FOR ALTERNATIVE II-3

AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

| REGULATORY AUTHORITY | LOCATION CHARACTERISTIC | REQUIREMENT | STATUS | REQUIREMENT SYNOPSIS | ACTION TO BE TAKEN TO ATTAIN REQUIREMENT |
|----------------------|-----------------------------|--|--------------------------|--|--|
| Federal | Floodplains | Floodplain Management Executive Order 11988 [40 CFR Part 6, Appendix A] | Applicable | Requires federal agencies to evaluate the potential adverse effects associated with direct and indirect development of a floodplain. Alternatives that involve modification/construction within a floodplain may not be selected unless a determination is made that no practicable alternative exists. If no practicable alternative exists, potential harm must be minimized and action taken to restore and preserve the natural and beneficial values of the floodplain. | Contaminated soil removal will be designed to minimize alteration/destruction of the floodplain area. If this alternative is chosen, floodplains affected by Remedial Investigation will be restored to original elevations. |
| | Wetlands | Protection of Wetlands Executive Order 11990 [40 CFR Part 6, Appendix A] | Applicable | Under this Order, federal agencies are required to minimize the destruction, loss, or degradation of wetlands, and preserve and enhance natural and beneficial values of wetlands. If remediation is required within wetland areas, and no practical alternative exists, potential harm must be minimized and action taken to restore natural and beneficial values. | Contaminated soil removal will be designed to minimize alteration/destruction of the wetlands. If this alternative is chosen, the wetlands will be restored. |
| | Wetlands, Aquatic Ecosystem | Clean Water Act, Dredge or Fill Requirements Section 404 [40 CFR Part 230] | Relevant and Appropriate | Section 404 of the CWA regulates the discharge of dredged or fill materials to U.S. waters, including wetlands. Filling wetlands would be considered a | The removal of soil will be designed for eventual restoration. A Massachusetts PGP (granted by USACE) is typically required prior to excavating/restoring |

TABLE 14 (continued)
SYNOPSIS OF FEDERAL AND STATE LOCATION-SPECIFIC ARARS FOR ALTERNATIVE II-3

AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

| REGULATORY AUTHORITY | LOCATION CHARACTERISTIC | REQUIREMENT | STATUS | REQUIREMENT SYNOPSIS | ACTION TO BE TAKEN TO ATTAIN REQUIREMENT |
|----------------------|--|---|---------------------------------|--|---|
| | | | | <p>discharge of fill materials. Guidelines for Specification of Disposal Sites for Dredged or Fill material at 40 CFR Part 230, promulgated under CWA Section 404(b)(1), maintain that no discharge of dredged or fill material will be permitted if there is a practical alternative that would have less effect on the aquatic ecosystem. If adverse impacts are unavoidable, action must be taken to restore, or create alternative wetlands.</p> | <p>any sediment. The substantive portions of the permit would potentially be required.</p> |
| | <p>Surface Waters, Endangered Species, Migratory Species</p> | <p>Fish and Wildlife Coordination Act [16 USC 661 <i>et seq.</i>]</p> | <p>Relevant and Appropriate</p> | <p>Actions that affect species/habitat require consultation with USDOJ, USFWS, NMFS, and/or state agencies, as appropriate, to ensure that proposed actions do not jeopardize the continued existence of the species or adversely modify or destroy critical habitat. The effects of water-related projects on fish and wildlife resources must be considered. Action must be taken to prevent, mitigate, or compensate for project-related damages or losses to fish and wildlife resources.</p> <p>Consultation with the responsible agency is also strongly recommended for on-site actions.</p> <p>Under 40 CFR Part 300.38, these</p> | <p>To the extent necessary, actions will be taken to develop measures to prevent, mitigate, or compensate for project related impacts to habitat and wildlife. The USFWS, acting as a review agency for the USEPA, will be kept informed of proposed Remedial Investigations.</p> |

TABLE 14 (continued)
SYNOPSIS OF FEDERAL AND STATE LOCATION-SPECIFIC ARARS FOR ALTERNATIVE II-3

AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

| REGULATORY AUTHORITY | LOCATION CHARACTERISTIC | REQUIREMENT | STATUS | REQUIREMENT SYNOPSIS | ACTION TO BE TAKEN TO ATTAIN REQUIREMENT |
|-----------------------------|---|---|--------------------------|--|--|
| | | | | requirements apply to all response activities under the NCP. | |
| | Endangered Species | Endangered Species Act [50 CFR Parts 17.11-17.12] | Relevant and Appropriate | This act requires action to avoid jeopardizing the continued existence of listed endangered or threatened species or modification of their habitat. | According to the RI report, no endangered federally-listed species have been identified within one mile of the AOC 57. However, protection of endangered species and their habitat will be considered as part of the design and excavation activities. |
| | Atlantic Flyway, Wetlands, Surface Waters | Migratory Bird Treaty Act [16 USC 703 <u>et seq.</u>] | Relevant and Appropriate | The Migratory Bird Treaty Act protects migratory birds, their nests, and eggs. A depredation permit is required to take, possess, or transport migratory birds or disturb their nests, eggs, or young. | Remedial Investigations will be performed to protect migratory birds, their nests, and eggs. |
| State | Floodplains, Wetlands, Surface Waters | Massachusetts Wetland Protection Regulations [310 CMR 10.00] | Applicable | These regulations include standards on dredging, filling, altering, or polluting inland wetlands and protected areas (defined as areas within the 100-year floodplain). A NOI must be filed with the municipal conservation commission and a Final Order of Conditions obtained before proceeding with the activity. A Determination of Applicability or NOI must be filed for activities such as excavation within a 100 foot buffer zone. The regulations specifically prohibit loss of over 5,000 | All work to be performed within wetlands and the 100 foot buffer zone will be in accordance with the substantive requirements of these regulations. |

TABLE 14 (continued)
SYNOPSIS OF FEDERAL AND STATE LOCATION-SPECIFIC ARARS FOR ALTERNATIVE II-3

AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

| REGULATORY AUTHORITY | LOCATION CHARACTERISTIC | REQUIREMENT | STATUS | REQUIREMENT SYNOPSIS | ACTION TO BE TAKEN TO ATTAIN REQUIREMENT |
|-------------------------|----------------------------|--|------------|--|---|
| | | | | square feet of bordering vegetated wetland. Loss may be permitted with replication of any lost area within two growing seasons. | |
| | Endangered Species | Massachusetts Endangered Species Regulations [321 CMR 8.00] | Applicable | Actions must be conducted in a manner that minimizes the impact to Massachusetts-listed rare, threatened, or endangered species, and species listed by the Massachusetts Natural Heritage Program. | The RI report identified several state-listed rare, threatened, or endangered species occurring within one mile of AOC 57. The protection of state listed endangered species will be considered during the design and implementation of this alternative. |

Notes:

- AOC = Area of contamination
- ARAR = Area of Contamination
- CFR = Code of Federal Regulations
- CMR = Code of Massachusetts Regulations
- CWA = Clean Water Act
- USDOI = U.S. Department of the Interior
- USFWS = U.S. Fish and Wildlife Service
- NCP = National Contingency Plan
- NMFS = National Maine Fisheries Service
- NOI = Notice of Intent
- PGP = Programmatic General Permit
- RI = Remedial Investigation
- USACE = U.S. Army Corps of Engineers
- USEPA = U.S. Environmental Protection Agency
- USC = United States Code

**TABLE 15
SYNOPSIS OF FEDERAL AND STATE CHEMICAL-SPECIFIC ARARS FOR ALTERNATIVE II-3**

**AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS**

| REGULATORY AUTHORITY | CHEMICAL MEDIUM | REQUIREMENT | STATUS | REQUIREMENT SYNOPSIS | ACTION TO BE TAKEN TO ATTAIN REQUIREMENT |
|-----------------------------|------------------------|---|--------------------------|---|--|
| Federal | Groundwater | Safe Drinking Water Act, National Primary Drinking Water Regulations, MCLs and MCLGs [40 CFR Parts 141.60 - 141.63 and 141.50 - 141.52] | Relevant and Appropriate | The National Primary Drinking Water Regulations establish MCLs and MCLGs for several common organic and inorganic contaminants. MCLs specify the maximum permissible concentrations of contaminants in public drinking water supplies. MCLs are federally enforceable standards based in part on the availability and cost of treatment techniques. MCLGs specify the maximum concentration at which no known or anticipated adverse effect on humans will occur. MCLGs are non-enforceable health based goals set equal to or lower than MCLs. | The MCLs for arsenic and PCE will likely be met through natural attenuation processes. Monitoring would be performed to measure changes in contaminant concentrations or migration; therefore attainment of groundwater ARARs would eventually be confirmed at the two locations (57M-95-04A and 57P-98-02X), where MCL exceedances were detected. |
| State | Groundwater | Massachusetts Groundwater Quality Standards [314 CMR 6.00] | Relevant and Appropriate | These standards designate and assign uses for which groundwaters of the Commonwealth shall be maintained and protected, and set forth water quality criteria necessary to maintain the designated uses. Groundwater at Fort Devens is classified as Class I, fresh groundwaters designated as a source of potable water supply. | 314 CMR 6.00 would be met by achieving MMCLs for arsenic and PCE. The MMCLs for arsenic and PCE will likely be met through natural attenuation processes. Monitoring would be performed to measure changes in contaminant concentrations or migration; therefore attainment of groundwater MMCLs would eventually be confirmed at the two locations (57M-95-04A and 57P-98-02X). |
| | Groundwater | Massachusetts Drinking | Relevant and | These regulations list MMCLs which | As previously stated, Devens |

TABLE 15 (continued)
SYNOPSIS OF FEDERAL AND STATE CHEMICAL-SPECIFIC ARARS FOR ALTERNATIVE II-3

AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

| REGULATORY AUTHORITY | CHEMICAL MEDIUM | REQUIREMENT | STATUS | REQUIREMENT SYNOPSIS | ACTION TO BE TAKEN TO ATTAIN REQUIREMENT |
|-------------------------|--------------------|--------------------------------------|-------------|---|--|
| | | Water Regulations [310 CMR 22.00] | Appropriate | apply to drinking water distributed through a public water system. | groundwater is classified as Class I, and designated as a source of potable water supply. AOC 57 is currently not within a Zone I or II/Interim Wellhead Protection Area. An AUL would be established at Area 2 until the environmental monitoring program indicates that MMCLs have been achieved for at least three years. |

Notes:

- AOC = Area of contamination
- ARARs = Applicable or Relevant and Appropriate Requirements
- CFR = Code of Federal Regulations
- CMR = Code of Massachusetts Rules
- MCL = Maximum Contaminant Level
- MCLG = Maximum Contaminant Level Goal
- MMCL = Massachusetts Maximum Contaminant Level
- PCE = Tetrachloroethylene

**TABLE 16
SYNOPSIS OF FEDERAL AND STATE ACTION-SPECIFIC ARARS FOR ALTERNATIVE II-3**

**AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS**

| REGULATORY AUTHORITY | ACTION | REQUIREMENT | STATUS | REQUIREMENT SYNOPSIS | ACTION TO BE TAKEN TO ATTAIN REQUIREMENT |
|-----------------------------|---|---|--------------------------|---|---|
| Federal | Control of surface water runoff, Direct discharge to surface water | Clean Water Act NPDES Permit Program [40 CFR 122,125] | Relevant and Appropriate | The NPDES permit program specifies the permissible concentration or level of contaminants in the discharge from any point source, including surface runoff, to waters of the United States. | Construction activities will be controlled to meet USEPA discharge requirements. Water collected from dewatering and stockpile activities will be collected and treated offsite or discharged to the Devens WWTP. Any on-site runoff discharges (though none expected) will meet the substantive requirements of these regulations. |
| | Discharge to Devens Treatment Plant | CWA, General Pretreatment Program (40 CFR Part 403) | Applicable | Discharge of nondomestic wastewater to WWTP must comply with the general prohibitions of this regulation, as well as categorical standards, and local pretreatment standards. | Discharge to Devens WWTP would be sampled to evaluate compliance with pre-treatment standards. |
| | Groundwater | USEPA OSWER Publication 9345.3-03FS, January 1992 | To Be Considered | Management of IDW must ensure protection of human health and the environment. | IDW produced from well sampling will comply with ARARs. |
| | RCRA - Identification and Listing of Hazardous Wastes | Toxicity Characteristics (40 CFR 261.24) | Applicable | Defines those wastes that are subject to regulations as hazardous wastes under 40 CFR Parts 124 and 264. | Soil/sediment analytical results will be evaluated against the criteria and definitions of hazardous waste. The criteria and definition of hazardous waste will be referred to and utilized in development of the Remedial |

TABLE 16 (continued)
SYNOPSIS OF FEDERAL AND STATE ACTION-SPECIFIC ARARS FOR ALTERNATIVE II-3

AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

| REGULATORY AUTHORITY | ACTION | REQUIREMENT | STATUS | REQUIREMENT SYNOPSIS | ACTION TO BE TAKEN TO ATTAIN REQUIREMENT |
|----------------------|--|---|--------------------------|---|---|
| | Disposal of soil that contains hazardous waste | RCRA, Land Disposal Restrictions (40 CFR 268) | Applicable | Land disposal of RCRA hazardous wastes without specified treatment is restricted. LDRs require that such wastes must be treated either by a treatment technology or to a specific concentration prior to disposal in a RCRA Subtitle C permitted facility. | Investigation. Waste materials from Area 2 will be evaluated to determine whether the waste is subject to LDRs. If so, the materials will be treated in accordance with LDRs prior to disposal at an off-base facility. |
| | Management of PCB-contaminated soil | TSCA (40 CFR Part 761 Subpart G) PCB Spill Cleanup Policy | To be considered | This policy governs the cleanup of PCB spills occurring after May 4, 1987. Because this policy is not a regulation and only applies to recent spills (reported within 24hours of occurrence), these requirements are not applicable, but will be considered. | This policy would only be considered during the development of Remedial Investigation for areas with expected detected PCBs at concentrations greater than or equal to 50 ppm. The highest concentration of PCBs in soil was detected during the RI at 12 ppm. |
| | Management of PCB-contaminated soil | TSCA (40 CFR Part 761 Subpart D) Storage and Disposal | Relevant and Appropriate | This regulation governs the storage and final disposal of PCBs. The regulation also specifies procedures to be followed in decontaminating containers and moveable equipment used in storage areas. Section 761.61 pertains to PCB remediation wastes and provides self-implementing on-site cleanup and disposal requirements. Per Section 761.61, the self-implementing cleanup provisions are not binding for cleanups | Section 761.61 cleanup levels for low and high occupancy areas are ≤ 1 ppm, respectively. RI calculated RBCs for Aroclor - 1260 are more conservative and will be used as PRGs at AOC 57. Off-site storage, disposal and decontamination requirements specified in this regulation will be applied for soil or sediment containing PCBs. |

TABLE 16 (continued)
SYNOPSIS OF FEDERAL AND STATE ACTION-SPECIFIC ARARS FOR ALTERNATIVE II-3

AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

| REGULATORY AUTHORITY | ACTION | REQUIREMENT | STATUS | REQUIREMENT SYNOPSIS | ACTION TO BE TAKEN TO ATTAIN REQUIREMENT |
|----------------------|--|--|--------------------------|---|--|
| | | | | conducted under CERCLA. | |
| State | Hazardous Waste | Hazardous Waste Management Systems; (RCRA 40 CFR 260) | Relevant and Appropriate | USEPA procedures for making information available to the public; rules for claims of business confidentially. | Does not address cleanup requirements. However, these procedures will be followed when dealing with hazardous waste. |
| | Hazardous Waste | Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities (RCRA 40 CFR 264) | Relevant and Appropriate | Define requirements for RCRA facility operations and management including impoundments, waste piles, land treatment, landfills, incinerators, storage, closure and post closure. | Operations, management and safety requirements in effect for all portions of remedial process, if hazardous waste is being handled. |
| | Hazardous Waste | RCRA 40 CFR Part 262, Standards Applicable to Generators of Hazardous Waste | Relevant and Appropriate | These regulations establish standards for generators of hazardous waste. RCRA Subtitle C established standards applicable to treatment, storage, and disposal of hazardous waste and closure of hazardous waste facilities. | Sediments will be tested to determine whether they contain characteristic hazardous waste. If so, management of the hazardous waste would comply with substantive requirements of these regulations. |
| | Hazardous Waste | Massachusetts Hazardous Waste Management Rules; 310 CMR 30.000 | Relevant and Appropriate | These rules set forth Massachusetts definitions and criteria for establishing whether waste materials are hazardous and subject to associated hazardous waste regulations. | These regulations supplement RCRA requirements. Those criteria and definitions more stringent than RCRA take precedence over federal requirements. |
| | Activities that potentially affect surface water quality | Massachusetts Water Quality Certification and Certification for Dredging [314 CMR 9.00] | Relevant and Appropriate | A Massachusetts Division of Water Pollution Control Water Quality Certification is required pursuant to 314 CMR 9.00 for dredging-related | Excavation and filling activities will meet the substantive criteria and standards of these regulations. Remedial activities will be designed to |

**TABLE 16 (continued)
SYNOPSIS OF FEDERAL AND STATE ACTION-SPECIFIC ARARS FOR ALTERNATIVE II-3**

**AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS**

| REGULATORY AUTHORITY | ACTION | REQUIREMENT | STATUS | REQUIREMENT SYNOPSIS | ACTION TO BE TAKEN TO ATTAIN REQUIREMENT |
|-----------------------------|--|---|---------------|---|--|
| | | | | activities in waters (including wetlands) within the Commonwealth which require federal licenses or permits and which are subject to state water quality certification. | attain and maintain Massachusetts Water Quality Standards in affected waters. |
| | Activities that affect ambient air quality | Massachusetts Air Pollution Control Regulations [310 CMR 7.00] | Applicable | These regulations pertain to the prevention of emissions in excess of Massachusetts ambient air quality standards. | Remedial activities will be conducted to meet the standards for Visible Emissions (310 CMR 7.06); Dust, Odor, Construction and Demolition (310 CMR 7.09); Noise (310 CMR 7.10); and Volatile Organic Compounds (310 CMR 7.18). |

Notes:

- ARARs= Applicable or Relevant and Appropriate Requirements
- CFR = Code of Federal Regulations
- CMR = Code of Massachusetts Regulations
- CWA = Clean Water Act
- IDW = Investigation derived waste
- LDR = Land Disposal Restrictions
- NPDES= National Pollutant Discharge Elimination System
- RCBs = Risk-based concentrations
- RCRA = Resource Conservation and Recovery Act
- RI = Remedial Investigation
- TSCA = Toxic Substances Control Act
- PCB = Polychlorinated biphenyls
- PRGs = preliminary remediation goals
- USEPA= U.S. Environmental Protection Agency
- WWTP= Wastewater Treatment Plant

**TABLE 17
SYNOPSIS OF FEDERAL AND STATE LOCATION-SPECIFIC ARARS FOR ALTERNATIVE III-2A**

**AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS**

| REGULATORY AUTHORITY | LOCATION CHARACTERISTIC | REQUIREMENT | STATUS | REQUIREMENT SYNOPSIS | ACTION TO BE TAKEN TO ATTAIN REQUIREMENT |
|-----------------------------|--------------------------------|---|--------------------------|--|--|
| Federal | Floodplains | Floodplain Management Executive Order 11988 [40 CFR Part 6, Appendix A] | Applicable | Requires federal agencies to evaluate the potential adverse effects associated with direct and indirect development of a floodplain. Alternatives that involve modification/construction within a floodplain may not be selected unless a determination is made that no practicable alternative exists. If no practicable alternative exists, potential harm must be minimized and action taken to restore and preserve the natural and beneficial values of the floodplain. | Contaminated soil removal will be designed to minimize alteration/destruction of the floodplain area. If this alternative is chosen, floodplains affected by Remedial Investigation will be restored to original elevations. |
| | Wetlands | Protection of Wetlands Executive Order 11990 [40 CFR Part 6, Appendix A] | Applicable | Under this Order, federal agencies are required to minimize the destruction, loss, or degradation of wetlands, and preserve and enhance natural and beneficial values of wetlands. If remediation is required within wetland areas, and no practical alternative exists, potential harm must be minimized and action taken to restore natural and beneficial values. | Contaminated soil removal will be designed to minimize alteration/destruction of the wetlands. If this alternative is chosen, the wetlands will be restored. |
| | Wetlands, Aquatic Ecosystem | Clean Water Act, Dredge or Fill Requirements Section 404 | Relevant and Appropriate | Section 404 of the Clean Water Act (CWA) regulates the discharge of dredged or fill materials to U.S. | The removal of soil will be designed for eventual restoration. A Massachusetts PGP (granted by USACE) is typically |

TABLE 17 (continued)
 SYNOPSIS OF FEDERAL AND STATE LOCATION-SPECIFIC ARARS FOR ALTERNATIVE III-2A

AOC 57 RECORD OF DECISION
 DEVENS RFTA, DEVENS, MASSACHUSETTS

| REGULATORY AUTHORITY | LOCATION CHARACTERISTIC | REQUIREMENT | STATUS | REQUIREMENT SYNOPSIS | ACTION TO BE TAKEN TO ATTAIN REQUIREMENT |
|-------------------------|--|---|-----------------------------|--|--|
| | | [40 CFR Part 230] | | waters, including wetlands. Filling wetlands would be considered a discharge of fill materials. Guidelines for Specification of Disposal Sites for Dredged or Fill material at 40 CFR Part 230, promulgated under CWA Section 404(b)(1), maintain that no discharge of dredged or fill material will be permitted if there is a practical alternative that would have less effect on the aquatic ecosystem. If adverse impacts are unavoidable, action must be taken to restore, or create alternative wetlands. | required prior to excavating/restoring any sediment. The substantive portions of the permit would potentially be required. |
| | Surface Waters, Endangered Species, Migratory Species | Fish and Wildlife Coordination Act [16 USC 661 <u>et seq.</u>] | Relevant and Appropriate | Actions that affect species/habitat require consultation with USDOJ, USFWS, NMFS, and/or state agencies, as appropriate, to ensure that proposed actions do not jeopardize the continued existence of the species or adversely modify or destroy critical habitat. The effects of water-related projects on fish and wildlife resources must be considered. Action must be taken to prevent, mitigate, or compensate for project-related damages or losses to fish and wildlife resources. | To the extent necessary, actions will be taken to develop measures to prevent, mitigate, or compensate for project related impacts to habitat and wildlife. The USFWS, acting as a review agency for the USEPA, will be kept informed of proposed Remedial Investigations. |

TABLE 17 (continued)
SYNOPSIS OF FEDERAL AND STATE LOCATION-SPECIFIC ARARS FOR ALTERNATIVE III-2A

AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

| REGULATORY AUTHORITY | LOCATION CHARACTERISTIC | REQUIREMENT | STATUS | REQUIREMENT SYNOPSIS | ACTION TO BE TAKEN TO ATTAIN REQUIREMENT |
|-------------------------|---|---|--------------------------|--|--|
| | | | | <p>Consultation with the responsible agency is also strongly recommended for on-site actions.</p> <p>Under 40 CFR Part 300.38, these requirements apply to all response activities under the NCP.</p> | |
| | Endangered Species | Endangered Species Act [50 CFR Parts 17.11-17.12] | Relevant and Appropriate | This act requires action to avoid jeopardizing the continued existence of listed endangered or threatened species or modification of their habitat. | According to the RI report, no endangered federally-listed species have been identified within one mile of the AOC 57. However, protection of endangered species and their habitat will be considered as part of the design and excavation activities. |
| | Atlantic Flyway, Wetlands, Surface Waters | Migratory Bird Treaty Act [16 USC 703 <i>et seq.</i>] | Relevant and Appropriate | The Migratory Bird Treaty Act protects migratory birds, their nests, and eggs. A depredation permit is required to take, possess, or transport migratory birds or disturb their nests, eggs, or young. | Remedial Investigations will be performed to protect migratory birds, their nests, and eggs. |
| State | Floodplains, Wetlands, Surface Waters | Massachusetts Wetland Protection Regulations [310 CMR 10.00] | Applicable | These regulations include standards on dredging, filling, altering, or polluting inland wetlands and protected areas (defined as areas within the 100-year flood plain). A NOI must be filed with the municipal conservation commission and a Final Order of | All work to be performed within wetlands and the 100-foot buffer zone will be in accordance with the substantive requirements of these regulations. |

TABLE 17 (continued)
SYNOPSIS OF FEDERAL AND STATE LOCATION-SPECIFIC ARARS FOR ALTERNATIVE III-2A

AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

| REGULATORY AUTHORITY | LOCATION CHARACTERISTIC | REQUIREMENT | STATUS | REQUIREMENT SYNOPSIS | ACTION TO BE TAKEN TO ATTAIN REQUIREMENT |
|-------------------------|----------------------------|--|------------|--|---|
| | | | | Conditions obtained before proceeding with the activity. A Determination of Applicability or NOI must be filed for activities such as excavation within a 100-foot buffer zone. The regulations specifically prohibit loss of over 5,000 square feet of bordering vegetated wetland. Loss may be permitted with replication of any lost area within two growing seasons. | |
| | Endangered Species | Massachusetts Endangered Species Regulations [321 CMR 8.00] | Applicable | Actions must be conducted in a manner that minimizes the impact to Massachusetts-listed rare, threatened, or endangered species, and species listed by the Massachusetts Natural Heritage Program. | The RI report identified several state-listed rare, threatened, or endangered species occurring within one mile of AOC 57. The protection of state listed endangered species will be considered during the design and implementation of this alternative. |

Notes:

- AOC = Area of contamination
- ARAR = Area of Contamination
- CFR = Code of Federal Regulations
- CMR = Code of Massachusetts Regulations
- CWA = Clean Water Act
- USDOI = U.S. Department of the Interior
- USFWS = U.S. Fish and Wildlife Service
- NCP = National Contingency Plan
- NMFS = National Maine Fisheries Service

TABLE 17 (continued)
SYNOPSIS OF FEDERAL AND STATE LOCATION-SPECIFIC ARARS FOR ALTERNATIVE III-2A

AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

| | | |
|-------|---|--------------------------------------|
| NOI | = | Notice of Intent |
| PGP | = | Programatic General Permit |
| RI | = | Remedial Investigation |
| USACE | = | U.S. Army Corps of Engineers |
| USEPA | = | U.S. Environmental Protection Agency |
| USC | = | United States Code |

**TABLE 18
SYNOPSIS OF FEDERAL AND STATE CHEMICAL-SPECIFIC ARARS FOR ALTERNATIVES III-2A**

**AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS**

| REGULATORY AUTHORITY | CHEMICAL MEDIUM | REQUIREMENT | STATUS | REQUIREMENT SYNOPSIS | ACTION TO BE TAKEN TO ATTAIN REQUIREMENT |
|-----------------------------|------------------------|---|--------------------------|--|---|
| Federal | Groundwater | Safe Drinking Water Act, National Primary Drinking Water Regulations, MCLs and MCLGs [40 CFR Parts 141.60 - 141.63 and 141.50 - 141.52] | Relevant and Appropriate | The National Primary Drinking Water Regulations establish Maximum Contaminant Levels (MCLs) and Maximum Contaminant Level Goals (MCLGs) for several common organic and inorganic contaminants. MCLs specify the maximum permissible concentrations of contaminants in public drinking water supplies. MCLs are federally enforceable standards based in part on the availability and cost of treatment techniques. MCLGs specify the maximum concentration at which no known or anticipated adverse effect on humans will occur. MCLGs are non-enforceable health based goals set equal to or lower than MCLs. | The MCLs for arsenic, cadmium, tetrachloroethene (PCE), and 1,4-dichlorobenzene will likely be met through natural attenuation processes. Monitoring would be performed to measure changes in contaminant concentrations or migration; therefore attainment of groundwater ARARs would eventually be confirmed at the two locations (57M-95-03X and 57M-96-11X), where MCL exceedances were detected. |
| State | Groundwater | Massachusetts Groundwater Quality Standards [314 CMR 6.00] | Relevant and Appropriate | These standards designate and assign uses for which groundwaters of the commonwealth shall be maintained and protected, and set forth water quality criteria necessary to maintain the designated uses. Groundwater at Fort Devens is classified as Class I, fresh groundwaters designated as a | 314 CMR 6.00 would be met by achieving MMCLs for arsenic, cadmium, PCE, and 1,4-dichlorobenzene. The MMCLs will likely be met through natural attenuation processes. Monitoring would be performed to measure changes in contaminant concentrations or |

TABLE 18 (continued)
SYNOPSIS OF FEDERAL AND STATE CHEMICAL-SPECIFIC ARARS FOR ALTERNATIVE III-2A

AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

| REGULATORY AUTHORITY | CHEMICAL MEDIUM | REQUIREMENT | STATUS | REQUIREMENT SYNOPSIS | ACTION TO BE TAKEN TO ATTAIN REQUIREMENT |
|-------------------------|--------------------|--|--------------------------|---|---|
| | | | | source of potable water supply. | migration; therefore attainment of groundwater MMCLs would eventually be confirmed at the two locations (57M-95-03X and 57M-96-11X). |
| | Groundwater | Massachusetts Drinking Water Regulations [310 CMR 22.00] | Relevant and Appropriate | These regulations list Massachusetts MCLs applicable to drinking water distributed through a public water system. | As previously stated, Devens groundwater is classified as Class 1, and designated as a source of potable water supply. AOC 57 is currently not within a Zone I or II/Interim Wellhead Protection Area. An AUL would be established at Area 3 until the environmental monitoring program indicates that MMCLs have been achieved for at least three years. |

Notes:

- AOCs = Area of Contamination
- ARARs = Applicable or Relevant and Appropriate Requirements
- CFR = Code of Federal Regulations
- CMR = Code of Massachusetts Rules
- MCL = Maximum Contaminant Level
- MCLG = Maximum Contaminant Level Goal
- MMCL = Massachusetts Maximum Contaminant Level

TABLE 19
SYNOPSIS OF FEDERAL AND STATE ACTION-SPECIFIC ARARS FOR ALTERNATIVE III-2A

AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

| REGULATORY AUTHORITY | ACTION | REQUIREMENT | STATUS | REQUIREMENT SYNOPSIS | ACTION TO BE TAKEN TO ATTAIN REQUIREMENT |
|-----------------------------|---|---|--------------------------|---|---|
| Federal | Control of surface water runoff, Direct discharge to surface water | Clean Water Act NPDES Permit Program [40 CFR 122,125] | Relevant and Appropriate | The National Pollutant Discharge Elimination System (NPDES) permit program specifies the permissible concentration or level of contaminants in the discharge from any point source, including surface runoff, to waters of the United States. | Construction activities will be controlled to meet USEPA discharge requirements. Water collected from dewatering and stockpile activities will be collected and treated offsite or discharged to Devens WWTP. Any on-site runoff discharges (though none expected) will meet the substantive requirements of these regulations. |
| | Discharge to Devens Treatment Plant | CWA, General Pretreatment Program (40 CFR Part 403) | Applicable | Discharge of nondomestic wastewater to WWTP must comply with the general prohibitions of this regulation, as well as categorical standards, and local pretreatment standards. | Discharge to Devens WWTP would be sampled to evaluate compliance with pre-treatment standards. |
| | Groundwater | USEPA OSWER Publicaton 9345.3-03FS, January 1992 | To Be Considered | Management of IDW must ensure protection of human health and the environment. | IDW produced from well sampling will comply with ARARs. |
| | RCRA – Identification and Listing of Hazardous Wastes | Toxicity Characteristics (40 CFR 261.24) | Applicable | Defines those wastes that are subject to regulations as hazardous wastes under 40 CFR Parts 124 and 264. | Soil/sediment analytical results will be evaluated against the criteria and definitions of hazardous waste. The criteria and definition of hazardous waste will be referred to and utilized in development of the remedial action. |
| | Disposal of soil | RCRA, Land Disposal | Applicable | Land disposal of RCRA hazardous | Waste materials from Area 3 will be |

TABLE 19 (continued)
SYNOPSIS OF FEDERAL AND STATE ACTION-SPECIFIC ARARS FOR ALTERNATIVE III-2A

AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

| REGULATORY AUTHORITY | ACTION | REQUIREMENT | STATUS | REQUIREMENT SYNOPSIS | ACTION TO BE TAKEN TO ATTAIN REQUIREMENT |
|-----------------------------|-------------------------------|--|--------------------------|--|--|
| | that contains hazardous waste | Restrictions (40 CFR 268) | | wastes without specified treatment is restricted. LDRs require that such wastes must be treated either by a treatment technology or to a specific concentration prior to disposal in a RCRA Subtitle C permitted facility. | evaluated to determine whether the waste is subject to LDRs. If so, the materials will not be disposed of on base but will be treated in accordance with LDRs prior to disposal at an off-base facility. |
| | Hazardous Waste | Hazardous Waste Management Systems; (RCRA 40 CFR 260) | Relevant and Appropriate | USEPA procedures for making information available to the public; rules for claims of business confidentially. | Does not address cleanup requirements. However, these procedures will be followed when dealing with hazardous waste. |
| | Hazardous Waste | Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities (RCRA 40 CFR 264) | Relevant and Appropriate | Define requirements for RCRA facility operations and management including impoundments, wastepiles, land treatment, landfills, incinerators, storage, closure and post closure. | Operations, management and safety requirements in effect for all portions of remedial process, if hazardous waste is being handled. |
| | Hazardous Waste | RCRA 40 CFR Part 262, Standards Applicable to Generators of Hazardous Waste | Relevant and Appropriate | RCRA Subtitle C established standards applicable to treatment, storage, and disposal of hazardous waste and closure of hazardous waste facilities. | Sediments will be tested to determine whether they contain characteristic hazardous waste. If so, treatment on-site would comply with substantive requirements of these regulations. |
| State | Hazardous Waste | Massachusetts Hazardous Waste Management Rules; 310 CMR 30.000 | Relevant and Appropriate | These rules set forth Massachusetts definitions and criteria for establishing whether waste materials are hazardous and subject to associated hazardous waste regulations. | These regulations supplement RCRA requirements. Those criteria and definitions more stringent than RCRA take precedence over federal requirements. |

TABLE 19 (continued)
SYNOPSIS OF FEDERAL AND STATE ACTION-SPECIFIC ARARS FOR ALTERNATIVE III-2A

AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

| REGULATORY AUTHORITY | ACTION | REQUIREMENT | STATUS | REQUIREMENT SYNOPSIS | ACTION TO BE TAKEN TO ATTAIN REQUIREMENT |
|-------------------------|--|---|--------------------------|---|--|
| | Activities that potentially affect surface water quality | Massachusetts Water Quality Certification and Certification for Dredging [314 CMR 9.00] | Relevant and Appropriate | A Massachusetts Division of Water Pollution Control Water Quality Certification is required pursuant to 314 CMR 9.00 for dredging-related activities in waters (including wetlands) within the Commonwealth which require federal licenses or permits and which are subject to state water quality certification. | Excavation and filling activities will meet the substantive criteria and standards of these regulations. Remedial activities will be designed to attain and maintain Massachusetts Water Quality Standards in affected waters. |
| | Activities that affect ambient air quality | Massachusetts Air Pollution Control Regulations [310 CMR 7.00] | Applicable | These regulations pertain to the prevention of emissions in excess of Massachusetts ambient air quality standards. | Remedial activities will be conducted to meet the standards for Visible Emissions (310 CMR 7.06); Dust, Odor, Construction and Demolition (310 CMR 7.09); Noise (310 CMR 7.10); and Volatile Organic Compounds (310 CMR 7.18). |

Notes:

- ARARs= Applicable or Relevant and Appropriate Requirements
- CFR = Code of Federal Regulations
- CMR = Code of Massachusetts Regulations
- CWA = Clean Water Act
- IDW = Investigation-derived waste
- LDR = Land Disposal Restrictions
- NPDES= National Pollutant Discharge Elimination System
- PCB = Polychlorinated biphenyls
- PRGs = preliminary remediation goals

TABLE 19 (continued)
SYNOPSIS OF FEDERAL AND STATE ACTION-SPECIFIC ARARS FOR ALTERNATIVE III-2A

AOC 57 RECORD OF DECISION
DEVENS RFTA, DEVENS, MASSACHUSETTS

RBCs = Risk-based concentrations
RCRA = Resource Conservation and Recovery Act
RI = Remedial Investigation
TSCA = Toxic Substances Control Act
USEPA = U.S. Environmental Protection Agency
WWTP = Wastewater Treatment Plant

APPENDIX C - RESPONSIVENESS SUMMARY

RESPONSIVENESS SUMMARY

**RECORD OF DECISION
AREA OF CONTAMINATION 57**

**DEVENS RFTA
DEVENS, MASSACHUSETTS**

SEPTEMBER 2001

PRINTED ON RECYCLED PAPER

**RESPONSIVENESS SUMMARY
AREA OF CONTAMINATION 57**

**DEVENS RFTA
DEVENS, MASSACHUSETTS**

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RESPONSIVENESS SUMMARY
Area of Contamination 57
Devens RFTA, Devens, Massachusetts

PREFACE

This Responsiveness Summary has been prepared to meet the requirements of Sections 113(k)(2)(B)(iv) and 117(b) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), which requires response to "... significant comments, criticisms, and new data submitted in written or oral presentations" on a proposed plan for remedial action. The purpose of this Responsiveness Summary is to document the Army's responses to questions and comments expressed during the public comment period by the public, potentially responsible parties, and governmental bodies in written and oral comments regarding the Proposed Plan to Clean Up Areas of Contamination (AOC) 57 at the Devens Reserve Forces Training Area (RFTA), Devens, Massachusetts.

On February 23, 2001, the Army published a public notice announcing the Proposed Plan, the date for a public informational meeting, and the start and end dates of a 31-day public comment period in the Leominster Fitchburg Sentinel & Enterprise, Worcester Telegram, Harvard Post, and papers of the Nashoba Publishing Company (Groton Landmark, Harvard Hillside, Pepperell Free Press, The Public Spirit, Shirley Oracle, and Townsend Times). Notice was published in the Lowell Sun on February 26, 2001. The public notices were republished by the Leominster Fitchburg Sentinel & Enterprise, Lowell Sun, Worcester Telegram and Harvard Post on March 5, 2001, and by Nashoba Publishing Company on March 7, 2001. Notice announcing a 30-day extension of the public comment was published in the Lowell Sun on March 28, 2001, Leominster Fitchburg Sentinel & Enterprise on March 28, 2001, Worcester Telegram on March 28, 2001, Harvard Post on March 30, 2001, and in the Groton Landmark, Harvard Hillside, Pepperell Free Press, The Public Spirit, Shirley Oracle, and Townsend Times on March 30, 2001. The Army also made the Proposed Plan available to the public at the public information repositories at the Ayer Public Library, the Hazen Memorial Library in Shirley, the Harvard Public Library, and the Lancaster Public Library, or by request from the Devens BRAC Environmental Office.

From February 23 through April 25, 2001, the Army held a 61-day public comment period to accept public comments on the Proposed Plan and on other documents released to the public. On March 8, 2001, the Army held an informal public information meeting at Devens RFTA to present the Army's Proposed Plan to the public and to provide the opportunity for open discussion concerning the Proposed Plan. The Army also accepted formal verbal or written comments from the public during a public hearing held as part of the meeting. A transcript of the hearing and formal public comments are attached to this Responsiveness Summary.

This Responsiveness Summary is organized into the following sections:

1. **Overview of Remedial Alternatives Considered in the Feasibility Study Including the Selected Remedy**-This section briefly outlines the remedial alternatives evaluated in detail in the Feasibility Study and presented in the Proposed Plan, including the Army's selected remedy.
2. **Background on Community Involvement**-This section provides a brief history of community involvement and Army initiatives to inform the community of site activities.

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3. **Summary of Comments Received During the Public Comment Period and ARMY responses-**
This section provides Army responses to verbal and written comments received from the public and not formally responded to during the public comment period. A transcript of the March 8, 2001, public hearing is included as Attachment A to this Responsiveness Summary. Copies of the comment letters are included in Attachment B of this Responsiveness Summary.

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**1.0 OVERVIEW OF REMEDIAL ALTERNATIVES CONSIDERED IN THE FEASIBILITY
STUDY INCLUDING THE SELECTED REMEDY**

1.1 DESCRIPTION OF EVALUATED ALTERNATIVES FOR AOC 57 AREA 1

Area 1 consists of a storm water outfall area and drainage ditch (Storm Drainage System 6 of the Storm Sewer System Evaluation [AREE 70] Report [ADL, 1994]) that receives precipitation collected from paved areas around Building 3713. The discharge to the storm drainage ditch eventually flows to Cold Spring Brook. An estimated 50 to 100 gallon spill of No. 4 fuel oil was discharged through the Area 1 outfall in 1977. Approximately 3,000 gallons of mixed oil and water were recovered through use of containment dikes and adsorbent booms in 1977, and approximately 25 cubic yards (cy) of petroleum contaminated soil were removed in 1997. Review of available data indicates that contamination associated with the fuel oil spill has been removed, and a risk assessment indicates that there are no unacceptable risks for unrestricted use.

An assessment of risks was performed as part of the Area of Contamination (AOC) 57 Remedial Investigation (RI) to demonstrate Area 1 does not pose an unacceptable risk for future unrestricted land use. The assessment indicates that there are no unacceptable risks for future unrestricted land use (Refer to Appendix N-1 of the RI report [HLA, 2000a]), and the RI report recommended no further action at AOC 57 Area 1.

Additional or alternative remedies were not evaluated in the Feasibility Study.

The selected remedy for AOC 57 Area 1 is No Further Action.

1.2 DESCRIPTION OF EVALUATED ALTERNATIVES FOR AOC 57 AREA 2

Area 2 consists of upland and floodplain areas downslope of a former vehicle storage yard associated with former motor repair shops. Area 2 was originally thought to have been contaminated by the Area 1 No. 4 fuel oil spill; however, area grading was such that overland flow to Area 2 would not have been possible. When initially investigated, this Area 2 consisted of an eroded drainage ditch created by periodic rainfall runoff from vehicle storage yards. The area has since been regraded (following a soil removal action) and a permanent drainage swale has been installed. Runoff drains into the swale and discharges east to Cold Spring Brook. Portions of Area 2 are within the Cold Spring Brook 100-year flood plain. Data gathered during the RI as well as preceding investigations suggests that Area 2 contamination is the result of the historical disposal of vehicle maintenance related wastes. Contaminant distributions indicate that the disposal occurred along the break in slope above the flood plain.

The Feasibility Study assessed how well the following three alternatives would meet the evaluation criteria while controlling potential adverse human-health effects from exposure to contaminated media at AOC 57 AOC 57 Area 2:

Alternative II-1: No Action

Alternative II-2: Limited Action

Alternative II-3: Excavation (For Possible Future Use) and Institutional Controls

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Alternative II-4: Excavation (For Unrestricted Use) and Institutional Controls

1.2.1 Alternative II-1: No Action

The No Action alternative was evaluated as a baseline with which to compare other alternatives. No remedial action, monitoring, further investigation, or five-year site reviews would be performed as part of this alternative. No action would be taken to monitor existing zoning conditions that limit site use and thereby limit potential exposure to site contaminants.

1.2.2 Alternative II-2: Limited Action

Alternative II-2 contains institutional controls and environmental monitoring components to reduce potential human-health risks associated with exposure to contaminated soil and groundwater at the Area 2 wetland. Key components of Alternative II-2 consist of following:

- Institutional Controls
 - Institutional controls that control excavation activities at the Area 2 wetland
 - Existing zoning that prohibits residential use of flood plain property and proposed deed restrictions that prohibit residential use of flood plain property and potable use of groundwater
- Environmental Monitoring
 - Long-term groundwater monitoring
 - Long-term surface water monitoring
- Institutional Control Inspections
- Five-year Site Reviews

1.2.3 Alternative II-3: Excavation (For Possible Future Use) and Institutional Controls

Alternative II-3 adds soil excavation to protect future construction workers and wetland protection components to the components of Alternative II-2 to reduce potential human-health risks associated with exposure to contaminated soil and groundwater at the Area 2 wetland. Alternative II-3 at AOC 57 Area 2 includes the following key components:

- Soil Excavation and Treatment/Disposal at an Approved Facility
- Wetlands Protection
- Institutional Controls
 - Existing zoning that prohibits residential use of flood plain property and proposed deed restrictions that prohibit residential use of flood plain property and potable use of groundwater
- Environmental Monitoring
 - Long-term groundwater monitoring
 - Long-term surface water monitoring
- Institutional Control Inspections
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1.2.4 Alternative II-4: Excavation (For Unrestricted Use) and Institutional Controls

Alternative II-4 contains components similar to those of Alternative II-3, but increases the extent of soil excavation to reduce potential human-health risks associated with contaminated soil and groundwater at the Area 2 flood plain. Key components of Alternative II-4 consist of following:

- Soil Excavation and Treatment/Disposal at an Approved Facility
- Wetlands Protection
- Institutional Controls
 - Existing zoning that prohibits residential use of flood plain property and proposed deed restrictions that prohibit potable use of groundwater
- Environmental Monitoring
 - Long-term groundwater monitoring
 - Long-term surface water monitoring
- Institutional Control Inspections
- Five-year Site Reviews

1.2.5 Selected Remedy For AOC 57 Area 2

The selected remedy for AOC 57 Area 2 is Alternative II-3: Excavation (For Possible Future Use) and Institutional Controls. This alternative provides institutional and engineering controls to limit exposure to site-related contaminants and to reduce source-area contaminant concentrations as a measure to cleanup groundwater to protective levels. The remedy does not include a management of migration component.

1.3 DESCRIPTION OF EVALUATED ALTERNATIVES FOR AOC 57 AREA 3

Similar to Area 2, Area 3 consists of upland and floodplain areas downslope of a former motor pool and vehicle storage yard. Area 3 was the site of a historic garage and vehicle waste disposal area. A soil removal action was performed in 1999, and much of the area has since been regraded. Runoff from Area 3 drains into the Cold Spring Brook floodplain and wetland.

The Feasibility Study assessed how well the following three alternatives would meet the evaluation criteria while controlling potential adverse human-health effects from exposure to contaminated media at AOC 57 Area 3:

- Alternative III-1: No Action
- Alternative III-2: Limited Action
- Alternative III-3: Excavation (For Unrestricted Use) and Institutional Controls

1.3.1 No Action

The No Action alternative was evaluated as a baseline with which to compare other alternatives. No remedial action, monitoring, further investigation, or five-year site reviews would be performed as part of

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this alternative. No action would be taken to monitor existing zoning conditions that limit site use and thereby limit potential exposure to site contaminants.

1.3.2 Alternative III-2: Limited Action

Alternative II-2 contains institutional controls and environmental monitoring components to reduce potential human-health risks associated with exposure to contaminated soil and groundwater at Area 3. Key components of Alternative III-2 consist of following:

- Institutional Controls
 - Existing zoning that prohibits residential use of property and proposed deed restrictions that prohibit residential use of flood plain property and potable use of Area 3 groundwater
- Environmental Monitoring
 - Long-term groundwater monitoring
 - Long-term surface water monitoring
- Institutional Control Inspections
- Five-year Site Reviews

1.3.3 Alternative III-3: Excavation (For Unrestricted Use) and Institutional Controls

Alternative III-3 adds soil excavation to the components of Alternative III-2 to reduce potential human-health risks associated with exposure to contaminated soil and groundwater at the Area 3. Alternative III-3 at AOC 57 Area 3 includes the following key components:

- Soil Excavation and Treatment/Disposal at an Approved Facility
- Wetlands Protection
- Institutional Controls
 - Existing zoning that prohibits residential use of property and proposed deed restrictions that prohibit potable use of Area 3 groundwater
- Environmental Monitoring:
 - Long-term groundwater monitoring
 - Long-term surface water monitoring
- Institutional Control Inspections
- Five-year Site Reviews

1.3.4 Selected Remedy For AOC 57 Area 3

The selected remedy for AOC 57 Area 3 is Alternative III-2a: Excavation (to Accelerate Groundwater Cleanup) and Institutional Controls. This remedy was not evaluated in the Feasibility Study, but was developed and selected in response to comments on the Proposed Plan which indicated that the Army's preferred remedy for Area 3 was Alternative III-2: Limited Action. The commentors expressed concern that groundwater cleanup would not occur quickly enough under that remedial approach.

Alternative III-2a contains the same components as Alternative III-3, but is based on the need to accelerate groundwater cleanup rather than to protect unrestricted use residents from potential risks from exposure to

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contaminated soil. Implementation of Alternative III-3, which is based on soil removal to protect potential residents, is not necessary because floodplain and wetland conditions and existing zoning controls in the Devens Reuse Plan will prevent residential development. Alternative III2a retains the restrictive deed covenants to prohibit potable use of groundwater at Parcel A6a (AOC 57).

Alternative III-2a at AOC 57 Area 3 includes the following key components:

- Soil Excavation and Treatment/Disposal at an Approved Facility
- Wetlands Protection
- Institutional Controls
 - Existing zoning that prohibits residential use of property and proposed deed restrictions that prohibit potable use of Area 3 groundwater
- Environmental Monitoring:
 - Long-term groundwater monitoring
 - Long-term surface water monitoring
- Institutional Control Inspections
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2.0 BACKGROUND ON COMMUNITY INVOLVEMENT

The Army has held regular and frequent informational meetings, issued fact sheets and press releases, and held public meetings to keep the community and other interested parties informed of activities at AOC 57. Community interest in AOC 57 was low throughout this process until issuance of the Proposed Plan. At that time, several community members and local groups expressed strong concerns about the Army's preferred alternatives and time frames to achieve groundwater cleanup goals.

In February 1992, the Army released, following public review, a community relations plan that outlined a program to address community concerns and keep citizens informed about and involved in remedial activities at Fort Devens. As part of this plan, the Army established a Technical Review Committee (TRC) in early 1992. The TRC, as required by SARA Section 211 and Army Regulation 200-1, included representatives from USEPA, U.S. Army Environmental Center, Devens RFTA, MADEP, local officials, and the community. Until January 1994, when it was replaced by the Restoration Advisory Board (RAB), the committee generally met quarterly to review and provide technical comments on schedules, work plans, work products, and proposed activities for the SAs and AOCs at Devens RFTA. The AREE, SI, RI, and FS reports, Proposed Plan, and other related support documents were all submitted to the TRC or RAB for their review and comment.

The Army, as part of its commitment to involve the affected communities, forms a RAB when an installation closure involves transfer of property to the community. The Fort Devens RAB was formed in February 1994 to add members of the Citizen's Advisory Committee (CAC) to the TRC. The CAC had been established previously to address Massachusetts Environmental Policy Act/Environmental Assessment issues concerning the reuse of property at Devens RFTA. The RAB consists of 28 members (15 original TRC members plus 13 new members) who are representatives from the Army, USEPA Region I, MADEP, local governments and citizens of the local communities. It meets monthly and provides advice to the installation and regulatory agencies on the Devens RFTA cleanup programs. Specific responsibilities include: addressing cleanup issues such as land use and cleanup goals, reviewing plans and documents, identifying proposed requirements and priorities, and conducting regular meetings that are open to the public.

On February 23, 2001, the Army issued the Proposed Plan, to provide the public with a brief explanation of the Army's proposal for remedial action at AOC 57. The Proposed Plan also described the opportunities for public participation and provided details on the upcoming public comment period and public meeting.

On February 23, 2001, the Army published a public notice announcing the Proposed Plan, the date for a public informational meeting, and the start and end dates of a 31-day public comment period in the Leominster Fitchburg Sentinel & Enterprise, Worcester Telegram, Harvard Post, and papers of the Nashoba Publishing Company (Groton Landmark, Harvard Hillside, Pepperell Free Press, The Public Spirit, Shirley Oracle, and Townsend Times). The Public Notice was published in the Lowell Sun on February 26, 2001. The public notices were republished by the Leominster Fitchburg Sentinel & Enterprise, Lowell Sun, Worcester Telegram and Harvard Post on March 5, 2001, and by Nashoba Publishing Company on March 7, 2001. Notice announcing a 30-day extension of the public comment was published in the Lowell Sun on March 28, 2001, Leominster Fitchburg Sentinel & Enterprise on March 28, 2001, Worcester Telegram on March 28, 2001, Harvard Post on March 30, 2001, and in the Groton Landmark, Harvard Hillside, Pepperell Free Press, The Public Spirit, Shirley Oracle, and Townsend Times

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on March 30, 2001. The Army also made the Proposed Plan available to the public at the public information repositories at the Ayer Public Library, the Hazen Memorial Library in Shirley, the Harvard Public Library, and the Lancaster Public Library, or by request from the Devens BRAC Environmental Office.

From February 23 through April 25, 2001, the Army held a 61-day public comment period to accept public comments on the Proposed Plan. On March 8, 2001, the Army held an informal public information meeting at Devens RFTA to present the Army's Proposed Plan to the public and to provide the opportunity for open discussion concerning the Proposed Plan. The Army also accepted formal verbal or written comments from the public during a public hearing held as part of the meeting.

All supporting documentation for the decision regarding AOC 57 is contained in the Administrative Record for review. The Administrative Record is a collection of all the documents considered by the Army in choosing the plan of action for AOC 57. On February 23, 2001, the Army made the Administrative Record available for public review at the Devens BRAC Environmental Office and at the Ayer Town Hall, Ayer, Massachusetts. An index to the Administrative Record is available at the USEPA Records Center, 90 Canal Street, Boston, Massachusetts and is provided as Appendix D of this Record of Decision.

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**3.0 SUMMARY OF COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD
AND ARMY RESPONSES**

The Army received verbal comments from five people during the public hearing on March 8, 2001, and written comments from 14 people during the public comment period (see Attachment A to this Appendix). The following paragraphs summarize the comments and provide the Army's responses.

The commentors are listed below:

Provided comments at hearing

Cornelius Sullivan, Chairman, Ayer Board of Selectmen, Ayer, Massachusetts
Dina Samfield, Ayer, Massachusetts
Laurie S. Nehring, People of Ayer Concerned About the Environment, Ayer, Massachusetts
Richard Doherty, GeoInsight, Westford, Massachusetts
Mildred Chandler, Citizens to Protect Residential Harvard, Harvard, Massachusetts

Provided written comments

Dina Samfield, Ayer, Massachusetts (March 7, 2001)
Mildred Chandler, Citizens to Protect Residential Harvard, Harvard, Massachusetts (March 8, 2001)
Ruth and Morton Miller, 75 Westcott Rd., Harvard, Massachusetts (March 8, 2001)
Richard Doherty, GeoInsight, Westford, Massachusetts (March 14, 2001)
Helen Fiori, 37 Blanchard Rd. Harvard, Massachusetts (March 14, 2001)
Robert Burkhardt, 12 Harvard Rd., Shirley, Massachusetts (March 20, 2001)
Laurie S. Nehring, People of Ayer Concerned About the Environment, Ayer, Massachusetts (March 26, 2001)
Pam Resor, Senator, and Geoffrey Hall, Representative (March 26, 2001)
Ayer Board of Selectmen (March 30, 2001), Forwarding of submittals by Laurie S. Nehring (March 26, 2001), Richard Doherty (March 14, 2001), Mildred Chandler (March 8, 2001), and David Salvadore, MADEP (February 17, 2000).
Don Kochis, 26 Park Lane, Harvard, Massachusetts (April 1, 2001)
Claire Rindenello, 14 Blanchard Rd., Harvard, Massachusetts (April 4, 2001)
Mildred Chandler, Citizens to Protect Residential Harvard, Harvard, Massachusetts (April 10, 2001)
William Ashe, Harvard Board of Selectmen, Harvard, Massachusetts (April 23, 2001)
Elizabeth Ainsley Campbell, Nashua River Watershed Association, Groton, Massachusetts (April 24, 2001)

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1. Public Hearing Statement from Cornelius Sullivan, Ayer, Massachusetts

Comment No. 1. Although the Areas 2 and 3 that have been discussed earlier tonight appear outside of the Zone II, it's not clear to me what effect groundwater or surface water may have on migration of those contaminants into Cold Spring Brook. The brook seems to enter part of the outer range of our Zone II to the Grove Pond Wells. I understand that Areas 2 and 3 are not to be returned, the drinking water, that is, to drinking water standards. And where our Zone II is so nearby and connected to these areas through Cold Spring Brook, that does just does not seem acceptable, at least to the people of Ayer.

Response: While AOC 57 Areas 2 and 3 are not within the Zone II, groundwater at AOC 57 does discharge to Cold Spring Brook which in turn discharges to Grove Pond. However, historical data suggest that AOC 57 is not contributing contaminants of concern to Cold Spring Brook.

As indicated in the Feasibility Study report and Proposed Plan, the Army's goal is to attain drinking water standards in AOC 57 groundwater. To accomplish this goal, the Army removed approximately 1,300 cubic yards of contaminated soil from Area 2 in 1994 and 1,860 cubic yards of contaminated soil from Area 3 in 1999. This soil was interpreted to be both a potential source of organic compound contamination to groundwater and the cause of reducing (i.e., anaerobic) conditions that result in release of arsenic to groundwater from natural soil materials. The Feasibility Study Report estimated that the length of time for attainment of the arsenic drinking water standard following soil removal might reasonably be within a range of less than 1 to 2 years at Area 2, and within a range of 1 to 8 years at Area 3. Because of the many variables that influence the cleanup time, accurately predicting an exact duration is difficult. To evaluate the sensitivity of estimated costs to the length of time that groundwater monitoring was performed, the Feasibility Study evaluated a 3 year and 30 year duration for Area 2 and a 7 year and 30 year duration at Area 3.

To better evaluate progress toward attainment of groundwater cleanup goals, the USEPA and MADEP collected groundwater samples from 6 AOC 57 Area 3 monitoring wells (57M-95-03X, 57M-96-09X, 57M-96-10X, 57M-96-11X, 57M-96-12X, and 57M-96-13X) on April 11, 2001. The samples were split three ways and analyzed by the USEPA, MADEP, and Army for volatile organic compounds and inorganics. Those analyses show exceedance of the arsenic cleanup level at one Area 3 monitoring well (analytical results of 91, 80, and 104 µg/L, respectively, at 57M-96-11X). This represents a significant reduction in arsenic from the 1997 concentration of 170 µg/L, but suggests that reducing conditions that result in arsenic mobilization still remain at location 57M-96-11X. Therefore, although only two years of the estimated 8 years necessary to attain drinking water standards have passed since the Area 3 soil removal, the Army has decided it is appropriate in this instance to remove additional contaminated soil to accelerate the groundwater cleanup process. The Record of Decision indicates that Alternative III-2a, which was developed in response to public comments and includes soil removal to accelerate groundwater cleanup, has been selected for implementation at AOC 57 Area 3.

Comment No. 2. If a private organization was involved in a cleanup effort such as this, the private organization would have to remediate to drinking water standards. That doesn't appear to be the case here, and I'm not sure why.

Response: Cleanup activities are base on attainment of drinking water standards and will meet Massachusetts standards. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP) set drinking water standards as cleanup goals for

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CERCLA groundwater cleanup actions, unless a waiver is obtained. This applies both to cleanups performed by the Army and by private organizations. The Feasibility Study identifies both the federal drinking water standards and the similar Massachusetts drinking water standards (Massachusetts Drinking Water Regulations [310 CMR 22.00]) as applicable or relevant and appropriate requirements that must be attained at AOC 57. In addition, attainment of MCLs will also result in attainment of MADEP GW-1 standards.

2. Public Hearing Statement from Dina Stamfield, Ayer, Massachusetts

Comment No. 1. Will this area be returned to drinking water standards within a defined period of time? If so, what is the time frame?

Response: As indicated in the Feasibility Study report and Proposed Plan, the Army's goal is to attain drinking water standards in AOC 57 groundwater. The Feasibility Study Report estimated that the length of time for attainment of the arsenic drinking water standard following soil removal might reasonably be within a range of less than 1 to 2 years at Area 2 and within a range of 1 to 8 years at Area 3. Because of the many variables that influence the cleanup time, accurately predicting an exact duration is difficult. To accomplish this goal, the Army removed approximately 1,300 cubic yards of contaminated soil from Area 2 in 1994 and 1,860 cubic yards of contaminated soil from Area 3 in 1999. This soil was interpreted to be both a potential source of organic compound contamination to groundwater and the cause of reducing (i.e., anaerobic) conditions that result in release of arsenic to groundwater from natural soil materials.

Comment No. 2. Will there be more excavation of Area 3? I thought Massachusetts DEP was recommending excavation in both areas 2 and 3.

Response: Yes. The Record of Decision indicates that Alternative III-2a, which was developed in response to public comments and includes soil removal to accelerate groundwater cleanup, has been selected for implementation at AOC 57 Area 3.

The USEPA and MADEP collected groundwater samples from 6 AOC 57 Area 3 monitoring wells (57M-95-03X, 57M-96-09X, 57M-96-10X, 57M-96-11X, 57M-96-12X, and 57M-96-13X) on April 11, 2001. The samples were split three ways and analyzed by the USEPA, MADEP, and Army for volatile organic compounds and inorganics. Those analyses show exceedance of the arsenic cleanup level at one Area 3 monitoring well (analytical results of 91, 80, and 104 µg/L, respectively, at 57M-96-11X). This represents a significant reduction in arsenic from the 1997 concentration of 170 µg/L, but suggests that reducing conditions that result in arsenic mobilization still remain at location 57M-96-11X. Therefore, although only two years of the estimated 8 years necessary to attain drinking water standards have passed since the Area 3 soil removal, the Army has decided it is appropriate in this instance to remove additional contaminated soil to accelerate the groundwater cleanup process.

Comment No. 3. Would the area east of Barnum Road and west of Cold Spring Brook be considered for rezoning as conservation land and open space?

Response: Although the Army has included institutional controls (i.e., deed restrictions in conjunction with existing zoning controls) as part of the remedy at AOC 57, achieving protectiveness does not require

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rezoning the entire area between Barnum Road and Cold Spring Brook for conservation and open space. Such extensive land use controls are not part of the selected remedies. Further, it should be noted that with the exception of the 16-acre parcel A6a that contains AOC 57, the property on the east side of Barnum Road has already been transferred to Mass Development. The Joint Boards of Selectmen and the Devens Enterprise Commission are the appropriate organizations to which to address further questions on rezoning.

Comment No. 4. Does the level of cleanup being offered in the Proposed Plan meet the minimum standard for other cleanups in Massachusetts?

Response: Yes. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP) set drinking water standards as cleanup goals for CERCLA groundwater cleanup actions, unless a waiver is obtained. This applies both to cleanups performed by the Army and by private organizations. The Feasibility Study identifies both the federal drinking water standards and the similar Massachusetts drinking water standards (Massachusetts Drinking Water Regulations [310 CMR 22.00]) as applicable or relevant and appropriate requirements that must be attained at AOC 57. In addition, attainment of MCLs will also result in attainment of MADEP GW-1 standards. Compliance with CERCLA and the NCP, combined with review and inputs from the Massachusetts Department of Environmental Protection throughout the investigation and remediation process, ensures that cleanup actions are protective and satisfy applicable or relevant and appropriate Massachusetts requirements.

5. Public Hearing Statement from Laurie Nehring, Ayer, Massachusetts

Comment No. 1. Figure 2 of the Proposed Plan would have been more helpful if landmarks that are currently in existence could have been included so that people could do drive-bys and see the site for themselves.

Response: Figure 2 shows the locations of several permanent buildings that could be used as landmarks. Because the soil storage piles adjacent to AOC 57 are temporary and are subject to relocation and removal the Army did not consider them good landmarks. The Proposed Plan did provide contact information so that anyone having difficulty in finding the site during a drive by could request more detailed directions.

Comment No. 2. In talking with PACE members, it was revealed to me that this plan was very difficult to read and follow, and the text was very dense. And I include myself in finding this to be true. Even people who had a previous overview of AOC 57 found that the format and content were confusing. For example, the Army's preferred alternative, as stated in the "Introduction," goes like this:

"The Army's preferred alternative for Area 2 is Alternative II-3: Excavation (for Possible Future Use) and Institutional Controls. The preferred alternative for Area 3 is Alternative III-2: Limited Action."

I found that the Codes II-3 and III-2 are very confusing, even today in preparation for tonight. I was especially confused because there are other numeric codes used in the text, such as Area 2 and Area 3. You

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also referred to tables. The tables in Figures 5 and 6 did not help me to clarify the codes. Those codes were omitted entirely from the tables. Then when you look at the text, the text describes the alternatives in some detail, but they did not identify which method was preferred by the Army within the context of those descriptions. The reader had to catch this important statement in the "Introduction" or find it at the very end of the document on Page 8 and then go back and reread the Army's recommended alternatives and try to determine their significance. I found that very confusing.

Response: For consistency, and in an effort to avoid confusion, the Proposed Plan followed the naming introduced in the Remedial Investigation and Feasibility Study reports. To have done otherwise would have made reference to work reported in those documents difficult.

The Army identified the preferred alternatives in the Introduction so that the reader would be alerted to which alternative was preferred at the outset and be prepared for it in the text. In addition, the Proposed Plan text on page 6 under the heading Why Does the Army Recommend Alternatives II-3 and III-2 clearly identifies the preferred alternatives of the Proposed Plan and discusses the reasons for the preference.

Comment No. 3. The proposal was too technical for local residents to follow. Only with a great deal of time and patience and with the assistance of a qualified environmental professional, i.e., Rich Doherty, would individuals feel capable of commenting intelligently on this plan.

Response: The Proposed Plan followed a format used for other sites and approved by USEPA. It represents a compromise between former 30-page Proposed Plans, which had great deal of detail, and 1 or 2 page fact sheets that could not provide all the needed information in the available space. The purpose of the question and answer session at the March 8, 2001 public meeting was to answer questions concerning AOC 57 and the preferred alternatives.

Comment No. 4. It's not clear to us how the public comment period was made known to the public. Who was selected to receive the nine-page Proposed Plan? How big was the mailing list? How prominent was the information displayed in public libraries? How prominent and helpful were the legal notices in the newspapers?

Response: On February 23, 2001, the Army published a public notice announcing the Proposed Plan, the date for a public informational meeting, and the start and end dates of the initial 31-day public comment period in the Leominster Fitchburg Sentinel & Enterprise, Worcester Telegram, Harvard Post, and papers of the Nashoba Publishing Company (Groton Landmark, Harvard Hillside, Pepperell Free Press, The Public Spirit, Shirley Oracle, and Townsend Times). Notice was published in the Lowell Sun on February 26, 2001. The public notices were republished by the Leominster Fitchburg Sentinel & Enterprise, Lowell Sun, Worcester Telegram and Harvard Post on March 5, 2001, and by Nashoba Publishing Company on March 7, 2001. The Army also made the Proposed Plan available to the public at the public information repositories at the Ayer Public Library, the Hazen Memorial Library in Shirley, the Harvard Public Library, and the Lancaster Public Library, or by request from the Devens BRAC Environmental Office.

Copies of the Proposed Plan were also mailed to approximately 660 individuals on a mailing list prepared for previous Devens announcements.

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Comment No. 5, (Recommendations).

Recommendation 1. Continue the use of maps which are helpful and prominently located in your brochures.

Response: The Army agrees that good figures and maps are valuable tools in describing sites and site activities.

Recommendation 2. Remove much of the technical language from the summaries, enabling the general public to read about the project in layman's terms without struggling to get through it. Eliminate abbreviations and acronyms such as RI/FS, AOC 57, COC, and all those code words that were described previously.

Response: The Army agrees that Proposed Plans should be as approachable by the public as possible while still providing detail necessary to describe the site and evaluated alternatives. It is easy to overuse acronyms and abbreviations. Unfortunately, some of the terms are still necessary. For this reason, a glossary of terms was included in the Proposed Plan.

Recommendation 3. Always refer to a place where more detailed information can be found. Try a Web site or mention the libraries. Identify a specific list of documents, arranged chronologically or by defined categories, which people could use. Likewise, identify local, state, and federal people who could have assisted in answering questions in the EPA and MADEP in case people didn't feel comfortable contacting the Army directly.

Response: The Introduction specifically refers the reader to the Remedial Investigation and Feasibility Study reports for additional information and indicates where they and other useful documents can be found in the local libraries. The Army feels that constantly referring the reader to external documents would be overwhelming and confusing.

Recommendation 4. Employ more effective public outreach. In all public announcements and legal notices, we suggest replacing meaningless code names like "AOC 57" with descriptive names and locations.

To get the information out in a more cost-effective way, please consider doing a larger initial mailing using postcards, such as NRWA does, to make an initial announcement. On that postcard you can tell people how they can obtain the nine-page summary document, with direct mailing as an option, or they can pick it up at several designated locations in each town, which I suggest would not be just the library, because it has limited hours, but perhaps town halls and other commonly visited places.

Consider taking advantage of the use of the Internet, making information available electronically, but also keeping in mind that not everyone has access to the Internet. Please set up a rapid response system to send the nine-page summary to all those who request it. Continue to send the document to all those who have attended any RAB meetings or other environmentally related meetings in the last couple of years, specifically I'm thinking of people who have attended environmentally related things with Mass Development, by sharing mailing lists.

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Response: The Army has initiated extensive public outreach efforts at Devens in the past with only limited success. The notification process followed for AOC 57 was based on the experience of those past activities as well as more formal public notice requirements. The Army remains interested in any approach that is capable of cost-effectively reaching the potentially interested segment of the public.

Comment No. 6. (Specific Comment No. 1) PACE is greatly concerned that the Proposed Plan does not address how drinking water standards will be met at AOC 57. We consider it unacceptable to allow the Army unlimited time to reach these standards. Acceptable resolution of these issues is very important to the community's acceptance of the final plans for AOC 57.

Let me emphasize that this important resource area, at least part of it being a Potentially Productive Aquifer and recharge area defined by MADEP, must be returned to drinking water standards within a defined period of time. The Army's proposal does not appear to stipulate how drinking water standards will be reached but insinuates that natural attenuation will occur. But how? How long will it take? How will it be proven? When will we know it has failed? And if it fails, what will be done? As with other sites the Army has worked on, additional remedial work must be planned for if the standards are not met within a specified time frame. PACE suggests that a specific five-year time frame be used to evaluate the need for additional work. We further urge that the Record of Decision be worded in such a way as to prevent the unacceptable postponing of the contingency remedy that has occurred at Shepley's Hill Landfill.

Response: The selected remedies contain requirements to perform long-term monitoring of groundwater and five-year-reviews. The five-year reviews will assess progress at attaining cleanup goals and whether the remedies remain protective of human health and the environment (i.e., to assess whether contamination, site conditions, or land use have changed in manner that means the remedy is no longer protective). The long-term monitoring and five-year review process will allow the Devens BCT to remain informed about cleanup progress at AOC 57. If warranted, the five-year review may recommend additional remedial actions to protect human health and the environment.

As indicated in the Feasibility Study report and Proposed Plan, the Army's goal is to attain drinking water standards in AOC 57 groundwater. To accomplish this goal, the Army removed approximately 1,300 cubic yards of contaminated soil from Area 2 in 1994 and 1,860 cubic yards of contaminated soil from Area 3 in 1999. This soil was interpreted to be both a potential source of organic compound contamination to groundwater and the cause of reducing (i.e., anaerobic) conditions that result in release of arsenic to groundwater from natural soil materials. The Feasibility Study Report estimated that the length of time for attainment of the arsenic drinking water standard following soil removal might reasonably be within a range of less than 1 to 2 years at Area 2, and within a range of 1 to 8 years at Area 3. Because of the many variables that influence the cleanup time, accurately predicting an exact duration is difficult. To evaluate the sensitivity of estimated costs to the length of time that groundwater monitoring was performed, the Feasibility Study evaluated a 3 year and 30 year duration for Area 2 and a 7 year and 30 year duration at Area 3.

To better evaluate progress toward attainment of groundwater cleanup goals, the USEPA and MADEP collected groundwater samples from 6 AOC 57 Area 3 monitoring wells (57M-95-03X, 57M-96-09X, 57M-96-10X, 57M-96-11X, 57M-96-12X, and 57M-96-13X) on April 11, 2001. The samples were split three ways and analyzed by the USEPA, MADEP, and Army for volatile organic compounds and inorganics. Those analyses show exceedance of the arsenic cleanup level at one Area 3 monitoring well (analytical results of 91, 80, and 104

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µg/L, respectively, at 57M-96-11X). This represents a significant reduction in arsenic from the 1997 concentration of 170 µg/L, but suggests that reducing conditions that result in arsenic mobilization still remain at location 57M-96-11X. Therefore, although only two years of the estimated 8 years necessary to attain drinking water standards have passed since the Area 3 soil removal, the Army has decided it is appropriate in this instance to remove additional contaminated soil to accelerate the groundwater cleanup process. The Record of Decision indicates that Alternative III-2a, which was developed in response to public comments and includes soil removal to accelerate groundwater cleanup, has been selected for implementation at AOC 57 Area 3.

Comment No. 7. (Specific Comment No. 2) We are confused about why the Army has recommended Alternative III-2: Limited Action, for Area 3. This appears to be a complete reversal from recommendations made in January of this year, in which the Army and MADEP supported Alternative III-3, Excavation and Institutional Controls.

Support for the Excavation and Institutional Controls alternative is clearly expressed in a comment letter on the Draft Proposed Plan for AOC 57 from MADEP dated January 5, 2001, and signed by David Salvadore. It states:

"The MADEP has completed its review ...and concurs with the Army's recommendation for ...the excavation of approximately 640 cubic yards and approximately 120 cubic yards petroleum material from Area No. 1 and Area No. 3 respectively."

The focus of this letter from Mr. Salvadore is to express MADEP's concerns about making sure that wetlands are restored properly, after excavation occurs in both areas, for a total removal of 760 cubic yards.

Why has this reversal taken place since the Draft plan? According to the Army's current Proposed Plan, the Alternative III-3 would result in wetland destruction with "limited benefit considering that residential development is improbable in wetland areas." As stated above, this is a Potentially Productive Aquifer, and now I assume in part at least, and accordingly, it should be returned to drinking water standards, regardless of how it may or may not be developed.

We know that wetland protection is being considered as well; however, it has not been demonstrated to us that the additional removal of 120 cubic yards from Area 3 would result in irreversible or unrepairable damage. We need to weigh the importance of excavating hot spots of COCs found in the groundwater and petroleum ground in the soil, removing continuing sources of pollution.

We searched Army documentation for some time, but we could not locate any information that showed us, with overlays, what the excavation impact would be on the wetlands. How deep would the 120 cubic yards of removal be? How does this overlay with the identified contaminants of concern? And finally, how will the excavation impact specific portions of the wetland?

Since the cost differential between these alternatives is minimal, we need to better understand why the more complete remediation is no longer recommended by the Army, when it was recommended and supported by DEP only two months ago.

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We believe that this question requires some additional investigation utilizing the skills of a wetland expert, perhaps NRWA, during the spring season so that a site-specific impact/benefit analysis could be done. In conclusion, unless proven to cause damage within a sensitive area of the wetland, PACE advocates Alternative III-3, which would excavate source contamination in Area 3.

Response: The Army has decided it is appropriate to remove additional contaminated soil at AOC 57 Area 3 to accelerate the groundwater cleanup process. The Record of Decision indicates that Alternative III-2a, which includes soil removal to accelerate groundwater cleanup, has been selected for implementation at AOC 57 Area 3. Implementation of Alternative III-3, which is based on soil removal to protect potential residents from risks resulting from soil exposure, is not necessary because floodplain and wetland conditions and existing zoning controls in the Devens Reuse Plan will prevent residential development. Restrictive deed covenants will be developed to prohibit potable use of groundwater at Parcel A6a (AOC 57).

As stated in a previous response, the Army's goal is to attain drinking water standards in AOC 57 groundwater. To accomplish this goal, the Army removed approximately 1,300 cubic yards of contaminated soil from Area 2 in 1994 and 1,860 cubic yards of contaminated soil from Area 3 in 1999. This soil was interpreted to be both a potential source of organic compound contamination to groundwater and the cause of reducing (i.e., anaerobic) conditions that result in release of arsenic to groundwater from natural soil materials. The Feasibility Study Report estimated that the length of time for attainment of the arsenic drinking water standard following soil removal might reasonably be within a range of less than 1 to 2 years at Area 2, and within a range of 1 to 8 years at Area 3. Because of the many variables that influence the cleanup time, accurately predicting an exact duration is difficult.

Please note that Mr. Salvadore was mistaken when he stated that the Army recommended excavation of approximately 120 cubic yards of soil from Area 3. Although the Army has decided to include this removal as part of Alternative III-2a, the removal was not considered prior to the most recent sampling effort.

Comment No. 8. (Specific Comment No. 3) AOC 57 is located in a sensitive area, within wetlands and along Cold Spring Brook. Not only is it a Potentially Productive Aquifer, it is also located very near or within Zone II recharge area for Ayer's Grove Pond wells. The proximity of the recharge area for the Devens Grove Pond wells also should be considered.

Future use of this aquifer for additional water resources may not have been adequately calculated for current growth patterns. Has the Army interviewed planning boards in the Towns of Ayer, Harvard, and Shirley and added them to the buildout at Devens? Future rapid growth in this region and on Devens may indeed demand use of the Cold Spring Brook Aquifer. I firmly believe that to be true.

Future changes in zoning must be considered in the level of cleanup by the Army. This land needs to be returned to drinking water standards and protected from future impacts. Industrial use of this property, as currently zoned, does not appear to be protective of these water resources.

PACE strongly recommends that the area east of Barnum Road and west of Cold Spring Brook which contains AOC 57, along with sensitive wetlands, a Potentially Productive Aquifer at Cold Spring Brook, and portions of Ayer's Zone II, be considered for rezoning as conservation land and open space. We will

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actively promote that. Community acceptance of this request is supported by the recent passage of the Community Preservation Act in both Ayer and Harvard.

Response: As indicated in response to the previous comment, the Army has decided it is appropriate to remove additional contaminated soil at Area 3 to accelerate the groundwater cleanup process. The Record of Decision indicates that Alternative III-2a, which was developed in response to public comments and includes soil removal to accelerate groundwater cleanup, has been selected for implementation at AOC 57 Area 3.

Although the Army has included institutional controls (i.e., deed restrictions in conjunction with existing zoning controls) as part of the remedy at AOC 57, achieving protectiveness does not require rezoning the entire area between Barnum Road and Cold Spring Brook for conservation and open space. Such extensive land use controls are not part of the selected remedies. Further, although the Army is held responsible to cleanup AOC 57 groundwater, it is not the Army's role to preemptively implement rezoning to restrict development adjacent to the Cold Spring Brook floodplain/wetland. In addition, it should be noted that with the exception of the 16-acre parcel A6a that contains AOC 57, the property on the east side of Barnum Road has already been transferred to Mass Development. The Joint Boards of Selectmen and the Devens Enterprise Commission are the appropriate organizations to which to address further questions on rezoning.

Comment No. 9. (Conclusions). PACE cannot accept the AOC 57 Proposed Plan in its current form. The following issues need to be resolved before PACE can support the AOC 57 remedy:

1. The Army must adequately address the technical issues raised in GeoInsight's letter, including fully adopting the recommendations contained in the GeoInsight letter.
2. Drinking water quality must be restored at AOC 57 within five years or an ironclad contingency remedy must be implemented to achieve drinking water standards within the following five years.
3. Alternative III-3 should be adopted for Area 3, unless proven that irreversible and unreparable damage to the wetland will result.

Response: The Army has responded to the technical issues raised by PACE, as it understands them, and to PACE's recommendations. Most significantly, following review of recent groundwater monitoring data, the Army has decided it is appropriate to remove additional contaminated soil at Area 3 to accelerate the groundwater cleanup process. The Record of Decision indicates that Alternative III-2a, which includes soil removal to accelerate groundwater cleanup, has been selected for implementation at AOC 57 Area 3. Implementation of Alternative III-3, which is based on soil removal to protect residents from potential risks resulting from soil exposure, is not necessary because floodplain and wetland conditions and existing zoning controls in the Devens Reuse Plan will prevent residential development. Restrictive deed covenants will be developed to prohibit potable use of groundwater at Parcel A6a (AOC 57).

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4. Public Hearing Statement from Richard Doherty, GeoInsight, Westford, Massachusetts

Comment No. 1. The Army acknowledges in their reports that the cleanup goals for AOC 57 groundwater are drinking water standards. This is regardless of whether the area is in a Potentially Productive Aquifer or not. However, the Proposed Plan includes no measures to achieve these standards. The Proposed Plan is worded to imply that drinking water standards will eventually be met, but the time required for this to happen is open-ended. For example, the plan states that the time required to meet drinking water standards at Area 2 is from, and I quote, "three to greater than 30 years." Greater than 30 years. To my mind, I can only interpret this as meaning that the Army is unwilling to state that they will ever meet drinking water standards at AOC 57. Based on the contents of the Proposed Plan, it's my professional opinion that the Proposed Plan does not meet the Army's own goal of achieving drinking water quality. Therefore, the only conclusion can be that the Proposed Plan is deficient because it does not meet the goals that have been set out for the cleanup.

Response: As indicated in the Feasibility Study report and Proposed Plan, the Army's goal is to attain drinking water standards in AOC 57 groundwater. To accomplish this goal, the Army removed approximately 1,300 cubic yards of contaminated soil from Area 2 in 1994 and 1,860 cubic yards of contaminated soil from Area 3 in 1999. This soil was interpreted to be both a potential source of organic compound contamination to groundwater and the cause of reducing (i.e., anaerobic) conditions that result in release of arsenic to groundwater from natural soil materials. The Feasibility Study Report estimated that the length of time for attainment of the arsenic drinking water standard following soil removal might reasonably be within a range of less than 1 to 2 years at Area 2, and within a range of 1 to 8 years at Area 3. Because of the many variables that influence the cleanup time, accurately predicting an exact duration is difficult. To evaluate the sensitivity of estimated costs to the length of time that groundwater monitoring was performed, the Feasibility Study evaluated a 3 year and 30 year duration for Area 2 and a 7 year and 30 year duration at Area 3.

To better evaluate progress toward attainment of groundwater cleanup goals, the USEPA and MADEP collected groundwater samples from 6 AOC 57 Area 3 monitoring wells (57M-95-03X, 57M-96-09X, 57M-96-10X, 57M-96-11X, 57M-96-12X, and 57M-96-13X) on April 11, 2001. The samples were split three ways and analyzed by the USEPA, MADEP, and Army for volatile organic compounds and inorganics. Those analyses show exceedance of the arsenic cleanup level at one Area 3 monitoring well (analytical results of 91, 80, and 104 µg/L, respectively, at 57M-96-11X). This represents a significant reduction in arsenic from the 1997 concentration of 170 µg/L, but suggests that reducing conditions that result in arsenic mobilization still remain at location 57M-96-11X. Therefore, although only two years of the estimated 8 years necessary to attain drinking water standards have passed since the Area 3 soil removal, the Army has decided it is appropriate in this instance to remove additional contaminated soil to accelerate the groundwater cleanup process. The Record of Decision indicates that Alternative III-2a, which was developed in response to public comments and includes soil removal to accelerate groundwater cleanup, has been selected for implementation at AOC 57 Area 3.

Comment No. 2. A clean-up at Devens should not be held to a lower standard just because it happens to be part of a Superfund site. On the contrary, we should expect a Superfund site to be held to a standard at least as high as that required for any other site in Massachusetts. In my opinion, the regulations clearly require that Massachusetts' standards should be met, but this is not the case at AOC 57.

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Response: Cleanup activities will meet Massachusetts standards. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP) set drinking water standards as cleanup goals for CERCLA groundwater cleanup actions, unless a waiver is obtained. This applies both to cleanups performed by the Army and by private organizations. The Feasibility Study identifies both the federal drinking water standards and the similar Massachusetts drinking water standards (Massachusetts Drinking Water Regulations [310 CMR 22.00]) as applicable or relevant and appropriate requirements that must be attained at AOC 57. In addition, attainment of MCLs will also result in attainment of MADEP GW-1 standards. Compliance with CERCLA and the NCP, combined with review and inputs from the Massachusetts Department of Environmental Protection throughout the investigation and remediation process, ensures that cleanup actions are protective and satisfy applicable or relevant and appropriate Massachusetts requirements.

5. Public Hearing Statement from Mildred Chandler, Harvard, Massachusetts

Comment No. 1. The Proposed Plan's indefinite cleanup time is inadequate and unacceptable. The indefiniteness of the "estimate greater than 30 years" allows a conclusion that the Army does not know and therefore is hedging. This produces a feeling of distrust based on the possibility of the lack of adequate study. It may not be there, but it produces that feeling.

Response: The Feasibility Study Report estimated that the length of time for attainment of the arsenic drinking water standard following soil removal might reasonably be within a range of less than 1 to 2 years at Area 2, and within a range of 1 to 8 years at Area 3. Because of the many variables that influence the cleanup time, accurately predicting an exact duration is difficult. To evaluate the sensitivity of estimated costs to the length of time that groundwater monitoring was performed, the Feasibility Study evaluated a 3 year and 30 year duration for Area 2 and a 7 year and 30 year duration at Area 3. The references to 3-to-30 year and 7-to-30 year time frames in the Proposed Plan did not make this distinction clear.

Comment No. No. 2. The Proposed Plan is unacceptable in that the standard of cleanup is lower than that on private property in Massachusetts. The statement: "Since groundwater at and beneath AOC 57 is not used as a source of drinking or industrial water," continues and makes an assumption that it will never be used as a source, thus belying its present status as a Potentially Productive Aquifer. With the level of contaminants in the ground and the indefinite period of attenuation mentioned previously, it is a denial of rights to put land in jeopardy that is on the east side of Cold Spring Brook and to threaten wells at Grove Pond. This proposal is precedent setting and may be recommended when other areas are examined in the future.

Response: Cleanup activities will meet Massachusetts standards. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP) set drinking water standards as cleanup goals for CERCLA groundwater cleanup actions, unless a waiver is obtained. This applies both to cleanups performed by the Army and by private organizations. The Feasibility Study identifies both the federal drinking water standards and the similar Massachusetts drinking water standards (Massachusetts Drinking Water Regulations [310 CMR 22.00]) as applicable or relevant and appropriate requirements that must be attained at AOC 57. In addition, attainment of MCLs

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will also result in attainment of MADEP GW-1 standards. Compliance with CERCLA and the NCP, combined with review and inputs from the Massachusetts Department of Environmental Protection throughout the investigation and remediation process, ensures that cleanup actions are protective and satisfy applicable or relevant and appropriate Massachusetts requirements.

The Feasibility Study did not assume that the groundwater would never be used be use as a source of drinking water, but rather that it would be unwise to do so before attainment of cleanup goals. As stated in response to the previous comment, the estimated time to reach drinking water standards was less than 1 to 2 years at Area 2, and within a range of 1 to 8 years at Area 3.

The Army believes that the available data do not indicate any threat to the east side of Cold Spring Brook or the Ayer Grove Pond Wells from AOC 57 Areas 2 and 3. The USEPA has also concluded that adverse affects on the Grove Pond wells are unlikely.

Comment No. No. 3. The Proposed Plan does not demonstrate this government agency's responsibility to achieve the highest standards for its citizens. The community we represent is almost totally dependent upon private wells for its drinking water and for all other purposes. We take seriously our personal responsibility to protect our properties from contamination with the knowledge that each person's ethical standard creates the national environmental ethic.

Avoiding responsibility to restore land despoiled by the Army's past carelessness or ignorance when it could achieve a better cleanup is blatant side stepping. I object to the Army's spirit that if land is not decontaminated, institutional controls for restricted use, that is, rezoning, are the solution.

Response: The Army also takes seriously its responsibility and has devoted considerable time and resources toward characterizing contamination and potential exposure risks at AOC 57 and lower Cold Spring Brook, and to removing over 3,100 cubic yards of contaminated soil to date.

As indicated in the Feasibility Study report and Proposed Plan, the Army's goal is to attain drinking water standards in AOC 57 groundwater. Recent sampling of several AOC 57 monitoring wells and piezometers shows progress in achieving this goal, but also suggests that reducing conditions that result in arsenic mobilization remain at location 57M-96-11X. Therefore, although only two years of the estimated 8 years necessary to attain drinking water standards have passed since the Area 3 soil removal, the Army has decided it is appropriate in this instance to remove additional contaminated soil to accelerate the groundwater cleanup process. The Record of Decision indicates that Alternative III-2a, which was developed in response to public comments and includes soil removal to accelerate groundwater cleanup, has been selected for implementation at AOC 57 Area 3.

Please note that rezoning has never been considered. Risk based decisions take into account the reuse plan provided by Massachusetts Development Finance Authority.

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Written Comments by Dina Samfield, Ayer, Massachusetts (March 7, 2001)

Comment No. 1. Will this area be returned to drinking water standards within a defined period of time? If so, what is the timeframe for this?

Response: The Feasibility Study Report estimated that the length of time for attainment of the arsenic drinking water standard following soil removal might reasonably be within a range of less than 1 to 2 years at Area 2, and within a range of 1 to 8 years at Area 3. Because of the many variables that influence the cleanup time, accurately predicting an exact duration is difficult. To evaluate the sensitivity of estimated costs to the length of time that groundwater monitoring was performed, the Feasibility Study evaluated a 3 year and 30 year duration for Area 2 and a 7 year and 30 year duration at Area 3. The references to 3-to-30 year and 7-to-30 year time frames in the Proposed Plan did not make this distinction clear.

Comment No. 2. Will there be any excavation at Area 3? Isn't Massachusetts DEP recommending excavation in both areas 2 and 3?

Response: Yes. The Record of Decision indicates that Alternative III-2a, which was developed in response to public comments and includes soil removal to accelerate groundwater cleanup, has been selected for implementation at AOC 57 Area 3.

As indicated in the Feasibility Study report and Proposed Plan, the Army's goal is to attain drinking water standards in AOC 57 groundwater. Recent sampling of several AOC 57 monitoring wells and piezometers shows progress in achieving this goal, but also suggests that reducing conditions that result in arsenic mobilization remain at location 57M-96-11X. Therefore, although only two years of the estimated 8 years necessary to attain drinking water standards have passed since the Area 3 soil removal, the Army has decided it is appropriate in this instance to remove additional contaminated soil to accelerate the groundwater cleanup process.

Comment No. 3. Will the area east of Barnum Road and west of Cold Spring be considered for rezoning as conservation land and open space? Is future use of the aquifer for additional water resources being considered?

Response: Although the Army has included institutional controls (i.e., deed restrictions in conjunction with existing zoning controls) as part of the remedy at AOC 57, achieving protectiveness does not require rezoning the entire area between Barnum Road and Cold Spring Brook for conservation and open space. Such extensive land use controls are not part of the selected remedies. Further, although the Army is held responsible to cleanup AOC 57 groundwater, it is not the Army's role to preemptively implement rezoning to restrict development adjacent to the Cold Spring Brook floodplain/wetland. In addition, it should be noted that with the exception of the 16-acre parcel A6a that contains AOC 57, the property on the east side of Barnum Road has already been transferred to Mass Development. The Joint Boards of Selectmen and the Devens Enterprise Commission are the appropriate organizations to which to address further questions on rezoning.

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Comment No. 4. Does the level of clean-up being offered in the proposed plan meet the minimum standard for other clean-ups within Massachusetts?

Response: Yes, cleanup activities will meet Massachusetts standards. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP) set drinking water standards as cleanup goals for CERCLA groundwater cleanup actions, unless a waiver is obtained. This applies both to cleanups performed by the Army and by private organizations. The Feasibility Study identifies both the federal drinking water standards and the similar Massachusetts drinking water standards (Massachusetts Drinking Water Regulations [310 CMR 22.00]) as applicable or relevant and appropriate requirements that must be attained at AOC 57. In addition, attainment of MCLs will also result in attainment of MADEP GW-1 standards. Compliance with CERCLA and the NCP, combined with review and inputs from the Massachusetts Department of Environmental Protection throughout the investigation and remediation process, ensures that cleanup actions are protective and satisfy applicable or relevant and appropriate Massachusetts requirements.

Written Comments by Mildred Chandler, Citizens to Protect Residential Harvard, Harvard, Massachusetts (March 8, 2001)

Comment No. 1. The Proposed Plan's indefinite clean up time is inadequate and unacceptable. The indefiniteness of the estimate "greater than 30 years" allows a conclusion that the Army does not know and therefore is hedging. This produces a feeling of distrust based on the possibility of the lack of adequate study

Response: The Feasibility Study Report estimated that the length of time for attainment of the arsenic drinking water standard following soil removal might reasonably be within a range of less than 1 to 2 years at Area 2, and within a range of 1 to 8 years at Area 3. Because of the many variables that influence the cleanup time, accurately predicting an exact duration is difficult. To evaluate the sensitivity of estimated costs to the length of time that groundwater monitoring was performed, the Feasibility Study evaluated a 3 year and 30 year duration for Area 2 and a 7 year and 30 year duration at Area 3. The references to 3-to-30 year and 7-to-30 year time frames in the Proposed Plan did not make this distinction clear.

Comment No. 2. The Proposed Plan is unacceptable in that the standard of clean up is lower than that on private property in Massachusetts. The statement: "Since groundwater at and beneath AOC 57 is not used as a source of drinking or industrial water..." continues and makes an assumption that it will never be used as a source, thus belying its present status as a Potentially Productive Aquifer. With the level of contaminants in the ground and the indefinite period of attenuation mentioned previously, it is a denial of rights to put land in jeopardy that is on the East Side of Cold Spring Brook and to threaten wells at Grove Pond. This proposal is precedent setting and may be recommended when other areas are examined in the future.

Response: Cleanup activities will meet Massachusetts standards. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP) set drinking water standards as cleanup goals for CERCLA groundwater cleanup actions, unless a waiver is

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obtained. This applies both to cleanups performed by the Army and by private organizations. The Feasibility Study identifies both the federal drinking water standards and the similar Massachusetts drinking water standards (Massachusetts Drinking Water Regulations [310 CMR 22.00]) as applicable or relevant and appropriate requirements that must be attained at AOC 57. In addition, attainment of MCLs will also result in attainment of MADEP GW-1 standards. Compliance with CERCLA and the NCP, combined with review and inputs from the Massachusetts Department of Environmental Protection throughout the investigation and remediation process, ensures that cleanup actions are protective and satisfy applicable or relevant and appropriate Massachusetts requirements.

The Feasibility Study did not assume that the groundwater would never be used be use as a source of drinking water, but rather that it would be unwise to do so before attainment of cleanup goals. As stated in response to the previous comment, the estimated time to reach drinking water standards was less than 1 to 2 years at Area 2, and within a range of 1 to 8 years at Area 3.

The Army believes that the available data do not indicate any threat to the east side of Cold Spring Brook or the Ayer Grove Pond Wells from AOC 57 Areas 2 and 3.

Comment No. 3. The Proposed Plan does not demonstrate this government agency's responsibility to achieve the highest standard for its citizens. The community we represent is almost totally dependent upon private wells for its drinking water and for all other purposes. We take seriously our personal responsibility to protect our properties from contamination with the knowledge that each person's ethical standard creates the national environmental ethic. Avoiding responsibility to restore land despoiled by the Army's past carelessness or ignorance when it could achieve a better cleanup is blatant side stepping. I object to the Army's theory that if land is not decontaminated, institutional controls for restricted use (rezoning) are the solution.

Response: The Army also takes seriously its responsibility and has devoted considerable time and resources toward characterizing contamination and potential exposure risks at AOC 57 and lower Cold Spring Brook, and to removing over 3,100 cubic yards of contaminated soil.

As indicated in the Feasibility Study report and Proposed Plan, the Army's goal is to attain drinking water standards in AOC 57 groundwater. Recent sampling of several AOC 57 monitoring wells and piezometers shows progress in achieving this goal, but also suggests that reducing conditions that result in arsenic mobilization remain at location 57M-96-11X. Therefore, although only 2 years of the estimated 8 years necessary to attain drinking water standards have passed since the Area 3 soil removal, the Army has decided it is appropriate in this instance to remove additional contaminated soil to accelerate the groundwater cleanup process. The Record of Decision indicates that Alternative III-2a, which was developed in response to public comments and includes soil removal to accelerate groundwater cleanup, has been selected for implementation at AOC 57 Area 3.

Please note that rezoning has never been considered. Risk based decisions take into account the reuse plan provided by Massachusetts Development Finance Authority.

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Devens RFTA, Devens, Massachusetts

Written Comments by Ruth and Morton Miller, 75 Westcott Rd., Harvard, Massachusetts (March 8, 2001)

Comment No. 1. It is our understanding that the contamination of AOC 57 was one of the reasons that Fort Devens was designated a Superfund site. Various parties to the original planning for Devens recall that AOC 57 was to be cleaned up to the highest standard.

Response: Fort Devens was designated a Superfund Site because of Shepley's Hill Landfill and Cold Spring Brook Landfill. However, once a single site at an installation is designated as a Superfund site, the entire installation is considered a Superfund Site. Superfund cleanups are performed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP). Because of AOC 57's presence at Fort Devens, its cleanup is proceeded according to CERCLA.

CERCLA and the NCP soil cleanup actions are generally based on reducing potential exposure risks to a range of 1 in 10,000 to 1 in 1,000,000 for carcinogenic substances and to a hazard index of 1 or less for noncarcinogenic substances. Groundwater cleanup actions are generally based on attaining drinking water standards.

Comment No. 2. We think the Proposed Plan should have specifically addressed remediation alternatives designed to clean up the aquifer to a drinking water standard in a reasonable time.

Leaving the contaminated soils in place as contemplated in the Army's chosen options for both Area 2 and Area 3 could result in a continuing source of further groundwater contamination and even in the appearance of compounds not yet identified as COPCs.

Response: The Feasibility Study Report estimated that the length of time for attainment of the arsenic drinking water standard following soil removal might reasonably be within a range of less than 1 to 2 years at Area 2, and within a range of 1 to 8 years at Area 3. Because of the many variables that influence the cleanup time, accurately predicting an exact duration is difficult. To evaluate the sensitivity of estimated costs to the length of time that groundwater monitoring was performed, the Feasibility Study evaluated a 3 year and 30 year duration for Area 2 and a 7 year and 30 year duration at Area 3. The references to 3-to-30 year and 7-to-30 year time frames in the Proposed Plan did not make this distinction clear.

As indicated in the Feasibility Study report and Proposed Plan, the Army's goal is to attain drinking water standards in AOC 57 groundwater. To accomplish this goal, the Army removed approximately 1,300 cubic yards of contaminated soil from Area 2 in 1994 and 1,860 cubic yards of contaminated soil from Area 3 in 1999. This soil was interpreted to be both a potential source of organic compound contamination to groundwater and the cause of reducing (i.e., anaerobic) conditions that result in release of arsenic to groundwater from natural soil materials.

To better evaluate progress toward attainment of groundwater cleanup goals, the USEPA and MADEP collected groundwater samples from 6 AOC 57 Area 3 monitoring wells and piezometers (57M-95-03X, 57M-96-09X, 57M-96-10X, 57M-96-11X, 57M-96-12X, and 57M-96-13X) on April 11, 2001. The samples were split three ways and analyzed by the USEPA, MADEP, and Army for volatile organic compounds and inorganics. Those

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analyses show exceedance of the arsenic cleanup level at one Area 3 monitoring well (analytical results of 91, 80, and 104 µg/L, respectively, at 57M-96-11X). This represents a significant reduction in arsenic from the 1997 concentration of 170 µg/L, but suggests that reducing conditions that result in arsenic mobilization still remain at location 57M-96-11X. Therefore, although only two years of the estimated 8 years necessary to attain drinking water standards have passed since the Area 3 soil removal, the Army has decided it is appropriate in this instance to remove additional contaminated soil to accelerate the groundwater cleanup process. The Record of Decision indicates that Alternative III-2a, which was developed in response to public comments and includes soil removal to accelerate groundwater cleanup, has been selected for implementation at AOC 57 Area 3.

Comment No. 3. The Massachusetts Contingency Plan should be an Applicable or Relevant and Appropriate Requirement. CERCLA should demand no less a remedy than the Commonwealth of Massachusetts.

Response: Because Fort Devens is a Superfund Site, the Army is performing the cleanup at AOC 57 according to CERCLA. CERCLA requires, as part of that process, that the Army identify Massachusetts applicable or relevant and appropriate requirements (ARARs) pertinent to the cleanup. The Army must comply with substantive portions of those requirements (e.g., drinking water standards), although compliance with administrative portions such as permitting is not required. This process helps ensure that CERCLA cleanups are consistent with Massachusetts requirements, but helps prevent introduction of conflicting procedures that could slow the cleanup process.

The Massachusetts Contingency Plan (310 CMR 40.0000) is not considered an ARAR for CERCLA actions at Devens. The provisions of the MCP are mostly administrative in nature and, therefore, do not have to be complied with in connection with the response action selected for AOC 57. Further, the MCP contains a specific provision (310 CMR 40.0111) for deferring application of the MCP at CERCLA sites. 310 CMR 40.0111(1)(a) provides that response actions at CERCLA sites shall be deemed adequately regulated for purposes of compliance with the MCP, provided the MADEP concurs in the CERCLA Record of Decision. The cleanup goals developed for AOC 57 under CERCLA meet the substantive requirements of the MCP.

In the case of AOC 57, CERCLA is more protective than state regulations in that if the MCP were applied to the site, cleanup standards could be adjusted through implementation of technical justifications (310 CMR 40.0193) and feasibility evaluations (40.0860).

Comment No. 4. If lands in AOC 57 are to be used as recreational open space in the future, the Army should clean up to protect the most vulnerable little soccer players. Health-risk potential is yet another good reason to clean up the toxic chemicals and heavy metals in AOC 57 soils.

Response: The portions of AOC 57 earmarked for open space are predominantly wooded floodplain and wetland, and not well suited for soccer. Designated uses in the Devens Reuse Plan include nature trails and bird watching. Further, upland portions of the site are designated for commercial/industrial use and would not be utilized for recreational purposes. The selected soil cleanup action is based on potential health risks associated with the planned/reasonable use of the area.

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Comment No. 5. The presence of numerous potentially dangerous agents at high levels found in AOC 57, including but not limited to PCBs, PAHs, TPHCs, VOCs, and heavy metals, is intolerable. They should be removed to the fullest extent possible to allow nature to recoup. For all the reasons above, we support options II-4 and III-3 as preferable to the other choices offered.

Response: Soil cleanup at AOC 57 has been based on reduction of potential exposure risks associated with planned/reasonable reuse to levels considered acceptable by USEPA, while groundwater cleanup is based on attainment of drinking water standards.

The Army has not changed its preference for Alternative II-3 at Area 2. However, although only two years of the estimated 8 years necessary to attain drinking water standards have passed since the 1999 Area 3 soil removal, the Army has decided it is appropriate in this instance to remove additional contaminated soil to accelerate the groundwater cleanup process. The Record of Decision indicates that Alternative III-2a, which was developed in response to public comments and includes soil removal to accelerate groundwater cleanup, has been selected for implementation at AOC 57 Area 3.

Written Comments by Richard Doherty, GeoInsight, Westford, Massachusetts (March 14, 2001)

Comment No. 1. The Proposed Plan does not adequately comply with Applicable or Relevant and Appropriate Requirements (ARARs).

Response: Because Fort Devens is a Superfund Site, the Army is performing the cleanup at AOC 57 according to CERCLA. CERCLA requires, as part of that process, that the Army identify Massachusetts applicable or relevant and appropriate requirements (ARARs) pertinent to the cleanup. The Army must comply with substantive portions of those requirements (e.g., drinking water standards), although compliance with administrative portions such as permitting is not required. This process helps ensure that CERCLA cleanups are consistent with Massachusetts requirements, but helps prevent introduction of conflicting procedures that could slow the cleanup process.

The Massachusetts Contingency Plan (310 CMR 40.0000) is not considered an ARAR for CERCLA actions at Devens. The provisions of the MCP are mostly administrative in nature and, therefore, do not have to be complied with in connection with the response action selected for AOC 57. Further, the MCP contains a specific provision (310 CMR 40.0111) for deferring application of the MCP at CERCLA sites. 310 CMR 40.0111(1)(a) provides that response actions at CERCLA sites shall be deemed adequately regulated for purposes of compliance with the MCP, provided the MADEP concurs in the CERCLA Record of Decision. The cleanup goals developed for AOC 57 under CERCLA meet the substantive requirements of the MCP.

In the case of AOC 57, CERCLA is more protective than state regulations in that if the MCP were applied to the site, cleanup standards could be adjusted through implementation of technical justifications (310 CMR 40.0193) and feasibility evaluations (40.0860).

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Comment No. 2. The Proposed Plan's estimates of time for ground water cleanup are inadequate, unsubstantiated, and conflicting.

Response: The Feasibility Study Report estimated that the length of time for attainment of the arsenic drinking water standard following soil removal might reasonably be within a range of less than 1 to 2 years at Area 2, and within a range of 1 to 8 years at Area 3. Because of the many variables that influence the cleanup time, accurately predicting an exact duration is difficult. To evaluate the sensitivity of estimated costs to the length of time that groundwater monitoring was performed, the Feasibility Study evaluated a 3 year and 30 year duration for Area 2 and a 7 year and 30 year duration at Area 3. The references to 3-to-30 year and 7-to-30 year time frames in the Proposed Plan did not make this distinction clear.

Comment No. 3. The Proposed Plan is not acceptable to the community because a lower standard of cleanup is being offered relative to other sites in Massachusetts.

Response: Cleanup activities will meet Massachusetts standards. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP) set drinking water standards as cleanup goals for CERCLA groundwater cleanup actions, unless a waiver is obtained. This applies both to cleanups performed by the Army and by private organizations. The Feasibility Study identifies both the federal drinking water standards and the similar Massachusetts drinking water standards (Massachusetts Drinking Water Regulations [310 CMR 22.00]) as applicable or relevant and appropriate requirements that must be attained at AOC 57. In addition, attainment of MCLs will also result in attainment of MADEP GW-1 standards. Compliance with CERCLA and the NCP, combined with review and inputs from the Massachusetts Department of Environmental Protection throughout the investigation and remediation process, ensures that cleanup actions are protective and satisfy applicable or relevant and appropriate Massachusetts requirements.

Written Comments by Helen Fiori, 37 Blanchard Rd., Harvard, Massachusetts (March 14, 2001)

Comment No. 1. As participant in the formulation of the Devens Reuse Plan, I understood that the Army is responsible for the remediation of the areas of Fort Devens designated as a Superfund site and that those areas would be returned to a condition comparable to that before occupation by the Army. Alternatives II-3 and II-2 fall far short of that standard.

Response: CERCLA and the NCP soil cleanup actions are generally based on reducing potential exposure risks to a range of 1 in 10,000 to 1 in 1,000,000 for carcinogenic substances and to a hazard index of 1 or less for noncarcinogenic substances. Groundwater cleanup actions are generally based on attaining drinking water standards. CERCLA does not require cleanup to background conditions or before occupation by the Army.

Comment No. 2. The contamination involves a medium yield aquifer (PPA). The host communities cannot afford to be cavalier about writing off a water resource. I believe the Army should clean up the aquifer to drinking water standards in a much shorter period of time.

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Response: The Feasibility Study Report estimated that the length of time for attainment of the arsenic drinking water standard following soil removal might reasonably be within a range of less than 1 to 2 years at Area 2, and within a range of 1 to 8 years at Area 3. Because of the many variables that influence the cleanup time, accurately predicting an exact duration is difficult. To evaluate the sensitivity of estimated costs to the length of time that groundwater monitoring was performed, the Feasibility Study evaluated a 3 year and 30 year duration for Area 2 and a 7 year and 30 year duration at Area 3. The references to 3-to-30 year and 7-to-30 year time frames in the Proposed Plan did not make this distinction clear.

As indicated in the Feasibility Study report and Proposed Plan, the Army's goal is to attain drinking water standards in AOC 57 groundwater. To accomplish this goal, the Army removed approximately 1,300 cubic yards of contaminated soil from Area 2 in 1994 and 1,860 cubic yards of contaminated soil from Area 3 in 1999. This soil was interpreted to be both a potential source of organic compound contamination to groundwater and the cause of reducing (i.e., anaerobic) conditions that result in release of arsenic to groundwater from natural soil materials.

To better evaluate progress toward attainment of groundwater cleanup goals, the USEPA and MADEP collected groundwater samples from 6 AOC 57 Area 3 monitoring wells (57M-95-03X, 57M-96-09X, 57M-96-10X, 57M-96-11X, 57M-96-12X, and 57M-96-13X) on April 11, 2001. The samples were split three ways and analyzed by the USEPA, MADEP, and Army for volatile organic compounds and inorganics. Those analyses show exceedance of the arsenic cleanup level at one Area 3 monitoring well (analytical results of 91, 80, and 104 µg/L, respectively, at 57M-96-11X). This represents a significant reduction in arsenic from the 1997 concentration of 170 µg/L, but suggests that reducing conditions that result in arsenic mobilization still remain at location 57M-96-11X. Therefore, although only two years of the estimated 8 years necessary to attain drinking water standards have passed since the Area 3 soil removal, the Army has decided it is appropriate in this instance to remove additional contaminated soil to accelerate the groundwater cleanup process. The Record of Decision indicates that Alternative III-2a, which was developed in response to public comments and includes soil removal to accelerate groundwater cleanup, has been selected for implementation at AOC 57 Area 3.

Comment No. 3. I particularly noted that the alternatives chosen would not protect residential receptors, but would not produce adverse effects to any plants or animals. I would like an explanation.

Response: Estimates of potential risk are based on the combination of chemical concentration, frequency and duration of exposure, and sensitivity of the plant or animal to the chemical. Although a potential resident and a plant or animal may be exposed to the same concentration of a chemical in soil, differences in exposure frequency and duration, and differences in sensitivity result in different estimates of potential risk. It should be noted that the site will not be used for residential purposes.

Comment No. 4. Really only options II-4 and III-3 seem to be acceptable. Full restoration of the wetland and Cold Spring Brook is the goal and AOC must be cleaned up to the best of the Army's considerable ability.

Response: Because of AOC 57's presence at Fort Devens, its cleanup is proceeding according to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National

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Contingency Plan (NCP). CERCLA and the NCP soil cleanup actions are generally based on reducing potential exposure risks to a range of 1 in 10,000 to 1 in 1,000,000 for carcinogenic substances and to a hazard index of 1 or less for noncarcinogenic substances. Groundwater cleanup actions are generally based on attaining drinking water standards. CERCLA does not require cleanup to background conditions or before occupation by the Army.

Consistent with the requirements of CERCLA, the selected soil cleanup actions at AOC 57 are based on potential health risks associated with the planned/reasonable use of the area, while groundwater cleanup is based on attainment of drinking water standards

As part of the cleanup process, portions of the wetland disturbed by remedial activities will be restored.

Written Comments by Robert Burkhardt, 12 Harvard Rd., Shirley, Massachusetts (March 20, 2001)

Comment No. 1. I think possibilities for actively cleansing the groundwater the groundwater should be explored.

Response: The Army believes that the most important factor in cleaning up groundwater at AOC 57 is cleaning up soils that are a potential source of contaminants and/or reducing (anaerobic) conditions that result in release of arsenic from native soil materials. Soil removal is a relatively quick process (a few days or weeks); however, several months or years may be needed after soil removal for groundwater conditions to stabilize and for existing groundwater contamination to disperse.

The Army removed approximately 1,300 cubic yards of contaminated soil from Area 2 in 1994 and 1,860 cubic yards of contaminated soil from Area 3 in 1999. This soil was interpreted to be both a potential source of organic compound contamination to groundwater and the cause of reducing (i.e., anaerobic) conditions that result in release of arsenic to groundwater from natural soil materials. The Feasibility Study Report estimated that the length of time for attainment of the arsenic drinking water standard following soil removal might reasonably be within a range of less than 1 to 2 years at Area 2, and within a range of 1 to 8 years at Area 3. Because of the many variables that influence the cleanup time, accurately predicting an exact duration is difficult. To evaluate the sensitivity of estimated costs to the length of time that groundwater monitoring was performed, the Feasibility Study evaluated a 3 year and 30 year duration for Area 2 and a 7 year and 30 year duration at Area 3. The references to 3-to-30 year and 7-to-30 year time frames in the Proposed Plan did not make this distinction clear.

To better evaluate progress toward attainment of groundwater cleanup goals, the USEPA and MADEP collected groundwater samples from 6 AOC 57 Area 3 monitoring wells (57M-95-03X, 57M-96-09X, 57M-96-10X, 57M-96-11X, 57M-96-12X, and 57M-96-13X) on April 11, 2001. The samples were split three ways and analyzed by the USEPA, MADEP, and Army for volatile organic compounds and inorganics. Those analyses show exceedance of the arsenic cleanup level at one Area 3 monitoring well (analytical results of 91, 80, and 104 µg/L, respectively, at 57M-96-11X). This represents a significant reduction in arsenic from the 1997 concentration of 170 µg/L, but suggests that reducing conditions that result in arsenic mobilization still remain at location 57M-96-11X. Therefore, although only two years of the estimated 8 years necessary to attain drinking water standards have passed since the Area 3 soil removal, the Army has decided it is appropriate in this instance to remove additional contaminated soil to accelerate the groundwater cleanup process. The Record of Decision

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indicates that Alternative III-2a, which was developed in response to public comments and includes soil removal to accelerate groundwater cleanup, has been selected for implementation at AOC 57 Area 3.

Comment No. 2. It may be advisable to restore the wetlands to a greater area than the previously occupied. This would help compensate for losses of BVW elsewhere on the base due to the Army's activities. Both of these are valuable assets whose values should be considered when weighing alternatives and their costs.

Response: Loss of wetlands and subsequent restoration/mitigation have been dealt with on an AOC specific basis at Devens. The selected remedies for AOC 57 include wetlands restoration to address potential adverse effects from remedy implementation. There will be no loss of wetlands at AOC 57. Further, there is no need to include compensatory wetland restoration as part of the remedies at AOC 57 as a result of activities at other sites. It should be noted that as part of base closure activities, Devens has made substantial wetland transfers to the U.S. Fish & Wildlife Service. Management of those areas by the Fish & Wildlife Service will help maintain the region's wetland resources.

Written Comments by Laurie S. Nehring, People of Ayer Concerned About the Environment, Ayer, Massachusetts (March 26, 2001)

Comment No. 1. The Army's proposed cleanup goal to reach drinking water standards at AOC 57 should be restated to include a clearly defined timeframe. We recommend five years. Additionally, this should be stated in the ROD as a specific date, i.e., by June 1, 2006, these standards should be met. This will remove future ambiguity for all parties concerned.

We recommend the ROD include specific definitions of what constitutes reaching drinking water standards. For example, a single monitoring well below drinking water standards would not be sufficient for the Army to claim the goal has been reached. PACE would like to be included in technical discussions to clearly define the cleanup endpoint in the ROD.

Response: The response to this comment is combined with the response to Comment No. 2.

Comment No. 2. If the drinking water standards are not restored within five years, then an iron -clad contingency remedy must be fully implemented in a reasonable time frame to achieve drinking water standards within the following five years.

Response: The Feasibility Study Report estimated that the length of time for attainment of the arsenic drinking water standard following soil removal might reasonably be within a range of less than 1 to 2 years at Area 2, and within a range of 1 to 8 years at Area 3. Because of the many variables that influence the cleanup time, accurately predicting an exact duration is difficult. The references to 3-to-30 year and 7-to-30 year time frames in the Proposed Plan did not make this distinction clear.

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The Army believes that the most important factor in cleaning up groundwater at AOC 57 is cleaning up soils that are a potential source of contaminants and/or reducing (anaerobic) conditions that result in release of arsenic from native soil materials. Soil removal is a relatively quick process (a few days or weeks); however, several months or years may be needed after soil removal for groundwater conditions to stabilize and for existing groundwater contamination to disperse.

The Army removed approximately 1,300 cubic yards of contaminated soil from Area 2 in 1994 and 1,860 cubic yards of contaminated soil from Area 3 in 1999. This soil was interpreted to be both a potential source of organic compound contamination to groundwater and the cause of reducing (i.e., anaerobic) conditions that result in release of arsenic to groundwater from natural soil materials.

Recent sampling by USEPA and MADEP suggests that reducing conditions that result in arsenic mobilization remain at location 57M-96-11X at Area 3. Therefore, although only two years of the estimated 8 years necessary to attain drinking water standards have passed since the Area 3 soil removal, the Army has decided it is appropriate in this instance to remove additional contaminated soil to accelerate the groundwater cleanup process. The Record of Decision indicates that Alternative III-2a, which was developed in response to public comments and includes soil removal to accelerate groundwater cleanup, has been selected for implementation at AOC 57 Area 3.

The selected remedies also require long-term monitoring of groundwater and five-year-reviews to assess progress toward attaining cleanup goals and whether the remedies remain protective of human health and the environment (i.e., to assess whether contamination, site conditions, or land use have changed in manner that means the remedy is no longer protective). If warranted, the five-year review may recommend additional remedial actions to protect human health and the environment.

Comment No. 3. Groundwater monitoring will be required in order to determine if the cleanup goals are being attained. We recommend the following schedule: quarterly sampling during the first year (minimally). This will enable the Army to determine seasonal cycles of highest concentrations so that future sampling can be done during 'worst case' scenarios. Years two and three could be sampled biannually. If the levels of contaminates are decreasing as we anticipate, then the final two years of sampling could be done annually.

PACE would like to request an opportunity to review and discuss the number and the placement of the monitoring wells to be monitored during a technical meeting with the BCT team, when the time comes for this decision.

Response: The schedule for long-term monitoring will be developing in a Long-term Monitoring Plan for the site, and these suggestions will be considered during the plan's development. USEPA and MADEP will review the draft plan to ensure its adequacy and completeness.

Comment No. 4. As stated in the AOC 57 Feasibility Study, the selected remedy will utilize natural attenuation. As described by GeoInsight, this should be fully demonstrated for each chemical constituent, and substantiated according to accepted remedial practices.

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Response: The Army believes that the most important factor in cleaning up groundwater at AOC 57 is cleaning up soils that are a potential source of contaminants and/or reducing (anaerobic) conditions that result in release of arsenic from native soil materials. Because of this, the Army removed approximately 1,300 cubic yards of contaminated soil from Area 2 in 1994 and 1,860 cubic yards of contaminated soil from Area 3 in 1999.

Although soil removal is a relatively quick process (a few days or weeks), several months or years may be needed after soil removal for groundwater conditions to stabilize and for existing groundwater contamination to disperse. The Feasibility Study Report estimated that the length of time for attainment of the arsenic drinking water standard following soil removal might reasonably be within a range of less than 1 to 2 years at Area 2, and within a range of 1 to 8 years at Area 3. Because of the many variables that influence the cleanup time, accurately predicting a more exact duration is difficult.

The Army will perform long-term monitoring of groundwater and five-year-reviews to assess progress at achieving cleanup goals and whether the remedies remain protective of human health and the environment (i.e., to assess whether contamination, site conditions, or land use have changed in manner that means the remedy is no longer protective). If warranted, the five-year review may recommend additional remedial actions to protect human health and the environment.

Comment No. 5. We recognize that the Army has done extensive remediation projects over many years, since first declaring it a Superfund site. Likewise, we also recognize the Army used this land with varying degrees of intensity for over 70 years. With such heavy use, it's certainly possible that some (perhaps many) areas of contamination were never discovered, and will be missed during the BRAC cleanups.

Since much of the Deven's land will revert back to the three towns, the land should be returned in as clean a state as possible. Therefore, we recommend that the Army adopt the more aggressive Alternative III-3 for Area 3 of AOC 57, unless proven that irreversible and un-repairable damage to the wetland will result.

Response: As stated in response to a previous comment, the Army has decided it is appropriate to remove additional contaminated soil to accelerate the groundwater cleanup process at Area 3. Sampling performed by the USEPA and MADEP at six AOC 57 Area 3 monitoring wells (57M-95-03X, 57M-96-09X, 57M-96-10X, 57M-96-11X, 57M-96-12X, and 57M-96-13X) on April 11, 2001, indicates that groundwater quality is improving. The samples were split three ways and analyzed by the USEPA, MADEP, and Army for volatile organic compounds and inorganics. Those analyses show exceedance of the arsenic cleanup level at one Area 3 monitoring well (analytical results of 91, 80, and 104 µg/L, respectively, at 57M-96-11X). This represents a significant reduction in arsenic from the 1997 concentration of 170 µg/L, but suggests that reducing conditions that result in arsenic mobilization still remain at location 57M-96-11X and that additional soil removal is appropriate to accelerate the groundwater cleanup process. The Record of Decision indicates that Alternative III-2a, which was developed in response to public comments and includes soil removal to accelerate groundwater cleanup, has been selected for implementation at AOC 57 Area 3. Implementation of Alternative III-3, which is based on soil removal to protect potential residents from risks resulting from soil exposure, is not necessary because floodplain and wetland conditions and existing zoning controls in the Devens Reuse Plan will prevent residential development. Restrictive deed covenants will be developed to prohibit potable use of groundwater at Parcel A6a (AOC 57).

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Written Comments by Pam Resor, Senator, and Geoffrey Hall, Representative (March 26, 2001)

Comment. A number of constituents and government officials have apprised us their views and concerns regarding the proposed plan for Area of Contamination (AOC) 57 at Devens. In some cases they have sent us copies of their comments to your office. It is evident that there are issues of serious concern yet to be resolved to the satisfaction of all parties.

As elected representatives of the region, the concerns of the constituents are also ours. We would expect that the interests of those people most affected by any decisions you ultimately make would receive priority consideration and accommodation in the process, for these are the people who must finally live with the decisions. They should be assured that no possibility of substandard conditions would exist after remediation.

Response: The Superfund process ensures that citizen comments are solicited and considered during the cleanup process. The Army has reviewed all the comments received on the Proposed Plan for ACC 57, and has decided that it is appropriate in this instance to remove additional contaminated soil at AOC 57 Area 3 to accelerate the groundwater cleanup process. The Record of Decision indicates that Alternative III-2a, which was developed in response to public comments and includes soil removal to accelerate groundwater cleanup, has been selected for implementation at AOC 57 Area 3.

Written Comments by Ayer Board of Selectmen (March 30, 2001), Forwarding of submittals by Laurie S. Nehring (March 26, 2001), Richard Doherty (March 14, 2001), Mildred Chandler (March 8, 2001), and David Salvadore, MADEP (February 17, 2000)

Comment. The Board of Selectmen unanimously endorses and supports the comments submitted by Richard Doherty of GEO and Laurie Nehring, President of PACE for (AOC) 57 Devens.

Response: The Army has provided responses to comments by Mildred Chandler (March 8, 2001), Richard Doherty (March 14, 2001), and Laurie S. Nehring (March 26, 2001) elsewhere in this Responsiveness Summary.

Because D. Salvadore was commenting on the draft Remedial Investigation report in his February 17, 2000 letter and not the Proposed Plan, his comments in that letter are now somewhat out of context. The Army offers the following generalized responses.

- The Proposed Plan proposed institutional controls to restrict development as recommended in the letter.
- Groundwater monitoring was performed at Area 3 in year 2000 to further evaluate the vertical extent of VOC contamination. Additional sampling was also performed in year 2001. The results were considered in preparing the Feasibility Study, Proposed Plan, and Record of Decision.
- Potential risks from exposure to contaminants were evaluated in a detailed risk assessment. The Feasibility Study and the Proposed Plan contained alternatives to control exposure and risk at both

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Areas 2 and 3 for possible (i.e., anticipated) future use and for unrestricted, but unanticipated, future use.

- Neither CERCLA nor Massachusetts regulations require cleanup to uncontaminated levels. The extent of cleanup evaluated in the Feasibility Study and discussed in the Proposed Plan for the various alternatives are consistent with the results of risk estimates prepared for possible and unrestricted future use scenarios.
- Following review of recent groundwater monitoring data, the Army has decided it is appropriate to remove additional contaminated soil at Area 3 to accelerate the groundwater cleanup process. The Record of Decision indicates that Alternative III-2a, which was developed in response to public comments and includes soil removal to accelerate groundwater cleanup, has been selected for implementation at AOC 57 Area 3.
- Implementation of Alternative III-3, which is based on soil removal to protect potential residents from risks resulting from soil exposure, is not necessary because floodplain and wetland conditions and existing zoning controls in the Devens Reuse Plan will prevent residential development. Restrictive deed covenants will be developed to prohibit potable use of groundwater at Parcel A6a (AOC 57).

Written Comments by Don Kochis, 26 Park Lane, Harvard, Massachusetts (April 1, 2001)

Comment No. 1. As a Harvard resident dependent upon our own well for water, I am concerned with any contaminants or potential contaminants to groundwater and - especially in this case -potential contaminants of a medium yield aquifer as the Cold Spring Brook area is considered.

Knowing that our well goes down at least 175 feet, its location risks being affected by contamination to the aquifer.

It seems to me to be only common sense that when a site has been identified as being contaminated with PCB's, lead, elevated levels of arsenic and "volatile organic compounds", the site should be completely cleanup or at least the level of cleanup should be with the goal of eventually providing, potable water.

Response: The Army considers it unlikely that contaminants from AOC 57 would migrate into Harvard southeast of Cold Spring Brook. Cold Spring Brook and its tributaries, such as Bowers Brook, are discharge areas for groundwater migrating north from Harvard. Groundwater from AOC 57 would not migrate against the regional groundwater gradient. In response to specific concerns about contamination of your well, Park Lane is about 2½ miles from AOC 57 and at an elevation of approximately 490 feet. If your well is 175 feet deep, its screen is at an elevation about 315 feet, well above the elevation of AOC 57. Considering the distance involved, the northward regional movement of groundwater, and the differences in elevation, contamination of your well by AOC 57 should not be a concern.

On a general note, the Army's goal is to attain drinking water standards in AOC 57 groundwater. To accomplish this goal, the Army removed approximately 1,300 cubic yards of contaminated soil from Area 2 in 1994 and 1,860 cubic yards of contaminated soil from Area 3 in 1999. This soil was interpreted to be both a potential source of organic compound contamination to groundwater and the cause of reducing (i.e., anaerobic) conditions that result in release of arsenic to groundwater from natural soil materials. The Feasibility Study Report estimated that the length of time for attainment of the arsenic drinking water standard following soil removal might

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reasonably be within a range of less than 1 to 2 years at Area 2, and within a range of 1 to 8 years at Area 3. Because of the many variables that influence the cleanup time, accurately predicting an exact duration is difficult. To evaluate the sensitivity of estimated costs to the length of time that groundwater monitoring was performed, the Feasibility Study evaluated a 3 year and 30 year duration for Area 2 and a 7 year and 30 year duration at Area 3. The references to 3-to-30 year and 7-to-30 year time frames in the Proposed Plan did not make this distinction clear.

To better evaluate progress toward attainment of groundwater cleanup goals, the USEPA and MADEP collected groundwater samples from 6 AOC 57 Area 3 monitoring wells (57M-95-03X, 57M-96-09X, 57M-96-10X, 57M-96-11X, 57M-96-12X, and 57M-96-13X) on April 11, 2001. The samples were split three ways and analyzed by the USEPA, MADEP, and Army for volatile organic compounds and inorganics. Those analyses show exceedance of the arsenic cleanup level at one Area 3 monitoring well (analytical results of 91, 80, and 104 µg/L, respectively, at 57M-96-11X). This represents a significant reduction in arsenic from the 1997 concentration of 170 µg/L, but suggests that reducing conditions that result in arsenic mobilization still remain at location 57M-96-11X. Therefore, although only two years of the estimated 8 years necessary to attain drinking water standards have passed since the Area 3 soil removal, the Army has decided it is appropriate in this instance to remove additional contaminated soil to accelerate the groundwater cleanup process. The Record of Decision indicates that Alternative III-2a, which was developed in response to public comments and includes soil removal to accelerate groundwater cleanup, has been selected for implementation at AOC 57 Area 3.

Comment No. 2. I never received any reply to my Jan. 11, 1999 letter to you (copy attached), if you have information which would provide answers to my questions, please forward.

Response: Responses to comments offered during the public comment period for the Landfill Remediation at Fort Devens are provided in the Responsiveness Summary that is Appendix C of the Landfill Remediation Record of Decision¹. Review of that Responsiveness Summary shows that your letter was received and considered in those responses.

In the case of the Landfill Remediation Responsiveness Summary, the Army prepared responses to generalized comments on the proposed plan. Specific responses to individual comments were not prepared. The Army does not send letters of response to individual commentors.

The selection of a remedial approach for the several Devens landfills addressed by the Landfill Remediation Record of Decision is complete, and the consolidation landfill is under construction. If you have continuing questions, you may review the Responsiveness Summary in the Landfill Remediation Record of Decision. It is available for review at the information repository at the Harvard Public Library, and at the Ayer, Lancaster, and Shirley libraries.

¹ *Record of Decision Landfill Remediation Study Areas 6, 12, and 13 and Areas of Contamination (AOC) 9, 11, 40, and 41*; prepared for U.S. Army Corps of Engineers, Concord, Massachusetts; prepared by Harding Lawson Associates, Portland, Maine. July, 1999.

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Written Comments by Claire Rindenello, 14 Blanchard Rd., Harvard, Massachusetts (April 4, 2001)

Comment. The medium yield aquifer underlying AOC 57 should be cleaned up and protected from further contamination. This area may some day be part of a buffer zone used for open space recreational purposes: For these as well as other reasons given above, we support thorough excavation of the contaminants, restoration of the Cold Spring Brook wetlands, and measures to bring the groundwater to drinking water quality within five years.

Response: The Army believes that the most important factor in cleaning up groundwater at AOC 57 is cleaning up soils that are a potential source of contaminants and/or reducing (anaerobic) conditions that result in release of arsenic from native soil materials. Soil removal is a relatively quick process (a few days or weeks); however, several months or years may be needed after soil removal for groundwater conditions to stabilize and for existing groundwater contamination to disperse.

The Army removed approximately 1,300 cubic yards of contaminated soil from Area 2 in 1994 and 1,860 cubic yards of contaminated soil from Area 3 in 1999. This soil was interpreted to be both a potential source of organic compound contamination to groundwater and the cause of reducing (i.e., anaerobic) conditions that result in release of arsenic to groundwater from natural soil materials. The Feasibility Study Report estimated that the length of time for attainment of the arsenic drinking water standard following soil removal might reasonably be within a range of less than 1 to 2 years at Area 2, and within a range of 1 to 8 years at Area 3. Because of the many variables that influence the cleanup time, accurately predicting an exact duration is difficult. To evaluate the sensitivity of estimated costs to the length of time that groundwater monitoring was performed, the Feasibility Study evaluated a 3 year and 30 year duration for Area 2 and a 7 year and 30 year duration at Area 3. The references to 3-to-30 year and 7-to-30 year time frames in the Proposed Plan did not make this distinction clear.

Recent sampling suggests that reducing conditions that result in arsenic mobilization remain at location 57M-96-11X at Area 3. Therefore, although only 2 years of the estimated 8 years necessary to attain drinking water standards have passed since the Area 3 soil removal, the Army has decided it is appropriate in this instance to remove additional contaminated soil to accelerate the groundwater cleanup process. The Record of Decision indicates that Alternative III-2a, which was developed in response to public comments and includes soil removal to accelerate groundwater cleanup, has been selected for implementation at AOC 57 Area 3.

The selected remedies also require long-term monitoring of groundwater and five-year-reviews to assess progress toward attaining cleanup goals and whether the remedies remain protective of human health and the environment (i.e., to assess whether contamination, site conditions, or land use have changed in manner that means the remedy is no longer protective). If warranted, the five-year review may recommend additional remedial actions to protect human health and the environment.

Written Comments by Mildred Chandler, Citizens to Protect Residential Harvard, Harvard, Massachusetts (April 10, 2001)

Comment. As the enclosed petitions indicate, residents of the Town of Harvard want to see AOC 57 cleaned up as thoroughly as possible, including complete excavation and removal of the contaminants,

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restoration of the Cold Spring Brook wetlands, and remediation of the groundwater to drinking water quality within 5 years.

Response: The Army believes that the most important factor in cleaning up groundwater at AOC 57 is cleaning up soils that are a potential source of contaminants and/or reducing (anaerobic) conditions that result in release of arsenic from native soil materials. Soil removal is a relatively quick process (a few days or weeks); however, several months or years may be needed after soil removal for groundwater conditions to stabilize and for existing groundwater contamination to disperse.

The Army removed approximately 1,300 cubic yards of contaminated soil from Area 2 in 1994 and 1,860 cubic yards of contaminated soil from Area 3 in 1999. This soil was interpreted to be both a potential source of organic compound contamination to groundwater and the cause of reducing (i.e., anaerobic) conditions that result in release of arsenic to groundwater from natural soil materials. The Feasibility Study Report estimated that the length of time for attainment of the arsenic drinking water standard following soil removal might reasonably be within a range of less than 1 to 2 years at Area 2, and within a range of 1 to 8 years at Area 3. Because of the many variables that influence the cleanup time, accurately predicting an exact duration is difficult. To evaluate the sensitivity of estimated costs to the length of time that groundwater monitoring was performed, the Feasibility Study evaluated a 3 year and 30 year duration for Area 2 and a 7 year and 30 year duration at Area 3. The references to 3-to-30 year and 7-to-30 year time frames in the Proposed Plan did not make this distinction clear.

Recent sampling suggests that reducing conditions that result in arsenic mobilization remain at location 57M-96-11X at Area 3. Therefore, although only 2 years of the estimated 8 years necessary to attain drinking water standards have passed since the Area 3 soil removal, the Army has decided it is appropriate in this instance to remove additional contaminated soil to accelerate the groundwater cleanup process. The Record of Decision indicates that Alternative III-2a, which was developed in response to public comments and includes soil removal to accelerate groundwater cleanup, has been selected for implementation at AOC 57 Area 3.

The selected remedies also require long-term monitoring of groundwater and five-year-reviews to assess progress toward attaining cleanup goals and whether the remedies remain protective of human health and the environment (i.e., to assess whether contamination, site conditions, or land use have changed in manner that means the remedy is no longer protective). If warranted, the five-year review may recommend additional remedial actions to protect human health and the environment.

Written comments by William Ashe, Harvard Board of Selectmen, Harvard, Massachusetts (April 23, 2001)

Comment. The Army's current approach appears based largely on the following factors: 1) the site is vacant; 2) it is not located near active land use areas; 3) the site is within an area zoned for Rail Industrial and Trade related uses; and 4) the site and adjacent lands will eventually be redeveloped for commercial and/or industrial use. Further, there is no significant adverse affect to wildlife. The Army's solution is limited to excavation of contaminated soils, institutional controls and imposition of land use restrictions until cleanup goals are reached. We note no time frame to reach cleanup goals, or how and when drinking water standards will be attained.

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Considering the above, with emphasis on the sensitivity and uniqueness of this riverine habitat, and noting the determined concern and interest of Harvard residents, the Board of Selectmen recommends the highest level of cleanup and restoration for the AOC 57 site. We support the recommendations of PACE and CPHR and, specifically urge the Army to adopt:

- Alternative II-4 for Area 2, unrestricted use;
- Alternative III-3 for Area 3, unrestricted use;
- A five year goal to achieve drinking water standards; and
- An aggressive program of wetland restoration.

Response: Because of AOC 57's presence at Fort Devens, its cleanup is proceeding according to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP). CERCLA and the NCP soil cleanup actions are generally based on reducing potential exposure risks to a range of 1 in 10,000 to 1 in 1,000,000 for carcinogenic substances and to a hazard index of 1 or less for noncarcinogenic substances. Groundwater cleanup actions are generally based on attaining drinking water standards. CERCLA does not require cleanup to background conditions or conditions before occupation by the Army.

Consistent with the requirements of CERCLA, the selected soil cleanup actions at AOC 57 are based on potential health risks associated with the planned/reasonable use of the area (i.e., commercial/industrial use rather than residential use), while groundwater cleanup is based on attainment of drinking water standards.

The Army believes that the most important factor in cleaning up groundwater at AOC 57 is cleaning up soils that are a potential source of contaminants and/or reducing (anaerobic) conditions that result in release of arsenic from native soil materials. Soil removal is a relatively quick process (a few days or weeks); however, several months or years may be needed after soil removal for groundwater conditions to stabilize and for existing groundwater contamination to disperse.

The Army removed approximately 1,300 cubic yards of contaminated soil from Area 2 in 1994 and 1,860 cubic yards of contaminated soil from Area 3 in 1999. This soil was interpreted to be both a potential source of organic compound contamination to groundwater and the cause of reducing (i.e., anaerobic) conditions that result in release of arsenic to groundwater from natural soil materials. The Feasibility Study Report estimated that the length of time for attainment of the arsenic drinking water standard following soil removal might reasonably be within a range of less than 1 to 2 years at Area 2, and within a range of 1 to 8 years at Area 3. Because of the many variables that influence the cleanup time, accurately predicting an exact duration is difficult. To evaluate the sensitivity of estimated costs to the length of time that groundwater monitoring was performed, the Feasibility Study evaluated a 3 year and 30 year duration for Area 2 and a 7 year and 30 year duration at Area 3. The references to 3-to-30 year and 7-to-30 year time frames in the Proposed Plan did not make this distinction clear.

Recent sampling suggests that reducing conditions that result in arsenic mobilization remain at location 57M-96-11X at Area 3. Therefore, although only 2 years of the estimated 8 years necessary to attain drinking water standards have passed since the Area 3 soil removal, the Army has decided it is appropriate in this instance to remove additional contaminated soil to accelerate the groundwater cleanup process. The Record of Decision indicates that Alternative III-2a, which was developed in response to public comments and includes soil removal to accelerate groundwater cleanup, has been selected for implementation at AOC 57 Area 3.

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As part of the cleanup process, portions of the wetland disturbed by remedial activities will be restored.

The selected remedies also require long-term monitoring of groundwater and five-year-reviews to assess progress toward attaining cleanup goals and whether the remedies remain protective of human health and the environment (i.e., to assess whether contamination, site conditions, or land use have changed in manner that means the remedy is no longer protective). If warranted, the five-year review may recommend additional remedial actions to protect human health and the environment.

Written comments by Elizabeth Ainsley Campbell, Nashua River Watershed Association, Groton, Massachusetts (April 24, 2001)

Comment No. 1. The Association sees it as the Army's responsibility to undertake remediation approaches that enable the highest level of cleanup possible. For Area 2, while we are tempted to request Alternative II-4 at the outset, we feel that perhaps the money could be better spent elsewhere at this point, and it is reasonable to monitor the situation before taking more action than outlined in Alternative II-3. With a five year time table and monitoring plan in place to assure drinking water standards are met. We can support the Army's recommendation of Alternative II-3 for Area 2. If, within five years, drinking water standards have not been met, then further remediation must be undertaken.

Response: Because of AOC 57's presence at Fort Devens, its cleanup is proceeding according to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP). CERCLA and the NCP soil cleanup actions are generally based on reducing potential exposure risks to a range of 1 in 10,000 to 1 in 1,000,000 for carcinogenic substances and to a hazard index of 1 or less for noncarcinogenic substances. Groundwater cleanup actions are generally based on attaining drinking water standards. CERCLA does not require cleanup to background conditions or before occupation by the Army.

Consistent with the requirements of CERCLA, the selected soil cleanup actions at AOC 57 are based on potential health risks associated with the planned/reasonable use of the area (i.e., commercial/industrial use rather than residential use), while groundwater cleanup is based on attainment of drinking water standards.

The selected remedies also require long-term monitoring of groundwater and five-year-reviews to assess progress toward attaining cleanup goals and whether the remedies remain protective of human health and the environment (i.e., to assess whether contamination, site conditions, or land use have changed in manner that means the remedy is no longer protective). If warranted, the five-year review may recommend additional remedial actions to protect human health and the environment.

Comment No. 2. With regard to Area 3, we have tried to evaluate if there are credible scenarios under which any potential contaminants could impact drinking water supplies in the future. We feel that the situation is not 100% clear and definite, and for that reason recommend Alternative III-3.

Response: Recent sampling suggests that reducing conditions that result in arsenic mobilization remain at location 57M-96-11X. Therefore, although only two years of the estimated 8 years necessary to attain drinking

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water standards have passed since the Area 3 soil removal, the Army has decided it is appropriate in this instance to remove additional contaminated soil to accelerate the groundwater cleanup process. The Record of Decision indicates that Alternative III-2a, which includes soil removal to accelerate groundwater cleanup, has been selected for implementation at AOC 57 Area 3. Implementation of Alternative III-3, which is based on soil removal to protect potential residents from risks resulting from soil exposure, is not necessary because floodplain and wetland conditions and existing zoning controls in the Devens Reuse Plan will prevent residential development. Restrictive deed covenants will be developed to prohibit potable use of groundwater at Parcel A6a (AOC 57).

The selected remedies contain requirements to perform long-term monitoring of groundwater and five-year-reviews. The five-year reviews will assess progress at attaining cleanup goals and whether the remedies remain protective of human health and the environment (i.e., to assess whether contamination, site conditions, or land use have changed in manner that means the remedy is no longer protective). The long-term monitoring and five-year review process will allow the Devens BCT to remain informed about cleanup progress at AOC 57. If warranted, the five-year review may recommend additional remedial actions to protect human health and the environment.

Comment No. 3. In restoring disturbed wetlands to native vegetation, we recommend carefully monitoring to be sure that invasive exotic species are not introduced.

Response: A Wetlands Restoration Plan will be prepared to outline proposed wetland restoration and monitoring activities for areas where wetlands may be disturbed. The Army does not plan to introduce invasive exotic species.

PUBLIC HEARING TRANSCRIPT

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 :
 PROPOSED CLEANUP PLAN FOR AOC 57 :
 :
 DEVENS RESERVE FORCES TRAINING AREA :
 :
 DEVENS, MASSACHUSETTS :
 :
 ----- X

BEFORE MODERATOR: James Chambers,
BRAC Environmental Coordinator

Held at:
 Devens RFTA Commander's Conference Room
 Building 679
 31 Quebec Street
 Devens, Massachusetts
 Thursday, March 8, 2001
 8:00 p.m.

(Anne H. Bohan, Registered Diplomat Reporter)

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P R O C E E D I N G S

(Presentation off public record)

MR. CHAMBERS: Good evening. My name is James Chambers, I'm the Base Realignment and Closure Environmental Coordinator for the Devens Reserve Forces Training Area. Thank you for coming to the Public Hearing for the Remedial Proposed Plan for Area of Contamination 57.

Tonight we're going to hold the public hearing. If you have a comment to make, you can make it either orally this evening or in writing. The public comment period is open through March 26th. If you choose to make a comment this evening, please state your name and your address and your comment, as all comments received, either this evening or in writing, will be responded to in the response and summary that will be included in the Record of Decision.

MR. SULLIVAN: My name is Cornelius Sullivan, Chairman of the Board of Selectmen in the Town of Ayer. The address would be Town Hall, Ayer, Mass. 01432.

I'm here tonight because of the concern my board has for the proximity of Areas 2 and 3 of

1 AOC 57 to the Zone II four-hour Grove Pond wells.
2 Although the Areas 2 and 3 that have been discussed
3 earlier tonight appear to be outside of the Zone II,
4 it's not clear to me what effect migration through
5 groundwater or surface water may have on the
6 contaminants found at Areas 2 and 3; in particular,
7 the migration of those contaminants into or towards
8 the wetland area known as Cold Spring Brook. The
9 brook does in fact travel in a northerly direction
10 from Areas 2 and 3 and seems to, at least on the map
11 that I have from our planning board, enter part of
12 the outer range of our Zone II to the Grove Pond
13 wells.

14 So with the remedial action that's being
15 proposed, I understand that Areas 2 and 3 are not to
16 be returned, the groundwater, that is, to drinking
17 water standards. And where our Zone II is so nearby
18 and connected to these areas through the Cold Spring
19 Brook, that just does not seem acceptable, at least
20 to the Town of Ayer.

21 Secondly -- and I'll stand corrected, if
22 I'm mistaken --- if a private organization was
23 involved in a clean-up effort such as this, it's my
24 understanding -- and again I'll stand corrected if

1 I'm mistaken -- that the private organization would
2 have to remediate and return any contamination to
3 drinking water standards. And that doesn't appear
4 to be the case here, and I'm not sure why. So those
5 would be the two comments that I would make for the
6 record.

7 MR. CHAMBERS: Thank you. Is there anybody
8 else now who would like to make a public comment at
9 this time?

10 MS. SAMFIELD: My name is Dina Samfield. I
11 live at 18 Westford Road, No. 20 in Ayer. And I
12 have some questions that I would like to have added
13 into the record.

14 First of all, I'd like to know if this area
15 will be returned to drinking water standards within
16 a defined period of time? If so, what the time
17 frame is for that.

18 Secondly, I wasn't clear as to whether
19 there will be more excavation of Area 3. I thought
20 Massachusetts DEP was recommending excavation in
21 both Areas 2 and 3.

22 ~~My third question is, would the area east~~
23 of Barnum Road and west of Cold Spring be considered
24 for rezoning as conservation land and open space?

1 Is future use of the aquifer for additional water
2 resources being considered?

3 And my fourth question is, does the level
4 of cleanup being offered in the Proposed Plan meet
5 the minimum standard for other cleanups within
6 Massachusetts?

7 MR. CHAMBERS: Thank you. Is there anybody
8 else at this time?

9 MR. SULLIVAN: Thanks for the opportunity
10 to come in.

11 MR. CHAMBERS: Thank you. At this time I'd
12 like to temporarily close the public hearing. We'll
13 continue on with the presentation and reopen the
14 hearing afterwards.

15 (Public record portion of meeting
16 suspended)

17 MR. CHAMBERS: We'll again open up the
18 public hearing process. I think I already stated
19 for the record who I am, no need to do that again,
20 but again, please, the comments you make for the
21 public hearing tonight, we will respond to in
22 writing. You may also submit your comments in
23 writing, and the public comment period ends on March
24 26th.

1 Is there anybody that would like to make a
2 comment for the public record?

3 MRS. NEHRING: I believe several others are
4 going to make comments. I'll start. I'm Laurie
5 Nehring, 35 Highland Avenue, Ayer, Mass. 01432. I'm
6 also the president of People of Ayer Concerned about
7 the Environment. I made a lengthy presentation, and
8 I'm going to go ahead and read what I have written
9 as it's written, and I will ad lib based on some of
10 the comments that were made tonight.

11 I would like to also state for the record
12 that a number of people who would have liked to have
13 been here tonight were required to be at other
14 meetings that are also environmentally related, and
15 we may perhaps have had a larger turnout had it not
16 conflicted with other meetings that are occurring
17 tonight. And some of my comments are going to
18 address sort of the format of this process.

19 So now looking at the comments I prepared,
20 I do want to thank you, Mr. Chambers, for the
21 opportunity to formally present and comment on the
22 ~~Proposed Plan for the Area of Contamination located~~
23 on Devens known as AOC 57. Community acceptance of
24 the Proposed Plan is a critical component of the

1 Superfund process. We appreciate the Army's efforts
2 in seeking our public comments: our suggestions,
3 modifications, and objections.

4 On behalf of PACE, I have been working
5 closely with Mr. Rich Doherty of GeoInsight,
6 Incorporated, to review the Army's Proposed Plan for
7 AOC 57. For the record, Mr. Doherty is a certified
8 Professional Engineer and Licensed Site Professional
9 who was hired by PACE through the U.S. EPA's
10 Technical Assistant Grant program.

11 The purpose of this grant is to enable
12 communities impacted by Superfund sites to review
13 technical documentation by a qualified
14 environmental professional, enabling that community
15 to make appropriate and useful comments in just this
16 kind of arena. Mr. Doherty has extensive
17 professional experience advising and overseeing all
18 stages of remediation for both state and Superfund
19 sites in New England and particularly in
20 Massachusetts.

21 The technical comments Mr. Doherty will
22 ~~submit in writing to the record and on behalf of~~
23 PACE are ones we fully endorse. PACE strongly
24 supports all the recommendations presented in Mr.

1 Doherty's letter, and our acceptance and support of
2 the final remedy at AOC 57 is contingent on the
3 Army's adopting these recommendations in their
4 entirety. But rather than duplicate his
5 presentation or his written comments and
6 recommendations, I will make some general comments
7 and recommendations about this process and then some
8 specific comments about this site.

9 First, general comments. No. 1, the
10 format. The intent of the Army's nine-plus-page
11 summary report Proposed Plan for AOC 57 is, of
12 course, to educate and inform the general public.
13 Comments and suggestions on this format are as
14 follows:

15 First, great maps, Jim. Figure 1 was
16 particularly useful in visualizing the general
17 location of the site, and I thank you for including
18 the numerous recognizable features for proper
19 orientation by the general public.

20 I believe, based on the presentation today,
21 that Figure 2 would have been more helpful if
22 ~~landmarks that are currently in existence could have~~
23 been included so that people could do drive-bys and
24 see the site for themselves.

1 Despite the inclusion of some of the good
2 maps, in talking with PACE members, it was revealed
3 to me that this plan was very difficult to read and
4 follow, and the text was very dense. And I include
5 myself in finding this to be true. Even people who
6 had a previous overview of AOC 57 found that the
7 format and content were confusing. For example, the
8 Army's preferred alternative, as stated in the
9 "Introduction," goes like this:

10 "The Army's preferred alternative for Area
11 2 is Alternative II-3: Excavation (for Possible
12 Future Use) and Institutional Controls. The
13 preferred alternative for Area 3 is Alternative
14 III-2: Limited Action."

15 I found that the Codes II-3 and III-2 are
16 very confusing, even today in preparation for
17 tonight. I was especially confused because there
18 are other numeric codes used in the text, such as
19 Area 2 and Area 3.

20 You also referred to tables. The tables
21 in Figures 5 and 6 did not help me to clarify the
22 codes. Those codes were omitted entirely from the
23 tables. Then when you look at the text, the text
24 describes the alternatives in some detail, but they

1 did not identify which method was preferred by the
2 Army within the context of those descriptions. The
3 reader had to catch this important statement in the
4 "Introduction" or find it at the very end of the
5 document on Page 8 and then go back and reread the
6 Army's recommended alternatives and try to
7 determine their significance. I found that very
8 confusing.

9 No. 2, comments on public outreach. I
10 interviewed several local residents who received the
11 Proposed Plan in the mail. The proposal was too
12 technical for them to follow. Only with a great
13 deal of time and patience and with the assistance of
14 a qualified environmental professional, i.e., Rich
15 Doherty, would individuals feel capable of
16 commenting intelligently on this plan.

17 I just want to read you one little section
18 that, frankly, I still don't understand. This is on
19 Page 7 of the Proposed Plan. And I'm going to read
20 couple of sentences:

21 "Alternatives II-3 and III-2 would
22 temporarily impose land-use restrictions at Areas
23 2 and 3 to prohibit potable use of groundwater until
24 cleanup goals are achieved. Ground water COCs and

1 their respective cleanup levels are arsenic and
2 tetrachloroethylene at 50" -- and some people might
3 not know micrograms/L -- "micrograms per liter for
4 Area 2, and arsenic, cadmium, tetrachloroethylene,
5 and 1,4-dichlorobenzene at 50 micrograms per liter,
6 5 micrograms per liter, 5 micrograms per liter, and
7 5 micrograms per liter for Area 3."

8 I'm sorry, I don't really quite grasp what
9 that means. That could have been written in
10 layman's terms much more easily.

11 We respectfully request, therefore, that
12 the comments which the Army does receive on the
13 Proposed Plan for AOC 57 within the comment period
14 are perceived as representing the concerns of at
15 least a dozen other people who did not feel
16 comfortable responding because of the style of the
17 presentation.

18 In addition, it's not clear to us how the
19 public comment period was made known to the public.
20 Who was selected to receive the nine-page Proposed
21 Plan? How big was the mailing list? How prominent
22 was the information displayed in public libraries?
23 How prominent and helpful were the legal notices in
24 the newspapers?

1 On behalf of PACE, I respectfully make the
2 following specific recommendations be incorporated
3 into all future public comment processes:

4 One. Continue the use of maps which are
5 helpful and prominently located in your brochures.

6 Two. Remove much of the technical language
7 from the summaries, enabling the general public to
8 read about the project in layman's terms without
9 struggling to get through it. Eliminate
10 abbreviations and acronyms such as RI/FS, AOC 57,
11 COC, and all those code words that were described
12 previously.

13 Three. Always refer to a place where more
14 detailed information can be found. Try a Web site
15 or mention the libraries. Identify a specific list
16 of documents, arranged chronologically or by defined
17 categories, which people could use. Likewise,
18 identify local, state, and federal people who could
19 have assisted in answering questions in the EPA and
20 MA DEP in case people didn't feel comfortable
21 contacting the Army directly.

22 ~~Four. Employ more effective public~~
23 outreach. In all public announcements and legal
24 notices, we suggest replacing meaningless code names

1 like "AOC 57" with descriptive names and locations.

2 To get the information out in a more
3 cost-effective way, please consider doing a larger
4 initial mailing using postcards, such as NRWA does,
5 to make an initial announcement. On that postcard
6 you can tell people how they can obtain the
7 nine-page summary document, with direct mailing as
8 an option, or they can pick it up at several
9 designated locations in each town, which I suggest
10 would not be just the library, because it has
11 limited hours, but perhaps town halls and other
12 commonly visited places.

13 Consider taking advantage of the use of the
14 Internet, making information available
15 electronically, but also keeping in mind that not
16 everyone has access to the Internet. Please set up
17 a rapid response system to send the nine-page
18 summary to all those who request it. Continue to
19 send the document to all those who have attended any
20 RAB meetings or other environmentally related
21 meetings in the last couple of years, specifically
22 ~~I'm thinking of people who have attended~~
23 environmentally related things with Mass
24 Development, by sharing mailing lists.

1 The next section I would like to go into
2 are specific comments on this Proposed Plan for
3 AOC 57.

4 In No. 1, I address Potentially Productive
5 Aquifers and Zone II considerations. And we had
6 some discussion on that earlier this evening. I'm
7 going to pretty much read the comments as I have
8 prepared them, as I had prepared them.

9 AOC 57, it was my understanding that AOC 57
10 is located within a Potentially Productive Aquifer
11 known as Cold Spring Brook, it appears part of it.
12 It's also very near or directly within the zone,
13 the Ayer Zone II. The contamination has been
14 partially remediated through excavation. However,
15 the Army's Remedial Investigation found that
16 areas still contained levels of contaminants in
17 the groundwater exceeding MCL's for arsenic,
18 cadmium, 1,4-dichlorobenzene, chloroform,
19 bis(2-ethylhexyl)phthalate and tetrachloroethylene.
20 Rich Doherty of GeoInsight will present detailed
21 technical comments in writing on this issue on
22 ~~behalf of PACE and other local communities~~
23 benefitting from the TAG program.

24 PACE is greatly concerned that the Proposed

1 Plan does not address how drinking water standards
2 will be met at AOC 57. We consider it unacceptable
3 to allow the Army unlimited time to reach these
4 standards. Acceptable resolution of these issues is
5 very important to the community's acceptance of the
6 final plans for AOC 57.

7 Let me emphasize that this important
8 resource area, at least part of it being a
9 Potentially Productive Aquifer and recharge area
10 defined by MA DEP, must be returned to drinking
11 water standards within a defined period of time.
12 The Army's proposal does not appear to stipulate how
13 drinking water standards will be reached but
14 insinuates that natural attenuation will occur. But
15 how? How long will it take? How will it be proven?
16 When will we know it has failed? And if it fails,
17 what will be done?

18 As with other sites the Army has worked on,
19 additional remedial work must be planned for if the
20 standards are not met within a specified time frame.
21 PACE suggests that a specific five-year time frame
22 ~~be used to evaluate the need for additional work.~~
23 We further urge that the Record of Decision be
24 worded in such a way as to prevent the unacceptable

1 postponing of the contingency remedy that has
2 occurred at Shepley's Hill Landfill.

3 Now comments on Area 3. We are confused
4 about why the Army has recommended Alternative
5 III-2: Limited Action, for Area 3. This appears to
6 be a complete reversal from recommendations made in
7 January of this year, in which the Army and MA DEP
8 supported Alternative III-3, Excavation and
9 Institutional Controls.

10 Support for the Excavation and
11 Institutional Controls alternative is clearly
12 expressed in a comment letter on the Draft Proposed
13 Plan for AOC 57 from MA DEP dated January 5, 2001,
14 and signed by David Salvadore. It states:

15 "The MA DEP has completed its review...and
16 concurs with the Army's recommendation for...the
17 excavation of approximately 640 cubic yards and
18 approximately 120 cubic yards petroleum material
19 from Area No. 1 and Area No. 3 respectively."

20 The focus of this letter from Mr. Salvadore
21 is to express MA DEP's concerns about making sure
22 ~~that wetlands are restored properly, after~~
23 excavation occurs in both areas, for a total removal
24 of 760 cubic yards.

1 Why has this reversal taken place since the
2 Draft plan? According to the Army's current
3 Proposed Plan, the Alternative III-3 would result in
4 wetland destruction with "limited benefit
5 considering that residential development is
6 improbable in wetland areas." As stated above, this
7 is a Potentially Productive Aquifer, and now I
8 assume in part at least, and accordingly, it should
9 be returned to drinking water standards, regardless
10 of how it may or may not be developed.

11 We know that wetland protection is being
12 considered as well; however, it has not been
13 demonstrated to us that the additional removal of
14 120 cubic yards from Area 3 would result in
15 irreversible or unrepairable damage. We need to
16 weigh the importance of excavating hot spots of
17 COCs found in the groundwater and petroleum ground
18 in the soil, removing continuing sources of
19 pollution.

20 We searched Army documentation for some
21 time, but we could not locate any information that
22 showed us, with overlays, what the excavation impact
23 would be on the wetlands. How deep would the 120
24 cubic yards of removal be? How does this overlay

1 with the identified contaminants of concern? And
2 finally, how will the excavation impact specific
3 portions of the wetland?

4 Since the cost differential between these
5 alternatives is minimal, we need to better
6 understand why the more complete remediation is no
7 longer recommended by the Army, when it was
8 recommended and supported by DEP only two months
9 ago.

10 We believe that this question requires some
11 additional investigation utilizing the skills of a
12 wetland expert, perhaps NRWA, during the spring
13 season so that a site-specific impact/benefit
14 analysis could be done.

15 In conclusion, unless proven to cause
16 damage within a sensitive area of the wetland, PACE
17 advocates Alternative III-3, which would excavate
18 source contamination in Area 3.

19 Item 3, considerations of open space/zoning
20 changes. AOC 57 is located in a sensitive area,
21 within wetlands and along Cold Spring Brook. Not
22 only is it a Potentially Productive Aquifer, it is
23 also located very near or within Zone II recharge
24 area for Ayer's Grove Pond wells. The proximity of

1 the recharge area for the Devens Grove Pond wells
2 also should be considered.

3 Future use of this aquifer for additional
4 water resources may not have been adequately
5 calculated for current growth patterns. Has the
6 Army interviewed planning boards in the Towns of
7 Ayer, Harvard, and Shirley and added them to the
8 buildout at Devens? Future rapid growth in this
9 region and on Devens may indeed demand use of the
10 Cold Spring Brook Aquifer. I firmly believe that to
11 be true.

12 Future changes in zoning must be considered
13 in the level of cleanup by the Army. This land
14 needs to be returned to drinking water standards and
15 protected from future impacts. Industrial use of
16 this property, as currently zoned, does not appear
17 to be protective of these water resources.

18 PACE strongly recommends that the area east
19 of Barnum Road and west of Cold Spring Brook which
20 contains AOC 57, along with sensitive wetlands, a
21 Potentially Productive Aquifer at Cold Spring Brook,
22 and portions of Ayer's Zone II, be considered for
23 rezoning as conservation land and open space. We
24 will actively promote that. Community acceptance of

1 this request is supported by the recent passage of
2 the Community Preservation Act in both Ayer and
3 Harvard.

4 Finally, my conclusions. PACE cannot
5 accept the AOC 57 Proposed Plan in its current form.
6 The following issues need to be resolved before PACE
7 can support the AOC 57 remedy:

8 One. The Army must adequately address the
9 technical issues raised in GeoInsight's letter,
10 including fully adopting the recommendations
11 contained in the GeoInsight letter.

12 Two. Drinking water quality must be
13 restored at AOC 57 within five years or an ironclad
14 contingency remedy must be implemented to achieve
15 drinking water standards within the following five
16 years.

17 And three, Alternative III-3 should be
18 adopted for Area 3, unless proven that irreversible
19 and unrepairable damage to the wetland will result.
20 Thank you.

21 MR. CHAMBERS: Next?

22 MR. DOHERTY: My name is Richard Doherty, I
23 work at GeoInsight at 319 Littleton Road in
24 Westford, and I am the environmental consultant for

1 PACE.

2 On behalf of PACE I have reviewed the
3 Proposed Plan and prepared a detailed comment
4 letter. Although I won't be reading the letter into
5 the record tonight, I would be happy to discuss the
6 contents of the letter and address questions on the
7 letter with anyone who has any questions on it.

8 I just want to summarize some of the main
9 points. I'd like to talk for a minute about how
10 this Proposed Plan addresses groundwater at AOC 57.

11 The Army acknowledges in their reports that
12 the cleanup goals for AOC 57 groundwater are
13 drinking water standards. This is regardless of
14 whether the area is in a Potentially Productive
15 Aquifer or not. However, the Proposed Plan
16 includes no measures to achieve these standards.
17 The Proposed Plan is worded to imply that
18 drinking water standards will eventually be met,
19 but the time required for this to happen is
20 open-ended.

21 For example, the plan states that the time
22 required to meet drinking water standards at Area 2
23 is from, and I quote, "three to greater than 30
24 years." Greater than 30 years. To my mind, I can

1 only interpret this as meaning that the Army is
2 unwilling to state that they will ever meet drinking
3 water standards at AOC 57.

4 Based on the contents of the Proposed Plan,
5 it's my professional opinion that the Proposed Plan
6 does not meet the Army's own goal of achieving
7 drinking water quality. Therefore, the only
8 conclusion can be that the Proposed Plan is
9 deficient because it does not meet the goals that
10 have been set out for the cleanup.

11 Now, I've heard tonight that the way
12 drinking water standards are going to be achieved is
13 through natural attenuation. But it's standard
14 practice in the industry, in the environmental
15 remediation field, that natural attenuation
16 processes cannot be assumed to be effective. You
17 have to show their effectiveness; you have to
18 investigate it, document it, and confirm it. And
19 the Army has not done this at AOC 57. The AOC 57
20 feasibility study does not include an initial
21 screening or a detailed evaluation of natural
22 attenuation. It's not even an alternative in the
23 feasibility study.

24 Now I'd like to take a minute to look at

1 the groundwater issue from another perspective.
2 We've talked a lot about Potentially Productive
3 Aquifers off the record, but I'd like to illustrate
4 what our points are in this regard. If we suppose
5 for a minute that AOC 57 wasn't part of Fort Devens
6 and that everything else was, we have part of the
7 site as nonpotentially productive, part is
8 potentially productive, and we have one well with
9 TCE in it, above the drinking water standards one
10 time and below it the other time.

11 Now, in this case -- and let's assume
12 instead of it being the Army, it's just a local
13 business such as a trucking company or whatever. In
14 this case the local businessperson would be required
15 by Massachusetts regulations to come up with a
16 workable plan to meet drinking water standards.

17 In my years of experience with many
18 environmental sites in Massachusetts, if the local
19 businessperson were to do no more than state that it
20 would take between three and greater than 30 years
21 to meet drinking water standards and provided no
22 plan for how the drinking water standards were
23 going to be met, that businessperson's Proposed Plan
24 would be rejected by the Commonwealth of

1 Massachusetts.

2 And that brings me to the point, a clean-up
3 at Devens should not be held to a lower standard
4 just because it happens to be part of a Superfund
5 site. On the contrary, we should expect a Superfund
6 site to be held to a standard at least as high as
7 that required for any other site in Massachusetts.
8 In my opinion, the regulations clearly require that
9 Massachusetts standards should be met, but this is
10 not the case at AOC 57.

11 By saying this, I don't mean to say that
12 the DEP personnel working on this project are not
13 working as hard as they can. What I am saying is
14 that Devens is in Massachusetts, and the
15 Massachusetts regulations should apply. Right now
16 they do not.

17 In conclusion, I'd just like to restate my
18 opinion that AOC 57 and other environmental sites in
19 Devens should be held to the minimum standards of
20 cleanup that are required at other sites within the
21 Commonwealth, and I further recommend that the Army
22 develop a workable plan for how and when drinking
23 water standards will be met at AOC 57. Thank you.

24 MR. CHAMBERS: Anyone else?

1 MS. CHANDLER: Mildred Chandler,
2 representing an organization called Citizens to
3 Protect Residential Harvard, address 295 Littleton
4 County Road, Harvard.

5 On behalf of the Citizens to Protect
6 Residential Harvard, I wish to thank you for this
7 opportunity to comment on the Proposed Plan, Area of
8 Contamination (AOC) 57, Devens Reserve Forces
9 Training Area, Devens, Massachusetts.

10 The purpose of Citizens to Protect
11 Residential Harvard is to protect the residents from
12 the negative impact of unreasonable development in
13 surrounding towns. The development and reuse of the
14 former Fort Devens and the possibility for its being
15 rejoined to the rest of Harvard and the other towns
16 have made CPRH concerned about the cleanup and the
17 potential for contamination affecting its land and
18 groundwater both now and in the future.

19 No. 1. The Proposed Plan's indefinite
20 cleanup time is inadequate and unacceptable. The
21 indefiniteness of the "estimate greater than 30
22 years" allows a conclusion that the Army does not
23 know and therefore is hedging. This produces a
24 feeling of distrust based on the possibility of the

1 lack of adequate study. It may not be there, but it
2 produces that feeling.

3 No. 2. The Proposed Plan is unacceptable
4 in that the standard of cleanup is lower than that
5 on private property in Massachusetts. The
6 statement: "Since groundwater at and beneath AOC 57
7 is not used as a source of drinking or industrial
8 water," continues and makes an assumption that it
9 will never be used as a source, thus belying its
10 present status as a Potentially Productive Aquifer.

11 With the level of contaminants in the
12 ground and the indefinite period of attenuation
13 mentioned previously, it is a denial of rights to
14 put land in jeopardy that is on the east side of
15 Cold Spring Brook and to threaten wells at Grove
16 Pond. This proposal is precedent setting and may be
17 recommended when other areas are examined in the
18 future.

19 No. 3. The Proposed Plan does not
20 demonstrate this government agency's responsibility
21 to achieve the highest standards for its citizens.
22 The community we represent is almost totally
23 dependent upon private wells for its drinking water
24 and for all other purposes. We take seriously our

1 personal responsibility to protect our properties
2 from contamination with the knowledge that each
3 person's ethical standard creates the national
4 environmental ethic.

5 Avoiding responsibility to restore land
6 despoiled by the Army's past carelessness or
7 ignorance when it could achieve a better cleanup is
8 blatant side stepping. I object to the Army's
9 spirit that if land is not decontaminated,
10 institutional controls for restricted use, that is,
11 rezoning, are the solution. Thank you.

12 MR. CHAMBERS: Is there anybody else that
13 would like to speak? One more time. Is there
14 anybody else that would like to speak? I'd like to
15 close the public hearing at 9:02.

16 MRS. MILLER: I might say something.

17 MR. CHAMBERS: Is this for the record?

18 MRS. MILLER: I really don't want to read
19 the complete statement because --

20 MR. CHAMBERS: Mrs. Miller, is this for the
21 record?

22 MRS. MILLER: I suppose so.

23 MR. CHAMBERS: I just closed the hearing.
24 I need to reopen it if you're going to make it for

1 the record.

2 MRS. MILLER: I think I'll submit it in
3 writing.

4 MR. CHAMBERS: Is this for the record?

5 MS. AINSLEY CAMPBELL: I'd like to ask Mrs.
6 Miller if she would like to read it. I thought that
7 was just a little bit quick on your part.

8 MR. CHAMBERS: I'm not saying you shouldn't
9 read it, Mrs. Miller. I'm not suggesting you not
10 read it. I just wanted to know, we closed the
11 hearing. If you want to read it and it not be on
12 the record, you can say it now and then submit it in
13 writing, if that's what you want to do, or do you
14 want to record it tonight as part of the public
15 hearing?

16 MRS. MILLER: I think I'll pass for now.

17 All right. I'll make you aware of some of
18 this, then, and I'll submit the comments later.

19 MR. CHAMBERS: Okay. Again, so we're
20 certain, so that we know whether the stenographer
21 should record this.

22 MRS. MILLER: This is not official. I'm
23 going to modify it, but I'll make some comments.

24 MR. CHAMBERS: What I'm going to do, just

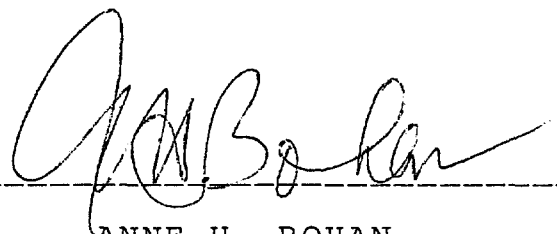
1 so we can formally close it, unless there's any
2 other formal comments, the public hearing is now
3 closed.

4 (Public hearing concluded at 9:07 p.m.)
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C E R T I F I C A T E

I, Anne H. Bohan, Registered Diplomate Reporter, do hereby certify that the foregoing transcript, Volume I, is a true and accurate transcription of my stenographic notes taken on March 8, 2001.



ANNE H. BOHAN

Registered Diplomate Reporter

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PUBLIC COMMENTS

Mr. James Chambers
BRAC Environmental Coordinator
30 Quebec Street
Unit 100
Devens, MA 01432-4429

Dina Samfield
18 Westford Road #20
Ayer, MA 01432

March 7, 2001

Dear Mr. Chambers:

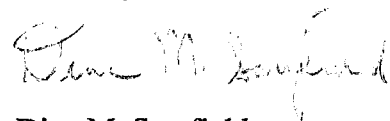
I have the following questions about the proposed plan for the clean-up of AOC 57:

1. Will this area be returned to drinking water standards within a defined period of time? If so, what is the timeframe for this?
2. Will there be any excavation at Area 3? Isn't Massachusetts DEP recommending excavation in both areas 2 and 3?
3. Will the area east of Barnum Road and west of Cold Spring be considered for re-zoning as conservation land and open space? Is future use of the aquifer for additional water resources being considered?
4. Does the level of clean-up being offered in the proposed plan meet the minimum standard for other clean-ups within Massachusetts?

I would appreciate it if these questions could be answered at the RAB on March 8, 2001 ~~and~~ in writing at some date in the near future.

Thank you.

Sincerely,



Dina M. Samfield

Citizens to Protect Residential Harvard

P.O. Box 424
Harvard, Massachusetts 01451

March 8, 2001

**Mr. James Chambers USARFTA
BRAC Environmental Coordinator
30 Quebec St., Unit 100
Devens, MA 01432-4429**

Dear Mr. Chambers,

On behalf of Citizens to Protect Residential Harvard (CPRH), I wish to thank you for this opportunity to comment on the Proposed Plan, Area of Contamination (AOC) 57, Devens Reserve Forces Training Area, Devens, Massachusetts.

The purpose of Citizens to Protect Residential Harvard is to protect residents from the negative impact of unreasonable development in surrounding towns. The development and reuse of former Fort Devens, and the possibility for its being rejoined to the rest of Harvard and the other towns, have made CPRH concerned about the cleanup and the potential for contamination affecting its land and ground water both now and in the future.

- 1. The Proposed Plan's indefinite clean up time is inadequate and unacceptable. The indefiniteness of the estimate "greater than 30 years" allows a conclusion that the Army does not know and therefore is hedging. This produces a feeling of distrust based on the possibility of the lack of adequate study**
- 2. The Proposed Plan is unacceptable in that the standard of clean up is lower than that on private property in Massachusetts. The statement: "Since groundwater at and beneath AOC 57 is not used as a source of drinking or industrial water..." continues and makes an assumption that it will never be used as a source, thus belying its present status as a Potentially Productive Aquifer. With the level of contaminants in the ground and the indefinite period of attenuation mentioned previously, it is a denial**

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of rights to put land in jeopardy that is on the East Side of Cold Spring Brook and to threaten wells at Grove Pond. This proposal is precedent setting and may be recommended when other areas are examined in the future.

3. The Proposed Plan does not demonstrate this government agency's responsibility to achieve the highest standard for its citizens. The community we represent is almost totally dependent upon private wells for its drinking water and for all other purposes. We take seriously our personal responsibility to protect our properties from contamination with the knowledge that each person's ethical standard creates the national environmental ethic. Avoiding responsibility to restore land despoiled by the Army's past carelessness or ignorance when it could achieve a better cleanup is blatant side stepping. I object to the Army's theory that if land is not decontaminated, institutional controls for restricted use (rezoning) are the solution.

Comment submitted by



Mildred A. Chandler

President

295 Littleton County Road

Harvard, MA 01451

75 Westcott Road
Harvard, MA 01451

March 8, 2001

Mr. James Chambers
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429

Dear Mr. Chambers:

It is our understanding that the contamination of AOC57 was one of the reasons that Fort Devens was designated a Superfund site. Various parties to the original planning for Devens recall that AOC 57 was to be cleaned up to the highest standard.

The current options chosen by the Army for the cleanup of Areas 2 and 3 of AOC 57 present us only with a partial cleanup, one which is far below the highest standard. This partial solution leaves most of the remediation and risk-management to nature. However, nature does not always perform as man expects, and natural attenuation is not clearly predictable, as the Army seems to acknowledge by allowing 30 years or more for the process to work.

At AOC 57, the Army has contaminated a medium yield aquifer, a Potentially Productive Aquifer (PPA). In Massachusetts, a PPA cleanup must restore groundwater to drinking water quality in order to be considered a permanent remedy. By omitting discussion of the medium yield aquifer underlying AOC 57 in its Proposed Plan, the Army has minimized the potential importance of this water resource. In an era of dwindling water supplies and water shortages, no one can predict that this aquifer will not one day be needed by the surrounding communities for potable water. We were amazed at the lack of discussion in your brochure, particularly when DEP has noted "Devens' soil and groundwater to be an interconnected system regardless of the disparate locations of the sites." We think the Proposed Plan should have specifically addressed remediation alternatives designed to clean up the aquifer to a drinking water standard In A Reasonable Time. Surely the Massachusetts Contingency Plan is an Applicable or Relevant and Appropriate Requirement. Surely CERCLA should demand no less a remedy than the Commonwealth of Massachusetts.

Leaving the contaminated soils in place as contemplated in the Army's chosen options for both Area 2 and Area 3 could result in a continuing source of further groundwater contamination and even in the appearance of compounds not yet identified as COPCs. It is known that heavy precipitation and snow melt can cause migration of contaminants in Area 3. Moreover, the wetlands in the Cold Spring Brook floodplain, termed in Army literature "a sensitive eco system," have already been contaminated. Will this contamination infiltrate neighboring well-fields?.. Or contaminate the property

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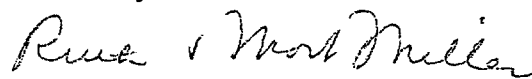
(and wells?) of Harvard residents abutting AOC 57? We have followed with growing chagrin the unforeseen trajectory of the plume from Moore Army Airfield and, as if one plume were not enough, another from Shepley Hill. We think that monitoring and institutional controls are inadequate to address the problem. We believe there should be maximum removal of contaminated soils accompanied by careful restoration of the wetlands in both Areas 2 and 3.

If lands in AOC 57 are to be used as recreational open space in the future, the Army should clean up to protect the most vulnerable little soccer players. Health-risk potential is yet another good reason to clean up the toxic chemicals and heavy metals in AOC 57 soils. Monitoring will not reduce health risks. Use limitations and deed restrictions simply pass the risks and responsibilities on to successive users of the land.

Reading DEP documents and various Army publications, we are aware that there are many identified "hot spots" in AOC 57. It seems likely that there may be others which have not yet been discovered. Also, DEP has noted that some of the Army's past efforts at excavation have been inadequate. DEP has at times questioned the Army's health risk calculations. The presence of numerous potentially dangerous agents at high levels found in AOC 57, including but not limited to PCBs, PAHs, TPHCs, VOCs, and heavy metals, is intolerable. They should be removed to the fullest extent possible to allow nature to recoup. For all the reasons above, we support options II-4 and III-3 as preferable to the other choices offered.

Thank you for the opportunity to comment on the Plan. We hope you will reconsider your choices and do whatever is required to restore the PPA and AOC57 to their natural state as expeditiously as possible.

Yours truly,



Ruth and Morton Miller



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March 14, 2001

GeoInsight Project 2863-001

Mr. James Chambers
BRAC Environmental Coordinator
30 Quebec St., Unit 100
Devens, MA 01432-4429

Re: **Comments on Proposed Plan
Area of Contamination (AOC) 57
Devens, Massachusetts**

Dear Mr. Chambers:

On behalf of People of Ayer Concerned About the Environment (PACE), GeoInsight, Inc. (GeoInsight) reviewed the *Proposed Plan, Area of Contamination (AOC) 57, Devens Reserve Forces Training Area, Devens, Massachusetts* (the "Proposed Plan"). The Proposed Plan summarizes the Army's recommended cleanup plan for Areas 2 and 3 at AOC 57.

COMMENTS

1. The Proposed Plan does not adequately comply with Applicable or Relevant and Appropriate Requirements (ARARs). The AOC 57 Remedial Investigation (RI) identified Federal and State Maximum Contaminant Levels (MCLs), also known as drinking water standards, as ARARs at AOC 57.¹ Results from AOC 57 ground water exceed MCL ARARs for arsenic, cadmium, 1,4-dichlorobenzene, chloroform, bis(2-ethylhexyl)phthalate, and tetrachloroethylene.² The Proposed Plan does not include or adequately describe measures to comply with these ARARs and is therefore inadequate.

In the AOC 57 Focused Feasibility Study (FFS), it is stated that MCLs "will likely be met through natural attenuation processes" as a result of implementing the selected alternatives.³ In GeoInsight's experience, a statement that an ARAR is *likely* to be met would not be considered

¹ *Final Remedial Investigation Report, Area of Contamination 57*, Harding-Lawson Associates, June 2000, Table 4-1.

² See Tables 9-12 through 9-15 of the RI, and the *Final Focused Feasibility Study Report, Area of Contamination 57*, Harding ESE, November, 2000, Section 3.3. It is noted that Harding ESE suspects that the bis(2-ethylhexyl)phthalate concentrations are due to laboratory contamination.

³ *Final Focused Feasibility Study Report, Area of Contamination 57*, Harding ESE, November, 2000, Tables 6-7 and 6-16.

sufficient by Superfund site regulators. Further, it is standard practice in the environmental remediation field that Natural Attenuation processes cannot be *assumed* to be effective; rather, their effectiveness must be investigated, documented, and confirmed. The Army has clearly not done so at AOC 57. The AOC 57 Feasibility Study included neither an Initial Screening nor a Detailed Evaluation of Natural Attenuation.

The contaminants of concern at AOC 57 include compounds with differing Natural Attenuation behaviors. For example, natural attenuation of cadmium and arsenic is significantly less demonstrated than natural attenuation of petroleum hydrocarbons. The Army has not demonstrated mechanisms or effectiveness of natural attenuation for the contaminants of concern.

2. The Proposed Plan's estimates of time for ground water cleanup are inadequate, unsubstantiated, and conflicting . For Area 2, the Proposed Plan states that "Groundwater cleanup duration may range from 3 to greater than 30 years." For Area 3, the Proposed Plan states that "Groundwater cleanup duration is not readily definable, but may range from 7 to greater than 30 years." GeoInsight offers the following comments on these cleanup time estimates:

- Because the estimates do not have an upper bound, the Proposed Plan effectively allows the Army unlimited time to achieve drinking water standards. Adoption of the Proposed Plan allows the Army a basis to continue inaction on AOC 57 ground water even if drinking water standards are not met for decades into the future.
- The broad range of time incorporated in these estimates strongly implies that the Army does not have an adequate understanding of when, how, or even if drinking water standards will be met at AOC 57. In GeoInsight's experience, an estimate such as this would not be considered adequate by regulatory agencies, who would typically require that additional studies be undertaken to obtain sufficient understanding of the factors involved.
- Supporting calculations for these cleanup time estimates were not found in the RI, the FS, or the Proposed Plan. What is the basis for these estimates and where are the supporting calculations?
- The cleanup time estimates are inconsistent with the Army's previous estimates presented in Appendix C of the Feasibility Study. The Appendix C estimates, which *are* supported by calculations, conclude that 1 to 8 years would be required for cleanup of ground water. The fact that the Army's Proposed Plan replaces the 1 to 8 year estimate with one that allows an unlimited cleanup time is further indicative of the Army's uncertainty regarding the achievement of MCL ARARs.

3. The Proposed Plan is not acceptable to the community because a lower standard of cleanup is being offered relative to other sites in Massachusetts. The Massachusetts Department of Environmental Protection (MADEP) has acknowledged that at least some portion

of AOC 57 overlies a Potentially Productive Aquifer, and is therefore considered to be a ground water resource by the Commonwealth of Massachusetts.⁴ If AOC 57 were a non-Superfund site, the Proposed Plan would not meet the Massachusetts Response Action Performance Standard (RAPS) because measures to achieve drinking water standards are not included. PACE and other community members have indicated to GeoInsight that they strongly believe that the US Army should be held to a standard at least as high as that required of private parties within the Commonwealth of Massachusetts.

PROPOSED ACTION

GeoInsight, on behalf of PACE, recommends the following actions to address the comments presented above:

- An additional Focused Feasibility Study should be prepared that includes a detailed evaluation of alternatives for achieving MCLs in ground water at AOC 57 Areas 2 and 3. Detailed evaluation of the natural attenuation alternative should include a characterization of the subsurface environment's potential for promoting natural attenuation, and the use of generally accepted models⁵ to demonstrate the ability of natural attenuation to achieve ARARs within a reasonable period of time. The evaluation must take into account the different fate and transport characteristics of the contaminants of concern. All estimates of time to achieve ARARs should be fully documented. If a calculated time estimate has no upper bound (e.g., "greater than 30 years") or spans more than one decade (e.g., "3 to 30 years"), the corresponding alternative should be eliminated due to the uncertainty involved.
- A reliable alternative for achieving drinking water standards in a reasonable period of time should be selected based on the FFS. The selected alternative should be presented in a Supplemental Proposed Plan. The *current* Proposed Plan should be modified to clearly state that it is intended as to select a "Source Control" alternative only, and that a Supplemental Proposed Plan will be issued to select a "Management of Migration" alternative. The evaluation of both Source Control and Management of Migration alternatives is consistent with the approach required at Superfund sites.
- To allow the AOC 57 cleanup to attain minimum standards established by the Commonwealth of Massachusetts, GeoInsight repeats our previous recommendation that the Massachusetts cleanup procedures and standards documented in the Massachusetts Contingency Plan (MCP, 310 CMR 40.0000) be adopted as an ARAR throughout the Devens Superfund site.

⁴ *Response to Comments on the Draft Focused Feasibility study for Area of Contamination 57*, September 2000, see MADEP General Comment No. 1.

⁵ e.g., Bioplume for petroleum hydrocarbons; Biochlor for chlorinated hydrocarbons.

SUMMARY

GeoInsight is greatly concerned with the lack of attention paid to compliance with MCL ARARs (drinking water standards) at AOC 57. Neither the Feasibility Study nor the Proposed Plan describe the means by which the Army will attain drinking water standards. The ground water cleanup time estimates are inadequate, inconsistent with earlier estimates, and reflective of the Army's uncertainty regarding whether or not drinking water standards can ever be reached at AOC 57 without additional action. Finally, the level of cleanup being offered in the Proposed Plan does not meet the minimum standard for other cleanups within the Commonwealth of Massachusetts. While AOC 57 may be relatively uncontaminated relative to other sites at Devens, GeoInsight strongly believes that approval of this Proposed Plan will set a precedent that will not only be detrimental to the cleanup of AOC 57, but also to other sites at Devens including Moore Army Airfield and Shepley's Hill Landfill.

Please feel free to contact me if you have any questions regarding this letter.

Sincerely,



Richard E. Doherty, P.E., L.S.P.
Senior Associate

cc: Laurie Nehring, PACE

Use This Space to Write Your Comments

The Army wants your comments on the proposed plan for AOC 57. You may use the form below to submit written comments. If you have questions about how to comment, please call the BRAC Environmental Coordinator, Jim Chambers, at (978) 796-3835. Send this form or any other written comments, postmarked no later than March 26, 2001, to:

Jim Chambers
U.S. Army Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street
Unit 100
Devens, MA 01432-4429
FAX (978) 796-3133

Dear Mr. Chambers:

The contamination of our area is very serious. On March 5, 2001, I attended the public review of the Devens Reuse System Plan and was unable to comment on the Army's proposed plan for AOC 57 Areas 2+3.

As a participant in the formulation of the Devens Reuse Plan, I understood that the Army is responsible for the remediation of the areas of Fort Devens designated as a deep burial site and that those areas would be returned to a condition comparable to that before occupation by the Army. Alternatives II-3 (Areas 2) and Alternative #2 (Area 3) fall far short of that standard. There is also the fact that the contamination involves a medium-yield aquifer (PPA). The host communities cannot afford to be chomped about withing off a water resource in face of future growth and possible climate changes. I certainly believe the Army should clean up the aquifer to drinking water standards in a much shorter period than 30 years.

Particularly noted that the area's alternative cleanup chosen would not protect unresidential (residential) receptors but would not produce adverse effects to any plants or animals. I would like an explanation.

Really, only options II-4 & II-3 seem to be acceptable. Full restoration of the wetland & Cold Spring Brook (river on the outside) is the goal and AOC must be cleaned up to the best of the Army's considerable ability!

Comment Submitted by:

John Fiore

Address:

37 Blanchard Rd.
Harvard MA 01451

RECEIVED

MAR 14 2001

Use This Space to Write Your Comments

The Army wants your comments on the proposed plan for AOC 57. You may use the form below to submit written comments. If you have questions about how to comment, please call the BRAC Environmental Coordinator, Jim Chambers, at (978) 796-3835. Send this form or any other written comments, postmarked no later than March 26, 2001, to:

Jim Chambers
U.S. Army Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street
Unit 100
Devens, MA 01432-4429
FAX (978) 796-3133

Dear Mr. Chambers:

I appreciate the opportunity to comment on the Army's plans for the restoration of AOC 57. From the alternatives presented, II-4 and III-3 (Excavation for unrestricted use and institutional controls) are the ones I prefer. In addition, I think possibilities for actively cleansing the groundwater should be explored. With the growing scarcity of potable water supplies, the goal should be to ^{aggressively} restore these ~~to~~ ~~to~~ to potability since this seems feasible. With the amount of material removed, it may be advisable to restore the wetlands to a greater area than they previously occupied. This would help compensate for losses of BVW ~~down~~ elsewhere on the base due to the Army's activities. It will also improve the area's flood storage capacity. Both of these (as well as the potable water supply) are valuable assets whose value should be considered when weighing alternatives and their costs. In conclusion, I would like to say I appreciate the Army's decision ~~to~~ to excavate AOC 11 and restore that wetland.

Comment Submitted by: Robert Burkhardt

Address: _____ Robert Burkhardt _____
12 Harvard Rd. #10 _____
Shirley, MA 01464-2433 _____

RECEIVED

MAR 20 2001

People of Ayer
Concerned About the Environment

35 Highland Avenue
Ayer, MA 01432
(978) 772-9749

Mr. James Chambers, Director
U.S. Army Reserve Forces Training Area
BRAC Environmental Office
30 Quebec St.
Unit 100
Devens, MA 01432-4429

March 26, 2001

Re: Comments on the Proposed Plan for AOC 57, February 2001.

Dear Mr. Chambers:

Thank you for the opportunity to comment on the Proposed Plan for AOC 57. This letter is a continuation of the comments submitted to the record on behalf of PACE on March 8, during the Public Hearing. Enclosed are additional comments prepared for PACE by Mr. Richard Doherty, P.E., L.S.P. of GeoInsight, Inc. through the EPA Technical Assistance Grant Program. PACE fully endorses GeoInsight's comments; we respectfully request that they become part of the official record and be responded to in accordance with CERCLA.

At this point in time, I would like to submit the following criteria for your consideration, to be incorporated into the Proposed Plan.

1. The Army's proposed cleanup goal to reach drinking water standards at AOC 57 should be restated to include a clearly defined timeframe. We recommend five years. Additionally, this should be stated in the ROD as a specific date, i.e., by June 1, 2006, these standards should be met. This will remove future ambiguity for all parties concerned.

We recommend the ROD include specific definitions of what constitutes reaching drinking water standards. For example, a single monitoring well below drinking water standards would not be sufficient for the Army to claim the goal has been reached. PACE would like to be included in technical discussions to clearly define the cleanup endpoint in the ROD.

2. If the drinking water standards are not restored within five years, then an iron - clad contingency remedy must be fully implemented in a reasonable time frame to achieve drinking water standards within the following five years.

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MAR 28 2001

3. Groundwater monitoring will be required in order to determine if the cleanup goals are being attained. We recommend the following schedule: quarterly sampling during the first year (minimally). This will enable the Army to determine seasonal cycles of highest concentrations so that future sampling can be done during 'worst case' scenarios. Years two and three could be sampled bi-annually. If the levels of contaminants are decreasing as we anticipate, then the final two years of sampling could be done annually.

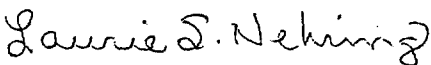
PACE would like to request an opportunity to review and discuss the number and the placement of the monitoring wells to be monitored during a technical meeting with the BCT team, when the time comes for this decision.

4. As stated in the AOC 57 Feasibility Study, the selected remedy will utilize natural attenuation. As described by GeoInsight, this should be fully demonstrated for each chemical constituent, and substantiated according to accepted remedial practices.
5. We recognize that the Army has done extensive remediation projects over many years, since first declaring it a Superfund site. Likewise, we also recognize the Army used this land with varying degrees of intensity for over 70 years. With such heavy use, it's certainly possible that some (perhaps many) areas of contamination were never discovered, and will be missed during the BRAC cleanups.

Since much of the Deven's land will revert back to the three towns, the land should be returned in as clean a state as possible. Therefore, we recommend that the Army adopt the more aggressive Alternative III-3 for Area 3 of AOC 57, unless proven that irreversible and un-repairable damage to the wetland will result.

Thank you for your consideration.

Sincerely,


Laurie Nehring, President of PACE

Electronic copies

Senator Pam Resor

Representative Geoffrey D. Hall

Ms. Carol A. Keating, EPA

Mr. John Regan, DEP

Ayer Board of Selectmen

Harvard Board of Selectmen

Ms. Julie Corenzwit, Community RAB Member, Ayer

Ms. Kathy Bourassa, Community RAB Member, Shirley

Rev. Phil Goff, Community RAB Member, Ayer
Ms. Elizabeth Ainsley Campbell, Executive Director, NRWA
Ms. Heidi Roddis, Mass. Audubon Society
Ms. Ruth Miller, Citizens to Protect Residential Harvard
Ms. Mildred Chandler, President, Citizens to Protect Residential Harvard
PACE Listserv (sent to residents in Ayer, Harvard, Shirley, Littleton & Lancaster)
www.pace-ayer.org PACE Web site
www.devenswatch.org Web Site.
Area newspapers: The Lowell Sun, The Public Spirit, The Harvard Post,
The Shirley Volunteer

Hard Copies:

Senator Edward M. Kennedy
Senator John F. Kerry
Congressman Martin T. Meehan
Senator Pam Resor
Representative Geoffrey D. Hall
Ayer Board of Selectmen
Harvard Board of Selectmen
Shirley Board of Selectmen



The Commonwealth of Massachusetts
House of Representatives
State House, Boston 02133-1054

GEOFFREY HALL
STATE REPRESENTATIVE
2ND MIDDLESEX DISTRICT
AYER - PRECINCT 2
HARVARD, LITTLETON, WESTFORD

March 29, 2001

Chairman
Committee on State Administration

ROOM 34, STATE HOUSE
TEL. (617) 722-2320

JOANNE BARNETT
STAFF DIRECTOR

James Chambers, Director
U.S. Army Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street Unit 100
Devens, MA 01432

Re: AOC 57

Dear Mr. Chambers:

A number of constituents and government officials have apprised us their views and concerns regarding the proposed plan for Area of Contamination (AOC) 57 at Devens. In some cases they have sent us copies of their comments to your office. It is evident that there are issues of serious concern yet to be resolved to the satisfaction of all parties.

As elected representatives of the region, the concerns of the constituents are also ours. We would expect that the interests of those people most affected by any decisions you ultimately make would receive priority consideration and accommodation in the process, for these are the people who must finally live with the decisions. They should be assured that no possibility of substandard conditions would exist after remediation.

We commend you for inviting public discussion on the issue, but also look forward to receiving assurances that the federal government will not absolve itself of its responsibilities over the long term. If we can be of any use in the process, please feel free to contact us.

Sincerely,

GEOFFREY D. HALL, Representative
Chairman
Committee on State Administration

PAM RESOR, Senator
Chair
Committee on Ethics

Cc: Rep. M. Meehan
Sens. E. Kennedy, J. Kerry
And others

RECEIVED

APR 2 2001

Board of Selectmen

MEETING TUESDAYS AT 7:00 P.M. • UPPER TOWN HALL • 1 MAIN STREET • AYER, MASSACHUSETTS 01432



Tel. (978) 772-8220
Fax. (978) 772-3017

Town Administrator
(978) 772-8210

March 30, 2001

James Chambers
BRAC Environmental Coordinator
30 Quebec Street, Unit 100
Devens, MA 01432-4429

Re: Comments on Proposed Plan
Area of Contamination (AOC) 57
Devens, Massachusetts

Dear Mr. Chambers:

Enclosed please find two (2) letters, and various attachments thereto received by the Ayer Board of Selectmen at their meeting on Tuesday, March 13, 2001. The Board of Selectmen unanimously endorses and supports the comments submitted by Richard Doherty of GEO Insight and Laurie Nehring, President of PACE for (AOC) 57 Devens.

Sincerely,



Edward McCann, Interim Town Administrator

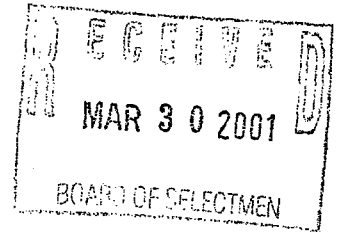
EM/jl

Cc: Board of Selectmen
Laurie Nehring
Richard Doherty
File

Enc; 2

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People of Ayer
Concerned About the Environment
35 Highland Avenue
Ayer, MA 01432
(978) 772-9749



Mr. James Chambers, Director
U.S. Army Reserve Forces Training Area
BRAC Environmental Office
30 Quebec St.
Unit 100
Devens, MA 01432-4429

March 26, 2001

Re: Comments on the Proposed Plan for AOC 57, February 2001.

Dear Mr. Chambers:

Thank you for the opportunity to comment on the Proposed Plan for AOC 57. This letter is a continuation of the comments submitted to the record on behalf of PACE on March 8, during the Public Hearing. Enclosed are additional comments prepared for PACE by Mr. Richard Doherty, P.E., L.S.P. of GeoInsight, Inc. through the EPA Technical Assistance Grant Program. PACE fully endorses GeoInsight's comments; we respectfully request that they become part of the official record and be responded to in accordance with CERCLA.

At this point in time, I would like to submit the following criteria for your consideration, to be incorporated into the Proposed Plan.

1. The Army's proposed cleanup goal to reach drinking water standards at AOC 57 should be restated to include a clearly defined timeframe. We recommend five years. Additionally, this should be stated in the ROD as a specific date, i.e., by June 1, 2006, these standards should be met. This will remove future ambiguity for all parties concerned.

We recommend the ROD include specific definitions of what constitutes reaching drinking water standards. For example, a single monitoring well below drinking water standards would not be sufficient for the Army to claim the goal has been reached. PACE would like to be included in technical discussions to clearly define the cleanup endpoint in the ROD.

2. If the drinking water standards are not restored within five years, then an iron-clad contingency remedy must be fully implemented in a reasonable time frame to achieve drinking water standards within the following five years.

Rev. Phil Goff, Community RAB Member, Ayer
Ms. Elizabeth Ainsley Campbell, Executive Director, NRWA
Ms. Heidi Roddis, Mass. Audubon Society
Ms. Ruth Miller, Citizens to Protect Residential Harvard
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Senator Pam Resor
Representative Geoffrey D. Hall
Ayer Board of Selectmen
Harvard Board of Selectmen
Shirley Board of Selectmen



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e-mail: info@geoinc.com

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e-mail: info@geoinc.com

March 14, 2001

GeoInsight Project 2863-001

Mr. James Chambers
BRAC Environmental Coordinator
30 Quebec St., Unit 100
Devens, MA 01432-4429

Re: **Comments on Proposed Plan
Area of Contamination (AOC) 57
Devens, Massachusetts**

Dear Mr. Chambers:

On behalf of People of Ayer Concerned About the Environment (PACE), GeoInsight, Inc. (GeoInsight) reviewed the *Proposed Plan, Area of Contamination (AOC) 57, Devens Reserve Forces Training Area, Devens, Massachusetts* (the "Proposed Plan"). The Proposed Plan summarizes the Army's recommended cleanup plan for Areas 2 and 3 at AOC 57.

COMMENTS

1. The Proposed Plan does not adequately comply with Applicable or Relevant and Appropriate Requirements (ARARs). The AOC 57 Remedial Investigation (RI) identified Federal and State Maximum Contaminant Levels (MCLs), also known as drinking water standards, as ARARs at AOC 57.¹ Results from AOC 57 ground water exceed MCL ARARs for arsenic, cadmium, 1,4-dichlorobenzene, chloroform, bis(2-ethylhexyl)phthalate, and tetrachloroethylene.² The Proposed Plan does not include or adequately describe measures to comply with these ARARs and is therefore inadequate.

In the AOC 57 Focused Feasibility Study (FFS), it is stated that MCLs "will likely be met through natural attenuation processes" as a result of implementing the selected alternatives.³ In GeoInsight's experience, a statement that an ARAR is *likely* to be met would not be considered

¹ *Final Remedial Investigation Report, Area of Contamination 57*, Harding-Lawson Associates, June 2000, Table 4-1.

² See Tables 9-12 through 9-15 of the RI, and the *Final Focused Feasibility Study Report, Area of Contamination 57*, Harding ESE, November, 2000, Section 3.3. It is noted that Harding ESE suspects that the bis(2-ethylhexyl)phthalate concentrations are due to laboratory contamination.

³ *Final Focused Feasibility Study Report, Area of Contamination 57*, Harding ESE, November, 2000, Tables 6-7 and 6-16.

of AOC 57 overlies a Potentially Productive Aquifer, and is therefore considered to be a ground water resource by the Commonwealth of Massachusetts.⁴ If AOC 57 were a non-Superfund site, the Proposed Plan would not meet the Massachusetts Response Action Performance Standard (RAPS) because measures to achieve drinking water standards are not included. PACE and other community members have indicated to GeoInsight that they strongly believe that the US Army should be held to a standard at least as high as that required of private parties within the Commonwealth of Massachusetts.

PROPOSED ACTION

GeoInsight, on behalf of PACE, recommends the following actions to address the comments presented above:

- An additional Focused Feasibility Study should be prepared that includes a detailed evaluation of alternatives for achieving MCLs in ground water at AOC 57 Areas 2 and 3. Detailed evaluation of the natural attenuation alternative should include a characterization of the subsurface environment's potential for promoting natural attenuation, and the use of generally accepted models⁵ to demonstrate the ability of natural attenuation to achieve ARARs within a reasonable period of time. The evaluation must take into account the different fate and transport characteristics of the contaminants of concern. All estimates of time to achieve ARARs should be fully documented. If a calculated time estimate has no upper bound (e.g., "greater than 30 years") or spans more than one decade (e.g., "3 to 30 years"), the corresponding alternative should be eliminated due to the uncertainty involved.
- A reliable alternative for achieving drinking water standards in a reasonable period of time should be selected based on the FFS. The selected alternative should be presented in a Supplemental Proposed Plan. The *current* Proposed Plan should be modified to clearly state that it is intended as to select a "Source Control" alternative only, and that a Supplemental Proposed Plan will be issued to select a "Management of Migration" alternative. The evaluation of both Source Control and Management of Migration alternatives is consistent with the approach required at Superfund sites.
- To allow the AOC 57 cleanup to attain minimum standards established by the Commonwealth of Massachusetts, GeoInsight repeats our previous recommendation that the Massachusetts cleanup procedures and standards documented in the Massachusetts Contingency Plan (MCP, 310 CMR 40.0000) be adopted as an ARAR throughout the Devens Superfund site.

⁴ *Response to Comments on the Draft Focused Feasibility study for Area of Contamination 57*, September 2000, see MADEP General Comment No. 1.

⁵ e.g., Bioplume for petroleum hydrocarbons; Biochlor for chlorinated hydrocarbons.

Citizens to Protect Residential Harvard

P.O. Box 424
Harvard, Massachusetts 01451

March 8, 2001

Mr. James Chambers USARFTA
BRAC Environmental Coordinator
30 Quebec St., Unit 100
Devens, MA 01432-4429

Dear Mr. Chambers,

On behalf of Citizens to Protect Residential Harvard (CPRH), I wish to thank you for this opportunity to comment on the Proposed Plan, Area of Contamination (AOC) 57, Devens Reserve Forces Training Area, Devens, Massachusetts.

The purpose of Citizens to Protect Residential Harvard is to protect residents from the negative impact of unreasonable development in surrounding towns. The development and reuse of former Fort Devens, and the possibility for its being rejoined to the rest of Harvard and the other towns, have made CPRH concerned about the cleanup and the potential for contamination affecting its land and ground water both now and in the future.

1. The Proposed Plan's indefinite clean up time is inadequate and unacceptable. The indefiniteness of the estimate "greater than 30 years" allows a conclusion that the Army does not know and therefore is hedging. This produces a feeling of distrust based on the possibility of the lack of adequate study
2. The Proposed Plan is unacceptable in that the standard of clean up is lower than that on private property in Massachusetts. The statement: "Since groundwater at and beneath AOC 57 is not used as a source of drinking or industrial water..." continues and makes an assumption that it will never be used as a source, thus belying its present status as a Potentially Productive Aquifer. With the level of contaminants in the ground and the indefinite period of attenuation mentioned previously, it is a denial

Shows Max. detection levels of chemicals

TABLE 3-3
PROPOSED PRELIMINARY REMEDIATION GOALS
FOR SOILS
AOC 57

Source: FOCUSED FEASIBILITY STUDY REPORT, Nov 2000
DEVENS MASSACHUSETTS

| LAND USE SCENARIO | AREA | COC (a) | MAXIMUM DETECTION (mg/kg) | BKGRND (b) (mg/kg) | HUMAN HEALTH RBC (c) (mg/kg) | MCP (d) | | PRG (mg/kg) |
|---------------------------------------|----------------------------------|------------------------------------|---------------------------|--------------------|------------------------------|---------------------------|---------------------------|-------------|
| | | | | | | Method 1 S-1/GW-1 (mg/kg) | Method 1 S-2/GW-1 (mg/kg) | |
| Possible Future (Construction Worker) | Area 2 Wetland - Subsurface Soil | Aroclor-1260 Lead | 12 | ND | 3.5 | (f) | (f) | 3.5 |
| | | | * 5060 | 48 | 400 (e) | 300 | 600 | 600 (g) |
| Unrestricted (Residential) | Area 2 Wetland - Surface Soil | Aroclor-1260 Arsenic | 4.2 | ND | 0.5 | (f) | (f) | 0.5 |
| | | | 61.2 | 19 | 21 | (f) | (f) | 21 |
| | Area 2 Wetland - Subsurface Soil | Chromium Aroclor-1260 C11-C22 Lead | * 2410 | 33 | 550 | (f) | (f) | 550 |
| | | | 12 | ND | 0.5 | (f) | (f) | 0.5 |
| | | | 990 (h) | ND | 930 | (f) | (f) | 930 |
| * Area 3 Wetland - Surface Soil | C11-C22 | * 5060 | 48 | 400 (e) | (f) | (f) | 400 | |
| | | | * 3100 | ND | 930 | (f) | (f) | 930 |

Note:

- (a) CPCs that present cancer risks above 1E-06 or target-organ specific HI above 1.0 based on the baseline risk assessment (HLA, 1999a).
- (b) Background concentrations for inorganic analytes based upon chemical data gathered from 20 soils samples collected as part of Group 1A and 1B investigations. (See Appendix L of the RI Report (HLA, 1999a))
- (c) PRGs are based on receptor risks to soil. Achieving the PRGs listed in this table should enable the residual receptor risks to be at or below a target-organ specific HI of 1 for soil and a cumulative receptor cancer risk at or below 1E-04 for soil.
- (d) Massachusetts Contingency Plan Method 1 Risk Characterization S-1/GW-1 and S-2/GW-1 Soil Standards (MADEP, 1997)
- (e) USEPA residential soil lead screening level per OSWER Directive 9355.4-12 (USEPA, 1994)
- (f) Risk characterization performed following USEPA guidance. Method 1 MCP methods are not applied.
- (g) No USEPA commercial/industrial soil lead screening level currently exists. PRG is based upon MCP Method 1 S-2/GW-1 standards (potentially accessible soil, children present, low frequency, and high intensity for construction worker.)
- (h) Maximum C11-C22 aromatic concentration was 990 mg/kg. Maximum TPHC concentration was 31,800 mg/kg or an estimated 7,050 mg/kg C11-C-2 converting TPHC concentrations to EPH/VPH concentrations. The computed site-specific average composition of petroleum detected at the site is presented in Appendix N of the RI Report (HLA, 1999a).
- (i) Exceedance above 930 mg/kg C11-C12 or the equivalent calculated value 4,195 mg/kg TPHC for Area 2.

ACRONYMS

- BKGRND - Background
- COC - Contaminant of Concern
- CPCs- Contaminants of Potential Concern
- MCP - Massachusetts Contingency Plan
- ND - Not determined
- PRG - Preliminary Remediation Goal
- RBC - Risk-Based Concentration



COMMONWEALTH OF MASSACHUSETTS
 EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
 Central Regional Office, 627 Main Street, Worcester, MA 01608

ARGEO PAUL CELLUCCI
 Governor

BOB DURAND
 Secretary

JANE SWIFT
 Lieutenant Governor

LAUREN A. LISS
 Commissioner

CERTIFIED MAIL: RETURN RECEIPT REQUESTED

February 17, 2000 ← *make date*

BRAC Environmental Office
 30 Quebec Street
 Box 100
 Devens, MA 01432

Attn: James Chambers

Dear Mr. Chambers:

RE: Army response to MADEP comments on Draft Final Remediation Investigation reports Area of contamination (AOC) 57 Report, January 28, 1999.

The Massachusetts Department of Environmental Protection (MADEP) has completed its review of the above reference document. Although the majority of the regulatory agencies comments have been addressed, the MADEP still has several concerns regarding residual contamination at AOC 57 and recommends that these concerns they be further evaluated in the final remedial investigation or be addressed through specific remedial alternatives in the feasibility study as appropriate. Our specific concerns include the following:

The possibility exist that human receptors could be exposed to contaminants through inhalation and dermal contact of residual contamination at the site. Therefore the MADEP requests that the future ROD for AOC57 require Institutional Controls to restrict development in the open space areas at this site. Our review of the RI's risk calculations indicates continued potential human health risk under both residential and construction worker scenario. Although the MADEP realizes that the current reuse plan precludes construction in the open or buffer zone located in AOC 57, we are concerned that future changes to the reuse plan may alter the use of the site, creating a scenario for potential expose.

RE: Army response to MADEP comments on Draft Final Remediation Investigation reports Area of contamination (AOC) 57 Report, January 28, 1999, page 2.

The existent of surface soil hot spots at AOC 57 poses an unacceptable risk and requires the excavation and removal of the impacted surface soil. MADEP has identified the immediate area surface soil sample 57E-95-13X as a hot spot.

A review of the data indicates that the detected concentrations of chromium (2410 ug/g) and lead (5660) ug/g in surface soil sample 57E-95-13X in Area 2 are greater than 100 times the concentration of these analytes in surrounding samples. Since both of these are recognized as COPCs, it is recommended that subsurface soil sampling location 57E- 95-13X be evaluated separately as a hot spot. MADEP also recommends that the data be reevaluated to determine if other hot spots exist.

The MADEP is concerned with the low concentrations of chlorinated VOCs present in groundwater. The possibility of an unknown up gradient groundwater contamination source of chlorinated solvents may exist. MADEP recommends additional investigation to determine the possible source of the VOCs in groundwater at Area 3. The Petrucci Company Inc. detected an unknown source of VOCs in soil and groundwater in December 1998 directly upgradient of AOC 57 during a limited. Fig. 7-5. Groundwater 1996 field Analytical Detects Area 3, reveal elevated levels of chlorinated VOC in groundwater.. Based on the current groundwater analytical data, the vertical extent of chlorinated VOCs in groundwater has not been adequately defined. MADEP recommends the installation of 1 monitoring well at depth with field or laboratory GC screening of groundwater during well installation to define the vertical extent of chlorinated VOCs. This well could be installed as part of the RI/FS or included as part of a long term monitoring plan.

It appears that the oil recovery trench located in Area 2 was not properly remediated and sampled before being backfilled MADEP is requesting the remediation and confirmatory sampling of the oil recovery trench. Table 7-8 lists oil recovered from a trench excavated in the wetland at Area 2 had PCBs contamination of Aroclor 1254, at concentrations 28.4 ppm, Aroclor 1242, 29.7 ppm and Aroclor 1260 81.9 ppm.

MADEP agrees with the Army that the timing for a soil removal at test pit 57E -95-15X during the investigation phase of the RI may not been practical. However a future soil removal action at this location is anticipated. Table 7-10. Soil screening at Test pit 57E -95-15X had TPH, results of 5000 ppm at 0 feet depth and 28000 ppm at 5 feet. In addition to TPH a laboratory confirmed analysis of 7.3 ppm of PCB 1260 was detected at a depth of 2 feet.

Total
Tetraclorom
Hydrocarbons

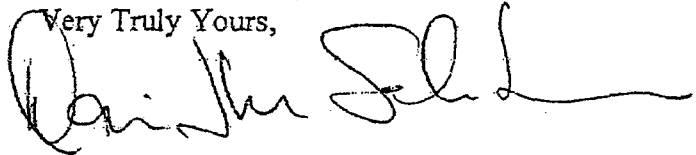
RE: Army response to MADEP comments on Draft Final Remediation Investigation reports Area of contamination (AOC) 57 Report, January 28, 1999, page 3.

Based on the confirmatory soil samples taken at the final excavation at Area 3 it does not appear that the Army met the soil cleanup objectives. The residual soil contamination at the south end of the excavation should have been removed. Samples EX57W14X, EX57W15X and EX57W16X soil samples revealed elevated petroleum contamination in the EPH ranges of C9 - C8, C19-C32, Aliphatics and C11- C22 Aromatics. These samples were taken from the open excavation in the immediate area of the Coldspring Brook wetland at Area 3. They represent samples of the impacted soil remaining at the site. The MADEP recommends additional soil removal at this site.

was this
done?

A meeting to discuss these concerns at AOC 57 can be arranged at your earliest convenience. Please contact the undersigned at (508) 767 2842.

Very Truly Yours,



David M. Salvadore

P:\SALA\AOC57.2
Information Repositories

Don Kochis
26 Park Lane
Harvard, MA 01451-1436

4/1/01

Mr. Jim Chambers, Environmental Manager
U.S. Army Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Unit 100
Devens, MA 01432-4429

RE: Cleanup of Cold Spring Brook, AOC 57

Dear Mr. Chambers:

I am pleased that the Army has extended the deadline from March 26 to April 24 for public comment on the cleanup plan for AOC 57.

As a Harvard resident dependent upon our own well for water, I am concerned with any contaminants or potential contaminants to groundwater and - especially in this case - potential contaminants of a medium yield aquifer as the Cold Spring Brook area is considered.

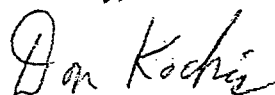
Knowing that our well goes down at least 175 feet, its location risks being affected by contamination to the aquifer.

It seems to me to be only common sense that when a site has been identified as being contaminated with PCB's, lead, elevated levels of arsenic and "volatile organic compounds", the site should be completely cleaned up or at least the level of cleanup should be with the goal of eventually providing, potable water.

Request, therefore that the standards for the cleanup of Area Of Concern #57 be raised beyond what is presently planned.

Also, since I never received any reply to my Jan. 11, 1999 letter to you (copy attached), if you have information which would provide answers to my questions, please forward.

Sincerely,



Don Kochis

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APR 4 2001

Don Kochis
26 Park Lane
Harvard, MA 01451-1436

1/11/99

Mr. Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
~~Devens~~ Devens, MA 01432-4429

RE: Proposed Plan for Landfill Cleanup at Fort Devens

Dear Mr. Chambers:

As a Formal Comment to the Proposed Army Cleanup of the seven landfills listed in the subject Plan, I pose the following questions:

- 1) Although page 13 of the plan indicates that "none of the landfills currently affect groundwater quality", is there any evidence that the landfills have affected groundwater quality in the past?
- 2) What is the criteria used for the determination that a particular site presents "acceptable human risks"? What is acceptable? At what point do the risks become unacceptable?
- 3) What specifically are the "contaminants" mentioned and several places in the Plan such as on page 3: "chlorinated solvents and metals"?
- 4) Do any of the contaminants have a history of causing any specific diseases? If so, what specific diseases?
- 5) The plan makes reference to the Nashua River likely being "a significant contributor to floodplain sediment contamination". What are the studies that serve as the basis for this statement or studies referenced that I may access?

Thank you.

Sincerely,

Don Kochis

Don Kochis

Filed 1/11/99
[Signature]

Mr. James Chambers
US Army RFTA, BRAC Environmental Office
30 Quebec Street
Devens, MA 01432

Dear Mr. Chambers,

This is to express my concern about the cleanup of AOC57, between Barnum Road and Cold Spring Brook abutting Harvard land. The Army's preferred options described in the Proposed Plan do not go far enough in cleaning up Area 2 and Area 3 of AOC57. I advocate the most thorough cleanup option, one that removes the contaminants to the fullest extent possible and restores the Cold Spring Brook wetlands.

I am disturbed that the Army has not committed itself to restoring the groundwater to drinking water quality in a timely manner. The Army's open-ended estimate of 30 or more years suggests that the groundwater may never attain that standard. I am also concerned about the potential spread of contaminants to other areas, such as property in Harvard or the Grove Pond wellfield in Ayer. We are aware that other plumes of contaminants have migrated elsewhere on Devens, such as at the Moore Army Airfield and at Shepley's Hill Landfill.

The medium yield aquifer underlying AOC57 should be cleaned up and protected from further contamination. This area may some day be part of a buffer zone used for open space recreational purposes. For these as well as other reasons given above, we support thorough excavation of the contaminants, restoration of the Cold Spring Brook wetlands and measures to bring the groundwater to drinking water quality within five years..

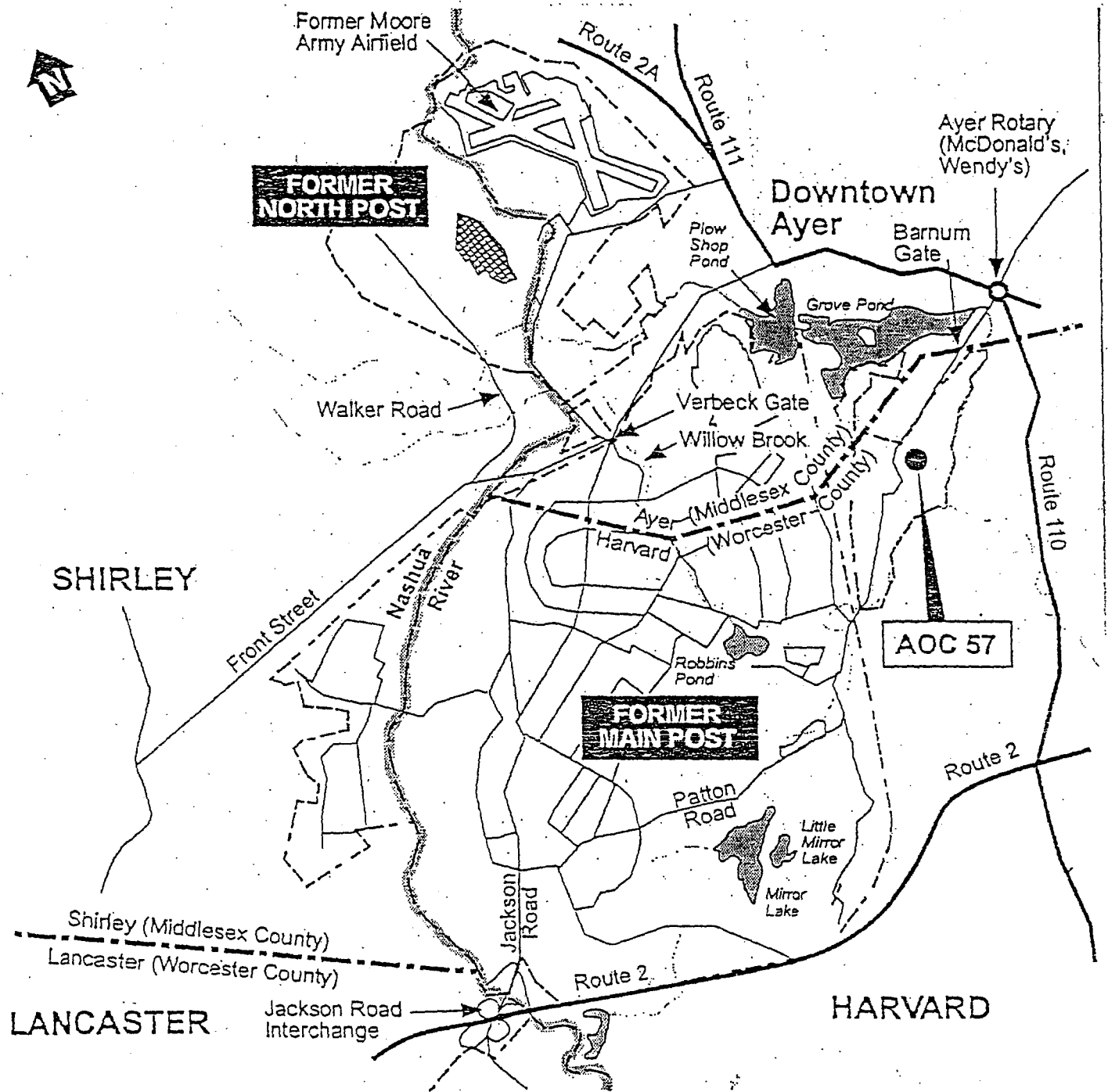
Thank you for this opportunity to comment on your proposed plan. I hope you will factor the preferences of the Harvard community into your final decision on AOC57.

Yours

Clare Rindemell
Clare Rindemell
14 Blanchard Rd
Harvard, Ma
01451

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Legend

- | | | | |
|--|-----------------------|--|---------------|
| | Site Location | | Brook |
| | Installation Boundary | | Pond/Lake |
| | Town Line | | Roads/Highway |

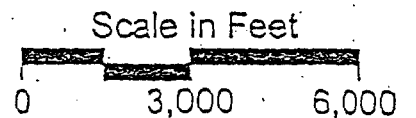


Figure 1: Location of AOC 57 at U.S. Army RFTA.

Citizens to Protect Residential Harvard

P.O. Box 424
Harvard, Massachusetts 01451

April 10, 2001

Mr. James Chambers, Director
U.S. Army Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Unit 100
Devens, MA 01432

Dear Mr. Chambers,

We appreciate the opportunity to comment on the Army's Proposed Plan for AOC 57. As the enclosed petitions indicate, residents of the Town of Harvard want to see AOC 57 cleaned up as thoroughly as possible, including complete excavation and removal of the contaminants, restoration of the Cold Spring Brook wetlands, and remediation of the groundwater to drinking water quality within 5 years. Harvard residents have long been concerned with safeguarding the Devens aquifers and are troubled by reports of soil and groundwater contamination in the Cold Spring Brook area impacting the wetlands.

The enclosed petitions contain 250 signatures obtained at the March 31 Annual Town Meeting. Please note that four members of the current Board of Selectmen and numerous members of other town boards including the Conservation Commission, Planning Board and Board of Health signed this petition.

Citizens to Protect Residential Harvard, a non-profit citizen's organization, believes that the cleanup alternatives advocated by the Army do not go far enough. We therefore support Alternative 11-4 for Area 2 and Alternative 111-3 for Area 3, for Unrestricted Use. We concur with Richard Doherty, PE, L.S.P., the consultant for PACE, that a five year time frame be adopted to reach drinking water standards at AOC 57 and that this five year timetable be stated in the Record of Decision, along with a mutually agreed upon definition of what kind of monitoring results will determine that the ground water has met the drinking water standard. We agree with Mr. Doherty's recommendations for quarterly sampling, at the outset, to identify periods of high contamination in order to indicate when future sampling can best be done. And we agree that natural attenuation needs to be demonstrated for each contaminant so that appropriate remediation may be

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carried out. The cleanup must remove contaminants precluding their further migration, protect future users of the land, and return the groundwater to drinking water quality in the period defined above.

The Army made a commitment to clean up Devens. The good faith of that promise needs to be demonstrated at AOC 57. This land on Harvard's boundary overlies a medium yield aquifer and will likely be part of a buffer area used for recreation. It is not throwaway land. Potable water is a dwindling resource. The AOC 57 aquifer may some day be needed and should be restored to drinking water quality by those whose activities polluted it. If the Army dodges its responsibility to clean up this area to the highest standard, it will set an unfortunate precedent for the rest of the cleanup of Devens, resulting in increased skepticism of the Army's credibility and the Superfund process.

We urge you and the governmental regulators to listen to public opinion, do the right thing, and clean up AOC 57 to the highest standard within 5 years.

Yours truly,



Mildred A. Chandler
President

Cc: Senator Edward M Kennedy
Senator John F. Kerry
Congressman Martin T. Meehan
Secretary Robert A. Durand
Senator Pamela P. Resor
Representative Geoffrey D. Hall
Representative Robert S. Hargraves
James Murphy, EPA
John Regan, EQE
Elizabeth Ainsley Campbell, NRWA
Harvard Board of Selectmen
Ayer Board of Selectmen
PACE
Editor, Harvard Post

A PETITION FOR A THOROUGH CLEANUP OF THE DEVENS AOC 57 SITE

AREA OF CONCERN 57 is located on the east of Devens on the Harvard boundary, between Barnum Road and Cold Spring Brook. We, the undersigned, urge the Army to undertake the most thorough clean up possible of AOC 57 including excavation of the contaminants, restoration of the Cold Spring Brook wetlands, and measures to bring the underground water to drinking water quality within 5 years. Because AOC 57 overlies a medium yield aquifer and may in the future be used for a buffer zone and recreation, this area merits the highest level of cleanup.

| Signature | Name (Printed) | Address |
|-----------|--------------------|----------------------|
| | PHILIP C COTLER | 56 STON RD |
| | Deborah Levering | 71 Finn Rd |
| | JEFF LEVERING | 71 FINN RD |
| | LAWRENCE M. FINNEY | 12 TABACK TRAIL |
| | MICHAEL CHANDLER | 295 Little Cr Rd |
| | PAMELA SMITH | 136 Oak Hill Rd |
| | Susan Bigelow | 81 Woodside Rd |
| | DONALD D. GIRARD | 95 Pinnacle Rd |
| | Michele A. Girard | 95 Pinnacle Rd. |
| | Robin Macy | 122 W Bare Hill Rd |
| | STEVEN ABRAMS | 30 JACOB GATES |
| | Robin Cavlaw | 54 Woodloch Hill |
| | Rob Egan | 70 Westcott Row |
| | William H. Elwood | 11 BEVERLY RD |
| | FAY MARTIN | 5 FAIRBANK ST |
| | John Martin | " " |
| | DEBORAH RICCI | 198. Bare Hill Rd |
| | PAMELA V RIEU | 19 C Bare Hill Rd |
| | Randy Hubbs | 15 Slough Rd |
| | W H PARKINSON | 211 OLD LITTLETON RD |
| | JOHN HENDERSON | 338 Stone Rd |
| | JAMES HARTE | 341 LITTLETON |
| | ROY McFARR | 30 OAK HILL |

A PETITION FOR A THOROUGH CLEANUP OF THE DEVENS AOC 57 SITE

AREA OF CONCERN 57 is located on the east of Devens on the Harvard boundary, between Barnum Road and Cold Spring Brook. We, the undersigned, urge the Army to undertake the most thorough clean up possible of AOC 57 including excavation of the contaminants, restoration of the Cold Spring Brook wetlands, and measures to bring the underground water to drinking water quality within 5 years. Because AOC 57 overlies a medium yield aquifer and may in the future be used for a buffer zone and recreation, this area merits the highest level of cleanup.

| Signature | Name (Printed) | Address |
|-------------------------|-----------------|----------------------|
| <i>Susan Ostberg</i> | Susan Ostberg | 41 Waman Ave. |
| <i>Kou Ruzer</i> | Kou Ruzer | 116 DAKOTA RD |
| <i>Paul Willard</i> | PAUL WILLARD | 218 STILL RIVER RD |
| <i>John Atkinson</i> | JOHN ATKINSON | 60 TAHANTO TR |
| <i>Mary Essary</i> | Mary Essary | 239 Stow Rd. |
| <i>Lisa Arunkowicz</i> | Lisa Arunkowicz | 61 Depot Road |
| <i>Nelson Northrup</i> | NELSON NORTHRUP | 64 WOODSIDE RD |
| <i>Janet Helloush</i> | Janet Helloush | 290 Stow Rd |
| <i>Paula Brown</i> | Paula BROWN | PO 628 14 Ave |
| <i>Piali De</i> | PIALI DE | 8 MILL RD |
| <i>Hugh A. Stoddart</i> | HUGH STODDART | 8 MILL RD |
| <i>Julie Malchow</i> | Julie malchow | 76 Woodside Rd |
| <i>Dan Farber</i> | Dan Farber | 76 Woodside Rd |
| <i>Danica Keating</i> | Danica Keating | 63 Myrick Ln. |
| <i>Julie Nocke</i> | Julie Nocke | 84 Shaker |
| <i>Karl Nocke</i> | Karl Nocke | " |
| <i>Bruce A. Grant</i> | Bruce A Grant | 12 Aye Rd |
| <i>Mia MacRae</i> | Mia MacRae | 9 Woodside Rd. |
| <i>David Kendall</i> | David Kendall | 67 Still River Rd. |
| <i>W. Kerros</i> | W KERROS | 112 130 TOWN RD |
| <i>Sharon Kerros</i> | Sharon Kerros | " " " |
| <i>James D. Dunlap</i> | JAMES DUNLAP | 131 OLD LITTLETON RD |
| | | |

A PETITION FOR A THOROUGH CLEANUP OF THE DEVENS AOC 57 SITE

AREA OF CONCERN 57 is located on the east of Devens on the Harvard boundary, between Barnum Road and Cold Spring Brook. We, the undersigned, urge the Army to undertake the most thorough clean up possible of AOC 57 including excavation of the contaminants, restoration of the Cold Spring Brook wetlands, and measures to bring the underground water to drinking water quality within 5 years. Because AOC 57 overlies a medium yield aquifer and may in the future be used for a buffer zone and recreation, this area merits the highest level of cleanup.

| Signature | Name(Printed) | Address |
|---------------------------------|-------------------------|-----------------------|
| <i>Ruth H. Silman</i> | Ruth H. Silman | 114 Bolton Road. |
| <i>Jean C. McCrosky</i> | Jean C. McCrosky | 193 Old Littleton |
| <i>Patricia W White</i> | Patricia W White | 162 East Barn Hill Rd |
| <i>Susan J. Loring</i> | Susan J. Loring | 69 Still River Rd. |
| <i>Mary M. Cutter</i> | Mary M. Cutter | 56 Stow Rd. |
| <i>MARKA HADY</i> | MARKA HADY | 18 ANN LESTER |
| <i>Wm J SALTER</i> | Wm J SALTER | 3 ELN ST |
| <i>MARILYN S. CLARK</i> | MARILYN S. CLARK | 71 BOLTON RD. |
| <i>Wm J SALTER</i> | Wm J SALTER | 71 BOLTON RD |
| <i>ROBERT McHERNIEY</i> | ROBERT McHERNIEY | 55 PARK LANE |
| <i>Charlanne B. Van Wormer</i> | Charlanne B. Van Wormer | 127 Calk HILL Rd. |
| <i>Joe Dzekevich</i> | Joe Dzekevich | 17 Withington Ln |
| <i>Josephine S. Carothers</i> | Josephine S. Carothers | 85 Depot Rd. |
| <i>ROBERT HARLEY</i> | ROBERT HARLEY | 73 Bolton Rd |
| <i>JAMES FARRELL</i> | JAMES FARRELL | 3 ONCIN LN |
| <i>LAUREN T FARRELL</i> | LAUREN T FARRELL | 3 ONCIN LAKE |
| <i>Mark V. Roux</i> | Mark V. Roux | 82 Whitney Rd. |
| <i>CINDY STEEVES</i> | CINDY STEEVES | 56 Simon Atherton |
| <i>MINA LEVITSKY</i> | MINA LEVITSKY | 305 OLD LITTLETON RD |
| <i>JEFF SCHWARTZ</i> | JEFF SCHWARTZ | 48 E Barn Hill |
| <i>JAMES KATHLMAN</i> | JAMES KATHLMAN | 263 LITTLETON RD. |
| <i>Denise Wagner</i> | Denise Wagner | 389 Still River Rd. |
| <i>2 → Donald + Janet Fowke</i> | Donald + Janet Fowke | 335 Ayer Rd. |
| <i>SANDRA L. LEFKOVITS</i> | SANDRA L. LEFKOVITS | 18 DEBIT RD |

A PETITION FOR A THOROUGH CLEANUP OF THE DEVENS AOC 57 SITE

AREA OF CONCERN 57 is located on the east of Devens on the Harvard boundary, between Barnum Road and Cold Spring Brook. We, the undersigned, urge the Army to undertake the most thorough clean up possible of AOC 57 including excavation of the contaminants, restoration of the Cold Spring Brook wetlands, and measures to bring the underground water to drinking water quality within 5 years. Because AOC 57 overlies a medium yield aquifer and may in the future be used for a buffer zone and recreation, this area merits the highest level of cleanup.

| Signature | Name(Printed) | Address |
|------------------------|------------------------|-----------------------------|
| Elizabeth S. Mac | ELIZABETH S | W. Bare Hill Rd. |
| Alice Rennie | Alice Rennie | 27 Ann Lee Harvard |
| Sharon M. Carthy | SHARON M. CARTHY | 90 E. Bare Hill Rd. Harvard |
| Kelly Bollman | Kelly Bollman | 9 Westcott Rd. |
| Gary Wenger | Gary Wenger | 2 Westcott Rd. |
| Colan Williams | Colan Williams | 120 Bolton Rd |
| S. Alan Williamson | S. Alan Williamson | 224 Still River Rd |
| Bruce Blain | BRUCE BLAIN | 40 BLANCHARD RD |
| Karen M. Green | KAREN M. GREEN | 90 Oak Hill Rd. |
| Margie A. Darby | MARGIE A. DARBY | 8 AYER RD |
| C. Ron Ostberg | C. Ron Ostberg | 41 Weyman Ave. |
| Mary Bowker | MARY BOWKER | 170 Littleton Rd. |
| John Mazzota | John Mazzota | 170 Poor Farm Rd |
| Eric Dier | ERIC DIER | 6 Westcott Rd |
| Willie D. Wickman | WILLIE WICKMAN | 7 Still River Rd |
| Susan Hardy | SUSAN HARDY | 18 Ann Lee Rd |
| Darrell Wickman | Darrell Wickman | 7 Still River |
| Eric P. Cody | Eric P. Cody | 3 Tahanto Trail |
| AMES HARRISMAN SCHNIEB | AMES HARRISMAN SCHNIEB | 12 OLD BOSTON TPKE |
| Toni Spaccigali | Toni Spaccigali | 143 Ayer Rd |
| Ralph DeFlorio | Ralph DeFlorio | 20 Hillcrest Drive |
| Vic Myer | Vic Myer | 292 Ayer Rd. |
| Chatanika Stoop-Myer | Chatanika Stoop-Myer | 292 Ayer Rd. |
| Sarah J. Arnold | Sarah Arnold | 21 Glenview Dr. |

A PETITION FOR A THOROUGH CLEANUP OF THE DEVENS AOC 57 SITE

AREA OF CONCERN 57 is located on the east of Devens on the Harvard boundary, between Barnum Road and Cold Spring Brook. We, the undersigned, urge the Army to undertake the most thorough clean up possible of AOC 57 including excavation of the contaminants, restoration of the Cold Spring Brook wetlands, and measures to bring the underground water to drinking water quality within 5 years. Because AOC 57 overlies a medium yield aquifer and may in the future be used for a buffer zone and recreation, this area merits the highest level of cleanup.

| Signature | Name (Printed) | Address |
|---------------------------|--------------------|------------------------|
| <i>Rhonda L Cotton</i> | Rhonda L. Cotton | 109 Slough Rd |
| <i>Helen Fione</i> | Helen Fione | 37 Standard Rd |
| <i>Phyllis M Luck</i> | Phyllis M Luck | 85 Tahanto Trail |
| <i>PAUL Durrant</i> | Pamela B. Durrant | 159 E. Bare Hill Rd |
| <i>Charles M. Conrath</i> | Charles M. Conrath | 27 Ann Lee Rd |
| <i>Dorothy C. Braat</i> | DOROTHY C. BRAAT | 72 Bolton Rd |
| <i>Rita Lancaster</i> | Rita Lancaster | 17 Withington Lane |
| <i>H. L. Munn</i> | H. L. Munn | 122 Tahanto |
| <i>Betsy Williams</i> | Betsy Williams | 120 Bolton Rd. |
| <i>Sarah Hamill</i> | SARAH HAMILL | 34 Oak Hill Rd |
| <i>L. B. Wallace</i> | L. B. Wallace | 18 Orchard Hill |
| <i>Linda Kafurke</i> | Linda Kafurke | 70 Woodside Rd. |
| <i>Robin Betzell</i> | Robin Betzell | 46 Star Rd |
| <i>William R Veno</i> | William R Veno | 28 Partridge Hill Rd. |
| <i>Judith M Veno</i> | Judith M Veno | 28 Partridge Hill Rd |
| <i>Cynthia A. Bulmer</i> | Cynthia A. Bulmer | 345 Star Rd |
| <i>Laurie Lingham</i> | Laurie Lingham | 40 Oak Hill Rd. |
| <i>Paul Wormser</i> | PAUL WORMSER | 3 WHITE LA. |
| <i>Kathleen Marble</i> | Kathleen Marble | 84 Littleton County Rd |
| <i>Anne Perkins</i> | Anne Perkins | 212 Bolton Rd. |
| <i>Richard High</i> | RICHARD HIGH | 212 Bolton Rd. |
| <i>Louise Potter</i> | Louise Potter | 267 Littleton Rd. |
| <i>Jeanie Colony</i> | Jeanie Colony | 244 Old Littleton Rd |
| <i>Roger Bowler</i> | Roger Bowler | 120 Littleton Rd |

A PETITION FOR A THOROUGH CLEANUP OF THE DEVENS AOC 57 SITE

AREA OF CONCERN 57 is located on the east of Devens on the Harvard boundary, between Barnum Road and Cold Spring Brook. We, the undersigned, urge the Army to undertake the most thorough clean up possible of AOC 57 including excavation of the contaminants, restoration of the Cold Spring Brook wetlands, and measures to bring the underground water to drinking water quality within 5 years. Because AOC 57 overlies a medium yield aquifer and may in the future be used for a buffer zone and recreation, this area merits the highest level of cleanup.

| Signature | Name(Printed) | Address |
|--------------------------------|----------------------|---------------------|
| <i>[Handwritten Signature]</i> | DAVID WESTERLIN | 63 SCOVILLE RD. |
| <i>[Handwritten Signature]</i> | Donald Boyce | 310 Stow Rd |
| <i>[Handwritten Signature]</i> | J M BOYCE | 310 Stow Rd |
| <i>[Handwritten Signature]</i> | R. B. Watson, Jr | 310 Ayer Rd |
| <i>[Handwritten Signature]</i> | Nancy W. Reitenstein | 8 Houghton Lane |
| <i>[Handwritten Signature]</i> | Wanda A. Morse | 72 Stow Rd |
| <i>[Handwritten Signature]</i> | W. L. Britton | 74 E. Barn Hill Rd. |
| <i>[Handwritten Signature]</i> | DAVID WESTERLIN | 63 SCOVILLE RD. |
| <i>[Handwritten Signature]</i> | Lisa Dagniclav | 42 Simon Abbott Rd |
| <i>[Handwritten Signature]</i> | JEFFREY H HARRIS | 69 WHITNEY RD |
| <i>[Handwritten Signature]</i> | DAVID MAGATTE | 62 W. Dan Hill Rd |
| <i>[Handwritten Signature]</i> | Kristine Forsgard | 44 Oak Hill Rd. |
| <i>[Handwritten Signature]</i> | WADE HOLTZMAN | 104 BOLTON RD. |
| <i>[Handwritten Signature]</i> | Margaret Holtzman | 104 Bolton Rd. |
| <i>[Handwritten Signature]</i> | Patricia Wenger | 2 Westcott Rd |
| <i>[Handwritten Signature]</i> | Heather Jordan | 38 Westcott Rd |
| <i>[Handwritten Signature]</i> | E. A. Solod | 61 Myrick Lane |
| <i>[Handwritten Signature]</i> | Donna J. Solod | 61 Myrick Lane |
| <i>[Handwritten Signature]</i> | John Osborn | 14 Park Ln |
| <i>[Handwritten Signature]</i> | Cynthia S. Russo | 116 Oak Hill Rd |
| <i>[Handwritten Signature]</i> | Margaret A. Grogan | 19 Pond Road |
| <i>[Handwritten Signature]</i> | Valerie Hurley | 25 Candleberry Lane |
| <i>[Handwritten Signature]</i> | Peter Callkins | 117 E Barn Hill Rd |
| | | |

A PETITION FOR A THOROUGH CLEANUP OF THE DEVENS AOC 57 SITE

AREA OF CONCERN 57 is located on the east of Devens on the Harvard boundary, between Barnum Road and Cold Spring Brook. We, the undersigned, urge the Army to undertake the most thorough clean up possible of AOC 57 including excavation of the contaminants, restoration of the Cold Spring Brook wetlands, and measures to bring the underground water to drinking water quality within 5 years. Because AOC 57 overlies a medium yield aquifer and may in the future be used for a buffer zone and recreation, this area merits the highest level of cleanup.

| Signature | Name(Printed) | Address |
|-------------------------|----------------------|-------------------------|
| <i>Marie Finnegan</i> | Marie Finnegan | 12 Tahanto Trail |
| <i>Pam Frederick</i> | Pam Frederick | 144 Littleton Rd |
| <i>George Watkins</i> | GEORGE WATKINS | 92 SHAKER RD |
| <i>c. J. Lahana</i> | c. J. Lahana | 23 Woodside Rd. |
| <i>Ralph Williams</i> | Ralph Williams | 112 Old Shirely Rd |
| <i>Jan Allard</i> | Jan Allard | 112 Old Shirely Rd |
| <i>James T. Linton</i> | James T. LINTON | 23 Stoughton Rd Harvard |
| <i>Greg Georgaklis</i> | Greg GEORGAKLIS | 165 Littleton Circle |
| <i>Elena Thrasimou</i> | Elena Thrasimou | 117 Devon Rd |
| <i>Cynthia Elder</i> | Cynthia Elder | 76 E. Base Hill |
| <i>Elizabeth Egan</i> | Elizabeth Egan | 70 Westcott Rd |
| <i>Steve Darby</i> | STEVE DARBY | 8 AYER RD. |
| <i>James H. Wilmore</i> | James H. Wilmore | 18 Oriskany Hill |
| <i>Ronna Levin</i> | RONNA LEVIN | 99 Tahanto TR |
| <i>Anne DeBeau</i> | Anne DeBeau | 79 Shaker Rd |
| <i>Maria Finnegan</i> | Maria Finnegan | 126 Oak Hill Rd |
| <i>Hilary Finnegan</i> | Hilary Finnegan | 126 Oak Hill Rd |
| <i>Lorrie Coleman</i> | Lorrie Coleman | 39 Foot Farm Rd. |
| <i>Robert HARRAH</i> | <i>Robert HARRAH</i> | 2 Willow Rd. |
| <i>Ann Whitney</i> | Ann Whitney | 113 Old Mill |
| <i>Mark Mandozzi</i> | Mark Mandozzi | 349 Stoughton Rd |
| <i>Sharon Briggs</i> | Sharon Briggs | 74 S. Shaker Rd |
| <i>Tom LAINHART</i> | TOM LAINHART | " " |

A PETITION FOR A THOROUGH CLEANUP OF THE DEVENS AOC 57 SITE

AREA OF CONCERN 57 is located on the east of Devens on the Harvard boundary, between Barnum Road and Cold Spring Brook. We, the undersigned, urge the Army to undertake the most thorough clean up possible of AOC 57 including excavation of the contaminants, restoration of the Cold Spring Brook wetlands, and measures to bring the underground water to drinking water quality within 5 years. Because AOC 57 overlies a medium yield aquifer and may in the future be used for a buffer zone and recreation, this area merits the highest level of cleanup.

| Signature | Name(Printed) | Address |
|------------------------------|-----------------------|-----------------------------|
| <i>Heidi Edwards</i> | Heidi Edwards | 332 Stow Rd. Harvard |
| <i>Lisa R Stanley</i> | Lisa R Stanley | 73 Tahanto Tr. Harvard |
| <i>Paul F. Jager</i> | PAUL F. JAGER | 145 DEPOSIT RD HARVARD |
| <i>Margaret Sisson</i> | Margaret Sisson | 281 Stow Rd Harvard |
| <i>Nancy S Brown</i> | NANCY S BROWN | 15 Old Littleton Rd Harvard |
| <i>Joyce Smith</i> | Joyce Smith | 96 Old Mill Rd Harv |
| <i>Vera K. Dunkley</i> | Vera Dunkley | 96 Old Mill |
| <i>Sue Mozer</i> | SUE MOZER | 25 SHAKER RD |
| <i>Joseph F. Mozer</i> | JOE MOZER | 25 Shaker Rd |
| <i>Caroline Fish</i> | Caroline Fish | 53 Paris |
| <i>Keith Turner</i> | Keith Turner | 217 Littleton City Rd |
| <i>Melinde Sowizrac</i> | Melinde Sowizrac | 1 St. John Lane |
| <i>Peter Jackson</i> | Peter Jackson | 46 Jacob Leakes Rd |
| <i>Charles L. Gagnebin</i> | Charles L. Gagnebin | 20 Mettacommet Pk |
| <i>Elizabeth S. Peterson</i> | Elizabeth S. Peterson | 31 East Barrett Hill Rd. |
| <i>Barbara D. White</i> | Barbara D. White | 11 Bowers Rd. Harvard |
| <i>Stephen Finnegan</i> | Stephen Finnegan | 29 Whitney R 01451 |
| <i>Ruth Miller</i> | Ruth Miller | 75 Westcott Rd. Harv |
| | | |
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| | | |
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| | | |

A PETITION FOR A THOROUGH CLEANUP OF THE DEVENS AOC 57 SITE

AREA OF CONCERN 57 is located on the east of Devens on the Harvard boundary, between Barnum Road and Cold Spring Brook. We, the undersigned, urge the Army to undertake the most thorough clean up possible of AOC 57 including excavation of the contaminants, restoration of the Cold Spring Brook wetlands, and measures to bring the underground water to drinking water quality within 5 years. Because AOC 57 overlies a medium yield aquifer and may in the future be used for a buffer zone and recreation, this area merits the highest level of cleanup.

| Signature | Name (Printed) | Address |
|-------------------------------|--------------------------------|---------------------------|
| <i>Audrey A. Ball</i> | John Audrey A. Ball | 85 Oak Hill Road |
| <i>John A. Ball</i> | John A. Ball | 85 Oak Hill Road |
| <i>Laura Rosen</i> | Laura Rosen | 32 Sawyer Lane |
| <i>B. William Spacciopoli</i> | B. William Spacciopoli | 143 Myer Road Harvard |
| <i>J. Brenton Farago</i> | J. Brenton Farago | 11 Willow Harvard |
| <i>Thomas Acivkiewicz</i> | Thomas Acivkiewicz | 61 Depot Rd, Harvard |
| <i>H.R. Kenna</i> | H.R. Kenna | 187 W. Bare Hill, Harvard |
| <i>Finment, Tim</i> | Finment, Tim | 77 W B Ave Hill |
| <i>James L. Ware</i> | James L. Ware | 90 E. Bare Hill B |
| <i>Christopher Schiner</i> | Christopher Schiner | 12 Old Boston Trpk |
| <i>D. Dantese</i> | D. Dantese | 221 Littleton City Rd |
| <i>Ray W. Fisher</i> | Ray W. Fisher | 25 Park Lane |
| <i>See First</i> | See First | 42 Stone Road |
| <i>David Cruise</i> | David Cruise | 113 Tahan to Tr. |
| <i>Katherine R. Elkin</i> | Katherine R. Elkin | 23 Slough rd |
| <i>John L. Finna</i> | John L. Finna | 25 Hines Lane |
| <i>Bridget P. Poirer</i> | Bridget P. Poirer | 205 Stone Rd |
| <i>Dessa Dancy</i> | Dessa Dancy | 145 Depot Rd |
| <i>Scott Hayward</i> | Scott Hayward | 5 Elm St. |
| <i>Cynthia H. Gold-Davis</i> | Cynthia H. Gold-Davis | 154 Littleton |
| <i>Barbara S. Dendorfer</i> | Barbara S. Dendorfer | 338 Stone Rd |
| <i>Susan C. Torgensen</i> | Susan C. Torgensen | 39 Cleaves Hill Rd |
| <i>Andrea Christianson</i> | Andrea Christianson | 16 Metacomb Pl |
| <i>Lisa Fox</i> | Lisa Fox | 51 Westcott Rd. |

OFFICES OF THE
BOARD OF SELECTMEN
TOWN ADMINISTRATOR



13 AYER ROAD • HARVARD, MASSACHUSETTS 01451 • (978) 456-4100
FAX: (978) 456-4107

April 23, 2001

Mr. James Chambers, USARFTA
BRAC Environmental Coordinator
30 Quebec Street, Unit 100
Devens, MA 01432-4429

Dear Mr. Chambers:

This is the Town of Harvard's response to the U.S. Army's proposed cleanup plan for AOC 57 Areas 2 and 3 at Devens, MA. According to your Proposed Plan dated February 2001, the intent of the cleanup is "to protect human health and the environment". We point out the contaminated sites are within the geographic bounds of our town and more significantly near Harvard's residential neighborhoods. Significantly, AOC 57 lies within the Cold Spring Brook flood plain, thus impacts important wetland habitats, overlays a medium yield aquifer, and appears to be within, or immediately adjacent to the Zone 2 area for the Grove Pond Wellsite. Therefore, the environmental implications, particularly as it relates to water quality, are a serious concern to us.

From the Proposed Plan, we discern the Army's current thinking as reflected in the preferred alternative is based largely on the following factors: 1) the site is vacant; 2) it is not located near active land use areas; 3) is within an area zoned for Rail Industrial and Trade related uses; and 4) the site and adjacent lands will eventually be redeveloped for commercial and/or industrial use. Further, your studies indicate no "significant adverse affects" to wildlife. Thus, the Army's solution to the AOC 57 problem is limited excavation of contaminated soils, institutional controls and imposition of land use restrictions "until cleanup goals are achieved". We note no timeframe to reach clean up goals, or how and when drinking water standards will be attained.

The Army's preferred alternative is not acceptable to the Town of Harvard. It does not provide sufficient effort "to protect human health and the environment", nor does it appear to comply with USEPA's nine criteria to balance the pros and cons of cleanup alternatives. Cost appears to be the overriding factor.

The AOC 57 site is vacant. However, its geographic (neighborhoods), biological (wetlands and wildlife) and geologic (aquifer) make up combine to make it an Area of Concern, to our town, whereby any environment impact – whether soil contamination, water degradation, noise or visual impact – becomes a matter of serious concern and debate. MDFA understands this well. Such concern has caused MDFA to initiate a master plan process, now in progress, to determine what uses are appropriate in the area between Barnum Road and Cold Spring Brook. AOC 57 is in this zone.

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One-third of the Barnum Road/Cold Spring Brook area is "Preservation and Conservation" land, as classified in the Devens Open Space and Recreation Plan. Preservation and Conservation zones, according to this Plan, are locations "deserving of high standards of preservation, due to their unusual characteristics...". The Harvard Devens Environmental Committee in commenting on the master plan, has recommended to MDFA that the entire Barnum Road/Cold Spring Brook area be classified as a Preservation and Conservation zone. This, of course, would preclude any commercial or industrial development on lands abutting Cold Spring Brook or its flood plain.

Considering the above, with emphasis on the sensitivity and uniqueness of this riverine habitat, and noting the determined concern and interest of Harvard residents, the Board of Selectmen recommends the **highest level of cleanup and restoration** for the AOC 57 site. And the work must be done quickly. Therefore, we support the recommendations of PACE and CPRH and, specifically, we urge the Army to adopt:

- Alternative II – 4 for Area 2, unrestricted use;
- Alternative III – 3 for Area 3, unrestricted use;
- A Five (5) year goal to achieve drinking water standards; and
- An aggressive program of wetland restoration.

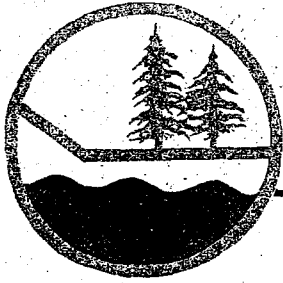
Thank you for the opportunity to comment.

Sincerely,



William C. Ashe, Chair
Board of Selectmen

cc: Senator Edward M. Kennedy
Senator John F. Kerry
Congressman Martin T. Meehan
Secretary Robert A. Durand
Senator Pamela P. Resor
Representative Geoffrey D. Hall
Representative Robert S. Hargraves
Ayer Board of Selectmen
James Murphy, USEPA
John Regan, MassDevelopment
Elizabeth Ainsley Campbell, NRWA
Mildred A. Chandler, CPRH
Laurie Nehring, PACE



Nashua River Watershed Association

592 MAIN STREET, GROTON, MASSACHUSETTS 01450-1230

TEL: 978/448-0299 FAX: 978/448-0941

E-mail: nrwa@ma.ultranet.com

April 24, 2001

Mr. James Chambers, Director
U.S. Army Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Unit 100
Devens, MA 01432

Dear Mr. Chambers:

Thank you for the opportunity to comment on the Army's Proposed Plan for AOC 57, located between Barnum Road and Cold Spring Brook on the northeast side of the former Main Post of Fort Devens.

The Nashua River Watershed Association concurs with Richard Doherty, the consultant for PACE, that a five year timetable be established to reach drinking water standards at AOC 57. We recognize that the monitoring plan to determine *if* drinking water standards have been met is important, and endorse Mr. Doherty's suggested approach. Further, we agree that natural attenuation needs to be demonstrated for *each* contaminant separately.

The Association sees it as the Army's responsibility to undertake remediation approaches that enable the highest level of clean up possible. For Area 2, we have considered recommending Alternative II-4. However, while we are tempted to request Alternative II-4 at the outset, we feel that perhaps the money could be better spent elsewhere at this point, and it is reasonable to monitor the situation before taking more action than outlined in Alternative II-3. With a five year timetable and monitoring plan in place to assure drinking water standards have been met, we can support the Army's recommendation of Alternative II-3 for Area 2. If, within the five years, drinking water standards have not been met, then further remediation must be undertaken.

With regard to Area 3, we have tried to evaluate if there are credible scenarios under which any potential contaminants remaining after completion of Alternative III-2 could impact drinking water supplies in the future. We feel that situation is not 100% clear and definite, and for this reason recommend Alternative III-3. While we do have some



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APR 25 2001

concerns regarding the additional disturbance of the wetlands, we believe, on balance, that in this instance it is better to pursue the more thorough clean-up entailed in Alternative III-3.

In restoring the disturbed wetlands to native vegetation, we recommend carefully monitoring to be sure that invasive exotic species are not introduced.

Again, thank you for the opportunity to comment on AOC 57.

Sincerely,



Elizabeth Ainsley Campbell
Executive Director

cc: Senator Edward M. Kennedy
Senator John F. Kerry
Congressman Martin T. Meehan
Secretary Robert A. Durand
Senator Pamela P. Resor
Representative Geoffrey D. Hall
Representative Robert S. Hargraves
James Murphy, EPA
John Regan, DEP
Harvard Board of Selectmen
Ayer Board of Selectmen
Laurie Nehring, PACE
Mildred Chandler, Citizens to Protect Residential Harvard

APPENDIX D - ADMINISTRATIVE RECORD INDEX

HARDING ESE

Fort Devens – Area of Contamination 57

Administrative Record File

Index

Prepared for

New England District
Corps of Engineers

Prepared by
Harding ESE

107 Audubon Road, Suite 301, Wakefield, MA 01880
(781) 245-6606

ADMINISTRATIVE RECORD FILE INDEX

for

Fort Devens – AOC 57

Updated: July 18, 2001

2.0 REMOVAL RESPONSE

2.1 CORRESPONDENCE

1. MADEP Environmental Concerns and Recommendations for the Removal Action/ Contamination at Study Area 57 and the Cold Spring Brook Study, Barnum Road, Fort Devens, MA. filed in Group 1A. October 7, 1994.

2.2 REMOVAL RESPONSE REPORTS

Reports 2.2

1. Draft Removal Action Report, Study Area 57 - Area 2, Fort Devens, MA, OHM Remediation Services Corp., filed in Group 2&7. October 17, 1995.
2. Final Updates to Draft Removal Action Reports, Study Area 57 (Area 2) and AREE 63BE, OHM/Hopkinton, MA, filed in Group AREE. dated February 15, 1996.
3. USEPA Review of the Final Removal Action Reports for SA 57 and AREE 63BE, James P. Byrne, USEPA Region I, filed in Group 2&7, dated February 27, 1996.
4. Removal Action Report, Contaminated Soil Removal - Phase II, Study Area 57, Area 1, Storm Drain System No. 6 Outfall, Weston, filed in Group 2&7, dated July 1998.

Comments 2.2

4. Comments from USEPA New England on the Draft Removal Action reports for SA 57 - Area 2 and AREE 63BE, filed in Group AREE. comments dated November 20, 1995.
5. Comments from MADEP on the Draft Removal Action Report, Study Area 57, Area 2, Fort Devens MA (OHM, Inc., October 17, 1995). filed in Group 2&7. Comments Dated November 30, 1995.
6. MADEP letter from Christopher J. Knuth, MADEP re: Final Removal Action Report, Study Area 57 (OHM), filed in Group 2&7. Dated February 27, 1996.
7. Comments from James P. Byrne, USEPA New England, Review of the Removal Action Report for Study Area 57, Area 1 Storm Drain System No. 6 Outfall, filed in Group 2&7, dated August 25, 1998.
8. Comments from David M. Salvadore, MADEP on the Study Area 57, Area 1, Storm Drain System #6, Contaminated Soil Removal Phase II, Removal Action Report, prepared by Weston in July 1998. filed in Group 2&7. Comments dated September 14, 1998.

ADMINISTRATIVE RECORD FILE INDEX

AOC 57
(Continued)

2.3

Reports 2.3

1. Devens - AOC 57 Area 2, Supplemental Soil Sampling Letter Report, prepared by Rod R. Rustad, Harding ESE, filed in Group 2&7. January 12, 2001.

2.6 WORK PLANS AND PROGRESS REPORTS

Comments 2.6

1. Comments from Christopher J. Knuth, MADEP on Contaminated Soil Removal - Phase II, Study Area 57, Area 1 Storm Drain System (SDS), No. 6 Outfall. filed in Group 2&7. Comments dated February 7, 1997.

2.9 ACTION MEMORANDA

Reports 2.9

1. Action Memorandum, Area of Contamination (AOC) 57, Devens, Massachusetts, Harding ESE. filed in Group 2&7. Document dated February 1999.

Comments 2.9

2. Comments from James P. Byrne, USEPA on the Action Memorandum & Field Sampling Plan for Study Area 57, Study Area 1, Storm Drain System No. 6 Outfall, filed in Group 2&7. Comments dated November 20, 1996.
3. Comments from Christopher J. Knuth, MADEP on Action Memorandum, Contaminated Soil Removal - Phase II, Study Area 57, Area 1 Storm Drain System (SDS), No. 6 Outfall, filed in Group 2&7. Comments dated January 31, 1997.
4. Comments from Jerry Keefe, USEPA on the Action Memorandum for Area of Contamination 57 (AOC 57). filed in Group 2&7. Comments dated February 5, 1999.
5. Comments from David M. Salvadore, MADEP on Action Memorandum, Area of Contamination (AOC) 57, Devens, Massachusetts, HLA, filed in Group 2&7. dated February 10, 1999.

Responses to Comments 2.9

6. U.S. Army Corps of Engineers Response to Comments on the Action Memorandum for Area of Contamination (AOC) 57, Devens, Massachusetts. filed in Group 2&7. Resp. to comments dated February, 1999.

3.0 REMEDIAL INVESTIGATION (RI)

ADMINISTRATIVE RECORD FILE INDEX

AOC 57
(Continued)

3.4 INTERIM DELIVERABLES

Workplan 3.4

1. Risk Assessment Approach Plan, Remedial Investigation Reports, AOCs 57 and 63AX, Fort Devens, MA, prepared by ABB Environmental Services, Inc. filed in Group 2&7. Dated March 12, 1996.

Comments 3.4

2. Comments from James P. Byrne, USEPA Region I on the Risk Assessment Approach Plan, Remedial Investigation Reports, AOCs 57 and 63AX, Fort Devens, MA. filed in Group 2&7. Dated April 15, 1996.
3. Comments from Christopher J. Knuth, MADEP on the Risk Assessment Approach Plan, Remedial Investigation Reports, AOCs 57 and 63AX, Fort Devens, MA. filed in Group 2&7. Dated April 23, 1996.

3.6 REMEDIAL INVESTIGATION (RI) REPORTS

Reports 3.6

1. Draft Remedial Investigation Report, AOC 57, ABB Environmental Services, Inc. filed in Group 2&7. Dated March 1997.
2. Final Remedial Investigation Report for Area of Contamination (AOC) 57, Devens, Massachusetts. Prepared by Harding Lawson Associates, filed in Group 2&7. Dated June 2000.

Comments 3.6

3. Comments from Christopher J. Knuth, MADEP on the Draft Remedial Investigation Report, AOC 57, Volumes I through III. filed in Group 2&7. Dated May 5, 1997.
4. Comments from James P. Byrne, USEPA on the Draft Remedial Investigation Report for AOC 57. filed in Group 2&7. Dated May 19, 1997.
5. Comments from James P. Byrne, USEPA on the Response to Comments on the Draft Remedial Investigation Report for AOC 57. filed in Group 2&7. Dated September 18, 1997.
6. Comments by Jerry Keefe, USEPA on the Draft Final Remedial Investigation Report, Area of Contamination (AOC) 57, Volumes I - III, Devens, Massachusetts, October 1999. filed in Group 2&7. Comments dated December 16, 1999.

Responses to Comments 3.6

7. Responses Dated August 1997 to Comments from MADEP and USEPA on the "Draft Remedial Investigation Report for Area of Contamination (AOC) 57", ABB Environmental Services, Inc., March 1997.

ADMINISTRATIVE RECORD FILE INDEX

AOC 57
(Continued)

Responses to Responses to Comments 3.6

8. Rebuttal from James P. Byrne Dated September 18, 1997, from James P. Byrne, USEPA Region I, to the Response to Comments on the Draft Remedial Investigation Report for AOC 57. filed in Group 2&7.
9. MADEP Rebuttals from David M. Salvadore (dated October 16, 1997) to US Army Responses to MADEP Comments on the Draft Remedial Investigation Report for AOC 57, Fort Devens, Massachusetts. filed in Group 2&7.

3.7 WORK PLANS AND PROGRESS REPORTS

Workplan 3.7

1. Draft Task Order Work Plan, AOCs 57, 63AX and 69W, Data Item A002, ABB Environmental Services, Inc. filed in Group 2&7. Dated July 1995.
2. Final Task Order Work Plan, AOCs 57, 63AX and 69W, Data Item A002, ABB Environmental Services, Inc. filed in Group 2&7. Dated January 1996.
3. Draft RI/FS Supplemental Workplan for Area of Contamination (AOC) 57, Areas 2 and 3, Rod R. Rustad, ABB Environmental Services, Inc. filed in Group 2&7. Dated March 12, 1998.
4. Final RI/FS Letter Work Plan for Area of Contamination (AOC) 57 Area 3, Devens, Massachusetts. Prepared by Harding Lawson Associates. filed in Group 2&7. Dated June 1, 2000.

Reports 3.7

5. Request for extensions on AREE 61 Final Report, AREE 63 Final Report, Draft Work Plan for AOCs 57, 63X & 69W and the Draft Remedial Investigation Reports for AOCs 41, 43G & 43J. James P. Byrne. filed in Group 2&7. Dated August 16, 1995.

Comments 3.7

6. Comments from Jerome C. Keefe, USEPA Region I on the Draft Task Order Work Plan, AOCs 57, 63AX and 69W, Data Item A002. filed in Group 2&7. Comments dated August 18, 1995.
7. Comments from Christopher J. Knuth, MADEP on Task Order No. 0001, Modification No. 1, Fort Devens Final RI/FS Task Work Plan Addendum for AOC 57 (ABB-ES, August 28, 1996). filed in Group AREE. Comments dated September 12, 1996.
8. Comments from D. Lynne Welsh, MADEP on the Draft Task Order Work Plan, AOCs 57, 63AX and 69W, Data Item A002. filed in Group 2&7. Comments dated September 15, 1995.
9. Comments from Christopher J. Knuth, MADEP on the Rebuttals to Army Responses to Comments for Draft Task Order Work Plan, AOC 57 and 69W and Comments on Final Task Order Work Plan AOC 57, 63AX and 69W. filed in Group 2&7. Dated February 27, 1996.
10. Comments from Christopher J. Knuth, MADEP on the Final Task Order Work

ADMINISTRATIVE RECORD FILE INDEX

AOC 57 (Continued)

- Plan, AOCs 57, 63AX, & 69W, Data Item 002. filed in Group 2&7. Dated February 27, 1996.
11. Comments from Jerome C. Keefe, USEPA Region I USEPA Comments on the Final Task Order Work Plan for Areas of Contamination 57, 63AX, & 69W. filed in Group 2&7. Comments dated February 27, 1996.
 12. Comments from James P. Byrne, USEPA Region I on the RI/FS Work Plan Addendums for AOCs 57 and 69W, (ABB-ES). filed in Group 2&7. Comments dated July 11, 1996.
 13. Comments from David M. Salvatore, MADEP on the Draft RI/FS Supplemental Workplan, Area of Contamination (AOC) 57, Areas 2 and 3. filed in Group 2&7. Comments dated March 24, 1998.
 14. Comments from James P. Byrne, USEPA on the Draft RI/FS Supplemental Work Plan for AOC 57 - Areas 2 & 3. filed in Group 2&7. Comments dated March 31, 1998.
 15. Comments from Jerry Keefe, USEPA regarding the Draft RI/FS Letter Work Plan for (AOC) 57 - Area 3. Jerry Keefe, USEPA. filed in Group 2&7. Comments dated May 18, 2000.

Responses to Comments 3.7

16. Response to Comments, Draft Task Order Work Plan, AOCs 57, 63AX and 69W, Data Item A002, ABB Environmental Services, Inc. filed in Group 2&7. Dated January 1996.
17. Response to Comments on the Draft RI/FS Supplemental Workplan for AOC 57, Areas 2 and 3 from Army Corps of Engineers. filed in Group 2&7. Dated April 1998.
18. Response to Comments on the RI/FS Letter Work Plan for Area of Contamination (AOC) 57 Area 3, Devens, Massachusetts. Prepared by Harding Lawson Associates for the US Army Corps of Engineers. filed in Group 2&7. Dated June 2000.

Responses to Responses to Comments 3.7

19. Christopher J. Knuth, MADEP, MADEP Rebuttals to the Army Response to Comments for the Draft Task Order Work Plan, AOCs 57, 63AX, & 69W, Data Item 002, AND (2) MADEP Comments on the Final Task Order Work Plan, AOCs 57, 63AX, & 69W, Data Item 002. filed in Group 2&7. Dated February 27, 1996.

Meeting Notes 3.7

20. Letter to Mark Applebee from Rod Rustad, ABB-ES, re: Supplemental Workplan for AOC 57 Areas 2 and 3. filed in Group 2&7. Dated March 12, 1998

4.0 FEASIBILITY STUDY (FS)

4.6 FEASIBILITY STUDY (FS) REPORTS

Reports 4.6

ADMINISTRATIVE RECORD FILE INDEX

AOC 57 (Continued)

1. Draft Focused Feasibility Study Report, Area of Contamination 57, Devens, Massachusetts. Prepared by Harding Lawson Associates. filed in Group 2&7. Dated June 2000.
2. Final Focused Feasibility Study Report, Area of Contamination 57, Devens, Massachusetts. Prepared by Harding ESE for the US Army Corps of Engineers, New England District. filed in Group 2&7. Dated November 2000.

4.7 WORK PLANS AND PROGRESS REPORTS

Comments 4.7

1. Comments from James P. Byrne, USEPA on the Draft RI/FS Task Work Plan Addendum for AOCs 69W and 57. filed in Group 2&7. Comments dated June 1996.
2. Comments from Christopher J. Knuth, MADEP on Task Order No. 0001, Modification No. 1, RI/FS Task Work Plan Addendum for AOC 57, Fort Devens, Mass. (ABB-ES, June 28, 1996). filed in Group 2&7. Comments dated August 8, 1996.
3. Christopher J. Knuth, MADEP, Review of Response to Comments, Draft RI/FS Task Work Plan Addendum for AOCs 69W and 57. filed in Group 2&7. Dated September 12, 1996.

4.9 PROPOSED PLAN FOR SELECTED REMEDIAL ACTION

Reports 4.9

1. Proposed Plan, AOC 57, U.S. Army Reserve Forces Training Area, Devens, Massachusetts, Harding ESE. filed in Group 2&7. Dated February 2001.

5.0 RECORD OF DECISION (ROD)

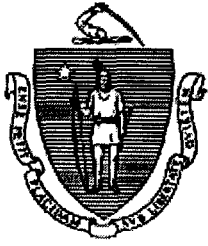
5.4 RECORD OF DECISION

Reports 5.4

1. Final No Further Action Decision Document, AREE 66C: Building 3657 Transformer #767-1845, Fort Devens, Massachusetts. Prepared by ABB Environmental Services, Inc. filed in Group AREE. Dated December 1995.

APPENDIX E - DECLARATION OF STATE CONCURRENCE

HARDING ESE



COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Central Regional Office, 627 Main Street, Worcester, MA 01608

JANE SWIFT
Governor

BOB DURAND
Secretary

LAUREN A. LISS
Commissioner

September 11, 2001

Ms. Patricia Meaney
Director
Office of Site Remediation and Restoration
U.S. Environmental Protection Agency
JFK Federal Building
1 Congress Street
Boston, MA 02114

RE: Final Record of Decision, Area of Contamination 57, U.S. Army Reserve Forces Training Area, Devens, Massachusetts (Sept 2001)

Dear Ms. Meaney,

The Massachusetts Department of Environmental Protection (MADEP) has reviewed the Record of Decision (ROD) proposed by the United States Army for AOC 57. The MADEP has worked closely with both the Army and the U.S. Environmental Protection Agency and is pleased to concur with the Army's selected remedial action for the site.

The remedy presented in the ROD is the culmination of a long effort to remediate contaminated soil at AOC 57. The Army's completion of additional sampling and analyses at Areas II and III as well as agreeing to remove additional soil has favorably resolved MADEP's concerns regarding contaminated site media.

Key actions detailed in the proposed ROD at both areas include:

- Soil Excavation and Treatment/Disposal at an Approved Facility
- Wetlands Protection
- Institutional Controls
- Long Term Environmental Monitoring
- Institutional Control Inspections
- Five Year site Reviews

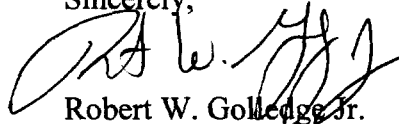
This information is available in alternate format by calling our ADA Coordinator at (617) 574-6872.

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The MADEP has worked closely with the Army, EPA and the public for the past five years in the development of a remedy for AOC 57. Our concurrence with the remedial alternative is based on this involvement as well as the remedy's compliance with Applicable or Relevant and Appropriate Requirements (ARAR) and its overall protectiveness of human health and the environment. We greatly appreciate the Army's efforts to encourage public participation as well as developing remedial options that incorporate concerns that were raised throughout the process. We look forward to continuing to work with the EPA and the Army during the implementation of the remedy.

Sincerely,

A handwritten signature in black ink, appearing to read 'R. W. Golledge Jr.', written in a cursive style.

Robert W. Golledge Jr.
Regional Director
Central Regional Office

cc: Fort Devens Mailing List
Carol Keating, EPA
Benjamin Goff, BRAC



EXPLANATION OF SIGNIFICANT DIFFERENCES AREA OF CONTAMINATION 57, DEVENS, MASSACHUSETTS

Superfund Records Center
SITE: Fort Devens
PROJECT: 54
OTHER: 201553
AOC57

I. Introduction

A. Site Name and Location

Site Name: Area of Contamination 57, Devens, Massachusetts

Site Location: off Barnum Road, Ayer/Harvard, Massachusetts

B. Lead and Support Agencies

Lead Agency: US Environmental Protection Agency

Support Agency: Massachusetts Department of Environmental Protection

C. Legal Authority

Under Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA),¹ Section 300.435(c) of the National Contingency Plan (NCP),² and U.S. Environmental Protection Agency (EPA) guidance,³ if EPA determines that differences in the remedial action significantly change but do not fundamentally alter the remedy selected in the Record of Decision (ROD) signed on September 28, 2001, with regard to scope, performance, or cost, EPA shall publish an explanation of the significant differences (ESD) between the remedial action being undertaken and the remedial action set forth in the ROD as well as the reasons such changes are being made.

D. Summary of Circumstances Necessitating this Explanation of Significant Differences

This ESD is necessary due to the circumstances listed below:

1. Increased volume and cost of contaminated soil requiring removal to attain cleanup levels at Area 2.
2. Inclusion of EPH as contaminant of concern for soils at Area 2, in the September 2001 AOC57 ROD, to monitor the presence of petroleum waste encountered during contaminated soil removal.
3. Inclusion of EPH and PCBs as contaminants of concern for Area 2 groundwater in the September 2001 AOC57 ROD for groundwater at Area 2.

¹42 U.S.C. Section 9617(c).

²40 C.F.R. Section 300.435(c).

³Office of Solid Waste and Emergency Response {OSWER} Directive 9355.3-02.

These circumstances were based on data obtained and observations made during the contaminated soil removal action initiated in January 2002 by Conti Environmental, Inc. (Conti) as contractor to the US Army Corps of Engineers New England District (USACE). Subsequent sections of this document provide further detailed discussions of the conditions leading up to these circumstances.

E. Availability of Documents

This ESD and supporting documentation shall become part of the Administrative Record for the Site. The ESD, supporting documentation for the ESD, and the Administrative Record are available to the public at the EPA Records Center and at the following additional locations.

| | | |
|---|-------------------|---|
| US Environmental Protection Agency Records Center One Congress Street Boston, MA 02114 (617) 918-1440 | Hours: M-F and | 10:00 am - 1:00 pm 2:00 pm - 5:00 pm |
|---|-------------------|---|

BRAC Environmental Office
Building 666
30 Quebec Street
Devens, MA 01432

Hazen Memorial Library
3 Perimeter Road
Shirley, MA 01464

Harvard Public Library
Fairbanks Street
Harvard, MA 01461

Ayer Public Library
26 E. Main Street
Ayer, MA 01432

Lancaster Public Library
Main Street
Lancaster, MA 01523

II. Summary of Site History, Contamination Problems, and Selected Remedy

A. Site History and Contamination Problems

Site Chronology - Listed below are milestones relevant to the history of investigation and cleanup efforts at Devens AOC57 Area 2:

1992 – The drainage ditch at Area 2 was investigated as part of the Site Investigation for Groups 2 and 7 Historic Gas Stations. Fingerprint analysis of soil samples collected from the ditch area indicated soil contamination most likely derived from lubricating oil, or vehicle crankcase oil.

1994 – The Army performed a soil removal action at Area 2, in response to newly promulgated Massachusetts Contingency Plan (MCP) standards. The 1994 soil removal action was discontinued due to the soil contamination extending below the water table and well beyond the areal limits originally estimated. A total of 1,300 cubic yards of contaminated soil was removed during this 1994 removal action.

1995 – 1998 – The Army conducted site Remedial Investigations at AOC57 Areas 2 and 3.

2000 – The Army performed additional soil and groundwater investigations, and completed a Feasibility Study for selection of final remedies at AOC57 Areas 2 and 3.

2001 – A Record of Decision was signed on September 28, 2001 for AOC57 Areas 2 and 3.

Record of Decision – The September 28, 2001 ROD for Area of Contamination 57 presented the Army's selected remedial action for soil and groundwater contamination at Areas 1, 2 and 3. The selected remedy for Area 1 was "No Further Action". The selected remedy for Area 2 was "Excavation (for possible future use) and Institutional Controls". The selected remedy for Area 3 was "Excavation (to Accelerate Groundwater Cleanup) and Institutional Controls". Information on the soil volume originally proposed for excavation and cost for remedy implementation in the ROD is provided in Section IV below.

History of Petroleum Waste Seepage - The petroleum waste contamination at AOC 57 Area 2 reportedly resulted from spills or releases of various oils or fuel materials from historic motor pool vehicle service operations. The June 2000 Remedial Investigation (RI) report for AOC 57 and the Feasibility Study (FS) (each prepared by Harding Lawson Associates) document historic observations and measurements related to the presence of subsurface petroleum waste at AOC 57 Area 2. The reports describe observations made during a previous removal action, performed in August-September 1994, of an oily sheen on groundwater, and black oily soil at the base of the existing slope in Area 2. A sample of the groundwater taken from the sheen in an open trench showed elevated Total Petroleum Hydrocarbon (TPH) concentrations of 754,000 mg/l, and Polychlorinated BiPhenyls (PCBs) (140 mg/l). A fingerprint analysis indicated that the petroleum waste was most likely a mixture of kerosene and lubricating oil.

Plans for further investigation were subsequently developed and executed during the RI, forming the basis for the planned remedial action as selected in the ROD. The USACE issued a task order to Conti in November of 2001 to perform the source remedial action.

January 2002 Contaminated Soil Removal - The remediation scope addressed removing contaminated soil to achieve cleanup levels for lead and PCB Aroclor-1260 in soil at Area 2, (600 mg/kg and 3.5 mg/kg, respectively) which were established in the ROD for AOC 57. The remedial contractor mobilized for the soil removal work on January 23, 2002, began excavation

on January 29 within initial excavation limits staked based on the selected remedy in the ROD for Area 2 and 3. Soil samples collected from Area 3 confirmed that ROD cleanup levels had been attained.

During the soil removal work at Area 2, oil sheening/globules were frequently observed on the groundwater surface in the open excavation. At the direction of the Devens Base Closure Team (BCT), the excavation was expanded beyond the initial excavation limits to remove visible petroleum-contaminated soils. The remedial contractor deployed absorbent materials to soak up the petroleum waste sheen/globules, and stored the materials in 55-gallon drums for proper disposal. On February 13, 2002, the remedial contractor completed removal of visibly stained soils, having obtained a full set of representative post-excavation samples from the excavation sides and bottom per the work plan, submitted for chemical analysis for lead and PCB Aroclor-1260. The confirmatory samples for the final excavation limits exhibited concentrations of these constituents below the ROD cleanup levels. The remedial contractor removed a total of 2,197 tons of contaminated soils from AOC57 Areas 2 and 3. Approximately 2,000 tons (1,300 cubic yards) were removed from Area 2 and the remainder from Area 3. All contaminated soils were transported off site for treatment/recycling in a thermal desorption process at Environmental Soils Management, Inc. (ESMI) in Loudon, NH.

The last area excavated in Area 2 was at a location on the upgradient side of the initial excavation limits and within the footprint of the previous 1994 removal area, but at a greater depth than the 1994 removal. Up to the endpoint of the soil removal work, petroleum waste sheens and globules persisted on the water surface within the excavation. Due to these persistent petroleum waste sheens and globules on groundwater in this area, a small portion of the excavation was left open to observe and absorb/remove further sheens or globules on the groundwater surface. During backfilling, the remedial contractor also installed four 12-inch diameter corrugated metal pipe sumps (CMP sumps) with vertical slots at locations surrounding this open excavation area to aid in observing the petroleum waste sheen on the groundwater surface. Due to the persistent petroleum waste seepage, the excavation was left open, and additional remediation work was planned and implemented.

On February 20, 2003, at the direction of USACE, the remedial contractor obtained a sample of the floating petroleum waste sheen in the open excavation. The waste sample was analyzed for TPH and PCBs. The analytical results were consistent with previous results during the 1994 removal action (350,000 mg/kg TPH, and 103 mg/kg total PCBs, fingerprint description as mixture of #2 fuel oil and motor oil). Note that the results were reported in units of mg/kg since the laboratory treats waste samples in a manner similar to soil samples as opposed to aqueous samples.

Petroleum Waste Recovery February 2002 – August 2003 - Following completion of the excavation work on February 13, 2002, the remedial contractor deployed and removed absorbent materials on to mitigate the petroleum waste sheen and globules in the open excavation. As of August 2003, the open excavation was approximately 30 feet in diameter, and averaged 3 to 4 feet in depth, with approximately one to two feet of standing groundwater. Due to the persistence of the petroleum waste sheen at the open excavation, at the authorization of USACE, the remedial contractor installed and operated a belt-skimmer based product recovery system at Area 2 during September – November 2002, decommissioned the system for the winter, and then

installed and operated the system from May 2003 through August 2003. Throughout 2003, the open excavation water surface exhibited only isolated oil globules, and therefore the product recovery system was deployed in the two most downgradient CMP sumps. The product recovery system was alternately operated in each of the two most downgradient CMP sumps in 2003, with manual bailing performed on the sump without the skimmer. The system, in combination with manual bailing, successfully removed a total of approximately 80 gallons of petroleum waste/water mixture from operating on the open excavation water surface in 2002, and CMP sumps in 2003.

September 2002 Supplemental Soil Sampling – Based on BCT planning, the USACE executed supplemental soil sampling at Area 2 in September of 2002. The purpose of this sampling was to evaluate the source and delineate the extent of petroleum waste-contaminated soil at AOC57 Area 2. The data would be used to support further decision making on additional remediation work required at Area 2 and assist in locating monitoring wells for long term monitoring. The remedial contractor conducted this work under a Draft Supplemental Soil Sampling Plan, dated August 2002, and reported the results in a Draft Technical Memorandum dated October 15, 2002. The investigation delineated zones of visibly impacted subsurface soil remaining at the site, immediately surrounding and upgradient of the existing open excavation, and documented that a portion of these soils exceed ROD cleanup levels.

Monitoring Well Installation and Soil Sampling - Between December 2002, and March 2003, the remedial contractor and team subcontractor Nobis completed additional investigation field work at AOC57 Area 2, including drilling twelve (12) soil borings and installing six (6) groundwater monitoring wells. Drilling subcontractor TDS mobilized a Bombardier all-terrain vehicle (ATV) drill rig equipped with 4.25-inch hollow-stem augers and 2-inch split spoon samplers, to complete the installations. The remedial contractor conducted this work according to the Work Plan Amendment for Monitoring Well Installation and Soil Sampling at Area 2, dated January 2003. Results are reported in a draft Technical Memorandum entitled “Summary of Soil Sampling and Testing Data, and Recommendations for Further Removal Action”, dated April 14, 2003.

Work Plan Amendment for Additional Contaminated Soil Removal - The monitoring well installation and soil sampling further reduced uncertainties regarding the extent of subsurface soils exceeding ROD cleanup levels at the site, and led to identified target areas for further removal. A contaminated layer of soils, approximately 2 to 5 feet in thickness over the identified areas as evidenced by soil boring logs and analytical testing data, was targeted for further removal. The remedial contractor prepared a Work Plan Amendment for this additional removal work in May 2003, and the work was scheduled for the dry period of the year, in September 2003, when groundwater is at a low point. The Work Plan Amendment included modifications to address changes in the remedial approach resulting from this ESD.

September 2003 Final Soil Removal at Area 2 - The USACE remedial contractor mobilized in September 2003 to execute the final removal of contaminated soil at Area 2, followed by completion of site restoration. Excavation work began at a small area around newly installed well 57M-03-06X. Confirmatory samples taken from this excavation area around well 57M-03-06X met the cleanup goals, and the area was subsequently backfilled.

Excavation work continued at the slope area at Area 2, and progressed in a southerly direction. This direction of excavation allowed management of the groundwater infiltrating into the excavation bottom, through pumping to storage tanks, as the work progressed. Confirmatory samples were obtained to meet or exceed the required frequencies in the work plan amendment, which in many cases supercede results of confirmatory samples taken at some sidewalls and bottom locations during the 2002 removal work. All of the confirmatory samples obtained during the progress of the work met the final soil cleanup levels. An interceptor/monitoring trench was installed, at a location in Area 2 between the 2003 soil excavation area and the wetlands, to monitor any residual floating petroleum waste/sheens following the completion of the source removal work.

A total of 2,361 tons (approximately 1,500 cubic yards) of contaminated soils were removed in 2003 for recycling at the ESMI facility in Loudon, NH, and a total of approximately 96,000 gallons of contaminated groundwater were pumped, stored, and discharged to the Devens Sewer system under a temporary discharge permit. The 2003 soil removal successfully achieved the revised cleanup levels for soil at AOC57 Area 2. De-minimus remaining contamination (as evidenced by sheening on infiltrating groundwater observed at the completion of excavation in 2003 at Area 2), is consistent with, and will be addressed by, the planned remediation approach for groundwater contamination in the Long Term Monitoring Plan.

B. Summary of the Selected Remedy

Key components of the Selected Remedy for Area 2, Excavation (for Possible Future Use) and Institutional Controls, are summarized below:

- Soil Excavation and Treatment/Disposal at an off-site treatment, storage, or disposal facility;
- Wetlands Protection;
- Institutional Controls (Existing zoning that prohibits residential use of Area 2 property and proposed deed restrictions that prohibit potable use of Area 2 groundwater and residential use of flood plain property);
- Environmental Monitoring (long term groundwater and surface water monitoring)
- Institutional Control Inspections; and,
- Five-year Site Reviews.

Key components of the Selected Remedy for Area 3, Excavation (to Accelerate Groundwater Cleanup) and Institutional Controls are summarized below.

- Soil Excavation and Treatment/Disposal at an off-site treatment, storage, or disposal facility;
- Wetlands Protection;
- Institutional Controls (Existing zoning that prohibits residential use of Area 3 property and proposed deed restrictions that prohibit potable use of Area 3 groundwater and residential use of flood plain property);
- Environmental Monitoring (long term groundwater and surface water monitoring);

- Insitutional Control Inspections; and,
- Five-year Site Reviews.

III. Basis for the Document

Data obtained, and observations made during the January 2002 soil removal work, during the subsequent investigations for further soil delineation, and petroleum waste recovery efforts from 2002 through 2003, resulted in discovery of site conditions at AOC57 Area 2 which are different than conditions upon which the September 2001 ROD were based. These differences include an increased volume of petroleum waste-contaminated soil. The ROD addressed petroleum contamination by assuming that if the cleanup level for PCBs was attained in soil, the petroleum contamination would be successfully mitigated at the same time. However, confirmatory sampling results from the January 2002 soil removal and subsequent field observations showed that observable petroleum waste contamination persisted in areas where confirmatory samples indicated that the ROD cleanup level for PCBs had been attained.

These differences between the ROD assumptions and conditions encountered during the initial remediation work in January 2002 are being addressed using the same remedial technology/approach as specified in the ROD (Soil Removal). However cleanup goals (in the form of additional contaminants of concern [COC] and appropriate cleanup concentrations related to the increased quantity of petroleum-impacted media) should be formally adopted for AOC57 Area 2 so that a proper cleanup endpoint can be achieved and documented.

In response to results of the January 2002 removal action, the persistent petroleum waste seepage at AOC57 Area 2, and supplemental soil sampling/delineation work at this site through January 2003, EPA issued a letter on January 10, 2003 to the U.S. Army Devens Base Re-Alignment and Closure (BRAC) Environmental Coordinator, to request that an ESD be prepared to add Extractable Petroleum Hydrocarbons (EPH) as a contaminant of concern for site soils and groundwater. The EPA further requested (in accordance with a December 13, 2002 memorandum issued by John Regan with the Massachusetts Department of Environmental Protection [MADEP]) that the S3/GW-1 cleanup goal of 200 ppm for C11-C22 aromatics in soils should be the specified EPH cleanup goal at Area 2.

On August 29, 2003, the BRAC Environmental Coordinator decided to proceed with preparation of an Explanation of Significant Differences (ESD) to address the increased volume of soil requiring remediation at AOC57 Area 2, and the addition of EPH as a contaminant of concern. In addition, the provisions of the ESD were incorporated in the Work Plan Amendment for Additional Soil Removal, which addressed work planned for September-October 2003.

In February 2004, EPA requested the addition of PCBs as contaminants of concern in groundwater at Area 2. The additional analytes (EPH C11-C22 aromatics, and PCBs) for Area 2 groundwater samples will be incorporated into the Long Term Monitoring Plan for AOC57.

IV. Description of Significant Differences

The significant differences between the remedy as presented in the ROD and the action now being proposed are described below:

1. Increased volume and cost of contaminated soil requiring removal to attain cleanup levels at Area 2;
2. Inclusion of EPH as contaminant of concern for soils at Area 2, in the September 2001 AOC57 ROD, to monitor the presence of petroleum waste encountered during contaminated soil removal; and,
3. Inclusion of EPH and PCBs as contaminants of concern for Area 2 groundwater in the September 2001 AOC57 ROD.

Original Remedy

The technology selected for soil contamination in the Original Remedy was Soil Excavation and Treatment/Disposal at an off-site treatment, storage, or disposal facility. The estimated volume of soil to be removed from AOC57 Area 2 in the original remedy was 640 cubic yards.

Cleanup Levels in the Original Remedy were as follows:

Area 2 Soil COC

Cleanup Level in Soil

PCB Aroclor-1260
Lead

3.5 mg/kg dry weight
600 mg/kg dry weight

Area 2 Groundwater COC

Cleanup Level in Groundwater

Arsenic
Cadmium
1,4-Dichlorobenzene
Tetrachloroethene

50 ug/l
5 ug/l
5 ug/l
5 ug/l

Modified Remedy

The estimated volume of soils removed in the Modified Remedy is 2,920 cubic yards, which includes an estimated 1,420 cubic yards excavated during the January 2002 removal action, and an estimated 1,500 cubic yards excavated in 2003 to address the remaining soil contamination.

Cleanup levels in the Modified Remedy are as follows:

Area 2 Soil COC

Cleanup Level in Soil

PCB Aroclor-1260
Lead
EPH C11-C22 Aromatics

3.5 mg/kg dry weight
600 mg/kg dry weight
200 mg/kg dry weight (MADEP method)

| <u>Area 2 Groundwater COC</u> | <u>Cleanup Level in Groundwater</u> |
|-------------------------------|-------------------------------------|
| Arsenic | 50 ug/l |
| Cadmium | 5 ug/l |
| 1,4-Dichlorobenzene | 5 ug/l |
| Tetrachloroethene | 5 ug/l |
| EPH C11-C22 Aromatics | 200 ug/l |
| PCBs (total of all aroclors) | 0.5 ug/l |

The added cleanup levels for EPH C11-C22 Aromatics in soil and groundwater are based on current MCP Method 1 risk assessment standards for soil type "S-1" (surface accessible soils consistent with unrestricted use), and groundwater category "GW-1" (consistent with potential future use for drinking water supply). The added cleanup level for PCBs in groundwater is based on the current EPA Maximum Contaminant Level (MCL) for drinking water.

Summary of Costs

The original remedy for soils remediation at AOC 57 Areas 2 and 3 had an estimated total capital construction cost of \$ 429,344, including \$ 80,699 for Area 3, and \$ 348,645 for Area 2.

The final remedy for soils remediation at Areas 2 and 3 combined has a projected at-completion total cost of \$ 1,074,213. This cost includes costs of the soil removal work, closeout reports, and also some groundwater well installations, which may become part of the long-term monitoring network. The increase in costs can be attributed to the increased total volume of soil remediated, related additional delineation work, and the need for increased recovery of floating petroleum waste.

V. Supporting Agency Comments

The EPA and MADEP have determined that the ESD and proposed changes are acceptable.

VI. Statutory Determination

Considering the new information that has been developed and the changes that have been made to the selected remedy, the Army, EPA and MADEP believe that the remedy remains protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to this remedial action, and is cost-effective. In addition, the revised remedy utilizes a permanent solution to the maximum extent practicable for this Site. The modified remedy satisfies requirements set forth in CERCLA §121.

VII. Public Participation Activities

Although a formal public comment period is not required for this ESD, the Army, pursuant to CERCLA Section 117(c), shall publish a notice of availability and a brief description of the ESD in a local newspaper of general circulation, and make the ESD available to the public by placing it in the administrative record file and information repositories listed in Section I.E.

IT # 2740



DEPARTMENT OF THE ARMY
BASE REALIGNMENT AND CLOSURE
ATLANTA FIELD OFFICE
1347 THORNE AVENUE SW, BLDG243
FORT MCPHERSON, GEORGIA 30330-1062



MARCH 8, 2004

Reply to the order of
BRAC Environmental Office
DAIM-BO-A-DV
30 Quebec Street, Box 100
Devens, MA 01432

Ms. Carol Keating, Remedial Project Manager
U.S. Environmental Protection Agency
1 Congress Street, Suite 1100 (Mailcode HBT)
Boston, MA 02114-2023

Dear Ms.Keating:

Enclosed for your records, pursuant to the Comprehensive Environmental Response,
Compensation, and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments
Reauthorization Act of 1986, is the following document:

Final Version
Explanation of Significant Differences - ESD
Area of Contamination (AOC) 57
Devens, Massachusetts

If you have any questions regarding this matter, you may contact me at (978) 796- 2205.

Sincerely,

Benjamin F. Goff
BRAC Environmental Coordinator

Enclosures

Appendix D

Land Use Control Checklist

Land Use Control Checklist for AOC 57, Building 3713 Fuel Oil Spill Site

| I. Site Information | | | |
|--|-----|--|----------|
| Site Name/Location: AOC 57 | | Name/Affiliation: Building 3713 Fuel Oil Spill Site | |
| Remedy Includes: Long-term monitoring and institutional controls | | | |
| Inspection Date: | | | |
| Participants: | | | |
| II. Documentation and Records | | | |
| Item | Yes | No | Comments |
| Any related notices filed with Devens Enterprise Commission? | | | |
| Any related Department of Public Works permits found? | | | |
| Any related zoning permits or variances found? | | | |
| Any related Conservation Commission findings, proposals, or notices of intent found? | | | |
| III. Physical On-Site Inspection | | | |
| Item | Yes | No | Comments |
| Is there evidence of damage to the remedy? | | | |
| Any damage to on-site monitoring wells? | | | |
| Any groundwater extraction wells present? | | | |
| Is there sufficient access to the site for monitoring? | | | |
| Any signs of increased exposure potential? | | | |

Land Use Control Checklist for AOC 57, Building 3713 Fuel Oil Spill Site

| IV. Interview | | | |
|---|-----|----|----------|
| Name of Interviewer: | | | |
| Name of Interviewee: | | | |
| Date of Interview: | | | |
| Contact Information: | | | |
| Interview Notes: | | | |
| Site Update: | | | |
| Item | Yes | No | Comments |
| Is interviewee familiar with the LUCs imposed upon the property and documentation of these controls? | | | |
| Are there any extraction wells at the property? | | | |
| Are there any proposed plans for property sale, future development, construction, or demolition activities at the property? | | | |
| Is drinking water supplied from off-site? | | | |
| Are there any issues with site access for monitoring? | | | |
| V. Response Actions | | | |
| Item | Yes | No | Comments |
| Were violations of the LUCs present? | | | |
| Are there Response Actions necessary based on the violations? | | | |
| Are modifications/terminations of LUCs necessary? | | | |
| Have Enforcement Actions been taken during this reporting period? | | | |

Appendix E

Responses to Regulatory Comments



| Project Name: Former Fort Devens Army Installation | | Location: Devens, Massachusetts | | | |
|---|---|--|--|---|---|
| Document Name: Draft Land Use Control Implementation Plan, Area of Contamination 57 | | | | | |
| Prepared By: USACE and SERES-Arcadis 8(a) JV | | | | | |
| No. | Ref. Page / Para. | COMMENT (MassDEP submitted on September 14, 2022 and USEPA submitted on September 30, 2022) | RESPONSE (Submitted on November 17, 2022 as a Response Letter to MassDEP/USEPA Comments on the Draft) | BACKCHECK COMMENT (MassDEP submitted on December 6, 2022 and USEPA submitted on December 5, 2022) | BACKCHECK RESPONSE |
| MassDEP COMMENTS (Joanne Dearden) | | | | | |
| 1. | Section 3.2 | Please include a discussion regarding the planned LUCs requirements to be implemented for AOC 57. | Section 3.2 will be expanded as requested. | No additional comments. | NA |
| 2. | Section 3.2 | Current practice for CERCLA sites in Massachusetts is to impose land use controls using a Notice of Activity Use Limitation [NAUL, 30 CMR 40.111(8)]. Consequently, if the plan will not specify the use of a NAUL for AOC 57, the plan should include an explanation for doing so. | The document will be revised to indicate that the NAUL will be developed upon transfer of the property. | No additional comments. | NA |
| 3. | Section 4.1 | Concerning LUCs requirements, the LTMMP is subordinate to the LUCIP. Therefore, the LUCIP should present the LUCs monitoring requirements and maintenance activities. | Section 4.1 will be revised accordingly. | No additional comments. | NA |
| 4. | Section 4.3 | The LUCIP should include a schedule for all the activities that will be conducted under the plan. Also, please include a timeframe for when the annual inspection is to be conducted (spring, summer, etc.) | Section 4.3 will be updated to include the schedule for distribution of the approved Final LUCIP. The annual inspection is generally conducted at the end of year in November or December. | No additional comments. | NA |
| 5. | Appendix B, LUC Checklist, IV Interview | Please add the date of the interview to the checklist. | The checklist will be amended in response to this comment. | No additional comments. | NA |
| USEPA COMMENTS (Carol Keating) | | | | | |
| GENERAL COMMENTS | | | | | |
| 1. | | Changes to the long-term monitoring program are mentioned throughout. For example, on p. 10, Army states, "In 2015, the Long-Term Monitoring and Maintenance Plan (LTMMP; Sovereign and HGL 2015) discontinued the monitoring of groundwater and operation of the sumps at Area 2. The plan proposed long-term monitoring of two groundwater wells and one surface water sample location at Area 3 every 5 years (Sovereign and HGL 2015)." EPA requests that Army note that the 2015 LTMMP was finalized without EPA's concurrence and that the LTMMP will be updated upon conclusion of the AOC 57 Supplemental Remedial Investigation (scheduled to commence in 2023) in accordance with EPA's September 29, 2020, Additional Work Letter. In addition, please ensure that any discussion of the AOC 57 LTMMP in the draft final LUCIP acknowledges these unresolved issues and mentions the additional work planned to resolve them. | The text will be revised to indicate that LTM has been conducted at the site for over 20 years and that the sampling network has been optimized over time per EPA guidance "Roadmap to Long-Term Monitoring Optimization" with changes incorporated in the LTMMP. These optimization updates were included in the 2015 LTMMP, which was finalized in accordance with the FFA, Section 7.8 Finalization of Report(s). With the issuance of the EPA's September 29, 2020 Additional Work letter, the EPA invoked Section 7.9 of the FFA, Subsequent Modifications of Final Reports and Additional Work. The additional work is now planned for FY23. | Per EPA's 9/29/22 Additional Work letter, the last sentence of Army's response should reference Section XXXII of the FFA (and not Section 7.9). | The Army assumes the Additional Work letter referenced in USEPA's backcheck comment is the letter dated September 29, 2020. Section XXXII of the FFA references "Quarterly Reports." The reference to Section 7.9 will be retained. |

| No. | Ref. Page / Para. | COMMENT (MassDEP submitted on September 14, 2022 and USEPA submitted on September 30, 2022) | RESPONSE (Submitted on November 17, 2022 as a Response Letter to MassDEP/USEPA Comments on the Draft) | BACKCHECK COMMENT (MassDEP submitted on December 6, 2022 and USEPA submitted on December 5, 2022) | BACKCHECK RESPONSE |
|-------------------------------|------------------------|--|---|--|--------------------|
| 2. | | Please include a figure that delineates the specific LUC boundaries for Areas 2 and 3. Also, please make the boundaries of the restrictions clear in the narrative text throughout. | The LUC boundaries will be delineated on a figure and the document will be revised accordingly. | NA | NA |
| 3. | | Please note that Page-Specific Comments (PSCs) 22. – 26. below are identical to EPA’s recent comments on the draft AOCs 44/52 and AOC 69W LUCIPs in that they request, for consistency, incorporation of language from the EPA/Army/MassDevelopment approved, “FINAL LAND USE CONTROL IMPLEMENTATION PLAN ADDENDUM, FORMER OAK AND MAPLE HOUSING AREAS AND A PORTION OF THE FORMER GRANT HOUSING AREA (“RESTRICTED AREA”), April 2021. | The Army notes that several of the page-specific comments provided by EPA are not consistent with the format presented in the EPA-approved Work Plan and the EPA requested changes to the Draft LUCIPs for AOCs 44/52 and AOC 69W. The Army will incorporate the revisions in these comment to the extent that they are consistent with the format presented in the EPA-approved Work Plan and the AOCs 44/52 and AOC 69W LUCIPs. | Army’s response states that it will incorporate the requested revisions “to the extent that they are consistent with the format presented in the EPA-approved Work Plan and the AOCs 44/52 and AOC 69W LUCIPs.” EPA reserves the right to provide additional comment on (or disapprove) those revisions once it has had an opportunity to review them in the draft final document. | Comment noted. |
| PAGE-SPECIFIC COMMENTS | | | | | |
| 1. | Page 2, Section 2.0 | <p>While EPA appreciates Army’s efforts to summarize the description and history of the collective site into four paragraphs, this section should sufficiently identify and describe the activities undertaken to define/characterize the nature and extent of contamination, assess human-health and ecological risks, identify/evaluate potential removal/remediation options to address current and potential, future risks, support the selection of a final remedy and under post-ROD activities deemed necessary to ensure short- and long-term protectiveness of the selected remedy.</p> <p>While the area-specific subsections include some of this information, EPA recommends that the section be amended to include the following site-wide details/activities (excerpted from pgs. D-2 (Description of the Selected Remedy) and 2, § 2.0, Sept 2001 ROD):</p> <ul style="list-style-type: none"> • <i>AOC 57 is located on the south side of Barnum Road in an area of the former Fort Devens that was used primarily for the storage and maintenance of military vehicles. In addition, areas north of Barnum Road have historically been, and continue to be, used as rail yards and for freight handling and storage.</i> | The Army notes that the site background information provided in EPA’s comment is substantially already presented within Section 2.0 and it’s subsections. The limited details that are not provided in the LUCIP will be added to the appropriate section(s) within Section 2.0. | EPA reserves the right to provide additional comment on (or disapprove) the revisions once it has had an opportunity to review them in the draft final document. | Comment noted. |



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|-----|----------------------|--|--|--|--------------------|
| | | <ul style="list-style-type: none"> • AOC 57 consists of three subareas (Area 1, Area 2, and Area 3) located south to southeast of Building 3713 and former buildings 3756, 3757 and 3758. These subareas historically received stormwater runoff and wastes from vehicle maintenance at former vehicle storage yards associated with Building 3713 and former buildings 3757 and 3758. Former Building 3756 was a mess hall that area. • 1992 - an investigation was performed in Area 2 to determine the presence or absence of contamination associated with a February 1977 # 4 fuel oil spill. • 1994 – a Limited Soil Removal Action was conducted in Area 2 to address contamination found during the 1992 investigation; however, discovered that the extent of contamination was larger than expected and a Remedial Investigation/Feasibility Study (RI/FS) should be conducted at Areas 2 and 3. • 1995 to 1999 – Remedial Investigation (RI) performed to define the nature and extent of contamination and assess human health and ecological risk • June 2000 – Final RI Report issued (summarized RI results (i.e., characterized the nature and extent of contamination detected in various media) and identified/evaluated current and potential, future human health and ecological risks in Areas 2 and 3 (no unacceptable risks in Area 1)) • November 2000 – Final Focused Feasibility Study (FFS) Report issued (identified and evaluated possible remedial action alternatives to address contamination and risks identified in the RI for Areas 2 and 3) • February 2001 - Proposed Plan (PP) issued for public comment; detailed Army's preferred remedial alternatives for Areas 2 and 3 | | | |

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| | | <ul style="list-style-type: none"> • <i>September 2001 – Record of Decision (ROD) documenting the selected remedies for AOC 57:</i> <ul style="list-style-type: none"> ➤ <i>Area 1 - No Further Action</i> ➤ <i>Area 2 - Alternative II-3: Excavation (For Possible Future Use) and Institutional Controls</i> ➤ <i>Area 3 - Alternative III-2a Excavation (to Accelerate Groundwater Cleanup) and Institutional Controls</i> • <i>March 2004 - Explanation of Significant Difference (ESD) to document the increased volume and costs of contaminated soil removal in Area 2; and, add EPH as a COC for Area 2 soils and EPH and PCBs as COCs for Area 2 groundwater.</i> | | | |
| 2. | Page 9, Section 3.1, Last Paragraph, 3 rd Bullet | <p>For consistency with the description of the Institutional Controls component of the Selected Remedy for Area 2 in the 2001 ROD (see pg. 54), as amended by the 2004 ESD, please insert the following after “Institutional Controls” - Upland portions of AOC 57 are located within an area zoned for Rail, Industrial, and Trade Related uses, while flood plain portions of AOC 57 are zoned for Open Space and Recreation (Vanasse Hangen Brustlin, 1994a and 1994b). Residential construction is not permitted under those designations. In the event of future property transfer, the Army will include deed covenants to prohibit unrestricted use of upland and flood plain property and potable use of Area 2 groundwater.. All institutional controls will be stated in full or by reference within deeds, easements, mortgages, leases, or other instruments of property transfer. These controls will be drafted, implemented, and enforced in cooperation with federal, state, and local governments. These controls, or covenants, will be maintained as long as soil and groundwater contaminants remained at concentrations above protective cleanup levels. If future land use at AOC 57 is inconsistent with these institutional controls, then the site exposure scenarios for human health and the environment will be reevaluated to assess whether this response action remains appropriate.”</p> | The document will be revised as suggested. | NA | NA |

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| 3. | Page 9, Section 3.1, Last Paragraph, 6 th Bullet | For consistency with the description of the Environmental Monitoring component of the Selected Remedy for Area 2 in the 2001 ROD, as amended by the 2004 ESD, please insert the following after "Long Term Groundwater Monitoring" - <i>Long-term groundwater sampling will be performed to assess for groundwater COCs (arsenic, cadmium, 1,4-Dichlorobenzene (1,4-DCB), Tetrachloroethene (PCE), EPH C11-C22 Aromatics, and PCBs) migration and to monitor for the decrease of the groundwater COCs to drinking water standards (i.e., MCLs/MMCLs).</i> | The document will be revised as suggested. | NA | NA |
| 4. | Page 10, Section 3.1, 1 st Bullet | For consistency with the description of the "Environmental Monitoring" component of the Selected Remedy for Area 2 in the 2001 ROD (pg. 5), as amended by the 2004 ESD, please insert the following after "Long-Term Surface Water Monitoring" - <i>Surface water sampling will be a component of environmental sampling to assess for off-site migration of human-health COCs in excess of PRGs via the groundwater to surface water pathway. The purpose of the surface water sampling will not be to collect additional ecological risk assessment data.</i> | The document will be revised as suggested. | NA | NA |
| 5. | Page 10, Section 3.1, 1 st Full Paragraph (after Last Bullet) | For consistency with the description of the "Institutional Controls" component of the Area 3 selected remedy in the ROD (pg. 59) and specified in the FOST (pg. 3), please insert the following: <i>Since the Property was not remediated to levels suitable for unrestricted use, LUCs are required to limit potential exposure to contaminated soil and groundwater under both the existing and future site conditions. The controls will ensure that future use of the Property is limited solely to commercial and industrial activities and that that the extraction of Area 3 groundwater for industrial or potable water supply is prohibited. Upland portions of AOC 57 are located within an area zoned for Rail, Industrial, and Trade Related uses, while flood plain portions are zoned for Open Space and Recreation (Vanasse Hangen Brustlim, 1994a and 1994b). Residential construction would not be permitted under those designations.</i> <i>In the event of future property transfer, the Army would include deed covenants to prohibit residential</i> | The document will be revised as follows: <i>Since the Property was not remediated to levels suitable for unrestricted use, LUCs are required to limit potential exposure to contaminated soil and groundwater under both the existing and future site conditions. The controls will ensure that future use of the Property is limited solely to commercial and industrial activities and that that the extraction of Area 3 groundwater for industrial or potable water supply is prohibited. Upland portions of AOC 57 are located within an area zoned for Rail, Industrial, and Trade Related uses, while flood plain portions are zoned for Open Space and Recreation (Vanasse Hangen Brustlim 1994a and 1994b). Residential construction would not be permitted under those designations.</i> <i>In the event of future property transfer, the Army will include deed covenants to prohibit residential use of floodplain property and prevent access to and use of Area 3 groundwater for any purpose, without the prior written approval of the Army, EPA, and MassDEP. All</i> | NA | NA |



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| | | <p><i>use of floodplain property and prevent access to and use of Area 3 groundwater for any purpose, without the prior written approval of the Army, EPA, and MassDEP. All institutional controls would be stated in full or by reference within deeds, easements, mortgages, leases, or other instruments of property transfer. These controls would be drafted, implemented, and enforced in cooperation with federal, state, and local governments. These covenants would be maintained as long as soil and/or groundwater contaminants remained at concentrations above protective cleanup levels.</i></p> | <p><i>institutional controls will be stated in full within deeds or other instruments of property transfer. These covenants will be maintained as long as soil and/or groundwater contaminants remained at concentrations above protective cleanup levels.</i></p> | | |
| 6. | Page 10, Section 3.1, 1 st Full Paragraph, 6 th Bullet | <p>For consistency with the description of the “Environmental Monitoring” component of the Selected Remedy for Area 3 in the 2001 ROD (pg. 60), please insert the following after “Long-Term Groundwater Monitoring” – <i>Long-term groundwater sampling will be performed to assess for decreases in arsenic; maintenance of PCE, cadmium, and 1,4-DCB concentrations (upland and flood-plain COCs) at or below cleanup levels; and for the need for continued groundwater institutional controls to protect human receptors.</i></p> | <p>The document will be revised as suggested.</p> | NA | NA |
| 7. | Page 10, Section 3.1, 1 st Full Paragraph, 7 th Bullet | <p>For consistency with the description of the “Environmental Monitoring” component of the Selected Remedy for Area 3 in the 2001 ROD (pg. 60), please insert the following after “Long-Term Surface Water Monitoring” – <i>Surface water sampling will be a component of environmental sampling to assess for off-site migration of human-health COCs in excess of PRGs via the groundwater to surface water pathway. The purpose of the surface water sampling will not be to collect additional ecological risk assessment data.</i></p> | <p>The document will be revised as suggested.</p> | NA | NA |
| 8. | Page 10, Section 3.1, 2 nd Full Paragraph | <p>Please end this paragraph after the fourth sentence and insert a new paragraph that discusses Army’s issuance of an ESD in March 2004 and summarizes the circumstances necessitating the modification of the September 2001 ROD (i.e., increased volume and cost of contaminated soil requiring removal to attain cleanup levels at Area 2; inclusion of EPH as contaminant of concern for soils at Area 2 to monitor the presence of petroleum waste encountered during contaminated soil removal; and, inclusion of EPH and PCBs as contaminants of concern for Area 2 groundwater.)</p> | <p>The document will be revised as suggested.</p> | NA | NA |

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| 9. | Page 10, Section 3.1, 2 nd Full Paragraph, 5 th Sentence (New Paragraph 4) | Please see General Comment (GC) 1. | Please refer to the Army's response to EPA General Comment 1. | NA | NA |
| 10. | Page 10, Section 3.1, 3 rd Full Paragraph (New Paragraph 5), 1 st Sentence | Please change "have been" to "are being." | The text will be revised as suggested. | NA | NA |
| 11. | Page 10, Section 3.1, 3 rd Full Paragraph (New Paragraph 5), 1 st Sentence | Please insert "VOC & SVOC and" after "reduction in" and prior to "groundwater contamination through natural attenuation." | The text will be revised as suggested. | NA | NA |
| 12. | Page 10, Section 3.2 | For consistency with the description of land use controls in the 2001 ROD, 2004 ESD, and 2015 FOST, please delete the first sentence and replace it with <i>"The LUCs consist of deed restrictions that prohibit access or use of groundwater for any purpose and residential use of AOC 57 property. For purposes of this provision, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12."</i> | The document will be revised as suggested. | NA | NA |
| 13. | Page 10, Section 3.2 | The third and fourth sentences state, "These LUCs are currently in effect at AOC 57. The Army has leased AOC 57 to MassDevelopment, along with other Fort Devens parcels, as documented in the 1996 LIFOC (Appendix C)." Are the LUCs also currently or previously incorporated into the base-wide instructions or master plan? | BRAC properties are not included in the base-wide master plan. | Army's response states that BRAC properties are not included in base-wide master plans. If not in the master plans, please explain how Army has implemented the LUCs. Army indicates that the LUCs are currently in effect but does not describe how or through what mechanism they are implemented, monitored and/or enforced. Please explain. | LUCs are presented in the LIFOC and the LTMMMP. LUCs are monitored and enforced in the same manner as any other LTM remedy – through the 5-Year Review. |
| 14. | Page 11, Section 3.2, 1 st Paragraph | Please specify that the inspection checklists are included as an attachment to this document and will be discussed in greater detail below. | The following sentence will be added to the end of the last paragraph of Section 3.2, "The LUC checklist is presented in Appendix B and the following subsections describe the methodology used to perform LUC monitoring activities." | NA | NA |

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| 15. | Page 11, Section 3.2, 2 nd Paragraph | <p>For consistency with the 2001 ROD (pgs. 53 & 58), 2014 ESD (pgs. 6 & 7) and 2015 FOST, please amend the first sentence to include all of the “key components” of the selected remedy outlined below:</p> <p><i>“The key components of the Selected Remedy for Area 2, Excavation (for Possible Future Use) an Institutional Controls, are:</i></p> <ul style="list-style-type: none"> • <i>Soil Excavation and Treatment/Disposal at an off-site treatment, storage, or disposal facility;</i> • <i>Wetlands Protection;</i> • <i>Institutional Controls (prohibiting access or use of groundwater for any purpose and residential use of AOC 57 property);</i> • <i>Environmental Monitoring (long term groundwater and surface water monitoring)</i> • <i>Institutional Control Inspections; and,</i> • <i>Five-year Site Reviews.</i> <p><i>The key components of the Selected Remedy for Area 3, Excavation (to Accelerate Groundwater Cleanup) and Institutional Controls are.</i></p> <ul style="list-style-type: none"> • <i>Soil Excavation and Treatment/Disposal at an off-site treatment, storage, or disposal facility;</i> • <i>Wetlands Protection;</i> • <i>Institutional Controls (prohibiting access or use of groundwater for any purpose and residential use of AOC 57 property)</i> • <i>Environmental Monitoring (long term groundwater and surface water monitoring);</i> • <i>Institutional Control Inspections; and, Five-year Site Reviews.”</i> | The document will be revised as suggested. | NA | NA |
| 16. | Page 13, Table 2, “Parcel Number” Column | Please explain why the AOC 57 parcel is identified as “Parcel #22-17-700” in the table but “Parcel A.6A” in the September 2015 FOST (See Enclosure 1). | Table 2 will be revised to identify the parcel as Parcel A.6A. The AOC 57 figures will also be revised to show the parcel boundary as presented in the ROD (Parcel A.6A). The Army notes that how property is transferred and described is not dependent on CERCLA designations. | NA | NA |
| 17. | Page 13, Table 2, “Area of Interest” | Since the COCs are IC/LUCs Please amend (or replace) the table to include separate rows for Area 2 and Area 3 and separate sub-rows for upland soils, flood plains soils and groundwater. | Table 2 will be revised in response to this comment. | NA | NA |

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| 18. | Page 13, Table 2, "Area of Interest Column," Figure 2 | Please amend or replace the existing figure to show the boundaries for each of the ICs/LUCs placed on the property, as described in the AOC 57 ROD, ESD and FOST. This would make it extremely clear what the restrictions are and that they satisfy the objectives set forth in this table (See GC 2.) | Figure 2 will be revised in response to this comment and will also be revised to show the parcel boundary as presented in the ROD (Parcel A.6A). | NA | NA |
| 19. | Page 13, Table 2, "Area of Interest" Column, Figure 2 | Please amend or replace the existing figure to identify/demark the Parcel boundaries shown in the September 2015 FOST, "Enclosure 1 – Site Map of Property." (See Page-Specific Comment (PSC) 13.) | Figure 2 will be revised to show the parcel boundary as presented in the ROD (Parcel A.6A). | NA | NA |
| 20. | Page 13, Table 2, "Contaminants Remaining" | As mentioned in General Comment 1 above, because EPA did not concur with the 2015 LTMMMP Update and Army has yet to confirm attainment of ROD-specified cleanup goals for all ROD-specified COCs (i.e., Arsenic, Cadmium, 1,4-Dichlorobenzene, Tetrachloroethene, EPH C11-C22 Aromatics, and PCBs (to be determined upon completion of the planned supplemental RI), this column should be entitled, "ROD-specified COCs" and list all ROD-specified COCs. | Table 2 will be revised in response to this comment. | NA | Please note the format for Table 2 was revised based on USEPA's global LUCIP comments received on the AOC 69W LUCIP which were provided after the USEPA provided comments on the Draft AOC 57 LUCIP. Therefore, this comment/response is no longer applicable. |
| 21. | Page 13, Table 2, Conditions for Termination | Please revise the current text to "Upon attainment of Federal MCLs and MCP S-1/GW-1 standards and Army, MassDEP and EPA Region 1 approval." | Table 2 will be revised in response to this comment. | NA | Please note the format for Table 2 was revised based on USEPA's global LUCIP comments received on the AOC 69W LUCIP which were provided after the USEPA provided comments on the Draft AOC 57 LUCIP. Therefore, this comment/response is no longer applicable. |
| 22. | Page 14, Section 4.0 | Please change the title of the section to "LUC Responsibilities and Implementation Actions" and replace the discussion in this section (and the subsequent subsection 4.1) with the following: <i>"The Army is responsible for implementing, maintaining, reporting on, and enforcing the LUCs. Although the Army may delegate some or all of these duties required under this LUCIP to another entity (such as MassDevelopment or other future property owner) or through a third party by contract or through other means, it retains ultimate responsibility for ensuring the effectiveness and integrity of the AOC 57 remedy, as determined by the ROD and ESD, through the proper management of soils and groundwater and implementation, maintenance, reporting and enforcement of LUCs until such</i> | The Army notes that several of the page-specific comments provided by EPA are not consistent with the format presented in the EPA-approved Work Plan and the EPA requested changes to the Draft LUCIPs for AOCs 44/52 and AOC 69W. The Army will incorporate the revisions in this comment to the extent that they are consistent with the format presented in the EPA-approved Work Plan and the AOCs 44/52 and AOC 69W LUCIPs. | Army's response states that it will incorporate the requested revisions "to the extent that they are consistent with the format presented in the EPA-approved Work Plan and the AOCs 44/52 and AOC 69W LUCIPs." EPA reserves the right to provide additional comment on (or disapprove) those revisions once it has had an opportunity to review them in the draft final document. | Comment noted. |

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| | | <p><i>time that soils is at levels to allow unlimited use and unrestricted exposure (UU/UE) and groundwater has attained. Should another entity or third party cease to perform these duties, the Army shall implement the LUCs or propose modifications to this LUCIP that provide an equivalent level of protection, as determined by EPA and MassDEP, in consultation with MassDevelopment or its successor municipal authority."</i></p> <p><i>Upon approval this LUCIP by EPA and MassDEP, the Army will undertake the following implementation actions to ensure compliance with requirements set forth in the ROD, ESD and FOST and ensure that LUC objectives are met and maintained:</i></p> <ul style="list-style-type: none"> • <i>Within 30 days of receiving EPA approval and MassDEP concurrence of this LUCIP, in accordance with their respective legal authorities, the Army will undertake the following specific actions:</i> <ul style="list-style-type: none"> ➤ <i>Send a copy of this LUCIP Addendum and all Exhibits to the Town of Ayer, Massachusetts for its records;</i> ➤ <i>Send a copy of this LUCIP Addendum and all Exhibits to the Town of Harvard, Massachusetts for its records;</i> ➤ <i>Send a copy of this LUCIP Addendum and all Exhibits to the Town of Shirley, Massachusetts for its records;</i> ➤ <i>Send a copy of this LUCIP Addendum and all Exhibits to the DEC for its records;</i> ➤ <i>Send a copy of this LUCIP Addendum and all Exhibits to the Devens Fire Department for its records;</i> ➤ <i>Send a copy of this LUCIP Addendum and all Exhibits to MassDevelopment to be kept in its files at 33 Andrews Parkway; and</i> ➤ <i>Place a copy of this LUCIP Addendum and all Exhibits in the central Army</i> | | | |

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| | | <p>repository and on the Former Fort Devens website at: https://www.nae.usace.army.mil/missions/projects-topics/former-fort-devens-environmental-cleanup/ ➤ Place a copy of this LUCIP Addendum and all Exhibits on www.devensec.com.</p> <p>Upon transfer of the property to MassDevelopment, Army shall ensure that Notice of Activity Use Limitations (NAULs) are recorded on the title to the properties and a copy of the NAUL, prepared, recorded and inserted on the deed is included in Exhibit E after recording in the Worcester County Registry of Deeds is complete. The Army, in consultation with EPA and MassDEP, will work with MassDevelopment to ensure that any amendment to the NAUL includes all ROD/ESD-required LUCs. Copies of subsequently executed NAULs should be inserted into Exhibit E as they are recorded/executed."</p> | | | |
| 23. | Page 14, Section 4.2 | <p>Please change the number and title of this section to "5.0 - REPORTING AND NOTIFICATION" and replace the current discussion (and subsequent subsections 4.2.1 and 4.2.2) with the following:</p> <p>"4.2.1 REPORTING - ANNUAL REVIEWS/INSPECTIONS - Annual reviews, physical inspections, and interviews with Army, MassDevelopment and current/future sublessees or future property owners shall be conducted to verify continued, effective implementation, enforcement, and compliance with the LUCs required per the ROD, ESD, and this LUCIP. Army shall complete the Annual LUC Inspection Checklist, included in Exhibit F, to annually evaluate/verify compliance with the foregoing. Army (or its designee) will provide results of the annual LUC inspection in a draft Annual LUC Inspection/Compliance Report for submittal to EPA, MassDEP, and MassDevelopment. At a minimum, the annual report will include the completed Annual LUC Inspection Checklist (Appendix B) and a narrative summary of work performed, discuss observations during physical site inspections,</p> | <p>The Army notes that several of the page-specific comments provided by EPA are not consistent with the format presented in the EPA-approved Work Plan and the EPA requested changes to the Draft LUCIPs for AOCs 44/52 and AOC 69W. The Army will incorporate the revisions in this comment to the extent that they are consistent with the format presented in the EPA-approved Work Plan and the AOCs 44/52 and AOC 69W LUCIPs.</p> | <p>Army's response states that it will incorporate the requested revisions "to the extent that they are consistent with the format presented in the EPA-approved Work Plan and the AOCs 44/52 and AOC 69W LUCIPs." EPA reserves the right to provide additional comment on (or disapprove) those revisions once it has had an opportunity to review them in the draft final document.</p> | <p>Comment noted.</p> |

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| | | <p><i>identify deviations from the LUCIP and/or this LUCIP Addendum and whether they were caused by an implementation issue, a change in site conditions or land use, or some other issue. The report should also recommend corrective actions necessary or already undertaken to correct the infraction(s). If any deficiency(ies) are found during the annual inspection, a written explanation will be prepared indicating the deficiency and what efforts or measures have or will be undertaken to correct the deficiency, and a schedule to correct the same. The correction and enforcement of such deficiencies shall follow the requirements under Section 6.0 Enforcement. If there is to be a delegation of performance of duties by the Army as permitted by Section 4.0 above, the Army, having ultimate responsibility for the remedy's integrity, will promptly notify EPA, MassDEP, and MassDevelopment of such delegation. Army shall provide copies of the Final LUC Inspection/Compliance Report to EPA, MassDEP, MassDevelopment, the Devens Enterprise Commission (DEC), and the Towns of Ayer, Harvard, and Shirley, Massachusetts.</i></p> <p><i>4.2.2 REPORTING - FIVE-YEAR REVIEWS - As part of the Comprehensive Five-Year review process conducted at Devens under Section 121 of CERCLA, as amended by SARA of 1986, a review/inspection of the continued short- and long-term effectiveness of the LUCs will be conducted by the Army, with the cooperation of MassDevelopment and any current and future property lessees and/or owners. Public meetings will be held by the Army coincident with these five-year reviews to help keep the public informed of site status, including its general condition and effectiveness of the remedial action.</i></p> | | | |
| 24. | Page 15, Section 5.0 | <p>Please replace the existing discussion with the following:</p> <p><i>"Should the LUCs reflected in this LUCIP cease to provide an appropriate level of protection, the Army shall propose modifications through an Explanation of Significant Differences (ESD) or a ROD amendment. If the Army determines that the LUCs</i></p> | <p>The Army notes that several of the page-specific comments provided by EPA are not consistent with the format presented in the EPA-approved Work Plan and the EPA requested changes to the Draft LUCIPs for AOCs 44/52 and AOC 69W. The Army will incorporate the revisions in this comment to the extent that they are consistent with the format presented in the EPA-</p> | <p>Army's response states that it will incorporate the requested revisions "to the extent that they are consistent with the format presented in the EPA-approved Work Plan and the AOCs 44/52 and AOC 69W LUCIPs." EPA reserves the right to provide additional comment on (or disapprove) those revisions once it has had an opportunity to review them in the draft final document.</p> | <p>Comment noted.</p> |

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| | | <p>are not being complied with, its actions may range from informal resolutions with the owner or violator, to the institution of judicial action. Any activity that is inconsistent with the LUC objectives or use restrictions, or any other action that may interfere with the effectiveness of the LUCs will be addressed by the Army as soon as practicable, but in no case will the process be initiated later than 10 days after the Army becomes aware of the breach. The Army will notify EPA and MassDEP as soon as practicable but no longer than ten days after discovery of any activity that is inconsistent with the LUC objectives or use restrictions, or any other action that may interfere with the effectiveness of the ICs. The Army will notify EPA and MassDEP regarding how the Army has addressed or will address the breach within 10 days of sending EPA and MassDEP notification of the breach. Should the Army become aware that a user of the Restricted Area has violated any LUC requirement where a local agency may have independent jurisdiction (local regulations and permits), the Army will also notify the agencies and MassDevelopment of such violations and work cooperatively with them to re-establish owner/user compliance with the LUC. Without limiting the authority of the EPA and MassDEP under applicable law, MassDEP shall have the authority to enforce the NAUL against the then current owner of the property(ies)."</p> | <p>approved Work Plan and the AOCs 44/52 and AOC 69W LUCIPs.</p> | | |
| 25. | Page 15, Section 6.0 | <p>Please replace the existing discussion with the following:</p> <p><i>"6.1 MODIFICATION - The Army shall not modify or terminate Land Use Controls, implementation actions, or modify restrictions regarding land use without approval by EPA and the MassDEP and the concurrence of MassDevelopment; provided that Army determines, in its sole discretion, that the requirement for such concurrence shall not place the Army in violation of its legal obligations to the EPA. The Army shall seek prior concurrence before any anticipated action that may disrupt the effectiveness of the LUCs or any action that may alter or negate the need for LUCs. This LUCIP Addendum may be amended only in accordance with Section VII of the</i></p> | <p>The document will be revised as follows:</p> <p><i>6.1 MODIFICATION - The Army shall not modify or terminate Land Use Controls, implementation actions, or modify restrictions regarding land use without approval by EPA and the MassDEP. The Army shall seek prior concurrence before any anticipated action that may disrupt the effectiveness of the LUCs or any action that may alter or negate the need for LUCs. This LUCIP may be amended only in accordance with Section VII of the Federal Facility Agreement (FFA). Except as provided by Section 6.3, no changes shall be made without the prior approval of EPA and MassDEP. In the latter case, Army shall take reasonable steps to consult with MassDevelopment to minimize the impacts of the changes to these parties.</i></p> | <p>Please explain why Army omitted portions of the text regarding concurrence with MassDevelopment (which is text excerpted directly from the April 2021, Final LUCIP Addendum for Former Oak and Maple Housing Areas and a Portion of the Former Grant Housing Areas ("Restricted Area").</p> | <p>The conditions, as presented in the Final LUCIP Addendum for Former Oak and Maple Housing Areas, do not apply to AOC 57 because AOC 57 has not been transferred to MassDevelopment (property is currently being leased to them). MassDevelopment, as a lessee, does not have a say in the disposition of the property until that property is transferred to them. The Army, as the owner, maintains the ownership responsibilities under this LUCIP.</p> |

| No. | Ref. Page / Para. | COMMENT (MassDEP submitted on September 14, 2022 and USEPA submitted on September 30, 2022) | RESPONSE (Submitted on November 17, 2022 as a Response Letter to MassDEP/USEPA Comments on the Draft) | BACKCHECK COMMENT (MassDEP submitted on December 6, 2022 and USEPA submitted on December 5, 2022) | BACKCHECK RESPONSE |
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| | | <p><i>Federal Facilities Agreement (FFA). Except as provided by Section 8.1, no changes shall be made without the prior approval of EPA and MassDEP, and the concurrence of MassDevelopment; provided that Army determines, in its sole discretion, that the requirement for such concurrence shall not place the Army in violation of its legal obligations to the EPA. In the latter case, Army shall take reasonable steps to consult with MassDevelopment to minimize the impacts of the changes to these parties.</i></p> <p><i>6.2 TERMINATION - The LUCs will be maintained until such time that soil and groundwater COCs, as identified in the ROD and ESD, are at levels to allow for unrestricted use and unlimited exposure (UU/UE) without the use of LUCs. If LUCs are no longer needed, as determined in an ESD or ROD Amendment, the Army will coordinate with the owner of the affected property(ies) and MassDEP to record releases of the relevant LUCs following applicable federal, state and local regulations and will also advise MassDevelopment of that action. At that time, the specific LUCs that are no longer needed, and the associated responsibilities will be discontinued."</i></p> | <p><i>6.2 TERMINATION - The LUCs will be maintained until such time that soil and groundwater COCs, as identified in the ROD and ESD, are at levels to allow for unrestricted use and unlimited exposure (UU/UE) without the use of LUCs. If LUCs are no longer needed, as determined in an ESD or ROD Amendment, the Army will coordinate with the owner of the affected property(ies) and MassDEP to record releases of the relevant LUCs following applicable federal, state and local regulations and will also advise MassDevelopment of that action. At that time, the specific LUCs that are no longer needed, and the associated responsibilities will be discontinued.</i></p> | | |
| 26. | New Section 7.0 | <p>Please insert a new Section 7.0 entitled "APPROVALS; NOTICES" and insert the following text:</p> <p><i>7.1 APPROVALS - Changes to the LUCIP can only be approved through the process set forth in Section 5.0. Where the approval of a party (hereafter, the "approval party") is required under this LUCIP for nonsubstantive changes that may be made without amendment of this LUCIP as provided herein, the Army (or its designee) shall give the approval party notice thereof, along with any information to be included in such notice pursuant to the terms of this LUCIP. If the approval party fails to respond to the request for approval within thirty (30) days after said request is made, the Army (or its designee) will send the approval party a second request. If the approval party fails to respond to such second request within ten (10) days after</i></p> | <p>The Army notes that several of the page-specific comments provided by EPA are not consistent with the format presented in the EPA-approved Work Plan and the EPA requested changes to the Draft LUCIPs for AOCs 44/52 and AOC 69W. The Army will incorporate the revisions in this comment to the extent that they are consistent with the format presented in the EPA-approved Work Plan and the AOCs 44/52 and AOC 69W LUCIPs.</p> | <p>Army's response states that it will incorporate the requested revisions "to the extent that they are consistent with the format presented in the EPA-approved Work Plan and the AOCs 44/52 and AOC 69W LUCIPs." EPA reserves the right to provide additional comment on (or disapprove) those revisions once it has had an opportunity to review them in the draft final document.</p> | <p>Comment noted.</p> |

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| | | <p><i>said second request is made, the approval party will be deemed to have approved such request.</i></p> <p><i>8.2 NOTICES - All notices, responses, requests, and approvals required or permitted under this LUCIP Addendum, between or among MassDevelopment (or its successor entity(ies)), EPA, MassDEP and/or the Army, shall be sent by postage pre-paid certified or registered mail (return receipt requested) or by recognized overnight courier (such as DHL, Federal Express, UPS), with delivery charges prepaid, to the following respective addresses unless all parties consent to the use of electronic mail:</i></p> <p><i>If to MassDevelopment: Massachusetts Development Finance Agency, 99 High Street, Boston, MA 02110, Attn: President & CEO</i></p> <p><i>with copies to:</i></p> <p><i>Massachusetts Development Finance Agency, 33 Andrews Parkway, Devens, Massachusetts 01434, Attn: EVP, Devens Operations and</i></p> <p><i>Massachusetts Development Finance Agency, 99 High Street, Boston, MA 02110, Attn: EVP Real Estate, and</i></p> <p><i>Massachusetts Development Finance Agency, 99 High Street, Boston, MA 02110, Attn: General Counsel.</i></p> <p><i>If to the Army: Department of the Army, Fort Devens, BRAC Division, [please insert address for Army POC], Attn: BRAC Environmental Coordinator</i></p> <p><i>If to EPA: U.S. Environmental Protection Agency, Region I, 5 Post Office Square, Federal Facilities Superfund Section, Suite 100 (HBT), Mail Code OSRR07-3, Boston, MA 02109-3912, Attn: Remedial Project Manager</i></p> <p><i>If to MassDEP: Massachusetts Department of Environmental Protection, Bureau of Waste Site Cleanup, One Winter Street, Boston, MA 02108, Attn: Superfund Federal Facilities, Section Chief</i></p> | | | |



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| | | <i>A party may change its address for notice by notice to the other parties in accordance with this Section. Notices shall be deemed given when delivered (or, if delivery is refused, when so refused).</i> | | | |
| | | END OF COMMENTS | | | |



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| Project Name: | Former Fort Devens Army Installation | Date: | September 25, 2023 |
| Location: | Devens, Massachusetts | Reviewer: | Michael Daly (USEPA) |
| Document Name: | Revised Draft Final Land Use Control Implementation Plan, Area of Contamination 57, June 2023 | | Comments received: August 25, 2023 |
| Prepared By: | USACE and SERES-Arcadis 8(a) JV | | |

| No. | Ref. Page / Para. | COMMENT | RESPONSE |
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| | | Michael Daly (USEPA) | |
| | | Page-Specific Comments | |
| 1. | Section 3.2— Elements Specific to Instrument Category, Paragraphs 1 and 2 | The 1st paragraph refers to environmental use restrictive deed covenants for the real property making up AOC 57 Area 2 and Area 3 while the 2nd paragraph of this section refers to a 1996 Army lease for this same property to MassDevelopment (LIFOC - Appendix B). The AOC 57 site is still retained by the Army thus It should be clarified in the AOC 57 LUCIP that the LUC objectives required by the AOC 57 remedial decision documents and detailed in this LUCIP differ from those restrictions that were incorporated into the LIFOC. The LUCIP should also briefly discuss the adequacy of the existing LIFOC provisions in meeting AOC 57 remedy LUC objectives. LIFOC Article 16.05 restricts the lessee from undertaking any surface and subsurface alterations that may adversely affect the clean up being undertaken by the Army, unless approved by Army, MassDEP, and EPA, and prohibits extraction of ground water for any purpose. | A passage has been added after the 4 th sentence in the 2 nd paragraph of Section 3.2 that states: “These LUC restrictions include a moratorium on subsurface excavation, drilling, digging or other disturbance of the surface of the ground, or construction, alterations, additions, modifications, improvements or installations that may adversely affect the clean-up of leased premises by the lessee without approval of the Army, USEPA, and MassDEP. The LIFOC also stipulates that no groundwater will be extracted for any purpose. These restrictions are more stringent than the RAOs for Areas 2 and 3 as they do not designate separate objectives for commercial or residential use as presented in the ROD.” |
| 2. | Table 2 – Summary of LUCs, ICs, & Other Post-ROD Restrictions | Please see Comment #1 above. It is recommended that the 1996 lease agreement between the Army and MassDevelopment be listed as an implemented IC (6th column). Future planned IC instruments for this property that should be identified in this column would also include the incorporation of restrictive covenants within a quitclaim deed(s) transferring this land to MassDevelopment as well as recordation of a Notice of Activity and Use Limitation (NAUL). Please consider revising the table to include these planned IC instruments. | Table 2 has been revised to include the implemented ICs and planned ICs, and identify them accordingly. |



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| 3. | Section 6 – IC Modification and Termination Elements | It should be identified in this section of the LUCIP that any modification or termination of LUCs required by the current remedy decision documents for AOC 57 will also require a modification to the AOC 57 remedy to document such changes. Please amend the text as necessary. | A sentence has been added at the end of Section 6.1 that states, “Any modification or termination of LUCs required by the current remedy decision documents for AOC 57 (i.e., ROD or ESD) will also require a modification to the AOC 57 remedy to document such changes.” |
| | | END OF COMMENTS | |