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FINAL

FIRST FIVE-YEAR REVIEW REPORT
FOR
DEVENS RESERVE FORCES TRAINING AREA
DEVENS, MASSACHUSETTS

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DELIVERY ORDER 0009

Prepared for:

U.S. Army Corps of Engineers
New England District
Concord, Massachusetts

Prepared by:

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Project No. 45227
Task No. 0993804

SEPTEMBER 2000

United States Environmental Protection Agency
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September 29, 2000

James C. Chambers
BRAC Environmental Coordinator
Department of the Army
Devens Reserve Forces Training Area
30 Quebec Street, Box 100
Devens, MA 01432-4429

Re: *Five-Year Review Report - Devens Reserve Forces Training Area*
Devens, Massachusetts

Dear Mr. Chambers:

The U.S. Environmental Protection Agency (EPA) has completed its review of the above referenced document and concurs with the findings that all remedies as implemented, or in the process of being implemented, are protective of human health and the environment. The Army's submittal is consistent with EPA's *Five Year Review Guidance, Office of Solid Waste and Emergency Response (OSWER) Directive 9355.7-02* and *Supplemental Five-Year Review Guidance, (OSWER) Directive 9355-02A* and satisfactorily addresses all operable units and remedial actions for which there is a CERCLA decision document (e.g. Record of Decision (ROD), Action Memorandum, etc.).

As indicated in EPA's August 22, 2000 correspondence, this first five-year review report was submitted in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) § 121(c) and the National Contingency Plan (NCP) which requires that a review be conducted no less often than every five years after the initiation of remedial action at a site where hazardous substances, pollutants, or contaminants will remain above levels that allow for unlimited use and unrestricted exposure, to determine whether the remedy is protective of human health and the environment. Specifically, this five year review was triggered by the initiation of soil remediation activities at AOCs 42 and 52 - Barnum Road Maintenance Yards on August 11, 1995. Therefore, the next statutory required five-year review must be finalized prior to August 11, 2005.

Once again, thank you for the opportunity to review the first five year review report for the Devens Reserve Forces Training Area. EPA looks forward to working with the Army and the Massachusetts Department of Environmental Protection (MADEP) to complete ongoing investigatory and remedy selection activities at Shepley's Hill Landfill, AOC 50, and AOC 57.

Sincerely,

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

cc: John Regan, MADEP
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EXECUTIVE SUMMARY

Harding Lawson Associates (HLA) has performed the first five-year review of remedial actions for CERCLA sites at Devens Reserve Forces Training Area (RFTA). This review, completed in accordance with relevant U.S. Environmental Protection Agency (USEPA) guidance (USEPA, 1999), was performed from May 2000 through September 2000. The trigger date for performance of this five-year review was the initiation of soil remediation activities of Areas of Contamination (AOCs) 44 and 52 on August 11, 1995.

The purpose of five-year reviews is to determine whether the remedy at a site is protective of human health and the environment. In addition, five-year review reports identify deficiencies, if any, found during the review, and identify recommendations to address them.

This review is required by statute and policy, and is being implemented consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan.

Comprehensive statutory reviews were performed for all sites where a CERCLA Record of Decision (ROD) has been executed. Statutory five-year reviews were performed for the following sites:

- Barnum Road Maintenance Yards (AOCs 44 and 52)
- Shepley's Hill Landfill Operable Unit (AOCs 4, 5, and 18)
- AOC 63AX
- AOCs 43G&J
- South Post Impact Area (AOCs 25, 26, 27, and 41-groundwater)
- AOCs 32 and 43
- AOC 69W
- AOCs 9, 11, 40, and 41-solid waste, and SAs 6, 12, and 13

In addition, reviews were also performed as a matter of policy for all sites for which there is a CERCLA decision document (e.g., Action Memorandum). Policy reviews were performed for the following sites:

- SA 34
- SA 35
- AREE 63 BD
- AREE 63 BE
- AREE 63 BQ
- AREE 61 Z
- AREE 63 BH
- SA 71
- AREE 63 AM
- AOC 50
- AOC 57

Results of policy reviews, in addition to summaries of the statutory reviews, are provided in Appendix H. A brief description of each site where a ROD has been executed is provided below along with a summary of findings of the statutory five-year reviews.

Barnum Road Maintenance Yards (AOCs 44 and 52). The Barnum Road Maintenance Yards are located in the northeast corner of the former Main Post, near Barnum Gate. This site consists of former vehicle maintenance yards. Contamination at the site was primarily attributed to petroleum and oil releases associated with maintenance activity. The ROD describing the selected cleanup remedy was signed in March 1995. Remedial action consisting of soil excavation, asphalt-batching of contaminated soil, repaving, and installation of a stormwater collection system was completed in April of 1996.

There were no areas of noncompliance or deficiencies noted during the review that would make the remedial actions at AOCs 44 and 52 noncompliant with the ROD. The remedy at AOCs 44 and 52 is protective of human health and the environment.

Shepley's Hill Landfill Operable Unit (AOCs 4, 5, and 18). Shepley's Hill Landfill encompasses approximately 84 acres in the northeast corner of the former Main Post at Fort Devens. Landfill operations at Shepley's Hill Landfill began at least as early as 1917, and stopped as of July 1, 1992. Landfill capping was completed in May 1993. Remedial Investigation (RI) and RI Addendum investigations performed between 1991 and 1993 (E&E, 1995a; ABB-ES, 1995b) identified potential human exposure to arsenic in groundwater as the primary risk at the site. A Feasibility Study (FS) was performed in 1995 to evaluate alternatives to reduce potential exposure risks, and in September 1995, the ROD was finalized (ABB-ES, 1995a; ABB-ES, 1995b). The selected remedy consists of landfill closure, landfill maintenance, long-term groundwater and landfill gas monitoring, institutional controls, and public information meetings. The ROD stipulates that if an evaluation of this remedy shows that it is no longer protective, groundwater extraction will be implemented to help achieve protectiveness.

There were no areas of noncompliance or deficiencies noted during the review that would make the remedial action at Shepley's Hill Landfill Operable Unit noncompliant with the ROD. Needed maintenance is identified during annual inspections and documented in the annual reports. The remedy at Shepley's Hill Landfill Operable Unit is currently protective of human health and the environment. There are no known users of groundwater along the modeled downgradient path of groundwater leaving landfill area, although the presence of undocumented wells is possible. Further, the remedy directs groundwater flow away from Plow Shop Pond.

Review of available data suggests that the remedy may have difficulty meeting 2003 interim groundwater cleanup goals. Because of this, the Army should re-evaluate the contingency remedy of groundwater extraction with subsequent discharge to the Town of Ayer publicly owned treatment works (POTW). Although groundwater extraction has the potential to contain groundwater contaminants, it will not prevent the release of arsenic from aquifer materials and would need to be performed for an indeterminate length of time. Also, it appears that the POTW would no longer be suitable for receipt of extracted groundwater. These studies should be

completed prior to the 2003 assessment of risk at Shepley's Hill Landfill.

It is recommended that the Army continue with its programs of annual landfill inspections and landfill gas sampling, and semi-annual groundwater sampling with annual reporting to USEPA and MADEP. Landfill maintenance should continue as recommended in the Long Term Monitoring and Maintenance Plan and in the annual reports.

The list of parameters monitored as part of the long-term sampling program should be reviewed with the intent of eliminating parameters that have no significant site history and that do not contribute to site risks or to the understanding of groundwater chemistry. These include cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, BOD_5, and cyanide. Analysis of total organic carbon in lieu of BOD_5, would provide insight on the concentration of organic material in groundwater which is not currently available.

Samples from groundwater monitoring wells (i.e., SHM-99-31A, SHM-99-31B, SHM-99-31C, and SHM-99-32X) installed along Molumco Road north of Shepley's Hill Landfill should continue to be analyzed for arsenic, iron, manganese, and the general chemistry and field parameters monitored as part of the long-term sampling for the landfill. Samples from these monitoring wells will be used in the continuing assessment of migration of arsenic north of the landfill.

Although landfill-gas readings are within the parameters of a mature landfill and landfill-gas vents appear to be working properly, because of high landfill-gas measurements during routine sampling, the Army should assess whether subsurface migration of landfill gas is occurring.

AOC 63AX. AOC 63AX is located north of and near the western end of Patton Road on the southern portion of what was formerly the Main Post at Fort Devens. AOC 63AX formerly consisted of a large paved and fenced area; Building 2517, which at the time of the RI investigation was used as a warehouse by the U.S. Bureau of Prisons; and Building 2514, which was unoccupied. Contamination at AOC 63AX is attributed to a previously removed 1,000-gallon waste oil underground storage tank (UST) adjacent to Building 2517, and a previously removed 5,000-gallon gasoline UST adjacent to Building 2514. Several investigations, including a CERCLA directed RI, were performed at the site between 1992 and 1995. The results of the RI indicated that AOC 63AX posed no unacceptable risks to human health or the environment. Further, previous removal actions have eliminated USTs and contaminated soils that would otherwise be a continuing source of contamination. The ROD was signed in October of 1997 documenting No Further Action as the selected remedy.

There were no deficiencies or areas of non-compliance noted during this review that would make the selected remedy non-compliant with the ROD, or sufficient to warrant a finding of not protective. The selected remedy at AOC 63AX (no further action) is protective, and is expected to remain protective of human health and the environment. There are no recommendations as a result of this review.

AOCs 43G and 43J. Both AOCs 43G and 43J are historic gas stations located within the Devens RFTA. AOC 43G is located on Queenstown Road in the central portion of the former Main Post. AOC 43J is located on Patton Road at the southern edge of the former Main Post.

Contamination at both sites is attributed to releases from gasoline and waste USTs. Site investigations (SIs) and Supplemental SIs were performed between 1992 and 1994 at both sites. In June of 1996 CERCLA based RI/FS investigations were completed at both AOCs to address contaminated groundwater. A ROD was signed in October of 1996 documenting intrinsic remediation as the final selected cleanup remedy at both AOCs 43G and 43J. Specific components of the selected remedy for both AOCs include: intrinsic remediation assessment data collection and groundwater modeling, installation of additional monitoring wells, long-term groundwater monitoring, and annual data reports.

There are no areas of non-compliance or deficiencies that have been noted during the review that would make the remedial actions at AOCs 43G and 43J non-compliant with the ROD, or sufficient to warrant a finding of not protective. The remedies at AOCs 43G and 43J are expected to be protective of human health and the environment upon completion, and immediate threats are addressed. The following recommendation is made as a result of the findings of this review: Continue current remedial action activity which consists of implementing the remaining three components specified in the ROD: a long term groundwater monitoring program, annual reporting, and five-year site reviews (Component Nos. 4, 5, and 6, respectively). These components enable continued assessment for compliance with performance standards and reporting of the remedial progress. Follow performance standards established in the intrinsic remediation assessment and continue to assess for contaminant migration and remedial duration.

Long-term monitoring should continue as specified in the AOCs 43G and 43J Long-Term Monitoring Plans (SWETS, 1999a, 1999b) with the exception of the need to analyze for iron (AOCs 43G and 43J) and nickel (AOC 43J) as COCs. (Refer to Subsection 5.7). No reductions in sampled locations or in frequency are recommended at this time. The Long-term Monitoring is currently performed on an annual basis (November/December time period each year). The Army is responsible for implementation.

South Post Impact Area (AOCs 25, 26, 27, and 41-groundwater). The South Post Impact Area (SPIA) covers approximately 1,500 acres and is located within the 4,800-acre South Post section of the former Fort Devens. The SPIA is an active weapons and ordnance discharge area used by the Army, the Massachusetts National Guard, and law enforcement agencies for training purposes. Old Turnpike Road, Firebreak Road, the southern portion of Harvard Road, Trainfire Road, and Dixie Road roughly bound the area. The SPIA includes AOCs 25, 26, 27, and 41 as well as several Study Areas (SAs), and a number of firing ranges along Dixie Road and Trainfire Road that are not designated as AOCs.

The portion of the SPIA covered by the ROD encompasses the 964 acres north and west of New Cranberry Pond. This area is referred to as the SPIA monitored area. CERCLA directed RIs have been conducted for the SPIA and the associated AOCs. A ROD was signed in July of 1996 documenting No Action as the final selected remedy for the SPIA monitored area groundwater, surface water, soil, and sediment, and AOC 41 groundwater. The following components were included as part of the selected No Action Remedy: groundwater monitoring for potential contaminant migration out of the SPIA monitored area, groundwater monitoring at the individual

AOCs, sampling of monitoring well D-1, developing a Long-term Groundwater Monitoring Plan and Integrated Natural Resources Management Plan, restricting development of new drinking water sources within the SPIA monitored area, and submitting annual reports to document the results of monitoring.

There are no areas of non-compliance or deficiencies noted during this review that would make the selected remedy at the SPIA monitored area and the associated AOCs non-compliant with the ROD, or sufficient to warrant a finding of not protective. The selected remedy at the SPIA and associated AOCs is expected to be protective of human health and the environment. It is the recommendation of this review that long-term groundwater monitoring be continued as outlined in the ROD and Long-term Monitoring Plan. No changes are recommended at this time.

AOCs 32 and 43A. AOC 32 (Defense Reutilization and Marketing Office [DRMO Yard]) was used as a materials storage facility. Operational records indicate that the facility was active from at least 1964 to 1995. A former UST site (UST #13) has also been incorporated into AOC 32. This UST was used to store waste oil and was located just northeast of the DRMO Office. At the time of base closure in 1996, AOC 43A was being used as a petroleum, oils and lubricants storage area. Located across Market Street from AOC 32, this area served as the central distribution point for all gasoline and fuel at the former Fort Devens from the 1940s to base closure. AOC 43A consists of a fenced lot within a developed industrial area. A ROD was signed in February of 1998 documenting the selected remedies for AOCs 32 and 43A. Key components of the remedy at AOC 32 include excavation of contaminated soils and annual groundwater monitoring. The groundwater remedy for AOCs 32 and 43A includes establishing institutional controls, installing additional monitoring wells, collecting data to support monitored natural attenuation, groundwater modeling, performing annual long-term groundwater monitoring, and providing annual reports to regulators.

There are no areas of non-compliance or deficiencies that have been noted during this review that would make the remedial actions at AOCs 32 and 43A non-compliant with the ROD, or sufficient to warrant a finding of not protective. The remedies at AOC 32 and 43A are expected to be protective of human health and the environment upon completion; immediate threats have been addressed. There are no recommendations as a result of this review.

AOC 69W. AOC 69W comprises the former Fort Devens Elementary School (Building 215) and the associated parking lot and lawn extending approximately 300 feet northwest to Willow Brook. Contamination at AOC 69W is attributed to No. 2 heating oil which leaked from underground piping in two separate incidences; once in 1972 and again in 1978. It is estimated that approximately 7,000 to 8,000 gallons of fuel oil were released to soil from each release.

Based on the nature and distribution of contaminants, a Removal Action was undertaken in the winter of 1997 and 1998 to remove contaminated soil associated with the 1972 release. Soil was removed near the school and the 250-gallon UST. Confirmatory subsurface soil sample results from the Removal Action showed that concentrations of fuel-related contaminants still exceed Massachusetts Contingency Plan (MCP) S-1/GW-1 standards for extractable petroleum hydrocarbons (EPH) in subsurface soils immediately adjacent to the school building, but are generally low in downgradient areas (only a few concentrations in soil slightly exceeded MCP S-1/GW-1 standards). The Charter School opened in September 2000. In 1999, a Limited Action

ROD was signed. The Limited Action consists of long-term groundwater monitoring and institutional controls to limit potential exposure to contaminated soils and groundwater under both existing and future site conditions.

There are no areas of non-compliance or deficiencies that have been noted during this review that would make the remedial action at AOC 69W non-compliant with the ROD, or sufficient to warrant a finding of not protective. The selected remedy at AOC 69W is, and is expected to remain, protective of human health and the environment. It is the recommendation of this review that iron be removed as a contaminant of concern and as a sampled analyte in the Long-term monitoring Plan for AOC 69W. This recommendation is based on the USEPA Region I no longer endorsing use of the iron reference dose (RfD).

AOCs 9, 11, 40, 41 (Solid Waste), SAs 6, 12, and 13. These seven sites are all small former landfills and debris disposal areas at the former Fort Devens. SAs 6 and 12, and AOC 41 are located on the South Post. AOC 9 is located on the former North Post. AOCs 11 and 40, and SA 13 are located on the former Main Post.

SIs were conducted at SAs 12 and 13, and AOCs 9, 40, and 41 to verify the presence or absence of environmental contamination and to determine whether further investigation or remediation was warranted. Supplemental SI activities were conducted at SAs 12 and 13, and AOC 41 to address data gaps identified in the SI reports. RIs were completed at AOCs 11, 40, and 41 to further assess contaminant distribution and site risks. A Landfill Consolidation FS (ABB-ES, 1995a) was performed to evaluate options to consolidate debris from the seven landfills into a single waste disposal site. In response to comments, a Landfill Remediation FS (ABB-ES, 1997) was performed to evaluate nine debris management alternatives, including various combinations of no further action, capping in-place, and debris removal and consolidation. A ROD was issued in July 1999 which presented the selected remedial action of no further action for SA 6; surface debris and hot spot removal at SA 12, and AOC 41; debris removal and consolidation or offsite transport at AOC 9, 11, 40, and SA 13; and wetlands restoration at AOCs 9, 11, and 40. The decision to proceed with on-site consolidation was issued June 30, 2000, and a temporary (120 day) access agreement to begin construction was signed on September 15, 2000.

Because planned remediation for the debris disposal areas has not yet been implemented, observations regarding deficiency cannot be made. At present, there are no deficiencies that would prevent planned response actions from being protective of human health and the environment, nor are any expected in the future. Because planned remediation has not yet been implemented, there are no recommendations for improvements.

1.0 INTRODUCTION

Harding Lawson Associates (HLA) performed the first five-year review of remedial actions for CERCLA sites at Devens Reserve Forces Training Area (RFTA) in support of Delivery Order 0009 of Contract DACA31-94-D-0061 under the direction of the U.S. Army Corps of Engineers (USACE). This review, completed in accordance with relevant U.S. Environmental Protection Agency (USEPA) guidance (USEPA, 1999), was performed from May 2000 through September 2000. The trigger date for performance of this five-year review was the initiation of soil remediation activities of Areas of Contamination (AOCs) 44 and 52 on August 11, 1995.

1.1 PURPOSE AND SCOPE

The purpose of five-year reviews is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in five-year review reports. In addition, five-year review reports identify deficiencies, if any found during the review, and identify recommendations to address them.

This review is required by statute and policy, and is being implemented consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

1.2 BACKGROUND

In 1991, the U.S. Department of the Army and the USEPA signed a Federal Facility Agreement (FFA) under Section 120 of CERCLA for environmental investigations and remedial actions at Fort Devens. The agreement required that site investigations (SIs) be undertaken at each study area (SA) to verify whether a release or potential release of contaminants existed, to determine the nature of the associated risk to human health and the environment, and to determine whether further investigations or response actions would be required.

In 1985, Fort Devens applied for a Resource Conservation and Recovery Act (RCRA) Part B Permit for its hazardous waste storage facility. The submission included a list of Solid Waste Management Units that showed potential for the release of hazardous substances to the environment. Under the FFA between the Army and the USEPA (USEPA and Army, 1991), these potential areas of contamination are referred to as SAs.

Argonne National Laboratory's Environmental Assessment and Information Sciences Division completed an environmental assessment in November 1988, as part of the environmental restoration of Fort Devens. The objective of the assessment was to characterize on-site contamination and provide recommendations for potential response actions. Fort Devens was placed on the National Priorities List (NPL) effective December 1989.

The results of assessment are reported in a document entitled the Master Environmental Plan (MEP) for Fort Devens, Massachusetts (Biang et al., 1992). The MEP summarizes preliminary assessment activities and provides an historical summary of the installation, discusses the geologic and hydrologic setting, discusses the nature and extent of contamination, and proposes response actions.

In 1991, the former Fort Devens was identified for closure by July 1997 under Public Law 101-510, the Defense Base Closure and Realignment (BRAC) Act of 1990. This resulted in accelerated schedules for the environmental investigations at Fort Devens. Since 1991, the U.S. Army Environmental Center (USAEC, formerly the U.S. Army Toxic and Hazardous Materials Agency) and the USACE have tasked HLA [formerly ABB Environmental Services, Inc. (ABB-ES)] to perform SIs, remedial investigations (RIs), feasibility studies (FSs), and other CERCLA-related activities for the sites addressed in this report. To a significant extent, the five-year review draws upon information collected during the previous activities performed by HLA and by other Army contractors. Previous reports generated by prior activities, containing information used during the five-year review, are referenced in this report.

The remainder of this report describes the statutory five-year reviews performed for the CERCLA sites at Devens RFTA where Records of Decisions (RODs) have been executed. Some of the sites comprise more than one SA or area of contamination (AOC) (See Figure 1-1). The sites consist of the following:

- Barnum Road Maintenance Yards (AOCs 44 and 52)
- Shepley's Hill Landfill Operable Unit (AOCs 4, 5, and 18)
- AOC 63AX
- AOCs 43G&J
- South Post Impact Area (AOCs 25, 26, 27, and 41-groundwater)
- AOCs 32 and 43
- AOC 69W
- AOCs 9, 11, 40, and 41-solid waste, and SAs 6, 12, and 13

Because some RODs have been executed relatively recently, some site remedies have not yet been implemented.

Reviews were also performed as a matter of policy for all sites for which there is a CERCLA decision document (e.g. Action Memorandum). Policy reviews were performed for the following sites:

- SA 34
- SA 35
- AREE 63 BD
- AREE 63 BE
- AREE 63 BQ
- AREE 61 Z
- AREE 63 BH

- SA 71
- AREE 63 AM
- AOC 50
- AOC 57

Results of policy reviews, in addition to summaries of the statutory reviews, are provided in Appendix H.

It should be noted that investigations and remedial actions are ongoing for the landfills (AOCs 9, 11, 40, 41, Sas 5, 12, and 13), AOC 50 and AOC 57. Schedules for the completion of work at these sites are provided in Appendix I.