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RECORD OF DECISION

GRANT HOUSING AREA AND 37-mm IMPACT AREA
FORMER FORT DEVENS ARMY INSTALLATION
DEVENS, MASSACHUSETTS

Contract No.: W91236-05-D-003
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LIST OF ACRONYMS

ACEC	Areas of Critical Environmental Concern
AOC	Areas of Concern
ARAR	Applicable and/or Relevant and Appropriate Requirements
AREE	Areas Requiring Environmental Evaluation
Army	U.S. Department of the Army
AT	anti-tank
bgs	below ground surface
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	Constituents of Concern
CSM	Conceptual Site Model
DEC	Devens Enterprise Commission
Devens	former Fort Devens Army Installation
DMM	Discarded Military Munitions
EPA	U.S. Environmental Protection Agency
FFS	*Final Focused Feasibility Study*
ft	feet/foot
GERE	Grant of Environmental Restrictions and Easements
HA	Housing Area
HE	High Explosive
LUC	Land Use Controls
LUCIP	Land Use Control Implementation Plan
MassDEP	Massachusetts Department of Environmental Protection
MassDevelopment	Massachusetts Development and Finance Agency
MC	Munitions Constituents
MCP	Massachusetts Contingency Plan
MEC	Munitions and Explosives of Concern
MEC HA	Munitions and Explosives of Concern Hazard Assessment
mm	millimeter
MRS	Munition Response Sites
NCP	National Contingency Plan
NHESP	National Heritage and Endangered Species Program
NPL	National Priorities List
OB/OD	open burning/open detonation area
OER	Ordnance & Explosive Remediation, Inc.

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LIST OF ACRONYMS
(Concluded)

PASI	Preliminary Assessment Site Inspection
PCB	polychlorinated biphenyl
RAO	Response Action Outcome
RFTA	Reserve Forces Training Area
ROD	Record of Decision
SA	Study Areas
SARA	Superfund Amendments and Reauthorization Act
SSI	Supplemental Site Investigation`
TBC	To Be Considered
TMV	toxicity, mobility, and volume
U.S.	United States
USACE	U.S. Army Corps of Engineers
UXO	unexploded ordnance
WESTON®	Weston Solutions, Inc.
WWI	World War I

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SECTION 1

DECLARATION

1. DECLARATION

1.1 SITE NAME AND LOCATION

The site which is the subject of this Record of Decision (ROD) is comprised of the Grant Housing Area (Grant HA) and the 37-millimeter (mm) Impact Area. Both the Grant HA and Impact Area are located at the Former Fort Devens Army Installation (Devens). While portions of both the Grant HA and the Impact Area have been the subject(s) of removal actions under both the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Massachusetts Contingency Plan (MCP), this ROD is intended to address only those hazards and remedial actions associated with the presence of Munitions and Explosives of Concern (MEC)[1] as Unexploded Ordnance (UXO). Discarded Military Munitions (DMM) and munitions constituents (MC) were not identified as risk issues at the site.

Devens (CERCLIS I.D. Number MA7210025154) is located in the towns of Ayer and Shirley (Middlesex County) and Harvard and Lancaster (Worcester County), Massachusetts, approximately 35 miles west of Boston, Massachusetts (Figure 1).

1.2 STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedy for remedial action at the Grant HA and Impact Area, at Devens, which was chosen in accordance with CERCLA, as amended by Superfund Amendments and Reauthorization Act (SARA), and, to the extent practical, the National Contingency Plan (NCP). This decision is based on the Administrative Record file for this site. The Commonwealth of Massachusetts concurs with the selected remedy. A copy of the concurrence letter is included in Appendix D.

[1] December 18th, 2003 letter from Principal Assistant Deputy Under Secretary of Defense to Assistant Secretary's of the Army, Navy, and Air Force. Subject: Definitions Related to Munitions Response Actions. Munitions and Explosives of Concern (MEC) as defined by the Office of the Under Secretary of Defense are military munitions that may pose unique explosive safety risks, including: (a) Unexploded Ordnance (UXO), (b) Discarded military munitions (DMM); or (c) Munitions constituents (e.g., TNT, RDX) present in high enough concentrations to pose an explosive hazard.

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1.3 ASSESSMENT OF SITE

The remedial actions selected in this ROD are necessary to protect public health and welfare or the environment from the hazards associated with the potential existence of UXO in these areas. Historically, these areas were used for military training activities, including as a 37-mm anti-tank range, and past investigation has located MEC as UXO. For the Grant HA and Impact Area, 37-mm UXO is the primary military munition of concern. Munitions Constituents, as materials which originate from UXO, have not been found at the sites and are not expected to be a risk to the future site reuse.

Removal actions have occurred at each area to remove remnant UXO; however, though the methods used to investigate the presence of UXO in each area used state-of-the-art technology, the technology does not guarantee 100% identification of remnant UXO. Therefore, there remains a potential for UXO to exist at these areas. Even the existence of one UXO could present a physical (detonation) hazard.

The remaining potential explosive safety hazards were evaluated using the Draft Munitions and Explosives of Concern Hazard Assessment (MEC HA) Methodology (January 2008), as described in Subsection 2.6 of this ROD. However, language changes to that document[2] have been incorporated into this ROD when describing Hazard Levels. The remaining hazard warrants a remedial action that is addressed by the selected remedy for each area.

1.4 DESCRIPTION OF SELECTED REMEDY

The selected remedies neither impact nor are impacted by removal actions at other Operable Units, Study Areas (SA), and/or Areas of Concern (AOC) included within Devens.

It has been determined that the potential presence of UXO in the subsurface soil at the Grant HA and at the Impact Area does not represent a Principal Threat, as defined in *A Guide to Principal Threat and Low Level Threat Wastes* (OSWER 9380.3-06FS, November 1991), and as

[2] The Interim Munitions and Explosives of Concern Hazard Assessment (MEC HA) Methodology (October 2008) can be found at the following link www.epa.gov/fedfac/documents/mec_guidance_document.htm.

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summarized in Highlight 6-26 of *A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents* (EPA 540-R-98-031, July 1999). As such, the preference for reduction of toxicity, mobility, and volume (TMV) of the UXO was not considered to be paramount above other evaluation criteria. Therefore, based on the information presented in the CERCLA nine-criteria screening process, Land Use Controls (LUC) [alternatives GR-2 –LUCs (Grant HA) and IA-2 - LUCs (Impact Area)] are the selected remedies that are intended to be protective of public health and welfare or the environment which comply with Applicable and/or Relevant and Appropriate Requirements (ARAR), and are cost-effective. The alternatives are described in Subsection 1.4.1 and 1.4.2, and the selection process is documented in the *Final Focused Feasibility Study, Grant Housing Area and 37MM Impact Area, Former Fort Devens Army Installation, Devens, Massachusetts*, herein referred to as *FFS* [Weston Solutions, Inc. (WESTON®), April 2008a]. In addition, the selection process is summarized in the *Proposed Plan, Grant Housing Area and 37MM Impact Area, Former Fort Devens Army installation, Devens, Massachusetts*, herein referred to as *Proposed Plan* (WESTON, September 2008b).

1.4.1 Grant Housing Area: Alternative GR-2 - Land Use Controls

Land Use Controls is the selected remedy for the Grant HA. Land Use Controls in regard to real property are broadly interpreted to mean:

> *"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)"[3]

The "LUCs" for a property will provide a blue print for how the property should be used in order to maintain the level of protectiveness intended by the remedial alternative.

Land Use Controls at the Grant HA are addressed through affirmative measures including:

- Affirmative measures to include public education via ongoing periodic distribution of educational materials and development of a web-based visual and audio media. Education and outreach materials will be distributed to property owners, residents, as well as any construction and/or utility contractors conducting ground intrusive activities on the property. The intent is to provide education to current residents, including tenants and owners, potential residents, the public, and construction/utility contractors of the potential presence of UXO, how to identify UXO, and what actions to take if suspect UXO is encountered.
- Deed Notice: The Massachusetts Development and Finance Agency (MassDevelopment) will insert a Deed Notice into any deeds in which MassDevelopment conveys property located in the Grant HA. Then all subsequent deeds conveying property (no matter who conveys) will be required to convey in full the Deed Notice. The notice will provide a source of additional information on UXO investigations and removal actions conducted at the Grant HA, the conclusion of the ROD that the property with the LUCs is suitable for the proposed future use, that there is no evidence of additional UXO present at the site, but that the possibility does remain that UXO could be discovered in the future.

The intent is to educate current residents, including tenants and owners, potential residents, the public, and construction contractors to the potential presence of UXO, locations where UXO are more likely to be encountered, how to identify UXO, how to minimize the potential of encountering UXO, and what actions to take if suspect UXO is encountered.

The LUCs would be implemented through a Land Use Control Implementation Plan (LUCIP). The LUCIP formalizes the roles and responsibilities of the United States (U.S.) Department of the Army (Army), the U.S. Environmental Protection Agency (EPA), the Massachusetts Department of Environmental Protection (MassDEP), and MassDevelopment in the long-term

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[3] Memorandum - Land Use Control Policy, April 13, 1998, SUBJECT: Assuring Land Use Controls at Federal Facilities FROM: Jon D. Johnston, Chief, Federal Facilities Branch *www.epa.gov/region4/waste/fedfac/landusec.htm*

administration and management of the alternative. Annual reviews and inspections will be conducted to confirm the overall effectiveness of the established LUCs. In addition, a review/inspection of the effectiveness of the LUCs will also be conducted as part of the Comprehensive Five-Year review process conducted at Devens which is required under Section 121 of CERCLA, as amended by SARA of 1986.

The estimated costs include initial capital costs to develop the educational materials, 30-year annual costs, and a 3% discount rate (rounded to nearest thousand).

Estimated Capital Cost: $24,000
Estimated Present-Value Annual Cost: $50,000
Estimated Total Present-Value Cost: $74,000

Land Use Controls will be maintained until such time that the hazard associated with potential remnant UXO in the soil is at levels to allow for unrestricted use and exposure.

1.4.2 37-mm Impact Area: Alternative IA-2 - Land Use Controls

For the Impact Area, LUCs are addressed through institutional controls, access restrictions, affirmative measures, and prohibitive directives:

- Institutional controls are to be implemented through a Grant of Environmental Restrictions and Easements (GERE). The GERE is modeled after the GERE contained in 310 CMR 40.000 et seq. MassDEP has authority to accept a modified Grant pursuant to M.G.L. c. 21E, §6.
- Access controls to include the use of signage and either fencing and/or vegetative barrier to restrict public access to the area.
- Affirmative measures to include public education via ongoing periodic distribution of educational materials, development of a web-based visual and audio media, and signage at the site. Education and outreach materials will be distributed to affected public and construction and/or utility contractors. The intent is to provide ongoing education to the public and construction contractors of the potential presence of UXO, how to identify UXO, and what actions to take if suspect UXO is encountered.
- Prohibitive directives to include restrictions on all ground intrusive activities.

Land Use Controls would be implemented via a LUCIP. Inspection of the site to evaluate access controls, monitor for the presence of surficial and near surface UXO, and evaluate the overall

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effectiveness of the LUCs will be conducted on an annual basis. In addition, a review of the effectiveness of the LUCs will also be conducted as part of the Comprehensive Five-Year review process conducted at Devens which is required under Section 121 of CERCLA, as amended by SARA of 1986.

The estimated costs include initial capital costs to develop the educational materials, 30-year annual costs, and a 3% discount rate (rounded to nearest thousand).

Estimated Capital Cost: $60,000
Estimated Present-Value Annual Cost: $95,000
Estimated Total Present-Value Cost: $155,000

Land Use Controls will be maintained until such time that the hazard associated with potential remnant UXO in the soil is at levels to allow for unrestricted use and exposure.

1.5 STATUTORY DETERMINATIONS

Section 121 of CERCLA specifies that the selected remedial actions must comply with all (1) Federal and State ARARs, (2) be cost-effective, (3) be protective of public health and the welfare or the environment, and (4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable.

The remedies meet the first three statutory requirements; however, because of the low to moderate hazard levels currently existing at the site, treatment of potential UXO is not deemed necessary. Therefore, because treatment was evaluated and deemed unnecessary, the fourth statutory preference is satisfied.

To ensure that the statutory requirements are maintained, a statutory review will be conducted within five (5) years after initiation of remedial action to ensure that the remedy continues to be protective of public health and welfare or the environment. This review will be completed once every 5 years until the stakeholders determine that a review is no longer necessary.

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1.6 RECORD OF DECISION DATA CERTIFICATION CHECKLIST

The following information is included in the Decision Summary section (Section 2) of this ROD. Additional information can be found in the Administrative Record file for this site.

- Descriptions of constituents of concern (COC) (i.e., UXO) potentially remaining on-site.
- Baseline hazard assessment represented by the presence of UXO.
- Cleanup levels established for chemicals of concern and the basis for these levels.
- How source materials constituting principal threats are addressed.
- Current and reasonably anticipated future land use assumptions and current and potential future beneficial uses of groundwater used in the baseline hazard assessment and ROD.
- 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 factor(s) that led to selecting the remedy.

1.7 AUTHORIZING SIGNATURES

Signature: _____ Date: 16 SEP 09

William J. O'Donnell, II
Chief, Operational Army and Medical Branch
Department of the Army
Installation Chief of Staff for Installation Management

Signature: _____ Date: 9-24-09

James T. Owens III
Chief, Office of Site Remediation and Restoration
U.S. EPA Region 1

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SECTION 2

DECISION SUMMARY

2. DECISION SUMMARY

2.1 SITE NAME, LOCATION, AND BRIEF DESCRIPTION

The site which is the subject of this ROD is comprised of the Grant HA and the Impact Area. Both the Grant HA and Impact Area are located at Former Fort Devens Military Installation. While portions of both the HA and the Impact Area have been the subject(s) of other removal actions under both CERCLA and the MCP, this ROD is intended to address only those hazards and remedial actions associated with the presence of MEC as UXO.

Devens is located in the towns of Ayer and Shirley (Middlesex County) and Harvard and Lancaster (Worcester County), Massachusetts, approximately 35 miles west of Boston, Massachusetts (Figure 1).

Residences, farmland, and woodland occupied the area prior to the establishment of Fort Devens in 1917. Fort Devens was established as a temporary training area and disembarkment point for soldiers entering the European theatre during World War I (WWI). In 1931, Fort Devens became a permanent installation with the primary mission of commanding, training, and providing logistical support for non-divisional troop units. The installation occupied approximately 9,300 acres and was divided into three major areas referred to as the North, Main, and South Posts. The Grant HA and Impact Area are located within the Main Post. The installation continues to support the Army Readiness Regional Reserve and National Guard units in the New England area.

The lead agency for the site is the Army. As lead agency, the Army is responsible for: preparation of the ROD; reassessing its initial determination that the Preferred Alternative(s) provides the best balance of trade-offs; factoring in any new information or points of view; providing the EPA, MassDEP and supporting agencies (MassDevelopment – Current landowners) with an opportunity to review and comment on the ROD; considering EPA, MassDEP, MassDevelopment, and community comments; and making the final remedy decision jointly with EPA. The lead agency must also publish a notice of the availability of the ROD in a major local news paper and make the ROD available for public inspection and copying prior to

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commencement of remedial actions. EPA is the lead regulatory agency and is supported by MassDEP and MassDevelopment.

The Army is responsible for implementing, maintaining, reporting on, and enforcing the ROD. Although the Army may later transfer these procedural responsibilities to another party by contract, or through other means, the Army shall retain ultimate responsibility for remedy integrity.

2.2 SITE HISTORY AND ENFORCEMENT ACTIVITIES

On 21 November 1989, Fort Devens was placed on the CERCLA National Priorities List (NPL), assigned CERCLIS I.D. Number MA7210025154, and was identified for cessation of operations and closure under Public Law 101-510, the Defense Base Realignment and Closure Act of 1990. Fort Devens was officially closed in March 1996. Portions of the property formerly occupied by Fort Devens were retained by the Army for reserve forces training and renamed the Devens Reserve Forces Training Area (RFTA). Areas not retained as part of the Devens RFTA were, or are in the process of being, transferred to new owners (MassDevelopment) for reuse and redevelopment. The Grant HA and Impact Area are included in property that was transferred to MassDevelopment in May 1996 and August 1999, respectively, and are planned for future redevelopment (i.e., Grant HA - Residential reuse, Impact Area - restricted reuse).

Historical records indicate that training (physical and tactical as well as use of military equipment) including the use of military munitions occurred throughout the history of Fort Devens, including prior to the late 1950s within the Grant HA. A 37-mm range was located along the western boundary of the Grant HA with an impact area on the northern slope of Oak Hill. Historical documentation indicates that the range was likely used between WWI and World War II; however, with the construction of Hospital Road in the 1930s, the range was likely closed around that time to ensure road construction contractors and traveler safety. Military training was conducted within the then wooded Grant HA from 1917 through the late 1950s when base housing was constructed and, based on available information, was limited to physical and tactical training due to the proximity to the Main Post.

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In 1994/1995 the U.S. Army Corp of Engineers (USACE) completed a study to document the locations of all known training areas and ranges at Devens. Based on the findings of this study, *The Archive Search Reports* (USACE, 1995a; 1995b; 1995c), portions of the Grant and Oak HAs were identified for a removal action. This removal action identified significant amounts of UXO and UXO scrap in the 37-mm Impact Area on the Oak HA hillside, located to the southwest of the Grant HA. In excess of 50 unexploded 37-mm projectiles and a large amount of 37-mm fragments were located and disposed. Most of the ordnance located was in two dense clusters indicating former target locations. The removal action results are summarized in the *Final Removal Action Report* (Human Factors Applications, Inc., 1996).

In 2004 and 2005, the Army conducted Preliminary Assessment/Site Inspection (PASI) and Supplemental Site Investigation (SSI) efforts within the Grant HA and Impact Area to assess whether military activities resulted in the release of chemical COCs to soil and groundwater and if so, what hazard those releases would pose to public health and welfare or the environment. Based on the results of the investigation work, chemical COCs potentially related to UXO (i.e., MC), were not detected within the investigation areas and do not pose a hazard to public health and welfare or the environment; however, site inspections of the Impact Area located the presence of potential UXO on the surface. Though the military munition was determined to be scrap from an exploded munition, there remained the concern that additional UXO existed at the site. Results of the subsequent investigation activities are documented in the report, *Preliminary Assessment Site Inspection/Supplemental Site Investigation Comprehensive Report (PASI/SSI Report)* (WESTON, 2008c). For Investigation Area-2, which included the Impact Area and portions of the Grant HA, the *PASI/SSI Report* recommended that a Focused Feasibility Study be prepared to evaluate response alternatives involving LUCs that will reduce the explosive safety hazards associated with IA-2.

In 2006, USACE prepared a *Final Expanded Conceptual Site Model Report* (USACE, 2006) identifying training areas and ranges in the vicinity of the Grant, Locust, and Cavite HAs. The report identified three ranges within the Grant HA and adjacent Oak HA [Investigation Area 1- Former Training Area (Circa, 1922), Investigation Area 2 - Former Training Area 37-mm anti-tank (AT) range (i.e., 37-mm Range), and Investigation Area 5 - Sub-caliber AT range

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(i.e., 22-caliber range)]. Land use control was identified by the report as the preferred response action to address the former ranges within the Grant HA.

Concerns regarding the potential for remnant UXO to exist in soil within the Impact Area and the potential for similar conditions at the Grant HA resulted in MassDevelopment contracting Ordnance & Explosive Remediation, Inc. (OER) to conduct a survey of the areas. In 2004, a digital geophysical survey and *mag and flag* mapping was completed throughout the entire Grant HA and portions of surrounding HAs, including the Impact Area, to evaluate whether MEC existed. Though USACE had conducted an extensive removal action in 1994/1995, the OER resurvey was successful in finding additional UXO within the Grant HA and Impact Area. OER conducted a removal action in 2005 and was successful in removing additional UXO from the areas. In total, 31 UXO (20 37-mm, 4 mines, 1 rifle grenade, and 6 stokes mortars), and 17 other ordnance items (1-37-mm armor piercing round, 8 empty rifle grenades, 3 training hand grenades, 2 empty mine flare bodies, 1 empty anti-tank mine, and 1 French VB2 trainer (rifle grenade)) were located and removed during OER's investigation and removal effort. Similar to the 1994/1995 UXO removal efforts by USACE, most UXO was found within the Impact Area. Results of the survey and removal action are documented in the report, *Site Specific Final Report Digital Geophysical Mapping (DGM) & Unexploded Ordnance (UXO) Removal, Grant Housing Area, Former Ft. Devens, Harvard, Worcester, Massachusetts*, prepared by OER for MassDevelopment, March 2006.

In addition to MEC-related investigations, the Army conducted a pesticide soil removal action in 2002 and a Polychlorinated Biphenyl (PCB) Time Critical Removal Action from 2002 to 2005 within the Grant HA. It had been determined that during and potentially following the construction of the Grant HA in the late 1950s and early 1960s; the Army had applied pesticides around the housing units as an appropriate pest control method. The Army agreed with the Devens stakeholders to excavate and dispose of pesticide-impacted soils to Method 1 S-1 soil cleanup standards for unrestricted reuse in order to eliminate hazards to human health and the environment associated with the pesticides. The action resulted in the excavation and disposal of more than 150,000 tons of soil and concrete from the Grant HA. During the removal action, which was conducted throughout the Grant HA, no UXO was found. Further details on the

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pesticide soil removal action are provided in the *Final Release Abatement Measure Completion Report/Partial Response Action Outcome Statement – Grant Housing Area* (WESTON, 2009).

From 2002 through 2005, a Time Critical Removal Action was conducted in the southeast portion of the Grant HA to address soil impacted by PCB from an unknown source (i.e., undocumented historical release). The area was excavated to a standard of 1 mg/kg of PCB in soil. Approximately 12,000 tons of soil was excavated and disposed as part of the removal action. Included in a portion of the PCB remedial area was reportedly a former small arms range. Investigation Area 5 (IA-5) was identified as a 1,000-inch AT Range which used 22-caliber rounds fired from modified 37-mm cannons at targets within the scale-sized range. Proficiency on the 1,000-inch range was required before the crews were allowed to transition to the full scale range such as the 37-mm range at IA-2. Similar to the pesticide removal action, MEC, including ammunition, was not encountered within the excavation areas or in the presumed berm area. In addition, soil sample results were not indicative of a former small arms firing range (i.e., high concentrations of lead were not detected) indicating that the Army dismantled the range prior to the housing unit construction or the range never existed. Further details on the PCB removal action are provided in the *Final Polychlorinated Biphenyls Time Critical Removal Action Closure Report- Former Grant Housing Area, Devens, Massachusetts* (WESTON, 2006a). Further details on the IA-5 investigation are provided in the *PASI/SSI Report* (WESTON, 2008c).

As a result of investigations and removal actions conducted within the Grant HA and Impact Area, the Army contracted WESTON to draft a focused feasibility study comparing remedial alternatives addressing potential residual UXO at the Grant HA and the Impact Area. The findings of the alternatives comparison are documented in the *FFS* (WESTON, 2008a). Findings were summarized for public review and comment in the *Proposed Plan* (WESTON, 2008b).

2.3 COMMUNITY PARTICIPATION

In accordance with the Section 117 of CERCLA, the public must be provided with the opportunity to participate in the selection of the remedial action. A *Proposed Plan* for the Grant HA and 37-mm Impact Area was made available to the public by the Army in September 2008.

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The *Proposed Plan* and the *FFS* are also available in the Administrative Record file and the information repository maintained at the following locations:

U.S. Army Garrison Fort Devens
BRAC Environmental Office
Building 666, Room 140
Devens, MA 01432
Contact: Robert Simeone @ 978-796-2205

Ayer Public Library
26 East Main Street
Ayer, MA 01432

Harvard Public Library
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Harvard, MA 01451

A public notice of the availability of the *FFS* and *Proposed Plan* was published in the local newspapers, including "Ayer Public Spirit," "Groton Landmark," "Harvard Hillside," "Shirley Oracle," "Pepperell Free Press," and "Townsend Times" on 5 September 2008. A public comment period was held from 10 September through 10 October 2008. In addition, a public meeting was held on 18 September 2008, to present the *Proposed Plan* to a broader community audience than those that had already been involved at the site. At this meeting, representatives from the Army, EPA, MassDEP, and MassDevelopment answered questions about the remedy selection process, and also used this meeting to solicit a wider cross-section of community input on the reasonably anticipated future land use and potential beneficial groundwater uses at the site. Though community involvement was solicited, the Army did not receive comments from the general public during the public comment period.

2.4 SCOPE AND ROLE OF RESPONSE ACTION

The Devens CERCLIS I.D. Number, MA7210025154, is the applicable identification number for the entire property, consisting of 9,300 acres. Since the listing of the property on the NPL, a number of SA, AOC, and Areas Requiring Environmental Evaluation (AREE) have been the subject of investigations and remedial and removal actions have been conducted in accordance

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with CERCLA. In addition, other releases at the property have undergone response actions under the MCP under the purview of MassDEP.

With the exception of the UXO activities already documented herein, the other Devens releases are considered to be unrelated to the UXO at the Grant HA and Impact Area. Response actions completed under other regulatory programs similarly have been documented in accordance with applicable requirements.

All remedial and removal documentation pertaining to the Grant HA, the Impact Area, and other AOCs, AREEs, and SAs at Devens are available in the Administrative Record. CERCLA-related actions at Devens are also documented in the *2005 Five-Year Review Report for Former Fort Devens* (Nobis Engineering, Inc., 2005).

2.5 SITE CHARACTERISTICS

2.5.1 Site Layout and Current Zoning

The Grant HA occupies approximately 130 acres, located between Hospital Road, Grant Road, and the Nashua River (Figure 2). The Grant HA was primarily wooded open space until the construction of housing units and supporting infrastructure. The Grant HA included 130 former multi-family housing constructed in the late 1950s and early 1960s. Currently, Grant HA is open space with ground cover consisting of bare soils, un-maintained lawns, and woodland. Former HA infrastructure, including roadways and utilities, still remain in place. The area is currently zoned for residential reuse according to the Devens Reuse Plan (Figure 3).

The Impact Area is located on the northern slope of Oak Hill (Figure 2), adjacent to and southwest of the former Grant HA. The former Impact Area occupies 3.59 acres along the steeply sloping and wooded north slope of Oak Hill. There is no history of structures located in the Impact Area due to the steep slope. The area is currently zoned for open space/recreational reuse according to the Devens Reuse Plan (Figure 3), but will now need to comply with the LUCs implemented under this ROD. The crest of Oak Hill, previously the location of the Oak HA, is currently planned for commercial redevelopment.

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2.5.2 Conceptual Site Model

The site has been identified as a location of former military operations prior to the construction of the base housing in the late 1950s and early 1960s. The Grant HA was originally identified as used primarily for physical and strategy training with the potential for several small arms ranges. The ranges were investigated as part of the PASI/SSI effort and the information collected did not support the existence of small arm ranges (i.e., signature chemical constituents in soil or remnant ammunition casings were not found). However, the Impact Area was identified as the impact point or target area of a 37-mm anti-tank training range which began operation in the 1920s. The operation of the range impacted on the Grant HA, as the firing point was located in the northern portion of the Grant HA and projectiles were fired across the western portion of the HA into the Impact Area located on the northern slope of Oak Hill. Inherent in the operation of the range, the majority of projectiles hit the target area; however, errant or malfunctioning rounds may be dispersed within the range due to ricochets or as errant shots.

The 1996 MEC investigation by USACE and the 2004/2005 MEC survey and removal action by OER removed all identified UXO located within 18 inches of the surface over the entire HA. Eighteen inches is the confidence limit of the digital geophysical survey equipment used by OER for the 37-mm ordnance fired at the AT range. (OER, 2006). Clearance to greater depths was completed within the Impact Area, particularly at two identified target locations within the Impact Area.

During the 2004/2005 MEC effort, most 37-mm UXO was found within the boundaries in the Impact Area; however, several rounds of 37-mm UXO and 37-mm scrap metals were found outside the Impact Area. A limited number of UXO (six 37-mm rounds found between 0 - 6 inches below grade) were located within the Grant HA during the 2004/2005 survey and removal action. During the 2004/2005 MEC effort, over 35,000 potential UXO anomalies were identified. For all potential UXO anomalies identified during the survey, a removal action occurred. If a UXO was located and removed, the excavation was resurveyed resulting in a deeper evaluation of the area (i.e., depth of excavation plus 18 inches) until no further anomalies were identified. Munitions and Explosives of Concern identification and removal actions occurred throughout the Grant HA and Impact Area.

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The extensive non-MEC related soil excavations and investigations conducted from 2002-2005 (i.e., pesticide and PCB impacted soil removal actions) did not encounter UXO and support the low potential for UXO presence within the HA. The extensive soil and groundwater investigation activities associated with the PASI/SSI effort in the Grant HA and Impact Areas do not support a conclusion of significant impact due to military training activities. Soil and groundwater sampling and analysis has been focused on suspect and known training areas within the Grant HA and impact berm, and results do not identify munition constituents (i.e., lead, perchlorate, or explosives) within soil or groundwater that would identify former small-arms firing ranges or extensive use of military munitions or releases of MC at known locations (i.e., Impact Area).

In addition, there has been up to 90 years for frost heave to lift UXO to the surface. Frost heave in the Devens area is limited in depth (approximately 42 inches). In the Grant HA, UXO is not expected to have penetrated to depth due to the firing angle. However, any 37-mm munition that was at depth should have been brought to the subsurface through frost heave mechanics over the time period since the range was closed. For the Grant HA, the Conceptual Site Model (CSM) presumes that based on the known military training activities, the predominant UXO present at the site (i.e., 37-mm projectiles) are unlikely at depths greater than 18-inches due to the angle of penetration into the ground surface along the range, the effect of local soil composition (sand and gravel deposits) on limiting penetration depth, and the up to 90 years for frost heave to have brought items to the surface. In the Impact Area, UXO may be buried at depths deeper than the frost line for the Devens area. Therefore, any further potential associated with frost heave of UXO to the surface is considered minimal.

The MEC investigations and removal actions and other remedial actions support a CSM that the site was former active military training areas, primarily the 37-mm firing range and physical and tactical training occurred at the site. The investigated and removal actions have occurred using the best available technology. Though not 100% conclusive, these efforts have removed all identified UXO from the top 18 inches of soil throughout the Grant HA and Impact Area and to greater depths within the Impact Area where extensive removal actions occurred at two identified target locations.

Other UXO that were located are surface or near surface (mines) munitions that according to their designed use should not exceed 18 inches in depth; therefore, should have been identified and removed during the MEC survey and removal actions.

As a result of the OER survey and removal action (OER, 2006), near surface UXO has been removed and the near surface hazard has been eliminated. However, since the technology does not guarantee 100% detection, there remains a risk of exposure to remnant UXO with an explosive safety hazard. The remaining hazard would be primarily associated with construction workers during the future development (utility or foundation installation, or other deeper excavation activities) within the Grant HA or Impact Area. These remaining hazards are being addressed through the LUCs.

2.5.3 Climate

Typical meteorological conditions for the site include an annual mean air temperature of 50 degrees Fahrenheit, an annual mean precipitation total of 56 inches, an annual mean snow fall depth of 65 inches, and an annual mean wind speed of 13 miles per hour (Iacono, 2006).

2.5.4 Geology

The Grant HA and Impact Area encompass a variety of glacial landforms and materials, as well as recent riverine (fluvial) features, deposited upon bedrock of varying composition. Maps depicting information on the regional topography, regional bedrock geologic features identifying distinct bedrock formations, and on regional surficial geology identifying sand and gravel, till or bedrock, and floodplain alluvial deposits, are provided in the *PASI/SSI Report* (WESTON, 2008c).

The site is located on a former glacial outwash plain consisting of mostly sand and gravel deposits. The glacial outwash sediments have been reworked by the Nashua River along the northwestern edge of Grant HA, which is part of the Nashua River floodplain (U.S. Department of Agriculture Soil Conservation Service, 1985; MassGIS, 1999).

2.5.5 Groundwater

Depth to groundwater beneath both the Grant HA and the Impact Area was documented during the PASI/SSI effort (WESTON, 2008c). Groundwater depths measured in four monitoring wells and six piezometers installed in Grant HA and at the base of the Impact Area slope are approximately 40 feet (ft) below ground surface (bgs) in the Grant HA and approximately 15 ft bgs at the base of the slope on which the Impact Area is located.

Groundwater flow beneath the Grant HA and Impact Area is generally southwesterly to westerly. Groundwater flow directions are variable beneath the Grant HA, likely the result of the presence of the varied depositional environments that provide preferential pathways for groundwater flow.

Groundwater samples were collected from four overburden well locations (two down gradient of the Impact Area and two within the Grant HA) and submitted for perchlorate and explosives analysis. No explosive compounds were detected above laboratory detection limits. Perchlorate was detected in one sample from the Grant HA, but at levels below the MassDEP interim drinking water standards.

The towns of Ayer and Shirley operate and maintain public drinking water supplies in the Devens area. The Town of Ayer obtains water from two overburden groundwater wells, which are located cross-gradient of the site. The wells are located immediately east of the MassDevelopment Grove Pond overburden well field. The Town of Shirley obtains water from three groundwater sources, only one of which is located down gradient of the site. The Town of Shirley Patterson overburden well is located approximately 2,300 ft north of the northern portion of the Grant HA, and is the closest drinking water well to the site, with the area of contribution to the well extending into the northern portion of Grant HA (MassDevelopment, 1997; MassDEP 2004a). No known private drinking water wells are located on the site or near the AOC.

2.5.6 Surface Water Hydrology

Runoff from the Grant HA is controlled by a storm water system which drains to the Nashua River. Storm water on the Impact Area would infiltrate and become groundwater, or run

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overland down slope and then westerly to the Nashua River which is located approximately 100 ft to the west. Current site conditions do not indicate erosion or preferential flow pathways (i.e., natural drainage pathways) existing in the Impact Area. Both areas are located above the 500-year flood elevation of the Nashua River and its tributaries (Federal Emergency Management Agency, 1983).

2.5.7 Potential Ecological Receptors

There are no freshwater wetlands, Surface Water Supply Zone A areas, certified vernal pools, protected open spaces, National Heritage and Endangered Species Program (NHESP) Priority Habitats of Rare Species, NHESP Estimated Habitats of Rare Wildlife, or Areas of Critical Environmental Concern (ACEC) within or near the Grant HA and Impact Area (MassGIS, 2003a; 2003b; 2003c; 2003d; 2004b; 2004c; 2005). Freshwater wetlands, NHESP Habitats of Rare Species, NHESP Estimated Habitats of Rare Wildlife, ACECs, and protected open spaces associated with the Nashua River are located immediately west of Grant HA and the Impact Area. Figure 4 depicts available wetland and other environmental data for the SA.

According to base history, any explosives release would be to open surfaces in the identified ranges. Any release from the ranges would be through overland flow and would likely have occurred near the time of range activities. Since releases of explosives would have occurred pre-1960, it is unlikely that releases to surface water from the soil would still be occurring. Testing completed during the PASI/SSI and during the OER MEC survey activities did not detect the presence of MC or metals (contaminants associated with 37-mm UXO) in the Impact Area soil or groundwater.

2.5.8 Current and Potential Future Site and Resource Uses

Currently, both the Grant HA and the Impact Area are not occupied. However, as stated in Subsection 2.5.1, the Grant HA is described in the Devens Reuse Plan as being zoned for residential reuse. The Impact Area is located on the northern slope of Oak Hill and is slated for open space/commercial reuse. The ROD and subsequent GERE will further restrict the future use of the area.

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2.6 SUMMARY OF SITE HAZARDS

In accordance with the MEC HA Methodology (January 2008)[1], potential explosive safety hazards to people were evaluated at the Grant HA and Impact Area and the results of that evaluation are included as part of the *FFS* (WESTON, 2008a). The Army, EPA, MassDEP, and MassDevelopment have agreed to use the MEC HA as the guidance to assess a munition hazard level at each site.

The MEC HA is structured around three components of a potential explosive hazard incident:

- Severity, which is the potential consequences (e.g., death, severe injury, property damage, etc.) of a UXO item functioning.
- Accessibility, which is the likelihood that a receptor will be able to come in contact with a UXO item.
- Sensitivity, which is the likelihood that a receptor will be able to interact with a UXO item such that it will detonate.

Each of these components is assessed in the MEC HA by input factors. The sum of the input factors scores falls within one of four defined ranges, called hazard levels. Each of the four levels reflects site attributes that describe groups of sites and site conditions ranging from highest to lowest hazards. In accordance with the MEC HA, process hazard was evaluated for current and future reuse scenarios in the *FFS* (WESTON, 2008a). The current scenarios address hazards associated with each site as they exist in the spring of 2008. The future reuse evaluation addresses multiple scenarios, including hazards if no remedial action is taken, and what hazard will remain following the implementation of each of the remedial alternatives. Using the Draft MEC HA Guidance automated scoring worksheets, MEC data collected during previous investigations and removal actions, current and anticipated future reuse conditions, and conservative assumptions that were determined to be protective to public health and welfare were input into the worksheets, including the potential for future residents and construction contractors to access soil at depths greater than the depth of subsurface UXO clearance within

[1] A copy of the latest version of the Interim Munitions and Explosives of Concern Hazard Assessment (MEC HA) Methodology (updated in October 2008) can be found at http://www.epa.gov/fedfac/documents/hazard_assess_wrkgrp.htm

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each area. Detailed input data for each current/future and reuse/alternative scenarios assessment are provided in Appendix A of the *FFS* (WESTON 2008a). Output from the automated worksheets provided a set of Hazard Scores and MEC Hazard Level rankings (see Table 1).

The MEC HA characterizes site hazards with four Hazard Levels. A summary of each hazard level and descriptive scenarios are provided below and in the MEC HA Methodology (January 2008)[1].

- **Hazard Level 1 (Highest Hazard)**: Score ≥840, This Hazard Level identifies Munition Response Sites (MRS) with the highest potential explosive hazard conditions. Typical characteristics of Hazard Level 1 MRS conditions include the following:
  - High-explosive filled UXO, usually "Sensitive UXO" on the surface.
  - A former target area or open burning/open detonation area (OB/OD).
  - An MRS with full or moderate accessibility.
  - Has the presence of additional human receptors inside the MRS or Explosive Safety Quantity-Distance (ESQD).
  - May include subsurface MEC with intrusive activities to the depth of subsurface MEC.
  - An MRS that has not undergone a cleanup.
- **Hazard Level 1 Scenario:**

  An example of a Hazard Level 1 scenario is a MRS that:
  - Is a former OB/OD area for MEC including fuzed 60-mm High Explosive (HE) mortars.
  - Has a history of 60-mm mortars fond on the surface.
  - Historical response actions have been limited to removal of single items. Has not undergone a thorough cleanup.

[1] A copy of the latest version of the Interim Munitions and Explosives of Concern Hazard Assessment (MEC HA) Methodology (updated in October 2008) can be found at http://www.epa.gov/fedfac/documents/hazard_assess_wrkgrp.htm

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- Is fully accessible to people who will engage in intrusive activities such as gardening or landscape maintenance.

- **Hazard Level 2 (High Hazard)**: Score 725 to 835. This Hazard Level identifies MRS with high potential explosive hazard conditions. Typical characteristics of a Hazard Level 2 MRS include the following:

  - Former target area, OB/OD area, function test range, or maneuver area.

  - UXO, or Fuzed Sensitive DMM on the surface, or intrusive activities that overlap with minimum depths of UXO or Fuzed Sensitive DMM located only in subsurface.

  - Has full or moderate accessibility to people who will engage in intrusive activities.

- **Hazard Level 2 Scenario:**

  An example of a Hazard Level 2 scenario is a MRS that:

  - Is a former target area with UXO present, large size (e.g., 155-mm artillery)

  - Has a history of UXO found on the surface.

  - Has not been cleaned up.

  - Has been fenced with barbed-wire, but otherwise is accessible to recreational users.

- **Hazard Level 3 (Moderate Hazard)**: Score 530 to 720. This Hazard Level identifies MRS with moderate potential explosive hazard condition. Typical characteristics of a Hazard Level 3 MRS include the following:

  - Discarded Military Munitions only on the surface, or intrusive activities that overlap with minimum depths of DMM located only in subsurface.

  - Former target area, or OB/OD area, function test range, or maneuver area that has undergone a surface cleanup.

  - An MRS with moderate or limited accessibility, and low number of contact hours.

- **Hazard Level 3 Scenario 1:**

  - The MRS is a former range fan. The target area is addressed under a separate hazard assessment.

  - 60-mm HE mortars were found in the target area.

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- The target area and range fan have undergone a surface cleanup.
- The MRS is fully accessible by a large number of people who will conduct non-intrusive activities such as hiking.

- **Hazard Level 3 Scenario 2:**
  - The MRS is a golf course build over a 100-pound bombing range. The bombing range was cleared and then covered with several feet of soil before grading for a golf course. There is not intrusive use that exceeds the depth of the soil cover.
  - This is full accessibility for recreational surface activities.

- **Hazard Level 4 (Low Hazard)**: Score <525. This Hazard Level identified MRS with low potential explosive conditions. The presence of MEC at an MRS means that an explosive hazard may exist. Therefore, MEC may still pose a hazard at Hazard Level 4 MRS. Typical characteristics of an MRS in Hazard Level 4 include the following:
  - A MEC cleanup was performed or MEC is only located subsurface, below the depth of receptor intrusive activities.
  - Energetic Material Type is propellant, spotting charge, or incendiary.
  - Accessibility is limited or very limited, and contact hours are few or very few. This may be the result of LUCs.

2.6.1 Current Use Hazard Assessment

For current use, both the Grant HA and Impact Area assume recreational use receptors (i.e., hiker, bikers, or other occasional users) make use of the site and the contact time (time spent at the site) will be limited. Existing exposure pathways are limited due to the previous UXO removal actions and the lack of any intrusive activities below 18 inches by the receptors. Table 1 provides the hazard scores and resulting Hazard Level. The overall hazard level for the current conditions is Hazard Level 4 which is the lowest hazard level.

2.6.2 Future Use Hazard Assessment

For future reuse, a stepped evaluation process is used. Initially, a baseline scenario evaluates the hazard assuming the anticipated future reuse without a remedial action. For Grant HA, the initial scenario assumes the future reuse is residential with a potential for residents to congregate. For

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the Impact Area, the reuse is undeveloped open space with a potential for residents to congregate. If the baseline hazard assessment indicates the potential for a hazard to exist, then supplemental evaluations are conducted. These evaluations are conduct under the premise that the remedial alternative(s) (those alternatives identified in the *FFS*) have been conducted and the hazard assessment provides a post-remedial action Hazard Level. For the Grant HA, remedial alternatives evaluated were:

- No Action
- LUC
- Subsurface Clearance to Depth

For the Impact Area the alternatives evaluated were:

- No Action
- LUC
- LUC with Engineered Barrier
- Subsurface Clearance to Depth

For each of these future reuse/alternative scenarios, information on receptors (i.e., residents), contact time, exposures to UXO, barriers, types of military activities that occurred at the site, and data on the potential types of UXO present following the completion of the remedial alternative was entered into the MEC HA automated worksheets to develop Hazard Levels for each scenario. Table 1 provides the hazard scores and resulting Hazard Levels for each alternative scenario.

2.6.3 Hazard Assessment Results

Each evaluation provided a Hazard Level dependent upon input data subjective to the reuse scenario and conditions of the site at the time of reuse. Anticipated future reuse without remedial alternative actions will result in increased hazards to the receptors. The evaluation of future reuse with alternative remedial actions conducted at the site provides mixed results (low or moderate hazard level). Removal actions have occurred at each area to remove remnant UXO and though the technologies used to investigate for the presence of UXO was the state of the art; current technology cannot guarantee 100% removal of remnant UXO. Therefore, there remains a

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potential for UXO to exist at these areas. The existence of even one UXO, could present a physical (detonation) hazard and further actions should be taken to mitigate risks to receptors.

Further evaluation of remedial alternatives that will ensure protection of public health or welfare and the selected alternative and justification for the selection are provided in the following subsections.

2.6.4 Ecological Hazards

The *PASI/SSI Report* (WESTON, 2008), provides a detailed summary of land use and habitat survey and sampling efforts. As a result of this survey, no areas of current or future land use were identified as sensitive ecological habitat. Based on the results of the sampling and survey efforts conducted in the Grant HA and Impact Area, MEC and MEC-related COCs do not pose unacceptable hazards to ecological receptors.

2.7 REMEDIAL ACTION OBJECTIVES

Remedial action objectives (RAO) are project objectives identified by the Army, EPA, MassDEP, and MassDevelopment to ensure the protection of public health or welfare. As stated in the *FFS* (WESTON 2008a), the RAO for the Grant HA and Impact Area is to prevent direct contact with UXO which may remain in soil at the sites.

The RAO rationale is to provide protection to residents or contractors from conditions that have a potential to occur at any former military facility where training with or other use of military munitions could have occurred. ***The LUCs are preventative (i.e., "affirmative measures") for direct contact as they educate the contractor and resident as to the potential presence of UXO and the actions to be taken if presumed UXO is encountered, which includes not handling the UXO.***

The combined extensive investigation and removal actions that have been conducted to eliminate all identified UXO at the site and the selected remedy provides an appropriate level of protection to support the RAO. A Five-Year Review will be implemented to ensure the selected remedy is protective of public health and welfare or the environment.

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2.8 DESCRIPTION OF ALTERNATIVES

A total of seven remedial action alternatives were evaluated for the Grant HA (three alternatives) and Impact Area (four alternatives). The *FFS* addressed the strength of each alternative in respect to overall protectiveness of human health and the environment, compliance with ARARs, long-term effectiveness and permanence, TMV reduction through treatment, short-term effectiveness, implementability, cost, state/support agency acceptance, and community acceptance.

2.9 GRANT HOUSING AREA

2.9.1 Alternative GR-1 – No Action

CERCLA requires the "No Action" alternative be evaluated to establish a baseline for comparison to other remedial alternatives. No action is easily implemented, but leaves the area as is with no measures to prevent exposure. There are no costs considered for this option. A Comprehensive Five-Year Review will be mandatory under CERCLA (i.e., any remedial action which results in any hazardous substance, pollutants, or contaminants remaining at the site is subject for the Five-Year Review) for this alternative; however, the cost has been included in the Army's Five-Year Review process that is being conducted for the entire Devens site, so no cost is associated with this alternative.

2.9.2 Alternative GR-2 – Land Use Controls (Selected Remedy)

Land Use Controls are addressed through affirmative measures including:

- Distribution of educational materials
- Development of a web-based visual and audio media
- Deed notice

The total estimated present worth cost for the implementation of LUCs is $74,000.

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2.9.3 Alternative GR-3 – Subsurface Clearance to Depth

Subsurface clearance to depth addresses the removal of the top 18 inches of soil, which was cleared during a previous MEC survey in 2005, and conducts a MEC survey using geophysical survey methods of the next 18 inches. This process would be repeated to a depth of up to 8 ft below original grade depending on what type of MEC depositional environment exists. Anomalies detected during the survey will be investigated to determine if the anomaly is a MEC. If the anomaly is a UXO, the munitions will be appropriately disposed. This process will ensure the removal of any potentially remnant UXO within the HA and mitigate any hazards to public health or welfare or the environment associated with UXO.

The estimated cost to complete the alternative, consisting of capital costs only, is $30,000,000.

2.10 IMPACT AREA

2.10.1 Alternative IA-1 – No Action

CERCLA requires the "No Action" alternative be evaluated to establish a baseline for comparison to other remedial alternatives. No action is easily implemented, but leaves the area as is with no measures to prevent exposure. There are no costs considered for this option. A Five-Year Review will be mandatory under CERCLA for this alternative; however, the cost has been included in the Five-Year Review process that is being conducted for the entire Devens site, so no cost is associated with this alternative.

2.10.2 Alternative IA-2 – Land Use Controls (Selected Remedy)

For the Impact Area, LUCs are addressed through institutional controls, access restrictions, affirmative measures, and prohibitive directives:

- Institutional controls to be implemented through a GERE and existing open space/commercial property zoning to restrict future reuse of the property.
- Access Controls to include the use of signage and either fencing and/or vegetative barrier to limit public access to the area.

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- Public education via ongoing distribution of educational materials, development of a web-based visual and audio media, and signage at the site.
- Prohibitive directives to include restrictions to all ground intrusive activities.
- Annual site inspections of the site to evaluate access controls, monitor for the presence of surficial and near surface UXO, and evaluate the overall effectiveness of the LUCs.

The estimated total present-value cost for this alternative is $155,000.

2.10.3 Alternative IA-3 – Land Use and Engineering Controls

This alternative combines the LUCs identified in IA-2 along with the construction of an engineered soil barrier over the Impact Area. The containment would consist of the construction of a protective cap of approximately 3 ft of fill with dense vegetation to prevent access from the public and mobilization of potential UXO to the surface through frost heave or erosion. A fence may be built to limit access, or placards may be placed in the area as an indication that no intrusive activities are permitted. Land Use Controls would be imposed to ensure public education regarding the potential presence of UXO and to ensure that the engineered control would be maintained.

This alternative includes maintenance of the barrier/vegetative cover to limit migration of potential UXO through erosion.

The estimated total present-value cost for this alternative is $890,000.

2.10.4 Alternative IA-4 – Subsurface Clearance to Depth

Subsurface clearance to depth addresses the removal of the top 18 inches of soil, which was cleared during a previous MEC survey in 2005, and conducts a MEC survey using geophysical survey methods in 18 inches depths down to a depth of 5 ft below grade. Anomalies detected during the survey will be investigated to determine if the anomaly is a MEC. If the anomaly is a UXO, the munitions will be appropriately disposed. This process will ensure the removal of any

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remnant UXO within the Impact Area and mitigate any hazards to public health or welfare or the environment associated with UXO.

The estimated total present-value cost, consisting of capital costs only, is $724,000.

2.11 COMPARATIVE ANALYSIS OF ALTERNATIVES

Based on the detailed analysis of remedial alternatives in the *FFS* (WESTON, 2008a), the strengths and weaknesses of the remedial alternatives relative to one another are evaluated with respect to each of the NCP criteria. Alternatives GR-1, GR-2, and GR-3 were compared for Grant HA and alternatives IA-1, IA-2, IA-3, and IA-4 were compared for the Impact Area in the subsections below and summarized in Table 2.

2.11.1 Grant Housing Area

1. **Overall Protectiveness of Human Health and the Environment** – Based on weight of evidence, the Grant HA was evaluated to have a low probability of encountering UXO. The MEC HA indicates that area is a Hazard Level 3 for Alternative GR1 and GR-2 and Hazard Level 4 for Alternative GR-3. The area has been surveyed and cleared of all detected UXO in shallow soil. Alternative GR-1 does not address the hazard of human exposure to UXO, and would therefore not be protective of human health. Alternative GR-2 - LUCs offers a more protective option than Alternative GR-1, because the LUCs provide a means of educating the public to potential hazard that may exist. Alternative GR-3 – Subsurface Clearance to Depth provides a means of eliminating any potential UXO that may remain within Grant HA. Alternatives GR-1 and GR-2 would be protective to the environment as no clearing, grubbing, or excavation would be required. Alternative GR-3 would have significant impact on the environment.

2. **Compliance with Applicable and/or Relevant and Appropriate Requirements and To Be Considered** – There are no action-specific ARARs associated with Alternative GR-1, because there are no active remedial actions associated with this alternative. However, there are possible location-specific ARARs that may be applicable. Alternative GR-2 and GR-3 would be implemented and performed to comply with all ARARs and To Be Considered (TBC).

3. **Long-Term Effectiveness and Permanence** – Alternative GR-1 is not effective or permanent. Alternative GR-2 is more effective and permanent than Alternative GR-1, assuming the cooperation and active participation of the existing powers and authorities of government agencies. The LUCs described in Subsection 2.14.1 will provide effectiveness in the long-term. Alternative GR-3 is the most effective and

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permanent alternative by reducing or eliminating the presence of any remaining UXO within the Grant HA.

4. **Reduction of Toxicity, Mobility, and Volume of Contaminants Through Treatment** – Alternatives GR-1 and GR-2 will not reduce the TMV of UXO at the Grant HA. Alternative GR-3 will reduce the TMV of UXO in Grant HA.

5. **Short-Term Effectiveness** – Because there is no construction activity associated with either alternative, Alternatives GR-1 and GR-2 will not present significant additional hazard to the community or to contractors at Grant HA. Alternative GR-3 will result in short-term hazards to contractors and significant impact on the environment. No additional hazards to the community are anticipated as access to the area will be restricted during the remedial action.

6. **Implementability** – Alternative GR-1 would be easily implemented because it requires no action. Alternative GR-2 could also be easily implemented, because LUCs pose no technical difficulties and the materials and services needed are available. Although not technically difficult, Alternative GR-3 involves complex implementation because it would require the removal of 128 acres of vegetation; the excavation, staging, placement, and grading of several hundred thousand tons of overburden soil. In addition to the difficulties of construction work and UXO survey effort, erosion control measures will have to be implemented to ensure that degradation of the disturbed areas do not occur in the short- or long-term.

7. **Cost** – The total present-value cost to perform each alternative is as follows:

   Alternative GR-1 = $0
   Alternative GR-2 = $74,000
   Alternative GR-3 = $30,000,000

   Note: Costs have been rounded to the nearest thousand or million dollars and do not include costs associated with recurring reviews.

Alternative GR-1 and GR-2 represent alternatives with appropriate costs associated with the hazard presented by the potential presence of UXO within the Grant HA.

2.11.2 Impact Area

1. **Overall Protectiveness of Human Health and the Environment** – Based on weight of evidence, the Impact Area was evaluated to have a low probability of encountering UXO. The MEC HA indicates the area is a Hazard Level 3. Alternative IA-1 - No Action does not address the hazard of human exposure to UXO, and would therefore not be protective of human health. Alternatives IA-2, 3, and 4 are Hazard Level 4. Alternative IA-2 - LUCs is more protective than Alternative IA-1 as the LUCs would reduce exposure. However, Alternative IA-3 - LUCs with Engineering Controls is

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more protective than Alternatives IA-1 and IA-2 as it provides a protective barrier to further reduce the potential for exposure. Alternative IA-4 - Subsurface Clearance to Depth is the most protective alternative as it provides for the removal of remnant UXO to depth. Alternatives IA-1 and IA-2 would be protective of the environment as no clearing, grubbing, or excavation would be required. Alternative IA-3 and 4 would not be protective of the environment, because it requires extensive tree clearing and other disruptions to the habitat.

2. **Compliance with Applicable and/or Relevant and Appropriate Requirements and To Be Considered** – There are no action-specific ARARs associated with Alternative 1 because there are no active remedial actions associated with this alternative. However, there are possible location-specific ARARs that may be applicable. Alternatives IA-2, 3, and 4 would be implemented and performed to comply with all ARARs and TBCs.

3. **Long-Term Effectiveness and Permanence** – Alternative IA-1 is not effective or permanent. Alternative IA-2 is more effective and permanent than Alternative IA-1, assuming the cooperation and active participation of the existing powers and authorities of government agencies. The LUCs recommended as Alternative IA-2 have been designed to provide effectiveness in the long-term. Alternative IA-3 would provide long-term effectiveness by permanently capping the area with 3 ft of fill to mitigate the remnant UXO from resurfacing due to frost heaves. Engineering controls combined with LUCs would provide additional long-term effectiveness and permanence by assisting in managing the hazard before, during, and after the capping activity has been conducted, and will also ensure the integrity of the cap. Alternative IA-4 would provide long-term effectiveness by permanently removing any remnant UXO.

4. **Reduction of Toxicity, Mobility, and Volume of Contaminants Through Treatment** – Alternatives IA-1 and IA-2 will not reduce the TMV of UXO within the Impact Area. Alternative IA-3 will not reduce the toxicity or volume of UXO, but will provide limited hindrance of mobility of UXO through frost heave and erosion. Alternative IA-4 will reduce or eliminate UXO mobility through removal and disposal.

5. **Short-Term Effectiveness** – Because no construction activities are associated with either Alternative IA-1 or IA-2, they would not present additional short-term hazards to the community or to contractors in the Impact Area. Alternative IA-3 and IA-4 may increase the hazard exposure to contractors during installation of some physical aspects of the containment construction or removal action. The increased hazards to the community during these actions would be mitigated where possible by restricting access to the site.

   Implementability – Alternative IA-1 would be easily implemented because it requires no action. Alternative IA-2 could also be easily implemented, because LUCs pose no technical difficulties and the materials and services needed are available. Alternative IA-3 involves complex implementation because it would require the

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removal of several acres of forest; the import and placement of several tons of fill material, and the design of a cap on a severe slope. In addition to the difficulties of construction work and the removal of forest canopy on a severe slope, erosion control measures will have to be implemented to ensure that degradation of the cap does not occur in the short- or long-term. This will likely require the design, construction, and maintenance of erosion controls. Alternative IA-4 would be similar to IA-3, without the placement of imported fill.

6. **Cost** – The total present-value cost to perform each alternative is as follows:

   Alternative IA-1 = $0
   Alternative IA-2 = $155,000
   Alternative IA-3 = $890,000
   Alternative IA-4 = $724,000

   Note: Costs have been rounded to the nearest thousand dollars and do not include costs associated with recurring reviews.

Alternative IA-1 and IA-2 represent alternatives with appropriate costs associated with the hazards associated with UXO within the Impact Area. Alternatives 3 and 4 represent a high cost associated with the minimal hazards reduction that engineer controls or subsurface clearance would provide for remnant UXO potentially present at the Impact Area.

2.12 ALTERNATIVE SELECTION

Based on the information presented in the CERCLA nine-criteria screening process, alternatives GR-2 - LUCs and IA-2 - LUCs are the selected remedies that are protective of human health and the environment; comply with ARARs; and are cost-effective.

2.13 PRINCIPAL THREAT WASTE

As previously stated in Subsection 1.4, the residual subsurface UXO at both the Grant HA and the Impact Area is not considered to pose a Principal Threat.

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2.14 SELECTED REMEDY

2.14.1 Alternative GR-2 – Land Use Controls

Alternative GR-2 - LUC consists of Public/Contractor Awareness training through:

- Affirmative measures to include public education via ongoing periodic distribution of educational materials and development of a web-based visual and audio media. Education and outreach materials will be distributed to property owners, residents, as well as any construction and/or utility contractors conducting ground intrusive activities on the property. The intent is to provide education to current residents, including tenants and owners, potential residents, the public, and construction/utility contractors of the potential presence of UXO, how to identify UXO, and what actions to take if suspect UXO is encountered.

- Deed Notice: MassDevelopment will insert a Deed Notice into any deeds in which MassDevelopment conveys property located in the Grant HA. Then all subsequent deeds conveying property (no matter who conveys) will be required to convey in full the Deed Notice. The notice will provide a source of additional information on UXO investigations and removal actions conducted at the Grant HA, the conclusion of the ROD that the property with the LUCs is suitable for the proposed future use, that there is no evidence of additional UXO present at the site, but that the possibility does remain that UXO could be discovered in the future.

The LUCs in regard to real property are broadly interpreted to mean any restriction or control, arising from the need to protect public health and welfare or 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 also may 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 restrictions (e.g., informational/educational materials or signage) and prohibitive directives (e.g., no excavation or drilling of drinking water wells). Considered together, the "LUCs" for a property will provide a blue print for how the property should be used in order to maintain the level of protectiveness intended by the remedial alternative.

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In the selected remedy, LUCs are addressed through affirmative measures including, but not limited to, ongoing distribution of educational materials, development of a web-based visual and audio media, and a deed notice. The intent is to educate current residents, including tenants and owners, potential residents, the public and construction contractors to the potential presence of UXO, locations where UXO are more likely to be encountered, how to identify UXO, how to minimize the potential of encountering UXO, what actions to take if suspect UXO is encountered, and to provide an avenue for potential future property owners to have knowledge of property conditions prior to their purchase. These instructions will include requirements for informing EPA, public notification requirements, safety procedures, and protocols for proper disposal/destruction of the discovered UXO. In addition, actual procedures for notification of suspect UXO located by contractors is currently presented in MassDevelopment's "Soil Management Policy" and is provided in Appendix A.

In addition, Devens Enterprise Commission (DEC) has implemented in their building permit application process a requirement that personnel of companies or property owners intending to participate in intrusive work at Devens complete the MassDevelopment UXO video/awareness course and understand procedures for notification should UXO be located by contractors. This process is already developed and in use. A copy of the Building Permit Application, containing the requirement for training is provided as Appendix B.

The implementation of MassDevelopment/DEC requirements will be monitored as part of this alternative under the LUCIP and as part of the Comprehensive Five-Year Review process conducted at Devens which is required under Section 121 of CERCLA, as amended by SARA of 1986.

The LUCs would be implemented following the issuance of the ROD through a LUCIP. Within 120 days of ROD signature, the Army shall prepare and submit for EPA review and approval a LUCIP that shall contain implementation and maintenance actions, including periodic reviews and inspections. The LUCIP formalizes the roles and responsibilities of the Army, EPA, MassDEP, and MassDevelopment in the long-term administration and management of the alternative. The LUCIP will provide details of the deed notice, the information to be included in the brochure/fact sheets and website, locations of brochure/fact sheet distribution, how

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information will be disseminated to the property owners, residents and construction/utility contractors, detailed description and survey coordinates of the area that is being addressed by the LUCs (see Figure 2), and the schedule/procedure for dissemination of the information and will consider a permanent information kiosk. A visual inspection of the Grant HA for the presence of UXO will also be considered during the development of the LUCIP. The LUCIP will include instructions that will be followed in the event that UXO is discovered on the site. These instructions will include requirements for informing EPA, public notification requirements, safety procedures, and protocols for proper dispensation of the discovered UXO. Annual reviews will be conducted to confirm the overall effectiveness of the established LUCs.

The estimated costs include initial capital costs to develop the educational materials, 30-year annual costs, and a 3% discount rate is as follows.

- Estimated Capital Cost: $24,000
- Estimated Present-Value Annual Cost: $50,000
- Estimated Total Present-Value Cost: $74,000

Land Use Controls will be maintained until such time that the hazard associated with potential remnant UXO in the soil is at levels to allow for unrestricted use and exposure.

The Army is responsible for implementing, maintaining, reporting on, and enforcing the LUCs. Although the Army may later transfer these procedural responsibilities to another party by contract, property transfer agreement, or through other means, the Army shall retain ultimate responsibility for the remedy integrity.

2.14.2 Alternative IA-2 – Land Use Controls

For the Impact Area, LUCs are addressed through institutional controls, access restrictions, affirmative measures, and prohibitive directives:

- Institutional controls are to be implemented through a GERE.
- Access Controls to include the use of signage and either fencing and/or vegetative barrier to limit public access to the area.

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- Affirmative measures to include public education via ongoing periodic distribution of educational materials, development of a web-based visual and audio media and signage at the site. Education and outreach materials will be distributed to affected public and construction and/or utility contractors. The intent is to provide ongoing education to the public and construction contractor of the potential presence of UXO, how to identify UXO, and what actions to take if suspect UXO is encountered.

- Prohibitive directives to include restrictions on all ground intrusive activities.

- Annual site inspections of the site to evaluate access controls, monitor for the presence of surficial and near surface UXO, and evaluate the overall effectiveness of the LUCs will be conducted on an annual basis.

The LUCs would be implemented following the issuance of the ROD through a LUCIP. Within 120 days of ROD signature, the Army shall prepare and submit for EPA review and approval a LUCIP that shall contain implementation and maintenance actions, including period inspections. The LUCIP formalizes the roles and responsibilities of the Army, EPA, MassDEP, and MassDevelopment in the long-term administration and management of the alternative. The LUCIP will provide details of the GERE, details such as types of signage, how many and sizes, details on fencing or types and plans for vegetation to be installed, details of the information to be included in the brochure/fact sheets and website, locations of brochure/fact sheet distribution, detailed description and survey coordinates of the area that is being addressed by the LUCs (see Figure 2), and the schedule/procedure for dissemination of the information. The LUCIP will include instructions that will be followed in the event that UXO is discovered on the site. These instructions will include requirements for informing EPA, public notification requirements, safety procedures, and protocols for proper dispensation of the discovered UXO.

The instructions to follow in the event that UXO is discovered on the site will be included as an attachment to the GERE. These instructions will include requirements for informing EPA, public notification requirements, safety procedures, and protocols for proper dispensation of the discovered UXO. Actual procedures for notification of suspect UXO are presented in MassDevelopment's "Soil Management Policy" provided in Appendix A.

In addition, DEC has implemented in their building permit application process a requirement that personnel of companies or property owners intending to participate in intrusive work at Devens complete the MassDevelopment UXO video/awareness course and understand procedures for

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notification should UXO be located by contractors. This process is already developed and in use. A copy of the Building Permit Application, containing the requirement for training is provided as Appendix B.

The implementation of MassDevelopment/DEC requirements will be monitored as part of this alternative under the LUCIP and as part of the Comprehensive Five-Year Review process conducted at Devens which is required under Section 121 of CERCLA, as amended by SARA of 1986.

The estimated costs include initial capital costs to develop the educational materials, 30-year annual costs, and a 3% discount rate is as follows:

- Estimated Capital Cost: $60,000
- Estimated Present-Value Annual Cost: $95,000
- Estimated Total Present-Value Cost: $155,000

Capital and annual costs used in the calculation of present worth costs for the selected remedy are presented in Table 3 below. Note that for the purposes of cost estimating, a vegetative barrier is assumed to be installed. In addition, project/construction management costs were added to capitals costs as a percentage of calculated costs. A 15% contingency was added to the annual costs associated with both IA-2 and GR-2.

Land Use Controls will be maintained until such time that the hazard associated with potential remnant UXO in the soil is at levels to allow for unrestricted use and exposure.

The Army is responsible for implementing, maintaining, reporting on, and enforcing the land use controls. Although the Army may later transfer these procedural responsibilities to another party by contract, property transfer agreement, or through other means, the Army shall retain ultimate responsibility for the remedy integrity.

2.15 STATUTORY DETERMINATIONS

Under CERCLA §121 and the NCP, the lead agency must select remedies that are protective of public health, welfare or the environment, comply with ARARs (unless a statutory waiver is justified), are cost-effective, and utilize permanent solutions and alternative treatment

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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 TMV of hazardous wastes as a principal element and a bias against off-site disposal of untreated wastes. The following sections discuss how the selected remedy meets these statutory requirements.

2.15.1 Protection of Public Health, Welfare, or the Environment

The selected remedy, comprised of Alternatives GR-2 and IA-2, will protect public health and welfare through mitigation of hazards to public health and welfare from exposure to potential residual UXO. This is accomplished in two ways:

- Restrict access and limit ground-intrusive activities at the former Impact Area.
- Educate current residents, including tenants and owners, potential residents, the public and construction contractors regarding potential existence of UXO, recognition, and avoidance.

Threats to the environment are not anticipated while the suspected UXO remains in place.

2.15.2 Compliance with Applicable and/or Relevant and Appropriate Requirements

The ARARs for the Grant HA and Impact Area are provided in Table 4.

The selected remedy will result in compliance with all ARARs and TBCs contained in Table 4. The ARAR and TBC compliance will be achieved as described in the far right column of the table.

2.15.3 Cost Effectiveness

In the lead agency's judgment, the selected remedy is cost-effective and represents a reasonable value for the money to be spent. In making this determination, the following definition was used: "A remedy shall be cost-effective if its costs are proportional to its overall effectiveness." (NCP §300.430(f)(1)(ii)(D)). This was accomplished by evaluating the "overall effectiveness" of those alternatives that satisfied the threshold criteria (i.e., were both protective of human health

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and the environment and ARAR-compliant). Overall effectiveness was evaluated by assessing three of the five balancing criteria in combination (long-term effectiveness and permanence; reduction in TMV through treatment; and short-term effectiveness). Overall effectiveness was then compared to 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 this alternative represents a reasonable value for the money to be spent.

As shown in the comparative analysis of alternatives and summarized in Table 3, the selected remedy, alternatives GR-2 and IA-2, are the most cost effective alternatives evaluated that are ARAR-compliant and that provide acceptable levels of achievement of the other evaluation criteria, including implementability, but not limited to short- and long-term effectiveness, and protectiveness.

The estimated present worth cost of the selected remedy is $74,000 for Alternative GR-2 and $155,000 for Alternative IA-2. Although Alternatives GR-1 and IA-1 are less expensive, protection of public health and welfare is not addressed. Other alternatives evaluated may provide incrementally more protectiveness; however, their increased costs are not warranted by the incremental increases in protectiveness. In addition, under future use conditions, overall hazards from potential subsurface UXO were found to be low to moderate.

2.15.4 Utilization of Permanent Solutions and Alternative Treatment Technologies (or Resource Recovery Technologies) to the Maximum Extent Practicable

The Army has determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a practicable manner at the site. Of those alternatives that are protective of human health and the environment and comply with ARARs, the Army has determined that the selected remedy provides the best balance of trade-offs in terms of the five balancing criteria, while also considering the statutory preference for treatment as a principal element and bias against off-site treatment and disposal and considering state and community acceptance.

The selected remedy reduces potential hazards to public health and welfare by mitigating potential future exposure to subsurface UXO at the Grant HA and Impact Area. The selected

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remedy does not present short-term hazards different from the other alternatives. There are no special implementability issues that set the selected remedy apart from any of the other alternatives evaluated. Additionally, a Principal Threat has not been found to exist at the Grant HA or the Impact Area; therefore, the preference for treatment is not paramount. Because this remedy potentially could result in hazards remaining on-site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within 5 years after initiation of remedial action to ensure that the remedy is, or will be, protective of human health and the environment.

2.15.5 Preference for Treatment as a Principal Element

Because of the low to moderate hazard levels currently existing at the site, as documented in Table 1, treatment of potential UXO is not deemed necessary. Therefore, because treatment was evaluated and deemed unnecessary, this statutory preference is satisfied.

2.15.6 Five-Year Review Requirements

Because this remedy potentially could result in hazardous substances remaining on-site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within 5 years after initiation of remedial action to ensure that the remedy is, or will be, protective of public health, welfare or the environment.

2.16 DOCUMENTATION OF SIGNIFICANT CHANGES

The *Proposed Plan* was released for public comment in September 2008. It identified Alternative GR-2 – LUC and IA-2 - LUC as the Preferred Alternatives to address UXO. Alternative GR-2 involved distribution of educational materials and development of web-based visual and audio materials. During the comment period, EPA determined that there was insufficient notice to potential purchasers of property within Grant HA. Therefore, the Army has agreed to ensure that MassDevelopment includes a revised deed notice for UXO in the selected remedy to inform potential purchasers of property within the Grant HA of the potential existence of UXO in the area.

Alternative IA-2 involved the application institutional controls as a GERE to restrict reuse, access controls to limit access to the area, affirmative measures to educate residents and contractors through the development of web-based visual and audio materials for distribution, placement of restrictions on intrusive work in the area, and annual inspections. There were no significant changes presented during the comment period.

Additionally, a revised set of ARARs for the remedial action alternative evaluation are presented in Subsection 2.15.2 – Compliance with ARARs. The ARARs as presented represent a change from the ARARs as presented in the *FFS* (WESTON, 2008a). Changes were made to the ARARs table based on comments from EPA received after the Public Comment period on the *Proposed Plan* (WESTON, 2008b). EPA felt that several of the ARARs listed on the *FFS* ARAR table were not consistent with the definition of an ARAR and should be removed from the table. While these changes did not come to light until after the *Proposed Plan*, it is possible they could have reasonably been anticipated during production of the *FFS* or *Proposed Plan*. The changes to the ARARs do not change in any way the alternatives evaluation process or outcome. The preferred alternatives remain the same as it would have been had no changes to the ARARs been made. Therefore, additional documentation of the change in ARARs and additional public comment are not deemed to be necessary.

Finally, based on EPA review comments on the *FFS*, the information in the following two bullets have been incorporated into the descriptions of LUCs for both Alternative GR-2 and Alternative IA-2:

- Included among the LUCs would be an attachment to the existing deed of instructions to follow in the event that UXO is discovered on the site. These instructions will include requirements for informing EPA, public notification requirements, safety procedures, and protocols for proper disposal/destruction of discovered UXO.
- DEC has established a requirement in their building permit application process that personnel of companies intending to participate in intrusive work at Devens must complete the MassDevelopment UXO video/awareness course and understand procedures for notification should UXO be located by contractors. A copy of the Building Permit Application, containing the requirement for training is provided as Appendix B. Procedures for notification of suspect UXO are presented in MassDevelopment's "Soil Management Policy" which is provided in Appendix A.

The implementation of DEC's requirements will be monitored as part of this alternative under the LUCIP and as part of the Comprehensive Five-Year Review process conducted at Devens which is required under Section 121 of CERCLA as amended by SARA of 1986.

Because these procedures are already in place under the MassDevelopment Soil Management Plan, this change is documented in this subsection only, and is not deemed to be a change warranting further public notification.

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SECTION 3

RESPONSIVENESS SUMMARY

3. RESPONSIVENESS SUMMARY

3.1 STAKEHOLDER COMMENTS AND LEAD AGENCY RESPONSES

No comments from the public were received on the *Proposed Plan* (WESTON, 2008b) for the duration of the public comment period.

The Army conducted a Public Hearing on the Proposed Plan on 18 September 2008. A transcript of the meeting is provided in Appendix C. No significant changes to the Proposed Plan were presented by the public during the hearing.

On 5 November 2008, EPA submitted comments on the *Proposed Plan* and *FSS* (WESTON, 2008a). On 14 November 2008, MassDEP provided comments on the *Proposed Plan*. The comments and formal responses are provided in the Responsiveness Summary, Appendix C.

It was determined that no significant changes to the remedy, as originally identified in the Proposed Plan, were necessary or appropriate.

3.2 TECHNICAL AND LEGAL ISSUES

Other than the legal changes to deeds and deed notices noted in Subsection 2.16, no other technical or legal issues are foreseen during implementation of the selected remedies.

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SECTION 4

REFERENCES

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4. REFERENCES

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FIGURES

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SOURCE
US DEPT. OF THE INTERIOR, GEOLOGICAL SURVEY
7.5 x 15 MINUTE SERIES (TOPOGRAPHIC)
AYER, MA., 1988

GRAPHIC SCALE
2000 1000 0 1000 2000
APPROXIMATE SCALE IN FEET

RECORD OF DECISION GRANT HOUSING AREA AND 37mm IMPACT AREA DEVENS, MASSACHUSETTS	DEPARTMENT OF THE ARMY NEW ENGLAND DISTRICT CORPS OF ENGINEERS CONCORD, MASSACHUSETTS
SITE LOCATION MAP	WESTON SOLUTIONS MANCHESTER NEW HAMPSHIRE

DRAWN BEG
DATE NOV 2008
FIGURE NO. 1

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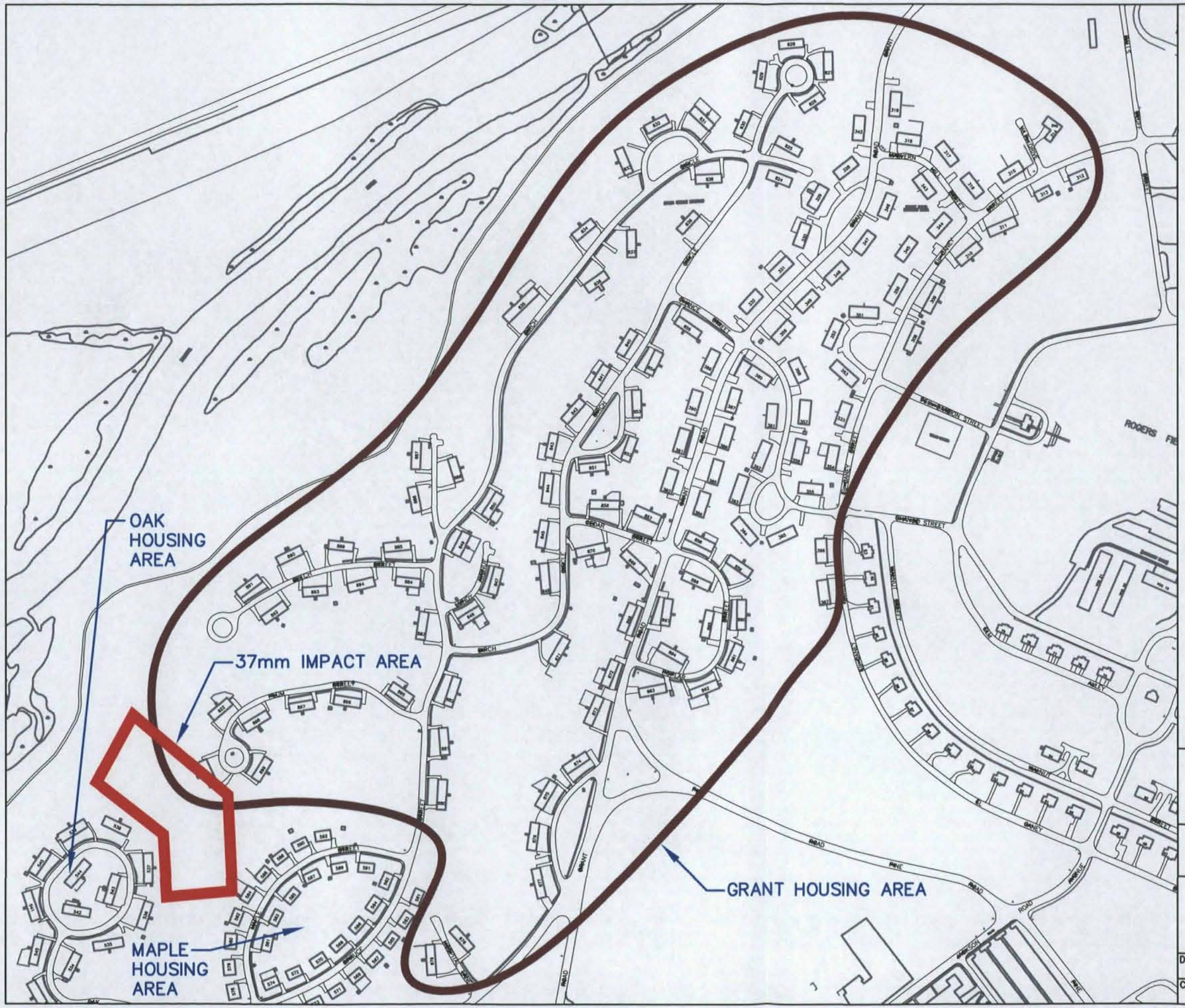


GRAPHIC SCALE

350 175 0 175 350

APPROXIMATE SCALE IN FEET

LEGEND

LOCATION OF FORMER HOUSING UNIT

WESTON SOLUTIONS
MANCHESTER NEW HAMPSHIRE

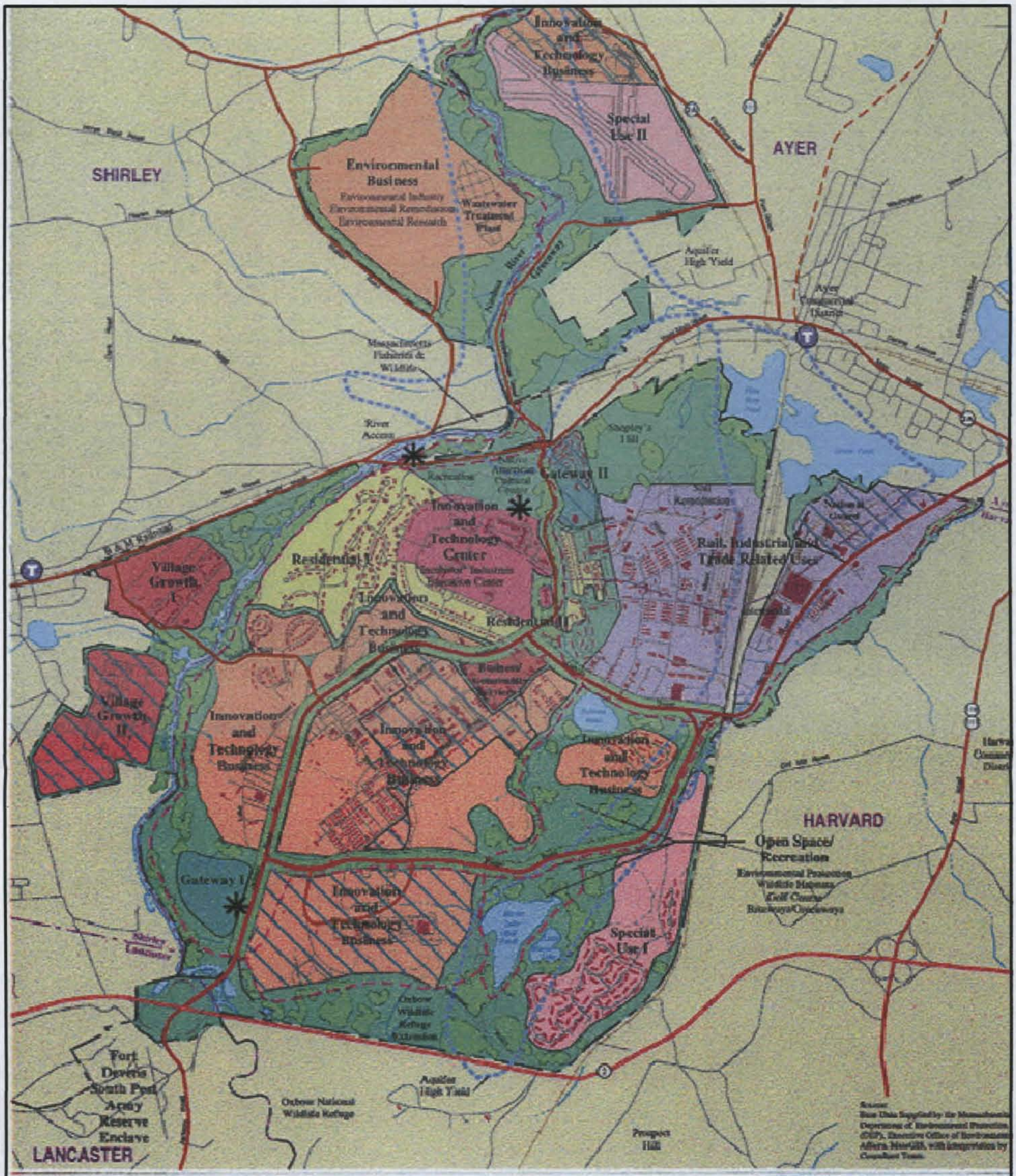
DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

RECORD OF DECISION
GRANT HOUSING AREA AND 37mm IMPACT AREA
DEVENS, MASSACHUSETTS

AREAS OF CONCERN

DRAWN	DATE	FIGURE NO.
BEG	NOV 2008	2
CHECKED	W.O. NO. 03886.184.002	

M:\Des...\DWG\ACOE\FTDEVENS\2008\ROD\FIG 2.dwg, Layout1, 11/25/2008 12:05:09 PM, CHASE\...:1



Open Space & Recreation
Innovation & Technology Business
Rail, Industrial & Trade-Related
Environmental Business
Residential I & II
Business/Community Services Village Growth Districts I & II
Innovation & Technology Center
Gateway I & II
Special Use I & II
Federal Lands
High Yield Aquifer
Conceptual Trails & Bikeways
Commuter Rail

SOURCE:
GRAPHIC TAKEN FROM DEVENS ZONING DISTRICTS & UNDERLYING FEDERAL USES, EXIBIT A, MADE FOR THE DEVENS BASE REUSE CENTER, NOVEMBER 17, 1994.

GRAPHIC SCALE
2000 1000 0 1000 2000
APPROXIMATE SCALE IN FEET

RECORD OF DECISION
FORMER FORT DEVENS MILITARY INSTALLATION
DEVENS, MASSACHUSETTS

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

ZONING USE MAP

WESTON SOLUTIONS
MANCHESTER NEW HAMPSHIRE

DRAWN BY	BEG
DATE	NOV 2008
FIGURE NO.	3

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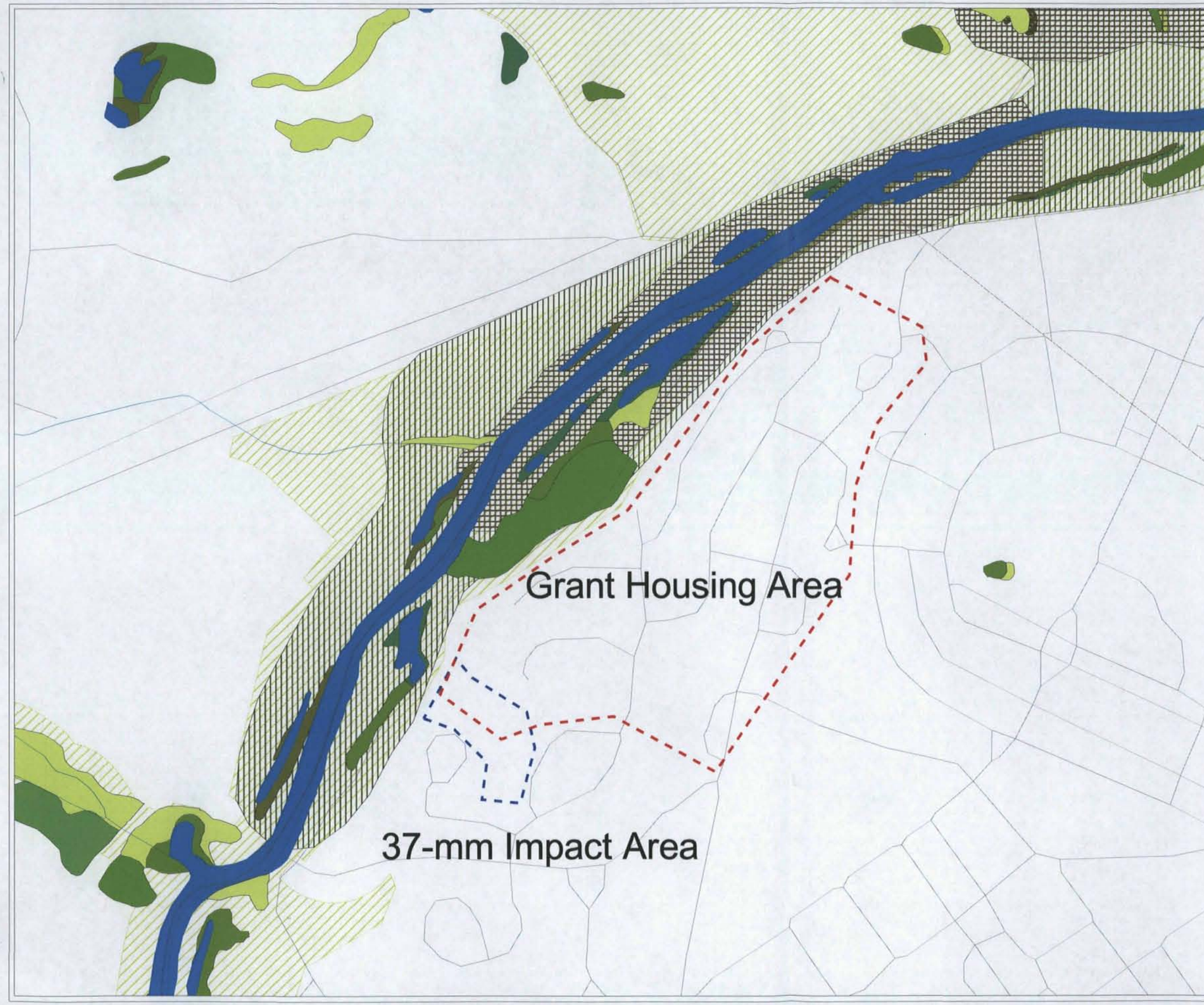

LEGEND

- Surface Water
- Roads
- Town Boundary
- NHESP Priority Habitats of Rare Species
- NHESP Estimated Habitats of Rare Wildlife

MDEP Wetlands

- Bog
- Deep Marsh
- Not Interpreted
- Open Water
- Shallow Marsh, Meadow, or Fen
- Shrub Swamp
- Wooded Swamp, Coniferous
- Wooded Swamp, Deciduous
- Wooded Swamp, Mixed Trees

Areas of Critical Environmental Concern

- Central Nashua River Valley
- Squannassit

N W E S

500 0 500 1000 Feet

WESTON SOLUTIONS Restoring Resource Efficiency

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT
CORPS OF ENGINEERS
CONCORD, MASSACHUSETTS

RECORD OF DECISION
GRANT HOUSING AREA AND 37-MM IMPACT AREA
DEVENS, MASSACHUSETTS

Wetlands and Wildlife Habitats Map

DRAWN	JS	DATE NOVEMBER 2008	Figure 4
CHECKED	PH	W.O. NO. 03886.184.002	

TABLES

Table 1

Munitions and Explosives of Concern Hazard Assessment Scoring Summary

Scenario	Hazard Score	Hazard Level
Grant Housing Area		
Current	460	4
Future	570	3
GR-1 (No Action)	570	3
GR-2 (Land Use Controls)	570	3
GR-3 (Subsurface Cleanup to Depth)	500	4
Impact Area		
Current	485	4
Future	595	3
IA-1 (No Action)	595	3
IA-2 (Land Use Controls)	440	4
IA-3 (Land Use Controls with Engineered Cap)	440	4
IA-4 (Subsurface Cleanup to Depth)	525	4

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Table 2

Detailed Analysis of Alternatives for Grant Housing Area and the Impact Area

		Grant Housing Area			Impact Area			
		Alternative GR-1 – No Action	**Alternative GR-2 – Land Use Controls (LUCs)**	**Alternative GR-3 – Subsurface Clearance to Depth**	**Alternative IA-1 – No Action**	**Alternative IA-2 – Land Use Controls (LUCs)**	**Alternative AI-3 –LUCs and Engineered Controls**	**Alternative IA-4 – Subsurface Clearance to Depth**
Criteria	**Overall protectiveness of human health and the environment**	▪ Achieves MEC HA Hazard Level 3 ▪ Will not be protective of human health. ▪ Will be protective of the environment because no clearing, grubbing, or excavation would be required.	▪ Achieves MEC HA Hazard Level 3 ▪ Will increase protection for human health. ▪ Will be protective of the environment because no clearing, grubbing, or excavation would be required.	▪ Achieves MEC HA Hazard Level 4 ▪ Will increase protection for human health. ▪ Will not be protective of the environment because excessive clearing, grubbing, or excavation would be required.	▪ Achieves MEC HA Hazard Level 3 ▪ Will not be protective of human health. ▪ Will be protective of the environment because no clearing, grubbing, or excavation would be required.	▪ Achieves MEC HA Hazard Level 4 ▪ Will be protective of human health. ▪ Will be protective of the environment because no clearing, grubbing, or excavation would be required.	▪ Achieves MEC HA Hazard Level 4 ▪ Will be protective of human health. ▪ Will not be protective of the environment because it requires extensive tree clearing and other disruptions to the habitat. ▪ LUCs would provide additional protection to human health and the environment, as discussed in Alternative 2.	▪ Achieves MEC HA Hazard Level 4 ▪ Will be protective of human health. ▪ Will not be protective of the environment because it requires extensive tree clearing and other disruptions to the habitat.
	Compliance with ARARs and TBCs	▪ There are no action-specific ARARs associated with this alternative. ▪ There are possible location-specific ARARs that may be applicable. These would include ARARs/TBCs that require reduction of risks to potential receptors. The main applicable location-specific ARARs would be CERCLA, the MCP, and specific BRAC property transfer requirements. It is unlikely the No Action alternative would attain these ARARs.	▪ Will comply with all ARARs and TBCs.	▪ Will comply with all ARARs and TBCs.	▪ There are no action-specific ARARs associated with this alternative. ▪ There are possible location-specific ARARs that may be applicable. These would include ARARs/TBCs that require reduction of risks to potential receptors. The main applicable location-specific ARARs would be CERCLA, the MCP, and specific BRAC property transfer requirements. It is unlikely the No Action alternative would attain these ARARs.	▪ Will comply with all ARARs and TBCs.	▪ Will comply with all ARARs and TBCs. ▪ LUCs will comply with ARARs and TBCs, as discussed in Alternative 2. This alternative is the most likely to ensure long-term ARAR compliance due to placement of a physical barrier between site contaminants (MEC) and potential receptors.	▪ Will comply with all ARARs and TBCs.

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Table 2

Detailed Analysis of Alternatives for Grant Housing Area and the Impact Area

		Grant Housing Area			Impact Area			
		Alternative GR-1 – No Action	**Alternative GR-2 – Land Use Controls (LUCs)**	**Alternative GR-3 – Subsurface Clearance to Depth**	**Alternative IA-1 – No Action**	**Alternative IA-2 – Land Use Controls (LUCs)**	**Alternative AI-3 –LUCs and Engineered Controls**	**Alternative IA-4 – Subsurface Clearance to Depth**
Criteria	**Long-term effectiveness and permanence**	▪ The magnitude of risk is not expected to reduce over the long term based on intended future land use.	▪ The remedial design will specify steps and controls to be put in place that will ensure that LUCs are maintained, thus ensuring long-term effectiveness and permanence.	▪ Will provide long-term effectiveness and permanence.	▪ The magnitude of risk is not expected to reduce over the long term based on intended future land use.	▪ The remedial design will specify steps and controls to be put in place that will ensure that LUCs are maintained, thus ensuring long-term effectiveness and permanence.	▪ Will provide long-term effectiveness. ▪ LUCs would provide additional long-term effectiveness and permanence by assisting in managing risk before, during, and after the containment activity has been conducted. ▪ LUCs will also ensure the integrity of the cap.	▪ Will provide long-term effectiveness and permanence.
	Reduction of toxicity, mobility, or volume (TMV) of contaminants through treatment	▪ Will not reduce MEC volume or mobility due to frost heave or erosion.	▪ Will not reduce MEC volume or mobility due to frost heave or erosion.	▪ Will reduce or eliminate MEC volume and mobility.	▪ Will not reduce MEC volume or mobility due to frost heave or erosion.	▪ Will not reduce MEC volume or mobility due to frost heave or erosion.	▪ Will not reduce the number (or volume) of MEC items. ▪ The presence and mobility of MEC items due to erosion would not be reduced, but would be limited. ▪ LUCs would not reduce the volume or mobility of MEC.	▪ Will reduce or eliminate MEC volume and mobility
	Short-term effectiveness	▪ No additional risk to the community or workers.	▪ There may be risk to workers during the installation of signage, however, the risk is considered minimal. ▪ No additional risk to the community or workers.	▪ There may be risk to workers during the remedial activities. ▪ No additional risk to the community.	▪ No additional risk to the community or workers.	▪ There may be risk to workers during the installation of signage, however, the risk is considered minimal. ▪ No additional risk to the community or workers.	▪ Will be a moderate increase in risk to workers. ▪ The increased risk to the community during the containment activity would be mitigated where possible.	▪ There may be risk to workers during the remedial activities. ▪ No additional risk to the community.

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Table 2

Detailed Analysis of Alternatives for Grant Housing Area and the Impact Area

		Grant Housing Area			Impact Area			
		Alternative GR-1 – No Action	**Alternative GR-2 – Land Use Controls (LUCs)**	**Alternative GR-3 – Subsurface Clearance to Depth**	**Alternative IA-1 – No Action**	**Alternative IA-2 – Land Use Controls (LUCs)**	**Alternative AI-3 –LUCs and Engineered Controls**	**Alternative IA-4 – Subsurface Clearance to Depth**
Criteria	**Implementability**	▪ No technical difficulties and would be administratively feasible.	▪ Most of the components can be easily implemented. ▪ Operation and maintenance of educational LUCs can be performed easily.	▪ Difficult to implement due to the volumes of soil to be handled.	▪ No technical difficulties and would be administratively feasible.	▪ Most of the components can be easily implemented. ▪ Operation and maintenance of educational LUCs can be performed easily.	▪ Containment of MEC is moderately complex. ▪ LUCs could be implemented as described in Alternative 2.	▪ Difficult to implement due to the volumes of soil to be handled and local topography (steep terrain).
	Cost	▪ The total present-value cost is $0.	▪ The total present-value cost is $73,000.	▪ The total present-value cost is $30,000,000.	▪ The total present-value cost is $0.	▪ The total present-value cost is $155,000.	▪ The total present-value cost is $890,000.	▪ The total present-value cost is $496,000

Notes:
ARARs = Applicable or Relevant and Appropriate Requirements
BRAC = Base Realignment and Closure
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
MCP = Massachusetts Contingency Plan
MEC HA = Munitions of Explosive Concern Hazard Assessment
TBC = To Be Considered

Table 3

Capital and Annual Costs for Selected Remedy Alternatives GR-2 and IA-2

Alternative GR-2			
Capital Costs	**Quantity**	**Unit**	**Cost**
LTM Plan	1	EA	$ 5,500.00
Signs (produced and installed)	1	EA	$ 4,950.00
Prepare and distribute Brochure/Fact Sheet	1	LS	$ 3,850.00
Copy & distribute UXO awareness videos	1	LS	$ 1,650.00
Update MassDevelopment Website	1	LS	$ 2,750.00
Contingency & Management	1	LS	$ 5,170.00
		TOTAL	**$ 23,870.00**
Annual Costs			
Signs (produced and installed)	1	EA	$ 550.00
Redistribute Brochure/Fact Sheet	1	LS	$ 550.00
Copy and redistribute UXO awareness videos	1	LS	$ 550.00
Update MassDevelopment Website	1	LS	$ 550.00
Management	1	LS	$ 330.00
TOTAL			**$ 2,530.00**
Alternative IA-2			
Capital Costs			
LTM Plan	1	EA	$ 5,500.00
Preparation of GERE	1	EA	$ 11,000.00
Legal Support	40	HR	$ 11,000.00
Prepare and distribute Brochure/Fact Sheet	1	LS	$ 2,750.00
Copy & distribute UXO awareness videos	1	LS	$ 1,650.00
Signs (produced and installed)	4	LS	$ 5,500.00
Update MassDevelopment Website	1	LS	$ 1,100.00
Installation of Vegetative Barrier			
UXO Tech II (ST)	24	HR	$ 2,150.00
Laborer	24	HR	$ 1,800.00
Pickup Truck 4x4 w/FOG (2)	25	DY	$ 2,060.00

Table 3

Capital and Annual Costs for Selected Remedy Alternatives GR-2 and IA-2 (Concluded)

Installation of Vegetative Barrier (continued)			
Consumable Supplies (plant species) (twenty foot centers)	100	Each	$ 2,200.00
Contingency & Management	1	LS	$ 12,900.00
TOTAL			**$ 59,600.00**
Annual Costs			
Signs (produced and installed)	1	EA	$ 550.00
Produce and Redistribute Brochure/Fact Sheet	1	LS	$ 550.00
Copy and distribute UXO awareness videos	1	LS	$ 550.00
Update MassDevelopment Website	1	LS	$ 550.00
Plant Maintenance			
UXO Tech II (ST)	16	HR	$ 1,435.00
Pickup Truck 4x4 w/FOG (2)	2	DY	$ 165.00
Consumable Supplies (plant species)	20	LS	$ 440.00
Contingency & Management	1	LS	$ 635.00
TOTAL			**$ 4,875.00**

Notes:
LTM = long-term monitoring
GERE = Grant of Environmental Restrictions and Easements
UXO = unexploded ordnance

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Table 4

Applicable or Relevant and Appropriate Requirements

Regulatory Authority	Location Characteristic	Requirement	Status	Requirement Synopsis	Action to be Taken to Attain ARAR to the Extent Practicable
Chemical-Specific Applicable and/or Relevant and Appropriate Requirements					
Federal	DoD Facilities	Munitions and Explosives of Concern Hazard Assessment Methodology (October 2008).	TBC	Provides a methodology for assessment of hazards in support of reuse/ redevelopment of sites contaminated with ammunition, explosives, or chemical agents.	MEC size, flight path, and penetration depth for each type of MEC found on-site will be considered in remedial planning/ redevelopment decision-making.
Location-Specific Applicable and/or Relevant and Appropriate Requirements					
State	Wetlands	Wetlands Protection Act – M.G.L. c. 131, Section 40 and 310 CMR 10	Applicable	Provides for protection of wetlands and requirement of Conservation Commission review and permit or waiver for work within the 100-foot buffer zone of a state wetland.	No work is being performed in wetlands or wetland buffer zones during the project. However, hay bales and silt fencing have been previously placed as appropriate to eliminate any potential adverse affects from adjacent on-site construction activities. Erosion control will be maintained in accordance with state regulations.
Federal	Wetlands	Protection of Wetlands Executive Order No. 11990 [40 CFR Part 6, App. 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 wetlands areas, and no practical alternative exists, potential harm must be minimized and action taken to restore natural and beneficial values. Not yet promulgated as of July 2007.	No work is being performed in wetlands during the project. In addition, this regulation is not yet promulgated. However, in consideration of state and local wetlands regulations and in the interest of minimizing environmental impacts during remediation, hay bales and silt fencing will be placed as appropriate to eliminate any potential adverse affects from adjacent on-site construction activities. Erosion control will be maintained in accordance with federal regulations.

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Table 4

Applicable or Relevant and Appropriate Requirements (Continued)

Regulatory Authority	Location Characteristic	Requirement	Status	Requirement Synopsis	Action to be Taken to Attain ARAR to the Extent Practicable
Action-Specific Applicable and/or Relevant ant Appropriate Requirements					
Federal	Regulation of Waste Management Portion of Response Actions that involve treatment or disposal of UXO.	RCRA - 40 CFR 266 Subpart M – Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste management Facilities	Applicable	266.203 – Provides standards for the transportation of solid waste military munitions. 266.204 – Standards applicable to emergency response. 266.205 - Standards applicable to storage of solid waste military munitions. 266.206 - Standards applicable to treatment and disposal of solid waste military munitions.	It is unlikely that MEC disposal or on-site treatment will be required as part of remedial alternatives discussed in the *FFS*. However, should the need for MEC disposal/treatment arise, the requirements of Subpart M regarding transportation and disposal will be followed.
Federal	Regulation of Waste Management Portion of Response Actions that involve treatment or disposal of UXO.	RCRA - 40 CFR 264 Subpart X – Standards for owners and operators of hazardous waste treatment, storage, and disposal facilities; Miscellaneous units	Relevant and Appropriate if UXO blown in place. Applicable if UXO moved from site prior to detonation.	264.601- A miscellaneous unit must be located, designed, constructed, operated, maintained, and closed in a manner that will ensure protection of human health and the environment.	It is unlikely that UXO disposal or on-site treatment will be required as part of remedial alternatives discussed in the *FFS*. However, should the need for UXO disposal/treatment arise, it could require the use of technologies defined as "miscellaneous units" in Subpart X, including OB/OD units, shredders, crushers, etc.

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Table 4

Applicable or Relevant and Appropriate Requirements (Continued)

Regulatory Authority	Location Characteristic	Requirement	Status	Requirement Synopsis	Action to be Taken to Attain ARAR to the Extent Practicable
Federal	Regulation of Waste Management Portion of Response Actions that involve treatment or disposal of UXO.	RCRA - 40 CFR 264 Subpart X – Standards for owners and operators of hazardous waste treatment, storage, and disposal facilities; Miscellaneous units	Relevant and Appropriate if UXO blown in place. Applicable if UXO moved from site prior to detonation.	Subpart X outlines procedures for issuing permits to miscellaneous units that treat, store, or dispose of hazardous waste. Miscellaneous units include OB/OD units, enclosed combustion devices, carbon and catalyst regeneration units, thermal desorption units, shredders, crushers, filter presses, and geologic repositories. Subpart X does not specify minimum technology requirements or monitoring requirements for miscellaneous units. Subpart X specifies an environmental performance standard that must be met through conformance with appropriate design, operating, and monitoring requirements.	

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Table 4

Applicable or Relevant and Appropriate Requirements (Contiued)

Regulatory Authority	Location Characteristic	Requirement	Status	Requirement Synopsis	Action to be Taken to Attain ARAR to the Extent Practicable
State	Regulation of Waste Management Portion of Response Actions that involve treatment or disposal of UXO.	310 CMR 30.606 – Standards for treatment, storage and disposal facilities, miscellaneous units.	Applicable and/or relevant and Appropriate to the extent that implementation authority for RCRA has been delegated to the Commonwealth of Massachusetts.	Miscellaneous Unit means a hazardous waste management unit where hazardous waste is treated, stored, or disposed of and that is not one of the following: a container, tank, surface impoundment, waste pile, land treatment unit, landfill, incinerator, boiler, industrial furnace, unit excluded from licensing requirements pursuant to 310 CMR 30.801, or a research facility. Part 606 prescribes environmental performance standards for miscellaneous units including location, design, construction, operation, maintenance, and closure. Operation, monitoring, inspection, and post-closure care provisions are included to protect public health, safety, welfare, and the environment.	It is unlikely that UXO disposal or on-site treatment will be required as part of remedial alternatives discussed in the *FFS*. However, should the need for UXO disposal/treatment arise, it could require the use of technologies defined as "miscellaneous units" in Subpart X, including OB/OD units, shredders, crushers, etc.

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Table 4

Applicable or Relevant and Appropriate Requirements (Concluded)

Regulatory Authority	Location Characteristic	Requirement	Status	Requirement Synopsis	Action to be Taken to Attain ARAR to the Extent Practicable
To Be Considered (TBC)					
State	Soil	GERE M.G.L. c. 21E § 6, 310 Code of Massachusetts Regulations 40.1071-1073	Potentially Applicable	Massachusetts provides regulatory guidance for the preparation of a Grant of Environmental Restriction to address site restrictions.	Restriction could be applied as a means of Land Use Control.

Notes:

ARAR = Applicable or Relevant and Appropriate Requirement
CFR = Code of Federal Regulations
CMR = Code of Massachusetts Regulations
MEC = Munitions and Explosives of Concern
TBC = To Be Considered
UXO = Unexploded Ordnance
OB/OD = open burn/open detonation
RCRA = Resource Conservation and Recovery Act
M.G.L. = Massachusetts General Law
FFS = *Focused Feasibility Study*
DoD = Department of Defense

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APPENDIX A

PROCEDURES TO BE FOLLOWED IF MUNITIONS AND EXPLOSIVES OF CONCERN IS FOUND ON-SITE

(Rev. 8/06)

Devens Soil Management Policy

The following represents the policy of the Massachusetts Development Finance Agency ("MassDevelopment" or the "Agency"), with regard to the disturbance, excavation, movement and/or removal of soils located in the Devens Regional Enterprise Zone ("Devens").

MassDevelopment, pursuant to Chapter 498 of the Acts of 1993, has been designated as the public agency responsible for the redevelopment, reuse, and operation of Devens.

Whereas, Devens is a former active military installation, it is possible that unexploded ordnance ("UXO") or Munitions of Explosive Concern ("MEC") and environmental contaminants may exist and/or be encountered at Devens. With this policy, MassDevelopment seeks to reduce any risk to human health and safety and the environment.

Until amended or rescinded, it shall be the policy of the Agency that:

1. Prior to commencing any intrusive earth work within Devens (due diligence, construction or otherwise) all personnel to be on site shall view a UXO/MEC video briefing provided by MassDevelopment. This video is intended to instruct on-site personnel as to how to visually recognize UXO/MEC if found during construction activities and to provide instructions on what to do if potential/suspected UXO/MEC is observed.

2. To the extent reasonably practicable, no soil shall leave any construction site at Devens. Construction sites at Devens should be "balanced", i.e., engineered such that all soils remain on the development site and result in no excess soil.

3. In the event that excess soils must be removed from a development site, the following protocol shall apply:

   (a) Excess soils may be transported to another suitable location within Devens, provided however, that:

      i. the soils must be restricted for use only at a commercial site;

      ii. there is written documentation evidencing the consent and approval of the party agreeing to accept the soils for a specific use and the use, location and disposition of the soils shall be approved in writing by MassDevelopment;

      iii. chemical testing of soils to be transported must be performed in conformity with the soil management plan

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developed by Haley and Aldrich (to be provided by MassDevelopment upon request) and any site specific requirements imposed by the Massachusetts Department of Environmental Protection ("MA DEP"). The MA DEP must review and approve the results of the soils tests prior to the soils being transported;

iv. upon approval of soil test results by the MA DEP, the owner of the soils shall request that MassDevelopment provide written approval for the soils to be transported; and

v. any relocation of soils shall be compliant with all applicable DEC regulations and bylaws.

(b) If there is no suitable location on Devens to relocate the soils, the soils may be removed to a location outside of Devens, provided however, that:

i. the requirements of paragraphs 3(a)(i-v) shall apply; and

ii. all soils to be relocated outside of Devens shall be passed through a 1" diameter screen under the supervision of trained UXO personnel;

iii. all tailings (i.e. debris/matter not passing through the screen) shall be utilized on site; and

iv. if UXO is found in the tailings (or elsewhere), operations in the vicinity of the found item shall immediately cease and MassDevelopment and State Police shall be notified by the contractor.

(State Police phone #:978-772-7200)

4. In the event that areas of suspected environmental contamination (i.e. underground storage tanks, foreign materials, substances, etc.) are found, operations in the area in the vicinity of the suspected contamination shall cease and the contractor shall immediately notify MassDevelopment

(Ron Ostrowski: phone # 978-784-2936 or
Richard Montuori: phone # 978-784-2933)

MassDevelopment shall work with its environmental consultants and DEP and/or EPA to promptly agree upon a plan to temporarily relocate the foreign materials, if possible, in order to permit work on the site continue while a permanent disposal/remediation plan is established.

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DEVENS UXO PROTOCOL AND PROCEDURES

1. Prior to performing any intrusive soil work, all personnel on site must view an instructional video regarding identifying unexploded ordnance ("UXO"). The video shall be shown by MassDevelopment personnel in Devens, MA.

2. If ordnance is found or suspected, follow the following procedures:

I. DO NOT TOUCH

II. STOP ALL OPERATIONS IN THE AREA OF THE ITEM

III. SHUT OFF ALL EQUIPMENT IN THE AREA OF THE ITEM

IV. EVACUATE THE AREA

V. CALL STATE POLICE DEVENS BARRACKS @ 978-772-7200

3. State Police will dispatch an emergency response including notifying the UXO technician on-site (if present).

4. State Police, in conjunction with the Devens Fire Chief, and the Army will determine the course of action to be followed regarding the relocating, removing and/or destroying of found UXO upon further investigation of the item.

5. The following disclosure and notification is provided by MassDevelopment in documentation allowing access to and ground related work to be performed at Devens. In this context, the "Licensee" is the party to be performing the work and the "Licensor" MassDevelopment as the owner of the property.

"Licensee acknowledges that Devens is the site of a former active military installation, and that there is a possibility that unexploded ordnance (UXO) may be encountered during activities licensed by this Agreement. Specifically, the Deed pursuant to which the United States Army conveyed Devens to Licensor, states that "The [Army] completed a comprehensive records search and, based on that search, undertook and completed statistical and physical testing of areas on Devens where the existence of unexploded ordnance ("UXO") was considered to be present. Based upon said search and testing, the Army represents that, to the best of its knowledge, no UXO is currently present on [Devens]. The [Army] and [Licensor] acknowledge that, due to the former use of [Devens] as an active military installation, and notwithstanding the above –referenced records search and testing, UXO may exist on Devens. Upon due notice, the [Army] agrees to remove any such remaining UXO discovered on [Devens], as required under applicable law and regulation, as expeditiously as reasonable and practicable, subject to the availability of funds." Licensee acknowledges and agrees that: (1) its right of entry is subject to the Army's disclosure; (2) UXO have in fact been identified at Devens subsequent to the Army's testing; (3) Licensee will take appropriate precautions as it deems necessary to be alert to the possibility of UXO; (4) neither Licensee nor its

employees, agents, or contractors will touch or otherwise disturb UXO or suspected UXO; and (5) Licensee will cooperate with Licensor with respect to issues relating to UXO or suspected UXO. Without limiting the generality of the foregoing, if Licensee identifies an object that it suspects is UXO, it will immediately stop work and alert Licensor. Licensor will promptly alert the Army or other authorities and ask them to take appropriate further actions. Licensee agrees that any UXO is the responsibility of the Army (not Licensor), and Licensee agrees to follow whatever precautions or other actions are recommended by the Army. Licensee understands that activities authorized under this Agreement may be interrupted, impeded, delayed or prohibited by the Army as a result of the presence or suspected presence of UXO. Notwithstanding, the obligations of Licensee and the Army as specified in this Agreement, Licensee also agrees to cooperate with Licensor with respect to actions Licensor determines are necessary with respect to UXO at the Licensed Premises while this Agreement is in effect. Licensee shall not conduct any intrusive soil work on the Licensed Premises without first viewing Licensor's instructional video on UXO.

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APPENDIX B

DEVENS ENTERPRISE COMMISSION BUILDING PERMIT APPLICATION

DEVENS ENTERPRISE COMMISSION

TOWN OF DEVENS

PERMIT NO. _____

DEC No. _____

APPLICATION DATE: _____

FEE _____

BUILDING PERMIT APPLICATION

Note: The Devens Building Commissioner is available Wednesday from 10 AM to 12 PM.
To avoid delays in processing your application, submit all required information together. Incomplete application packages cannot be processed. Fill out application form completely and legibly.

==========

ESTIMATED COST OF CONSTRUCTION _____

OWNER _____ BUILDER _____

ADDRESS _____ ADDRESS _____

TOWN/STATE _____ TOWN/STATE _____

PHONE _____ PHONE _____

FAX _____ FAX _____

OWNER SIGNATURE _____

CONST. SUPER. LIC. NO. _____ HIC REGISTRATION _____

NOTE: A photocopy of your "CONSTRUCTION SUPERVISORS LICENSE" along with 'PHOTO IDENTIFICATION' are required at the time you file this application.

JOBSITE / LOCATION / STREET _____

LOT SIZE / TOTAL PARCEL _____

==========

SCOPE OF WORK (pick the one which best fits your project)

____ New Construction ____ Renovations / Additions / Repairs

____ Sign ____ Tent ____ MISC

____ Is this building located in the Historic District? Yes _____ No _____

Explain work to be performed: _____

_____

_____

BUILDING PERMIT APPLICATION (continued)

NEW HOUSE

==========

TRASH DISPOSAL AFFIDAVIT

As a result of the provisions of MGL "C40, S54", I acknowledge that as a condition of the BUILDING PERMIT, all debris resulting from the construction activity governed by the BUILDING PERMIT shall be disposed of in a properly licensed solid waste disposal facility, as defined by MGL "C 111, S 150a". Disposal at a licensed Construction & Demolition Debris Recycling Facility is the preferred method of disposal.

I certify that I will notify the Inspector of Buildings by _____ (max. of 2 months) of the location of the solid waste disposal facility where the debris resulting from said construction activity shall be disposed of, and I shall submit the appropriate form for attachment to the Building Permit.

DATE	SIGNATURE OF PERMIT APPLICANT

PRINT THE FOLLOWING INFORMATION

NAME OF PERMIT APPLICANT	NAME OF WASTE REMOVAL COMPANY
FIRM NAME (IF ANY)	ADDRESS
ADDRESS	TOWN, STATE, ZIP CODE
TOWN, STATE, ZIP CODE	PHONE NUMBER AND AREA CODE

==========

SOIL MANAGEMENT

Is soil being disturbed as part of this project?

_____ YES _____ NO

If YES - As Devens is a former active military installation, it is possible that unexploded ordinance (UXO) or Munitions of Explosive Concern (MEC) and environmental contaminants may exist and/or be encountered at Devens. Prior to commencing any intrusive earth work within Devens, all personnel to be on-site shall comply with the requirements of MassDevelopment's Devens Soil Management Policy, as amended. As per the Devens Soil Management Policy, MassDevelopment is required to provide UXO/MEC training. Applicants shall contact the Devens Public Safety Officer to coordinate this training.

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WORKERS' COMPENSATION INSURANCE AFFIDAVIT

Please attach valid copy of Worker's Compensation Insurance Certificate.

==========

THIS SPACE LEFT INTENTIONALLY BLANK

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DO NOT WRITE IN THIS SPACE, FOR OFFICE USE ONLY

==========

IDENTIFICATION OF APPLICANT

NAME _____

MAILING ADDRESS _____

TOWN, STATE, ZIP CODE _____

PHONE NUMBER AND AREA CODE _____

I hereby certify that the proposed work is authorized by the owner of recorded, and that I have been authorized by the owner to make this application as his / hers authorized agent. We agree to conform to all applicable Devens By-Laws, State Building Codes, and other restrictions / requirements from authorized agencies. I also certify that the information on this application is correct.

_____ _____

SIGNATURE OF APPLICANT DATE

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APPENDIX C

RESPONSIVENESS SUMMARY

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Responsiveness Summary to Comments Received on the Proposed Plan and Feasibility Study – Grant Housing Area and 37MM Impact Area, Former Fort Devens Army Installation, Devens, Massachusetts, September 2008

Response to MassDEP Comments – November 14, 2008

1. The proposed future use of the Grant Housing Area is unrestricted development. The preferred land Use Control ("LUC") in the Proposed Plan for Grant housing Area is education via distribution of educational materials and development of a web-based visual and audio media for the public and for construction workers. MassDEP recommends that in addition to the education LUC, the Proposed Plan include a LUC requiring all deeds transferring property within Grant Housing Area to contain specific notice regarding the potential presence of munitions and explosives of concern (including unexploded ordnance)("MEC").

   Pursuant to Institutional Controls and Transfer of Real Property Under CERCLA, Section 120(H)(3)(A), (B), or (C), EPA, March 26, 2007, http://www.epa.gov/fedfac/documents/fi-icops_106.htm, during the transfer of real property from a federal facility to a non-federal entity, the transferring federal agency is required to provide a legal description of the real property of other geographical information sufficient to clearly identify the property where the institutional controls will be implemented. Although the Proposed Plan clearly delineates the Grant housing Area, the Proposed Plan will not be a part of the chain of title. The quitclaim deed from the United States of America through the Secretary of the Army to the Government Land Bank delineates the 9,300 acre Devens site, but does not identify the property where the institutional controls will be implemented. MassDEP recommends that a notice of potential presence of MEC be required in every deed transferring property within Grant Housing Area. Such notice will remain in the chain of title, clear for all subsequent buyers to understand the possibility of encountering MEC. The form of this specific deed notice should be part of the discussions and documents associated with the Institutional Control Implementation plan ("ICIP") for review by all stakeholders.

Response: All transfer deeds associated with the former Fort Devens property include a deed notice for the potential presence of Unexploded Ordnance (UXO) and the responsibility of the Army to remove any such remaining UXO discovered on the property.

Also, Section VIII. D of the existing deed requires that;

"the Grantee shall comply with any institutional controls established or put in place by the Grantor relating to the Property which are required by any record of decision ("ROD") or amendments thereto, related to the Property, which ROD was approved by the Grantor and the EPA and issued by the Grantor pursuant to CERCLA or the FFA before or after the date of this Deed. Additionally, the Grantee shall ensure that any leasehold it grants in the Property or any fee interest conveyance of any portion of the Property provides for legally binding compliance with the institutional controls required by any such ROD.

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Therefore, based on the ROD requirements (and the subsequent requirements of the Land Use Control Implementation Plan (LUCIP)), all future property conveyance will require deed notices, provisions and restrictions as necessary to meet the ROD requirements for the selected remedy. Also, in accordance with Section VIII. E of the existing deed, the Grantee is required to provide such conveyance provisions to the Army, EPA and the Commonwealth at least sixty (60) days prior to any such property transfer.

In order to meet the deed requirements of noted above, the Army recommends that MassDevelopment prepare a draft deed to be utilized in all future property conveyance associated with any portion of the former Grant Housing Area and the Impact Area. Review of the draft deed by the Army, EPA and the Commonwealth will ensure that the ROD requirements are incorporated and that the deed provides for "legally binding compliance" with all LUCs.

The Army also acknowledges that the current landowner, MassDevelopment, will provide a Grant of Environmental Restriction and Easement (GERE) to the MADEP for property associated with the former Impact Area as described in the ROD. This GERE will establish the covenants, restrictions, access and enforcement requirements as per the ROD and the LUCIP. However, this GERE does not replace the requirements in the current deed for providing such covenants and restrictions as part of all future property conveyances.

This information referencing the existing deed provisions and the requirements regarding future property conveyance for compliance with the ROD and LUCIP have been added to Section 1.4 of the ROD to further address this comment.

2. The Proposed Plan did not contain any details regarding the implementation of the education aspect of the LUC. Land use controls must be enforceable and soles and responsibilities for monitoring, reporting, and enforcing must be clear to all affected parties. See the Department of Defense and the United States Environmental Protection Agency, Unexploded ordnance Management, principles, Department of Defense and United States Environmental Protection Agency, http://www.epa.gov/fedfac/documents/uxo_principles.htm. The ICIP must state the following: how the education aspect of the LUC is going to be enforceable; who is going to provide such education; how the availability of such education will be made known to the public, construction workers, and potential buyers/lessors of the residences in the Grant Housing area; the duration of such education; and how those responsible for conducting the education will assess whether such education is actually effective.

Response: In response to both this comment and EPA comment No. 3, such information will be incorporated into the LUCIP, and the educational protocols currently being implemented for on-site workers through MassDevelopment's Soil Management Policy will be incorporated into MassDevelopment's by-laws and BOH process. Reference to these actions has been added to the text of the ROD.

3. The preferred LUC for the Impact Area consists of: access controls of fencing or vegetative barrier, signage at the impact area, establishment of a Land Use Control Implementation Plan, public/worker awareness training, and land use prohibitions/restrictions through deed or

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grant restrictions, zoning revisions, and/or property easements. The Proposed Plan did not detail any of the above. The Land Use Control Implementation Plan should include details and draft documents for review by all stakeholders, in addition to information regarding enforceability of the LUCs. There are no other legal issues in the Proposed Plan to prevent MassDEP from concurring with the preferred alternative for the Impact Area.

Response: As described in responses to Comments Nos. 1 and 2, some detail regarding the type and enforceability of the LUCs as well as of the public/worker awareness training and education have been included in the ROD text. However, as stated in DEP's comment, many of the details will be addressed in the LUCIP document itself.

4. Any modification to the LUCs must have prior approval by EPA and MassDEP.

Response: Comment acknowledged. Language to this effect will be included in the ROD and LUCIP.

<u>EPA Legal Comments on Final FFS and Draft Final Proposed Plan:</u>

EPA requests that the following comments be addressed in the Draft ROD:

1. Attached is a marked up version of the ARARs table that was included in the Final FFS (Table 2-1). EPA legal review of the ARARs table found that many of the cited requirements/policies/guidance are not ARARs. Please ensure that the ARARs table included in the Draft ROD is consistent with the attached mark-up table and addresses the following additions/revisions:

   - Chemical Specific category: Include the MEC HA as a To Be Considered (TBC).
   - Action Specific: Where it cites 40 C.F.R § 264 Subpart X, add the Massachusetts RCRA regulations equivalent citations, as the RCRA program is a delegated program.
   - Take out the reference to a GERE, but include the GERE in the discussion in the ROD as part of the ICs.
   - Question: Are there any Federal Jurisdiction wetlands (any area within 200 ft. of a river, or within 100 ft. of wetlands)? If so, leave the 'Protection of Wetlands Executive Order' entry on page 2-5. If not, this entry should be deleted.

Response: The ARARs have been revised and included in the ROD as Table 4 in subsection 2.15.2. The Nashua River is located and its associated wetlands are located to the west of the Impact Area and are under the jurisdiction of the US Fish and Wildlife Service.

2. The Draft ROD must include the procedures that are to be followed if MEC is found. These procedures must include notification of EPA and follow-on construction support. This should be in the IC section for both the Impact Area and the 'Grant proper' area.

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Response: Procedures for notification of MEC are currently in place at Devens. A copy of the procedures has been included in the ROD (Appendix A). The Appendix is referenced in Section 2.14 - Selected Remedy.

3. The Draft ROD must include the process currently implemented at Devens whereby all personnel conducting intrusive earthwork are required to complete the UXO video/awareness class prior to starting work. These policies should be enforceable requirements. Based on the 10/29/08 email from Ron Ostrowski, MassDevelopment intends to incorporate this requirement into its bylaws or regulations and the DEC will incorporate this as a requirement of its BOH process. A schedule for this should be included in the Draft ROD. The Army has to monitor that this IC remains in place and is adequately implemented as part of the remedy. If this is changed, the Army would have to propose a new IC to ensure construction worker training prior to any intrusive earthwork. This requirement would be for both the Impact Area and 'Grant proper."

Response: Currently MassDevelopment has, as part of their Building Permit process, a notification and signature line that requires all parties conducting intrusive activities at Devens to take MEC awareness training provided by MassDevelopment. A copy of the Building Permit is provided as Appendix B. Because the building permit process addresses intrusive work for the entirety of Devens, the requirement addresses both the Impact Area and Grant Housing Area.

A schedule will not be included in the Draft ROD as MassDevelopment has not provided the requested information. A schedule may be as part of the LUCIP. The Army will conduct monitoring of the process through the CERCLA 5-Year Review process.

4. In the Draft ROD, please describe the removal actions taken, risks addressed, and clean up actions implemented.

Response: These are described in Section 2.2 which is consistent with the information presented in the FS and PP.

5. The Proposed Plan does not provide for adequate notice to subsequent purchasers of the property of the Army's use of the property as a 37 MM anti- tank range and of the potential for MEC to be located on the property. Because the intended use of the property is for residential housing, deed notice must be provided in a way that will reach potential/subsequent homeowners. Outreach and education outlined in the Proposed Plan is intended to reach existing property owners, but it is not clear that it will be available to prospective or new property owners.

Response: As required in the existing deed provisions described in the response to MADEP comment #1 above, all future property conveyances will provide for legally binding compliance with the ROD and the LUCIP.

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In addition, the 1996 deed, under which this property was originally transferred, provided the CERCLA Covenant that all remedial actions necessary had been taken. This was not correct. To correct the record for this deed, EPA recommends that a GERE be used to legally document the status of this site. The GERE should refer to the 1996 deed and reference the total acreage transferred under that deed and then include a metes and bounds description of the entire ~130-acre anti-tank range area and the GERE should provide an updated MEC 'notice' for the 130-acre property. The notice should explain that the property was not 'clean' at the time of the 1996 transfer and summarize the removal and remedial actions taken to address CERCLA risks. The GERE should provide an easement to the Army to allow the Army access to address MEC, if MEC is found. This should be for the entire ~130-acre site. The GERE should then include a metes and bounds description of the Impact Area and the restrictions that will apply to that area. The GERE should be referenced in all subsequent deeds of transfer of any of the 130-acre property. Putting all subsequent purchasers on notice of the history of the property in this way will provide an additional margin of safety for people who will ultimately live on the property.

Response: The Army does not believe that a "correction" of the record related to the CERCLA Covenant within the deed is appropriate. The property that includes the Impact Area was transferred in August 1999 (Parcel A.21). The Finding of Suitability to Transfer (FOST) Parcel A.21 was reviewed by the Army, EPA, MADEP and MassDevelopment and the property was deemed to be transferrable and the property deed was prepared accordingly. Subsequent to the property transfer, it has been determined that an additional remedial action (LUCs) was warranted, and as provided for in the CERCLA covenant to perform "any additional remedial actions found to be necessary after the date of the conveyance", such action is being implemented per this ROD. The additional details requested to include prior site use, remedial actions, property metes and bounds etc., can be provided as part of the existing property deed requirements noted in response to MADEP comment #1.

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APPENDIX D

CONCURRENCE LETTER

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
ONE WINTER STREET, BOSTON, MA 02108 617-292-5500

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

IAN A. BOWLES
Secretary

LAURIE BURT
Commissioner

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September 21, 2009

Mr. James T. Owens, Director
Office of Site Remediation and Restoration
U.S. Environmental Protection Agency, Region I
One Congress Street, Suite 1100
Boston, MA 02114-2023

Re: State Concurrence with Record of Decision
Grant Housing Area and 37-mm Impact Area
Former Fort Devens Army Installation

Dear Mr. Owens:

The Massachusetts Department of Environmental Protection (MassDEP) has reviewed the selected remedies recommended by the U.S. Army for the Grant Housing Area and the 37-mm Impact Area at the former Fort Devens Army Installation. MassDEP concurs with the selection of the remedies as presented in the Record of Decision (ROD).

The selected remedy for the Grant Housing Area (GHA) is the implementation of land use controls designed to inform potentially affected parties (current and future) about the former land use and the possible presence of munitions. Because of earlier munitions clearance work it was determined through the feasibility studies and hazard assessments that, with certain land use controls, the GHA is safe for residential use. The land use controls called for in the ROD consist primarily of a notice on the property deeds and requirements for public educational efforts aimed at affected and potentially affected parties. The educational effort will include information on recognition, reporting, and avoidance of munitions that may be discovered. The content and implementation of the educational activities will be developed after the ROD and specified in a Land Use Control Implementation Plan (LUCIP). CERCLA 5-year reviews will also be conducted on the GHA remedy.

The selected remedy for the 37-mm Impact Area (IA) is the implementation of land use controls designed to restrict access to the IA. As the IA is likely to contain munitions, including unexploded ordnance, land use will be restricted through zoning and a Grant of Environmental Restrictions. Access to and ground intrusive activities within the IA will be restricted through a combination of measures, including fences, vegetative barriers, and signs. Public educational activities will also be implemented. The content and implementation of the educational effort will be developed as part of the LUCIP.

The Army has determined that the remedies in this ROD are comprehensive and address the principal site risks and meet the Remedial Action Objectives (RAOs) established for the GHA and the IA. EPA and

MassDevelopment, the current site owner, also concur with the selected remedies. The selected remedies meet applicable or relevant and appropriate state requirements.

If you have any questions or comments, please contact Jay Naparstek of my staff at 617-292-5697.

Sincerely,

Janine Commerford
Assistant Commissioner
Bureau of Waste Site Cleanup

cc: Ginny Lombardo, U.S. EPA Region 1
Robert J. Simeone, CIV USA, USACE
Ron Ostrowski, MassDevelopment