



# PROPOSED PLAN

for SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41  
U.S. Army, Reserve Forces Training Area  
Devens, Massachusetts

Superfund Program  
December 1997

## How would the cleanup affect the local area?

The Army has developed a plan to address concerns about seven landfills at Devens. Find out about the proposed cleanup plan and how it compares with other cleanup options at a public meeting on Thursday, January 8, 1998. During the presentation portion of the meeting, the Army will respond to your questions and concerns about the proposed cleanup and how it may affect you. Prior to the Army's presentation, there will be a poster board session at which citizens are free to browse and ask questions. For further information on the meeting, call Jim Chambers at the Devens Environmental Office at (978) 796-3835.

## Public Meeting

Thursday, January 8, 1998

Devens Inn And Conference Center (formerly the Officer's Club)  
100 Sherman Street, Devens, MA

4:30 To 6:30 P.M. - Poster Boards / Browsing

6:30 To 8:30 P.M. - Army Presentation / Questions and Answers

8:30 To 9:30 P.M. - Formal Public Hearing

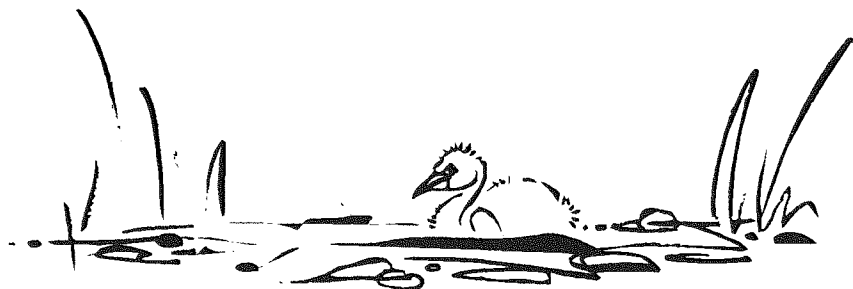
## What do you think?

The Army is accepting public comment on this proposal from December 8, 1997 through January 22, 1998. You don't have to be a technical expert to comment - if you have a concern or preference, the Army wants to hear it before making a final decision on how to protect your community. To comment formally:

Offer oral comments during the formal public hearing scheduled on Thursday, January 8, 1998 at 8:30 p.m., or

Send written comments postmarked no later than January 22, 1998 to:

Jim Chambers  
U.S. Army, Reserve Forces  
Training Area  
BRAC Environmental Office  
30 Quebec Street, Box 100  
Devens, MA 01432-4429





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## Introduction

In accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), (Section 117), the law that established the Superfund Program, this document summarizes the Army's proposed plan for cleanup at seven landfill sites, namely, Study Areas (SAs) 6, 12, and 13, and Areas of Contamination (AOCs) 9, 11, 40, and 41 (Figure 1). The purpose of this plan is to help the public understand and comment on the Army's proposal. The Landfill Remediation Feasibility Study (FS) Report contains detailed information on the proposed cleanup plan and other options evaluated for use at the sites. The FS Report is available for review at the site information repositories at the Ayer Public Library, the Hazen Memorial Library in Shirley, the Harvard Public Library, and the Lancaster Public Library. The U.S. Environmental Protection Agency (USEPA) and the Massachusetts Department of Environmental Protection (MADEP) concur with this proposal.

## The Proposed Cleanup.

After careful study of the seven sites, the Army has developed a plan to address risks from landfilled debris. The Army is proposing a cleanup plan that would:

- Dig up and relocate debris from AOCs 9 and 40 and from SA 13. Of the seven sites, AOCs 9 and 40, respectively, contain the largest and second-largest debris volumes. Debris will be relocated to a new, lined landfill to be constructed near the existing Shepley's Hill Landfill (Figure 1). If hazardous waste is encountered during debris removals, it will be disposed of off-site.
- Remove all visible man-made surface debris from AOC 11. Surface debris removal will eliminate potential physical hazards resulting from human contact. Known surface soil "hot spots" will be removed. If hazardous waste is encountered, it will be disposed of off-site. USEPA will be responsible for future long-term monitoring at AOC 11.
- Offer no action under CERCLA at the remaining three landfills (SA 6, SA 12, and AOC 41). Of the seven sites, the three landfills have the smallest debris volumes. At SA 12 and AOC 41, all visible man-made surface debris will be removed (as a non-CERCLA action) by Devens RFTA personnel. Known surface soil "hot spots" will be removed. If hazardous waste is encountered, it will be disposed of off-site.

MADEP will be responsible for future long-term monitoring at SA 12. At AOC 41, future long-term monitoring will be performed by the Army.

## Public Comment

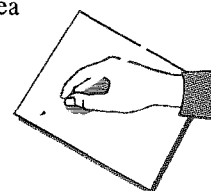
The Army solicits public review of and comment on all of the alternatives described in this Proposed Plan. Public input on all alternatives is an important contribution to the remedy selection process.

The Army will accept public comment on these alternatives from December 8, 1997 through January 22, 1998. You don't have to be a technical expert to comment — if you have a concern or preference, the Army wants to hear it before making a final decision on how work should proceed to protect your community.

There are two ways to formally register a comment:

1. Offer oral comments during the formal public hearing scheduled at 8:30 p.m. on Thursday, January 8, 1998, at the Devens Inn and Conference Center, or
2. Send written comments, postmarked no later than January 22, 1998 to:

Jim Chambers  
U.S. Army, Reserve Forces Training Area  
BRAC Environmental Office  
30 Quebec Street, Box 100  
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### Contents:

### Page

Learn More About the Proposed Plan .....	2
A Closer Look at the Army's Proposed Plan .....	2
Landfill Descriptions and History .....	2
Why is Cleanup Needed? .....	5
Human Health Risk Summaries .....	6
Ecological Risk Summaries .....	8
How Does the Army Choose the Final Cleanup Plan? .....	8
Four Categories of Cleanup Actions .....	9

### Contents:

### Page

Landfill Cleanup Options .....	9
Alternative Comparison .....	10
The Proposed Remedial Alternative .....	12
Why is the Army Recommending this Alternative? .....	12
What's a Formal Comment? .....	12
Cleanup Options .....	12
Next Steps .....	12

## Learn More About the Proposed Plan

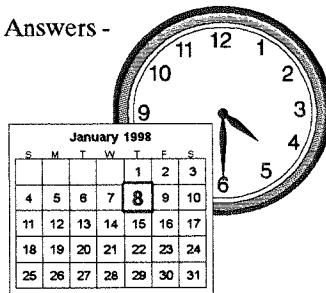
The Army will describe the proposed cleanup plan and how it compares with other cleanup options for the site, and respond to your questions and concerns at a public meeting.

Poster Boards/Browsing - 4:30 to 6:30 p.m.

Army Presentation/Question and Answers -  
6:30 to 8:30 p.m.

January 8, 1998  
Devens Inn and Conference  
Center

For further information on the meeting call Devens BRAC Environmental Office at 978/796-3835.



## A Closer Look at the Army's Proposal...

The cleanup proposed for each of the seven landfills:

**SA 6, SA 12, and AOC 41.** 19th century household debris at SA 6 are not expected to pose risks to human health or to wildlife. A no action alternative at this site meets the criteria used to evaluate remedial alternatives.

SA 12 and AOC 41, have been shown to present acceptable human health risks when current or probable future use of the sites is considered. Preliminary evaluations indicate that fish and wildlife may be at risk from contaminants at these two sites. The extent of ecological risk, if it exists, is not clear due to the preliminary nature of the risk evaluations. It may be that contaminants posing potential ecological risk at SA 12 are not from the landfill, but rather from

industrial discharges at upstream locations in the Nashua River. As part of a South Post-wide monitoring program, the Army will be evaluating potential impacts to fish and wildlife at New Cranberry Pond from contaminants at AOC 41. The Army believes that harm caused by removing or treating contaminated sediment in ecologically-sensitive areas would outweigh any benefits provided. As a non-CERCLA action, all visible man-made surface debris will be removed by Devens RFTA personnel.

**AOC 11.** Army studies have shown that this site presents acceptable human health risks when current or probable future use of the sites is considered. Although exposure to surface soil and sediment at AOC 11 may present risk to fish and wildlife, the Army believes that harm caused by removing or treating contamination in this ecologically-sensitive area would outweigh benefits provided. For these reasons, removing surface debris to eliminate hazards from physical contact is appropriate.

Known surface soil "hot spots" will be removed. If hazardous waste is encountered, it will be disposed of off-site.

**AOCs 9 and 40, and SA 13.** Debris from AOCs 9 and 40 and from SA 13 will be consolidated at a new landfill cell to be built near Shepley's Hill Landfill. The landfill cell will contain a lined bottom. Debris in the cell will be capped with a solid sheet of geomembrane (heavy plastic) to prevent infiltration of rainwater. Groundwater at the completed cell will be tested as part of a monitoring and maintenance program. Wetlands disturbed during debris excavations will be restored or replaced. If encountered in the landfills, hazardous wastes will be separated from the debris and disposed of off-site.

At AOC 40, sediment from two small areas outside of the debris limits will be removed and placed in the new landfill cell. Con-

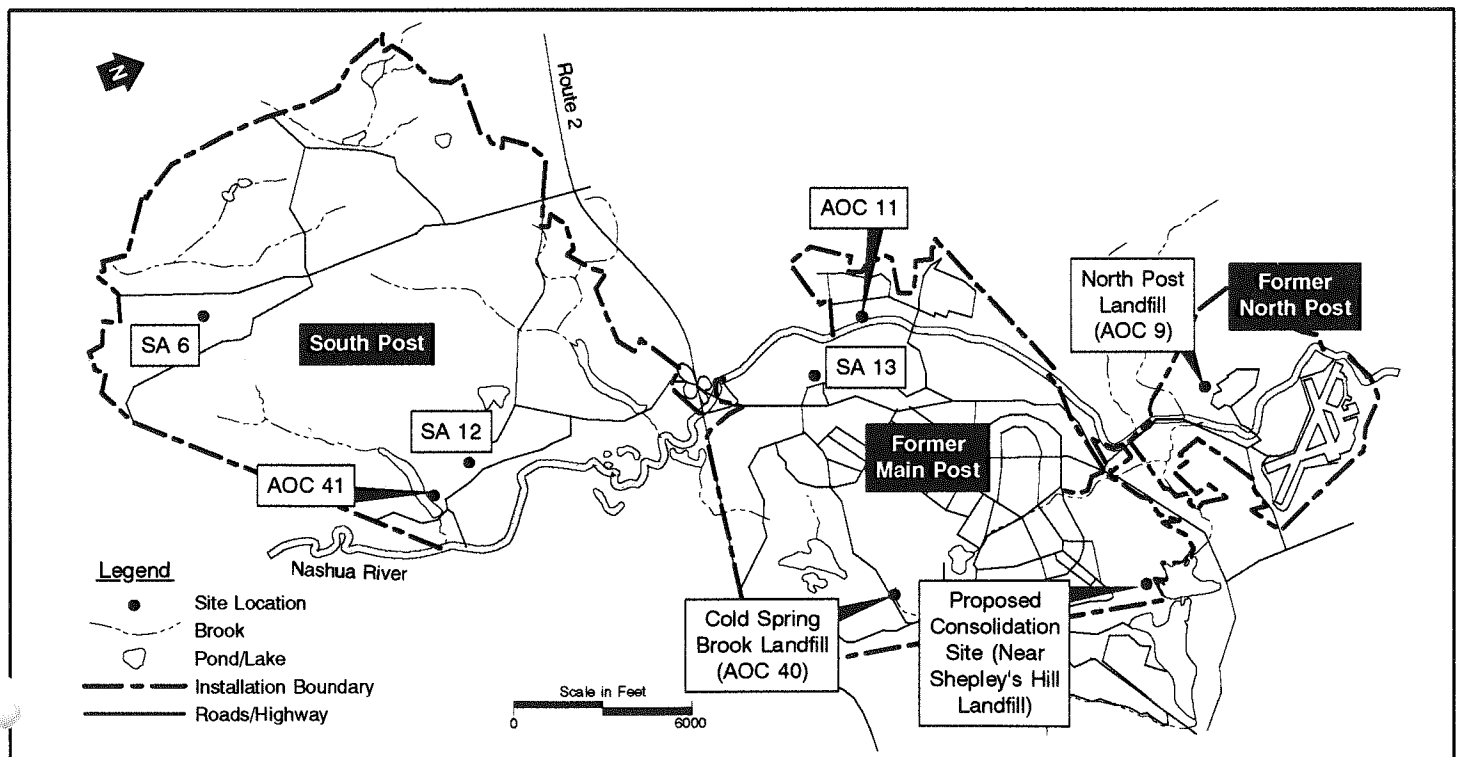


Figure 1: Location of the seven landfills

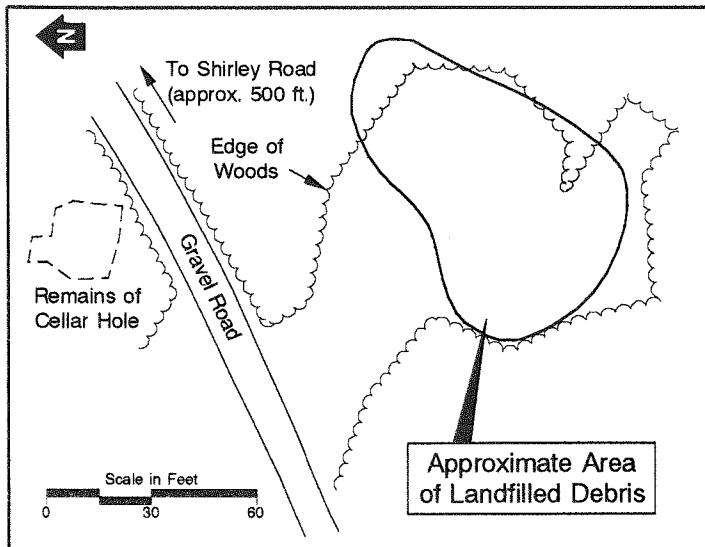


Figure 2: Location of SA 6

taminant levels in the isolated sediment areas (known as “hot spots”) have been shown to pose a potential risk to wildlife. Fourteen metal drums on the ground surface along the AOC 40 landfill’s edge will be removed and disposed offsite. In 1988, contents from the 15- to 20-year old drums were analyzed. The analysis showed the presence of chlorinated solvents and metals in the drum residues.

### Landfill Descriptions and History

**SA 6**, located on the South Post, was used between 1850 and 1920 for disposal of household debris. The South Post is to be retained by the Army for continued military use. A variety of household debris was deposited in a low area, less than one-quarter acre in size, south of the access road (Figure 2). SA 6 is moderately forested with hardwood trees. The disposal area has not been covered, and trash is visible on the ground surface.

Army investigations at SA 6 determined that the landfill contains household debris, primarily metal and glass. The volume of debris in the landfill is approximately 500 cubic yards (cy). Archaeologists have determined that SA 6 is potentially valuable in researching the socioeconomic status and waste disposal behavior of 19th Century northern Lancaster residents.

**AOC 9**, the North Post Landfill, is located on the former North Post, west of the wastewater treatment plant (Figure 3). It is known informally as the old “stump dump” or “wood dump.”

The landfill was operated from the late 1950s until 1978 and was used by the Army, National Guard, contractors, and off-post personnel. Landfill material at AOC 9 is generally demolition debris, including wood, concrete, asphalt, metal, brick, glass, and tree stumps. Debris volume is estimated to be approximately 112,000 cy. Because of the extent of the partially vegetated cover, the area is generally not recognizable as a former landfill. Planned increased use of the nearby treatment plant could result in adverse effects from the landfill on the environment.

**AOC 11** The Lovell Road Debris Disposal Area, also referred to as AOC 11, is a two-acre landfill that received wood-frame hospital demolition debris from 1975 to 1980.

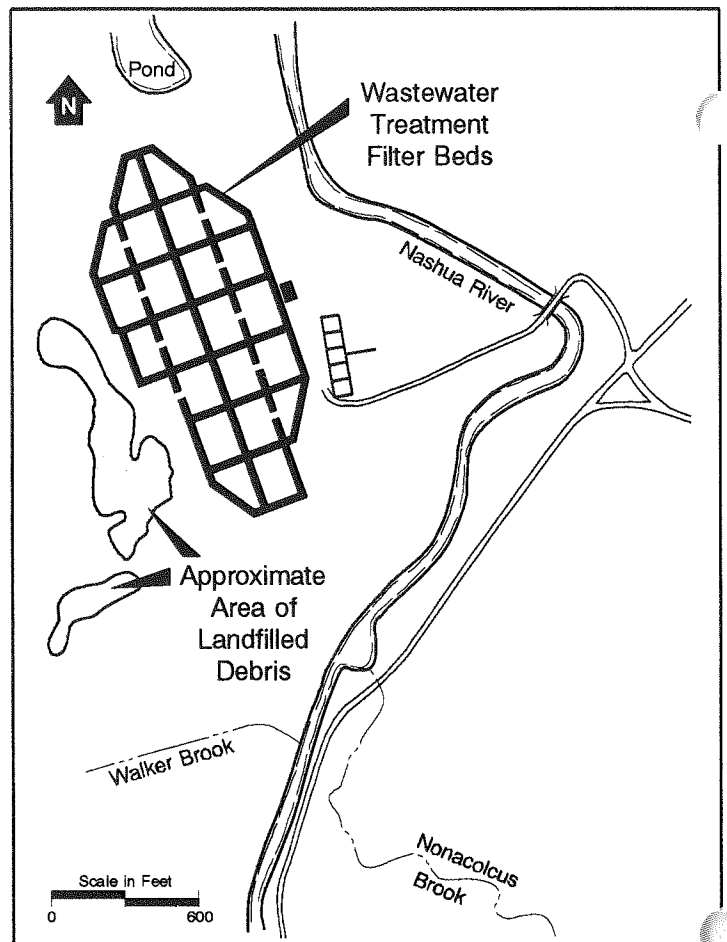


Figure 3: Location of AOC 9.

Debris volume is estimated to be approximately 35,000 cy. The landfill is within a wetlands complex that runs along the western side of the Nashua River (Figure 4). East of the landfill, a 40-ft-wide

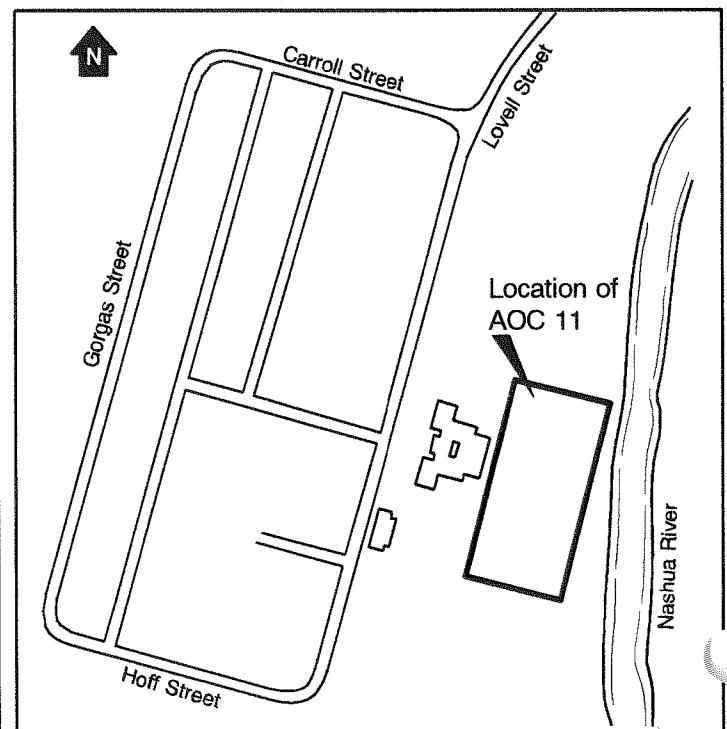


Figure 4: Location of AOC 11.

soil berm separates the landfill from the Nashua River. Refuse, including large pieces of metal, wood, bricks, and other construction debris is exposed at the ground surface throughout the site, except where an access road has been constructed over the fill. The landfill area is vegetated and is bordered on the north and south by wetlands.

**SA12** SA 12, about one-half acre in size, is located on a steep, wooded slope adjacent to the Nashua River floodplain and partially encroaching on wetlands on the South Post. The landfill is located across Dixie Road from B and P Ranges (Figure 5). SA 12 was used by the Army beginning in 1960, was still in use in 1982, and appeared in 1988 to have been inactive for several years. The debris came from construction and range operations.

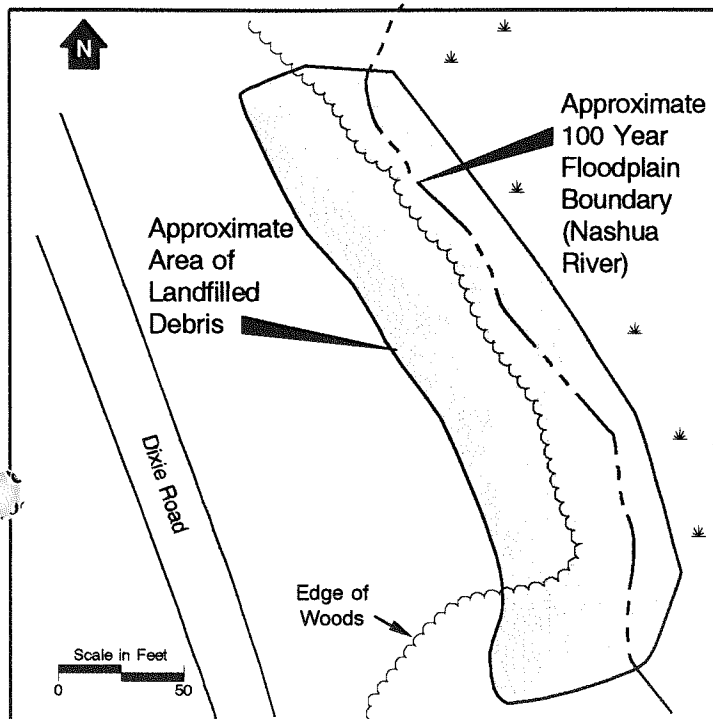


Figure 5: Location of SA 12.

Debris at SA 12 consist mostly of lumber, sheet metal, concrete, and leaves mixed with soil. Debris volume is estimated to be approximately 8,700 cy.

**SA13** The Lake George Street Landfill, also referred to as SA 13, was used between 1965 and 1990 for disposal of construction debris, stumps, and brush. Debris volume is estimated to be approximately 10,000 cy. The landfill is less than one acre in size and is located on the west side of Lake George Street near Hattonsville Road on the former Main Post (Figure 6).

In 1989, recently disposed stumps, branches, steel fencing, plumbing fixtures and pipes were removed from the site. The landfill is currently closed to debris disposal.

SA 13 is surrounded by large trees, but no trees are growing on the landfill itself. Tree stumps, limbs, and trunks have been deposited on the surface of the landfill and down the steep lower slope. A wetland is located at the base of this slope.

**AOC40** occupies approximately four acres along the edge of Patton Road in the southeastern part of the former Main Post. It extends

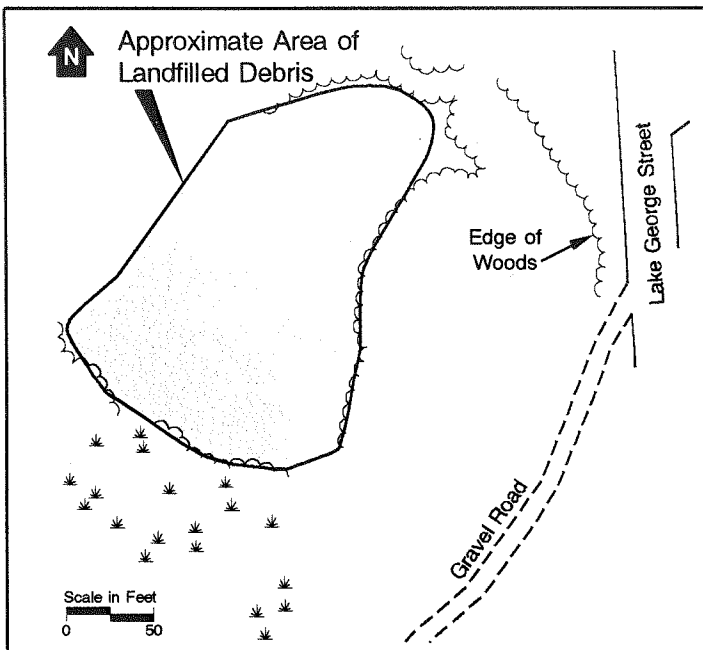


Figure 6: Location of SA 13.

for approximately 800 ft along Patton Road and out into the former wetland along Cold Spring Brook, now mostly submerged beneath Cold Spring Brook Pond (Figure 7). The upper surface of the landfill slopes gently toward the north and east. The surface is densely covered with small trees and scrub, the trees being predominantly pines. The edge of the landfill falls off abruptly to the wetland or to the pond with an elevation drop that ranges between 10 and 20 ft.

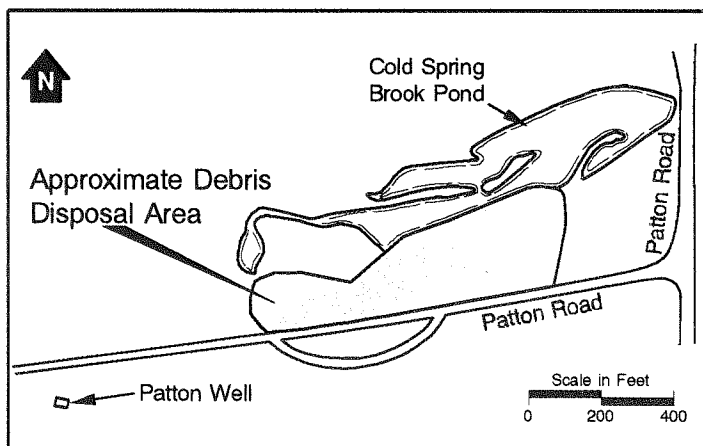


Figure 7: Location of AOC 40.

Debris in the landfill is mostly wood, concrete, asphalt, metal, brick, wire, ash, stumps, and logs. Debris volume is estimated at approximately 110,000 cy. The AOC 40 landfill is located approximately 600 feet from the Patton water supply well, within the well's recharge zone. Groundwater quality at the well is not at risk from AOC 40, under current conditions. Under current well pumping conditions, groundwater has been determined by the Army to flow from the landfill toward Cold Spring Brook Pond, away from Patton well. The landfill has been present for 25 years and has not affected the well's water quality.

**AOC41** is located on the former South Post of Fort Devens, approximately 0.5 mile west of the Still River Gate, on the north

shore of New Cranberry Pond (Figure 8). The landfill, less than one-quarter acre in size, was used up to the 1950s for disposal of nonexplosive military and household debris. The site is overgrown with trees and brush.

Debris at AOC 41 includes beverage cans, bottles, and miscellaneous debris. Debris volume is estimated to be approximately 1,500 cy.

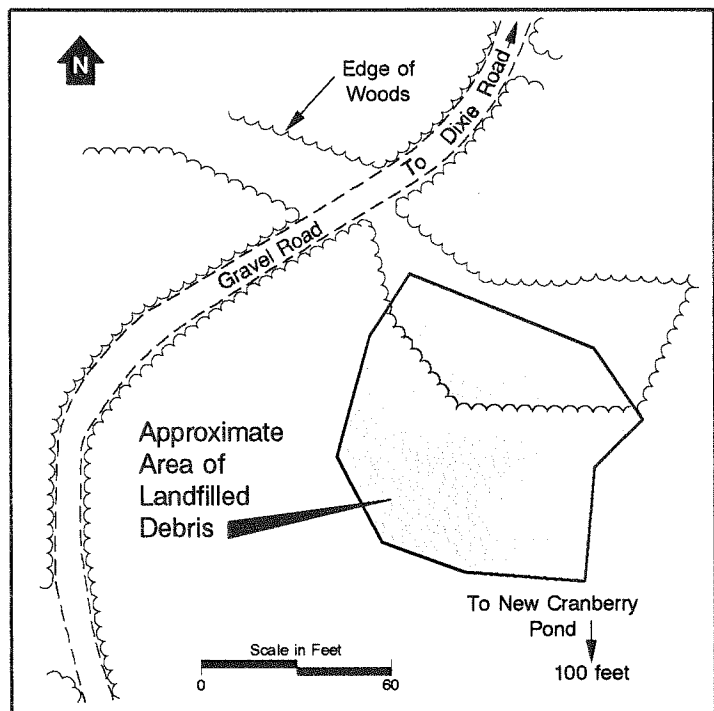


Figure 8: Location of AOC 41.

## Why is Cleanup Needed?

To determine whether cleanup is necessary under the Superfund program, the possible risks that landfill materials might pose to people and to fish and wildlife are evaluated. Preliminary risk evaluations were performed for landfills at AOC 9 and SAs 12, 13, and 41, and baseline risk assessments were performed for AOCs 11 and 40.

A preliminary risk evaluation generally involves:

- identifying environmental media (such as soil, groundwater, surface water, or sediment) where there are landfill-related materials (hazard identification)
- comparing the levels of chemicals in those media to safe levels that have been established for people or for fish and wildlife
- comparing the levels of chemicals in those media to levels that are present in areas where waste has not been deposited (these are called background concentrations)
- discussing the results of these comparisons (risk characterization)

In a preliminary risk evaluation, very conservative (that is, protective of human health and the environment) assumptions are used. For example, it is usually assumed that a house could be built directly on the site (this is called potential future residential use),

and that people could be exposed to materials that are up to 3 feet deep. It is also usually assumed that people or fish and wildlife would be exposed to the one area where the highest concentration of a chemical was found, rather than to the entire area. Another conservative assumption is that people would be drinking water that comes from the site. For the sites discussed in this proposed plan (except AOC 40), it is very unlikely that people would drink groundwater associated with the site.

A baseline risk assessment generally includes the same steps as the preliminary evaluation, plus a few more:

- describing the possible health effects of the chemicals present (the toxicity assessment)
- identifying the people and fish and wildlife who are likely to be present at the site under current and future land use (the exposure assessment)
- developing numerical risk estimates for potential cancer effects and hazard quotients (a ratio of the amount of the chemical to which a person or fish and wildlife may be exposed to the safe amount that has been established for those receptors) for noncancer effects
- comparing these estimates to acceptable risk targets that have been established by USEPA (for human health, the target cancer risk range is one additional cancer case in a group of one million people; the target noncancer hazard quotient is 1).
- if necessary, performing more specific tests to help identify risks to fish and wildlife that are present at the site.

A baseline risk assessment includes many of the same conservative assumptions as a preliminary evaluation; however, it also considers more reasonable exposures. Many of the sites are in areas that may not be used at all by people, or may be used as part of a commercial or industrial area (for example, office buildings and parking lots may be built).

Under commercial/industrial use, people probably would not come into contact with landfill materials in the soil or groundwater. Therefore, risks to human health associated with these former landfill sites would be minimal.

Human health risks associated with current use of the landfill sites are acceptable according to USEPA criteria. The human health risks associated with potential future residential use for some of the sites may not be acceptable according to USEPA criteria. However, residential use of these areas is very unlikely. Human health risks associated with potential future commercial/industrial use of these sites (i.e., exposures to surface soil only) would be acceptable according to USEPA criteria.

Preliminary ecological risk evaluations at some of the landfill sites concluded that because contaminant levels exceed conservatively-based safe levels, potential risk could be posed to wildlife. The significance of these conclusions, however, varies depending on how closely conditions at the site match the assumptions upon which the safe level is based. The significance also depends on the magnitude of the exceedance and whether information exists that would suggest the adverse ecological effects are caused by contamination from a source other than the landfill. At some of the

landfill sites, the extent of potential ecological risk is not clear because of the preliminary nature of the evaluations, and the possibility that contaminants causing potential concern are from a source other than the landfill.

Actual or potential releases of substances from the landfill sites, if not addressed by the preferred alternative or one of the other active measures considered, may present a potential threat to human health or the environment.

The results of the risk evaluations at each of the landfills are discussed in the next section.

## Human Health Risk Summaries

### AOC 9

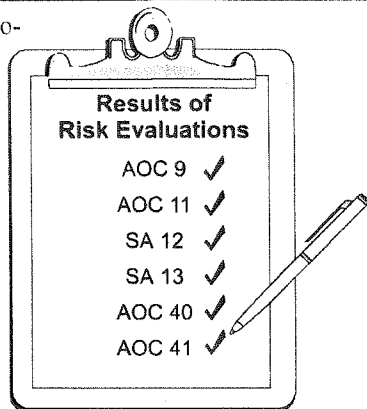
A preliminary risk evaluation was performed for AOC 9 to identify chemicals that may pose risks to people and to fish and wildlife. Exposures to surface soil, subsurface soil, groundwater, surface water and sediment were evaluated.

The human health portion of the preliminary risk evaluation compared the maximum concentrations of chemicals detected in surface soil and sediment to screening values that are protective of residential land use, the maximum concentrations of chemicals detected in subsurface soil to screening values that are protective of commercial/industrial land use, and the maximum concentrations of chemicals detected in groundwater and surface water to promulgated drinking water standards.

Chemicals that have maximum concentrations above their respective screening values include semivolatile organic compounds, metals, and inorganics. There is one chemical in surface soil, eight chemicals in subsurface soil, eight chemicals in groundwater, two chemicals in surface water, and one chemical in sediment that were detected at maximum concentrations above their respective screening values. This indicates that chemicals are present in media at AOC 9 at concentrations that exceed residential screening values, and in subsurface soil at AOC 9 at concentrations that exceed commercial/industrial screening values.

For surface soil, no chemicals were detected at concentrations that exceeded both background levels and screening values. Although this comparison is based on two samples, the surface soil data evaluated in the preliminary risk evaluation actually represent the composition of the landfill cover. No signs of organic chemical contamination from the landfill were observed in surface or near-surface soils (those within three feet of the surface). Chemicals identified in the landfill cover are not related to the contents of the landfill or the site. The subsurface soil data actually represent the effects of the contents of the landfill.

Because AOC 9 is a landfill, it is highly unlikely that structures (including residences) would be built at the site. Therefore, evaluations using residential and commercial/industrial screening val-



ues represent very conservative indications of potential risks. This is in particular the case for evaluations of surface water and sediment, as surface water will not be used for drinking water, and exposures to sediment would be considerably less than those assumed for soil. Current uses of the site, which include occasional access by visitors/trespassers, and no use of the groundwater at the site, are unlikely to change in the future. Planned increased use of the nearby treatment plant could result in adverse effects from the landfill on the environment.

### AOC 11

A baseline risk assessment was performed for AOC 11 to identify risks that landfill materials might pose to people and to fish and wildlife. The baseline risk assessment evaluated possible risks for exposures to surface soil, subsurface soil, groundwater, surface water, sediment, and air. The chemicals of potential concern identified in those media include semivolatile organic compounds, pesticides, PCBs (Nashua River sediments only), and metals and inorganics.

Although AOC 11 will continue to remain Army property, a more conservative recreational-area use scenario was assumed in the human health risk assessment. Human health risks were evaluated for:

- recreational visitors (children and adults) who have direct-contact (skin contact and incidental ingestion) exposures to surface soil at the site,
- recreational visitors (children and adults) who have direct contact (skin contact and incidental ingestion) exposures to surface water and skin contact with sediment while swimming in the Nashua River,
- recreational visitors (children and adults) who have skin contact with surface water and sediment while wading in the wetlands adjacent to AOC 11, and
- workers inside the building adjacent to AOC 11 who may breathe air affected by AOC 11
- possible future remediation worker direct contact (skin contact and incidental ingestion) exposures to subsurface soil at the site

These cancer and non-cancer risks are within levels that are acceptable to the USEPA.

### SA 12

A preliminary risk evaluation was performed for SA 12 to identify chemicals that may pose risks to people and to fish and wildlife. Exposures to surface soil, groundwater, and sediment were evaluated.

The human health portion of the preliminary risk evaluation compared the maximum concentrations of chemicals detected in surface soil and sediment to screening values that are protective of residential land use, and the maximum concentrations of chemicals detected in groundwater to promulgated drinking water standards.

Chemicals that have maximum concentrations above their respective screening values include semivolatile organic compounds, polychlorinated biphenyls (PCBs), and metals and inorganics.



There are seven chemicals in surface soil, eight chemicals in groundwater, and three chemicals in sediment that were detected at maximum concentrations above their respective screening values. This indicates that chemicals are present in media at SA 12 at concentrations that exceed residential screening values.

The site is presently accessed only by occasional visitors, and military personnel and groundwater is not used. Future use of the site will be retained under control of the military for training, and groundwater will not be used for drinking. Therefore, evaluations of soil, groundwater, and sediment using residential screening values represent very unlikely indications of potential risks.

### SA 13

A preliminary risk evaluation was performed for SA 13 to identify chemicals that may pose risks to people and to fish and wildlife. Exposures to surface soil, groundwater, surface water, and sediment were evaluated.

The human health portion of the preliminary risk evaluation compared the maximum concentrations of chemicals detected in surface soil and sediment to screening values that are protective of residential land use, and the maximum concentrations of chemicals detected in groundwater and surface water to promulgated drinking water standards.

Chemicals that have maximum concentrations above their respective screening values include semivolatile organic compounds, explosives, pesticides, and metals and inorganics. There are six chemicals in surface soil, five chemicals in groundwater, six chemicals in surface water, and two chemicals in sediment that were detected at maximum concentrations above their respective screening values. This indicates that chemicals are present in media at SA 13 at concentrations that exceed residential screening values.

The site is presently accessed only by occasional visitors, and groundwater is not used. Future use of the site will be recreational or commercial/industrial, and groundwater and surface water will not be used for drinking. Therefore, evaluations of soil, groundwater, surface water, and sediment using residential screening values represent very unlikely indications of potential risks.

### AOC 40

A baseline risk assessment was performed for AOC 40 to identify risks that landfill materials might pose to people and to fish and wildlife. The baseline risk assessment evaluated possible risks for exposures to surface soil, groundwater, surface water and sediment, and eating fish. The chemicals of potential concern identified in those media include semivolatile organic compounds, pesticides, and metals and inorganics.

The human health portion of the baseline risk assessment evaluated risks for current land use conditions and possible future land use conditions. Under current land use conditions, risks were evaluated for:

- fishermen and their families who have direct-contact (skin contact and incidental ingestion) exposures to surface soil at the landfill,
- fishermen and their families who may incidentally ingest surface water while fishing at Cold Spring Brook,

- fishermen and their families who eat fish caught from Cold Spring Brook, and
- adolescents who have direct-contact (skin contact and incidental ingestion) exposures with pond sediments along the shoreline

Under future land use conditions, the same exposure pathways were assumed to exist, except the potentially exposed populations were assumed to be residents instead of site visitors. Risks to residents were also evaluated for potable use of groundwater at the site, including:

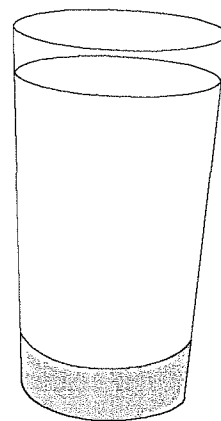
- ingestion of groundwater as drinking water,
- skin contact with groundwater while bathing or showering, and
- eating homegrown fruits and vegetables watered with groundwater

These cancer and non-cancer risks are within levels that are acceptable to the USEPA.

The total cancer risk estimates for potential future residential land use range from three excess cancer cases in one hundred thousand people to three excess cancer cases in ten thousand people, and the non-cancer hazard indices range from 4 to 10. Cancer risks above one excess cancer case in ten thousand people and non-cancer hazard indices above 1 exceed the USEPA acceptable risk thresholds.

The higher risks for potential future residential land use result from the greater frequency of contact assumed for future residents compared to site visitors, and use of groundwater that was assumed for residents but not for site visitors. However, future residential use of AOC 40 is very unlikely because houses would not be built on the landfill. The area around AOC 40 will be used for commerce and industry. The majority of the risk for future residential use is associated with exposure to arsenic and manganese in the site groundwater if it is used as drinking water. Groundwater at the landfill is not currently used for drinking water.

Although the AOC 40 landfill is located within 600 feet of the Patton Well, which is a drinking water supply well, the landfill has been present for the past 25 years and the groundwater quality of the Patton Well has been unaffected during that time. Groundwater from downgradient wells (those that may have been affected by the landfill site) did not contain arsenic at levels greater than the drinking water standard. There is no state or federal drinking water standard for manganese. Analytical results from the April 30, 1997 sampling of Patton Well water indicate that arsenic was not detected above the analytical reporting limit (0.0025 mg/L). Although expansion of the Patton Well use is planned, groundwater modeling indicates that only under worst-case future conditions that assume the Patton Well pumps continuously near its permitted capacity of 1,000 gallons per minute, would particles from AOC 40 migrate in groundwater toward Patton Well.





**AOC 41**

A preliminary risk evaluation was performed for AOC 41 to identify chemicals that may pose risks to people and to fish and wildlife. The preliminary risk evaluation evaluated exposures to surface soil, groundwater, surface water, and sediment.

The human health portion of the preliminary risk evaluation compared the maximum concentrations of chemicals detected in surface soil and sediment to screening values that are protective of residential land use, and the maximum concentrations of chemicals detected in groundwater and surface water to promulgated drinking water standards.

Chemicals that have maximum concentrations above their respective screening values include volatile organic compounds, semivolatile organic compounds, polychlorinated biphenyls

(PCBs), and metals and inorganics. There are seven chemicals in surface soil, twelve chemicals in groundwater, four chemicals in surface water, and two chemicals in sediment that were detected at maximum concentrations above their respective screening values. This indicates that chemicals are present in media at AOC 41 at concentrations that exceed residential screening values.

The site is presently accessed only by occasional visitors and military personnel, and groundwater is not used. The site is very small (less than 1/4 acre). Future use of the site will be retained under control of the military for training, and groundwater and surface water will not be used for drinking. Therefore, evaluations of soil, groundwater, surface water, and sediment using residential screening values represent very unlikely indications of potential risks.

## Ecological Risk Summaries

- AOC 9** Risks to ecological receptors are unlikely to occur at AOC 9. The significance of contaminant concentrations at the site compared to benchmark values was discussed in the PRE. The types of sensitive receptors on which the risk benchmarks were derived (i.e., salmonid fish) would probably not occur in the existing ecological habitats at AOC 9.
- AOC 11** The ecological risk assessment evaluated wildlife exposures on the landfill and aquatic receptor exposures within the Nashua River and associated floodplain adjacent to the site. Exposure to cadmium and lead in landfill surface soil could adversely affect sensitive wildlife, and river and floodplain contaminant concentrations (primarily pesticides and inorganics) pose a risk to aquatic receptors that dwell in or on sediments. However, the AOC 11 RI report determined that the Nashua River itself is likely a significant contributor to floodplain sediment contamination. The report concluded that the incremental population-level risks to fish and wildlife associated with the landfill itself are probably insignificant.
- SA 12** Maximum concentrations of some organic and inorganic contaminants at SA 12 exceed ecological benchmark values. Several inorganics (i.e., cadmium, chromium, copper, lead and mercury) detected in floodplain sediments were determined to most likely contribute risk to ecological receptors. Contaminant concentrations in sediment adjacent to the Nashua River were higher than those in sediment at the foot of the landfill, suggesting that the river itself is a contributor to floodplain sediment contamination.
- SA 13** Potential risks to sensitive aquatic receptors may exist in the wet area downgradient of the landfill.
- AOC 40** Exposure to Cold Spring Brook Pond sediments containing inorganics and pesticides represents a localized risk to aquatic receptors.
- AOC 41** Potential wildlife risks exist at AOC 41, due primarily to exposure to inorganics in surface soil.

## How Does the Army Choose the Final Cleanup Plan?

The Army uses USEPA's nine criteria to balance the pros and cons of cleanup alternatives. In the FS Report, the Army evaluated how well each of the cleanup alternatives meets the first seven criteria. Once Proposed Plan comments from the public are received, the Army will finish comparing alternatives and select the cleanup plans to be used at the seven landfills.

The following list of the nine criteria highlights questions the Army will consider in selecting a cleanup plan. Public comments that focus on these criteria help the Army better evaluate all aspects of the alternatives. For precise definitions of the criteria, see Section 8.0 of the FS Report.

- 1. Overall protection of human health and the environment:** Will it protect you and the plant and animal life on and near the site? The Army will choose a plan that considers this basic criterion.
- 2. Compliance with Applicable or Relevant and Appropriate Requirement (ARARs):** Does the alternative meet federal and state environmental statutes, regulations and requirements?
- 3. Long-term effectiveness and permanence:** Will the effects of the cleanup plan last or could contamination present a risk again over time?
- 4. Reduction of toxicity, mobility or volume through treatment:** Does the alternative reduce the harmful effects of the contaminants, their ability to spread, and the amount of contaminated material present?

5. **Short-term effectiveness:** How soon will site risks be adequately reduced? Are there short-term hazards to workers, residents or the environment that could occur during the cleanup operation?
6. **Implementability:** Is the alternative technically feasible? Are the goods and services (i.e., treatment machinery, space at an approved disposal facility) necessary to implement the plan readily available?
7. **Cost:** What is the total cost of an alternative over time in today's dollars? The Army must find a plan that gives necessary protection for a reasonable cost.
8. **State acceptance:** Do state environmental agencies agree with the Army's recommendations?
9. **Community acceptance:** What objections, suggestions, or modifications does the public offer during the comment period?

## Four Categories of Cleanup Actions

When evaluating the best way to address risks presented at a site, the Army looks at a number of technical approaches. The Army then focuses on approaches that protect human health and the environment. Remedial actions selected for landfill cleanup can be grouped into four categories:

**Take no action.** Leave the site as it is. The FS Report evaluated how well the nine cleanup criteria would be met if nothing were done to address landfill debris.

**Limited debris removal.** Surface debris is collected from the top of the landfill and disposed of at another location.

**Landfill cap.** Contain the landfill with a cap so that debris will not be contacted or spread.

**Excavate and relocate debris.** Dig up landfill debris and move it to a new landfill constructed to meet current standards. If hazardous waste is encountered, dispose of it at an approved off-site facility. Backfill the excavated landfill with clean soil.

## Landfill Cleanup Options

The Landfill Remediation FS Report reviewed nine options considered by the Army for cleanup. The options, referred to as "remedial alternatives", are combinations of plans to contain or move debris to protect human health and the environment. During preparation of this Proposed Plan, discussions took place among the Army, USEPA, and MADEP regarding the appropriateness of the nine remedial alternatives evaluated in the FS Report. During the discussions, an additional alternative similar to Alternative 4 was evaluated. The new option is called Alternative 4a.

During the upcoming public comment period, the Army welcomes your comments on the proposed cleanup plan as well as the other approaches briefly described below. Please consult the FS Report for further information about the remedial alternatives.

**Alternative 1: No Action at all Seven Landfills.** Leave the sites as they are. No action would be taken to contain or remove debris at any of the landfills.

**Alternative 2: No Action at SAs 6 and 12, and AOC 41; Limited Removal at AOC 11 and SA 13; Cap in Place AOCs 9 and 40.** No action would be taken at SAs 6 and 12, and AOC 41. Surface debris would be removed from AOC 11 and SA 13 for disposal at AOC 9. A cap meeting the requirements of federal hazardous waste landfill closure regulations would be placed over the landfills at AOCs 9 and 40. The caps would prevent infiltration of rainwater to the debris, which could cause spreading of contamination to ground-

water. After cap placement, nearby wetlands disturbed during cap construction would be restored or replaced. Groundwater at both sites would be monitored to help measure cap effectiveness.

At AOC 40, sediment from two small areas outside of the debris limits would be removed and placed underneath the cap at AOC 9. Contaminant levels in the isolated sediment areas (known as "hot spots") have been shown to pose a potential risk to wildlife. Also at AOC 40, 14 metal drums along the landfill's edge would be removed and disposed of offsite.

**Alternative 3:** No action would be taken at SAs 6, 12, and 13, and AOC 41. At AOCs 9, 11, and 40, a cap would be placed over the debris. Wetlands at AOCs 9 and 40 disturbed during cap construction would be restored or replaced. Groundwater at the three capped landfills would be monitored. Hot spot sediment and drum removal would occur at AOC 40.

**Alternative 4:** No action would be taken at SAs 6, 12, and 13, and AOC 41. Surface debris would be removed from AOC 11. Debris at AOCs 9 and 40 would be dug up and relocated to a new landfill constructed near the existing Shepley's Hill Landfill. Wetlands at AOCs 9 and 40 disturbed during debris excavation would be restored or replaced. The former debris disposal areas at AOCs 9 and 40 would be regraded to match the surrounding area. When filled, the new landfill would be capped. Groundwater quality at the capped landfill would be monitored. Hot spot sediment and drum removal would occur at AOC 40.

**Alternative 4a:** No action under CERCLA would be taken at SAs 6 and 12, and AOC 41. At SA 12 and AOC 41, limited (non-CERCLA) surface debris removal would be conducted by Devens RFTA personnel. Surface debris would be removed from AOC 11. Debris at AOCs 9 and 40 and SA 13 would be dug up and relocated to a new landfill constructed near the existing Shepley's Hill Landfill. Wetlands disturbed during debris excavation would be restored or replaced. Former debris disposal areas at AOCs 9 and 40 and SA 13 would be regraded to match the surrounding area. When filled, the new landfill would be capped. Groundwater quality at the capped landfill would be monitored. Hot spot sediment and drum removal would occur at AOC 40.

**Alternative 5:** Surface debris would be removed from AOC 11. A cap would be placed over debris at SAs 6, 12, and 13, and AOC 41. Debris at AOCs 9 and 40 would be dug up and relocated to a new landfill constructed near the existing Shepley's Hill Landfill. The former debris disposal areas at AOCs 9 and 40 would be regraded to match the surrounding area. Wetlands disturbed during debris excavation at AOCs 9 and 40 would be restored or replaced. When filled, the new landfill would be capped. Groundwater at the capped

landfills, including the new landfill near Shepley's Hill, would be monitored. Hot spot sediment and drum removal would occur at AOC 40.

**Alternative 6:** A cap would be placed over debris at SAs 6, 12, and 13, and AOC 41. Debris at AOCs 9, 11, and 40 would be dug up and relocated to a new landfill constructed near the existing Shepley's Hill Landfill. The former debris disposal areas at AOCs 9, 11, and 40 would be regraded to match the surrounding area. Wetlands disturbed during debris excavation at AOCs 9 and 40 would be restored or replaced. When filled, the new landfill would be capped. Groundwater at the capped landfills, including the new landfill near Shepley's Hill, would be monitored. Hot spot sediment and drum removal would occur at AOC 40.

**Alternative 7:** A soil cap would be placed over debris at all seven landfills. Wetlands disturbed during cap construction at AOCs 9 and 40 would be restored or replaced. Groundwater at the capped landfills would be monitored. Hot spot sediment and drum removal would occur at AOC 40.

**Alternative 8:** Surface debris would be removed from AOC 11. Debris at SAs 6, 12, and 13, and AOCs 9, 40, and 41 would be dug up and relocated to a new landfill constructed near the existing Shepley's Hill Landfill. The former debris disposal areas at SAs 6, 12, and 13, and AOCs 9, 40, and 41 would be regraded to match the surrounding area. Wetlands disturbed during debris excavation at AOCs 9 and 40 would be restored or replaced. When filled, the new landfill would be capped. Groundwater at the capped landfills, including the new landfill near Shepley's Hill, would be monitored. Hot spot sediment and drum removal would occur at AOC 40.

**Alternative 9:** Debris at all seven landfills would be dug up and relocated to a new landfill constructed near the existing Shepley's Hill Landfill. The seven former debris disposal areas would be regraded to match the surrounding area. Wetlands disturbed during debris excavation at AOCs 9 and 40 would be restored or replaced. When filled, the new landfill would be capped. Groundwater at the capped landfill would be monitored. Hot spot sediment and drum removal would occur at AOC 40.

## Alternative Comparison

The Army has evaluated the ten cleanup alternatives, including the proposed cleanup, using the criteria described earlier in this Plan.

The proposed cleanup plan **protects human health and the environment** to a similar or greater extent than the alternatives being considered. Human health risks associated with current use of the landfill sites are acceptable according to USEPA criteria. Human health risks associated with potential future residential use for some of the sites may not be acceptable according to USEPA criteria. However, residential use of these areas is very unlikely. Human health risks associated with potential future commercial and industrial use (i.e., exposure to surface soil) at the six landfill sites for which risk was evaluated are acceptable, according to USEPA criteria. No impact to the Patton water supply well attributable to the AOC 40 landfill has been measured in the 25 years of the landfill's existence. Groundwater quality at the well is not at risk from AOC 40, under current conditions. It has not been determined that water quality associated with increased use of the Patton well will be

impacted by the landfill. Removal of debris from AOCs 9 and 40 and SA 13 will eliminate potential human health and ecological risk posed by possible contaminant release. In addition, land re-use needs will be fostered because current landfill property will be made available for future development.

The proposed cleanup plan **meets Federal and State environmental statutes and regulations**, including 310 CMR 16.000 and 19.000, the state regulations governing solid waste landfill siting and closure. Landfills not being relocated (i.e., SAs 6 and 12, AOCs 11 and 41) meet the state's definition of "inactive" landfills. State regulations for closure of inactive landfills can be less than those for "active" landfills. In the absence of significant threat to human health or the environment, closure of inactive landfills typically require only a vegetated (or grassed) cover. Testing performed during investigations did not identify any significant risk at those sites where no action or limited action is proposed. Substantive closure requirements for SA 6 have been met, and no further action under CERCLA and/or the Massachusetts Solid Waste Regulations, 310 CMR 19.000, will be taken there.

Substantive closure requirements for SA 12, and AOCs 11 and 41 will be satisfied by removing all visible surface debris, restoring disturbed soil in a manner consistent with surrounding vegetation, revegetation, and long-term site monitoring. Submittal of site investigation and feasibility reports is acceptable to MADEP in lieu of formal closure plans.

The proposed cleanup plan **provides long-term protection** equal to or better than the alternatives being considered. The proposed new landfill cell, if properly maintained, will provide protection to groundwater from rainwater infiltration. The associated groundwater monitoring program will continue over the long term. It is not expected that the generally low-level risks posed by debris left in-place will change over time.

Because the landfilled materials are primarily demolition debris and are not considered toxic, none of the alternatives being considered offer **treatment to reduce their harmful effects**, nor is the **volume of debris being reduced**. By lining and capping debris and preventing rainwater from seeping into the new landfill cell and possibly spreading contaminants, a lined landfill serves to **reduce the debris' mobility**. Those alternatives that propose only capping landfills fall short of the proposed cleanup plan's ability to meet this criterion.

The proposed cleanup plan offers **short-term effectiveness** equal to the other alternatives being considered. Compared to the other alternatives, site risks would be reduced in approximately the same amount of time. Short-term hazards to the community and to workers would be relatively equal for all of the alternatives being considered. These would be primarily construction-related hazards, and noise and dust from truck traffic.

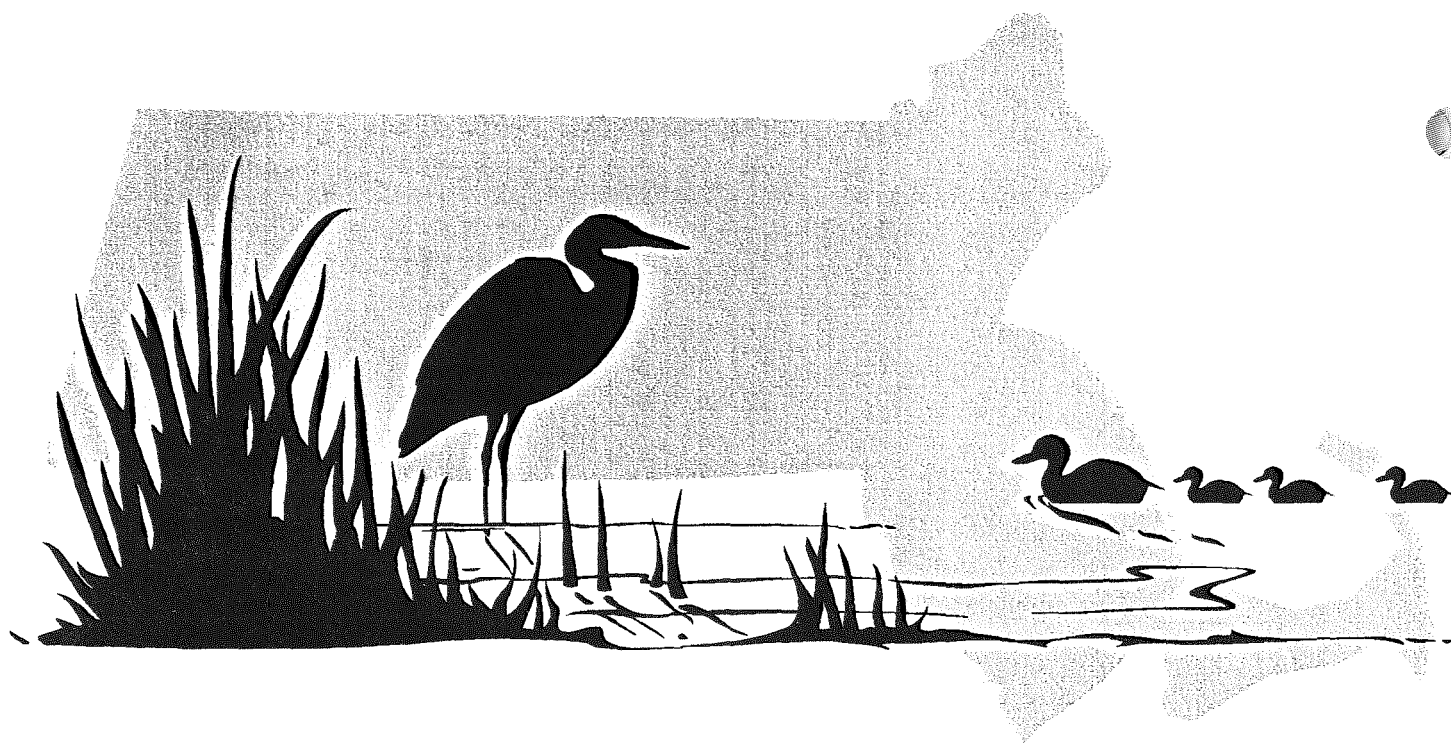
The goods and services needed to **implement** the proposed cleanup plan, and all of the alternative plans, are readily available. Labor and equipment needed to implement the proposed cleanup plan are those similarly used in conventional construction projects.

The estimated **cost** of the proposed cleanup plan is \$17.3 million. The proposed cleanup plan offers the necessary protection for a cost in the moderate-to-high range among the considered alterna-

**Figure 9. Landfill Remediation - Remedial Alternatives Cost Summary**

	1	2	3	4	4a	5	6	7	8	9
	No Further Action: All seven landfills	Cap in Place: AOCs 9, 40 Limited Removal: AOC 11, SA13 No Further Action: SAs 6, 12, AOC 41	Cap in Place: AOCs 9, 11, 40 No Further Action: SAs 6, 12, 13 AOC 41	Excavate/ Consolidate: AOCs 9, 40 Limited Removal: AOC 11 No Further Action: SAs 6, 12, 13 AOC 41	Excavate/ Consolidate: SA13 AOCs 9, 40 Limited Removal: AOC 11 No Action under CERCLA: SAs 6, and 12, AOC 41	Excavate/ Consolidate: AOCs 9, 40 Cap in Place: SAs 6, 12, 13 AOC 41 Limited Removal: AOC 11	Excavate/ Consolidate: AOCs 9, 11, 40 Cap in Place: SAs 6, 12, 13 AOC 41	Cap in Place: All seven landfills	Excavate/ Consolidate: SAs 6, 12, 13 AOCs 9, 40, 41 Limited Action: AOC 11	Excavate/ Consolidate: All seven landfills
Cost (30 years)	\$0	\$8.4 million	\$9.5 million	\$16.6 million	\$17.3 million	\$19.6 million	\$21.6 million	\$12.5 million	\$18.1 million	\$20.2 million

 Army's Preferred Alternative



tives. A summary of the costs estimated for each of the ten alternatives is shown in Figure 9.

**USEPA** and the **Commonwealth of Massachusetts** concur with the Army's proposed cleanup plan.

**Community acceptance** will be determined following the public comment period discussed in this Plan. Public comments will play an important role in the eventual selection of the cleanup plan.

## The Proposed Remedial Alternative

After careful study of the ten alternatives, the Army has selected Alternative 4a to reduce potential risks from site debris. No action under CERCLA is proposed for SA 6, SA 12, and AOC 41. At SA 12 and AOC 41, all visible man-made surface debris will be removed (as a non-CERCLA action) by Devens RFTA personnel. Future long-term monitoring will be conducted at SA 12 and AOC 41.

At AOC 11, all visible man-made surface debris will be removed, and future long-term monitoring will be conducted. AOCs 9 and 40 and SA13 will be dug up and consolidated at a new landfill cell to be constructed near the existing Shepley's Hill Landfill. Long-term monitoring and maintenance of the new cell will be performed.

## Why is the Army Recommending this Alternative?

The Army proposes to implement Alternative 4a to reduce low-level current and potential human health and ecological risk posed by the landfills. None of the landfills currently affect groundwater quality. Relocation of debris from AOCs 9 and 40 and SA13 will eliminate potential human health and ecological risk posed by possible contaminant release from landfill debris. In addition, land re-use needs will be fostered because current landfill property will be made available for future development. Removal of hot spot sediment at AOC 40 will address risk to ecological receptors.

Removal of visible man-made surface debris at AOC 11 will eliminate physical hazards associated with potential debris contact. Although surface soil at AOC 11 could present a risk to individual ecological receptors, population-level risks are probably insignificant. And although sediment at AOC 11 poses a risk to aquatic receptors, potential remedial actions to treat or excavate sediments would cause certain short-term destruction of receptor habitat. In addition, subsequent flooding of the Nashua River would likely redeposit contaminated sediment and render remedial action futile.

At SA 6, SA12, and AOC 41, the Army believes no remedial actions are warranted under CERCLA. Human health risks associated with potential future commercial and industrial use of the sites (i.e., exposures to surface soil only) would be acceptable, according to USEPA criteria. At SA 12 and AOC 41, non-CERCLA visible debris removal will be conducted by Devens RFTA personnel. In conjunction with a South Post-wide monitoring program, the Army will be evaluating possible impacts to fish and wildlife at New Cranberry Pond from contaminants at AOC 41.

## What's a Formal Comment?

During the public comment period, the Army will accept formal written comments and hold a meeting to accept formal verbal or written comments. It is important to note that regulations distinguish between "formal" and "informal" comments. While the Army

uses comments throughout site investigation and cleanup, regulations require the Army respond to formal comments in writing.

To make a formal comment, you need only speak during the formal public hearing at 8:30 p.m. on January 8, 1998, or submit a written comment during the comment period. The Army will not respond to your comments during the formal public hearing. The Army will review the transcript of all formal comments received at the hearing, and all written comments received during the formal comment period, before making a final decision and developing a written response to the comments.

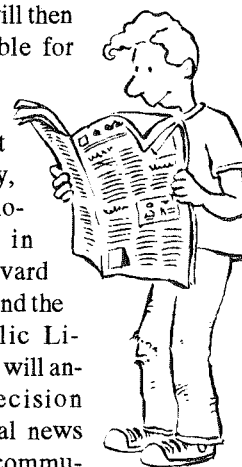
All comments and responses will be evaluated to assist the Army, USEPA and MADEP in selecting the final remedial alternatives at SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41.

## Cleanup Options?

Your formal comment will become part of the official public record, a crucial element in the decision-making process. The transcript of comments and Army's written responses will be issued in a document called a Responsiveness Summary when the Army releases the final decision.

## Next Steps

In March, 1998, the Army expects to have reviewed all comments received and signed the Record of Decision document describing the chosen remedial alternative. The Record of Decision and Responsiveness Summary will then be made available for review at the site information repositories at the Ayer Library, the Hazen Memorial Library in Shirley, the Harvard Public Library, and the Lancaster Public Library. The Army will announce the decision through the local news media and the community mailing list.



## Use This Space to Write Your Comments

The Army wants your written comments on all of the options under consideration for dealing with the landfills at SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41. You can use the form below to send in written comments. If you have questions about how to comment please call the Devens BRAC Environmental Coordinator, Jim Chambers, at 978/796-3835. Send this form, or any other written comments, postmarked no later than January 22, 1998 to:

Jim Chambers  
U.S. Army, Reserve Forces Training Area  
BRAC Environmental Office  
30 Quebec Street, Box 100  
Devens, MA 01432-4429  
Fax 978/796-3133

Comment Submitted by: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41  
Public Comment Sheet**

Fold on dotted lines, staple, stamp, and mail

Place  
stamp  
here

Jim Chambers  
U.S. Army, Reserve Forces Training Area  
BRAC Environmental Office  
30 Quebec Street, Box 100  
Devens, MA 01432-4429



## Mailing List Additions/Deletions/Charges

If you or someone you know would like to be added to (or deleted from) the Devens Reserve Forces Training Area mailing list, please fill out and mail this form to:

Jim Chambers  
U.S. Army, Reserve Forces Training Area  
BRAC Environmental Office  
30 Quebec Street, Box 100  
Devens, MA 01432-4429

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Affiliation: \_\_\_\_\_

Phone: \_\_\_\_\_

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Jim Chambers  
U.S. Army, Reserve Forces Training Area  
BRAC Environmental Office  
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