

# Impact Area Groundwater Study Program

JUNE 2009

BA-4 DISPOSAL AREA

FACT SHEET 2009-2

## NO FURTHER ACTION DECISION DOCUMENT

The BA-4 Disposal Area (BA-4) is part of the ongoing U.S. Army Impact Area Groundwater Study Program's (IAGWSP) cleanup at Camp Edwards on the Massachusetts Military Reservation (MMR).

In order to expedite cleanup and remove any potential sources of groundwater contamination, the IAGWSP conducted a rapid response action at the BA-4 Disposal Area in 2006 to address contaminated soil found at the site. The U.S. Environmental Protection Agency (EPA) is issuing the BA-4 Disposal Area No Further Action Decision Document, which proposes that no further remedial action is necessary at the BA-4 Disposal Area in order to protect the groundwater beneath the site.

The proposed no further action decision was selected in accordance with Section 1431(a) of the Safe Drinking Water Act, 42 USC Section 300i(a), as amended, and the related USEPA Administrative Order concerning response actions (SDWA-1-2000-0014) and includes consideration of the cleanup standards set forth under Massachusetts General Laws, M.G.L. c. 21E and 310 CMR 40.0000, the Massachusetts Contingency Plan (MCP). The Mass DEP has also proposed that no further remedial action is necessary at the BA-4 Disposal Area to protect public health, safety, welfare and the environment.

### INFORMAL PUBLIC COMMENT PERIOD JUNE 17 THROUGH JULY 17, 2009

The EPA is issuing the **BA-4 Disposal Area No Further Action Decision Document** for an informal public comment period that will run from June 17 to July 17, 2009. For additional information on the Decision Document and how to submit comments, please turn to the back of this fact sheet.

### BACKGROUND

The BA-4 Disposal Area is located on the northern portion of the Massachusetts Military Reservation (MMR) known as Camp Edwards. It consists of two acres at the intersection of Pew Road and Pocasset-Forestdale Road. Portions of the BA-4 Disposal Area fall within the much larger A-3, A-5 BA-4 and A-4 training areas. The decision document pertains to five areas of 2,500 to 6,500 square feet each (labeled Area A-E) and areas adjacent to, but just outside Areas A-E, that were investigated as potential disposal sites. The remainder of the BA-4 area outside of the disposal area is still under investigation.

The investigation of the BA-4 Disposal Area was initiated as part of a survey to assess areas that could have been used for disposal. Survey sites were selected using historical

records and other archival information. Geophysical surveys, as well as soil and groundwater investigations, were conducted at the BA-4 site based on that information.

### SOIL INVESTIGATIONS AND CLEANUPS

**Geophysical Investigations:** In 2001, geophysical surveys were conducted in five areas (Areas A through E) of the BA-4 site to identify potential munitions disposal sites. These areas varied in size from 2,500 square feet to 6,500 square feet. Selection of the areas was based on analysis of historical aerial photographs and interviews regarding past activities.

Following the geophysical survey a total of 82 anomalies from the five areas were excavated. Anomalies were selected for investigation based on signal strength and proximity to other anomalies. The majority of the materials recovered during the investigations in Areas B, C, and D included miscellaneous metallic debris such as nails, beverage cans, ammunition cans, railroad material, structural reinforcing bars and packaging material. One practice grenade was recovered from Area D.

**Additional Investigations – Areas A and E:** Based on geophysical survey results, additional investigations were conducted later in 2001 at Area A, a site covering approximately 6,500 square feet, and Area E, a site covering approximately 2,500 square feet. Approximately 590 square feet are shared by Areas A and E.

During these investigations, a total of 46 anomalies were identified and excavated. A disposal site containing 312 expended jet starter-cartridges and igniter-tubes was found in Area A, and a 55-gallon drum of ash, burnt small arms and pyrotechnics, was found in Area E. These items and the surrounding soil were removed and properly disposed of off site.

Soil samples were collected from the fill material and the native soil at the bottom of the Area A and Area E excavations, and from the ash material inside the drum, found in Area E. All samples were analyzed for explosives, semi-volatile organic compounds (SVOCs), nitrogen compounds, and metals. The Area E samples also were analyzed for dioxins and furans. After sampling, the excavation sites were mapped, the bottoms lined with plastic snow fencing and the areas backfilled.

Sample results showed significant lead concentrations in the Area A fill material and dioxin and several metals in the ash sample collected in Area E, which was disposed of off site.



Facing North toward Area A

**Rapid Response Actions:** Based on soil investigations and geophysical surveys, rapid response actions were conducted at the BA-4 Disposal Area in 2006 and 2007. These included the removal of contaminated soils from Areas A and E, along with intrusive investigations to identify anomalies detected during geophysical surveys of three areas: 1) north of Area E; 2) east of Area A, and 3) west of Area B and south of Area C (areas outlined in blue and purple on map on page 3).

**Area A Action:** In August 2006, lead-impacted soil in Area A was excavated. The initial excavation consisted of removing soil from a 16-foot by 18-foot area. During that excavation, expended jet engine starter cartridges and igniter tubes were observed in the eastern sidewall. Additional excavation of an area of approximately 8-feet by 8-feet by 10-feet deep was conducted to recover these cartridges. No unexploded ordnance was encountered during intrusive operations.

Approximately 85 tons of excavated soil were removed along with the cartridges and igniter tubes. The soil and other items were properly disposed of off site.

Confirmation samples indicate the contaminated soil has successfully been removed.

**Area E Action:** In May 2007, dioxin-impacted soil was excavated from Area E. The initial excavation removed soil from a 6-foot by 3-foot by 5-foot deep area. At approximately four feet below ground surface (bgs), two expended jet engine starter cartridges and nine rubber boots were observed on the east wall of the excavation and also were removed. Soil also was excavated from a 6-foot by 3-foot by 5-foot deep area to the west of the initial excavation.

The final Area E excavation dimensions were approximately 6-feet by 6-feet and 5-feet deep. A total of 10.5 tons of soil were excavated and disposed of off site.

No unexploded ordnance was encountered during intrusive operations.

Soil sampling results confirmed no further soil removal was necessary.

**Additional Anomaly Investigation:** In addition to the excavation of Areas A & E, 38 anomalies identified in previous investigations were excavated in conjunction with the rapid response actions. These anomalies were selected to provide better overall coverage of the investigation area.

No unexploded ordnance was encountered during the excavations. The approximately 100 pounds of material removed was primarily metallic debris, along with two empty cartridges and a small arms cartridge. All of these items were removed and properly disposed of off site. Two items determined to be construction debris were left in place.

**Confirmatory Soil Sampling and Analysis:** Multi-increment samples were collected from the sidewalls and bottom of the Area A excavation area prior to backfilling. Samples were analyzed for perchlorate and metals. Explosives were not included in the analytical suite since they were not detected in any previous samples from Area A. All other detected analytes were below cleanup standards, confirming no further soil removal was necessary.

Multi-increment soil samples also were collected from sidewalls and bottom of the Area E excavation. Samples were analyzed for dioxin and confirmed no further soil removal was necessary.

## GROUNDWATER INVESTIGATIONS

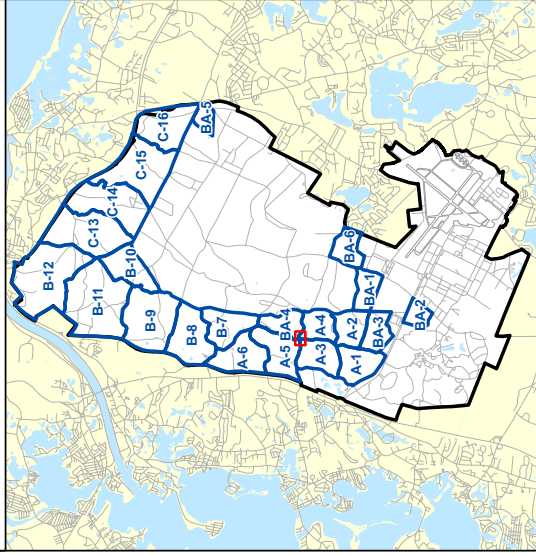
Two groundwater monitoring wells, MW-84M2 and MW-84M3, located approximately 4,000 feet downgradient of the BA-4 Disposal Area have been regularly monitored since 1999 and there have been no detections of contaminants.

Also, a decommissioned water supply well located in the immediate vicinity of the BA-4 Disposal Area was sampled for an extensive list of analytes, including metals, between 1999 and 2002. Only lead, at concentrations up to 53 ppb (July 1999), was detected above the MassDEP drinking water action level of 15 ppb.



Facing north toward Area E

LOCATION MAP



Legend

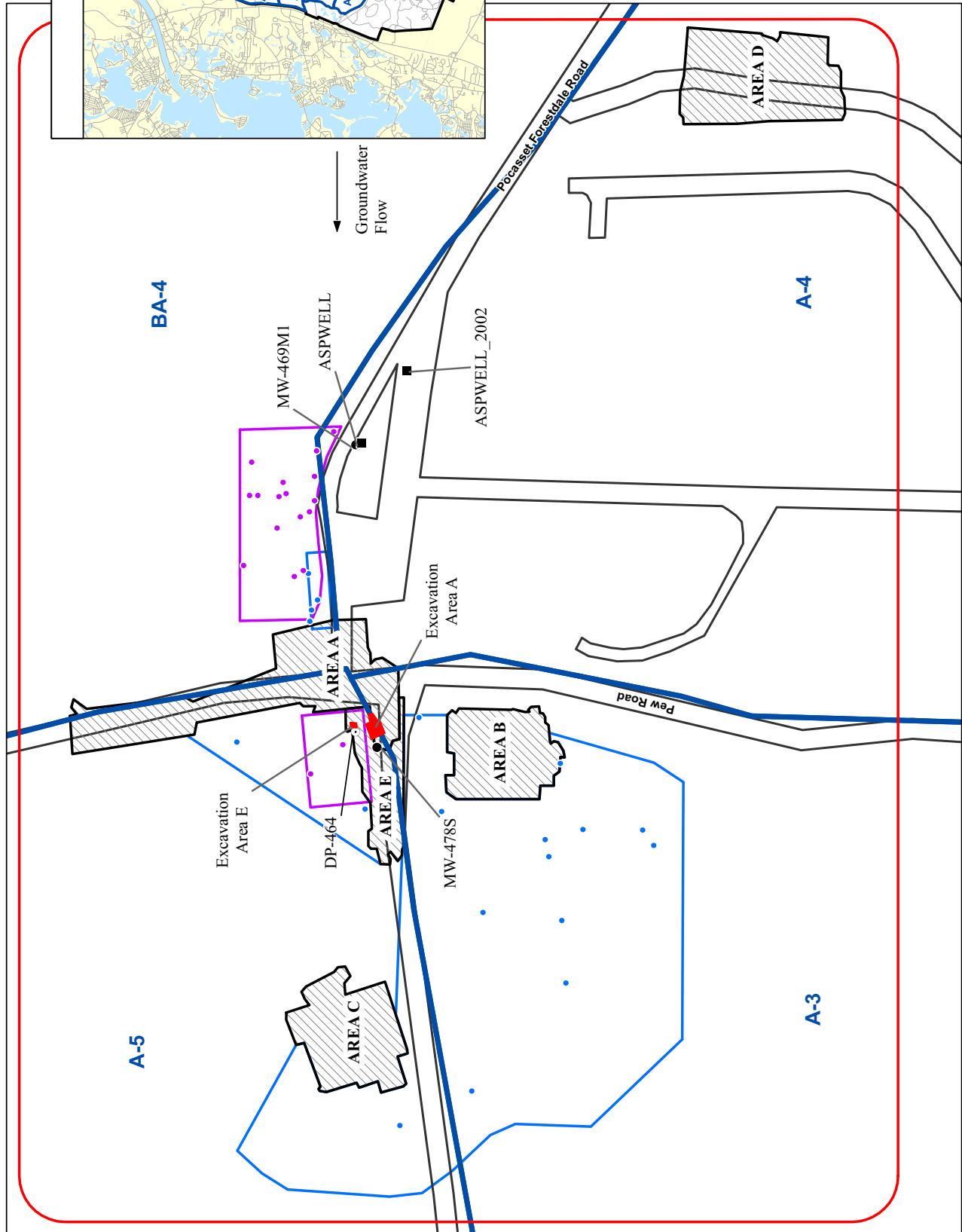
	BA-4 Disposal Area Boundary
	Training Areas
	Initial Investigation Areas
	Excavation Area
	RRA Geophysical Survey Area (Schonstedt)
	RRA Geophysical Survey Area (EM61)
	Excavated Anomaly (Schonstedt)
	Excavated Anomaly (EM61)
	Drive Point
	Monitoring Well
	Water Supply Well

TITLE

BA-4 Disposal Area  
Geophysical and Groundwater  
Investigation Areas

0 100 Feet

DRAFT



These detections were likely due to well construction materials. A groundwater monitoring well (MW-469M1) installed at the decommissioned water supply-well location has not had any lead detections in samples collected from that well since its installation.

In 2006, a drive point (DP-464) and a monitoring well (MW-478S) were placed near Areas A and E, respectively. Samples, analyzed for metals, explosives and perchlorate, showed no detections of explosives, lead, or perchlorate in the drive point or monitoring well.

### SUMMARY

The Draft BA-4 Disposal Area Decision Document presents a no further action decision for the two-acre site that includes five areas (labeled Area A through E) and areas adjacent to, but just outside Areas A-E. This decision is based on the following findings:

Historic disposal activities led to detectable levels of several analytes in BA-4 Disposal Area soil. Anomalies identified by geophysical investigations were excavated along with the surrounding soil. No unexploded ordnance was encountered during the excavations.

An abandoned supply well at the BA-4 Disposal Area and two downgradient monitoring wells have been sampled since 1999. Lead detected above an actionable level in the supply well was attributed to well construction materials since the detection decreased following installation of a new well in 2002. A drive point and two new monitoring wells added in 2006 in the vicinity of Areas A and E, and the original supply well, have been consistently non-detect for explosives, perchlorate, and metals.

The soil rapid response actions conducted in 2006 and 2007 removed contaminated soil found in Areas A and E. Post-excavation soil and groundwater sample results are all below applicable cleanup standards indicating that groundwater is not threatened and that no significant risk to human health, the environment or the aquifer exists.

### PUBLIC AND REGULATORY INVOLVEMENT

Details of the BA-4 investigation and removal actions were regularly briefed to the public during meetings of citizens' advisory groups including the Impact Area Review Team, Senior Management Board and more recently, the MMR Cleanup Team. Information also was made available through fact sheets, media releases, advertisements, and meetings with town officials.

A briefing and public comment period were held on the rapid response action in May 2006. The Draft No Further Action Decision Document was briefed to the public in May 2009. The rapid response action and decision document addendum were conducted pursuant to EPA Administrative Orders issued under the federal Safe Drinking Water Act and includes consideration of the cleanup standards set forth under Massachusetts General Laws, M.G.L. c. 21E and 310 CMR 40.0000, the MCP.

### OPPORTUNITIES FOR PUBLIC COMMENT

A public comment period on the *BA-4 Disposal Area No Further Action Decision Document* will be held from **June 17 through July 17, 2009**.

The No Further Action Decision Document will be available for review on the EPA Web site:

[www.epa.gov/ne/mmr](http://www.epa.gov/ne/mmr)

Other related Demolition Area 1 documents available on the Web site will include:

- *Decision Document Demolition Area 1 Groundwater Operable Unit*
- *Demolition Area 1 Source Area Completion of Work Report, including the Supplementary Post-Screening Investigation Report*

These documents also will be available at:

[groundwaterprogram.army.mil](http://groundwaterprogram.army.mil)

**Comments can be submitted as follows:**

- By fax to: 617-918-0028
- By mail to: Jim Murphy  
EPA  
One Congress Street, 11th Floor  
(Mailcode: ORA)  
Boston, MA 02114
- By e-mail to: [murphy.jim@epa.gov](mailto:murphy.jim@epa.gov)

### FOR MORE INFORMATION

For more information, please contact:

Kris Curley – IAGWSP -508-968-5626

Ellie Grillo – MassDEP - 508-946-2866

Jim Murphy – EPA - 617-918-1028

Or visit the Impact Area Groundwater Study Program Web site at:

[groundwaterprogram.army.mil](http://groundwaterprogram.army.mil)

Information repositories have been established in local public libraries to make information on the program available to the public. The repositories are updated regularly to ensure that the most recent documents, including copies of work plans, sampling results, site reports, fact sheets, meeting minutes and other materials are available.

**The repositories are located at:**

Falmouth Public Library	Sandwich Public Library
123 Katharine Lee Bates Road	142 Main Street
Falmouth, MA 02540	Sandwich, MA 02563

\*Jonathan Bourne Library  
19 Sandwich Road  
Bourne, MA 02532

\*A complete repository of documents related to the program is available at this library and on the CLAMS system.