

# Impact Area Groundwater Study Program

JANUARY 2003

## DEMOLITION AREA 1

FACT SHEET 2003 - 01

This fact sheet provides information on the National Guard Bureau Impact Area Groundwater Study Program's ongoing investigations and actions at Demolition Area 1 (Demo 1). It provides an update on the Rapid Response Action/Release Abatement Measure (RRA/RAM) activities currently underway at Demo 1. These activities are scheduled to begin in 2003 and they are the first major groundwater remediation activities for the Groundwater Program.

The Groundwater Program has been performing an investigation and cleanup of the soil and groundwater in the northern 15,000 acres at Camp Edwards on the Massachusetts Military Reservation (MMR) since 1997. The U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MADEP) provide regulatory oversight.

Words in *italics* are defined in the glossary on page 2.

Demolition Area 1 is a former military training area used from the mid 1970s to 1997 primarily for demolition training including the open burning and detonation of explosives. The seven-acre area is a topographic depression, or kettle hole, 45 feet deep at its base.

Explosives and munitions either used for training purposes and/or disposed of at this location, included C4, TNT, dynamite, shape charges, mines, and detonating cord.

Soil and groundwater investigations conducted to identify the nature and extent of contamination at Demo 1 are nearly complete. The investigations began in June of 1997 and have identified specific Contaminants of Concern (COCs) for soil and groundwater. The COCs are primarily explosive compounds – RDX, TNT, HMX, 2A-DNT, 4A-DNT, 2,4-DNT, and perchlorate, a substance contained in some military propellants and munitions.

Perchlorate has migrated the farthest in the groundwater. A groundwater contaminant plume extends more than 8,500 feet west (downgradient) of Demo 1 and is about 1,000 feet wide and 100 feet deep in the aquifer. (See figure on page 3).

The highest contaminant concentrations measured to date in the Demo 1 plume are 370 parts per billion (ppb) for RDX and 300 ppb for perchlorate. The long-term federal *health advisory* for RDX in drinking water is 2 ppb. There currently is no federal or state *drinking water standard* for perchlorate. EPA New England provided a *relevant standard* of 1.5 ppb for remedial decision making for the Groundwater Study Program at MMR.



As of January 2003, the contaminants in the Demo 1 groundwater plume have been almost fully defined. Plume delineation activities will continue to identify the location of the downgradient extent of the plume.

The Groundwater Study Program has proposed *Rapid Response Actions/Release Abatement Measures (RRA/RAM)* to address the soil and groundwater contamination at Demo 1. These actions are being taken to reduce the impacts of the contamination and fast track the cleanup until comprehensive cleanup measures are identified through the *Feasibility Study* process. The regulatory agencies, EPA and MA DEP, have agreed to this proposed approach.

The actions to address Demo 1 groundwater contamination include extraction, treatment, and reinjection (ETR) in two areas of the plume: one along Frank Perkins Road (in the middle of the plume) and another area near the plume toe. The ETR at Frank Perkins Road addresses the portion of the plume with the highest levels of contamination, while the ETR at the toe of the plume will limit further downgradient contamination of the sole source aquifer. The selection of this approach was made with careful consideration of regulatory agency comments, citizen advisory team comments, and with a strong commitment to pursue an aggressive approach towards cleanup. The Feasibility Study evaluates whether additional steps are needed and, if so, what cleanup alternatives are available to address the entire site.

Soil contamination at Demo 1 also will be addressed under an action involving excavation of the contaminated soil thought to be acting as an ongoing source of groundwater contamination. Under the RRA/RAM workplan, approximately 15,000 cubic yards of contaminated soil will be removed from the Demo 1 source area.

## NEXT STEPS/UPCOMING ACTIVITIES

The next steps toward conducting the Rapid Response Actions/Release Abatement Measures (RRA/RAM) for GROUNDWATER at Demo 1 and completing the Feasibility Study include the following activities:

- A detailed schedule for the Interim Action activities will be developed.
- Plume delineation activities will continue to identify the location of the downgradient extent of the plume.
- The design for the pump and treat systems will begin; groundwater modeling will be updated to incorporate the latest groundwater data; permitting issues will be identified, as well as natural resource and cultural impacts.
- A RRA/RAM workplan will be prepared and submitted to the Agencies, the Impact Area Review Team and the public for review and comment during a public comment period, which is scheduled for 1/28/03 – 2/11/03.
- The data collected for the additional groundwater plume delineation will be used to complete a Revised Draft Feasibility Study. The Feasibility Study will be developed concurrently with the design and implementation of the RRA/RAM action.

Next Steps toward conducting the Rapid Response Actions/Release Abatement Measures (RRA/RAM) for SOIL at Demo 1 include:

- Preparation of a RRA/RAM workplan.
- Removal of geophysical *anomalies* at the site.
- Excavation of approximately 15,000 cubic yards of soil.
- Treatment and/or offsite disposal of contaminated soil.

## GLOSSARY

**Anomalies** – Objects detected by geophysical instruments that may be buried ordnance (unexploded or inert), debris, or ferrous rocks.

**Drinking water standard** – Regulations EPA and MADEP set to control the level of contaminants in the nation's drinking water. These values are based on non-cancer health effects for different durations of exposure (e.g., one-day, ten-day, and lifetime).

**Feasibility Study** – A report identifying and evaluating potential cleanup alternatives.

**Groundwater Plume** – a volume of contaminated water that extends downstream from a contamination source to its leading edge

**Health Advisory** – Information on contaminants that can cause human health effects and are known, or anticipated, to occur in drinking water. Health Advisories are federal guidance values based on non-cancer health effects for different durations of exposure (e.g., one-day, ten-day, and lifetime).

**Relevant Standard** – a guidance value developed by EPA Region I based upon national EPA guidance and the most recent published and peer reviewed health studies. Any groundwater treatment system must be designed to treat groundwater to this value.

**Rapid Response Action/Release Abatement Measure** – Voluntary actions intended to reduce risks and/or increase the cost effectiveness of response actions by allowing the implementation of certain accelerated remedial actions to stabilize, treat, control, minimize or eliminate contamination.

## FOR MORE INFORMATION

Contact the following individuals for more information:

Kris Curley – Groundwater Program Community Involvement  
508-968-5626

Ellie Grillo – MADEP Community Involvement 508-946-2866

Jim Murphy – EPA Community Involvement 617-918-1028

Or visit the Groundwater Study Program Web site at:  
[www.groundwaterprogram.org](http://www.groundwaterprogram.org)

Information repositories have been established in five local libraries to make information on the program available to the public. The repositories are updated to ensure that all necessary 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  
123 Katharine Lee Bates Road  
Falmouth, MA 02540

Mashpee Public Library  
Steeple Street, Mashpee Commons  
Mashpee, MA 02649

U.S. Coast Guard Library  
Building 5205, Ent Street  
Otis ANGB, MA 02542

Sandwich Public Library  
142 Main Street  
Sandwich, MA 02563

Jonathan Bourne Library  
19 Sandwich Road  
Bourne, MA 02532

## OPPORTUNITIES FOR PUBLIC COMMENT

There will be opportunities for the public to provide comment on the RRA/RAM actions throughout the process. A 15-day informal public comment period will be held on the draft workplan for groundwater from January 28, 2003 - February 11, 2003 and on the draft workplan for soil from February 25, 2003 – March 11, 2003.