GROUNDWATER CLEANUP PROGRESS AT BROOKHAVEN NATIONAL LABORATORY, UPTON, NY

Douglas Paquette PG, William Dorsch PG, Robert Howe,
Vincent Racaniello PG, and John Burke
Groundwater Protection Group
Environmental Protection Division
Brookhaven National Laboratory
Upton, New York 11973-5000

Abstract

In December 1989, BNL was included as a Superfund Site on the National Priorities List (NPL) of contaminated sites identified for priority cleanup. The U.S. Department of Energy (DOE), U.S. Environmental Protection Agency (EPA), and the New York State Department of Environmental Conservation (NYSDEC) created a comprehensive Federal Facilities Agreement (FFA) that integrated DOE's response obligations under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), the Resource Conservation and Recovery Act (RCRA) and New York State hazardous waste regulations.

In the 1990s, extensive characterization was conducted to determine the extent of soil and groundwater contamination. The characterization effort was followed by soil remediation, landfill capping, and the construction of groundwater remediation systems located on the BNL site and in several off-site areas. Cleanup goals were detailed in nine CERCLA Records of Decision (RODs), with planned groundwater remediation being accomplished using a combination of active treatment and natural attenuation. Seventeen groundwater treatment systems have been constructed. Fourteen systems were designed to remediate volatile organic compounds (VOCs), two systems to remediate Strontium-90 and one system was used to control the downgradient migration of a tritium plume. Since the start of active groundwater remediation in 1996, significant groundwater cleanup progress has been realized, and noticeable improvements in groundwater quality is evident in a number of on-site and off-site areas. Nearly 7,400 pounds of VOCs and 32 millicuries of Strontium-90 have been removed while treating approximately 25 billion gallons of groundwater. Presently, nine treatment systems remain in operation. Three systems have been decommissioned, and five systems are in standby mode and are being evaluated for decommissioning.

An extensive groundwater monitoring program is utilized to evaluate system performance and the need for adjustments based on changing plume conditions. The monitoring results have been used to make modifications and enhancements to the groundwater cleanup program to optimize plume capture and treatment.