

ACTION MEMORANDUM

PECONIC RIVER  
REMOVAL ACTION FOR SEDIMENT ON BNL  
PROPERTY

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## ACRONYMS, ABBREVIATIONS, AND UNITS OF MEASURE

ARAR	Applicable or Relevant and Appropriate Requirement
BNL	Brookhaven National Laboratory
CERCLA	<i>Comprehensive Environmental Response, Compensation and Liability Act</i> of 1980
CFR	Code of Federal Regulations
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PCB	polychlorinated biphenyl
ppm	parts per million
STP	Sewage Treatment Plant
SCDHS	Suffolk County Department of Health Services
TBC	to be considered

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## **I. PURPOSE**

The purpose of this Action Memorandum is to document the decision by the U.S. Department of Energy (DOE) to remove contaminated sediments from the portion of the Peconic River on the Brookhaven National Laboratory (BNL) property.

The DOE has determined that on-site contaminated sediments may continue to migrate off of the Laboratory property, and, therefore, a non-time-critical removal action is warranted. Contaminated sediments that may already have migrated offsite will be addressed in a subsequent document.

Following the public comment period for *Engineering Evaluation/Cost Analysis—Action Memorandum: Peconic River Removal Action for Sediment on BNL Property*, DOE evaluated comments received. The DOE then met with the U.S. Environmental Protection Agency (EPA), New York State Department of Environmental Conservation (NYSDEC), New York State Department of Health (NYSDOH), and Suffolk County Department of Health Services (SCDHS). After evaluating the comments and additional data obtained to support the cleanup process, the areas initially identified for cleanup have been expanded to ensure that cleanup goals will be met.

## **II. SITE CONDITIONS AND BACKGROUND**

### **A. Site Description**

#### **1. Physical Location**

BNL is owned by the DOE and is located in the Town of Brookhaven in Suffolk County, New York. The Laboratory carries out basic and applied research in the fields of high-energy nuclear and solid-state physics, fundamental material and structure properties and the interaction of matter, nuclear medicine, biomedical and environmental sciences, and selected energy technologies.

BNL contains 5,265 acres of which 75 percent is wooded. The remainder is developed and includes office buildings, research facilities, residential areas, and parking lots. BNL is located near the western boundary of the Manorville drainage basin. The principal drainage feature of the Manorville drainage basin is the Peconic River, which is a coastal plain stream. BNL forms part of the upper drainage area or headwaters of the Peconic River. The surface drainage is poor in the Manorville drainage basin, and accounts for much of the land near the river being swampy. East of the Manorville drainage basin, the Peconic River valley widens and forms the Riverhead basin. The Peconic River drains in an easterly direction and then flows into Flanders Bay, an arm of the Great Peconic Bay. The western branch of the Peconic River enters BNL in the northwest section. The Sewage Treatment Plant (STP) outfall marks the start of constant flow and the river

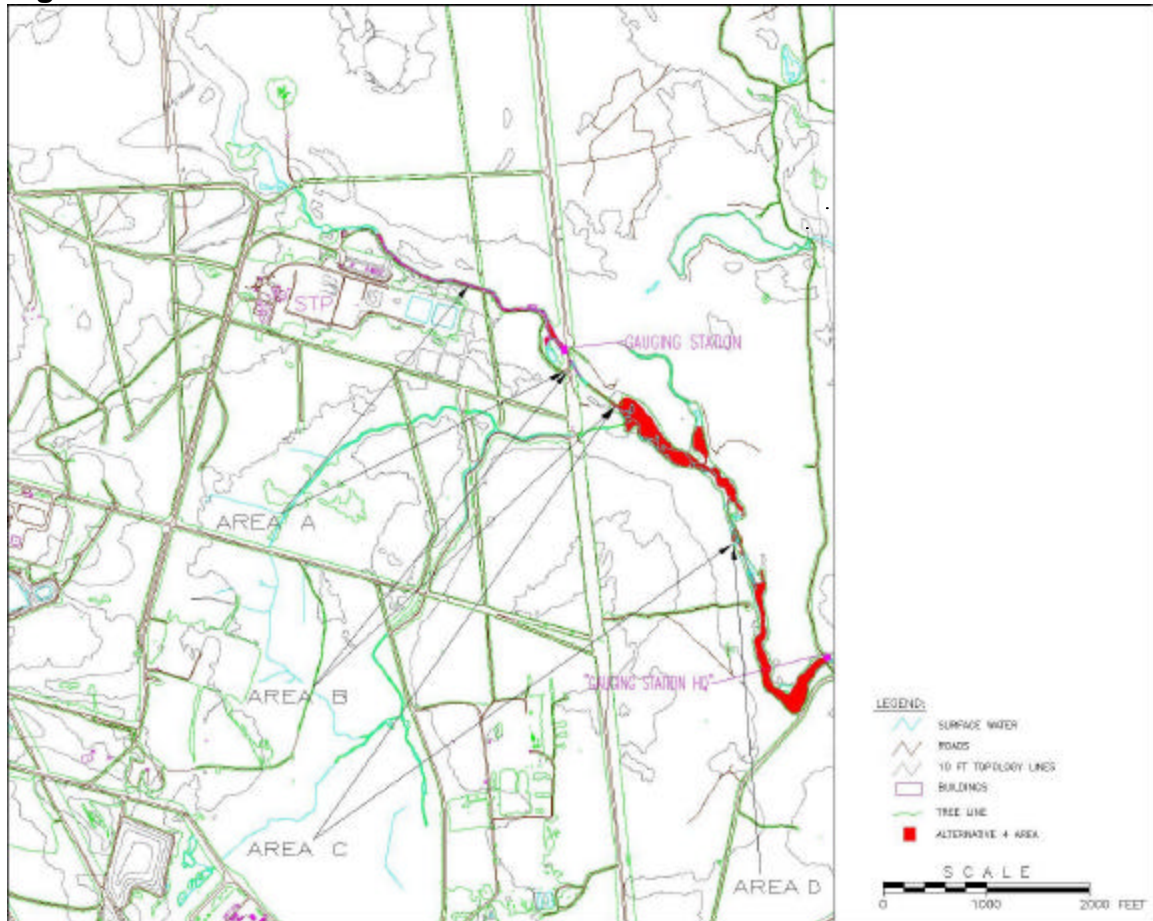
exits the property to the southeast near North Street. (The northern branch joins the river off site, approximately 0.5 miles upstream of Schultz Road).

## 2. Removal Site Evaluation

Past operations and practices at BNL resulted in the discharge of wastewater containing chemical and radiological contaminants to the STP, and then to the Peconic River causing contamination of sediments and fish in the river.

On Laboratory property, the Peconic River contains four major depositional wetland areas: Area A, Area B, Area C, and portions of Area D (Figure 1). Elevated levels of metals, and low levels of polychlorinated biphenyls (PCBs) and radionuclides are present in Peconic River sediment in these areas.

**Figure 1. Location of the Peconic River Removal Areas**



The contaminant of greatest concern is mercury, with a maximum concentration in sediment of 39.7 parts per million (ppm), and the PCB aroclor-1254, with a maximum concentration in sediment of 1.5 ppm, because these contaminants have been shown to bioaccumulate in fish. Radiological contaminants are below levels requiring cleanup, but are largely co-located with the other contaminants and will be

removed with the other contaminants. Contamination is highest in surface sediment and is most prominent in the depositional areas.

## **B. Actions to Date**

### **1. Previous Actions**

BNL has taken numerous actions to reduce the discharge of contaminants. Numerous upgrades to the BNL STP have been performed and a proactive Pollution Prevention/Waste Minimization program has been implemented to reduce the generation of wastes at the source and the discharge of contaminants. The quality and contaminant levels in the Peconic River surface water, sediment, and fish have been characterized as part of BNL's cleanup and environmental monitoring programs. Pilot studies were conducted in March 2002 to demonstrate the effectiveness of two cleanup technologies. A high capacity vacuum/guzzler was tested in Area A and sediment removal/wetland restoration was demonstrated in Area D. Extensive screening of other more innovative technologies, such as electrochemical and phytoremediation, were also conducted. Information about these technologies and the pilot projects may be found at <http://www.bnl.gov/erd/peconic.html>.

### **2. Current Actions**

In addition to the removal of on-site sediments being implemented, surface water, sediment, and fish monitoring is part of BNL's routine environmental management programs.

### **3. Planned Actions**

A Proposed Remedial Action Plan is being prepared for public review and comment. It will address the final remedy for the off-site portion of the Peconic River. Following public comment the selected remedy will be documented in a Record of Decision and implemented accordingly. This removal action will be consistent with and constitute a portion of the final remedy. Surface water, fish, and sediment monitoring will continue as part of BNL's environmental programs.

## **C. National Priorities List Status**

Brookhaven National Laboratory was added to the National Priorities List in 1989.

### **III. THREATS TO PUBLIC HEALTH OR WELFARE AND THE ENVIRONMENT STATUTORY AND REGULATORY AUTHORITIES**

#### **A. Threats to Public Health or Welfare and the Environment**

This action is being undertaken as a voluntary removal action under an Interagency Agreement between the DOE, EPA, and NYSDEC. This action will address regulatory agency concerns, including those of NYSDOH and SCDHS, about contamination in Peconic River sediment and bioaccumulation of mercury and PCBs in fish. The appropriateness of the removal action is based on the following factors listed in 40 Code of Federal Regulations (CFR) 300.415 (b) (2) of the regulations implementing the National Contingency Plan:

- Other situations or factors that may pose threats to public health or welfare of the United States or the environment.
- Actual or potential contamination of drinking water supplies or sensitive ecosystems.

### **IV. IDENTIFICATION OF REMOVAL ACTION OBJECTIVES**

Removal action objectives for the sediment of the Peconic River on the Laboratory property are based on the evaluation of 500 sediment samples and three risk assessments. Based on the results of these evaluations, the following Removal Action Objectives have been identified for sediment:

- Reduce site-related contaminants (e.g., mercury) in sediments to levels protective of human health.
- Reduce or mitigate, to the extent practicable, existing and potential adverse ecological effects of contaminants in the Peconic River.
- Prevent, or reduce to the extent practicable, the migration of contaminants off the BNL facility.

### **V. PROPOSED ACTION AND ESTIMATED COSTS**

#### **A. Proposed Action**

The removal action addresses all areas originally identified in Alternative 4. In addition, after reviewing public comments and discussing design drawings with the regulatory agencies, these areas have been expanded to further ensure cleanup goals will be met. The action involves the removal of contaminated sediments in Areas A, B, C, and D to achieve an average concentration of 1 part per million (ppm) mercury through the portion of the Peconic River on the DOE's BNL property,

with a goal of no sample in any excavated area exceeding 2 ppm mercury. Co-located contaminants will also be removed. The major features of this action include stream dewatering, the excavation and removal of the sediment layer, dewatering of removed sediment, disposal of sediment at a licensed off-site landfill facility, wetland restoration as needed and installation of access roads for removal equipment. Details will be determined during the preparation of project work plans. Post-excavation sampling will be performed to confirm that cleanup goals have been met. Construction and long-term monitoring of surface water, sediment, and fish will ensure effectiveness.

#### **B. Contribution to the Remedial Performance**

This removal action will contribute to the overall cleanup of the Peconic River by removing a significant amount of contaminated sediment. The Peconic River is identified as Area of Concern 30 in the Interagency Agreement. A future Record of Decision will document the final remedy selected. This action will be consistent with the final remedy.

#### **C. Description of Alternative Technologies**

In December 2000, BNL hosted a Peconic River cleanup workshop that involved national and international environmental restoration companies. Regulatory agency personnel, the DOE and BNL staff, and community members attended the workshop. The workshop focused on the identification of alternative technologies that might be capable of reducing wetland damage while achieving the necessary cleanup objectives.

Based on the results of this workshop, it was determined that additional technologies should be evaluated. During 2001 and through early 2002, several technologies were evaluated, and two (i.e., vacuum guzzling and sediment removal with wetland restoration) were field tested by pilot studies that were completed during the spring of 2002. This sediment removal/wetland restoration will be used for most of the work to be performed under this removal action.

#### **D. Applicable or Relevant and Appropriate Requirements**

The National Contingency Plan, Section 300.430 (e)(9)(iii)(B), requires that removal attain the Federal and State Applicable and Relevant and Appropriate Requirements (ARARs) to the extent practicable. While there are no promulgated Federal or State cleanup standards for contaminated sediment, there are requirements that apply to the selected action. The significant ARARs are highlighted below.



## **1. Chemical-Specific ARARs**

Federal and State regulations define hazardous wastes. All wastes classified as hazardous will be handled, stored, and disposed of off site at a permitted facility in accordance with these regulations. State regulations pertaining to air emissions control requirements will also be followed (6 New York Codes, Rules, and Regulations Part 212, General Process Emission Sources).

## **2. Location-Specific ARARs**

Federal and State wetland regulations require that impacts to wetlands be minimized unless no other viable option exists. The pilot studies conducted on the Peconic River have demonstrated that the sediment removal techniques are effective at minimizing disturbance to sensitive wetland environments. Wetland restoration techniques have also been demonstrated to be effective through a pilot study. This removal will use the same techniques to minimize damage to the wetlands. As the Peconic River is a New York State designated Wild and Scenic River, equivalency permit requirements will be reviewed with NYSDEC for land access and the wetland excavation and restoration.

## **3. Action-Specific ARARs**

Action specific requirements include 33 CFR 320.2 Dredge and Fill Operations and state and federal discharge regulations.

## **4. To-be-Considered (TBC) Guidance**

In implementing this Removal Action, the important non-promulgated guidance, known as To Be Considered's (TBCs), will also be followed.

### **E. Project Schedule**

The current working schedule calls for the removal action including all waste disposal to be initiated late in 2003 and completed by spring 2004. Long-term monitoring will continue at least until the five-year remedy review. Lessons learned from the removal action will be applied to the remainder of the Peconic River cleanup.

### **F. Estimated Costs**

The cleanup will cost approximately \$7,838,590.

## **VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN**

A delayed action or no action will increase the potential for additional contaminants to migrate off Laboratory property and for continued bioaccumulation of contaminants in fish. This removal action allows for an early start before the Record of Decision is finalized. This action is best performed during the dry season (typically late summer to early winter) when water levels are low and sections of the river are dry.

## **VII. PUBLIC PARTICIPATION**

Extensive public participation on this project has been conducted over a period of several years. This remedy reflects many aspects of that participation.

Public participation for this Removal Action included issuing a public notice of availability in a local newspaper coinciding with the submission of the Engineering Evaluation – Action Memorandum to the Administrative Record. The public was invited to attend two information sessions, one in Riverhead and one at BNL. These activities took place during the thirty-day public comment period.

Peconic River updates will continue to be provided to the BNL Community Advisory Council and Brookhaven Executive Roundtable. Additional Peconic River-related information is available to the public from the Peconic River project website (<http://www.bnl.gov/erd/peconic.html>) and *cleanupupdate* newsletter.

## **VIII. OUTSTANDING POLICY ISSUES**

There are no outstanding policy issues identified for this removal action.

## **IX. ENFORCEMENT**

The DOE owns BNL and the DOE will fund this removal action. The removal action will be conducted in accordance with the *Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA)* and National Contingency Plan requirements, the Interagency Agreement, and applicable New York State regulations.

## **X. RECOMMENDATION**

This document recommends a non-time-critical removal action for the Peconic River on Laboratory property. This decision document was developed in accordance with CERCLA as amended, and is consistent with the National Contingency Plan.