

ENGINEERING EVALUATION/COST ANALYSIS
AND
ACTION MEMORANDUM

PECONIC RIVER
REMOVAL ACTION FOR SEDIMENT ON BNL
PROPERTY

September 11, 2003

Prepared by:
Brookhaven National Laboratory
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Under Contract No. DE-AC0-2-98CH01886 with the
United States Department of Energy

Prepared for:

U.S. Department of Energy
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EXECUTIVE SUMMARY

Brookhaven National Laboratory (BNL) is a Department of Energy (DOE) facility that was placed on the New York State Department of Environmental Conservation (NYSDEC) "Inactive Hazardous Waste Disposal Sites" list in 1980. Subsequently, in 1989, the Laboratory was included on the U.S. Environmental Protection Agency (EPA) National Priorities List for cleanup. The Laboratory ranked high on the EPA rating system and was placed on this list because of the environmental effects of past practices, some of which could pose a threat to Long Island's sole-source aquifer in the vicinity of BNL. The cleanup of BNL is funded by the DOE and overseen by the DOE, U.S. EPA, and NYSDEC.

The Peconic River is part of Operable Unit V and has been identified as Area of Concern 30 (AOC 30) in the Interagency Agreement between the EPA Region II, the DOE, and NYSDEC. This is a Federal Facility Agreement under the *Comprehensive Environmental Response Compensation, and Liability Act* of 1980 (CERCLA) Section 120, Administrative Docket Number II-CERCLA-FFA-00201.

Contaminants in the sediment of the Peconic River on the Laboratory property may migrate off of the Laboratory property, and a non-time-critical removal action is warranted. To help determine the most appropriate action, the DOE has prepared this Engineering Evaluation/Cost Analysis (EE/CA) – Action Memorandum. The scope of the evaluation includes the sediment in the Peconic River on the Laboratory property. Sediment in portions of the river off of Laboratory property will be addressed in a separate document.

Wastewater from Laboratory operations is processed and treated at the BNL Sewage Treatment Plant (STP). Treated, monitored water is discharged into the Peconic River. However, past operations and practices resulted in wastewater containing chemical and radiological contaminants being discharged into the Peconic River; contaminants were deposited into the sediment. Elevated levels of metals, and low levels of PCBs, pesticides and radionuclides were detected in Peconic River sediment. Concentrations were highest in on-site surface sediment and most prominent in the depositional areas on the Laboratory property located approximately 0.5 mile, 1 mile, and 1.5 miles downstream of the STP.

This EE/CA – Action Memorandum has been prepared to document the engineering and cost analysis of various alternatives and to implement the recommended alternative. The EE/CA – Action Memorandum scope and contents include a description of the regulatory framework, basis for the clean up, description of the area under evaluation, and the identification, analysis and comparison of various removal action alternatives. The four removal alternatives for the Peconic River sediment on the BNL property, which are evaluated in this EE/CA – Action Memorandum, are summarized as follows:

Alternative 1, No Action, is required by CERCLA and provides the baseline to compare the other alternatives. Long term monitoring of the surface water, fish, and sediment would be included in this alternative.

Alternative 2, Removal of all Sediment from the STP to the Property Line. The cleanup would remove approximately 95% of mercury and PCBs in surface sediment; co-located contaminants would also be removed. This alternative would require complete excavation from BNL STP to the BNL boundary. The alternative includes long-term monitoring of surface water, fish, and sediment to ensure effectiveness.

Alternative 3, Removal of all Sediment with Mercury Concentrations Greater than 9.8 ppm. The cleanup would remove approximately 85% of mercury and 75% of PCBs in surface sediment; co-located contaminants would also be removed. This alternative includes long-term monitoring of surface water, fish, and sediment to ensure effectiveness.

Alternative 4, Removal of Targeted Depositional Areas. Flow patterns in the Peconic River on the BNL property have resulted in deposition of most of the contaminants in specific areas. The cleanup would remove contaminated sediments in depositional areas identified as Areas A, B, C, and D (see Figure 1 in the document) to achieve an average concentration of 1 part per million (ppm) mercury through the portion of the Peconic River on DOE property, with a goal of no sample in any excavated area exceeding 2 ppm mercury. The cleanup would remove 95% of mercury and 88% of PCBs in surface sediment; co-located contaminants would also be removed. This alternative includes long-term monitoring of surface water, fish, and sediment to ensure effectiveness.

The EE/CA process involves the evaluation of the characterization data, presents alternatives to address the contamination, and recommends a preferred alternative. Therefore, the four alternatives were evaluated against the CERCLA criteria: effectiveness, implementability, and cost. Based on this evaluation, Alternative 4 is the recommended alternative.

The recommended alternative, Alternative 4 involves the removal of the unconsolidated sediment layer (which is approximately six to 12 inches in depth) from the depositional areas (A, B, C, and D) with a cleanup goal of 1 ppm average mercury concentration overall in the portion of the Peconic River on Laboratory property. Contamination will be removed from the depositional areas with a goal that all post-clean up confirmation samples from the excavated areas contain mercury concentrations less than 2 ppm. 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 to the depositional areas. Construction and long-term monitoring will be conducted to verify protectiveness. Details will be determined during the preparation of project work plans. Post-excavation sampling will be performed to demonstrate the achievement of cleanup goals. Documents supporting this action are located in the Administrative Record for Brookhaven National Laboratory.

DOE worked closely with U.S. EPA, NYSDEC and the Suffolk County Department of Health in developing the cleanup proposal. The proposed alternative will contribute to overall protection of public health and the environment of the Peconic River by removing a significant amount of contaminated sediment. Removal of these contaminated sediments will limit migration of contaminants off of the Laboratory property and is expected to contribute to reductions of mercury and PCBs in fish tissue. This removal action will not be the final cleanup of the Peconic River. A future Record of Decision will document the final remedy selected. This action will be consistent with the final remedy.

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ACRONYMS, ABBREVIATIONS, AND UNITS OF MEASURE

AOC	Area of Concern
ARAR	Applicable or Relevant and Appropriate Requirement
BER	Brookhaven Executive Roundtable
BNL	Brookhaven National Laboratory
CAC	Community Advisory Council
CERCLA	<i>Comprehensive Environmental Response, Compensation and Liability Act of 1980</i>
CFR	Code of Federal Regulations
DOE	U.S. Department of Energy
EE/CA	Engineering Evaluation/Cost Analysis
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
RI	Remedial Investigation
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 Engineering Evaluation/Cost Analysis (EE/CA) – Action Memorandum is to document the decision to remove sediment from the Peconic River on the Brookhaven National Laboratory (BNL) property. The DOE has determined that contaminants in the sediment of the Peconic River on the Laboratory property may migrate off of the Laboratory property, and that a non-time-critical removal action is warranted. To help determine the most appropriate action, the DOE has prepared this Engineering Evaluation/Cost Analysis (EE/CA) – Action Memorandum. The scope of the evaluation includes the sediment in the Peconic River on the Laboratory property. Sediment in portions of the river off of Laboratory property will be addressed in a separate document.

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).

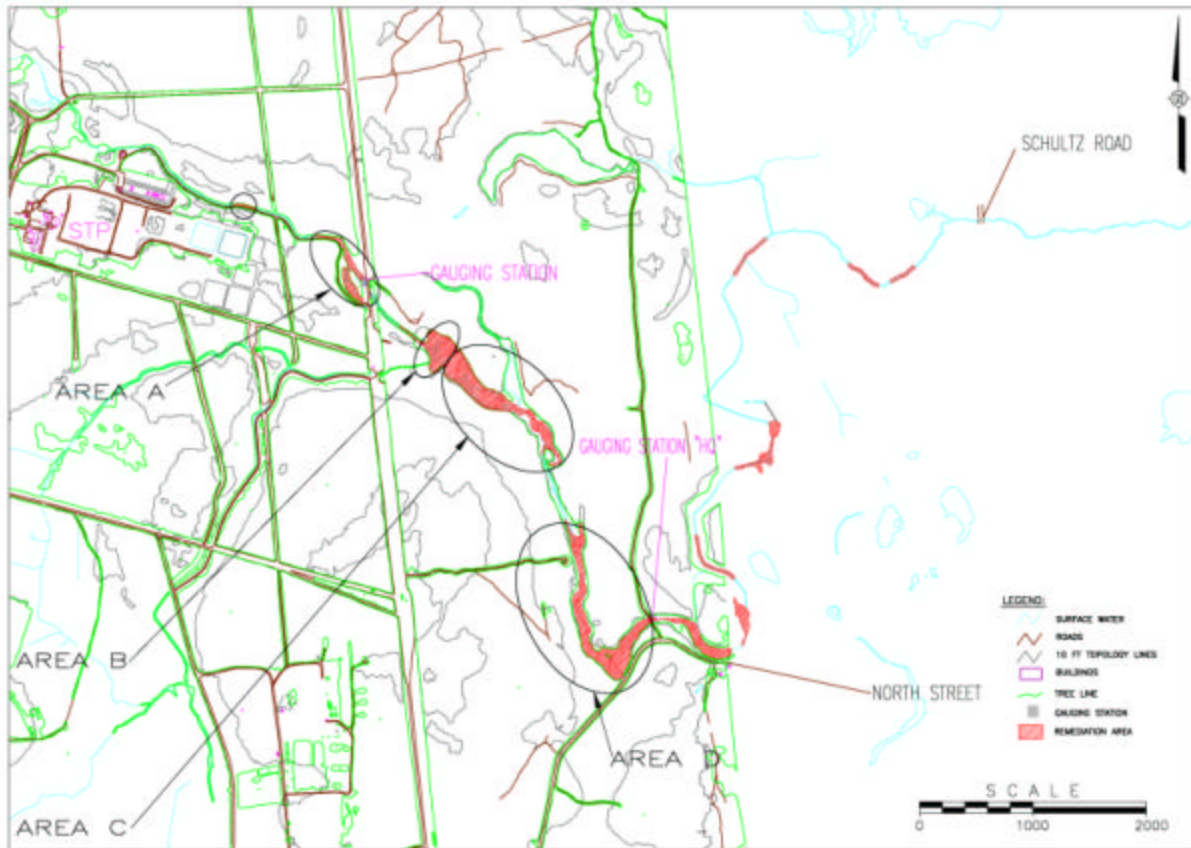
2. Removal Site Evaluation

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 Sediment Targeted for Removal in the Peconic River



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, since 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

Continued surface water, sediment, and fish monitoring is part of BNL's routine environmental management programs.

3. Planned Actions

A Proposed Remedial Action Plan, which proposes the final remedy for the Peconic River, is being prepared for public review and comment. The final Peconic River remedy, once selected, will be documented in a Record of Decision and implemented. This removal action will be a component 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, U.S. Environmental Protection Agency (EPA), and New York State Department of Environmental Conservation (NYSDEC). This action will address regulatory agency concerns, including those of the New York State Department of Health (NYSDOH) and Suffolk County Department of Health Services (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 available contaminant data. In general, the scope of the removal action is to reduce the potential of further contaminant migration in the Peconic River off of the Laboratory property.

Based on the results of the Remedial Investigations, the following Removal Action Objectives have been identified for sediment:

- Reduce site-related contaminants (e.g., mercury) in fish 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. IDENTIFICATION AND ANALYSIS OF REMOVAL ACTION ALTERNATIVES

The overall objective of BNL is the safe, timely, and cost-effective cleanup of the Peconic River. The Area of Concern (AOC) 30 removal alternatives described and evaluated by this EE/CA – Action Memorandum were developed with consideration and input from the DOE, U.S. EPA, New York State, Suffolk County, and community members. Community feedback solicited at routine meetings of the BNL Community Advisory Council (CAC) and the Peconic River Working Group has been considered in developing this EE/CA – Action Memorandum. This EE/CA – Action Memorandum also reflects regulatory and community input on parallel issues and decisions that have been provided in connection with other BNL environmental restoration projects. It is also reflective of the community values obtained during roundtable sessions conducted for the Peconic River.

Four AOC 30 alternatives have been identified, which span the entire range from No Action through complete excavation of the onsite portion of the Peconic River. The No-Action Alternative is used as the baseline against which the other alternatives are evaluated and is required to be considered under the *Comprehensive Environmental Response*,

Compensation, and Liability Act of 1980 (CERCLA). The sections below describe each of these alternatives.

- *Alternative 1, No Action*
- *Alternative 2, Removal of all sediment from the STP to the Property Line*
- *Alternative 3, Removal of all sediment with mercury concentrations greater than 9.8 ppm*
- *Alternative 4, Removal of Targeted Depositional Areas*

A. Analysis of Removal Action Alternatives

Alternative 1, No Action

Alternative 1 is the “no action” alternative and will not include the implementation of any remedial action. Monitoring of surface water and sediment would be conducted for a minimum of five years to establish that contaminant deposition is not recurring and that contamination is not migrating downstream. Annually, surface water and sediment samples would be collected and analyzed for the constituents of concern (mercury, PCBs, and cesium-137). It is assumed that samples would be collected at approximately 500-foot intervals over the length of the Peconic River from the STP discharge point to the end of the Laboratory property.

This alternative was not recommended because it leaves a continuing source for bioaccumulation of mercury and PCBs in fish and transport downstream. The no action alternative is used as the baseline against which the other alternatives are evaluated, and it is required to be considered under CERCLA.

Alternative 2, Removal of all Sediment greater than 1.06 ppm from the STP to the Property Line

Alternative 2 would remove greater than approximately 95% of mercury and PCBs in surface sediment and would require complete excavation from BNL Sewage Treatment Plant to the end of BNL property; the co-located contaminants would also be removed. The alternative includes long-term monitoring of surface water, sediment, and fish. Alternative 2 includes the following:

1. The removal of all sediment greater than 1.06 ppm mercury will require the complete removal of the unconsolidated sediment layer (approximately six to 12 inches) down to sand from the Peconic River. Conventional earth moving equipment would be utilized, supplemented as appropriate by the use of vacuum guzzling technologies.
2. Stream dewatering as necessary would be performed.
3. Dewatering of sediment prior to packaging and transportation to a licensed disposal facility.
4. Sediment control to prevent downstream migration during removal.

5. 7,200 linear feet of haul roads would be constructed as appropriate to access those areas requiring remediation.
6. Post-excavation sampling of the riverbed will be conducted to confirm the cleanup objective has been met.
7. Wetland and upland restoration, as needed, will be performed following sediment removal.
8. 14,444 cubic yards of sediment would be removed and disposed of at a cost of \$9.6 million.

Alternative 3, Removal of all Sediment with Mercury Concentrations Greater than 9.8 ppm

Alternative 3 would remove approximately 85% of mercury and 75% of PCBs in surface sediment; co-located contaminants would also be removed. The alternative includes long-term monitoring of surface water, sediment, and fish. Alternative 3 includes the following:

1. The removal of the unconsolidated sediment layer (approximately six to 12 inches) down to sand from the Peconic River in areas known to contain mercury at concentrations that exceed the removal trigger. Conventional earth moving equipment would be utilized, supplemented as appropriate by the use of vacuum guzzling technologies.
2. Stream dewatering as necessary would be performed.
3. Dewatering of sediment prior to packaging and transportation to a licensed disposal facility.
4. Sediment control to prevent downstream migration during removal
5. 4,200 linear feet of haul roads would be constructed as appropriate to access those areas requiring remediation.
6. Post-excavation sampling of the riverbed will be conducted to confirm the cleanup objective has been met.
7. Wetland and upland restoration, as needed, will be performed following sediment removal.
7. 7,979 cubic yards of sediment would be removed at a cost of \$5.6 million.

Alternative 4, Removal of Targeted Depositional Areas

Alternative 4 would remove 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 property, with a goal of no sample in any excavated area exceeding 2 ppm mercury. The cleanup would remove 95% of mercury and 88% of PCBs in surface sediment. The co-located contaminants would also be removed. The alternative includes long-term monitoring of surface water, sediment, and fish. Alternative 4 includes the following:

1. The removal of the unconsolidated sediment layer (approximately six to 12 inches) down to sand from the Peconic River in the targeted depositional areas containing

the highest contamination. Conventional earth moving equipment would be utilized supplemented as appropriate by the use of vacuum guzzling technologies.

2. Stream dewatering as necessary would be performed.
3. Dewatering of sediment prior to packaging and transportation to a licensed disposal facility.
4. Sediment control to prevent downstream migration during removal.
5. 4,200 linear feet of haul roads would be constructed as appropriate to access those areas requiring remediation.
6. Post-excavation sampling of the riverbed will be conducted to confirm the cleanup objective has been met.
7. Wetland and upland restoration, as needed, will be performed following sediment removal.
8. 12,080 cubic yards of sediment would be removed at a cost of \$7.8 million.

VI. COMPARATIVE ANALYSIS OF REMOVAL ACTION ALTERNATIVES

This section evaluates the removal action alternatives against the nine CERCLA criteria: (A) overall protection of human health and the environment, (B) compliance with applicable or relevant and appropriate requirements, (C) long-term effectiveness and permanence, (D) reduction of toxicity, mobility, or volume through treatment, (E) short-term effectiveness, (F) implementability, (G) cost, (H) state, and (I) community acceptance.

A. Overall Protection of Human Health and the Environment

Alternative 1 requires no disruption of the wetlands, forested areas, or biota; however, the contaminants present will remain and continue to be a source for bioaccumulation in fish presenting a potential health hazard to people or wildlife eating locally caught fish in the Peconic River and will continue to impact ecological receptors. Contaminants will remain that may be subject to transport to other areas.

Alternatives 2, 3, and 4 involve the removal of sediment and produce short-term disturbance to the wetlands. Alternatives 2, 3, and 4 each remove sediment that may be toxic to benthic communities and will reduce the potential for bioaccumulation in fish.

The levels of contaminants that would be expected to remain after implementation of these alternatives are compared in Table 1, below. The values represent estimated average concentrations in the surface sediment (top six inches) remaining after cleanup has been completed.

Table 1. Average Concentrations After Remediation

	Alternative One	Alternative Two	Alternative Three	Alternative Four
Mercury (ppm)	8.3	0.3	1.5	0.5
PCBs (ppm)	0.9	ND*-0.03	ND-0.04	ND-0.03
Cesium-137 (picoCuries/gram)	7.0	0.4	2.0	0.5

*ND = non-detectable

The high percentage of removal in these alternatives is expected to significantly reduce bioaccumulation in fish. The long-term monitoring component of the remedy will ensure long-term protection.

B. Compliance with ARARs

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 described for this alternative 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 TBCs, will also be followed.

C. Long-Term Effectiveness and Permanence

Alternative 1 does not provide a permanent remedy. Under the No Action alternative, the contaminants will remain in place and rely on the occurrence of natural sedimentation or reduction through dispersment from transport to reduce the bioaccumulation in fish and the exposure of aquatic life to contaminated sediment.

Alternatives 2, 3, and 4 involve the removal of contaminated sediment from the Peconic River. Alternative 2 would remove all the contaminated sediment for the onsite portion of the river and would be effective. Alternative 3 would remove the sediment with mercury greater than 9.8 ppm. The remaining sediment could provide a mercury source for potential fish bioaccumulation or for migration. Alternative 4 removes the contaminated sediment from the four depositional areas and would remove 95% of the mercury and also be nearly as effective as Alternative 2 with less incremental damage to the wetlands and upstream areas.

Since residual contamination will remain in the Peconic River with any remedy selected, monitoring will be used to assess the long-term effectiveness in meeting remedial action objectives. The results of the monitoring will be assessed as part of the five-year review, and the need for additional actions would be evaluated in the event of unacceptable residual risk.

D. Reduction of Toxicity, Mobility, or Volume through Treatment

Alternative 1 does not reduce the volume or toxicity of the contaminants contained in the Peconic River sediment.

Alternatives 2, 3, and 4, through removal rather than treatment, reduce the volume, mobility, and toxicity of contaminated sediment that is available for bioaccumulation in fish or for direct exposure to aquatic life.

E. Short-Term Effectiveness

There will be a short-term impact to the environment as sediment is removed and the areas are restored. Additionally, upland areas where access roads are installed will be impacted for at least a five-year period until the remedy review is complete.

This criterion also assesses the impact to the community and site workers during construction or implementation, and includes the time needed to finish work. Alternative 1 involves no remedial actions that have the potential to impact worker health and safety or

the surrounding community. Alternatives 2, 3, and 4 pose minimal risk to workers during removal, cleanup, and waste disposal, and these are minimized through BNL's health and safety practices. Similarly, because of these health and safety practices, there are minimal risks to the public. Additional protection will be provided through ongoing controls that reduce the potential for sediment migration during the sediment removal process.

F. Implementability

All of the alternatives are readily implementable using established, field-proven practices and standard construction practices. Industry technologies and equipment designed to reduce the ecological impact during the implementation will be used.

G. Cost

Table 2 lists the cost for each of the alternatives.

Table 2. Cost Comparison

Alternative	Cost (Includes 25% Contingency)
Alternative One – No Action	\$137,992
Alternative Two	\$9,552,388
Alternative Three	\$5,602,360
Alternative Four	\$ 7,838,590

H. State Acceptance

The regulatory acceptance criterion evaluates whether the technical and administrative concerns of State have been addressed. The NYSDEC has reviewed and commented on this EE/CA – Action Memorandum. Additionally, the NYSDEC will review this action for acceptance as a final action when the Record of Decision is presented at a future date.

I. Community Acceptance

The community acceptance criterion evaluates whether the concerns of public have been addressed. The community will have the opportunity to review and comment on the removal alternatives in a 30-day public comment period. Public comments will be formally addressed. Additionally, the public will have the opportunity to review this action for acceptance as a final action when the Record of Decision is presented at a future date.

VII. REMOVAL ACTION RECOMMENDATION

A. Proposed Action

Alternative 4 is the proposed removal action. 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. 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.

VIII. 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.

IX. 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 will include issuing a public notice of availability in a local newspaper coinciding with the submission of this Action Memorandum to the Administrative Record. The public will also have an opportunity to re-evaluate this action as final when the Feasibility Study Addendum and Proposed Remedial Action are issued for public review and comment at some future date.

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.

The public is invited to attend information sessions to be held at the times noted below. These activities will take place during the thirty-day public comment period. Responses to formal comments received during the comment period will be responded to and considered as part of the final Action Memorandum.

Public information session: October 7, 2003 at Cornell Cooperative Extension

Public information session: October 15, 2003 at Brookhaven National Laboratory, Berkner Hall Room B.

X. OUTSTANDING POLICY ISSUES

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

XI. ENFORCEMENT

BNL is owned by the DOE and the DOE will fund this removal action. The removal action will be conducted in accordance with CERCLA and National Contingency Plan requirements, the Interagency Agreement, and applicable New York State regulations.

XII. RECOMMENDATION

This decision document represents the 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. This decision is based on the Administrative Record for the site.