

Project Operating Plan – Brookhaven National Laboratory – Accelerate Cleanup of Surplus Nuclear Facilities

Brookhaven National Laboratory – Accelerate Cleanup of Surplus Nuclear Facilities

Project Operating Plan

BACKGROUND

| | |
|-------------------------------------|---|
| Recovery Act Project: | Brookhaven National Laboratory – Accelerate Cleanup of Surplus Nuclear Facilities |
| TAFS: | 89-09/10-0335 |
| Project Identification Code: | 2002010 |
| Recovery Act Bill Reference: | PL 111-5, Title IV – Energy and Water Development, Non-Defense Environmental Cleanup (H.R.1-25) |
| Project Cost: | \$42,355,000 |
| Budget Authority: | 05949, FE.01.10.00.0 - \$42,355,000 |
| Program Office: | Environmental Management (EM) |
| Recovery Program Plan: | EM - Non-Defense |
| Management Office: | Brookhaven National Laboratory Project Office, Thomas J. Vero, (631) 344-3519 |

LEADS

| | |
|------------------------|-----|
| Implementation: | N/A |
| Breakthrough: | N/A |
| Laboratory: | N/A |

I. SUMMARY & OBJECTIVES

Summary:

This project will clean-up a variety of radiological contaminated facilities and structures, all a result of non-defense nuclear studies and projects performed at Brookhaven National Laboratory (BNL). More specifically the project will:

- Remove radiologically contaminated soils surrounding the Former Hazardous Waste Management Facility perimeter area.
- Demolish the High Flux Beam Reactor (HFBR) stack (Building 705) and fan houses (Buildings 704 and 802) including their structures, systems, and components, including foundation walls and contaminated soils beneath the buildings, and isolation of Building 750 (the main reactor building).
- Remove the A/B waste lines which include underground 4,200 linear feet (lf) of piping used to transfer radioactive liquid waste from Building 801 to Building 811, the Waste Concentration Facility. Other materials being removed include: a concrete trench and culvert (870 lf), asbestos insulation (700 lf), steel trench channels (170 lf), 10” transite/asbestos (1,800 square feet), and contaminated soil (47 cubic yards)
- Remove the reactor’s pile consisting of over 60,000 graphite blocks whose average dimensions are 4” x 4” with varying lengths at a total volume of

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15,625 cubic feet from the Brookhaven Graphite Research Reactor (BGRR); Building 701.

A major portion of the above scope is the HFBR acceleration of baseline work by nine years (FY09 – FY11 vs. FY18 – FY20) with an estimated baseline savings of approximately \$5.6M. This work will be awarded to Brookhaven Science Associates (BSA), the holder of the current M&O contract with the Office of Science and the contractor currently performing the BGRR decontamination and decommissioning (D&D) work.

This Recovery Act work ties to the following DOE and EM Strategic Goals and Themes:

DOE Strategic Goal 4 – Environmental Responsibility – Protecting the environment by providing a responsible resolution to the environmental legacy of nuclear weapons production.

DOE Strategic Goal 5 – Management and Excellence – Enabling the Department’s mission through sound management and business practices.

EM Goals – To safely disposition, deactivate and decommission thousands of contaminated facilities no longer needed by the Department to carry on its current mission; EM is fulfilling its commitments to reduce overall risk and complete cleanup across all sites for generations to come.

Public Benefits:

As a result of the initiation of the Recovery Act projects at Brookhaven, the public will benefit from the acceleration of the currently baselined HFBR out year scope with the reduction of accumulated radioactive and contaminated waste as described above sitting over the area’s only aquifer nine years sooner with an estimated baseline savings of approximately \$5.6 million. Between both, the out year HFBR scope acceleration and the continuance of current base work (decontamination of the BGRR), the Recovery Act funding will create and/or retain jobs through 2011.

The expected Recovery Act funding of approximately \$42.4 million will be added to the current Office of Science’s Maintenance and Operations (M&O) contract that DOE has in place with Brookhaven Science Associates (BSA). BSA has been supporting environmental cleanup project for the past 10 years and is currently working on the baselined BGRR and HFBR projects, and will continue to do so. BSA will take advantage of Long Island and United States based subcontractors to perform specialty work that will be definitive upon the initiation of the projects. Subcontract awards and values of those subcontracts are yet to be determined, but are scheduled in the Recovery Act baseline plans, and are being given high priority for implementation.

In summary; this project offers the following public benefits:

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- Creation/preservation of onsite jobs
- Creation of additional indirect jobs within the community
- Reduction of risk to the general public as well as onsite workers to radiological exposure
- Reduction of life cycle costs associated with D&D of the HFBR structures through elimination of nine years of project schedule

Recovery Act Project Impacts:

The intended results of this project can be summarized simply by the following statements:

- Completion of this project supports DOE’s major priority of legacy footprint reduction with the removal of radiologically contaminated graphite from the BGRR’s pile, and the demolition of 3 structures originally constructed as part of the HFBR complex consisting of two fan houses (Buildings 704 and 802), and a stack (Building 705).
- Save approximately \$5.6 million by accelerating the HFBR out year scope by nine years.

Overall, these results of the Brookhaven Recovery Act Project will most certainly support program office goals by ensuring a safer environment to Long Island’s environmentally sensitive area and to human health, and accelerating the footprint reduction of legacy facilities by nine years.

II. COST & SCHEDULE

Budget

Given that planning has not been finalized for this work, the following tables depict an estimate of the planned Recovery Act Project funds, obligations and expenditures expected at Brookhaven, and do not include DOE support dollars.

Table 1a: Budget Implementation 12 Week Obligations (\$M)

| | Week of ARRA Activities (Beginning Week of March 9) | | | | | | | | | | | |
|------------------------|---|---|---|---|---|---|---|---|---|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| [Project Title] | | | | | | | | | | | | |

Table 1b: Budget Implementation 12 Week Expenditures (\$M)

| | Week of ARRA Activities (Beginning Week of March 9) | | | | | | | | | | | |
|------------------------|---|---|---|---|---|---|---|---|---|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| [Project Title] | | | | | | | | | | | | |

Table 2a: Budget Implementation Monthly & Yearly Obligations (\$M)

| | FY 2009 Q3 | | | FY 2009 Q4 | | | FY 2010 Q1 | | |
|------------------------|------------|-----|-----|------------|-----|------|------------|-----|------|
| | Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec |
| [Project Title] | | | | | | | | | |
| | FY 2010 Q2 | | | FY 2010 Q3 | | | FY 2010 Q4 | | |
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sept |

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| Baseline Budget | Decrease | 09 | 10 | 11 | 12 | 13 | 14 | 15 |
|--------------------------------------|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Program Direction | No change | | | | | | | |
| Continuation of current BGRR Project | Decrease | | | | | | | |
| | | | | | | | | |

NOTES:

The changes to baseline budgets results shown in Table 4 are:

Continuation of the current baselined BGRR Project using Recovery Act funds will decrease the current BGRR Baseline by the above amount over the span of two years. After the BGRR Recovery Act scope is completed, the base program budget will pay for the remaining scope to complete the project currently scheduled to finish in early FY11.

Acceleration of the HFBR Project out year scope will accelerate the intended baseline transfer of funding liability from FY21 to FY12 (nine years) of currently baselined scope which includes Site Soil and Groundwater Operations & Maintenance, and the required Surveillance and Maintenance of the two reactor facilities (BGRR and HFBR) from the Office of Environmental Management to the Office of Science. Save approximately \$5.6 million by accelerating the HFBR out year scope

Milestones

The milestones and performance targets (measures) provided below as well as in Table 6 are conceptual and based on the best available information about ARRA requirements and pre-work authorization project definitions. Pre Critical Decision 2 (CD-2) estimates have been developed (using Primavera 6.2) to date for costs and the associated end-state, interim milestones, and associated performance targets (measures). These all assume Recovery Act (RA) funding availability third quarter FY09. It is expected that as the detailed estimates and resource-loaded schedules become fully matured, reviewed and approved, there will be some change to these estimates for costs, milestones and performance measures.

Additionally, it is assumed the internal DOE approved change control process will be applied to all RA scope. It is also assumed that there will also be a future DOE-HQ change control process associated with costs, milestones and performance measures that have been reported to date and included in this plan.

| Weekly/Monthly Milestones* | DATE* | Comments |
|--|--------------|-----------------|
| Initial Funding received | 4/6/2009 | |
| Issue Contract Modification and Work Authorization | 4/13/2009 | |
| FHWMF Soils Removal Planning Meeting | 5/10/2009 | |
| FHWMF Soils Identify Resource Requirements | 5/17/2009 | |
| FHWMF Soils Procurement Process Initiated | J-09 | |

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|--|------|--|
| FHWMF Soils Remediation Pre-Start Meeting | J-09 | |
| FHWMF Soils Remediation Start | A-09 | |
| BGRR D&D Plan of Action Approved by DOE | S-09 | |
| A&B Waste Lines D&D Procurement Process Initiated | O-09 | |
| DOE Submit Draft RD/RA Plan to Regulators | N-09 | |
| BGRR D&D ORR Implementation Plan Finalized | D-09 | |
| A&B Waste Lines D&D Start | J-09 | |
| DOE Submit Draft Final RD/RA Plan to Regulators | F-10 | |
| Authorization to Proceed-BGRR D&D Pile Removal | M-10 | |
| FHWMF Soil Remediation Complete | M-10 | |
| HFBR Utilities Isolations Start | A-10 | |
| DOE HFBR RD/RA Work Plan Approved | M-10 | |
| A&B Waste Lines D&D Complete | J-10 | |
| BGRR D&D Pile Removal Complete | J-10 | |
| HFBR Fan House D&D Identify Resource Requirements | S-10 | |
| HFBR Stack D&D Identify Resource Requirements | O-10 | |
| HFBR Fan House D&D Identify Subcontract Requirements | N-10 | |
| HFBR Stack D&D Procurement Process Initiated | D-10 | |
| HFBR Fan House D&D Start | J-11 | |
| HFBR Fan House D&D Complete | M-11 | |
| HFBR Stack D&D Start | J-11 | |
| HFBR Utilities Isolations Complete | A-11 | |
| HFBR Stack D&D Complete | S-11 | |
| *Milestones and dates are conceptual and will be adjusted based on detailed cost estimates, field implementation schedules, and implementation contracting for the activities. | | |

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Table 5: Delivery Schedule for Capital Asset Projects N/A (until OECM and EM agree on the 413.3A graded approach)

| Program/OECM Milestone | Delivery (End) Date | Comments |
|---|----------------------------|-----------------|
| Develop capital asset projects Integrated Project List | N/A | N/A |
| Develop Parametric Performance Baseline (Individual Projects) | N/A | N/A |
| If < \$100 M Perform IPR, > \$100 M Perform EIR (Individual Projects) | N/A | N/A |
| Approve Performance Baseline | N/A | N/A |
| Approve Start of Construction | N/A | N/A |
| Approve Project Completion | N/A | N/A |

The Brookhaven Recovery Act project is not a Capital Asset Project and the above Table is not applicable to Brookhaven.

NOTES:

Among the Project risks identified as possibly affecting the critical path, the dominant schedule risks include the completion of the required BGRR Operational Readiness Review and the HFBR stack demolition rate uncertainty based on site conditions (weather) differing significantly than planned. A probabilistic risk assessment at an 80% confidence level was performed by Brookhaven Science Associates (BSA) against all identified schedule and cost risks, and has levied schedule and cost adjustments to those activities for their risk mitigation.

III. PERFORMANCE

Performance Measures

Table 6: Project Performance Targets

| | |
|--|--|
| Recovery Act Project Identification Code | 2002010 |
| Linkage To S-1 Priorities | The ARRA funding will enable Brookhaven not only to stabilize, but reinforce the economic prosperity of Long Island, NY by allowing for the retention and creation of new job positions that would have been |

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| | impacted due to forecasted fiscal year funding shortfall in FY2009 and out. |
| Linkage to Current Program Goal (if applicable) | DOE Strategic Goal 4 – Environmental Responsibility – Protecting the environment by providing a responsible resolution to the environmental legacy of nuclear weapons production. EM Goals – To safely disposition, deactivate and decommission thousands of contaminated facilities no longer needed by the Department to carry on its current mission; EM is fulfilling its commitments to reduce overall risk and complete cleanup across all sites for generations to come. |
| Three-Year Outcome-Oriented Performance Measure | By the end of fiscal year 2011, Brookhaven will have removed over 60,000 blocks of radioactive graphite from the Brookhaven Graphite Research Reactor (BGRR) building, demolished two High Flux Beam Reactor’s (HFBR) Fan Houses, removed the underground A/B Waste Lines which include underground piping used to transfer radioactive liquid waste from Building 801 to Building 811, the Waste Concentration Facility. Other materials being removed include: a concrete trench and culvert, asbestos insulation, steel trench channels, transite/asbestos, and contaminated soils in addition to the demolition of the 300 foot brick exhaust stack, and removal of contaminated soils near the Former Hazardous Waste Management Facility (FHWMF). |
| First Year Performance Target (FY 2009) | |
| Q3 - Project-Level Quarterly Performance Milestone(s) | |
| Q4 - Project-Level Quarterly Performance Milestone(s) | |
| Second Year Performance Target (FY 2010 accomplishments) | During the first year it is anticipated that the following efforts will be completed: removal of the contaminated soils near the FHWMF. |
| Q1 - Project-Level Quarterly Performance Milestone(s) | |

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| Q2 - Project-Level Quarterly Performance Milestone(s) | |
| Q3 - Project-Level Quarterly Performance Milestone(s) | |
| Q4 - Project-Level Quarterly Performance Milestone(s) | <ul style="list-style-type: none"> Former Hazardous Waste Management Facility Soil Remediation Complete |
| Third Year Performance Target (FY 2011 accomplishments) | During the second year it is anticipated that the following efforts will be completed: removal of all the BGRR graphite blocks, the removal of underground A/B Waste Lines, and the demolition of the High Flux Beam Reactor's (HFBR) Fan Houses. |
| Q1 - Project-Level Quarterly Performance Milestone(s) | <ul style="list-style-type: none"> Removal completion of underground A/B Waste Lines. |
| Q2 - Project-Level Quarterly Performance Milestone(s) | <ul style="list-style-type: none"> Complete the Graphite Pile Removal from the BGRR Reactor Building |
| Q3 - Project-Level Quarterly Performance Milestone(s) | |
| Q4 - Project-Level Quarterly Performance Milestone(s) | <ul style="list-style-type: none"> HFBR Fan Houses demolition Complete |

NOTE:

Environmental Management's commitments to reduce risks to human life, the environment and complete cleanup across all DOE Sites for the generations to come are supported with the advent of performing the ARRA efforts as described. The removal of the graphite pile in fiscal year 2010 would not be able to occur if it were not for the ARRA funding availability. Operating budgets have been dramatically reduced in fiscal year 2009 to the point that the experienced staff currently working the project would have to be let go prior to the start of the pile removal. Additionally, the acceleration of the removal of waste lines, contaminated soils, the High Flux Beam Reactor's fan houses and stack will provide for newly created jobs for this effort over the next two years and an earlier risk reduction will be achievable.

National Strategic Benefits

N/A

Table 7: National Strategic Benefits

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|---|
| 1. Carbon Emission Reductions: Estimated 5-year undiscounted CO ₂ reduction (in metric tonnes of CO ₂ equivalent) are [fill in the blank] |
| 2. Oil Consumption Reductions: Estimated 5-year reduction in undiscounted oil consumption (in barrels of oil equivalent) is [fill in the blank] |

NOTES :

N/A.

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IV. MANAGEMENT

Secretarial-level Items

Intended Results and Linkage to Secretary’s Priorities

Table 8: Secretary's Priorities

| Secretary’s Priorities | Project Impacts (Qualitative) | Project Impacts (Quantitative) |
|-------------------------------|--|--|
| Science and Discovery | None | None |
| Clean, Secure Energy | None | None |
| Economic Prosperity | Job creation and/or retention. | Between both, the out year HFBR scope acceleration and the continuance of the current base program work (decontamination of the BGRR), this Recovery Act work scope will create new and/or retain job positions through 2011. As a result of the initiation of the Recovery projects at Brookhaven, the public will benefit from the acceleration of the HFBR out year scope with the reduction of accumulated radioactive and contaminated waste sitting over the area’s only aquifer, nine years sooner with an estimated overall baseline savings of approximately \$5.6 million. |
| National Security and Legacy | Accelerating the removal and proper disposal of hazardous or radiological material reduces risk of releases of this material to the environment and lowers exposure risks to the site workers. | It is estimated that over 4,000 cubic yards of Low Level Radioactive Waste (LLRW) will be removed from Brookhaven. |
| Climate Change | None | None |

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Collaboration and Coordination

DOE's work is coordinated across the department, government, and globe. Brookhaven's work within the ARRA scope is no different. The plan for the Brookhaven Recovery Act project is that it will be executed by Brookhaven Science Associates (BSA) who is the Maintenance & Operations contractor with the Brookhaven Site Landlord; the Office of Science. BSA was formed as a partnership between Battelle and the Research Foundation of State University New York on behalf of Stony Brook University.

There will be waste shipments to the Nevada Test Site, Energy Solutions in Utah, and other commercially-operated waste treatment/ storage/disposal facilities. Coordination with these interfaces already exists; however, it will be enhanced throughout this project.

The Brookhaven regulators and the site specific Community Advisory Council support acceleration of this proposed work for decontamination and decommissioning and soil remediation.

Other organizations Brookhaven normally collaborates with on its cleanup Projects include, but are not limited to: Local, State and Federal public agencies supporting Brookhaven's cleanup projects and supporting Professional Labor Unions.

Federal Infrastructure Investments

There are no infrastructure investment project activities associated with this Recovery Act Project.

Accelerating the removal and proper disposal reduces risk of releases of this material to the environment. The Brookhaven Recovery Act project will reduce the agency's environmental impact by removing and disposing of over 4,000 yd³ of Low Level Radioactive Waste debris and perform the remediation of contaminated soils.

Line Management

In support of the Brookhaven Recovery Act project, the project's line management and Federal reporting will

- Fully comply with ANSI/EIA-748-A Standard for Earned Value Management Systems.
- Weekly and Monthly reviews and reports will be provided by the Site's contractor with quarterly reporting to agency management.
- Contractor and EM Site staff have utilized and will continue to utilize existing Project Management processes and procedures that have sustained numerous Project Reviews from independent and agency auditors.

Brookhaven will implement all Recovery Act transparency and reporting requirements through modifications to the contract that will fund this Recovery Act Project.

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Needs from Staff Offices

The Brookhaven project needs from DOE staff offices would include:

- *Direct point-of-contacts with the EM Budget Office, Project Management, and the Consolidated Business Center.*

1) Human Capital

With the increased ARRA scope for environmental cleanup, the EM Site Project Office is seeking additional support contractor help in the skills listed in Table 9.

Table 9: Information on Hiring Under the Recovery Act

| # & Type of Positions (Title, Series and Grade) | Location (HQ or Field – w/location) | Federal or Contractor | Timeframe (1-6mos; 6+mos; other; specify date needed if possible) |
|---|--|----------------------------------|--|
| Project Controls Specialist | BNL | Contractor | 30 months |
| Field Engineer | BNL | Contractor | 30 months |
| Contract Specialist | BNL | Contractor | 30 months |