cleanupdate

U.S. DEPARTMENT OF ENERGY/BROOKHAVEN NATIONAL LABORATORY/BROOKHAVEN SCIENCE ASSOCIATES — ENVIRONMENTAL RESTORATION DIVISION — VOL.4/NO.2/SEPTEMBER 1999

Roger Stoutenburgh

Community members at a roundtable meeting provide input on the graphite reactor decommissioning, while John Carter (DOE - Brookhaven Group) records their comments.

Public participation begins on next cleanup project

Brookhaven National Laboratory is seeking early public input as it plans its next major cleanup project — the decommissioning of the Brookhaven Graphite Research Reactor. This project will involve cleaning up and securing several buildings and structures and their surrounding soils. The activities involved in decommissioning are described in the article on page 5. The decommissioning project will span several years, with a target completion date of 2005.

The Laboratory operated the graphite reactor between 1950 and 1969. This reactor is described in more detail in the article on page 6.

Although the decommissioning project is still in its early stages, the U.S. Department of Energy (DOE) and the Laboratory conducted a series of roundtable meetings to discuss the project with the community. The meetings, held on July 27, July 29 and August 3, were the first in a series of ongoing community involvement opportunities that are planned over the course of the project.

About the roundtable meetings

The purpose of the roundtable meetings was to provide information about the decommissioning project and to obtain initial input on community values, expectations, and issues associated with the project. The project intends to

*(see **Graphite reactor**, page 4)*

Community input key to groundwater cleanup decision

Community input was an important factor in the final decision on groundwater cleanup methods at Brookhaven National Laboratory (BNL). Based on input received during the public comment period, several changes were made to the originally proposed remedy. The revised remedy is documented in the Operable Unit III Record of Decision (ROD), which is expected to be signed by the regulators in the fall of 1999.

Early community input

Community members had an opportunity early in the decision-making process to provide input on the alternatives being considered for groundwater cleanup. In response to this early public input, the Lab evaluated two additional alternatives, one of which was incorporated into the final cleanup remedy.

*(see **Community input**, page 3)*

INSIDE

Tritium plume measurements continue

Samples taken immediately south of the Lab's High Flux Beam Reactor (HFBR), as part of a planned investigation to further define the tritium plume, contain higher tritium levels than previously seen in that area. The highest levels measured are approximately 2.5 times higher than the 2 million picoCuries per liter reported at the public meeting on the groundwater cleanup in March. Regulatory agencies have been briefed on the most recent results.

Even at the higher concentrations that have been detected near the HFBR, tritium is not expected to reach the site boundary at levels above drinking water standards.

The higher concentrations of tritium are not unexpected, considering the high levels that are known to have been in the HFBR spent fuel storage pool. The Lab will continue to work with the U.S. Department of Energy (DOE) and the regulatory agencies to make a final decision on how to remediate the tritium plume.

Sampling methods and future actions

The increased tritium levels were detected in temporary groundwater monitoring wells. These wells are one-time drillings used to sample groundwater at a variety of depths in one location. The well location is filled in with soil after all samples are taken. While awaiting regulatory agency concurrence on the final groundwater cleanup plan, the Lab and DOE took these samples near the HFBR to get a more detailed "picture" of the tritium plume and plan the placement of permanent wells.

Based on these results, and as part of the final cleanup remedy, the Lab will be installing additional permanent wells in the vicinity of the HFBR. If tritium levels measured in these permanent wells are above a "trigger" level agreed to with the regulatory agencies, the higher concentrations of tritium will be pumped from the ground and shipped to a licensed off-site facility for disposal.

Dilution and radioactive decay will reduce tritium levels as the groundwater moves southward. Pumping out the higher levels of tritium would further ensure that the tritium levels will not exceed standards at or beyond the Lab's southern boundary. ■

Lab to release report on localized soil cleanup

On September 20, Brookhaven National Laboratory expects to release a report on cleanup alternatives for contaminated soils at the Brookhaven Linac Isotope Producer, or BLIP, for public comment. The *BLIP Engineering Evaluation/Cost Analysis* summarizes the nature and extent of soil contamination, describes and evaluates the removal alternatives, and recommends one alternative.

The alternatives include: maintenance or upgrade of an existing cap, in-place containment of soils using a cement or colloidal silica grout, and excavation of the contaminated soils.

The recommended alternative is upgrade of the existing cap and in-place containment by injecting a colloidal silica grout, pending results of grout performance testing that is currently underway. If this testing indicates that the silica grout would not meet performance goals, then the cap upgrade alone will be recommended.

The *BLIP Engineering Evaluation/Cost Analysis* will be available in local libraries as part of the Lab's Administrative Record. The Executive Summary will also be available on the ERD web site at **http://www.oer.dir.bnl.gov/blipeeca.html**.

Following the 30-day public comment period, all comments will be reviewed and considered. The selected alternative will be documented in an Action Memorandum, which will be made available to the public later this year. ■

cleanupdate A newsletter from the Environmental Restoration Division (www.oer.dir.bnl.gov) at Brookhaven National Laboratory, *cleanupdate* is part of an on-going effort to inform people about environmental restoration issues and activities at the Lab. If you would like to be on the Environmental Restoration Division mailing list, or if you have any questions about the cleanup, please contact:

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Community input...

(continued from page 1)

Comments sought on remedy

On March 1, the Lab distributed the proposed groundwater cleanup plan for public comment. The Lab held three information sessions and a public meeting in March to provide information about the proposed groundwater cleanup remedy and to solicit input. A total of 75 members of the public attended these four events.

Joseph Rubino

During a regularly scheduled meeting between BNL, DOE, EPA, NYSDEC and SCDHS, the results of the latest tritium plume sampling were discussed.

In addition, Brookhaven sought comments from the Community Advisory Council (CAC), an independent group that was formed to provide input directly to Laboratory management on issues of concern to the community. On this council, 32 individuals and organization representatives with a broad range of perspectives work together to learn about Laboratory activities and provide advice to Laboratory management.

The CAC and other stakeholders requested an extension of the public comment period to allow additional time to review the large volume of material. In response to these requests, DOE granted a 30-day extension.

Comments received

The focus of the CAC meeting in April was the proposed groundwater cleanup plan. At this meeting, BNL, U.S. Department of Energy (DOE) and Suffolk County Department of Health Services (SCDHS) representatives answered questions from CAC members. By the end of the meeting, the CAC had reached consensus on a formal recommendation. Their recommendations were:

- The objective of the remedies put in place by BNL should be to meet drinking water standards in groundwater for volatile organic compounds (VOCs), strontium-90 and tritium.
- BNL should complete cleanup of the groundwater in a timely manner.
- The Proposed Plan for Operable Unit III should specify the decision criteria or methods for stopping active VOCs cleanup in in-well air stripping systems and should specify the process for monitoring and reactivating treatment systems if contaminant levels increase.
- BNL's goal should be, wherever possible, to use active measures such as in-well air stripping systems to clean up the groundwater containing VOCs to New York State drinking water standards or better.

In total, twenty-eight written comments on the groundwater cleanup plan were received during the public comment period. Concerns included the length of time required for cleanup, the volume and complexity of the cleanup reports, and a perceived decline in area property values. Concern was also voiced about the limited studies of groundwater in the deeper Magothy aquifer. Several comments requested additional treatment systems to address VOCs migrating towards the Carmans River. Also, there were concerns about the potential health impact of airborne emissions from the existing and planned groundwater treatment systems. Responses to all comments are included in the Responsiveness Summary, which is part of the final Record of Decision.

Response to comments

In response to public and regulator comments, the final remedy differs from the remedy proposed in March in four ways:

- The remedy will include additional groundwater treatment in the southwest corner of Lab property to address VOCs in that area. This change was made in order to reduce the chances of VOCs reaching the Carmans River, which is located southwest of the Lab.
- The remedy for tritium groundwater contamination was modified to be more specific about the operation of the "interim" pump-and-recharge system. The remedy clarifies that this system will be kept running for up to one year after the ROD is signed. This change was made in response to

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Graphite reactor...

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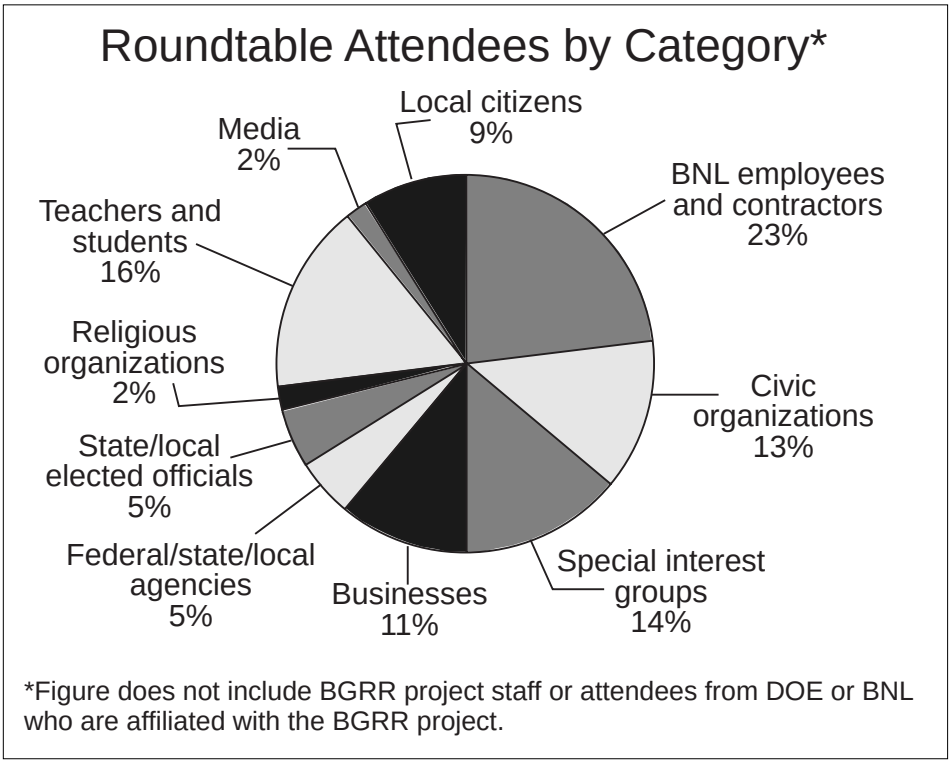


*Figure does not include BGRR project staff or attendees from DOE or BNL who are affiliated with the BGRR project.

address community values in the preliminary screening and analysis of decommissioning alternatives.

The roundtable sessions were designed as small group meetings to encourage interaction and discussion among the participants and the project team. The meetings included brief presentations, question and answer periods, and facilitated discussions.

Participants

Nearly 60 people from the community attended the roundtable sessions, not including the project staff or individuals from the Lab or DOE who are affiliated with the project.

Participants represented a broad spectrum of the community, including civic associations, environmental groups, regulatory agencies, elected officials, lab employees and contractors, businesses, students and educators, and the general public. Several members of the Community Advisory Council and the Brookhaven Executive Roundtable also attended. A breakdown of roundtable attendees by category is shown in the figure above.

Results of the roundtable meetings

During the roundtable meetings, community values and comments were recorded and organized into 10 categories. These categories covered a full range of factors that can influence decisions about decommissioning. All categories received a fair amount of interest and discussion, as shown in the figure on the next page.

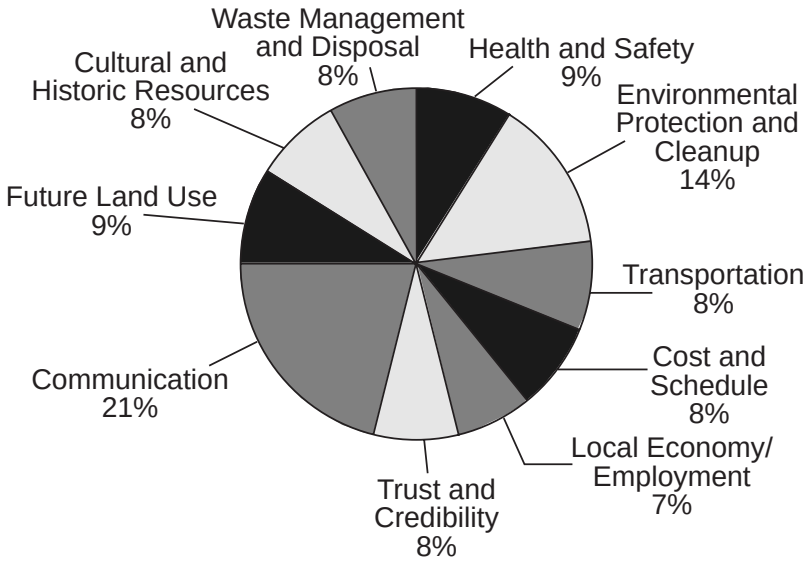
Many people offered values and suggestions regarding communication. Issues associated with environment, safety, and health were also key topics of discussion in all sessions.

Based on the input received, the project team drafted a set of overarching value statements that have been sent to participants for review and comment. When finalized, these values will be addressed in a Removal Action Alternatives Study. This study will screen and identify the range of decommissioning alternatives to be considered over the course of this project.

These value statements are intended to reflect the many individual comments, ideas, and recommendations recorded at the meetings. It is also important that they encompass the interests of the community at large. As a result, the project is seeking comments from the Community Advisory Council, the Brookhaven Executive Roundtable and other stakeholders.

Roundtable Evaluations

Area of Evaluation	Ranking (1-5, 5 high)
Meeting facilities, locations, and times were appropriate	4.3
Format of meeting was effective	4.1
Presentations were clear and understandable	4.0
Questions were addressed	4.2
Time allotted was adequate	4.3
Overall rating	**4.2**



*Percentages are based on the number of individual community value statements recorded in each category during the roundtable meetings, out of a total of 117 statements in all categories. This figure does not include questions recorded in each category.

The roundtable sessions received high marks from participants, who welcomed the opportunity for information exchange and dialog about this important cleanup project. Participants expressed a high level of satisfaction with the content and format of the meetings. They also indicated interest in ongoing participation, including a tour of the reactor facility and future roundtable meetings. Results of the evaluation forms are shown in the table on page 4.

A summary report on the roundtable meetings, which includes a copy of the draft value statements, is now available on the project website at **http://www.bgrr.bnl.gov**. The website also contains more information about the project and community involvement activities. BNL will be regularly updating this website to add more material about the decommissioning project.

Information is also available from Ken White in the Lab's Community Relations office at (516) 344-4423, email kwwhite@bnl.gov, or from John Carter, U.S. Department of Energy, at (516) 344-5195, email jcarter@bnl.gov. ■

What is "decommissioning"?

Decommissioning is a controlled process used to safely retire a facility that is no longer needed. During decommissioning, radioactive and hazardous materials, equipment or structures are cleaned or secured so that the facility does not pose a risk to public health or the environment now or in the future.

A variety of techniques may be used at the Brookhaven Graphite Research Reactor to achieve desired cleanup levels. The decommissioning process may entail actions such as:

- **Decontamination** - In some cases, hazardous and radioactive contamination can be removed by cleaning or "scouring" surfaces or actually removing contaminated structures, equipment, components, and soil.
- **Fixing or isolating contaminants** - It is sometimes possible to apply coatings or other treatments that stabilize or fix contaminants in place. Also, contaminated areas can be enclosed or sealed off from the environment.
- **Demolition and dismantlement** - Decommissioning can involve tearing down structures and taking building components and equipment apart.
- **Building conversion and reuse** - If buildings are left in place, they can sometimes be converted for other uses after clean-up is completed.
- **Waste management and disposal** – Decommissioning can generate a large amount of waste and debris that must be safely managed and disposed. Some of the materials may also be suitable for salvage and recycling rather than disposal.

The techniques that are used depend on many variables including the type, location, and extent of contamination present. The particular actions to be taken at the BGRR will be chosen after a detailed evaluation of alternatives. The Lab and the U.S. Department of Energy are already seeking input from the public and from regulators such as the U.S. Environmental Protection Agency and the New York State Department of Environmental Conservation. ■

An aerial view of the Brookhaven Graphite Research Reactor facility. The reactor building is the tall, square structure just to left of center. The graphite reactor is near the center of Brookhaven National Laboratory.

What is the Brookhaven Graphite Research Reactor?

The Brookhaven Graphite Research Reactor played an important role in the history of atomic energy. It is now being decommissioned as part of the Lab's environmental cleanup program.

The Brookhaven Graphite Research Reactor was the world's first research reactor constructed solely for peaceful exploration of atomic energy. The reactor operated from 1950 to 1969, producing neutrons for scientific research. The graphite reactor was a premier facility for its time. During its operation, the reactor contributed to many scientific and technical advances in the fields of medicine, biology, chemistry, physics and nuclear engineering.

The reactor itself consisted of a 25-foot cube of graphite that contained uranium fuel rods. The reactor core was air-cooled.

The graphite reactor is located in the center of the Lab's industrial complex, about a mile-and-a-half from the site boundary. The reactor facility consists of several buildings as well as support structures, systems, and equipment. The primary components include:

- the graphite reactor core and related shielding,
- reactor building and office areas,
- spent fuel storage canal and canal water treatment system,
- air exhaust system comprised of large fans, above-ground and underground ductwork, and,
- reinforced concrete foundations extending 35 feet below ground level.

Only certain areas of the reactor facility contain hazardous materials or radioactive contamination. All such areas are clearly marked and monitored, and access is controlled. The decommissioning project will remove or isolate hazardous or radioactive contamination to reduce any potential risk to public health and the environment, and ensure that the site remains safe and secure. ■

EPA awards grant to local community group to review Lab cleanup

In May, NEAR (Neighbors Expecting Accountability and Remediation) was selected by the U.S. Environmental Protection Agency (EPA) to receive a three-year, $50,000 Technical Assistance Grant. NEAR will use this grant to improve community understanding of the technicalities of, and to more effectively monitor, the cleanup at Brookhaven National Laboratory. EPA awards only one Technical Assistance Grant (TAG) per Superfund site.

How the grant will be used

NEAR plans to use this grant to hire consultants who will examine and interpret the large volume of cleanup-related documents produced by the Lab. These technical assistants will provide an independent analysis of the cleanup information. NEAR also plans to participate in community-run public forums to discuss Laboratory cleanup operations and provide recommendations to the Lab.

"We will seek precise, reliable information with which people can make sound and responsible judgments on matters of personal and community health," stated NEAR administrator Judy Pannullo in a June 2nd press release announcing the award.

NEAR defines itself as a coalition of community residents committed to monitoring operations at the Laboratory, and to ensuring protection of the environment and the health and safety of community residents and Lab workers. Members of NEAR also represent nearly 30 local community and environmental groups. These groups include the Long Island Progressive Coalition, the Environmental Defense Fund, the Suffolk County Environmental Advocates and the Long Island Association of Commerce and Industry, as well as the Affiliated Brookhaven Civic Organization, itself an umbrella group that includes 40 civic organizations.

About the TAG program

The U.S. Congress established the TAG program in 1986 to help communities near Superfund sites better understand the technical information generated during the cleanup process. This enables community members to more effectively participate in cleanup decisions.

TAG money may be used to hire technical advisors to review and explain cleanup documents to the community, and to help communicate the community's concerns to the cleanup site's management. TAG funds may also pay for administrative help for the group that receives the grant. TAGs may not be used to develop new information or to underwrite legal action. ■

Community input...

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comments from the U.S. Environmental Protection Agency (EPA).

- The remedy for the Magothy aquifer has been removed from the ROD. The Lab plans to undertake additional characterization of the Magothy contamination. After this characterization has been completed, the DOE, EPA and New York State Department of Environmental Conservation (NYSDEC) will evaluate the need for treatment of the Magothy. If treatment is deemed necessary, either the ROD will be modified or another decision document will establish the selected action. Any such additional actions will be announced to the public.

- The remedy for VOC groundwater contamination on Lab property at Building 96 has been altered from air sparging and soil vapor extraction to in-well air stripping.

In order to be finalized, the Record of Decision must be signed by DOE and EPA, and concurred with by the New York State Department of Environmental Conservation. This will be an important milestone in the Lab's environmental cleanup program and will clear the way for construction of additional on- and off-site cleanup systems.

What's next

After the Record of Decision is signed, it will be available to the public in local libraries. At that point, the design phase of the cleanup can begin and the details of the groundwater cleanup will be finalized. These details include specific treatment system locations, numbers of wells to be installed and groundwater monitoring requirements. All groundwater treatment systems are expected to be operational by the year 2006 or earlier. ■

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What would you like to read in cleanupdate?

cleanupdate's purpose is to provide you with information about Superfund cleanup activities at Brookhaven National Laboratory, and we'd like to know whether the newsletter is meeting your information needs. Drop us a line at: *cleanupdate*, Brookhaven National Laboratory, Environmental Restoration Division, Bldg. 51, Upton NY 11973 (web address: http://www.oer.dir.bnl.gov).