



THE ADVISOR

A Publication of the Rocky Flats Citizens Advisory Board

Accelerated Southside D&D Strategy



Demolition work on Building 886, the former Criticality Testing Laboratory at Rocky Flats.

In the baseline schedule for 2006 closure, a high proportion of the decommissioning activities fell toward the end of the project. This meant, in turn, that nearly all of the environmental cleanup of the industrial area would be pushed to the end of the project. For the major plutonium buildings, whose decommissioning and demolition (D&D) will require a sustained effort between now and closure, back-loading of environmental restoration is unavoidable. However, sometime last year site managers began to realize that it would be both possible and beneficial to accelerate D&D of the major non-plutonium buildings, which according to the original baseline were to be completed in 2006 as well.

This realization led to a new strategy for D&D of the non-plutonium buildings, termed the Southside Strategy because many of these buildings are located mostly on the south end of the industrial area. Under the Southside Strategy, the bulk of the non-plutonium buildings would come down in fiscal years 2003 and 2004, clearing the way for environmental restoration to begin on large sections

of the site a year or two earlier than previously planned. This acceleration of D&D work on the southside does not affect the amount of resources being devoted to the major plutonium buildings. If successful, site managers believe that the accelerated Southside Strategy will not only bring about a more achievable work sequence, but also result in a \$70 million savings over the life of the project, money that would be channeled into other work.

Already the Southside Strategy has produced noticeable changes at the site. Gone is Building 886, the former Criticality Testing Laboratory. Per the original baseline, it was due for final demolition in the second quarter of 2005. Instead, this 40-year-old facility was demolished three years early using several cutting-edge technologies. One such innovation, called hydrolasing, employed high-intensity water pressure to remove layers of potentially contaminated paint and cement from the inner walls of the building. Another innovative technique was necessitated by the extreme thickness of the walls themselves. Due to the nature of the experiments that took place there, some rooms were encased by walls made of concrete up to five feet thick and generously reinforced with rebar. How does one safely demolish such a fortress, built to contain a small-scale nuclear criticality?

One solution, site D&D workers found, lies in a technique dubbed "harmonic delamination." Basically, vertical holes were drilled into the thick walls from above, and inside each hole were placed explosive charges just strong enough to fracture the concrete without dismantling it. The process unfolded in a sequence of three explosions, which left the building still standing, but in a weakened state conducive to manual demolition. A covering of black fabric had been draped

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News Briefs and Updates

Update on Progress of the Actinide Migration Evaluation

Since 1996, Rocky Flats has been studying how radioactive contaminants move in the environment. In April, researchers doing this work, the Actinide Migration Evaluation (AME), released a summary report that attempts to rank the various pathways by which these radioactive elements (known as actinides) may be transported off the site. The pathways include transport via air, surface water, groundwater, and biota.

The three actinides of concern in this study are plutonium, americium, and uranium. The largest source of contamination at Rocky Flats was the 903 Pad, where drums of radioactive cutting oil were stored in the 1960s. The drums leaked, and during subsequent cleanup efforts, the underlying soil became disturbed, causing plutonium and americium to be dispersed by the wind over a large area of the site.

Understanding the solubility of actinides is key to understanding their movement. The more soluble a material, the more readily it moves in water. Studies show that plutonium and americium released to the environment at Rocky Flats are insoluble. Thus, their potential for groundwater transport is very low. However, plutonium and americium have a strong tendency to attach to soil and sediment particles, and become

mobilized in surface water and air via particulate transport.

The air pathway involves wind erosion of radioactive particulates from soil and vegetation. This represents the dominant transport pathway for plutonium and americium. With the potent combination of high winds and soil disturbance that marked the 903 Pad event, it took only a few days in the winter of 1969 to release nearly a quarter of the site's plutonium contamination.

Just as plutonium and americium attached to tiny soil particles tend to become airborne, so too may these contaminants erode into the creeks that flow from Rocky Flats into the downstream communities. Therefore, surface water is the other important pathway by which plutonium and americium leave the site. Also found in Rocky Flats surface water is uranium, most of it natural rather than man-made.

Shallow groundwater is a major transport pathway for uranium, but a minor one for plutonium and americium, owing to the differences in solubility of these contaminants.

AME has significant implications for Rocky Flats closure, especially the need to control soil wind and water erosion over the long-term. The researchers recommend establishing drought-resistant vegetation in the industrial area once buildings have been removed, and in parts of the buffer zone where site managers



expect to leave behind radioactive contaminants in the soil. This would help control water runoff, as would terraced slopes and other erosion controls. And finally, the closure design must account for burrowing animals, whose propensity to cause soil disturbance is a consideration wherever there will be known or suspected residual contamination.

New Staff Member Joins the Board

In early April, the Board approved hiring a staff person to replace a vacancy left by the resignation of Michelle Kump, Program Coordinator. The new person hired is Patricia Rice, a resident of Lafayette. Patricia has a background in writing, including reporting on environmental issues, copy editing, and research of public records as well as state and federal regulations. She has a BS and an MS in Physics, and attended the Graduate School of Journalism at the University of California-Berkeley.

Natural Resource Management Issues

Ecological Risk Assessment

This summer the Rocky Flats Cleanup Agreement (RFCA) parties intend to modify Attachment 5 to RFCA, which specifies, among other things, surface soil cleanup goals for the site. The new cleanup goals will be informed by updated calculations of the risk posed by soil contaminants to humans as well as to the ecology of the site. Human health risks from contaminants have been studied extensively, but the effect of contamination on ecological receptors is less well known. Thus, the site is now performing an ecological risk assessment to evaluate adverse impacts to wildlife that may occur as a result of the environmental contamination at Rocky Flats.

The team assembled to conduct the ecorisk assessment is comprised of wildlife biologists and other scientists from various entities, including the U.S. Fish and Wildlife Service, the Colorado Department of Public Health and Environment, the Environmental Protection Agency, Kaiser-Hill, and the Department of Energy. Listed below are just a few of the many questions they will be exploring:

- What are the key ecological receptors at Rocky Flats and how do these receptors become exposed to contaminants?
- What are the contaminants of concern for wildlife?
- Do any of the contaminants tend to bioaccumulate in the food chain?
- Are there contaminants benign to humans but acutely toxic to animals?
- Are there contaminants that will require a more aggressive cleanup level in order to protect wildlife than would have been necessary to protect humans?

Some work on ecological risks at Rocky Flats was already done in the mid-1990s. The current review will update that work based on recent scientific research and EPA guidance, and provide new calculations by the middle of the summer.

Vegetation Management Plan

The 2002 Vegetation Management Plan for Rocky Flats takes aim at weeds in both the buffer zone and the industrial area for good reason. Noxious weeds degrade habitat quality, threaten native plant communities, create fuel for wildfires, detract from aesthetics, and create traffic safety problems.

Using a combination of mowing, ground and aerial application of herbicides, biocontrol insects, reseeding with native perennial grasses, hand pulling, cutting, and grading, the site seeks to eliminate 20 species of "priority 1" weeds. Among the most aggressive and difficult to control are diffuse knapweed, Russian knapweed, Canada Thistle and dalmation toadflax.

Most of the weed control measures for 2002 are similar to ones in the 2001 plan. However, the site has added a monitoring and mapping provision for control of diffuse knapweed to evaluate the effectiveness of current techniques. The herbicide Sahara has been added to the list of approved chemicals. The site has also reduced the number of acres to be treated with herbicides from about 1,500 last year to about 890 this year.

As an aside, the plan mentions grazing and burning as "highly recommended" tools to control weeds, though there are no plans to incorporate either practice into the weed management at this time.

"Long term control of these noxious weeds will ultimately depend on restoring the natural processes (i.e. fire, grazing) that originally kept the ecosystem healthy," the plan states.

The plan concludes that, "Strides have been made in recent years at the site to implement an integrated, ecosystem management program."



Accelerated Southside D&D Strategy (continued from page 1)

over the building to cut down on the amount of dust generated, so that onlookers saw nothing more than small dust clouds emanating from each blast.

Harmonic delamination occurred on a Saturday morning in April. That same weekend, using a piece of heavy construction equipment called a tracked excavator, the Kaiser-Hill construction crew set about knocking down the building. With the concrete and rebar loosened, the once formidable walls offered little resistance, and by Monday morning, Building 886 was a pile of rubble. It was during subsequent removal of the B886 rubble that the site had a serious safety incident. While repositioning an excavator, the operator struck an overhead, high-voltage power line, and electricity momentarily arced to the ground, causing power outages in several buildings. Fortunately there were no injuries resulting from the mishap. Nonetheless, use of heavy equipment was suspended at the site for some time as the D&D team prepared a corrective action plan aimed at preventing such a dangerous near-miss from happening again.

As far as the non-plutonium buildings are concerned, the D&D focus will now shift to Building 865, which during site operations served as a metal shop that housed machining of depleted uranium and beryllium. Of primary concern here will be how to safeguard workers against the hazard of airborne beryllium. Persons of high susceptibility may contract lung disease as a result of inhaling even minute amounts of beryllium. In the appropriate areas of B865, fixative will be sprayed on all surfaces to prevent beryllium from becom-

ing airborne. Also, the waste load-out facility will be equipped with an airlock to prevent beryllium from escaping the building. Demolition is expected to be complete by the end of this year.

Building 881 is where most of the enriched uranium operations took place. Like Building 886, this structure dates back to the early days of Rocky Flats, and was in fact one of the first four buildings constructed at the site. It is also a massive facility, with more than 250,000 square feet of floor space, almost entirely underground. B881 is still being used for drum repackaging and D&D training exercises, but those activities will be winding



Building 865 workers prepare equipment for removal.

down this summer, by which time Kaiser-Hill hopes to have accepted a bid on the D&D work.

According to the accelerated strategy, demolition of the building is scheduled for completion by the middle of next year, fully two years before it would have been demolished under the original closure schedule.

In other D&D news related to the plutonium buildings, last quarter the site completed its first work set in Building 371 a year early. This has significance because D&D of B371 is the critical path to closure of the entire site. The B371

team recently processed and packaged the last of the RFETS plutonium residues. This represents the culmination of a six-year effort involving over a hundred metric tons of material, or 85% of the nation's residue stockpile. It was in that same building roughly a year ago that Kaiser-Hill began packaging plutonium metals and oxides using the complex system known as PuSPS. Now operating 24 hours a day, seven days a week, PuSPS containerizes special nuclear materials destined for the Savannah River Site in South Carolina. The latest quarter saw a near doubling of PuSPS production. As it stands, more than 600 containers of plutonium metals and oxide are ready to ship.

Even so, the delay in plutonium shipping remains one of the biggest potential obstacles to 2006 closure. By contrast, shipments of transuranic waste to the Waste Isolation Pilot Plant (WIPP) in New Mexico have increased of late, with the pace topping out at 18 shipments in one week, a new record for the site. The site achieved another milestone on May 14, 2002, by executing its 500th shipment to WIPP. By closure, it is estimated that Rocky Flats will have made a total of 2000 WIPP shipments.

The site still has many hurdles to overcome if 2006 closure is to be realized. The Rocky Flats Citizens Advisory Board continues to monitor D&D progress in general, and also to stay apprised of specific D&D issues such as plutonium shipments and worker safety. As progress over the past year indicates, maintaining a safe working environment remains the key to closing Rocky Flats.

The Defense Nuclear Facilities Safety Board

The Defense Nuclear Facilities Safety Board (DNFSB) has had a long association with Rocky Flats, issuing recommendations to the U.S. Department of Energy since 1990 to ensure cleanup activities at the former nuclear weapons plant are safe.

Board Chairman John Conway said, however, much of the hazardous activity at the site is complete.

"Most of the hazardous work has already been accomplished there," Conway said in a phone interview from his Washington office. "That is now why we are down from two to one site representative (at Rocky Flats)."

Our site representatives not only work but also live in the community and their job is to ensure the safety of the community, the workers and their families.

John Conway, Chairman
Defense Nuclear Facilities Safety Board

Conway has had a wealth of experience in nuclear issues. He has two engineering degrees – and a law degree – and spent nearly 13 years on the staff of the Congressional Joint Committee on Atomic Energy, six of those years as staff director with oversight responsibility for the civilian and nuclear weapons programs.

He was present at one of the last hydrogen bomb tests on Christmas Island in the Pacific Ocean in 1968.

Congress established the Defense Nuclear Facilities Safety Board in 1988 as an independent, executive branch agency to provide oversight of nuclear facilities operated by the Department of Energy. Its mandate under the Atomic Energy Act is to provide advice and recommendations to the Secretary of Energy and the President, if necessary, on worker and public health and safety at 14 DOE facilities around the country.

Protecting the environment is only part of the Board's mission. Its main focus encompasses three areas: 1) safe management of the nation's stockpile of nuclear weapons; 2) safe disposal of hazardous remnants of nuclear production; and 3) ensuring the health and safety of nuclear workers and the public.

DNFSB operates six site offices at high priority locations. The office at Rocky Flats is manned by Donald F. Owen, who is the Board's full-time representative there.

By law, Board members must be experts on nuclear safety. Thirty percent of its staff have doctorate degrees. While DNFSB is normally composed of five members, a vacancy was created last year when Board member Jessie Hill Roberson – former site manager at Rocky Flats – was tapped as the Assistant Secretary of Environmental Management at the Department of Energy.

The Board's website at www.dnfsb.gov contains information on DNFSB's oversight of Rocky Flats. To see formal safety recommendations the Board has made on Rocky Flats, click on "RFETS" on the home page, then "Recommendations" on the Rocky Flats page. Also of interest are the "Weekly Site Rep Reports."

"I was close enough to feel the blast, the heat, of the hydrogen bomb," he said.

Conway said one of the most important recommendations the safety board issued to DOE came in 1994,

advising the department to convert unstable plutonium residues to a stable form at DOE sites across the United States, including Rocky Flats.

"We believed in 1994 that some that we identified had to be stabilized within two years, otherwise we could have some serious problems," Conway said.

At Rocky Flats, some of the plutonium was encased with plastic, a condition that could have led to the production of hydrogen gas and plutonium fires, according to the recommendation, number 94-1.

A more recent DNFSB recommendation advised DOE to make sure fire safety and ventilation systems at Building 371, where the bulk of Rocky Flats plutonium is now being stored, are properly maintained.

"Our main responsibility," he said, "is to make sure the DOE does its job safely and to assist them in doing it properly."



Current members of the Defense Nuclear Facilities Safety Board from left to right: John Mansfield, John Conway (chair), A.J. Eggenberger (vice chair), and Joseph DiNunno.



This Issue: Oak Ridge Site Specific Advisory Board

*The Rocky Flats Citizens Advisory Board is one of nine Site-Specific Advisory Boards (SSABs) that have been formed at former nuclear weapons production sites. In each issue of *The Advisor*, we spotlight the activities of one of these boards, their respective sites, or other interesting information about the Department of Energy.*

One of the most important issues for the Oak Ridge Site Specific Advisory Board (ORSSAB) is the Department of Energy's (DOE's) top-to-bottom review, which has set nearly every DOE site around the country scrambling for a piece of an \$800 million pie, said Board Vice Chairman Dave Mosby.

DOE's program is designed to speed cleanup of the highest risk areas at sites complex-wide. The federal agency will dole out money to Oak Ridge only if the Oak Ridge Comprehensive Closure Plan, which was submitted to DOE in March, is aggressive in going after high-profile and high-risk areas of the reservation, such as Melton Valley and the East Tennessee Technology Park (ETTP).

While the advisory board has generally endorsed the accelerated cleanup plan, Mosby said the Board was disappointed in the lack of public participation.

"We were told," Mosby said. "It was a business decision not to include the public in the process of establishing priorities."

Mosby said, however, the advisory board has been a valuable asset to DOE in other areas.

"I think the Board has been fairly effective in getting their recommendations on stewardship considered by DOE. We have a very active stewardship contingent," Mosby said, adding, "Stewardship is very important in monitoring and assuring compliance in the future."

The ORSSAB was formed in 1995 under the Federal Advisory Committee Act. Its 20 members are chosen to reflect the diversity of the community in terms of gender, race, occupation, views, and interests. It recommends and advises DOE on environmental restoration, stewardship, waste management, land use, and economic development of contaminated areas.

According to the U.S. Environmental Protection Agency's website, radioactive and hazardous waste contributed to contamination at 294 sites in and around the reservation. Much of this legacy waste had been *(continued on page 7)*

The Oak Ridge Reservation is a sprawling forested complex on approximately 34,500 acres in eastern Tennessee within the city of Oak Ridge. The reservation encompasses three major Department of Energy facilities: Oak Ridge National Laboratory, the Y-12 National Security Complex, and East Tennessee Technology Park. The reservation was listed on the National Priorities List in 1989.

Oak Ridge National Laboratory was established in 1943 to develop pilot-scale production and separation of plutonium, and played an instrumental part in the Manhattan Project. The laboratory is now a research institution focusing on energy, scientific, and biological programs. Both the Y-12 complex and technology park were uranium enrichment plants. The Y-12 plant currently is used to disassemble nuclear weapons and to store highly enriched uranium.

Oak Ridge Site Specific Advisory Board (continued from page 6)

“containerized and buried below ground or stored in buildings.” It then seeped into the soil, both on and off-site. Strontium, tritium, and other hazardous waste leaked into groundwater and surface waters. It contaminated Poplar Creek and the Clinch River, a source of drinking water and recreational activity, and settled into the sediment.

Melton Valley and ETTP are two of the most contaminated areas of the reservation. Melton Valley, near Oak Ridge National Laboratory, is a former dumping

ground for solid and liquid radioactive wastes. ETTP was a uranium enrichment plant. It is now being transformed into an industrial park, in which DOE buildings are being leased to private companies. The K-25 building, which produced enriched uranium and was at one time the world’s largest building, has come under controversy because of its central role in the Manhattan Project. Some want to declare it a historic monument, but the building is highly contaminated, in serious disrepair, and

costs millions of dollars to maintain. An agreement is currently being worked out on how to preserve the history of the building.

At press time, the Department of Energy, State of Tennessee, and the Environmental Protection Agency agreed to an accelerated cleanup strategy at the Oak Ridge Site. This means that DOE has set aside \$105 million from its accelerated cleanup reform account for the Oak Ridge budget. Under the plan, the site would be cleaned up by 2016 with cleanup at high risk sites to be completed by 2008.

DO YOU EVER WONDER WHAT IS GOING ON AT ROCKY FLATS?

Would you like to have a voice in Rocky Flats cleanup decisions?

DO YOU HAVE THE TIME TO WORK WITH OTHER DEDICATED CITIZENS ON ENVIRONMENTAL ISSUES?

If you answered “YES” to these questions, the Rocky Flats Citizens Advisory Board needs you! We are soliciting applications from interested citizens in the Denver area to apply for membership on the Board. No expertise is required. Just volunteer your time and efforts to make a difference in your community. Call 303-420-7855 to receive an application packet by mail. Or, if you prefer, the application is available on our web site:

www.rfcab.org

click on the link for “Board Vacancies”

*** WOMEN AND MINORITIES ARE ENCOURAGED TO APPLY ***

RFCAB MISSION STATEMENT

The Rocky Flats Citizens Advisory Board, a nonpartisan, broadly representative, independent advisory board with concerns related to Rocky Flats activities, is dedicated to providing informed recommendations and advice to the agencies (Department of Energy, Colorado Department of Public Health and Environment, and the Environmental Protection Agency), government entities, and other interested parties on policy and technical issues and decisions related to cleanup, waste management, and associated activities. The Board is dedicated to public involvement, awareness and education on Rocky Flats issues.



RFCAB Web site:
www.rfcab.org

The Advisor is published quarterly by the Rocky Flats Citizens Advisory Board (RFCAB). The Executive Editor is Jeff Eggleston. Except as noted, all articles are written by RFCAB staff: Jerry Henderson, Ken Korkia, Patricia Rice, and Deb Thompson. Material may be reprinted if credit is given. RFCAB is funded under a 2002 grant of approximately \$350,000 sponsored by the U.S. Department of Energy. To request a change of address; to add or remove your name from the mailing list; or if you have questions, suggestions, ideas, contact:

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Rocky Flats Public Meeting Calendar

July

1	Rocky Flats Coalition of Local Governments	8:30 to 11:30 a.m.	Jeffco Airport
11	Rocky Flats Citizens Advisory Board Meeting	6 to 9:30 p.m.	Jeffco Airport
15	RFCAB End-State Discussion Steering Committee	6 to 8 p.m.	College Hill Library
25	Stewardship Working Group	3:30 to 5:30 p.m.	Arvada City Hall

August

1	Rocky Flats Citizens Advisory Board Meeting	6 to 9:30 p.m.	Jeffco Airport
5	Rocky Flats Coalition of Local Governments	8:30 to 11:30 a.m.	Jeffco Airport
5	RFCAB End-State Discussion Steering Committee	6 to 8 p.m.	College Hill Library
22	Stewardship Working Group	3:30 to 5:30 p.m.	Arvada City Hall

September

5	Rocky Flats Citizens Advisory Board Meeting	6 to 9:30 p.m.	Jeffco Airport
9	Rocky Flats Coalition of Local Governments	8:30 to 11:30 a.m.	Jeffco Airport
9	RFCAB End-State Discussion Steering Committee	6 to 8 p.m.	College Hill Library
26	Stewardship Working Group	3:30 to 5:30 p.m.	Arvada City Hall

ALL MEETINGS ARE SUBJECT TO CHANGE, PLEASE CALL BEFORE YOU GO: 303-420-7855

Arvada City Hall, 8101 Ralston Road, Arvada
College Hill Library, 3705 West 112th Avenue, Westminister
Jefferson County Airport Terminal Building, Mount Evans Room, 11755 Airport Way, Broomfield

Rocky Flats Citizens Advisory Board
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