

ENVIRONMENTAL 2002 REPORT

ROCKY FLATS
ENVIRONMENTAL
TECHNOLOGY SITE



KAISER-HILL

LETTER from the PRESIDENT



Alan Parker, CEO
Kaiser-Hill Company, LLC

Safely cleaning up and closing down the former nuclear weapons production plant at Rocky Flats, Colo., is an immense challenge. It is a challenge that, through a commitment to worker safety and environmental protection, Kaiser-Hill is meeting ahead of schedule and under budget.

All of the work the Department of Energy, Kaiser-Hill, our dedicated work force and our neighboring communities and stakeholders have put into developing the strategic planning, technologies and waste disposal solutions for this immense task is paying off.

We are successfully conducting one of the most challenging cleanup operations ever undertaken in the DOE Complex. We have developed, and are following, a workable plan that cuts 60 years and nearly \$30 billion off the originally projected cost of restoring Rocky Flats to a safe and valuable community asset.

Kaiser-Hill is proud to be recognized as the leader in the DOE Complex for performing decontamination and decommissioning (D&D), demolition and environmental restoration (ER) in an expedient, safe and compliant manner – and our performance stands second to none. This year we demonstrated that efficient and responsible environmental planning and stewardship results in positive environmental protection and risk reduction.

Verdant native grasses are reoccupying space where administrative and production facilities once stood. Work has begun on the most important long-term risk reduction activity to date: restoring the 903 Pad, our largest environmental restoration project. We are reducing the risks to our workers and the environment on a daily basis by removing vast amounts of radionuclide and hazardous material contamination for safe and compliant disposal off site.

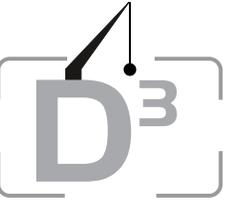
Our continued safe and compliant performance during the next few years is essential to ensuring a 2006 site closure.

Kaiser-Hill remains dedicated to maintaining its commitment to employee safety, while ensuring environmental protection and regulatory compliance. I personally look forward to the challenges ahead and am confident that our team will achieve success.

A handwritten signature in black ink that reads "Alan M. Parker". The signature is fluid and cursive.

President and CEO
Kaiser-Hill Company, LLC

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“We made solid progress this year toward our goal of closure in 2006. More environmental remediation is being completed than ever thought possible, and we continue to make record waste shipments.

We remain committed to the safe and efficient cleanup of the site and the realization of converting Rocky Flats to a National Wildlife Refuge.”

Gene Schmitt
Manager, Rocky Flats Field
Office Department of Energy

The Rocky Flats Environmental Technology Site (RFETS) is a DOE cleanup site located 16 miles northwest of downtown Denver, Colo. The site fabricated nuclear weapons components from plutonium, beryllium and stainless steel for the U.S. arsenal during the Cold War.

Nearly 40 years of nuclear weapons production at Rocky Flats left behind a legacy of environmental contamination. In 1989, Rocky Flats was placed on the National Priorities List for Superfund sites under the Comprehensive Environmental, Response, Compensation and Liabilities Act (CERCLA).

Kaiser-Hill Company, LLC assumed management of the RFETS cleanup in 1995 and became the first integrating management contractor in the DOE Complex. In 1996, the DOE entered into a cleanup agreement with the Environmental Protection Agency and the Colorado Department of Public Health and the Environment (CDPHE), the two principal regulatory agencies overseeing cleanup activities.

The Rocky Flats Cleanup Agreement (RFCA) describes the environmental regulatory framework for safe, timely and cost-effective site closure. It is the legally binding agreement that outlines the environmental regulations and standards for decommissioning and environmental remediation of radioactive and other hazardous substance contamination.

Kaiser-Hill and the DOE signed a new contract in January 2000 to complete the cleanup of Rocky Flats by December 2006 for \$4 billion. Planning innovations and hard work have made that goal achievable, cutting nearly 60 years and \$30 billion from 1995 cleanup projections.

Together, Kaiser-Hill and the DOE are committed to ensuring full compliance with regulatory requirements while protecting human health and the environment.

The foundation of our philosophy is documented in our nine environmental pledges. Kaiser-Hill pledges to integrate the following elements into its daily operations, activities and decision-making process as essential management elements.

- **Preserve and enhance the environmental quality at Rocky Flats**
- **Reduce risk to human health and the environment during the closure of Rocky Flats**
- **Minimize waste and pollutants; conserve natural resources and energy; recycle materials in every practical aspect of our operations, cleanup and closure of Rocky Flats**
- **Educate our employees and subcontractors regarding responsible care of the environment and encourage their active participation to improve Kaiser-Hill performance**
- **Actively support community initiatives regarding responsible care of the environment**
- **Continually assess the environmental impacts and opportunities of closure operations with a goal of continuous improvement**
- **Maintain necessary emergency preparedness plans to address potential environmental hazards at Rocky Flats**
- **Measure and report environmental performance through self-evaluations, assessments and audits**
- **Ensure subcontractors' strong environmental performance by including environmental awareness and stewardship as an element of evaluation in procurement and performance**

THE PROJECTS

This environmental annual report describes the progress the site made toward cleaning up Rocky Flats during 2002 and provides:

1. Status of leading indicators based upon environmental goals set last year.
2. Progress made in decontamination, decommissioning and demolition (D&D), environmental restoration (ER), environmental monitoring, waste management, regulatory affairs and other activities supporting closure.
3. Summary of 2002 compliance status and regulatory framework.
4. Proposed path forward and 2003 goals supporting closure and the final land use as a wildlife refuge

The Projects



Building 371/374 Project

– Building 371 was the plutonium recovery building and continues some special nuclear material operations under the Resource Conservation and Recovery Act (RCRA). Building 374 was the process waste treatment facility and both buildings are in active decommissioning.



Building 707/776/777 Project

– Building 707 was the plutonium fabrication and pyrochemical operation, and Building 776/777 was the assembly and manufacturing building. Both buildings are undergoing decommissioning.



Material Stewardship

– (MS) supports all projects with primary responsibility for waste management, including treatment (on and off site), storage and disposition. In addition, MS is responsible for the site's safeguards and security program.



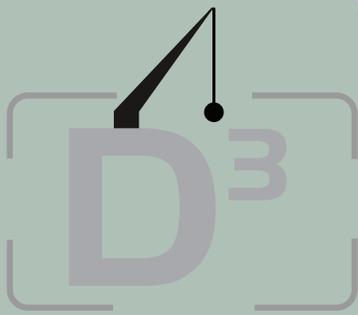
RISS Project

– (Remediation, Industrial decommissioning and Site Services) is primarily responsible for closure of the south side of the plant, aka the “cold side,” site infrastructure including the steam plant, road maintenance, plant maintenance and environmental restoration.



Building 771/774 Project

– Building 771 housed plutonium recovery operations. Building 774 was the process waste treatment facility. This will be the next major project to complete decommissioning.



DECONTAMINATION, DECOMMISSIONING and DEMOLITION

Decontamination, decommissioning (D&D) and demolition is the process for placing a building, portion of a building, structure, system or component in a safe and stable condition in preparation for, and including, final demolition or removal. These activities are conducted safely, compliantly and in a manner that is protective of workers, the public and the environment.

Indicators

- Removed 500 gloveboxes from the four plutonium buildings
- Completed 8 D&D sets in B371/374
- Shut down B374 and began D&D
- Completed 35 D&D sets in B707
- Drained mixed residue tanks in B776/777
- Completed 28 D&D sets in B776
- Completed 16 D&D sets in B771/774
- Decommissioned B886
- Started decommissioning B865
- Demolished or removed 158 buildings, facilities and structures
- Innovative technology reduced worker exposure and risk

At Rocky Flats, decontamination, decommissioning and demolition are how the facilities and equipment used to build nuclear weapons components are safely cleaned up and removed from the site. Risks to site workers, neighboring communities and the environment are reduced by every step of the D&D process as the hazardous materials left from decades of weapons production are safely and compliantly packaged and shipped off site for disposal. Once cleaned, the buildings and structures can be demolished and the site restored to its original condition.

Kaiser-Hill achieved unprecedented levels of D&D in 2002. Workers removed hundreds of gloveboxes, miles of pipe and ducts and cleaned up and demolished more than 150 buildings, facilities and structures.

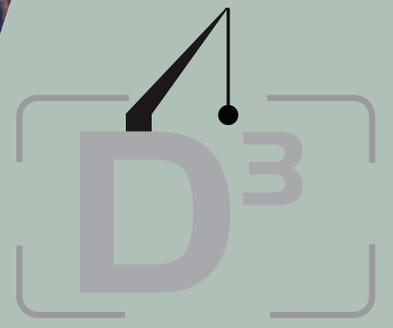
Rocky Flats workers completed dozens of D&D sets – including some of the site’s most difficult sets. D&D sets are specific work sets that range from the removal of individual tanks or equipment to the complete stripout of a room. Sets are established in agency-approved Decommissioning Operations Plans, the RFCA decision documents outlining decontaminating and decommissioning activities for specific buildings. Following are some of the highlights and accomplishments achieved by Rocky Flats workers in 2002.

B371 Project

Building 371, the last operating nuclear processing facility at Rocky Flats, made great strides toward completing nuclear operations and increased the amount of D&D activities during 2002. It was the first full year of plutonium packaging operations and the final year of stabilizing the last of 106 metric tons of residues. The project processed more than 1,000 compliant containers through the Plutonium Stabilization and Packaging System (PuSPS) and began shipping plutonium metal and oxide materials to the DOE site at Savannah River, SC. The project also began removing equipment from the central storage vault.

B776/777 Project

The Building 776/777 Project cleaned up and decommissioned the highly contaminated size-reduction vault, leaving only one highly contaminated infinity room remaining in the building, a room so contaminated it pegged standard radiation detection equipment used decades ago when the room was locked, sealed and left for later decontamination. Additional accomplishments included completing the D&D of the Fluidized Bed Incinerator Units, decontaminating and removing



a 45-ton super-compact and demolishing the cooling towers north of Building 776.

B707 Project

The Building 707 Project completed its first full year of D&D operations in the former plutonium fabrication and pyrochemical facility. Four autoclaves and their 11-ton doors, highly contaminated vacuum pumps, several lathes and four tilt-pour furnaces were part of the equipment removed from former production modules. The project also demolished and removed a cooling tower, removed and recycled a 20,000-pound tank and completed nearly 50 percent of the asbestos abatement work throughout the building.

B771/774 Project

A building full of highly contaminated gloveboxes, tanks and process piping that was described as the most dangerous building in America, Building 771 is now nearly empty. Workers will soon begin decontaminating the structure so that demolition can begin. The project's most difficult D&D work sets were completed during the year and all of the building's 240 gloveboxes have been removed. Building 771's infinity room, which had been abandoned for 30 years, was also completely stripped out. Liquid processing operations in Building 774 were completed and full-scale D&D of that facility initiated.

RISS Project

The most visible signs of progress toward site closure occurred along

the site's "main street" — Central Avenue. Work in Building 444, much involving beryllium contamination, included the removal of 432 pieces of manufacturing equipment weighing more than 1 million pounds. Extensive D&D activities were also performed on the south ("non-plutonium") side of the site. RISS continued to take advantage of the savings afforded by utilizing commercial demolition practices to take down 118 buildings and structures this year, including one of the site's most historically significant facilities - the Building 886 Criticality Laboratory. To date, 232 buildings, out of the more than 400 buildings that stood just five years ago, have been demolished or removed.



B886 Criticality Laboratory demolition



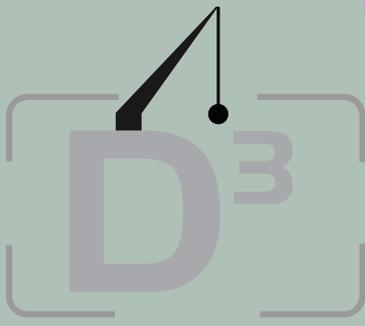
PuSPS 3013 can

Innovative D&D Technologies

Increased efficiency and most importantly, improved safety and compliance resulted from innovative technologies that were either introduced or continued. Cerium nitrate was used extensively as a decontamination agent in gloveboxes, a vacuum system supported the removal of Raschig rings from tanks, and high-pressure abrasive water jets helped size-reduce



High-pressure water jet cutting



B771 infinity room stripout

tanks that were far too large to be removed from buildings in one piece.

An innovative approach for shipping large pieces of contaminated equipment was initiated this year. This approach uses a polyurea spray-on coating as a compliant container for shipping large equipment, greatly reducing the need for dangerous and costly size-reduction. In addition, structural foam was used to more safely and effi-



Large tank removal

ciently package contaminated wastes in cargo containers. All of these technologies help reduce worker exposure and decrease risk.

P2 Initiatives in D&D

Kaiser-Hill employees continue to identify and implement

waste reducing and recycling opportunities within each of the projects. The volume and amount of waste requiring disposition was reduced, providing cost and schedule benefits to the closure mission.

Significant waste-reducing accomplishments generally originate from two major types of closure activities: waste characterization and packaging and implementation of

various innovative technologies used to decontaminate and decommission gloveboxes, tanks and piping systems. Two notable accomplishments in 2002 significantly reduced the volume of transuranic (TRU) waste being sent to the Waste Isolation Pilot Plant (WIPP) for final disposal. The first was using a cerium nitrate rinse to remove radioactive contamination from stainless steel surfaces; thereby reducing transuranic levels of contamination to surface contaminated low-level waste.

The second was the development and use of new radiation detection instrumentation capable of measuring the high levels of surface contamination, which enables workers to accurately characterize surface contaminated objects as either TRU or low-level waste. The tandem use of these technologies allowed gloveboxes (in particular) to be shipped to a low-level landfill for disposal as surface contaminated low-level waste.



Measuring high-level surface contamination



ENVIRONMENTAL RESTORATION



Environmental Restoration is focused on the characterization and appropriate management/removal of contamination in more than 200 potential release sites in the Industrial Area and Buffer Zone, including Individual Hazardous Substance Sites (IHSS), Potential Areas of Concern (PACs), and Under-building Contamination (UBC) sites.

Some of the most important indicators of closure progress can be found in the environmental restoration arena. Important results were published for both actinide transport evaluations and the sitewide water balance study. These two studies provide qualified quantitative predictions for consideration in closure decisions. In addition, several important decision documents were formally approved, allowing fieldwork to begin on important environmental remediation projects.

Kaiser-Hill, with agreement from DOE, CDPHE and EPA, implemented a new comprehensive approach to environmental restoration projects that greatly accelerates closure activities and protects the environment. This innovative approach enhances the ability to make remediation decisions in a timely manner.

Actinide Migration Evaluations

In April, the Actinide Migration Evaluation Pathway Analysis Report was published. It determined the form and mobility of actinides in the environment at Rocky Flats. Laboratory studies show that the form of plutonium in the environment at Rocky Flats is highly insoluble oxide; they conclude that movement of plutonium and americium at the site will be dominated by particulate transport.

Sitewide Water Balance Study

The Sitewide Water Balance study uses a mathematical model to represent the water budget for the site. The water budget includes all imported water, surface water flow and groundwater. The model is designed to predict the physical conditions that can be responsible for transport of actinides at the site. The study showed the relationship and interaction among surface water, groundwater and precipitation in the Industrial Area that will be the primary influence on the ultimate transport of actinides, other relatively insoluble surface contaminants and more soluble contaminants such as Volatile Organic Compounds (VOCs).

Decision Documents

The first part of the year was focused on developing necessary internal procedures and obtaining agency approval on key RFCA decision documents needed to support remediation activities that were scheduled to be initiated or completed in 2002.

Indicators

- Applied comprehensive approach to Environmental Restoration projects to accelerate closure activities
- Finalized ER RSOP, Buffer Zone SAP, B123 and B889 slab cleanup and B903 Pad Plans
- Characterized 35 potential contaminant release sites
- Identified and acquired regulator approval for 140 No Further Action (NFA) sites
- Remediated three UBC sites
- Remediated 13 release sites
- Started 903 Pad remediation
- Reseeded several building footprints and disturbed areas in the Industrial Area
- Modified cleanup strategy based on plutonium migration under development



Solar pond remediation

In early 2002, Kaiser-Hill received agency approval for the Environmental Restoration RFCA Standard Operating Protocol (RSOP) for Routine Soil Remediation (ER RSOP) and the Buffer Zone Sampling and Analysis Plan (BZ SAP). They address routine remediation of soil and associated debris, soil

characterization and sampling in the Industrial Area and Buffer Zone. The combined use of these documents provides a consistent approach to accelerated remediation activities and streamlines the decision-making process.

Completed Restoration Actions

As the number of completed demolition projects continues to increase, the way is cleared for environmental remediation of the remaining contaminated structures and soil after building demolition. Remediation of an UBC site includes removal of contaminated soil, foundations and associated structures, followed by grading and revegetating the area.

During 2002, three UBC sites at former Buildings 123, 442, 889 and 886 were remediated. The projects included remediation of floor slabs, subsurface soil and several portions of the old process waste lines.

In addition, several IHSS and PACs associated with the buildings and several small areas associated with

the Solar Evaporation Ponds were restored.

Solar Evaporation Ponds

The Solar Ponds Remediation Project was completed this year. Remedial work included the removal of all above-ground lines, valve vaults, sumps, pumps and associated equipment. This included removing 600 linear feet of above-ground fluid transfer lines and the 788/778A Pad and its foundation. Contaminated soil containing both hazardous and radioactive constituents was characterized, removed and disposed of. The berms were pushed in and the area graded. Revegetation is scheduled for spring 2003.

903 Pad

More than 5,000 drums were stored at the 903 Pad between 1958 and 1967. During that time a number of drums leaked radioactively contaminated cutting solutions into the soil.

The cleanup project, started in 2002, includes two large, moveable “weather” tents on the pad and excavation of approximately 13,000 cubic yards of radioactively contaminated soil. Excavation began in October and is expected to take approximately six months to complete. This is the largest ER project and represents the most important long-term risk reduction activity to date.

Revegetation

Various structures came down across Rocky Flats during 2002 and the site



903 Pad excavation

began to restore the original grasslands using native plant species. Revegetation prevents soil erosion and protects surface drainages. Several building footprints and disturbed areas were reseeded in the Industrial Area in 2002. In addition, an evaluation of current revegetation techniques and methods for the site was begun in 2002. A final report and set



Underground piping remediation

of revegetation instructions for the site closure should be completed in early 2003.

Modifications to RFCA

Significant progress was made during the past year in developing and proposing a modified cleanup strategy for the site. The RFCA parties must formally adopt this risk-based approach, which is undergoing public review and comment through January 2003, and modify the RFCA and ER

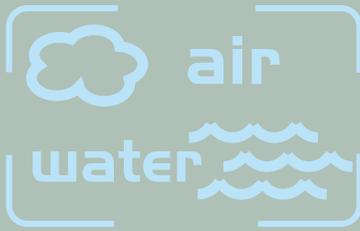
RSOP to incorporate the strategy before it can be implemented for final closure.

Driving the proposed modifications are recently completed investigations that confirmed that plutonium in the environment at Rocky Flats is not soluble. Plutonium movement is associated with water and wind erosion of surface soils, while contamination in the subsurface presents much less risk of movement.

The proposed modification would remove radioactive contamination originating at the surface down to three feet. Below three feet, where contamination is less accessible and relatively immobile, a risk-based approach would be applied to examine potential pathways of exposure to a human. Cleanup actions would be triggered to protect surface water and future land users based on that analysis.



400 area after demolition



ENVIRONMENTAL MONITORING

The Environmental Monitoring Program provides sitewide monitoring of environmental quality of the air, surface water and groundwater, demonstrating compliance with standards imposed on these media. In addition, the program provides a framework for planning future monitoring needs and related closure strategies.

Indicators

- Initiated a well abandonment program for more than 1,200 groundwater wells
- Characterized groundwater actinide contamination in wells that have been shielded from surface contamination during drilling and sampling
- Performed additional isotopic characterization in areas of possible uranium contamination to delineate natural and anthropogenic contributions
- Reviewed effluent air monitoring activities to ensure appropriate cessation of monitoring in buildings where active decommissioning precludes the ability to collect representative samples
- Demonstrated compliance with air and water quality standards and responded appropriately to the RFCA monitoring and reporting requirements
- Performed studies and communicated results regarding the potential impacts of future end-state conditions on environmental quality

Environmental monitoring at Rocky Flats includes monitoring the air, surface water and groundwater. These monitoring activities assist in identifying, tracking and mitigating the potential impact of site activities on the environment. Information gathered through monitoring is used to plan and implement site operations, remediation and closure activities and to demonstrate compliance with applicable regulations and agreements.

All environmental monitoring at Rocky Flats is coordinated and integrated through the Integrated Monitoring Plan (IMP). The IMP – developed and reviewed annually in conjunction with the CDPHE, EPA and the communities – provides the framework for all monitoring activities based on Data Quality Objectives (DQOs).

Overall environmental monitoring activities in 2002 demonstrated that Kaiser-Hill's project planning and execution protected the public and the environment from chemicals and radionuclides. Environmental monitoring and protection is an ongoing commitment that will continue throughout and beyond site closure in 2006.

Air Monitoring

Kaiser-Hill's air-monitoring program consists of ambient, effluent and meteorological monitoring. Monitoring parameters include several elements: radionuclides, regulated pollutants and opacity. All of these are preventative indicators of potential pollutants generated from site activities. All air monitoring data collected demonstrated that there was no significant air quality impact either on or off the site.

The Radionuclide Air Emissions Annual Report for 2001 was submitted to the agencies in June 2002. The report's analysis demonstrated that the measured dose to a member of the hypothetical public at the site boundary in 2001 was 0.128 millirem, well below EPA's health-based regulatory standard of 10 millirem per year. Preliminary analysis of data collected in 2002 indicates that the potential dose remains well below the regulatory standard also.

At the request of the RFCA parties, additional monitoring was introduced in 2002 to reassure the public about the air quality impacts of demolishing buildings that had housed significant manufacturing operations for beryllium com-



Air Monitoring

ponents. This monitoring protocol, designed to detect beryllium in the air near the buildings, will be implemented in 2003.

Water Monitoring

Water management at Rocky Flats is very complex. The monitoring program includes surface water and groundwater, which are evaluated for both chemical and radionuclide pollutants, in addition to studies addressing sitewide water balance and actinide migration evaluations.

More than 79 million gallons of surface water were discharged from the



Surface water monitoring

site this year. All collected data from both the National Pollutant Discharge Elimination System (NPDES) permitted discharge outfalls and RFCA Points of Compliance were well within regulatory standards.

The routine surface water monitoring program demonstrated compliance with all applicable standards or permit conditions and met all prevailing requirements under RFCA in 2002. Maintenance of the monitoring system required installation of three new measuring stations in the streams exiting the Industrial Area.

Groundwater monitoring activities are performed at wells located down-gradient of known areas of contamination and at the site boundary. Groundwater monitoring is performed to understand any potential movement of contaminants in the subsurface. Data collected during 2002 have been used to support environmental restoration planning and activities, as well as decommissioning and demolition of site facilities.



Groundwater Monitoring

Finally, the site monitors its on-site drinking water distribution network to ensure its potable water supply meets drinking water standards. All data collected in 2002 were within regulatory parameters.



ECOLOGY

The Natural Resources (Ecology) program exercises good stewardship for preservation of the natural resources at the site while complying with applicable regulations and allowing site closure to proceed unimpeded.

Indicators

- **Complied with applicable wildlife and natural resource protection regulations**
- **Detected and managed problems or undesirable impacts to the Buffer Zone before they became severe**
- **Protected unique and ecologically valuable natural resources in the Buffer Zone**
- **Protected special-concern species (threatened, endangered, candidate, proposed, state-listed, or other sensitive species)**
- **Controlled noxious weeds**

During 2002, ecologists provided technical assistance to closure activities with potential impacts on wetlands and the Preble's Meadow Jumping Mouse (Preble's mouse) habitat. They also continued to manage and assess the site's vegetation and wildlife.

Wildlife Refuge

In late 2001, President George W. Bush signed a bill providing for the establishment of Rocky Flats as a National Wildlife Refuge after cleanup and closure of the site. The bill also requires that the U.S. Fish and Wildlife Service (USFWS) manage the refuge. During 2002, Kaiser-Hill provided technical data and expertise on the ecological resources at the site to USFWS staff as they began preparing their Comprehensive Conservation Plan for the refuge.

Regulatory Compliance

Kaiser-Hill continued to work to avoid, minimize and plan for the mitigation of potential impacts to wetlands, endangered species and migratory birds. Ecologists assisted numerous projects by pre-planning to avoid impacts and delays that could have hindered project schedules. Several biological evaluations and biological assessments were written for projects that could not avoid potential impacts and were submitted to the regulatory agencies (Corps of Engineers (COE), USFWS, or EPA) for evaluation and project approval.

Wetlands

Projects with a potential to impact wetlands were reviewed and assisted through the process of getting COE approval to disturb the wetlands as part of project activities. Meetings were held between DOE and the EPA to discuss and resolve outstanding wetland issues that have been a concern at the site. Major projects reviewed included the original and current landfill projects, the Well Abandonment and Removal Program (WARP) and the project to upgrade several water measurement flumes in Walnut Creek.

Threatened and Endangered Species

The Preble's mouse is a federally listed, threatened species that is found in the site's Buffer Zone, the 6,000-acre tract of open space surrounding the site's Industrial Area. The mouse's habitat along the site's streams is also protected. Any operation being conducted in or having the potential to impact the mouse's habitat must be evaluated. Through consultations with the USFWS, Kaiser-Hill



Preble's Meadow Jumping Mouse

obtained the required approvals for work that had to be done in such habitat so the projects could proceed. Some of the projects that were assisted included a power line removal project in the Buffer Zone, the WARP, the C-1 Pond Breach/Removal Project and replacing water measurement flumes in Walnut Creek.

Migratory Bird Issues

Site ecologists removed more than 120 bird nests from buildings slated for demolition through the use of the site's USFWS Depredation Permit in 2002. Timely removal of the bird nests allowed projects to move forward on schedule. Nest removal is regulated by the Migratory Bird Treaty Act that



Loggerhead Shrike

requires a special USFWS permit. Site ecologists began removing bird nests from buildings slated for D&D during 2003. The nests are cleared from the buildings during the winter season, when the nests are inactive, to prevent nesting on these buildings the following spring.

Ecological Monitoring

Kaiser-Hill continued to monitor the site's vegetation and wildlife in order to provide information needed for making informed management decisions regarding the site's ecological resources and for evaluating potential impacts.

Specific wildlife monitoring conducted in 2002 included Preble's mouse population monitoring and sitewide wildlife surveys. Live trapping was conducted over a two-week period during the first part of June.

Preble's mice were captured at three of the four trapping locations in Rock Creek.

Overall, 12 captures were made during the 2002 trapping season. The results confirm the presence of a stable population in the Rock Creek drainage.

Vegetation monitoring included weed mapping, monitoring to evaluate the impacts of herbicides on noxious weed species and non-target native plants, and an evaluation of the natural revegetation of several abandoned Buffer Zone roads.



Prunus Virginiana



The vegetation data will be used for planning future weed control efforts and evaluating revegetation techniques.

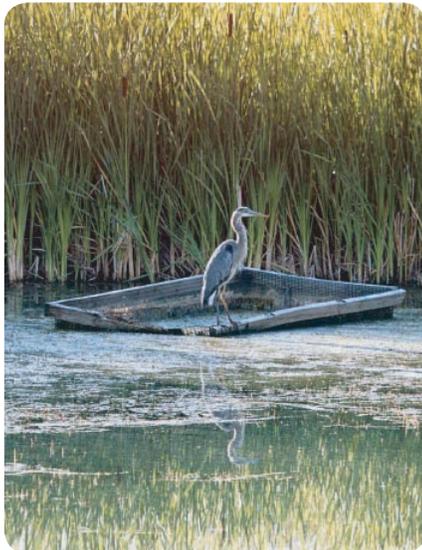
Vegetation monitoring also continued for Preble's mouse mitigation projects in Walnut and Woman Creeks, as well as several older revegetation projects in the Buffer Zone. In addition, a revegetation monitoring protocol was designed for use in the Industrial Area.



Antelope Spring

approximately 18 miles of Buffer Zone firebreak roads at appropriate times throughout the growing season to keep roadside weeds down. Mowing also controlled an annual rye infestation on the xeric tallgrass prairie in the north Buffer Zone.

Additional hand and spot controls were used to control several small infestations of weeds such as bouncing bet, Scotch thistle, and dame's rocket. Biological control insects and herbicides were also used with positive results.



Blue Heron

Noxious Weed Management

One of the greatest threats to the ecological resources at Rocky Flats are noxious weeds. These invasive species can replace native species and degrade the high-quality and increasingly rare plant communities found at the site.

Administrative/cultural controls used in 2002 included the use of certified weed-free straw for mulch and native plant species for final revegetation projects. Physical/mechanical controls included grading and mowing



Mule deer

WASTE MANAGEMENT



Waste Management is waste characterization, on-site management and consolidation of waste in addition to the transportation and off-site management of all site-generated wastes.

Six major types of wastes are generated at Rocky Flats: sanitary, hazardous, low-level (LL), low-level mixed (LLM), transuranic (TRU) and TRU-mixed (TRM).

Kaiser-Hill set all-time waste shipment records for both Rocky Flats and the DOE Complex in 2002 – once again surpassing all previous records for annual waste shipments. Wastes left the site in record amounts thanks to packaging innovations and other actions taken this year.

Rocky Flats' entire over-the-road waste shipments in 2002 were transported both safely and compliantly, resulting in no serious transportation incidents or releases to the environment.

Sanitary Waste

Much of the waste produced during site closure is sanitary waste – waste that requires no special management. An extensive waste screening process is in place at the site to ensure that the waste contains no hazardous or radioactive contamination. No negative incidents regarding the characterization or shipment of sanitary wastes occurred.

Sanitary waste from 62 separate demolition or remediation projects around the site was managed, including beryllium and asbestos contaminated wastes. Special contracts were put in place with landfills to safely manage this waste.

Rocky Flats shipped its 5,000th shipment of sanitary waste since the offsite program began in 1997. A total of 2,100 shipments of sanitary waste, or 17,000 tons, were generated and disposed of during 2002.

Hazardous Waste

The amount of hazardous waste being generated is diminishing as the site gets closer to closure. This year, Kaiser-Hill sent 856 containers of hazardous waste in 32 shipments, including 300 drums of waste chemicals, off site for treatment and/or disposal.

New offsite facilities were approved this year to support the management of both CERCLA and beryllium-contaminated wastes. Kaiser-Hill currently uses 10 off-site hazardous waste facilities to manage these wastes.

Indicators

- Shipped the last PCB-contaminated LL waste and PCB solids and two populations of Granular Activated Carbon (GAC)
- Processed and disposed of B374 nitrate brine and tank slurry wastes
- Developed and implemented a disposition pathway for offsite treatment of LL contaminated elemental mercury
- Continued treatment and disposal of pond sludge
- Began shipping standard waste boxes to WIPP
- Started automated headspace gas sampling in B440
- Recycled clean concrete for decommissioning activities
- Generated and disposed of 17,000 tons of sanitary waste
- Shipped 856 containers of hazardous waste for off-site disposal
- Shipped more than 31,000 cubic meters of LL waste to NTS for disposal
- Shipped 4,248 cubic meters of LLM waste off site for treatment or disposal
- Reduced the total amount of waste generated by 15 percent using innovative technologies
- Met all STP milestones



Glovebox SCO LL waste



LL waste crate



Loading SWBs into TRUPACT-II

Radioactive Waste Low-Level

For the fourth consecutive year, Kaiser-Hill shipped more LL waste to the Nevada Test Site (NTS) than any other DOE facility. This year Rocky Flats doubled the amount of LL waste sent in 2001, accounting for nearly half of all the waste sent by the entire DOE Weapons Complex. In 2002, a total of

635 shipments containing more than 31,818 cubic meters of waste were sent to NTS for disposal. This represents as much waste as was disposed of the previous three years combined.

Rocky Flats is the first waste generator to ship more than 1 million cubic feet of LL waste to the NTS for disposal. During 2002, 4,900 waste packages were shipped on 500 transport vehicles. Kaiser-Hill is anticipating another record year in 2003.

Low-Level Mixed

Kaiser-Hill also made over 200 LLM waste shipments to

treatment/disposal facilities throughout the country. Nearly 4,250 cubic meters of LLM were shipped to Utah, Tennessee, Texas and Florida for treatment or disposal. Waste forms included sludge, debris, soil, oversize equipment and waste chemicals.

TRU and TRU Mixed

For the third year in a row, Kaiser-Hill was the top shipper within the DOE complex of TRU waste to the Waste Isolation Pilot Plant (WIPP). A total of 497 shipments containing 3,446 cubic meters of waste were disposed of in 2002. Workers were able to triple last year's volume, due in part to the use of standard waste boxes (SWBs), which hold 30 percent more waste than a load of 55-gallon drums.

Innovative Technologies

Because of innovative uses of technologies like polyurea spray coating, glovebox foaming, SWBs and disposing of waste as surface contaminated objects (SCO), the total amount of waste generated by the closure process itself has been reduced. Rocky Flats cleanup is now projected to create 12,500 cubic meters of TRU waste, 175,000 cubic meters of LL waste and 44,500 cubic meters of LLM waste. This is approximately 15 percent less waste than originally projected.

Site Treatment Plan (STP)

Mixed wastes with no obvious dis-



posal pathway are managed under the STP. Kaiser-Hill made progress toward identifying treatment and disposition alternatives for these “orphan” wastes.

This year’s accomplishments included the off-site shipment of all of the identified mixed Granulated Activated Carbon (GAC); the required PCB liquids and organic liquids; the PCB solids-debris matrix; the organic solids-debris matrix; the sludge from Tank 231B and heavy metals, including elemental mercury.

Several aggressive milestones are included for 2003 and work has already begun to meet these commitments, including roaster oxide and incinerator ash sampling and shipping for disposal in 2003.

Pollution Prevention (P2)

Kaiser-Hill remains committed to continuing a strong pollution prevention and affirmative procurement program. This year waste reduction and recycling efforts avoided more than 15,900 cubic meters of waste and saved more than \$84 million.

Recycling efforts contributed significantly to reducing the volume of waste. More than 4,000 metric tons of concrete from building rubble was stockpiled for future use as backfill, and 366 metric tons of scrap metal was recycled off site. Other recycling numbers are equally impressive. In 2002, Rocky Flats recycled 232 metric tons of paper, 82 metric tons of cardboard, 65 metric

tons of pallets and more than 30 metric tons of tires.

Kaiser-Hill purchased more than \$920,000 in materials with recycled content under the site affirmative procurement program, representing a 98 percent affirmative procurement rate. This is the fifth consecutive year that the rate was higher than 95 percent.



Pond sludge tank treatment



Polyurea spray coating



LLM waste shipment



REGULATORY COMPLIANCE

Kaiser-Hill maintains strong environmental management within each of the projects for project-specific compliance implementation. This effort is guided through strong centralized integration, policy planning and implementation within the Environmental Systems and Stewardship group.

Indicators

- Met requirements and maintained environmental regulatory compliance
- Finalized permits (e.g. RCRA Part B Renewal Application, CAA Title V) to streamline closure
- Performed more than 525 environmental self-assessments with no significant findings
- Completed 53 agency inspections with no negative agency actions
- Closed out two Consent Orders and met all other requirements
- Submitted all agency reports on time with no additional agency follow-up required

Kaiser-Hill works on a number of different levels to fulfill all of the environmental regulatory requirements and applicable agreements. The framework is structured around both routine environmental operational requirements and more innovative agreements specific to the closure mission of the site. The compliance-related issues and progress made on each this year are discussed below.

RFCA-related Activities

The primary regulatory document guiding closure of the site is the RFCA. During the year, K-H provided significant technical support to the RFCA Parties (DOE, EPA and CDPHE) to facilitate review of the Radionuclide Soil Action Levels and a general shift to a more risk-based approach to the environmental remediation of the site. This effort, including substantial public participation, resulted in a set of proposed modifications that were published for formal public comment in November 2002.

In general, the modifications would result in removing significantly more soil contaminants at and close to the surface, where exposure and associated risk are greatest. Also, the changes would provide a more specific approach to the remediation of underground Original Process Waste Lines (OPWL) - some of which are reported or are suspected to have leaked in the past.

NEPA-related Activities

As part of the National Environmental Policy Act (NEPA) process, Kaiser-Hill reviews various operational and closure activities to assess their potential environmental consequences. The review process focuses on compliance with NEPA regulations by considering, as appropriate:

- Potential environmental impacts of proposed actions
- Identification of appropriate steps to mitigate potential environmental impacts
- Assessment of the potential for and magnitude of cumulative impacts
- Documentation of steps and analyses undertaken to accomplish NEPA compliance

In 2002, 56 formal project reviews were completed, resulting in three reviews that were submitted to DOE for further review and approval. Other reviews determined that the work and potential environmental impacts were covered by



one of the 17 Site Standing Categorical Exclusions (CXs) or other existing NEPA documents. One new Site Standing CX was completed and approved by DOE this year for the Siting, Construction or Modification and Operation of Support Buildings and Support Structures.

While no NEPA environmental assessments or environmental impact statements were prepared during 2002, existing site CERCLA documents containing NEPA-equivalent (NEPA values) sections were extensively used during reviews of proposed activities. In 2002, three new NEPA values sections were prepared for CERCLA decision documents; another four existing CERCLA decision documents were reviewed and revised.

Compliance Activities

Routine compliance activities take place throughout the Kaiser-Hill organization and its subcontractors. Efforts are coordinated directly with DOE as joint permittees under some environmental operating requirements, while in other areas Kaiser-Hill is sole permittee.

This year, many environmental compliance assessments were performed, both internally and by governing regulatory agencies. More than 525 environmental self-assessments were performed with no significant issue being identified. The CDPHE performed 19 RCRA inspections in 2002, none of which resulted

in any agency actions. In addition, they performed 19 air opacity inspections, 10 air compliance inspections and 5 CERCLA-related visits – again with no negative findings being identified.

Following a chemical cylinders venting incident that occurred in October 2001, CDPHE issued a Notice of Violation, a fine for \$5,000 and a Supplemental Environmental Plan (SEP).

Performed more than 525 environmental self-assessments with no significant issues identified

The fine was promptly paid and the associated Consent Order closed out. At the beginning of the year, the site operated under four other Consent Orders. During 2002, the Chemical Management Consent Order was closed. The Hazardous Waste Tanks and Idle Equipment Consent Order remains open for a single piece of idle equipment and two RCRA regulated tanks. The Mixed Residue order remains open for ancillary equipment, and the Site Treatment Plan will remain in place until 2005. All Consent Order requirements were met.

As the result of regulatory changes to the reporting threshold for lead, the site submitted a SARA Title III

Form R report this year. No other substances exceeded the threshold requirements.

Although the facility experienced some minor spills, only one spill exceeded the reportable quantity requiring implementation of Site Contingency Plan. This spill had no negative impact on the environment and required agency notifications were made.

Regulatory Permits

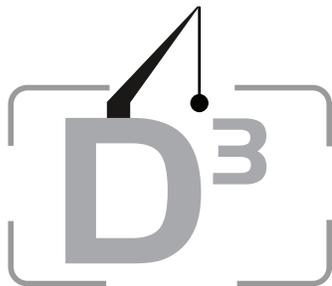
The site is currently operating under three major environmental permits and several smaller ecological permits. The following summarizes the permitting activities in 2002.

- The RCRA Part B permit renewal application was submitted late last year. Kaiser-Hill and DOE are in final negotiations with CDPHE regarding two of the primary sections of the permit - Container Storage Units and Procedures to Prevent Hazards.
- The site's Clean Air Act Title V Operating permit completed the public comment phase in May 2002 and the final permit was issued in July. It is the only operating permit in Colorado that governs radionuclides. No compliance issues were identified in 2002.
- The NPDES permit, issued in 2001, remains in place and no compliance issues were identified in 2002.



ENVIRONMENTAL GOALS

Kaiser-Hill has set aggressive environmental goals for 2003. Based on past performance and a tight schedule forward, these goals must be met to ensure a timely and compliant closure.



Decontamination, Decommissioning and Demolition

- Complete Raschig ring removal in Building 371
- Complete PuSPS operations in Building 371
- Close the remaining Protected Area
- Package and ship 6,000 cubic meters of waste and decommissioned equipment from Building 707
- Begin decommissioning Building 778
- Complete stripout and decontamination of remaining tanks in buildings 771 and 774
- Obtain regulatory approval for the Building 776 demolition plan
- Complete buried equipment investigation and removal in Building 776
- Complete 881 complex D&D and begin Building 991 D&D
- Demolish Building 865
- Complete tank D&D on the 750 Pad
- Begin D&D of Building 444
- Complete D&D of buildings 441, 443, 112, 334 and 551

Environmental Restoration

- Remediate 25 ER sites or obtain designation as no further action (NFA)
- Obtain regulatory approval of Original Landfill and Present Landfill closure plans
- Complete characterizing 21 IHSS and PACs
- Complete 903 Pad remediation
- Complete a hot demonstration of soil vacuum technology
- Initiate characterizing the OPWL



goals



Environmental Management

- Meet and maintain environmental regulatory compliance
- Successfully implement the expected new Integrated End State
- Complete contaminant transport modeling for uranium and volatile organic compounds
- No spills or releases that pose a potential risk to human health or the environment
- Maintain and adjust environmental monitoring systems
- Evaluate and optimize air monitoring resource commitments
- Streamline and automate air monitoring data management
- Track project actions and ensure that environmental reviews are complete and documented
- Develop final revegetation guidelines

Waste Management

- Ensure all waste sent off-site meets receiving site requirements
- Compliantly downgrade as much TRU waste to LLW waste as possible from decommissioning activities using decontamination technologies
- Complete Special Nuclear Materials shipments from B371
- Complete all STP milestones in a timely manner
- Complete treatment and shipment of pond sludge
- Begin classified TRU and LL waste shipments
- Begin LL legacy waste repackaging project