U.S. DEPARTMENT OF ENERGY

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

DOE/RW-0560

# OCRWM ANNUAL REPORT

## TO CONGRESS

FISCAL YEAR 2002

SEPTEMBER 2003

# *Contents*

# *Contents (continued)*

# *Executive Summary*

## Site Designation

During Fiscal Year (FY) 2002, the Office of Civilian Radioactive Waste Management (OCRWM or the Program) completed a key programmatic milestone when, on February 14, 2002, the Secretary of Energy recommended to the President that the Yucca Mountain site in Nevada be developed as a geologic repository for spent nuclear fuel (SNF) and high-level radioactive waste (HLW). The Secretary's recommendation was based on more than two decades of scientific investigations, field tests, and laboratory analyses by OCRWM. On February 15, 2002, the President announced that he considered Yucca Mountain qualified for a license application to the Nuclear Regulatory Commission (NRC) and transmitted his recommendation to Congress. The Governor of Nevada submitted a Notice of Disapproval to Congress on April 8, 2002, as allowed by the Nuclear Waste Policy Act of 1982 (NWPA). Both houses of Congress voted to pass a joint resolution approving the site, effectively overriding the Governor's disapproval. On July 23, 2002, the site designation took effect when the President signed the Repository Siting resolution (Public Law No: 107-200), approving Yucca Mountain for development of a repository.


**Aerial view of Yucca Mountain**

Site designation was a pivotal step in OCRWM's efforts to implement the Nation's policy for radioactive waste disposal, a policy that is important to the country's national, energy, and homeland security; non-proliferation objectives; and environmental protection. The site recommendation and supporting documents are available at http://www.ocrwm.doe.gov:80/ymp/sr/official/index.htm.

OCRWM is currently in the process of preparing a license application to NRC for the repository construction authorization.

## Meeting Performance Targets

OCRWM was responsible for meeting five performance targets in the Department of Energy's (DOE) Annual Performance Plan for FY 2002. All of these targets are related to preparation of the site recommendation report, developing a transportation system, and moving the Program toward licensing, constructing, and operating a repository at Yucca Mountain.

***Performance Target #1: Submit a Site Recommendation Report to the President***

On February 14, 2002, Secretary Abraham recommended to the President that the Yucca Mountain site in Nevada be developed as a geologic repository for SNF and HLW. On February 15, 2002, the President announced that he considered Yucca Mountain qualified for a license application to NRC and transmitted his recommendation to Congress. The Governor of Nevada submitted a Notice of Disapproval to Congress on April 8, 2002; both houses of Congress voted to override the Governor's disapproval and passed a joint resolution approving the site. On July 23, 2002, the site designation took effect when the President signed the Repository Siting resolution.

***Performance Target #2: Submit a final environmental impact statement to the President, as required by the Nuclear Waste Policy Act***

The *Final Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada* was transmitted to the President by the Secretary of Energy on February 14, 2002, as part of the documentation supporting the Secretary of Energy's Yucca Mountain site recommendation.

***Performance Target #3: Issue a draft request for proposals for waste acceptance and transportation services***

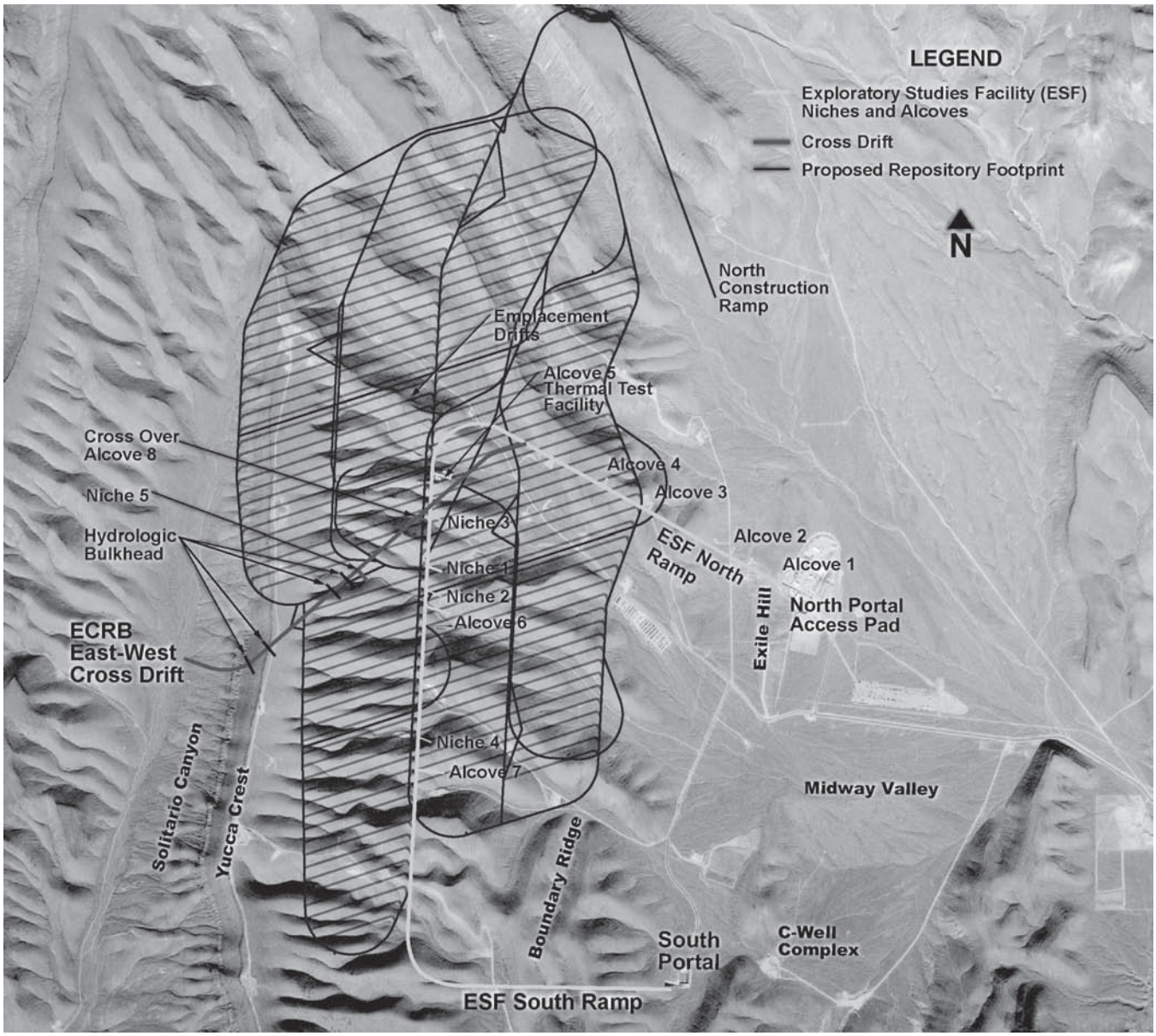
OCRWM reassessed its strategy for acquiring the transportation fleet, equipment, and services needed to implement its national transportation program. The risks, including technical and schedule uncertainties, which had presented problems in pursuing the acquisition strategy laid out in a 1998 request for proposals (RFP), were seen as likely to continue. Consequently, OCRWM developed an alternative acquisition strategy to mitigate the impact of these uncertainties and to address issues that have evolved since then. Rather than issuing a draft RFP, the strategy involved issuing a new draft statement of work (SOW) for consideration by potential vendors that addresses the ongoing business, schedule, and operational risks associated with the transportation of SNF and HLW. The draft SOW was issued on September 30, 2002, and OCRWM is reviewing the comments received as it continues developing its transportation acquisition approach.

***Performance Target #4: Begin development of updated Total System Life Cycle Cost and Fee Adequacy reports***

In February 2002, OCRWM released a letter report that supplemented the May 2001 Total System Life Cycle Cost (TSLCC) analysis and fee adequacy reports. In addition, a detailed response to the independent cost estimate review of OCRWM's 2001 TSLCC was issued. Several studies and reports that will be used in developing the next TSLCC analysis and fee adequacy reports were also completed. Work began on updating the logistics models and refining a uniform cost database.

***Performance Target #5: Issue Nuclear Waste Policy Act Section 180(c) Notice of Revised Proposed Policy and Procedures for public comment***

Section 180(c) of the NWPA authorizes technical and financial assistance to states for training of appropriate units of local government and Native American Tribes to deal with emergency response situations and safe, routine transportation of SNF and HLW. The Revised Proposed Policy and Procedures for Implementation of Section 180(c) of the NWPA of 1982, as amended, was drafted. OCRWM is now reviewing emergency response training being provided elsewhere within DOE and other agencies to eliminate duplication of training and to take advantage of lessons learned. These efforts should maximize use of available funds. NRC and the Department of Transportation are considering revising their regulations in response to the events of September 11, 2001; OCRWM is monitoring their activities and will implement any regulatory changes resulting from this review.



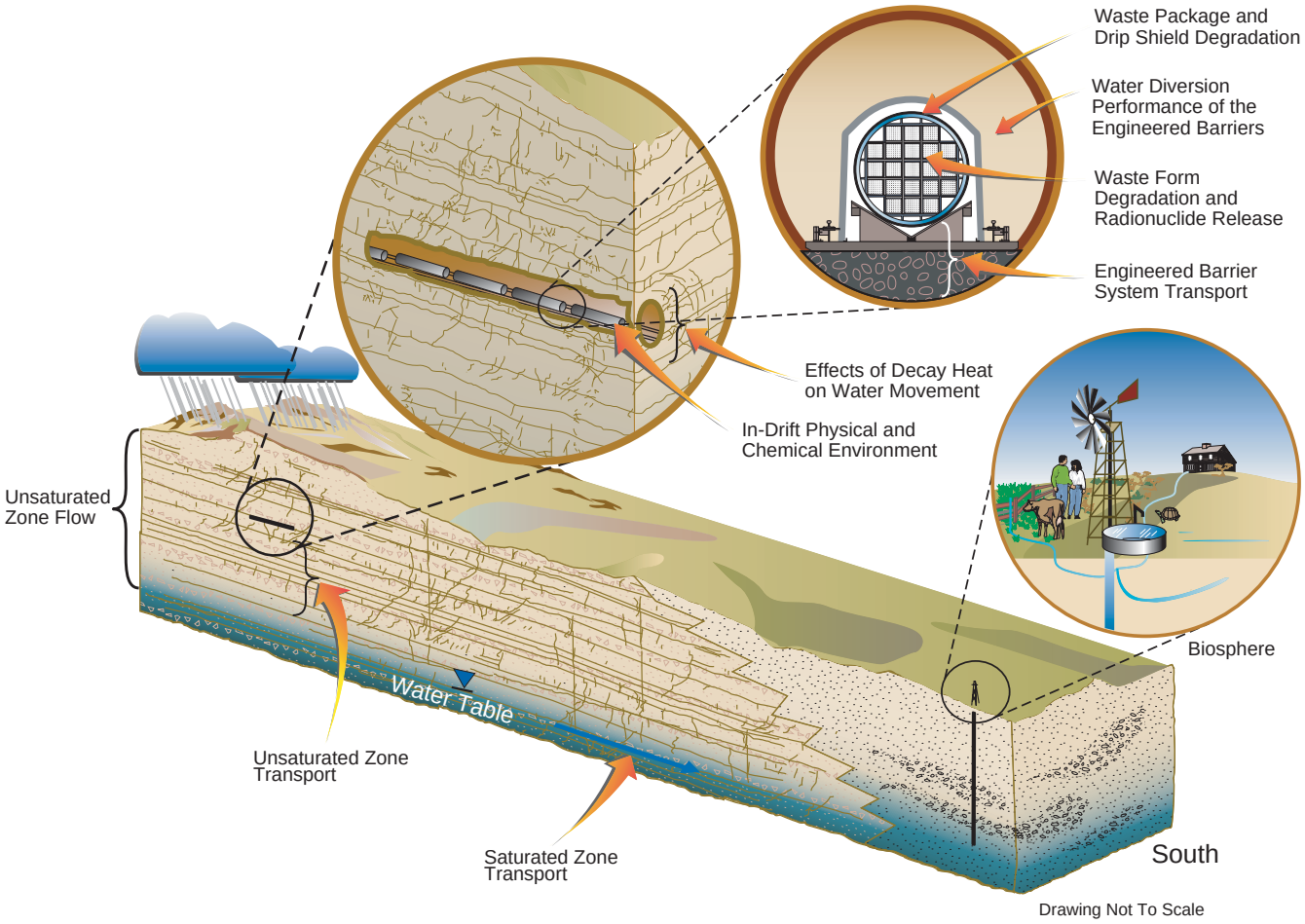

**Yucca Mountain Exploratory Studies Facility, alcoves, and subsurface repository design concept with expansion area**

## Other Significant Activities

Throughout FY 2002, OCRWM continued conducting the scientific and engineering analyses that further refine our understanding of how a repository at Yucca Mountain will perform far into the future. Scientists studied the natural features of the site, water and chemical movement through the rock, and the effects of heat and water on the physical and chemical properties of the rock. These analyses will contribute valuable data to the license application and the total system performance assessment.

We continued to refine our understanding of the types and quantities of waste requiring disposal. We used Energy Information Administration data to update our discharge projections for commercial SNF. Similarly, we continued to integrate acceptance criteria for DOE-owned SNF and HLW into waste acceptance requirements and factor shipment of DOE-owned materials into our transportation plans.

In support of Departmental efforts to accelerate environmental cleanup of sites formerly associated with defense weapons production or research, we continued to work with the Department's Office of Environmental Management; the National Nuclear Security Administration's (NNSA) Naval Nuclear Propulsion Program, which manages naval SNF; and NNSA's Office of Fissile Materials Disposition to refine acceptance criteria and acceptance schedules for defense wastes. Our work with these organizations led to a better understanding of the various waste forms and the cost effectiveness of alternative approaches to treatment before disposal. Accelerated defense site cleanup will substantially reduce long-term maintenance and surveillance costs.




**Schematic illustration of the processes modeled for total system performance assessment**

The five key initiatives described in the President's Management Agenda of August 2001 were used to guide our planning for the Program's transition from primarily scientific activities to licensing, construction, and operations. The initiatives focus on improving financial performance, linking performance to budget, strategically managing human capital, using commercial firms for work that is not inherently Governmental, and expanding the Program's use of electronic technology for management and public communication.

During FY 2002, we issued a Management Improvement Initiative and completed a draft Capital Asset Plan. The former is based on an intensive review of the Program's management structure and processes to identify specific areas for improvement. The recommendations in the report included actions to support the further development of a "nuclear safety culture" with clearly defined roles, responsibilities, authorities, and accountability across the Program. The draft Capital Asset Plan, required by the Office of Management and Budget (OMB) to accompany the Department's FY 2004 budget request, supports budget decision making by ensuring that major capital investments are well thought through and adequately funded. Development of the plan enables OCRWM to benefit from OMB's experience in overseeing the implementation of large construction projects in other agencies.

## Fiscal Year 2002 in Context

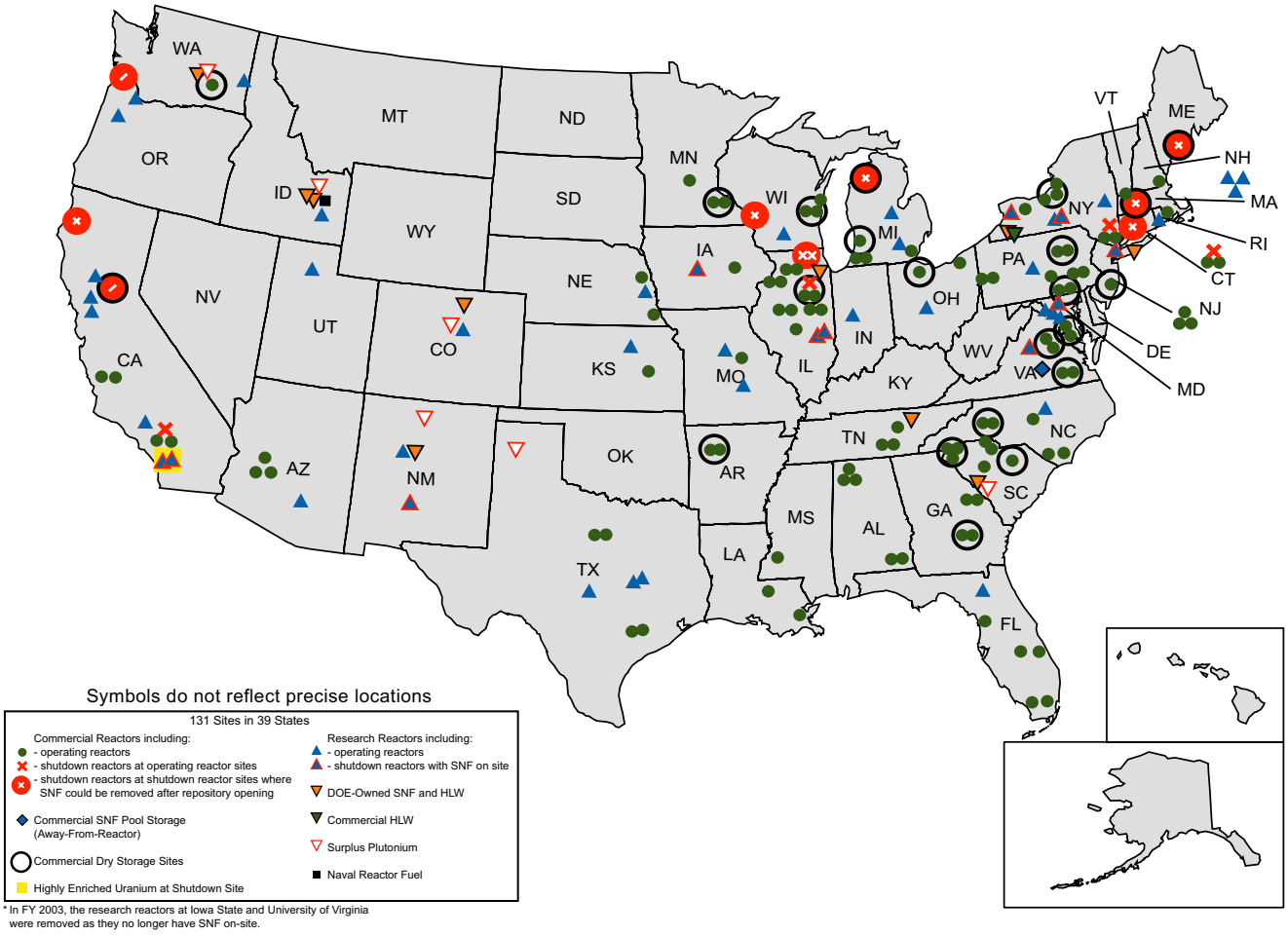
During FY 2002, OCRWM met a pivotal programmatic milestone by submitting a Yucca Mountain site recommendation and witnessed Presidential and congressional approval of the site for development as the Nation's first repository for SNF and HLW. Site designation marks a major turning point for the Program. The site characterization effort has been successful, and the Program's focus has shifted toward licensing, constructing, and operating a repository at Yucca Mountain and developing the necessary transportation infrastructure. OCRWM believes that waste acceptance in 2010 remains an ambitious, but achievable, target. Accomplishing this goal will require careful planning and phasing of Program activities, timely decision making, and adequate funding.

**This page intentionally left blank.**

# *Chapter One*

# *Introduction*

Decisions made many decades ago to pursue a nuclear weapons program and to develop nuclear energy for civilian use committed the Nation to perpetual custody of a large and growing inventory of radioactive materials, as described in Appendix C. The materials are now stored at 131 surface sites located in 39 States. Spent nuclear fuel (SNF) from commercial power plants constitutes the largest part of the inventory. The balance consists of nuclear materials managed by the Department of Energy (DOE), which resulted primarily from defense activities. These materials include SNF from naval propulsion systems, weapons production, domestic research reactors, and foreign research reactors; high-level radioactive waste (HLW) from reprocessing SNF; and surplus weapons-usable plutonium.




**Construction of the Yucca Mountain repository would enable spent nuclear fuel and high-level radioactive waste to be consolidated at one remote location**

**(A) Twenty percent of American homes use nuclear power,**
**(B) Defense nuclear research sites can be restored for other uses,**
**(C) Forty percent of U.S. Navy's principal combat vessels are nuclear powered,**
**(D) Nuclear power can drastically reduce air pollution,**
**(E) Safe disposal of radioactive waste**

Before reaching a consensus in the Nuclear Waste Policy Act of 1982 (NWPA), the United States studied methods for the safe storage and disposal of radioactive waste for more than 30 years. Many organizations and Government agencies participated in these studies. After analyzing a range of options, disposal in a geologic repository emerged as the preferred long-term environmental solution. The NWPA and related statutes, referenced in Appendix D, established the framework for addressing the issues of radioactive waste disposal and designated the roles and responsibilities of the Federal Government and the owners and generators of the waste.

The NWPA created the Office of Civilian Radioactive Waste Management (OCRWM) to develop a permanent, safe geologic repository for the disposal of SNF and HLW. The NWPA directed the Nuclear Regulatory Commission (NRC) to authorize, through their licensing process, construction and operation of the repository. Initially, OCRWM was concerned primarily with disposal of commercial SNF. In 1985, President Reagan determined that defense-related HLW would also be disposed of in the repository. Since then, the end of the cold war and the emphasis on cleanup of the weapons complex have increased the importance of disposal of DOE-managed nuclear materials. The Program Profile in Appendix B provides additional information on the Civilian Radioactive Waste Management Program.

## National Policy on Nuclear Waste

Geologic disposal is the ultimate goal of the Nation's high-level radioactive waste management policy. Developing this disposal capability supports national policies for national security, environmental protection, and the Nation's energy supply.

- The United States is committed to providing for disposal of commercial SNF in geologic repositories. Under this policy, fuel that originated in the United States, but was used in foreign research reactors, will be disposed of in a U.S. repository. The policy supports our Nation's advocacy of limiting international trade in weapons-usable nuclear materials. Our commitment to geologic disposal strengthens our policy of nuclear nonproliferation and provides a model for the efforts of other nations. The discussion of international cooperation in Chapter 4 underscores the importance of the U.S. contribution to resolution of this global problem.

- The Department of the Navy is committed to ensuring uninterrupted operation of its nuclear-powered fleet and the management of its SNF to facilitate safe disposal. DOE has the responsibility for storage and ultimate disposition of this naval SNF.

- A geologic repository is critical to the accelerated cleanup of numerous DOE sites associated with atomic energy defense activities. In addition to the environmental benefits, cleanup of these sites will reduce the mortgage costs (maintenance and oversight at current DOE facilities) that are the legacy of the Cold War.

- Nuclear energy is one of the few plentiful sources of power available to us now that produces no controlled air pollutants, such as sulfur and particulates, or greenhouse gas emissions. Therefore, it can help keep our air clean, limit generation of ground-level ozone, and reduce acid rain. A repository at Yucca Mountain is indispensable to the maintenance and potential growth of this environmentally efficient source of energy.

- Commercial nuclear power currently supplies approximately 20 percent of the Nation's electricity, and solving the waste problem to ensure this supply capacity is a key recommendation of the National Energy Policy report, released in May 2001. Operation of nuclear reactors is contingent on NRC's licensing of the reactors. Periodically, as part of its waste confidence rulemaking, NRC assesses prospects for timely disposal of commercial SNF. NRC's waste confidence rulemaking has determined that 1) there are no significant environmental impacts associated with spent fuel storage at reactors for at least 30 years beyond the licensed life for operation (which may include the term of a revised or renewed license); and 2) there is reasonable assurance that a mined geologic repository will be available within the first quarter of the twenty-first century. While NRC believes that on-site storage of HLW and SNF is safe and environmentally acceptable for up to 100 years, it also supports timely disposal in a geologic repository and does not intend to support spent fuel storage at reactor sites indefinitely. Without progress toward a repository for permanent disposal, continued reactor operations could be jeopardized.

Geologic disposal is a cornerstone of all these policies. In working to develop a geologic disposal capability, OCRWM remains committed to objective science as the basis for any decision; to full consideration of the views of the residents of Nevada; and to fulfillment of the requirements of the NWPA with regard to the collection, documentation, and public availability of information.

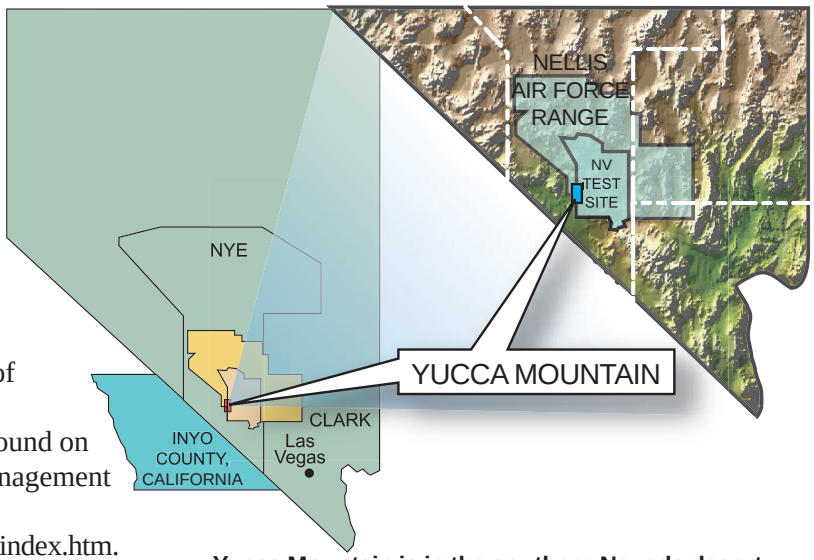
**This page intentionally left blank.**

# Chapter Two

# Yucca Mountain Site Characterization Project

## Background

In Fiscal Year (FY) 2002, work at the Yucca Mountain Site Characterization Project (Project) supported the Secretary's site recommendation to the President, which Congress approved, and the subsequent designation of Yucca Mountain as the site for the Nation's first geologic repository for spent nuclear fuel (SNF) and high-level radioactive waste (HLW). Site recommendation represents the culmination of more than 20 years of scientific study. Site recommendation-related documents can be found on the Office of Civilian Radioactive Waste Management (OCRWM or Program) website: http://www.ocrwm.doe.gov:80/ymp/sr/official/index.htm.



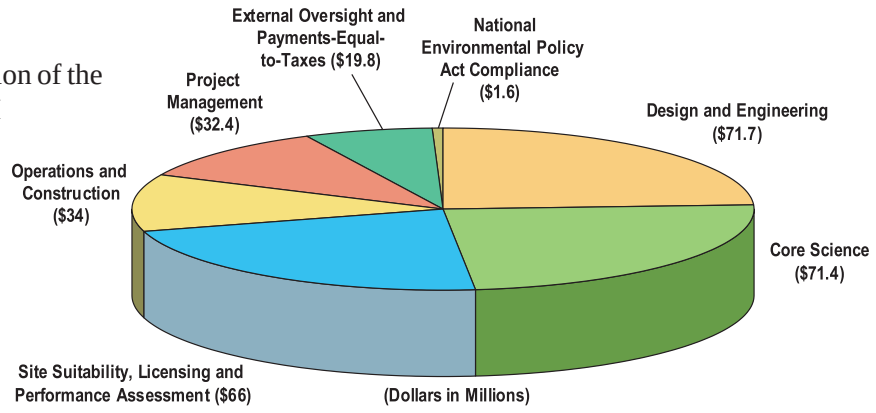

**Yucca Mountain is in the southern Nevada desert, about 100 miles from Las Vegas**

Early in FY 2002, OCRWM began transitioning resources from site characterization and site recommendation to the next major programmatic task – development and submission of a license application to the Nuclear Regulatory Commission (NRC) for a repository construction authorization.

### *Funding*

To accomplish its goal of achieving site recommendation and beginning preparation of the license application in FY 2002, OCRWM allocated $296.9 million of its $375 million appropriation to the Yucca Mountain Site Characterization Project. The distribution was $71.7 million to design and engineering; $71.4 million to core science; $66.0 million to site suitability, licensing, and performance assessment; $34.0 million to operations and construction; $32.4 million to project management; $19.8 million to external oversight and payments-equal-to-taxes; and $1.6 million to National Environmental Policy Act compliance.

During FY 2002, OCRWM reviewed options to reduce its funding needs between 2004 and 2010, while still preserving the Department of Energy's (DOE or



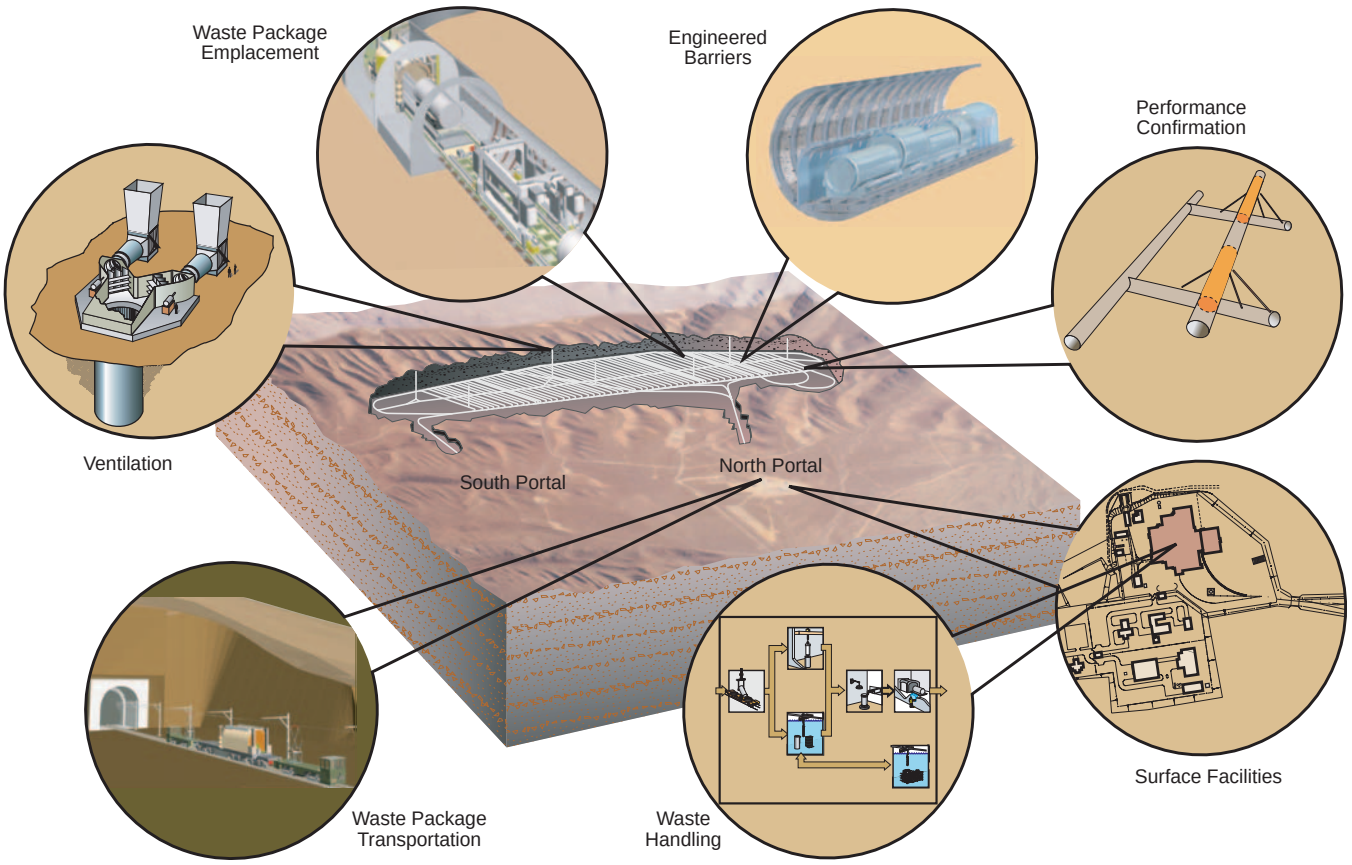

**Fiscal Year 2002 Yucca Mountain Site Characterization Project Budget**

Department) goal of commencing waste acceptance in 2010. OCRWM's original cost estimate for the licensing and construction phase between 2004 and 2010 was approximately $11 billion. The Program developed, evaluated, and adopted a phased development approach for constructing a repository that would reduce budget outlays to $8.6 billion in this period, deferring some costs.

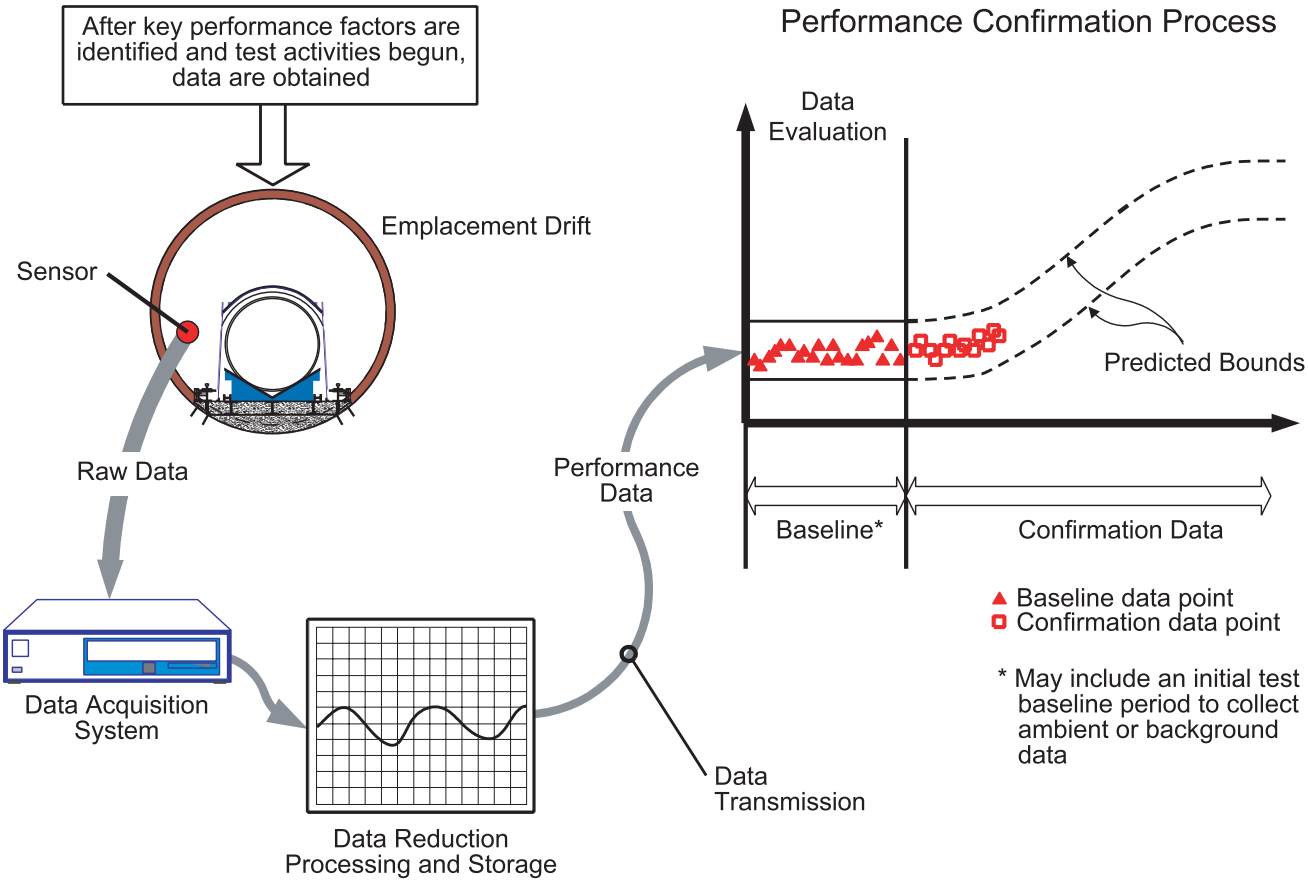
## Major Fiscal Year 2002 Activities and Results

The Project's most important accomplishment during FY 2002 was completion of the documentation supporting the Secretary's recommendation of the Yucca Mountain site. Some of the documents that accompanied the Secretary's recommendation were the: *Yucca Mountain Science and Engineering Report, Revision 1*; *Yucca Mountain Site Suitability Evaluation*; *Final Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-level Radioactive Waste at Yucca Mountain, Nye County, Nevada*; and *Total System Life Cycle Cost Estimate*. Release of these documents and the Secretary's recommendation put the capstone on 20 years of scientific and engineering work supporting the decision on whether the Yucca Mountain site is suitable for a geologic repository.

Throughout FY 2002, OCRWM conducted scientific and design activities, some of which began in earlier years and a few of which will continue until repository closure. OCRWM's scientific and engineering studies formed the foundation for the site recommendation and NRC's November 2001 statement on the sufficiency of the technical basis for the site recommendation. In FY 2002, new information generated through these activities was evaluated for its potential effect on repository performance. This information triggered ongoing refinements to ensure maximum repository safety and effectiveness.




**The subsurface layout of the proposed repository reflects more than 20 years of scientific study**




**Performance confirmation process, from testing to data evaluation**

The Program's scientific and design studies also directly support the development of the repository's pre-closure safety analysis and post-closure total system performance assessment, which are integral to OCRWM's license application to NRC.

## Design and Engineering

During FY 2002, we completed the site recommendation repository design, developed a set of baseline drawings representing that design, and performed a formal review of the design. We conducted alternative design studies and incorporated several new features into the repository's design concept. As a result of these studies, OCRWM transitioned to a phased development approach to design and construction of repository surface facilities and underground waste emplacement panels.

The phased development approach splits repository development into three phases. To accommodate receipt of the first 400 metric tons of SNF or HLW, basic facilities, such as a dry receipt and handling facility, a disposal container preparation building, and one subsurface waste emplacement panel, would be completed in 2010. Additional surface and subsurface facilities would be completed in 2011, including a second dry handling facility, aging pads, a remediation building, and a second waste emplacement panel. By 2014, the remaining surface facilities and sufficient emplacement panels to support the planned waste receipt rate of 3,000 metric tons of heavy metal per year would be completed. The advantage of this approach is that capital construction costs would be distributed over an extended period of time, and the facilities would be constructed as they are needed.

OCRWM also began integrating performance confirmation testing, which had been a separate activity, into the design for the first emplacement drift, in order

**Nye County's Early Warning Drilling Program provides important hydrologic and stratigraphic information**

to refine the design of subsequent drifts. In addition, OCRWM revised its system description documents, which provide the framework for documenting the design basis and design descriptions for all repository systems. OCRWM also performed a design readiness review to confirm the status of processes and procedures relevant to the start of preliminary design.

## Core Science

During FY 2002, OCRWM continued to conduct investigations at test facilities at the Yucca Mountain site, in its vicinity, and at several off-site laboratories. Six significant scientific studies were conducted in FY 2002:

- **Nye County Drilling Program** – We continued to integrate our efforts with those of the Nye County, Nevada, Early Warning Drilling Program, which is funded by OCRWM. During FY 2002, we used water level data and hydrostratigraphic information from new Nye County wells to refine both our conceptual model of the saturated zone and our site-scale model. Further information on the Early Warning Drilling Program can be found on Nye County's web site: www.nyecounty.com/ewdpmain.htm.

- **Saturated zone radionuclide transport experiments** – In FY 2002, we continued multi-well hydraulic testing and tracer testing in order to better understand water flow and radionuclide transport through the aquifer under Yucca Mountain. In a tracer test, a central well is pumped while chemical tracers are put into nearby wells. By measuring the time it takes the tracers to reach the pumped well, scientists can estimate more complex transport parameters that cannot be obtained from single-well testing. The multi-well tracer tests are also being performed to measure more complex hydrologic parameters and to validate already completed single-well test results. However, completion of the multi-well test is being delayed pending the resolution of the Department's appeal of the State's denial of our application for permanent water rights. The water rights issue is discussed in greater detail later in this chapter.

- **Studies of radionuclide transport** – In FY 2002, we gathered more data from tests in which tracers were injected into stone blocks from the Busted Butte testing site in the vicinity

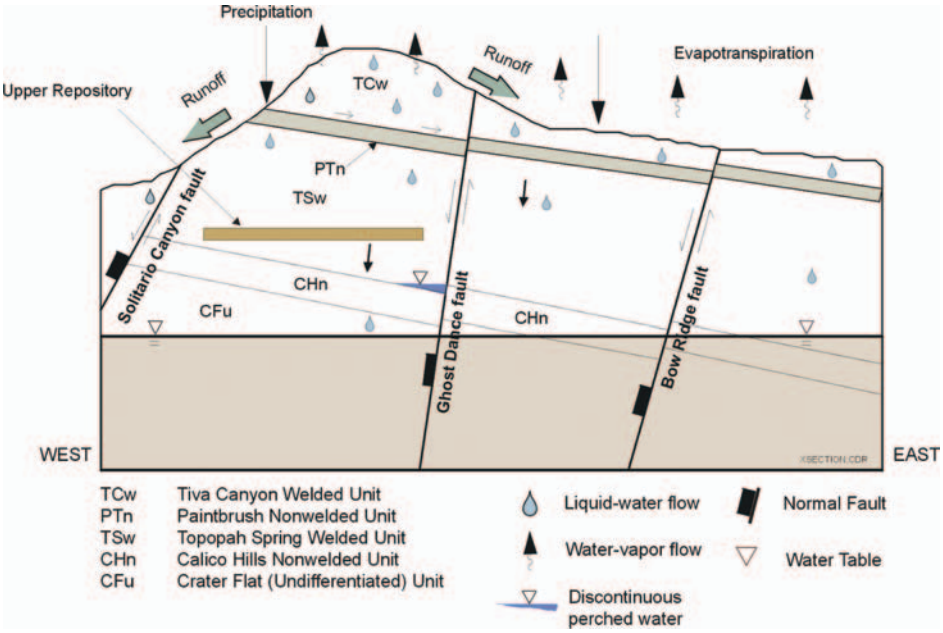
**View of Yucca Mountain crest to Busted Butte (South)**

of Yucca Mountain and concluded that the data appear consistent with the radionuclide transport observations made during previous laboratory experiments and with the site-scale measurements taken in the C-Wells and Busted Butte tests. The injection test data gathered in FY 2002 confirmed earlier indications that the Yucca Mountain site offers desirable natural geologic barriers to transport. Atomic Energy of Canada, Limited, performed the tracer tests.

- **Groundwater modeling** – Groundwater modeling is an important component of estimating the level of potential radionuclide transport out of the repository. In FY 2002, scientists completed the final report for the steady-state pre-development Death Valley Regional Flow System groundwater model. Our steady-state model evaluates the impact on the water table and groundwater flow of potential long-term changes in climate, such as a 10-degree increase in average annual temperature or an annual rainfall increase of 10 centimeters. The current regional flow model will be integrated with the site-scale saturated zone flow and radionuclide transport model. A transient model is under development, with the report scheduled to be completed in FY 2004. The transient model simulates and evaluates the effects of short-term events, such as localized or extremely heavy rainfall, on the water table and saturated zone flow. The transient model is being built in cooperation with ten other Federal, State, and county agencies.

- **Seismicity studies** – In FY 2002, scientists at the University of Nevada, Reno, completed a two-year study of precariously balanced rocks in the Yucca Mountain area, to assess long-term seismic hazards in the event of a nearby earthquake. The study determined that ground acceleration at the precariously balanced rocks has not exceeded 0.3 g (g is the acceleration due to gravity) for several tens of thousands of years. The study results are consistent with earlier paleoseismic studies, confirming our initial risk analysis, and increasing the level of scientific understanding of technical aspects for the repository.

- **Igneous studies** – In FY 2002, Project scientists completed their analysis of airborne surveys of magnetic field data which were taken above the Yucca Mountain region in 1999. Magnetic field surveys help reveal underground geologic structures. This specific analysis focused on whether magnetic anomalies found near Yucca Mountain could be caused by buried volcanic centers and how significantly such centers might increase the known igneous risks. In the spring of 2002, the Project established the Igneous Consequences Peer Review Panel, consisting of six experts in volcanology and related fields. The experts, in their final report released in February 2003, concluded that the conceptual model of a rising




**Conceptual model of groundwater flow map**

dike intersecting several drifts into which magma flows is both adequate and reasonable. The panel also concluded that many of the model parameters were conservative which would result in an overestimate of the risk associated with volcanic activity.

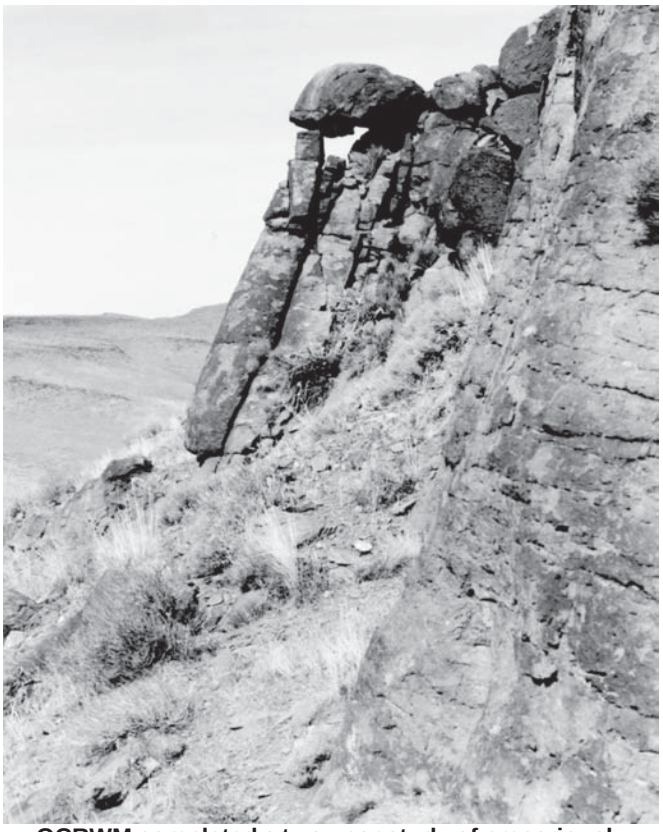
In addition to the studies described above, many monitoring, data collection, analysis, and modeling activities continued in FY 2002. Areas still under investigation include describing how the chemical composition of water near the emplacement zone may change as minerals are precipitated and redissolved over time due to heating and cooling, and the search for evidence of any fast paths that might facilitate water percolation to the repository horizon.

## Site Suitability, Licensing, and Performance Assessment

Key licensing and site suitability activities during FY 2002 included development of the site recommendation documentation, as previously discussed, finalization of the regulatory structure for the Program, and ongoing interactions with the NRC and Nuclear Waste Technical Review Board (NWTRB). Meetings held in FY 2002 with the NRC and NWTRB are listed in Appendix E. Publications issued by the NWTRB in FY 2002 are listed in Appendix F.

### *The Regulatory Framework for Repository Development*

The repository regulatory framework was mandated by the NWPA, which directed the Environmental Protection Agency (EPA) to establish generic radiological protection standards for repositories, NRC to publish licensing requirements, and DOE to issue guidelines for determining site suitability. The 1987 NWPA amendments limited characterization activities to the Yucca Mountain site, and the Energy Policy Act of 1992 directed EPA to develop site-specific radiation standards for Yucca Mountain and directed NRC to revise its licensing criteria to be consistent with EPA's standards. For consistency, DOE decided to amend its general siting guidelines to reflect a site-specific approach. This regulatory framework was finalized in early FY 2002.



**OCRWM completed a two-year study of precariously balanced rocks near Yucca Mountain to assess long-term seismic hazards**

*EPA Radiation Protection Standards*

On June 13, 2001, the EPA promulgated radiation protection standards for the Yucca Mountain repository (40 CFR Part 197). EPA's standards are designed to protect nearby residents by establishing maximum exposure levels that are within EPA's acceptable risk range for environmental pollutants, separate groundwater protection standards, and a compliance timeframe. The EPA rule sets enforceable public health and safety standards, with which OCRWM must comply. More information is available at EPA's website: http://www.epa.gov/radiation/yucca/.

*NRC Licensing Requirements*

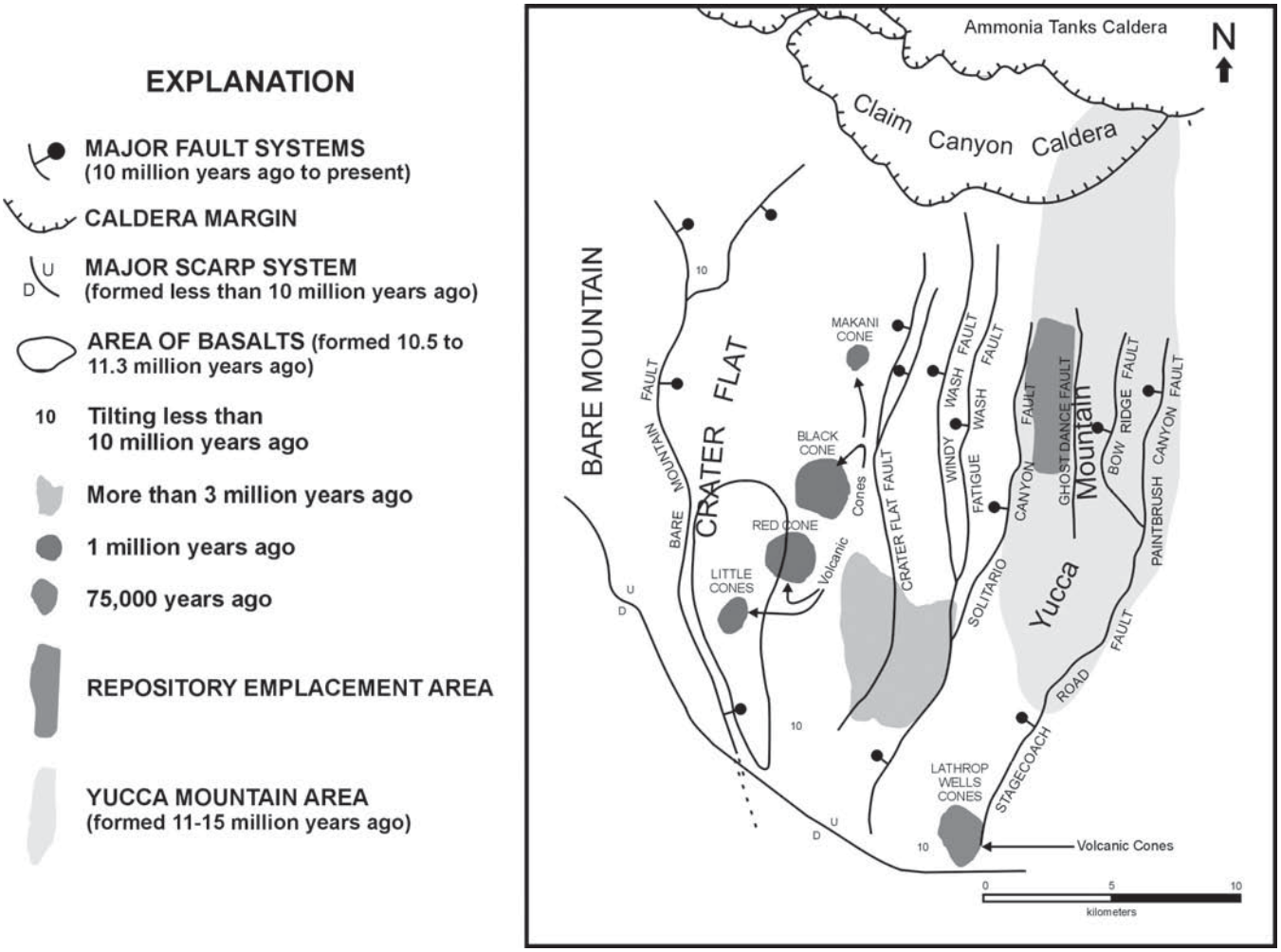
The NRC rule (10 CFR Part 63) is consistent with EPA's site-specific standards and was published on

November 2, 2001. It addresses overall performance of the repository and establishes requirements for public participation, record keeping, monitoring, performance confirmation, quality assurance, emergency planning, and training during repository development and operation. NRC will use its rule in adjudicating the repository license application, and will base its licensing decision on whether Yucca Mountain can comply with the requirements. More information is available at NRC's website: http://www.nrc.gov.

**View of Solitario Canyon fault zone**

*DOE Siting Guidelines*

On November 14, 2001, DOE supplemented its generic siting guidelines (10 CFR Part 960) with Yucca Mountain-specific guidelines




**Magnetic surveys helped interpret the repository's igneous setting**

(10 CFR Part 963). This completed the regulatory framework the Secretary used to evaluate whether the Yucca Mountain site is suitable for development as a repository. The Department's siting guidelines are available on the OCRWM website at http://www.ocrwm.doe.gov.

### *Interactions with NRC*

The NWPA requires that NRC provide preliminary comments on whether our site characterization and proposed waste form analysis appear sufficient to serve as the foundation for a license application. On November 13, 2001, NRC provided its favorable sufficiency comments to accompany the Secretarial site recommendation. This sufficiency statement does not draw conclusions concerning the actual licensability of the repository.

In their letter dated November 13, 2001, NRC concluded that exisiting and planned work, upon completion, would be sufficient to apply for a construction authorization. The agreed-upon course of action by DOE and NRC is intended to assist in the license application phase of the Project. In consultation with NRC staff, DOE agreed it would obtain certain additional information relating to nine "key technical issues" (KTI) to support a license application. To address these nine KTIs, DOE agreed to undertake 293 activities that would resolve the issues to NRC's satisfaction. All agreements need to be addressed by defining a clear path to completion before license application, but they do not necessarily need to be completed for license application.

Cumulatively, through the end of FY 2002, OCRWM had submitted information to address 132 of the 293 KTI agreement items; of these, NRC had closed a total of 61 and was in the process of reviewing 31. OCRWM had submitted information to partially address another 20 items, and NRC was awaiting additional information requested on a further 20 items.

OCRWM participated in several technical exchange meetings with NRC in 2002, addressing a wide range of issues. In addition, through management and quality assurance meetings, we kept NRC informed of our overall progress and ensured that issues needing management attention were addressed.

In March 2002, NRC issued Draft NUREG-1804, *Yucca Mountain Review Plan Draft Report, Revision 2.* This document provides directions to NRC staff for review of a license application and provides OCRWM with valuable guidance on preparing a license application. OCRWM provided comments on the draft in August 2002.

### *Interactions with the Nuclear Waste Technical Review Board*

The NWTRB was created by Congress and is composed of distinguished experts nominated by the National Academy of Sciences and appointed by the President. It acts as a full board and through five panels organized around site characterization; the repository; the waste management system; the environment, regulations, and quality assurance; and performance assessment.

In its 2002 annual report to Congress, the Board described its primary concern as the effects of high temperatures from SNF and HLW on the repository.

**Interior view of the hydrology experiment in Niche #3 of the Exploratory Studies Facility**

OCRWM agreed to provide an integrated evaluation and comparison of the long-term performance of the repository under two different post-closure temperature regimes.

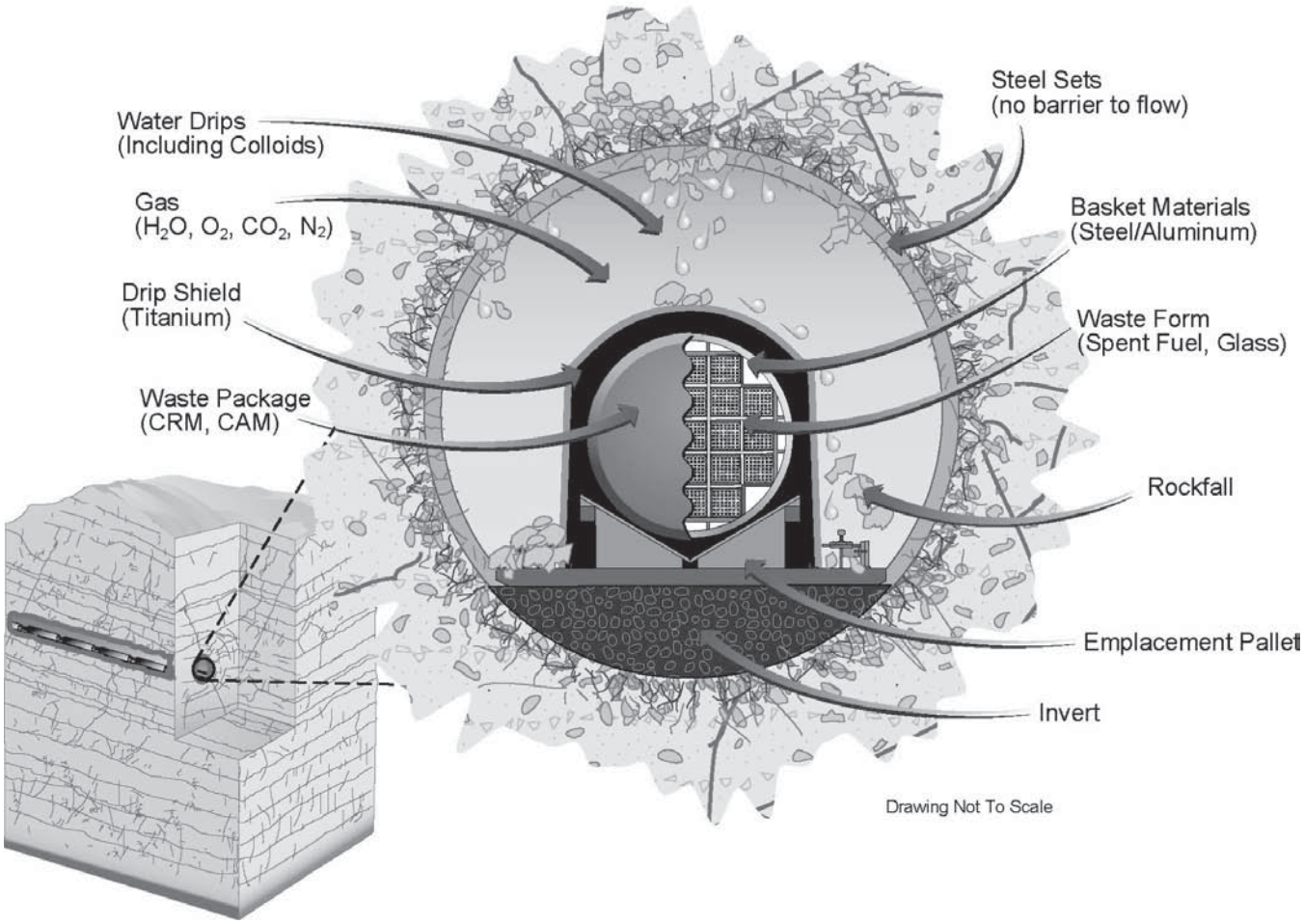
In FY 2002, the NWTRB held three full board meetings in which OCRWM participated. The meetings addressed a range of scientific and technical issues.

- At the January 2002 meeting, the Board received an update on scientific studies in progress at Yucca Mountain, and discussed hydrogeologic investigations and external reviews.

- At the May 2002 meeting, the Board reviewed issues involving the Yucca Mountain safety case, phased repository construction concepts, and corrosion testing.

- At the September 2002 meeting, the Board heard presentations on Yucca Mountain's science programs and barrier analyses. The Board also received and distributed consultation reports from the Igneous Consequences Peer Review Panel.

More information about the NWTRB and the text of correspondence between the NWTRB and OCRWM's Director are available on the NWTRB's web site at http://www.nwtrb.gov.




**Conceptualization of an emplacement drift with the major components of the engineered barrier system, and seepage diverted by the drip shield. CRM = corrosion resistant material; CAM = corrosion allowance material**

## Operations and Construction

### *Environmental Protection and Compliance*

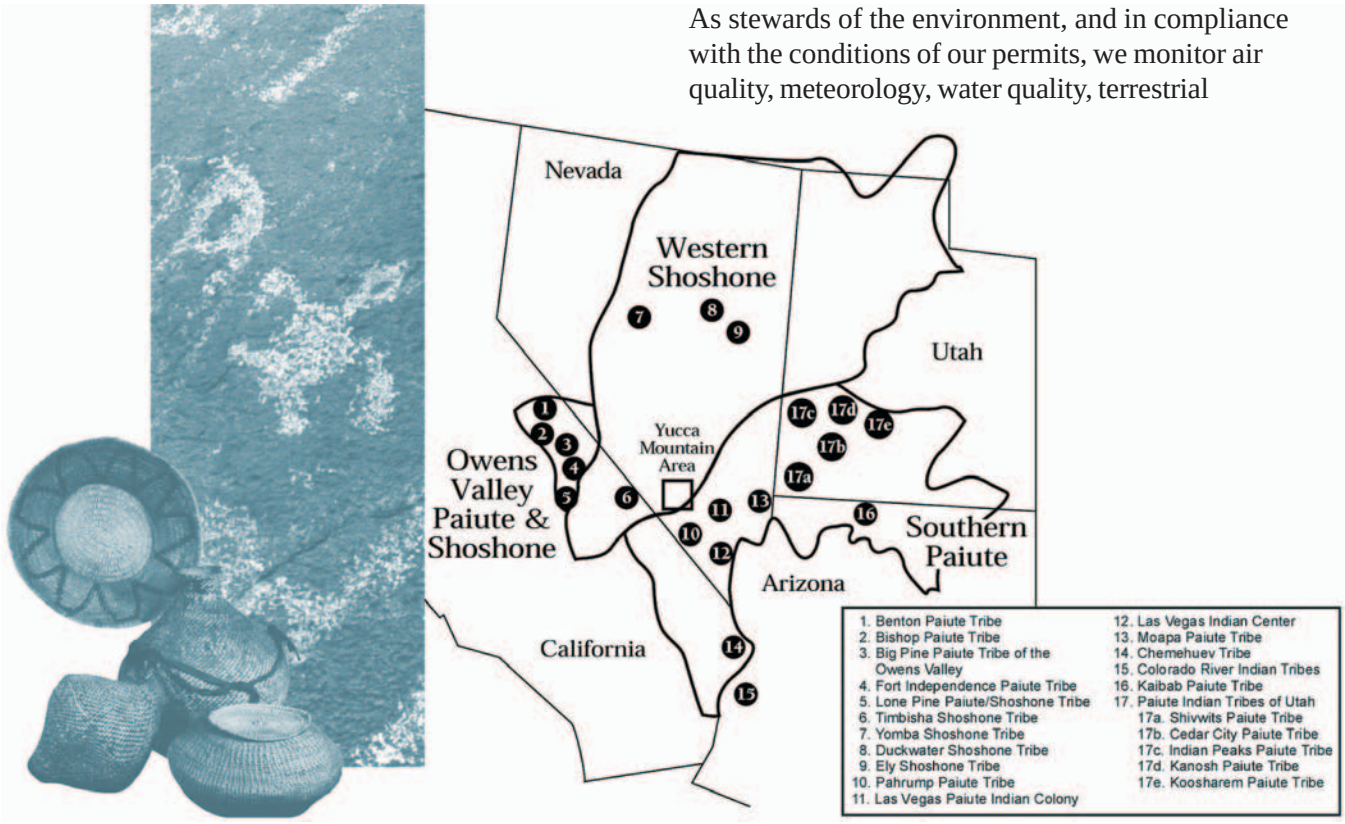
Throughout FY 2002, OCRWM continued its commitment to minimize adverse environmental impacts while complying with applicable Federal, State, and local environmental statutes and regulations and DOE orders. Our environmental staff continued to meet responsibilities that ranged from training new employees about their environmental obligations to reclaiming disturbed areas at which scientific studies had been completed. We routinely performed pre-activity land access surveys to inventory and protect ecological and cultural resources in areas proposed for surface-disturbing activities. Specially trained personnel thoroughly examined these areas before work began to identify important plant and animal species, such as the desert tortoise, and items of archaeological significance (primarily Native American Tribe artifacts).

In compliance with the Programmatic Agreement between DOE and the Advisory Council on Historic Preservation, we continued to consult and interact with numerous Native American Tribes and organizations to discuss preservation of Native American Tribe cultural resources and provide information on the scientific studies and reports we issued. We also maintained land access and land withdrawal agreements and right-of-way reservations with the Bureau of Land Management, the U.S. Air Force, the National Park Service, and the U.S. Forest Service.

In FY 2002, we maintained compliance with more than 40 environmental permits, plans, and procedures, conducted unannounced surveillance field checks to verify compliance, and continued to submit quarterly and annual compliance reports to the Nevada Division of Environmental Protection and other regulatory agencies.

### *Environmental Data Collection and Monitoring*

As stewards of the environment, and in compliance with the conditions of our permits, we monitor air quality, meteorology, water quality, terrestrial




**The Yucca Mountain Project Cultural Resources Program focuses on Native American Tribe interactions and archaeology. Consulting with Native American Tribes, the Project identifies significant cultural and historic areas to mitigate potential impacts.**

ecosystems, and cultural resources (archaeological and Native American Tribes) to determine potential impacts from repository activities. To date, no significant adverse environmental impacts have been detected.

In FY 2002, OCRWM continued data collection to support repository design, biosphere modeling, and total system performance assessment, and to respond to comments on the draft environmental impact statement, which culminated in the issuance of the final environmental impact statement in February 2002. Additional information on these and other environmental program activities can be found in the *Site Environmental Report*, which is published annually and is available upon request.

### *Protecting Workers, the Public, and the Environment*

OCRWM's general safety efforts underpin and reinforce a nuclear safety culture. In FY 2002, OCRWM continued to maintain an outstanding safety record; our recordable injury/illness case rates and lost workday injury/illness case rates remained consistently lower than the industry average. In FY 2001, we implemented a zero accident philosophy, which establishes the framework and the responsibilities for a Project goal of zero incidents and accidents. With continuing implementation and improvement of this approach in FY 2002, OCRWM remained committed to the goal of eliminating workplace injuries and illnesses, overexposures to hazardous substances, and hazards to the environment.

## Project Management

With the conclusion of the site characterization phase, the Project began moving away from its "rolling wave" schedule toward a detailed multiyear schedule. During site characterization, when each year's work depended on the results of the previous year's research, it was appropriate to use a rolling wave schedule in which work is planned in more detail in early years and less detail in later years. During the licensing and construction phases, the results of current work are more predictable, and the Project is extending its detailed planning to a longer-term horizon.

### *Litigation*

In the U.S. Court of Appeals, three legal challenges to DOE's activities regarding the Yucca Mountain site have been combined. These challenges, by the State of Nevada and others, are to the site recommendation by the Secretary of Energy to the President and the Presidential recommendation to Congress, to the Environmental Impact Statement, and to DOE's Yucca Mountain siting guidelines.

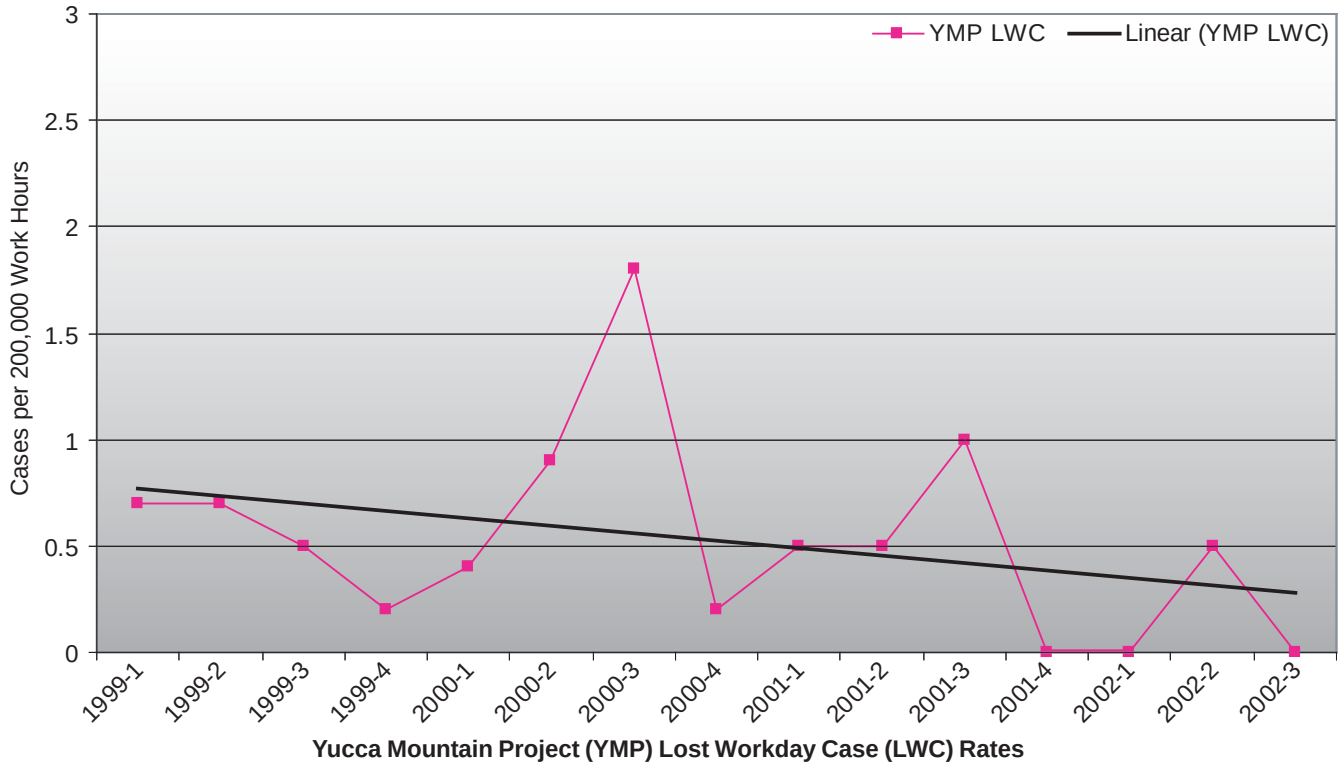
### *Water Rights*

In compliance with law of the State of Nevada, OCRWM applied for and was granted temporary water rights in 1992. The Department filed for and received an extension by the State for these permits up to April 2002. At that time, the State denied further extension, allowing the rights to expire. From April 2002 to January 2003 activities continued at the Yucca Mountain site using water stored in tanks prior to expiration of the rights. In late December 2002, the Department and the State entered into a Joint Stipulation allowing for pumping of groundwater for potable use (e.g., drinking, handwashing) at the Yucca Mountain site. However, pumping of water for nonpotable water uses (e.g., dust control for air quality permit compliance) is not authorized under this Joint Stipulation. Such water uses continue to rely on a dwindling supply of remaining water within water storage tanks.

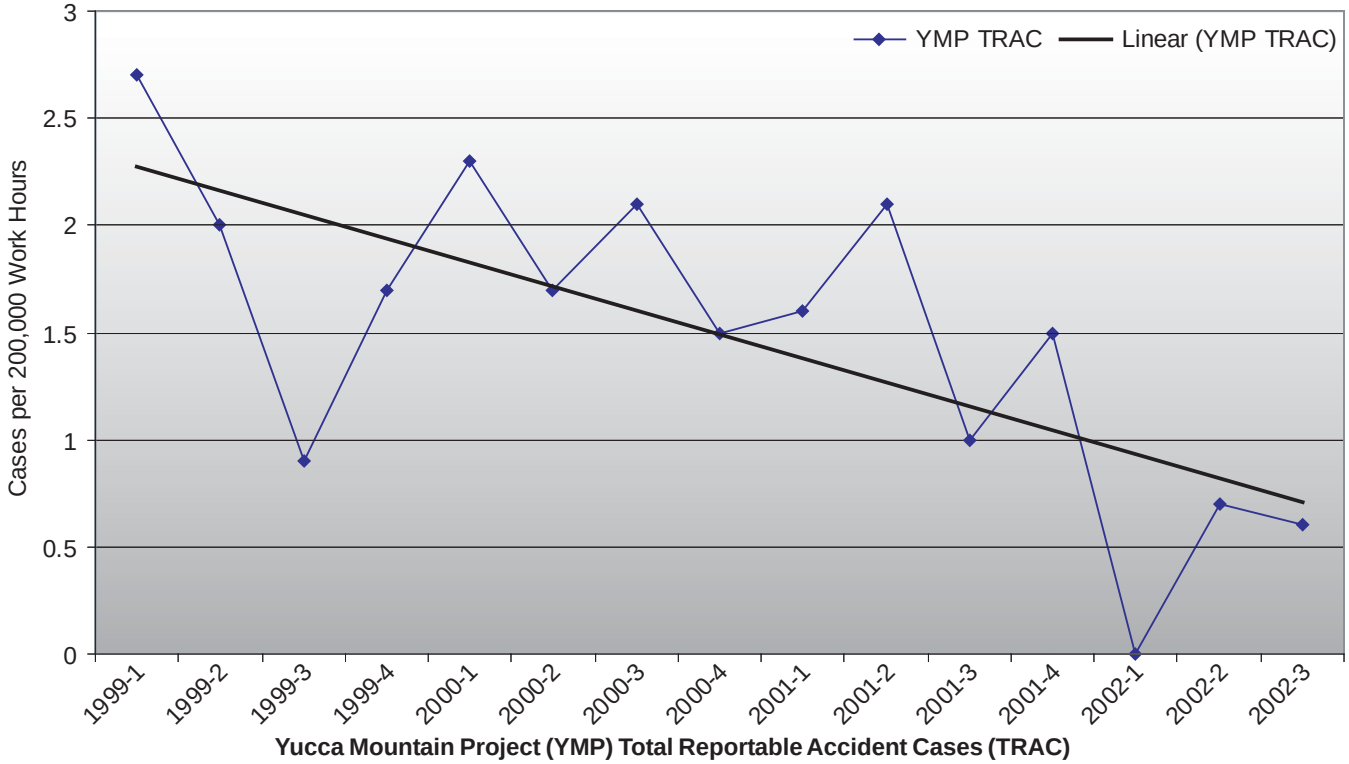
Recognizing that existing water rights were temporary, OCRWM applied for permanent water rights for water use at Yucca Mountain on July 22, 1997. The State denied these permanent water right applications in 2000. The Department appealed this ruling, and ultimately, in March 2003 the U.S. District Court ordered the State to conduct further hearings on this matter; a hearing was held in August 2003.

### *Yucca Mountain Site Characterization Project Outreach*

Consistent with Section 111(a)(6) of the NWPA, as amended, which states that "State and public participation in the planning and development of repositories is essential to promote public confidence in




**Yucca Mountain Project (YMP) Lost Workday Case (LWC) Rates**




**Yucca Mountain Project (YMP) Total Reportable Accident Cases (TRAC)**

the safety of disposal of such waste and spent fuel," OCRWM continued to conduct extensive project outreach activities in FY 2002. These activities are directed at ensuring that the affected units of local government (AULG), the State of Nevada, and the public have opportunities to participate in the Yucca Mountain Project and acquire information with which to make informed decisions about the Project.

In FY 2002, OCRWM completed and released to the public numerous significant documents related to the statutorily defined steps that culminated in site designation. As part of these efforts, we conducted briefings for AULG, the State of Nevada, and Tribal representatives, and maintained an active communications program to provide timely and accurate information to stakeholders, interested groups, and members of the public. Public involvement opportunities during FY 2002 included additional hearings on the draft site recommendation documents.

Our FY 2002 outreach activities promoted two-way communication with technical audiences and the general public through a tour program, speakers' bureau, and exhibits at key events. We continued to conduct tours of Yucca Mountain, educate visitors about Yucca Mountain activities, operate a toll-free information line, and respond to document requests worldwide. Through our public information activities, the Yucca Mountain Project reached thousands of people in FY 2002. For example, over 9,500 individuals visited our science centers; almost 7,000 people toured Yucca Mountain; our exhibits program reached 12,000 people; our toll-free information line handled over 8,000 calls; over 639,000 users accessed our website; and we shipped more than 18,000 documents to nearly 1,000 individuals.

**DOE scientists employing new technologies in Alcove #6 of the ESF Facility**

## External Oversight and Payments-Equal-To-Taxes

### *Relations with Affected Parties*

Under the NWPA, the State of Nevada and the AULG are entitled to exercise oversight of site characterization activities and to receive financial assistance for this purpose. AULG include Nye County and nine contiguous counties, including Inyo County in California. In FY 2002, Congress continued to provide financial support to oversight efforts by the 10 affected counties and the State of Nevada; Congress provided $6 million to the counties and $2.5 million to the State.

The NWPA also gives the State of Nevada and Nye County the authority to conduct independent investigations and to receive funding for an onsite representative. The State has not designated such a representative, but Nye County has, and its representative continued to oversee our work in FY 2002. Information about Nye County's oversight program can be found on its website at http://www.nyecounty.com. In addition, OCRWM provided Inyo County with $745,655 to initiate a regional groundwater monitoring program in Death Valley in FY 2002.

We continued funding our payments-equal-to-taxes agreements with the State of Nevada, and Nye and Clark Counties. Under Section 116(c)(3)(A) of the NWPA, these payments are intended to compensate for taxes that affected entities would have collected on site characterization and the development and operation of a repository if they were authorized to tax Federal Government activities. A total of $10.8 million was provided in FY 2002, of which $10 million went to Nye County, $721,804 went to the State of Nevada, and $109,175 went to Clark County.

In FY 2002, we continued funding the cooperative agreement with the University and Community College System of Nevada for conducting scientific studies that could augment our own studies of the Yucca Mountain site. Under this agreement, which was established in FY 1998, up to $40 million may be applied to such studies through FY 2003. Through FY 2002, $20 million had been approved for 34 tasks.

## Fiscal Year 2002 in Context

During FY 2002, OCRWM completed the work underlying the Yucca Mountain site recommendation and submitted the site recommendation report to the Secretary. The site was subsequently approved by the President and the Congress. The characterization effort has been successful, and the focus of Project activities has now shifted toward licensing and construction.

OCRWM believes that waste acceptance in 2010 remains achievable. Accomplishing this goal will require careful planning and phasing of Project activities, timely decision making, and adequate funding. We are preparing the license application and plan to submit it to NRC in 2004. We are also developing and evaluating alternative scenarios to identify the most effective approach for initial repository construction.

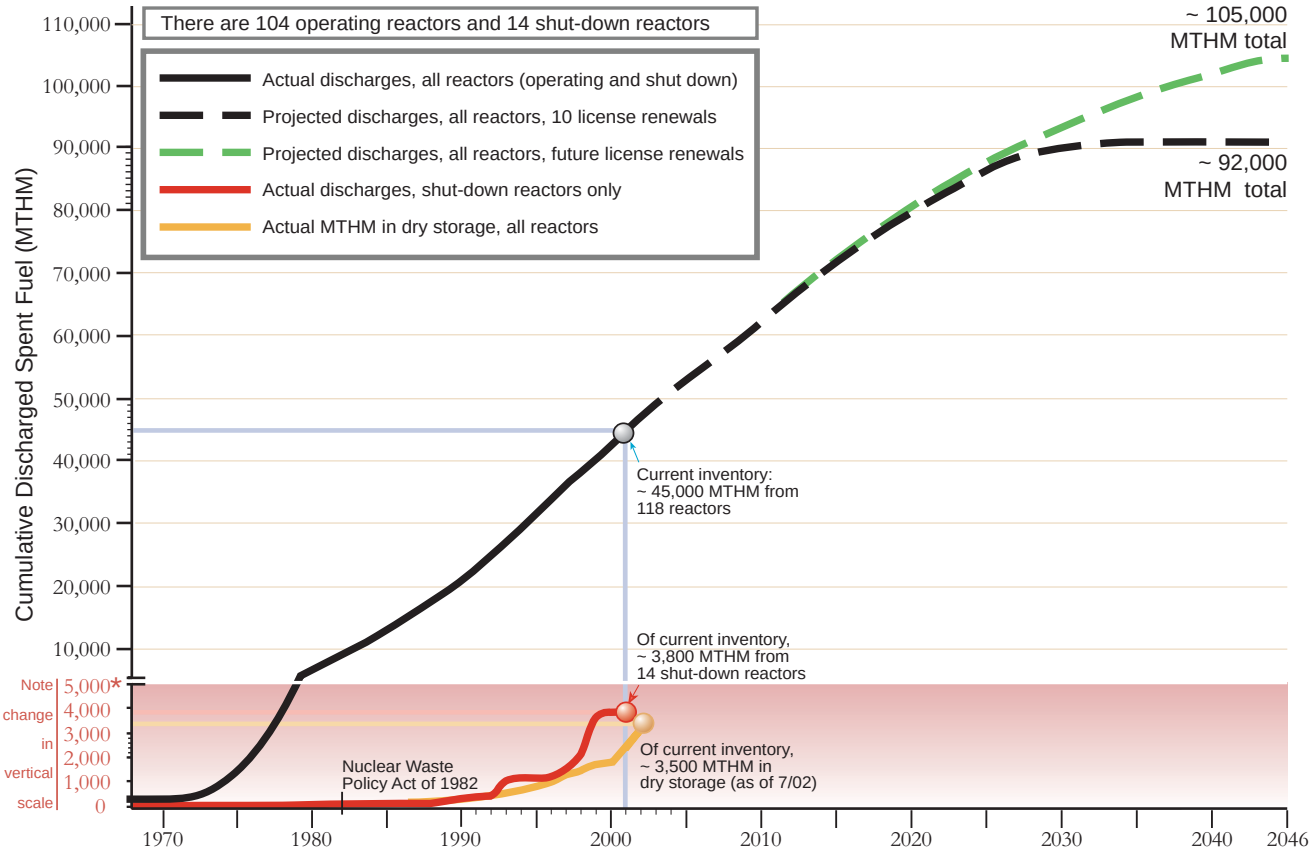
# Chapter Three

# Waste Acceptance, Storage, and Transportation Project

## Background

The Waste Acceptance, Storage, and Transportation Project is responsible for providing for the acceptance of commercial spent nuclear fuel (SNF), and Department of Energy (DOE)-owned SNF and high-level radioactive waste (HLW) from their owners and generators through the Office of Civilian Radioactive Waste Management (OCRWM). The materials destined for the potential repository are currently stored in various locations throughout the country, and it is anticipated that the materials will be transported from these locations to the Yucca Mountain site.

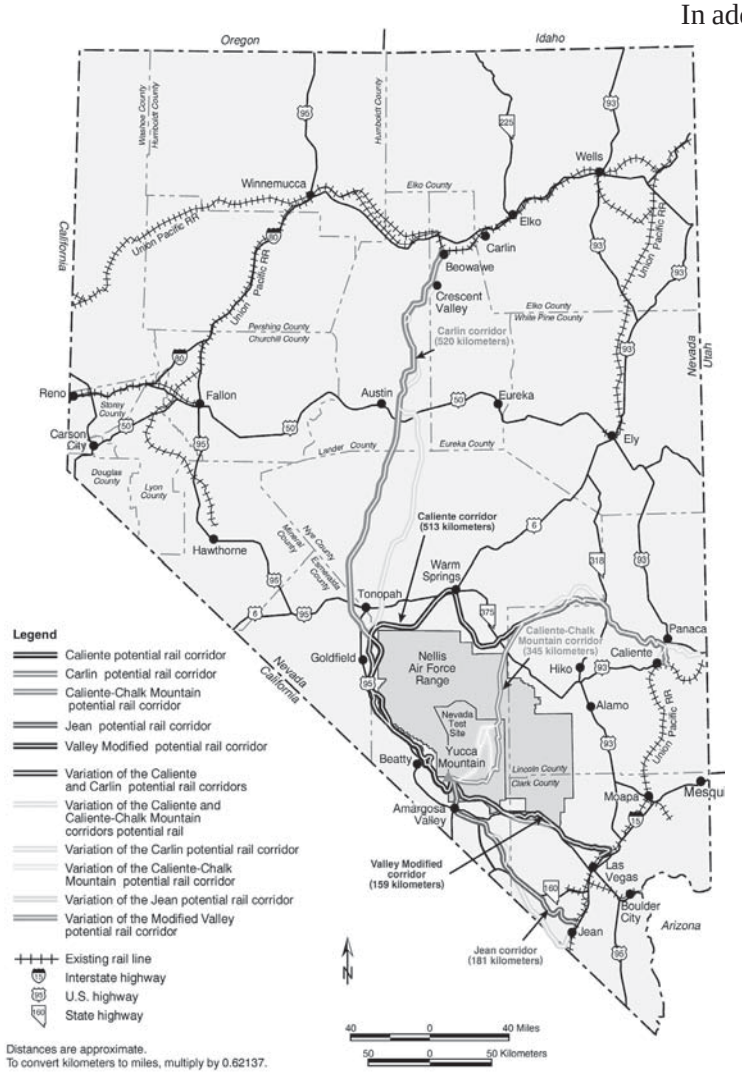
Due to very limited funding during the Yucca Mountain site characterization phase, Waste Acceptance, Storage, and Transportation Project activities were severely curtailed while the Program focused its resources on work directly related to the site recommendation. OCRWM recognizes the need to accelerate these activities and plans to do so as funding becomes available.




**Historical and projected commercial spent nuclear fuel discharges**

### *Funding*

OCRWM allocated $4 million from its FY 2002 appropriation to the Waste Acceptance, Storage, and Transportation Project. In preparation for waste acceptance activities, OCRWM maintains core capabilities to implement a private sector-based national transportation system for waste acceptance and transportation, to resolve institutional issues with stakeholders, and to prepare for funding of, and assistance for, training for emergency response personnel, as required by Section 180(c) of the Nuclear Waste Policy Act (NWPA).




**Potential Nevada rail corridors analyzed in the final environmental impact statement**

## Major Fiscal Year 2002 Activities and Results

In FY 2002, we used Energy Information Administration data to update our discharge projections for commercial SNF. In addition, we continued to integrate acceptance criteria and schedules for DOE-owned SNF and HLW. OCRWM also is continuing to work with the National Nuclear Security Administration's Office of Fissile Materials Disposition regarding a new plutonium disposition strategy, which involves blending plutonium with uranium to form mixed-oxide reactor fuel and will ultimately result in spent fuel requiring disposal in the repository.

In addition to OCRWM's existing agreement with the Assistant Secretary for the Office of Environmental Management (EM) for transporting DOE-owned SNF, OCRWM has agreed to assume responsibility for the design, certification, and fabrication of the transportation cask system for the DOE SNF. In order to implement this new responsibility, during FY 2002, OCRWM gathered the waste characterization and site capability data from EM sites to allow for the development of site servicing plans and cask specifications for the DOE-owned waste. We began to streamline requirements for the acceptance and transport of DOE-owned SNF and HLW and to integrate them into our plans for acquiring the transportation fleet.

As announced in the final environmental impact statement, OCRWM's preference is to transport SNF and HLW to Yucca Mountain primarily by rail. However, there is currently no rail line to the Yucca Mountain site. In FY 2002, we began the initial planning for the development of rail capability within Nevada, should the Department decide on the use of rail transport.

OCRWM anticipates that it will acquire the initial fleet of transportation casks and then contract with carriers to begin shipments. Once operations have stabilized, alternative approaches for long-term operation of the transportation fleet will be evaluated.

On September 30, 2002, OCRWM issued a draft scope of work (SOW) for the acquisition of a Transportation Integration Contractor (TIC) to support the shipment of SNF and HLW to the Yucca Mountain repository. We do not anticipate that a request for proposals will be released during FY 2003. However, planning activities will continue to ensure that we will have the capability to begin shipments in 2010.

OCRWM continued to evaluate how best to implement Section 180(c) of the NWPA, which provides for technical and financial assistance to train local, State, and tribal public safety officials in safe, routine transportation operations and for emergency response situations. OCRWM is now reviewing emergency response training being provided elsewhere within DOE and other agencies to ensure coordination of training and maximum effective use of available funding.

## Acceptance of Commercial Spent Nuclear Fuel

The NWPA authorized the Secretary to enter into contracts with the owners and generators of commercial SNF and HLW. Our interactions with them on matters concerning receipt, shipment, and disposal of their SNF are governed by the *Standard Contract for Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste*, 10 CFR Part 961, promulgated as a Federal rule in 1983. Under terms of the standard contract, OCRWM was to start accepting SNF from utilities in 1998.

### *Litigation*

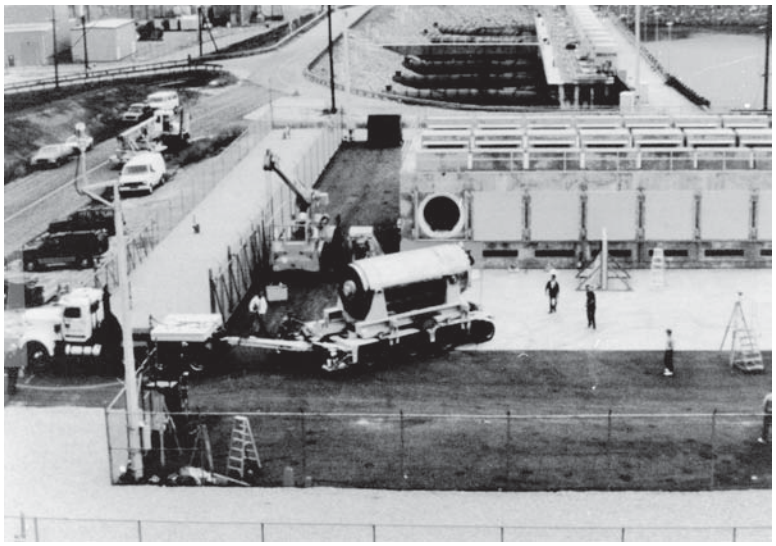
A number of utilities are seeking damages in the U.S. Court of Federal Claims that they allege are a result of the Department's delay in beginning waste acceptance. In 2000, the Department reached a settlement with Philadelphia Electric Company (PECO) Energy that allowed it to take an adjustment to charges against its payment into the Nuclear Waste Fund (NWF) for the costs incurred because of the Department's delay. Eight other nuclear power companies filed suit, challenging the Department's authority to use NWF offsets against future payments, because this practice would reduce the size of the NWF, which is the Program's funding source for civilian waste disposal costs. During FY 2002, the 11th U.S. Circuit Court of Appeals agreed with the petitioning power companies and declared the fee adjustment provided by the PECO Energy agreement null and void. In its ruling, which is now final, the Court of Appeals declared the Department is not authorized by law to spend NWF monies on settlement agreements aimed at compensating for utilities' onsite storage costs.

### *Dry Transfer System for Spent Nuclear Fuel*

The dry transfer system was developed to enable OCRWM to load SNF onto transport vehicles at utility company sites, some of which lack adequate loading capabilities. In FY 2002, OCRWM revised its Topical Safety Analysis Report (TSAR) on the dry transfer system in order to incorporate responses to two NRC requests for information. The revised TSAR will be submitted to NRC in early 2003, and the activity will be closed out.

## Acceptance of DOE-Managed Materials

OCRWM's eventual acceptance of nuclear materials from their owners and generators will be a complex process involving both legal and physical transfers. OCRWM and other DOE offices conducted significant



**Some sites, such as the Oconee Reactor in South Carolina, store dry spent nuclear fuel horizontally in modular units**

planning and review activities in FY 2002 to support this process.

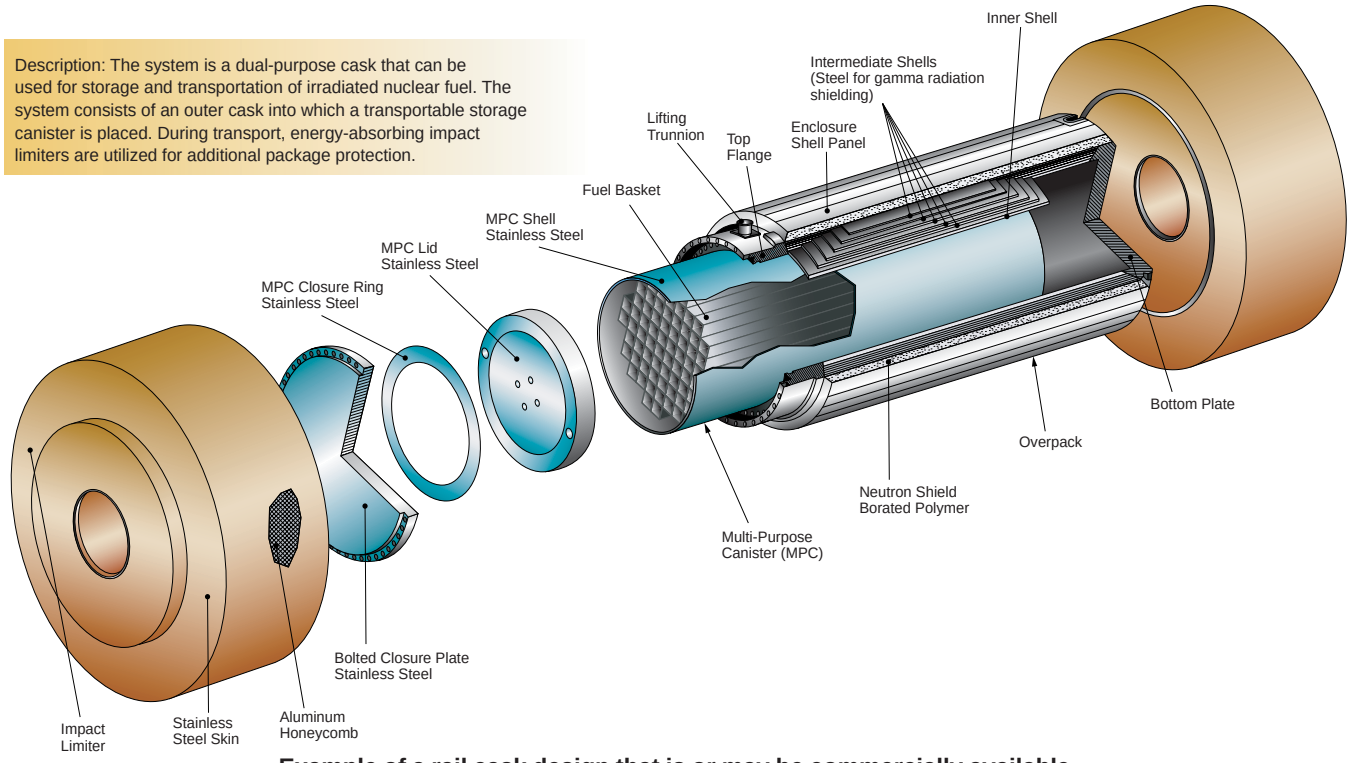
### *Integrating DOE-Managed Nuclear Materials into the Program*

OCRWM works with various offices within DOE to manage materials destined for geologic disposal. EM maintains custody of HLW, DOE-owned SNF, and surplus nuclear materials and prepares for their transfer to OCRWM for disposal. The Office of Fissile Materials Disposition plans for the disposition of surplus weapons-usable plutonium. The Naval Nuclear Propulsion Program is responsible for the management of naval SNF.

As part of its effort to reduce risk and long-term costs, EM completed a top-to-bottom review of its programmatic mission and functions in FY 2002. To implement the recommendations of the review, EM began conducting a number of studies aimed at reducing risks and achieving efficiencies in its waste management activities. One such study examines treatment options for HLW at the Hanford site in Washington, the Idaho National Engineering and Environmental Laboratory (INEEL), and the Savannah River site in South Carolina. EM plans to complete its study and establish a path forward for this waste in FY 2003.

In FY 2002, OCRWM studied the cost impact of varying the number of HLW canisters from INEEL to be disposed in the repository. The study found that certain technologies could reduce the total number of canisters by as much as 60 percent. Impacts on the repository and EM sites are being evaluated.

Throughout FY 2002, OCRWM continued to work with these DOE organizations to integrate acceptance criteria and schedules for the various waste forms. Integrated waste acceptance schedules will provide a basis for planning shipments of DOE SNF, HLW, and naval SNF.




**Example of a rail cask design that is or may be commercially available**

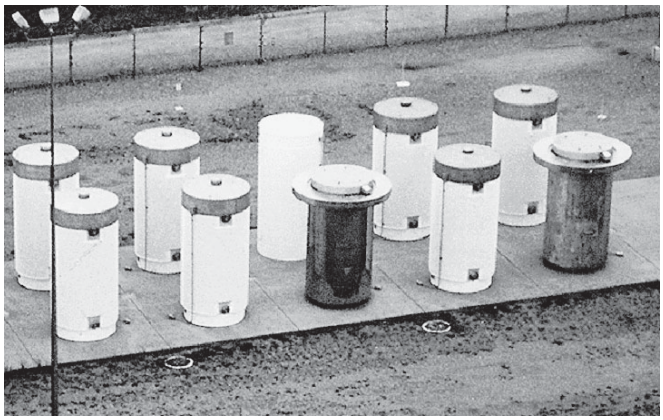
## Storage and Transportation

Several studies and planning exercises were conducted in FY 2002 to identify potential changes to transportation system implementation strategies and requirements in support of flexible repository design and construction alternatives. The evaluation of potential changes to transportation system strategies and requirements included analyses of their impact on cost estimates and acquisition strategies.

The *National Transportation Options for the Modular Design Implementation System Evaluation for License Application* (March 2002) focused on creating a transportation system design flexible enough to adapt to a wide range of future technical, schedule, licensing, and funding constraints.

OCRWM also developed the *Civilian Radioactive Waste Management System (CRWMS) Transportation Cask System Maintenance Options* (September 2002), which identified and evaluated a wide range of options for activity location, facility type, and acquisition strategy for the facility and/or services to maintain the shipping cask systems. Applicable NRC and Department of Transportation regulations, industry best practices, and lessons learned from other countries were incorporated.

In FY 2002, a new Nevada transportation infrastructure team was put in place to begin evaluating the requirements for transportation through the State to the repository. This included reviewing existing information and beginning the planning processes to develop any necessary infrastructure in Nevada.



**Spent nuclear storage in concrete vertical casks**

## Fiscal Year 2002 in Context

During FY 2002, the Waste Acceptance, Storage, and Transportation Project focused on maintaining its capability to implement a national transportation system, to resolve institutional issues with stakeholders, and to provide funding and assistance for emergency response training required by the NWPA. A revised acquisition strategy was considered for obtaining the equipment and services to support the OCRWM transportation mission.

Since Congress has designated Yucca Mountain as the repository site, the pace of transportation planning activities will need to increase to ensure that the transportation system is ready to move waste when the repository is ready to accept it.

**This page intentionally left blank.**

# *Chapter Four*

# *Program Management Center*

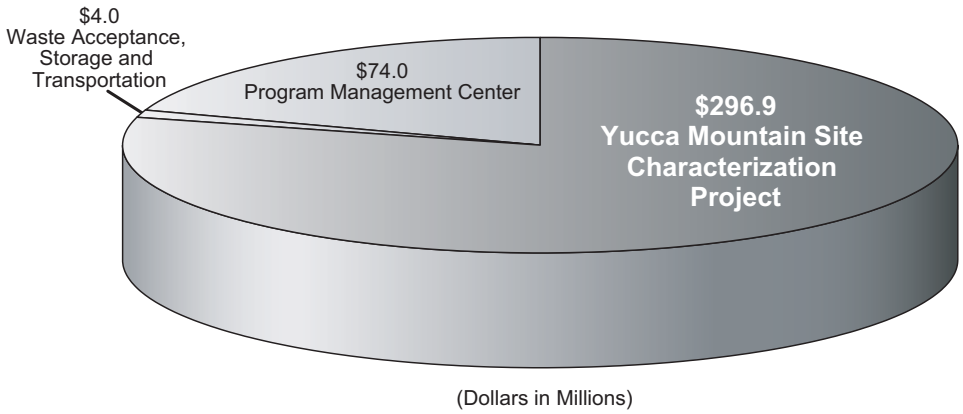
## Background

During Fiscal Year (FY) 2002, the Program Management Center consisted of the Office of Quality Assurance, located in Las Vegas, the Office of Program Management and Administration, and the Systems Engineering and International Division of the Office of Acceptance, Transportation, and Integration, located in Washington D.C. In October 2002, the Office of Civilian Radioactive Waste Management (OCRWM) implemented a reorganization that clarified roles, responsibilities, and functions across the Program. The OCRWM reorganization will be reflected in the FY 2003 Annual Report to Congress.

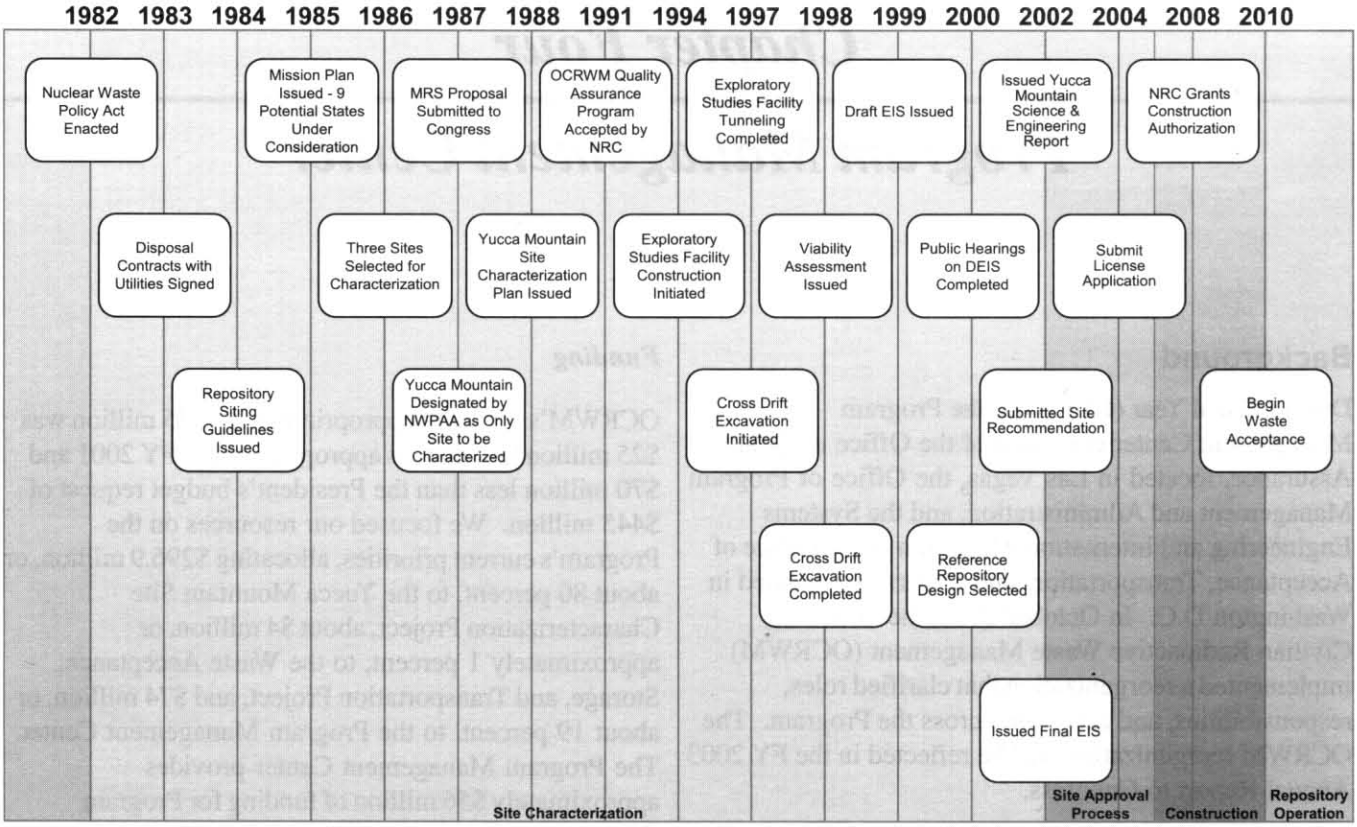
The Program Management Center provided guidance and support to the two business centers — the Yucca Mountain Site Characterization Project and the Waste Acceptance, Storage and Transportation Project — in implementing the Program's mission. The Program Management Center also supported OCRWM's implementation of the President's Management Agenda, launched in August 2001, to measure and improve Federal agencies' performance and to link spending to program performance and effectiveness. Five broad initiatives apply to all agencies, including the Department of Energy (DOE): strategic management of human capital, competitive sourcing, improved financial performance, expanded use of electronic government (E-government) technology, and budget and performance integration.

### *Funding*

OCRWM's FY 2002 appropriation of $375 million was $25 million less than its appropriation for FY 2001 and $70 million less than the President's budget request of $445 million. We focused our resources on the Program's current priorities, allocating $296.9 million, or about 80 percent, to the Yucca Mountain Site Characterization Project, about $4 million, or approximately 1 percent, to the Waste Acceptance, Storage, and Transportation Project, and $74 million, or about 19 percent, to the Program Management Center. The Program Management Center provides approximately $56 million of funding for Program Direction, which consists mostly of Federal staff salaries and technical support services primarily supporting the business centers. Almost half of this amount supported staff and activities at the Yucca Mountain Site Characterization Project.




**Distribution of Fiscal Year 2002 budget**




**Civilian Radioactive Waste Management Program milestones**

## Major Fiscal Year 2002 Activities and Results

As discussed in the Executive Summary and Chapter 2, FY 2002 was marked by the submittal of the Secretary's site recommendation to the President, and its subsequent approval by the House of Representatives and the Senate. On July 23, 2002, the President signed the Repository Siting resolution approving Yucca Mountain for development of the Nation's first geologic repository for spent nuclear fuel (SNF) and high-level radioactive waste (HLW). The Program Management Center played a central role in coordinating the Administration's review of the site recommendation documentation, as well as responding to related congressional inquiries.

Following designation of the Yucca Mountain site, the Program began preparing for the transition from the site characterization and pre-licensing phase to the repository design and licensing, transportation system development, and repository construction phases. This transition had been anticipated in FY 2001, with the award of a performance-based management and operating (M&O) contract to Bechtel SAIC Company, LLC. Senate confirmation of OCRWM's new Director, Dr. Margaret S. Y. Chu, on March 6, 2002, provided a unique opportunity for the Program's management to step back and evaluate the effectiveness of its business processes as well as the structure and resources of both Federal and contractor organizations.

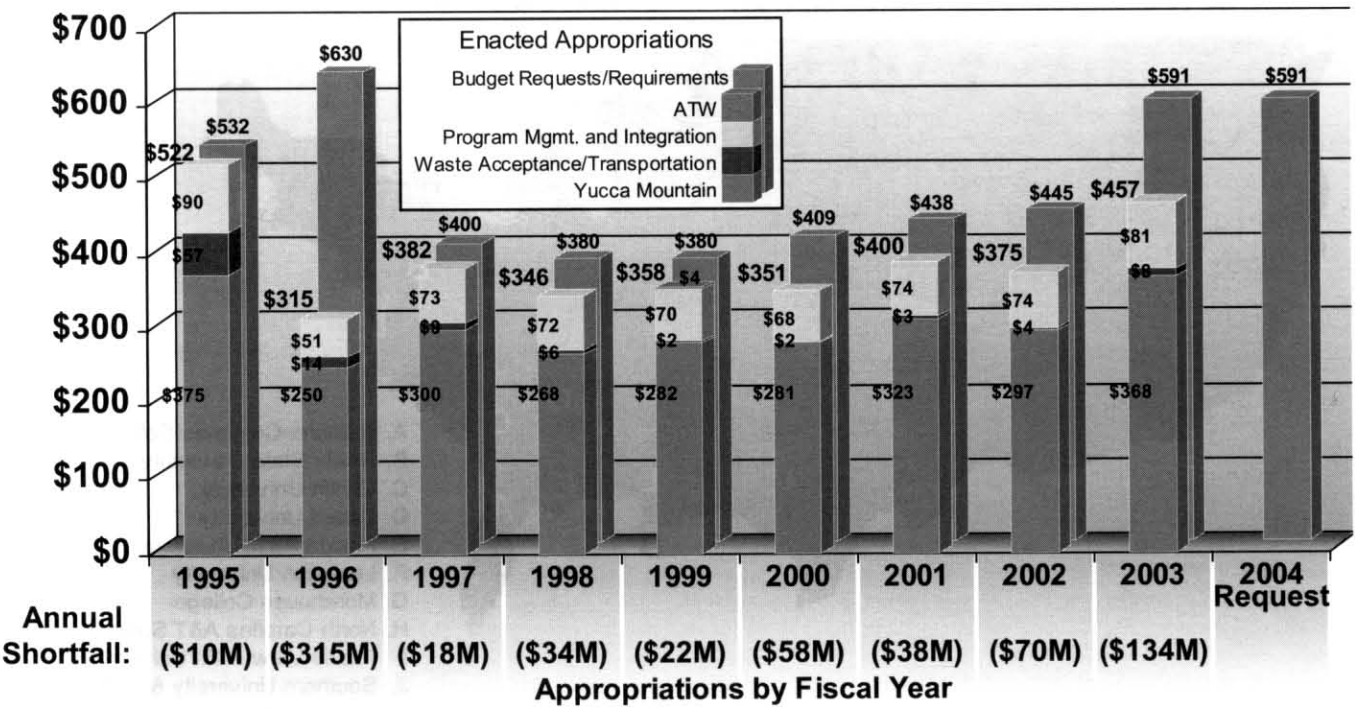
The incentives for enhancing management effectiveness were significant — between FY 1995 and FY 2002, budget appropriation shortfalls totaled $575 million. Since FY 1998, schedule delays largely attributable to these budget shortfalls have pushed the milestone for submittal of a license application to the Nuclear Regulatory Commission (NRC) from 2002 to 2004. For this reason, the Program will aggressively pursue all reasonable efficiencies in order to meet its longstanding goal of beginning waste acceptance in 2010.

One of the first major management initiatives undertaken by the Program in FY 2002 was a review of the management structure and processes to ensure the Program's ability to submit a license application to NRC by the end of calendar year 2004. This review resulted in a series of recommendations in the Management Improvement Initiative (MII), which was submitted to NRC in July 2002. The overall purpose of the MII was to create a more efficient and disciplined organization with clearly defined roles, responsibilities, authority, and accountability for Program functions. This objective supports the further development of a "nuclear safety culture" across the Program, which is essential to a successful licensing process.

Implementation of the MII recommendations began with publication of the *Program Manual, Phase 1,* in August 2002. This was followed by *Management Expectations Policy; Quality Assurance Program Responsibilities*; and *Summary of Phase 2 Activities to Clarify Roles, Responsibilities, Authority, and Accountability Within the OCRWM Program,* in September 2002. Phases 1 and 2 of the *Program Manual* communicated management's expectations and organizational approach for OCRWM Headquarters, the Yucca Mountain Site Characterization Project Office, the OCRWM Transportation Program, OCRWM's M&O contractor, and other contractors. During the latter part of FY 2002, OCRWM made preparations to implement an organizational realignment in October 2002. The *Program Manual Final – Phase 3* was issued in April 2003.

### *Supporting the President's Management Agenda*

The President's Management Agenda was issued as the Program began planning its transition to an organization focused on preparing the license application and constructing a waste management system. Although OCRWM has long had management systems and processes in place that support the President's Management Agenda, we focused on the President's objectives for the five initiatives detailed below to strengthen OCRWM business processes and to guide our transition planning.




**Cumulative Shortfall FY 1995 - FY 2003: ($699M)**

**Annual funding levels have been less than the Administration's request**

### *Strategic Management of Human Capital*

In FY 2002, OCRWM initiated a realignment of its organization and redefined Federal and contractor roles, responsibilities, authority, and accountability to support the licensing process. This restructuring process continued into FY 2003 and included improvements in business processes to ensure more effective management for work planning, performance, and control. The restructuring process addresses human capital management by ensuring that personnel are cognizant of their responsibilities and capable of meeting them. OCRWM has also taken steps to expand its internal training programs in order to assist staff in transitioning to new responsibilities as the Program proceeds toward license application.

### *Educational Outreach*

Through its Radioactive Waste Management Graduate Fellowship Program and the Historically Black Colleges and Universities (HBCU) Undergraduate Scholarship Program, OCRWM seeks to ensure that competent staff will be available to meet future Program needs. In FY 2002, the Graduate Fellowship Program provided fellowships to 10 graduate students pursuing advanced degrees in disciplines directly related to high-level radioactive waste management at the Nation's top colleges and universities. Also during FY 2002, 15 undergraduate scholars participated in OCRWM's HBCU Undergraduate Scholarship Program.

### *Competitive Sourcing*

OCRWM supported the President's management initiatives relating to competitive sourcing by updating its Federal Activities Inventory Reform Act personnel inventory in May 2002. The inventory classifies work performed by Federal employees into Governmental or commercial (i.e., capable of being performed by contractors) categories. Pending Departmental guidance, further studies may be initiated to prepare a competitive sourcing plan for commercial activities subject to the cost comparison or direct conversion requirements of the Office of Management and Budget (OMB).

In line with DOE's objective of moving to performance-based contracting, OCRWM awarded a new performance-based M&O contract in FY 2001.


A. Bethune-Cookman College
B. Bowie State University
C. Claflin University
D. Dillard University
E. Florida A&M University
F. Langston University
G. Morehouse College
H. North Carolina A&T State University
I. Prairie View A&M University
J. Southern University & A&M College
K. Tuskegee University
L. Xavier University of Louisiana

**Fifteen students from 12 historically black colleges and universities participated in OCRWM's undergraduate scholarship program**

In June 2002, a new Program-wide, performance-based technical support services contract was awarded. With this award, OCRWM has now transitioned its two major contractors to performance-based contracts.

### *Improving Financial Performance*

Because of its fiduciary responsibility for the fees paid by nuclear utilities into the Nuclear Waste Fund (NWF), OCRWM has, since the inception of the Program, engaged the services of a "Big-5" public accounting firm to perform an independent audit of OCRWM's financial statements. The audit ensures that Program revenues are properly accounted for and used only for purposes authorized by law. OCRWM has received a "clean" (unqualified) opinion from its auditors since inception of the Program, and did so again in FY 2002.

OCRWM utilizes a major Wall Street investment firm to provide monthly investment advice regarding the Treasury securities held in or to be purchased for the NWF. Investment income for FY 2002 was $854.8 million. The Fund's return, at 15 percent, was in line with market averages for Treasury bond portfolios.

### *Expanding Electronic Government*

Our information management (IM) activities in FY 2002 supported the President's management initiative relating to increased use of E-government technology to strengthen information sharing within the Federal Government and to provide a single access point for citizens seeking information about the Program.

In FY 2002, OCRWM placed special emphasis on documenting and managing information technology (IT) investments in accordance with the requirements of OMB and the Clinger-Cohen Act. Through collaborative work with the Department's Office of the Chief Information Officer and OMB, OCRWM incorporated information on improved business case justifications, consideration of commercial off-the-shelf system alternatives, and developing processes to provide management the ability to make informed decisions related to IT investments. Additional OCRWM efforts improved the linkage among the Program's business systems architecture, business processes, and management reporting, and enhanced internal efficiencies.

Also in FY 2002, we continued joint development with NRC of the Licensing Support Network (LSN), which is required by 10 CFR 2, Subpart J. The LSN will facilitate NRC access to the information it needs to review OCRWM's license application and facilitate discovery in the licensing hearings. During FY 2002, more than 71,000 records were processed and indexed in the Records Management System that will feed the LSN.

### *Budget and Performance Integration*

Clear linkages between Program objectives and resource allocations are established in OCRWM's planning and budgeting processes to ensure that milestones are met and costs are managed effectively. Performance goals and initial performance targets for each fiscal year are included in OCRWM's budget request to OMB and in DOE's Annual Performance Plan; the targets are modified to reflect each year's congressional appropriation.

Strategic performance goals and associated performance measures are assigned to OCRWM project managers and office directors, who are held accountable for their achievement. Resource allocation is tied directly to work scope; it is reviewed and approved by the OCRWM Director and issued in the form of a final annual work plan for each fiscal year. During FY 2002, we reported FY 2001 performance results and established final performance targets for FY 2002. Progress against current performance goals and associated performance targets is reported in DOE's commitments database. In addition, the OCRWM Director conducted performance reviews with OCRWM Federal and contractor managers.

In July 2002, at the request of OMB, OCRWM completed a draft Capital Asset Plan. The Capital Asset Plan supports improved financial performance by linking capital expenditures through the completion of the repository surface facilities to acquisition of specific assets (e.g., buildings, transportation systems). A final Capital Asset Plan, to be submitted to OMB with the FY 2005 budget request, will reflect the FY 2003

appropriation, the FY 2004 congressional request, and the FY 2005 OMB budget request and the documentation required by OMB to ensure that major capital investments are well planned and adequately funded. We worked closely with OMB to develop an understanding of how the Program's funding requirements interacted with budget policy and the Administration's goals.

Sufficient and predictable funding will be required to support waste acceptance, transportation, and emplacement at the repository beginning in 2010. Inadequate funding will result in increasingly costly delays in meeting the Department's obligation to remove nuclear waste from utility sites and defense facilities. The House Appropriations Committee report for the FY 2003 Energy and Water Development appropriations called for inclusion of a legislative proposal to secure adequate funding with the FY 2004 budget request. This was a followup to similar direction in the FY 2002 report by the same committee. In response to this direction, in FY 2002, OCRWM began working with other Departmental elements and OMB to develop an approach to financing repository design and construction.

## Quality Assurance

An effective quality assurance (QA) program is critical to obtaining a repository construction authorization from NRC. NRC must ensure that licensees will be able to construct and operate facilities in a reliable and consistently safe manner.

FY 2002 QA audit, surveillance, observation, and review activities focused heavily on technical work used to support the site recommendation, including verifying whether all aspects of the Program's *Quality Assurance Requirements and Description* document are being effectively implemented. OCRWM's Office of Quality Assurance and NRC regularly discuss progress in completing corrective actions for any deficiencies found, and to address any concerns or issues NRC may have.

In FY 2002, OCRWM quality assurance staff initiated discussions with the Office of Environmental Management (EM) for OCRWM to assure primary responsibility for audits and surveillances of SNF and HLW activities at several EM sites around the country. Previously, EM conducted its own QA activities and OCRWM staff typically participated as observers. Transition of HLW QA activities to OCRWM is expected to be completed in FY 2003. Transition of SNF QA activities may continue into FY 2004 due to the complexity of the issues involved.

### *Fostering a Nuclear Safety Culture*

While OCRWM has long recognized the importance of a nuclear safety culture, efforts in FY 2002 focused on reinforcing the safety culture to meet the requirements of the NRC-regulated environment. By September 2002, OCRWM had issued a description of its 19 major functional areas and 4 focus areas to clarify the roles, responsibilities, authority, and accountability of Program participants. Revised guidance from OCRWM management articulated a zero-tolerance policy for actions inconsistent with a safety-conscious work environment. OCRWM provided specialized training to all managers and supervisors to ensure their understanding of and compliance with this guidance and began providing training for all other Program participants. Furthermore, to ensure Program participants' ability to raise issues and concerns in a supportive environment, OCRWM began revamping its concerns program in April 2002. A key component of the program is a reporting system that allows employees to raise a concern anonymously or identify an opportunity for improvement.

The Department requires that safety be systematically integrated into management and work practices at all levels so that missions are accomplished while protecting the public, workers, and the environment. Each year, the Department oversees the review of our M&O contractor's continuous improvement efforts in implementing the integrated safety management system throughout its programs and activities.

## Program Management, Administration, and Integration

As the Program continued to gather, analyze, develop, and document information about the repository and transportation systems, we updated various planning documents to provide Program staff, Government

decision makers, and external stakeholders with an accurate picture of how the waste management system will be developed and operated. Our planning documents also outline the steps we are taking to ensure safety, fiscal responsibility, and effective performance.

### *Program Planning*

During FY 2002, OCRWM continued planning the site characterization, pre-licensing, repository design, and licensing work that must be completed before construction authorization. In addition, we integrated new work necessary to reduce uncertainty in meeting regulatory requirements and to respond to recommendations from oversight groups such as the Nuclear Waste Technical Review Board (NWTRB). The planning effort will be completed in FY 2003, at which time OCRWM intends to revise its Program Plan. During FY 2002, OCRWM continued to implement the general planning approach described in Revision 3 of the *Civilian Radioactive Waste Management Program Plan*, which was issued in March 2000.

In March 2002, we held a planning workshop, which focused on our strategy for developing a successful license application, implementation of the baseline change process in project and program management, and developing a path forward for the Transportation Program. It also addressed future priorities for additional scientific research and a path forward for national public communications and institutional affairs.

### *Program-level Baseline Change Control*

Integrated technical, cost, and schedule baselines are the foundation of our Program performance measurement system and support budget and performance integration. The *Civilian Radioactive Waste Management System Requirements Document* defines the basic technical requirements for a national waste management system. As a result of a reassessment of the Program's likely FY 2002-2015 funding, the option of a phased development approach to repository design and construction was evaluated during late FY 2001 and early FY 2002. The phased development concept lowers near-term funding requirements by developing the facilities over an extended time period. The phased development concept has been approved by OCRWM management and will be incorporated into the Program's FY 2003 *Civilian Radioactive Waste Management System Requirements Document* and *Total System Description* document.

The program-level technical baseline is included in the *Civilian Radioactive Waste Management System Requirements Document*. The program-level cost and schedule baselines are documented in the *Program Cost and Schedule Baseline*. *Program Change Control Procedures* are followed when updating the technical, cost, and schedule baselines.

The *Civilian Radioactive Waste Management Major System Management Policy* includes contractor requirements for technical management, planning and control, baseline management, quality assurance, integrated safety management, and performance management that are imposed on the M&O contractor.

A Program Manager's Summary Project Performance Report was submitted to the Under Secretary for Energy, Science, and Environment for the first three quarters of FY 2002. A Civilian Radioactive Waste Management Major System Phase-1 Closeout Report was submitted to the Department's Office of Management, Budget and Evaluation/Chief Financial Officer for the fourth quarter of FY 2002.

### *Program-level Systems Studies*

Systems studies ensure that changes evolving from a major decision regarding one component of the national waste management system are technically integrated with all other components. They also help ensure that resources will be available for planned work and that all efforts are directed toward achieving Program goals.

### *Flexible Repository Design and Construction Alternatives*

Driven by the need to expedite initial waste receipt and to reconcile the Program's out-year funding requirements with realistic funding scenarios, OCRWM conducted an evaluation of flexible repository development scenarios. We outlined basic assumptions

about the repository system and waste streams and, based on these assumptions and other design evolution studies, proposed and evaluated a phased development approach for various waste receipt and emplacement scenarios. These studies directly support the license application effort.

### *Total System Life-cycle Cost Impacts*

We developed three studies and one white paper to identify changes in total system life-cycle cost (TSLCC) estimates resulting from a more flexible repository design, alternative waste streams, different transportation scenarios, and updated economic projections. These studies enabled cost impacts to be considered before major system modification decisions are made.

*The Life Cycle Cost Analysis for Repository Flexible Design Concepts*, issued in October 2001, provided life cycle cost analyses for alternative repository designs. The analysis estimated the relative costs of different combinations of design and operating parameters to achieve a low post-closure temperature.

*Total Life Cycle and Defense Share Cost Study for INEEL Calcine Treatment Alternatives* (January 2002) was performed in response to a request from the Idaho National Engineering and Environmental Laboratory (INEEL) to estimate the cost impact of varying the number of HLW canisters to be disposed. This study estimates the total life cycle cost and the resulting defense cost for five alternatives.

The study, *Update of Barge and Heavy Haul Cost Models in CALVIN v. 3.1* (July 2002), updated transportation cost models in the CRWMS (Civilian Radioactove Waste Management System) Analysis and Logistics Visually Interactive Model (CALVIN) Version 3.1 computer code used to support TSLCC estimates, as well as Project- and Program-level trade studies.

Finally, the *Cost Escalation and Interest Rates* (October 2001) white paper supplied rates that will be used in subsequent documents for converting year-of-expenditure costs to constant 2001 dollars. The revised projections resulting from this study will be used to calculate TSLCC estimates.

### *Waste Stream Projection and Impacts Studies*

Three studies were developed to update current waste stream projections and evaluate future changes to the waste stream as commercial reactor design and DOE waste processing and waste forms evolve.

The 2002 Design Basis Waste Input Report provided information on waste stream characteristics. The design basis waste stream includes data on both commercial SNF and DOE-managed SNF and HLW. The study will assist system designers in assessing the impacts of alternative waste streams on design options.

The *2002 Operational Waste Stream Assumptions* study (September 2002) described the assumptions that have been used to generate the projected commercial and defense operational waste streams. These waste streams are key inputs to the TSLCC and related fee adequacy determination.

The *Calculation Method for the Projection of Future Spent Nuclear Fuel Discharges* study (February 2002) described the method for projecting the timing, quantity, burnup, and initial enrichment of future utility SNF discharges. These calculations provide a link between existing short-term projections and life-cycle discharge quantities and characteristics. The results of this study also affect fee adequacy assessments.

### *Operational Security*

On March 19, 2002, the Assistant to the President and Chief of Staff directed all Federal agencies to conduct an "immediate re-examination" of all public documents for sensitive information on weapons of mass destruction and other data that might be useful to terrorists. "The need to protect such sensitive information from inappropriate disclosure should be carefully considered, on a case-by-case basis." By April 2002, OCRWM had published a policy and had developed a process for limiting access to potentially sensitive information. By the end of the reporting period, over 70 individuals had been trained to review documents for sensitive information. Thousands of legacy and new documents have been reviewed prior to being made publicly available.

## External Interactions

### *Outreach*

The Nuclear Waste Policy Act provides the foundation upon which the activities of the outreach program are based. Our external interactions involve many Program stakeholders such as Congress, OMB, the State of Nevada, tribal governments, and other affected jurisdictions, industry, regulatory agencies, other Federal agencies, and public interest groups. Outreach activities are directed at ensuring that these organizations have an opportunity to acquire the information they need to participate in and make informed decisions about the Program. Appendix E presents an overview of the formal interactions in which we are engaged. Although some of our external interactions have been curtailed in recent years because of funding cuts, we continue to provide public information and actively solicit the public's views.

We also rely heavily on our website as the most efficient means of making Program documents, announcements, and other materials available to the general public. The OCRWM home page at http://www.ocrwm.doe.gov provides current Program and budget plans, major documents, congressional testimony, *Federal Register* notices, speeches, news releases, and photographs of the Yucca Mountain site. An interactive mailbox facilitates responses to individual questions and solicits comments. The website supports the President's Management Agenda goal of providing a single electronic point of access for information about the Program.

Each milestone on the path to operating a repository offers opportunities for informing the public of the technical work performed and for soliciting public comments. Major outreach activities in FY 2002 occurred as part of the process of considering the site recommendation. Management made extensive efforts to meet the numerous individuals and organizations with which OCRWM interacts, in order to address their concerns and answer their questions. These meetings helped our stakeholders build an understanding of our work, gave us an opportunity to address their concerns, and provided information for the Secretary's site recommendation decision.

### *International Cooperation*

The United States is a leader in efforts to develop and operate a geologic repository. OCRWM's international activities include cooperating with other countries and international organizations to exchange information, develop consensus on common international issues, foster safe radioactive waste management around the world, and prevent nuclear proliferation.

The United States maintains bilateral agreements with Canada, France, Japan, Switzerland, Sweden, and Spain, and has a memorandum of understanding with the Russian Federation's Academy of Science (RAS). Bilateral agreements are still under negotiation with the United Kingdom (Nirex), Finland (Posiva), and the Russian Federation's Ministry of Atomic Energy (Minatom). Senior OCRWM managers presented briefings and participated in technical exchanges throughout FY 2002. OCRWM continued to work directly with the Russian Federation in cooperative programs to support our Nation's nonproliferation objectives. DOE and Minatom are formalizing a bilateral agreement on the isolation of radioactive materials in geologic repositories, and OCRWM has signed two implementing arrangements with RAS.

During FY 2002, OCRWM participated in collaborative activities with international organizations, including the Organization for Economic Cooperation and Development/Nuclear Energy Agency (OECD/NEA), the International Atomic Energy Agency (IAEA), and the International Association for Environmentally Safe Disposal for Radioactive Materials. Our collaboration with these organizations enables all participants to benefit from the results of outside research and experiences. At OCRWM's request, the NEA led a joint NEA-IAEA international peer review of the *Yucca Mountain Total System Performance Assessment* document, using international experts in radioactive waste management. The peer review was completed in FY 2002 and supported the Secretary of Energy's site recommendation to the President. Our work with the IAEA continued to focus on the development of overall radioactive waste management system technical issues, such as spent fuel burnup credits and spent fuel storage. During FY 2002, OCRWM participated in the Advisory Group on Spent Fuel Management, the spent

nuclear fuel burnup credit report, underground research laboratory development activities, and spent fuel performance assessment and research activities. In addition, the IAEA and OCRWM were involved in a peer review on biosphere modeling.

## Fiscal Year 2002 in Context

In FY 2002, with the arrival of OCRWM's new Director, Dr. Margaret S. Y. Chu, we conducted a review of the Program's organization and business processes. We subsequently initiated a realignment to improve and streamline our organization to better meet OCRWM's needs during the NRC licensing phase of the Program.

In an effort to further strengthen the Program's management systems and processes, OCRWM used the five initiatives described in the President's Management Agenda of August 2001 to guide our planning for the Program's transition from primarily scientific activities to licensing, construction, and operations. These five initiatives focus on improving financial performance, linking performance to budget, strategically managing human capital, using commercial firms for work that is not inherently Governmental, and expanding the Program's use of electronic technology E-government for management and public communication. To implement the President's Management Agenda initiatives, during FY 2002, we undertook several important actions, including a restructuring of the organization and issuing a draft Capital Asset Plan.

Our development of the draft Capital Asset Plan supports improved financial performance by linking capital expenditures through completion of the repository surface facility to successful acquisition of specific assets. In addition, we continued development with NRC of the LSN, which will facilitate NRC access to information needed to review OCRWM's license application and intervenor access to information needed to participate in the licensing hearings. We also continued managing and achieving OCRWM's performance targets in the Department's Annual Performance Plan.

# *Chapter Five*

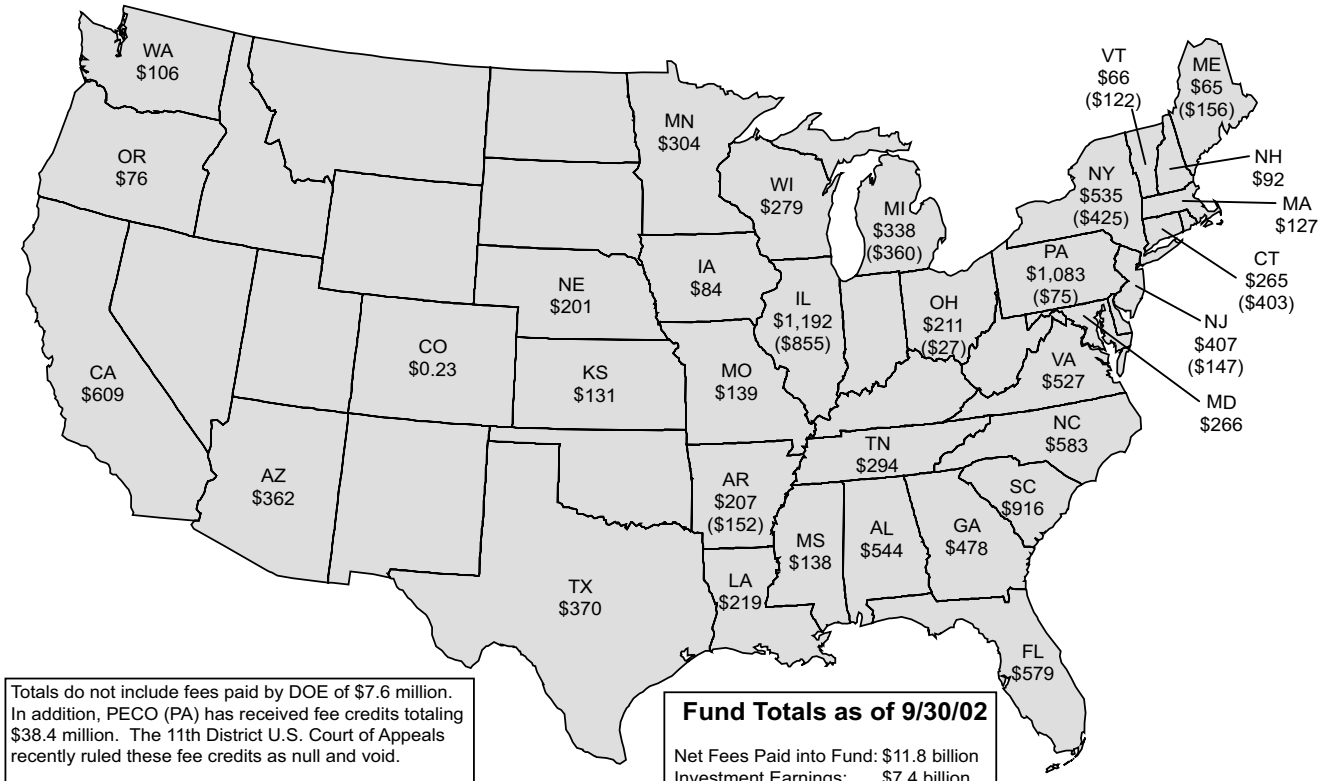
# *Financial Management*

In Fiscal Year (FY) 2002, we continued to carry out our primary financial management functions: accounting for the Program's assets, liabilities, and cash flows; quantifying the Program's long-range financial needs; and managing the investment of civilian revenues so that they are available to meet Program requirements.

## Funding

The Nuclear Waste Policy Act (NWPA) provides that the costs of disposing of spent nuclear fuel (SNF) and high-level radioactive waste (HLW) be borne by the parties responsible for the generation of these wastes. Under the NWPA, the Office of Civilian Radioactive Waste Management's (OCRWM) obligation to accept SNF and HLW for disposal is limited to those wastes whose disposal costs have been fully paid by their owners and generators.

The NWPA left it up to the President to determine whether civilian and defense-related waste should be emplaced in the same repository. On April 30, 1985, President Reagan issued a decision that they should be, with each party paying its proportional share of the full cost. To implement that decision, public rulemaking




Totals do not include fees paid by DOE of $7.6 million. In addition, PECO (PA) has received fee credits totaling $38.4 million. The 11th District U.S. Court of Appeals recently ruled these fee credits as null and void.

Figures represent cumulative 1.0 mil and one-time fee payments. One-time fees owed total $2.7 billion as shown in parentheses.

**Fund Totals as of 9/30/02**

| | |
|---|---|
| Net Fees Paid into Fund: | $11.8 billion |
| Investment Earnings: | $7.4 billion |
| TOTAL: | $19.2 billion |
| Disbursements: | ($5.7 billion) |
| NET BALANCE: | $13.4 billion |

**Nuclear electricity consumers in 34 states have paid fees into Nuclear Waste Fund ($ in millions)**

was used to develop a methodology for allocating defense and civilian costs. The result was published in the *Federal Register* in August 1987. The Department's accounting system is consistent with this methodology.

### *Program Revenues: Civilian Utility Fees for Civilian Waste*

The NWPA provides for two types of fees to be levied on the owners and generators of civilian SNF: an ongoing fee of 1.0 mil (one tenth of one cent) per kilowatt-hour (kWh) on nuclear electricity generated and sold after April 7, 1983, and a one-time fee for all nuclear electricity generated and sold prior to that date. The fees are defined in the *Standard Contract for Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste*, which was promulgated in 1983 and executed between the Department of Energy (DOE) and the owners and generators of the waste. Nuclear power producers make quarterly payments of the ongoing fee. For the one-time fee, the contract allowed owners to choose to pay immediately or defer payment and incur interest. Through FY 2002, $1,458 million in one-time fees had been paid and $880 million had been deferred.

Fees for SNF disposal are deposited in the Nuclear Waste Fund (NWF), a separate account in the U.S. Treasury that is managed and administered by DOE. Amounts not appropriated by the Congress for current Program expenses are invested in U.S. Treasury securities. OCRWM manages these investments strategically to ensure that the long-term costs of waste disposal can be met. The total market value of the NWF as of September 30, 2002, was approximately $14.0 billion.

OCRWM earns revenue when nuclear power plants generate and sell power, when OCRWM earns interest or realizes capital gains on U.S. Treasury investments, and when interest is charged on the utilities' unpaid fee balances. During FY 2002, OCRWM earned $1,662 million in revenue. FY 2002 civilian revenue consisted of $755 million in ongoing 1 mil/kWh fees, $52 million in interest on and adjustments to one-time fees, and $855 million in investment earnings. The cumulative revenue, as of September 30, 2002 (shown in Table 5-1), was $21,337 million, of which $18,327 million had been paid and $3,010 million remained unpaid. Revenue includes $6,516 million in earnings on U.S. Treasury investments, of which $6,445 million has been paid and $71 million was due with the next semiannual interest payment.

### *Program Revenues: Defense Dollars for Defense Waste*

The Department's Office of Environmental Management, and the National Nuclear Security Administration's Naval Nuclear Propulsion Program and Office of Fissile Materials Disposition, as custodians of the Department's inventory of HLW and SNF, also contribute to Program costs and revenues.

In FY 2002, we continued to implement the terms of the memoranda of agreement that we executed with the Office of Environmental Management and the Naval Nuclear Propulsion Program in FY 1998. The memoranda established a process for determining waste acceptance and fee payment schedules.

Table 5-1 also shows OCRWM accrued revenue from defense sources. Defense revenue is earned when the Program incurs costs related to defense waste disposal and when interest is charged on unpaid defense balances. In FY 2002, accrued defense revenue was $134 million, which included $112 million in accrued fee revenue and $22 million in accrued interest on deferred fees. OCRWM's cumulative accrued defense revenue as of September 30, 2002, consisted of $1,992 million in accrued fees and $918 million in accrued interest, for a total of $2,910 million. Of the total, $1,697 million had been paid and $1,213 million (including interest) remained unpaid.

### *Program Expenditures*

Congress makes two separate appropriations for the Program, one from the NWF, the other through a Defense Nuclear Waste Disposal appropriation. These appropriations are recorded in separate internal accounts; however, they are consolidated in the OCRWM financial statements.

Appropriations for the Program are subject to the Federal budget process. They are considered part of the discretionary portion of the budget and thus compete for resources with other discretionary spending programs. As a consequence, although the NWF is composed of dedicated utility fee payments, plus the investment earnings on the balance in the Fund, appropriations from it are included in the total spending limits imposed on general Federal programs. Historically, this has resulted in constraints on Program funding. In August 2001, the Program published a report, *Alternative Means of Financing and Managing the Civilian Radioactive Waste Management Program*, which suggested several ways of overcoming these constraints. In FY 2002, OCRWM began working with other Departmental elements and the Office of Management and Budget to develop an approach to financing repository design and construction.

As shown in Table 5-2, FY 2002 Program expenditures were $408 million, of which $296 million was allocated to civilian and $112 million to defense waste disposal activities. Through FY 2002, Congress had appropriated a total of $7,489 million for the Program and related activities under the NWPA.

The OCRWM financial statements for FY 2002 and the report from OCRWM's independent auditors are at Appendix A.

## Managing Investments

The objectives of OCRWM's investment strategy are to: (1) ensure that investment income is available when needed; (2) support the adequacy of the fee paid into the NWF by waste owners and generators; and (3) hedge against uncertainty and unplanned funding requirements. To achieve these objectives, the NWF is

| | CIVILIAN | | | | | DEFENSE | | | Grand Total |
|---|---|---|---|---|---|---|---|---|---|
| | 1 mil/kWh Fee | One-Time Fee | Interest on Fees | Return on Investment | Civilian Total | Fees | Interest on Fees | Defense Total | |
| FY 2002[1] | 755 | 0 | 52 | 855 | 1,662 | 112 | 22 | 134 | 1,796 |
| Cumulative through FY 2002 | 10,612 | 2,338 | 1,871 | 6,516 | 21,337 | 1,992 | 918 | 2,910[2] | 24,247 |
| Paid by Waste Owners[3] | 10,395 | 1,458 | 29 | 6,445 | 18,327 | 1,697 | | 1,697 | 20,024 |
| Receivable[4] | 217 | 880 | 1,842 | 71 | 3,010 | 1,213[2] | | 1,213 | 4,223 |

1 From Note 12 to the Financial Statements (Appendix A).

2 From Note 8 to the Financial Statements. Defense payments include the $12.5 million paid by the Department into the Nuclear Waste Fund, Defense Nuclear Waste Disposal appropriations, and credits to the Government for use of the Nevada Test Site facilities. Because payments are credited against the balance due and not separated into interest and principal, only one number is shown on the Paid and Receivable lines.

3 Paid amounts are calculated by subtracting the Receivable amount from the cumulative total.

4 From Notes 4, 5, and 8 to the Financial Statements.

**Table 5-1**
**Cumulative program revenue as of September 30, 2002**
**(in millions of dollars)**

managed as two portfolios: a contingency portfolio and a match portfolio.

The purpose of the contingency portfolio is to hedge against reasonable contingencies, such as unexpected near-term expenditures. The purpose of the match portfolio is to provide reliable funding for expected program expenditures. It serves to bring into balance the Program's assets and liabilities and to maintain that balance. The contingency portfolio is highly liquid and consists of U.S. Treasury securities, the average maturity of which does not exceed three years. The match portfolio consists of a mix of U.S. Treasury bills, notes, bonds, and zero-coupon bonds. The duration and present values of these investments are matched, or will be matched, to the durations and present values of OCRWM's projected liabilities. Matching investments to planned spending reduces the sensitivity of the fee adequacy balance to changing interest rates.

Each month, near-term cash flow expectations and current asset and liability values are reassessed and used as the basis for investment selection. The portfolio is rebalanced, as required, upon completion of each new total system life cycle cost analysis or when changes in Program assumptions warrant. During FY 2002, the average of the contingency portfolio's month-end balances was $1.8 billion and the average of its month-end maturities was 3 years.

On September 30, 2002, the market value of NWF investments was approximately $14,009 million, compared with $11,674 million at the end of FY 2001. The increase in market value was due to the addition of new investments of surplus fee income, investment earnings, and changes in market conditions. The impact of market conditions varies from year to year. Declining interest rates increase investment values, and rising rates lower values. In FY 2002, near- and long-term interest rates fell. The effect of declining rates was a substantial gain. Standard accounting practices require that we report the market value of the NWF because we occasionally sell securities before maturity to adjust investments to Program spending plans. However, most of the securities will be held to maturity and earn the return that was expected when they were purchased.

| | CIVILIAN | DEFENSE | TOTAL |
|---|---|---|---|
| FY 2002[1] | 296 | 112 | 408 |
| Cumulative through FY 2001[2] | 5,588 | 1,992 | 7,580 |
| Paid by Program[3] | 5,560 | 1,981 | 7,541 |
| Payable[3] | 28 | 11 | 39 |
| Appropriations[4] | 5,796 | 1,693 | 7,489 |

1 Total Program expenditures are from Note 12 to the Financial Statements, which states that kWh and defense fees are recognized as revenue to the extent of expenses incurred and recognizes earned revenue of $408 million. The total is divided into civilian and defense portions based on the May 2001 Total System Life Cycle Cost (TSLCC) defense share of 28 percent.

2 Cumulative defense and total expenditures are from Note 12 to the Financial Statements. Cumulative civilian expenditures are the difference between total expenditures and defense expenditures.

3 The Paid amount is the difference between total expenditures and payables. (Payables are shown in the Balance Sheet of the Financial Statements and are amounts owed by the Program that have not yet been paid. The total amount of payables is divided into civilian and defense portions based on the TSLCC defense share of 28 percent.)

4 Appropriation totals are based on historic appropriation legislation and are not discussed in the Financial Statements. Total appropriations are not equal to total expenditures because: 1) civilian expenditures include $135 million in interest on utility overpayment, most of which was funded through fee credits, i.e., not through appropriations; 2) capital expenditures are amortized in the Financial Statements; and 3) some appropriated funds were carried over into FY 2002 from FY 2001. Civilian appropriations include $327 million appropriated from the Nuclear Waste Fund to the Nuclear Regulatory Commission, the Nuclear Waste Technical Review Board, and the now-defunct Office of the Nuclear Waste Negotiator.

**Table 5-2**
**Cumulative program expenditures as of September 30, 2002**
**(in millions of dollars)**

Over the last year, the NWF investments earned a market value return of 15.7 percent and a book value return of 7.7 percent. Book value returns reflect the accrued income received from investments and realized capital gains. They are much more stable than market returns. Over many years, average book and market value returns will be approximately equal. Since the first investments were made in 1985, the market value return and the book value return have averaged about 8.8. and 8.0 percent, respectively.

**This page intentionally left blank.**

# *Appendix A*

# *Financial Statements*

**This page intentionally left blank.**

# OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

# ACCOUNTABILITY REPORT

# SEPTEMBER 30, 2002

**UNITED STATES DEPARTMENT OF ENERGY**
**OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT**

**Years Ended September 30, 2002 and 2001**

**Table of Contents**

## *OVERVIEW*

### Reporting Entity

The Nuclear Waste Policy Act of 1982 (Public Law 97-425) established the Office of Civilian Radioactive Waste Management (OCRWM) within the Department of Energy (Department). OCRWM's mission is to manage and dispose of the nation's spent nuclear fuel (SNF) and high-level radioactive waste (HLW). OCRWM provides leadership in developing and implementing strategies to accomplish this mission that ensure public and worker health and safety, protect the environment, merit public confidence, and are economically viable.

The Nuclear Waste Policy Amendments Act of 1987 (Title V, Public Law 100-203) directed the Secretary of Energy to characterize only the Yucca Mountain site in Nevada as a candidate site to determine if it was suitable for a repository for SNF and HLW.

As of September 30, 2002, OCRWM employed 1,923 people. This included 163 OCRWM Federal staff, 18 Federal full-time equivalents (FTEs) at other Headquarters offices, 6 Federal FTEs at the Department of Energy Nevada Operations Office, 102 U.S. Geological Survey employees, and 1,634 contractor employees, including employees of national laboratories.

In fiscal year 2002 OCRWM carried out its mission through two business centers -- the Yucca Mountain Site Characterization Project and the Waste Acceptance, Storage and Transportation Project -- and a Program Management Center.

The Yucca Mountain Site Characterization Project, located in Las Vegas, Nevada, oversaw the scientific and technical investigation of Yucca Mountain, including:

- Addressing the major unresolved technical questions about the site,
- Operating the exploratory studies facility,
- Developing repository and waste package design elements that are critical to determining the feasibility of the engineered barrier system,
- Preparing a final environmental impact statement to accompany the Secretarial site recommendation report
- Preparing a site recommendation report for the Secretary's submittal to the President, and
- Preparing a license application for repository construction for submittal to the Nuclear Regulatory Commission.

The Waste Acceptance, Storage and Transportation Project, located in Washington, D.C., focused on the development of processes for the legal and physical transfer of commercial SNF to the Federal Government, establishment of an acceptance process for Department-owned SNF, including naval SNF, HLW and immobilized surplus plutonium, creation of a national transportation capability for waste acceptance, and the resolution of institutional issues with OCRWM Program (Program) stakeholders.

OCRWM's Program Management Center (Center) provided program integration and management support to the Director, OCRWM, and to the two business centers. The Center was comprised of the Office of Quality Assurance in Las Vegas, Nevada, the Office of Program Management and Administration, and the Systems Engineering and International Division of the Office of Acceptance, Transportation and Integration, in Washington, D.C. The Center was responsible for quality assurance, program planning and administration, program management, technical and regulatory integration, international waste management activities, institutional activities, and management of the Nuclear Waste Fund (NWF).

The characterization of the Yucca Mountain Site has been completed. On February 14, 2002, the Secretary of Energy recommended the site to the President for development of a nuclear waste repository. On February 15, 2002, the President recommended the site to Congress. On May 8 and July 9, 2002, the House of Representatives and the Senate, respectively, passed a resolution approving the site recommendation. On July 23, 2002, the President signed into law the Congressional Joint Resolution designating Yucca Mountain as the site for the Nation's first SNF and HLW repository. At that point, the focus of the Yucca Mountain Project changed to the activities associated with the Nuclear Regulatory Commission licensing process for construction and receiving and possessing waste. The Waste Acceptance Storage and Transportation Project focus changed to the development of a national waste transportation capability.

**Fiscal Year 2002 Technical Performance**

Of OCRWM's five performance targets for FY 2002, three were met, as specified, one was replaced by an alternative measure that met the same overall objective and was completed in FY 2002, and one was not completed as a result of consultation with the Department's Office of General Counsel.

**Performance Target One.** Submit a Final Environmental Impact Statement to the President as required by the Nuclear Waste Policy Act.

*Results:* *Achieved: The Final Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada, was transmitted to the President by the Secretary of Energy on February 14, 2002, as a part of the documentation supporting the Yucca Mountain Site Recommendation.*

**Performance Target Two.** Finalize a Site Recommendation Report for the Secretary of Energy to submit to the President, and then to the Congress.

*Results:* *Achieved: On February 14, 2002, the Secretary of Energy formally recommended to the President that the Yucca Mountain site in Nevada be developed as the Nation's first geologic repository for spent nuclear fuel and high-level radioactive waste. On February 15, 2002, the President recommended the site to Congress. Both houses of Congress voted to override the Governor of Nevada's veto of the President's recommendation. On July 23, 2002, the President signed Congressional Joint Resolution 87 into law and the site designation took effect.*

**Performance Target Three.** Issue Nuclear Waste Policy Act Section 180(c) Notice of Revised Proposed Policy and Procedures for public comment.

*Results:* *Not Achieved: The Nuclear Waste Policy Act Section 180(c) Notice of Revised Policy and Procedures was drafted and was undergoing Departmental review. However, as a result of this review, it was decided, in consultation with the Office of General Counsel, that it was not appropriate to issue the notice at this time. There are multiple reasons for the decision: 1. The amount of related training States and Native American tribes have already received and continue to receive in response to the September 11, 2001, terrorist attacks. 2. The Nuclear Regulatory Commission and the Department of Transportation are considering revising their regulations to require armed escorts for all spent nuclear fuel shipments. 3. OCRWM will issue a transportation plan for shipments to Yucca Mountain in FY 2003, which will discuss how section 180(c) of the Nuclear Waste Policy Act will be implemented.*

**Performance Target Four.** Begin development of updated Total System Life Cycle Cost and Fee Adequacy Reports.

*Results:* *Achieved: A letter report supplementing the May 2001 Total System Life Cycle Cost Analysis and Fee Adequacy reports was issued in February 2002. In addition, a detailed response to the Independent Cost Estimate Review of OCRWM's 2001 Total System Life Cycle Cost Report was issued. Some deficiencies in estimating methodology were identified and are being corrected. Several other studies and reports that will be used in developing the next Total System Life Cycle Cost Analysis and Fee Adequacy reports were completed.*

**Performance Target Five.** Issue draft request for proposals for waste acceptance and transportation services.

*Results:* *Achieved through alternate approach: Since the target was established, OCRWM reassessed its strategy for acquiring the transportation fleet, equipment, and services needed to implement its national transportation program. Risks and technical and schedule uncertainties, which presented problems to implementing the strategy presented in the Draft Request for Proposal (RFP) issued in 1998, are unlikely to diminish in the foreseeable future. Therefore, OCRWM implemented an alternative strategy to mitigate the impact of these uncertainties*

*and to address issues that have evolved since the original Draft RFP was issued. This strategy entails the issuance of a new draft statement of work (SOW) rather than a draft RFP. The draft SOW was issued on September 20, 2002, and meets the purpose of the original performance target. The approach contained in the draft SOW addresses the onging business, schedule, and operational risks associated with the transportation of spent nuclear fuel and high-level radioactive waste. The draft SOW solicits comments on the acquisition approach and facilitates the issuance of a final RFP in FY 2003, as originally planned.*

**Fiscal Year 2003 Technical Performance Targets**

The following OCRWM technical performance targets have been identified for fiscal year 2003:

**Performance Target One.** Complete additional testing and analyses required to support license application design.

**Performance Target Two.** Complete development of repository conceptual design and request Acquisition Executive approval to start preliminary design, which will be used in the license application.

**Performance Target Three.** Complete and issue updated Total System Life Cycle Cost and Fee Adequacy reports in preparation for license application.

**Performance Target Four.** Develop and issue the OCRWM Strategic Transportation Plan.

**Performance Target Five.** Acquire transportation planning services.

**Fiscal Year 2002 Financial Performance**

OCRWM is required by the NWPA to recover the full cost of the Program. The Program's total cost was estimated in *Analysis of the Total System Life Cycle Cost of the Civilian Radioactive Waste Management Program,* dated *May 2001*.

Program funding comes from the NWF and the Defense Nuclear Waste Disposal Appropriation (DNWDA). The NWF consists of fees paid by the owners and generators of SNF from commercial reactors, in accordance with provisions of their contracts with the Department for disposal services. NWF assets in excess of those appropriated to pay program costs are invested in U.S. Treasury securities. The DNWDA was established by the Congress in lieu of direct payment of fees by the Department into the NWF, to pay for the disposal costs of the HLW resulting from atomic energy defense activities and other Department-managed nuclear materials. As of September 30, 2002, cumulative revenue from fees and the DNWDA, totaled approximately $14.953 billion, and cumulative interest earnings and other revenue totaled approximately $9.306 billion. Cumulative expenditures from appropriations, including direct appropriations to the Nuclear Regulatory Commission, the now defunct Office of the Nuclear Waste negotiator, and the Nuclear Waste Technical Review Board, totaled approximately $7.6 billion.

As of September 30, 2002, the U.S. Treasury securities held by OCRWM had a market value of $14.009 billion compared to $11.674 billion at the end of Fiscal Year 2001. Investment income for fiscal year 2002 was $854.8 million, including $683.4 million in interest earnings and $171.4 million in net gains on the sale of securities.

OCRWM's primary financial goal is to ensure that future spending needs can be met. Therefore, OCRWM relies on the asset-liability matching approach to investing used by pension funds and insurance companies. By matching investments to anticipated funding requirements, OCRWM reduces the risk that changes in interest rates will adversely affect the fee adequacy balance, ensures that identified spending projections will be met, and makes investments at the most favorable rates currently available.

In its FY 2001 Overview, OCRWM established the following two financial performance measures for FY 2002:

- To maintain an adequate liquid reserve of approximately $2 billion in U. S. Treasury securities, with an average duration not to exceed 3 years, to meet unexpected spending needs.

  *Results:* *Achieved: The month-end balances in the contingency fund were between $1.8 billion and $2.0 billion, and each month's duration was less than 3 years.*

- To reallocate existing investments and invest any additional surpluses to match the Program's cumulative spending profile through 2026.

  *Results:* *Achieved: As of September 30, 2002, the cumulative spending profile was matched through 2026.*

**Fiscal Year 2003 Financial Performance Targets**

The following have been identified as financial performance measures for OCRWM in FY 2003:

- To maintain an adequate liquid reserve of approximately $2 billion in Treasury securities, with an average maturity not to exceed 3 years, to meet unexpected spending needs.

- To reallocate existing investments and invest any additional surpluses to respond to increasing expenditure projections and match the Program's cumulative spending profile through 2024.

2001 M Street, N.W.
Washington, D.C. 20036

## INDEPENDENT AUDITORS' REPORT

U.S. Department of Energy
Office of Civilian Radioactive Waste Management:

We have audited the accompanying balance sheets of the Office of Civilian Radioactive Waste Management (OCRWM), a component of the U. S. Department of Energy (Department), as of September 30, 2002 and 2001, and the related statements of net costs, changes in net position, budgetary resources, and financing (hereinafter referred to as financial statements) for the years then ended. The objective of our audits was to express an opinion on the fair presentation of these financial statements. In connection with our audits, we also considered OCRWM's internal control over financial reporting and tested OCRWM's compliance with certain provisions of applicable laws and regulations that could have a direct and material effect on its financial statements.

### Summary

As stated in our opinion on the financial statements, we concluded that OCRWM's financial statements as of and for the years ended September 30, 2002 and 2001, as presented in OCRWM's *Fiscal Year 2002 Accountability Report*, are presented fairly, in all material respects, in conformity with accounting principles generally accepted in the United States of America.

Our consideration of internal control over financial reporting identified a reportable condition with respect to unclassified information systems security. However, this reportable condition is not believed to be a material weakness.

The results of our tests of compliance with laws and regulations disclosed no instances of noncompliance that are required to be reported herein under *Government Auditing Standards*, issued by the Comptroller General of the United States, or Office of Management and Budget (OMB) Bulletin No. 01-02, *Audit Requirements for Federal Financial Statements.*

The following sections discuss our opinion on OCRWM's financial statements, our consideration of OCRWM's internal control over financial reporting, our tests of OCRWM's compliance with certain provisions of applicable laws and regulations, and management's and our responsibilities.

### Opinion on Consolidated Financial Statements

We have audited the accompanying balance sheets of OCRWM as of September 30, 2002 and 2001, and the related consolidated statements of net costs, changes in net position, budgetary resources, and financing for the years then ended.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of OCRWM as of September 30, 2002 and 2001, and its net costs, changes in net position, budgetary resources, and reconciliation of net costs to budgetary obligations for the years then ended, in conformity with accounting principles generally accepted in the United States of America.

## Independent Auditors' Report, Continued

As discussed in Note 2 to the financial statements, during fiscal year 2002 OCRWM changed its method for accounting for Nuclear Waste Fund investments effective October 1, 2001.

As discussed in Note 9 to the financial statements, OCRWM is involved as a defendant in several matters of litigation relating to its inability to accept waste by the January 31, 1998 date specified in the Nuclear Waste Policy Act of 1982, as amended.

Our audits for the years ended September 30, 2002 and 2001, were made for the purpose of forming an opinion on the basic financial statements taken as a whole. The supplementary information included in Supplementary Information – Schedules I and II for the years ended September 30, 2002 and 2001, are presented for purposes of additional analysis and are not a required part of the basic financial statements. Such information has been subjected to the auditing procedures applied in the audits of the basic financial statements and, in our opinion, is fairly stated in all material respects in relation to the basic financial statements taken as a whole for the years ended September 30, 2002 and 2001.

We have also previously audited, in accordance with generally accepted auditing standards, the basic financial statements of OCRWM as of and for the years ended September 30, 1983 through September 30, 2000 (none of which are presented herein), and we expressed unqualified opinions on those financial statements. The supplementary information included in Schedules I and II related to OCRWM's financial statements as of and for the years ended September 30, 1983 through September 30, 2000 was subjected to auditing procedures applied in the audits of those basic financial statements and, in our opinion, is fairly stated in all material respects in relation to the basic financial statements from which it has been derived.

The information in the Overview and Required Supplementary Stewardship Information sections of OCRWM's *Fiscal Year 2002 Accountability Report* is not a required part of the financial statements, but is supplementary information required by accounting principles generally accepted in the United States of America or OMB Bulletin No. 01-09, *Form and Content of Agency Financial Statements*. We have applied certain limited procedures, which consisted principally of inquiries of management regarding the methods of measurement and presentation of this information. However, we did not audit this information and, accordingly, we express no opinion on it.

**Internal Control over Financial Reporting**

Our consideration of internal control over financial reporting would not necessarily disclose all matters in the internal control over financial reporting that might be reportable conditions. Under standards issued by the American Institute of Certified Public Accountants, reportable conditions are matters coming to our attention relating to significant deficiencies in the design or operation of the internal control over financial reporting that, in our judgment, could adversely affect OCRWM's ability to record, process, summarize, and report financial data consistent with the assertions by management in the financial statements.

Material weaknesses are reportable conditions in which the design or operation of one or more of the internal control components does not reduce to a relatively low level the risk that misstatements, in amounts that would be material in relation to the financial statements being audited, may occur and not be detected within a timely period by employees in the normal course of performing their assigned functions.

A certain Department-level matter involving internal control over financial reporting and its operation was reported by the Department and considered to be a reportable condition. Because OCRWM uses the Department's Information Technology (IT) systems to process financial transactions and generate reports, this weakness also affects the IT environment for OCRWM. For our fiscal year 2002 audit, we considered

## Independent Auditors' Report, Continued

this matter, described in Exhibit I, to be a reportable condition. However, this reportable condition is not believed to be a material weakness.

A summary of the status of prior year reportable conditions is included as Exhibit II.

We also noted other matters involving internal control over financial reporting and its operation that we will report to OCRWM management in a separate letter addressing financial and information technology matters.

**Compliance with Laws and Regulations**

The results of our tests of compliance with certain provisions of laws and regulations, described in the Responsibilities section of this report disclosed no instances of noncompliance that are required to be reported herein under *Government Auditing Standards* and OMB Bulletin No. 01-02.

**Responsibilities**

***Management's Responsibilities***

Management is responsible for:

Preparing the financial statements in conformity with accounting principles generally accepted in the United States of America;

Establishing and maintaining internal controls over financial reporting, and preparation of the Overview (including the performance measures), required supplementary information, and required supplementary stewardship information; and

- Complying with laws and regulations.

In fulfilling these responsibilities, estimates and judgments by management are required to assess the expected benefits and related costs of internal control policies. Because of inherent limitations in internal control, misstatements due to error or fraud may nevertheless occur and not be detected.

***Auditors' Responsibilities***

Our responsibility is to express an opinion on the fiscal year 2002 and 2001 financial statements of OCRWM based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America, the standards applicable to financial audits contained in *Government Auditing Standards*, and OMB Bulletin No. 01-02. Those standards and OMB Bulletin No. 01-02 require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free of material misstatement.

## Independent Auditors' Report, Continued

An audit includes:

Examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements;

Assessing the accounting principles used and significant estimates made by management; and

Evaluating the overall financial statement presentation.

We believe that our audits provide a reasonable basis for our opinion.

In planning and performing our fiscal year 2002 audit, we considered OCRWM's internal control over financial reporting by obtaining an understanding of OCRWM's internal control, determining whether internal controls had been placed in operation, assessing control risk, and performing tests of controls in order to determine our auditing procedures for the purpose of expressing our opinion on the financial statements. We limited our internal control testing to those controls necessary to achieve the objectives described in OMB Bulletin No. 01-02 and *Government Auditing Standards*. We did not test all internal controls relevant to operating objectives as broadly defined by the *Federal Managers' Financial Integrity Act of 1982*. The objective of our audit was not to provide assurance on internal control over financial reporting. Consequently, we do not provide an opinion thereon.

As required by OMB Bulletin No. 01-02, we considered OCRWM's internal control over required supplementary stewardship information by obtaining an understanding of OCRWM's internal control, determining whether these internal controls had been placed in operation, assessing control risk, and performing tests of controls. Our procedures were not designed to provide assurance on internal control over required supplementary stewardship information and, accordingly, we do not provide an opinion thereon.

As further required by OMB Bulletin No. 01-02, with respect to internal control related to performance measures determined by management to be key and reported in the Overview, we obtained an understanding of the design of significant internal controls relating to the existence and completeness assertions. Our procedures were not designed to provide assurance on internal control over performance reporting and, accordingly, we do not provide an opinion thereon.

As part of obtaining reasonable assurance about whether OCRWM's fiscal year 2002 financial statements are free of material misstatement, we performed tests of OCRWM's compliance with certain provisions of laws and regulations, noncompliance with which could have a direct and material effect on the determination of financial statement amounts, and certain provisions of other laws and regulations specified in OMB Bulletin No. 01-02, excluding certain provisions referred to in the *Federal Financial Management Improvement Act of 1996* (FFMIA), which was evaluated at the Department level. We limited our tests of compliance to the provisions described in the preceding sentence, and we did not test compliance with all laws and regulations applicable to OCRWM. Providing an opinion on compliance with laws and regulations was not an objective of our audit and, accordingly, we do not express such an opinion.

## Independent Auditors' Report, Continued

### Distribution

This report is intended for the information and use of OCRWM's and the Department's management, the Department's Office of Inspector General, OMB, and the U.S. Congress, and is not intended to be and should not be used by anyone other than these specified parties.

KPMG LLP

January 31, 2003

## Unclassified Information Systems Security

We noted network vulnerabilities and weaknesses in access and other security controls in unclassified information systems.

**Finding 1:** Network Security

The Department of Energy (Department) maintains a series of interconnected unclassified networks and information systems. Federal and Departmental directives require the establishment and maintenance of security over unclassified information systems, including financial management systems. Past audits identified significant weaknesses in selected systems and devices attached to the computer networks at some Department sites. The Department has implemented certain corrective actions to improve network security at the sites we reviewed in prior years. However, we identified significant weaknesses at all four sites we reviewed in fiscal year 2002. At all of these sites, we identified network vulnerabilities similar to those found at other sites in previous years, including poor password management, weak configuration management, and outdated software with known security problems. In addition, many previously identified weaknesses have not been resolved.

The identified weaknesses and vulnerabilities increase the risk that malicious destruction or alteration of data or unauthorized processing could occur. Because of our concerns, we performed supplemental procedures and identified compensating controls that mitigate their potential effect on the integrity of the Department's financial systems.

**Recommendation:**

We recommend that the Department's Chief Information Officer take actions to improve network security throughout the Department. Detailed recommendations to address the issues discussed above are included in a separate report to the Chief Information Officer. We also recommend that the Office of Civilian Radioactive Waste Management's (OCRWM) management continue to monitor the actions of the Department's Chief Information Officer and assess the impact on the processing and reporting of OCRWM's financial data.

**Finding 2:** Information Systems Access and Other Security Controls

The Department has mandated compliance with several Federal information security directives and public laws in DOE Notice 205.1, *Unclassified Computer Security Program*, dated July 26, 1999. The program also establishes policies for the protection of unclassified information and information systems. Within this security framework, the Department operates its financial management systems that form the basis for preparing its consolidated financial statements including OCRWM's financial statements.

Our audit disclosed weaknesses in access and other security controls at several sites. These weaknesses included ineffectual physical access controls, inadequate monitoring of networks for questionable activity, deficiencies in restriction and review of user privileges, insufficient segregation of incompatible privileges, and shortcomings in password security. We also identified weaknesses in security planning, including inadequate identification of critical and sensitive systems and applications, and outdated or nonexistent risk assessments and security certifications for support systems and major applications. Finally, we noted inadequate planning for re-establishment of computer operations following a disruption. For example, some sites had arranged for backup processing facilities, but had not tested those facilities, and others had not finalized or tested disaster

recovery plans. The Department's Office of Inspector General also reported deficiencies in the Department's network and information system risk management, contingency planning, configuration management, and access controls in its evaluation report on *The Department's Unclassified Cyber Security Program*, dated September 9, 2002.

Without appropriate access and computer security controls, the integrity of essential financial management system data may be threatened. Because of our concerns, we performed supplementary audit procedures and identified compensating controls that mitigate the potential effect of these security weaknesses on the integrity of the Department's and OCRWM's financial systems. Because the purpose of our audit was to express an opinion on OCRWM's financial statements, our audit did not address the potential effect of the security weaknesses on the integrity of the Department's or OCRWM's non-financial systems.

**Recommendation:**

As recommended in the prior year, the Department's Chief Information Officer should follow up on the implementation of its Cyber Security Program throughout the Department, to ensure that the Federal information standards are met and that its information and information systems are protected against unauthorized access. Detailed recommendations to address the issues discussed above are included in a separate report to the Chief Information Officer. We also recommend that OCRWM's management continue to monitor the actions of the Department's Chief Information Officer and assess the impact on its operations.

## Independent Auditors' Report, Continued
## Exhibit II – Status of Prior Year Findings

**Reportable Condition From Fiscal Year 2001**
Unclassified Information Systems Security first reported in 2001.

**Status at September 30, 2002**
Still reported in Exhibit I as a reportable condition.

# UNITED STATES DEPARTMENT OF ENERGY
# OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
## Balance Sheets
**As of September 30, 2002 and 2001**
**(Dollars in thousands)**

| | 2002 | 2001 |
|---|---|---|
| **ASSETS** | | |
| Intragovernmental | | |
| Fund Balance with Treasury (note 3) | $ 26,716 | $ 10,098 |
| Investments, Net (note 4) | 12,464,732 | 11,674,214 |
| Accounts Receivable: | | |
| Receivables from Department of Energy (note 7) | 1,213,285 | 1,359,871 |
| Utilities (note 5) | 11,104 | 11,087 |
| Accrued Investment Interest (note 4) | 71,180 | 70,149 |
| Other Accounts Receivable | 17 | 14 |
| Other Intragovernmental Assets | 262 | 101 |
| Total Intragovernmental Assets | $ 13,787,296 | $ 13,125,534 |
| Accounts Receivable: | | |
| Utilities (note 5) | 2,927,967 | 2,834,857 |
| Other Accounts Receivable | 20 | 972 |
| General Property, Plant, and Equipment, Net (note 6) | 16,705 | 17,106 |
| Other Assets | 717 | 1,221 |
| Total Assets | $ 16,732,705 | $ 15,979,690 |
| **LIABILITIES** | | |
| Intragovernmental: | | |
| Accounts Payable | $ 11,177 | $ 1,646 |
| Deferred Revenue (note 11) | 922,818 | 900,620 |
| Other Liabilities | 51 | 35 |
| Total Intragovernmental Liabilities | $ 934,046 | $ 902,301 |
| Accounts Payable | 27,397 | 39,239 |
| Deferred Revenue (note 11) | 15,742,914 | 14,376,400 |
| Pension and Other Actuarial Liabilities | 5,289 | 352 |
| Contract Holdback | 544 | 513 |
| Other Liabilities | 14,606 | 9,363 |
| Estimated Liability for Waste Acceptance Obligation (note 9) | 2,000,000 | 2,000,000 |
| Total Liabilities (note 8) | $ 18,724,796 | $ 17,328,168 |
| **NET POSITION** | | |
| Unexpended Appropriations | $ 7,909 | $ 8,573 |
| Cumulative Results of Operations | (2,000,000) | (2,000,000) |
| Total Net Position Before Unrealized Gain | $ (1,992,091) | $ (1,991,427) |
| Unrealized Gain on Investments Available for Sale (note 4) | - | 642,949 |
| Total Net Position | $ (1,992,091) | $ (1,348,478) |
| Total Liabilities and Net Position | $ 16,732,705 | $ 15,979,690 |

# UNITED STATES DEPARTMENT OF ENERGY
# OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
## Statements of Net Costs
**For the Years Ended September 30, 2002 and 2001**
**(Dollars in thousands)**

| | 2002 | 2001 |
|---|---|---|
| First Repository Costs | $ 301,489 | $ 303,803 |
| All Other Program Costs: | | |
| Program Support | $ 77,005 | $ 77,933 |
| Adjustment to Charges | - | 16,925 |
| Transfers of Appropriations (note 7) | 26,750 | 24,452 |
| Waste Acceptance, Storage and Transportation | 2,299 | 1,999 |
| Imputed and Other Costs | 1,202 | 1,093 |
| Total All Other Program Costs | $ 107,256 | $ 122,402 |
| Total First Repository and Other Program Costs (note 11) | $ 408,745 | $ 426,205 |
| Less Earned Revenues (note 11) | (407,543) | (425,112) |
| Net Costs | $ 1,202 | $ 1,093 |

# UNITED STATES DEPARTMENT OF ENERGY
# OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
## Statements of Changes in Net Position
**For the Years Ended September 30, 2002 and 2001**
**(Dollars in thousands)**

| | 2002 | 2001 |
|---|---|---|
| **CUMULATIVE RESULTS OF OPERATIONS:** | | |
| Beginning Balance | $ (1,357,051) | $ (2,052,497) |
| Cumulative Effect of Change in Accounting Principle (note 4) | (642,949) | - |
| Beginning Balance as Adjusted for Cumulative Effect of Change in Accounting Principle | $ (2,000,000) | $ (2,052,497) |
| Other Financing Sources: | | |
| Imputed Financing from Costs Absorbed by Others | 1,202 | 1,093 |
| Unrealized Gains on Investments (notes 2 and 4) | - | 695,446 |
| Total Financing Sources | $ 1,202 | $ 696,539 |
| Net Cost of Operations | (1,202) | (1,093) |
| Ending Balance - Cumulative Results of Operations | $ (2,000,000) | $ (1,357,051) |
| **UNEXPENDED APPROPRIATIONS:** | | |
| Beginning Balance of Unexpended Appropriations | $ 8,573 | $ 93,428 |
| Budgetary Financing Sources Related to Appropriations: | | |
| Appropriations Received (note 2) | 280,000 | 200,000 |
| Other Adjustments | (205) | (75,275) |
| Appropriations Used | (280,459) | (209,580) |
| Total Budgetary Financing Sources Related to Appropriations | $ (664) | $ (84,855) |
| Ending Balance Unexpended Appropriations | $ 7,909 | $ 8,573 |
| Total Net Position | $ (1,992,091) | $ (1,348,478) |

# UNITED STATES DEPARTMENT OF ENERGY
# OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

## Statements of Budgetary Resources

**For the Years Ended September 30, 2002 and 2001**
**(Dollars in thousands)**

| | 2002 | 2001 |
|---|---|---|
| **BUDGETARY RESOURCES** | | |
| Budget Authority: | | |
| Appropriations Received (note 2) | $ 401,750 | $ 415,526 |
| Appropriations Transferred Out (note 7) | (26,750) | (24,452) |
| Unobligated Balances, Beginning of Period | 7,621 | 87,430 |
| Spending Authority from Offsetting Collections | 1,190 | - |
| Authority Temporarily Not Available | (239) | - |
| Authority Permanently Not Available | (288) | (75,695) |
| Total Budgetary Resources | $ 383,284 | $ 402,809 |
| **STATUS OF BUDGETARY RESOURCES** | | |
| Obligations Incurred: | | |
| Direct | $ 280,243 | $ 209,726 |
| Exempt from Apportionment | 94,558 | 185,462 |
| Unobligated Balances Available | 8,454 | 7,607 |
| Unobligated Balances Not Available | 29 | 14 |
| Total Status of Budgetary Resources | $ 383,284 | $ 402,809 |
| **RELATIONSHIP OF OBLIGATIONS TO OUTLAYS** | | |
| Obligated Balance, Net - Beginning of Period | $ 96,036 | $ 83,203 |
| Obligated Balance, Net - End of Period: | | |
| Undelivered Orders | $ 51,702 | $ 51,460 |
| Accounts Payable | 49,009 | 44,576 |
| | $ 100,711 | $ 96,036 |
| Outlays: | | |
| Disbursements | $ 370,126 | $ 382,355 |
| Collections | (1,190) | - |
| Subtotal | $ 368,936 | $ 382,355 |
| Less: Offsetting Receipts | (2,310,638) | (1,932,062) |
| Net Outlays | $ (1,941,702) | $ (1,549,707) |

# UNITED STATES DEPARTMENT OF ENERGY
# OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
## Statements of Financing
**For the Years Ended September 30, 2002 and 2001**
**(Dollars in thousands)**

| | 2002 | 2001 |
|---|---|---|
| **RESOURCES USED TO FINANCE ACTIVITIES:** | | |
| Budgetary Resources Obligated: | | |
| Obligations Incurred | $ 374,801 | $ 395,188 |
| Less: Spending Authority from Offsetting Collections and Recoveries | (1,190) | - |
| Obligations, Net of Offsetting Collections and Recoveries | $ 373,611 | $ 395,188 |
| Offsetting Receipts: | | |
| Fees for Disposal of Spent Nuclear Fuel | $ (712,226) | $ (689,267) |
| Earnings on Investments | (1,598,412) | (1,242,673) |
| Other Offsetting Receipts | - | (122) |
| Total Offsetting Receipts | $ (2,310,638) | $ (1,932,062) |
| Net Obligations | $ (1,937,027) | $ (1,536,874) |
| Other Resources: | | |
| Financing Imputed For Cost Subsidies | $ 1,202 | $ 1,093 |
| Appropriations Transferred Out (note 7) | (26,750) | (24,452) |
| Other: | | |
| Offsetting Receipts, Deferred | 2,345,888 | 1,933,280 |
| Defense Fees and Related Interest | (133,873) | (174,562) |
| Adjustment for Department of Energy Appropriation | (280,459) | (209,580) |
| Other Adjustments | 25,039 | 6,717 |
| Total Other | $ 1,956,595 | $ 1,555,855 |
| Net Other Resources Used to Finance Activities | $ 1,931,047 | $ 1,532,496 |
| Total Resources Used to Finance Activities | $ (5,980) | $ (4,379) |
| **RESOURCES USED TO FINANCE ITEMS NOT PART OF THE NET COST OF OPERATIONS:** | | |
| Change in Resources Obligated for Goods/Services/Benefits Ordered But Not Yet Provided | $ (242) | $ (10,837) |
| Resources that Finance the Acquisition of Assets | (3,122) | (2,186) |
| Total Resources Used to Finance Items Not Part of the Net Cost of Operations | $ (3,364) | $ (13,023) |
| Total Resources Used to Finance the Net Cost of Operations | $ (9,344) | $ (17,402) |
| **NET COST ITEMS THAT DO NOT REQUIRE OR GENERATE RESOURCES IN CURRENT PERIOD:** | | |
| Increases in Unfunded Liability Estimates | $ 5,311 | $ 14,031 |
| Components Not Requiring or Generating Resources: | | |
| Depreciation and Amortization | 3,571 | 3,286 |
| Revaluation of Assets and Liabilities | (48) | 368 |
| Other | 1,712 | 810 |
| Total Components Not Requiring or Generating Resources | $ 5,235 | $ 4,464 |
| Total Net Cost Items That Do Not Require or Generate Resources in Current Period | $ 10,546 | $ 18,495 |
| **NET COST OF OPERATIONS** | $ 1,202 | $ 1,093 |

## (1) Legislative Background

The Nuclear Waste Policy Act of 1982 (NWPA) was signed into law on January 7, 1983. The NWPA establishes a framework for the financing, siting, licensing, operating and decommissioning of one or more mined geologic repositories for the Nation's spent nuclear fuel (SNF) and high-level radioactive waste (HLW) which is to be carried out by the Department of Energy's (Department) Office of Civilian Radioactive Waste Management (OCRWM). In addition, the NWPA contains other provisions including:

- Assigning responsibility for the full payment of disposal costs to the owners and generators of SNF and HLW and creating a special Nuclear Waste Fund (NWF) within the Department of Treasury of the United States for the collection of fees related to such costs;

- Providing for contracts between the Department and the owners and generators of SNF and HLW pursuant to which the Department is to take title to the SNF or HLW as expeditiously as possible, following commencement of repository operations and, in return for payment of fees established by the NWPA, to begin disposal of the SNF or HLW not later than January 31, 1998; and

- Requiring evaluation of the use of civilian disposal capacity for the disposal of HLW resulting from atomic energy defense activities (defense waste). In April 1985, the President notified the Department of his determination that a separate defense waste repository was not necessary and directed the Department to proceed with arrangements for disposal of such waste. Fees, equivalent to those paid by commercial owners, must be paid for this service by the Federal Government to the NWF account.

On December 22, 1987, the President signed into law the Budget Reconciliation Act, Subtitle A of Title V, of which contained amendments to the NWPA. The legislation directed the Department to characterize only the Yucca Mountain site in Nevada as a candidate site for the first repository. The legislation also provided for the termination of site-specific activities at all candidate sites other than the Yucca Mountain site, within 90 days of enactment, and for phasing out, not later than 6 months after enactment, all research programs in existence that were designed to evaluate the suitability of crystalline rock as a potential repository host medium. In the event that the Yucca Mountain site proves unsuitable for use as a repository, the legislation requires the Department to terminate site-specific activities and report to Congress.

Further, the legislation authorized the Department to pay interest to the utilities on overpayments of kilowatt hour (kWh) fees consistent with the December 5, 1985, ruling of the United States Court of Appeals. Interest on these overpayments of kWh fees was fully paid or credited as of September 30, 1990.

Additionally, the legislation annulled and revoked the Department's Monitored Retrievable Storage (MRS) proposal, submitted to Congress on March 31, 1987, to construct an MRS facility in Oak Ridge, Tennessee. However, the legislation authorized the Department to site, construct, and operate one MRS facility subject to certain conditions.

Although the NWPA prohibits the selection of an MRS site through a Department-directed site-survey process until the repository site is recommended to the President, it allowed for expedited siting to proceed via a Nuclear Waste Negotiator authorized to negotiate a proposed agreement with a State or Indian Tribe that would agree to host a repository or MRS facility. The Negotiator was to submit to Congress proposed agreements. No volunteer hosts were identified, and the Office of the Nuclear Waste Negotiator expired in January 1995.

## (2) Significant Accounting Policies

**Basis of Presentation** – These financial statements have been prepared to report the financial position and results of operations of OCRWM and include all activity related to OCRWM, including the Nuclear Waste Fund Appropriation and the Defense Nuclear Waste Disposal Appropriation, used for the disposal of SNF and HLW. The financial statements have been prepared from the books and records of the Department for OCRWM in accordance with accounting principles generally accepted in the United States of America as applicable to Federal entities.

**Basis of Accounting** – OCRWM's financial statements are prepared using the accrual method of accounting. Under the accrual method, revenues are recognized when earned, and expenses are recognized when a liability is incurred without regard to receipt or payment of cash. OCRWM also uses budgetary accounting to facilitate compliance with legal constraints and to monitor its budget authority.

**Revenue Recognition** – Fees are recognized as exchange (earned) revenue to the extent of expenses incurred, subject to Congressional authorization as discussed below. Fees billed in excess of current expenses are deferred.

The NWPA requires the civilian owners and generators of nuclear waste to pay their share of the full cost of the Civilian Radioactive Waste Management Program (Program) and, to that end, establishes a fee for electricity generated and sold by civilian nuclear power reactors which the Department must collect and annually assess to determine its adequacy. A one-time fee (see note 5) was recorded by OCRWM as of April 7, 1983, related to the disposal of SNF generated prior to that date. Fees recognized by OCRWM are based upon kWh of electricity generated and sold by civilian nuclear reactors on and after April 7, 1983.

Fees associated with the disposal of the Department's SNF and HLW are also recognized as the related costs are incurred and allocated. To estimate the share of the total Program costs that should be allocated to the Department, the methodology announced by the Department in the Federal Register in August 1987 was used. The most recent cost estimate, *Analysis of the Total System Cost of the Civilian Radioactive Waste Management Program* (TSLCC), issued in May 2001, of the surrogate single repository system (without interim storage) established the amounts to allocate.

**Appropriations** – Expenditure authority for OCRWM is provided by two separate appropriations as follows:

- For fiscal years 2002 and 2001, Congress appropriated $280,000 and $200,000, respectively, from the Defense Nuclear Waste Disposal Appropriation to be used for nuclear waste disposal activities. In fiscal year 2001, an additional $10,000 in funds previously restricted, were made available. Pursuant to the fiscal year 2002 Consolidated Appropriations Act, $205 of the $280,000 was rescinded from the Defense Nuclear Waste Disposal Appropriation. The fiscal year 2001 Consolidated Appropriations Act rescinded $275 from the Defense Nuclear Waste Disposal Appropriation.

- For fiscal years 2002 and 2001, Congress authorized $121,750 and $215,526, respectively, to be used for nuclear waste disposal activities and remain available until expended. This expenditure authority enables OCRWM to finance activities using the NWF special accounts. Pursuant to the Consolidated Appropriations Act, for fiscal years 2002 and 2001, $84 and $420, respectively, were rescinded. Fee payments and investment income are deposited into the NWF account and are made available to the Department through the annual expenditure authority provided by Congress. Investments are made in

U.S. Treasury securities from funds in excess of current needs. If, at any time, monies available in the NWF are insufficient to discharge responsibilities under the NWPA, borrowings may be made from the U.S. Treasury. The NWPA limits the OCRWM from incurring expenditures, entering into contracts, and obligating amounts to be expended except as provided in advance by appropriation acts.

**Imputed Financing Sources** – In certain instances, operating costs of OCRWM are paid out of funds appropriated to other federal agencies. For example, certain costs of retirement programs are paid by the Office of Personnel Management (OPM). When costs directly attributable to OCRWM's operations are paid by other agencies, OCRWM recognizes these amounts on the *Statements of Net Costs*. In addition, these amounts are recognized as imputed financing sources in the *Statements of Changes in Net Position*.

**Investments** – Investments for the NWF are classified as available for sale and are reported at cost net of amortized premiums and discounts except for fiscal year 2001 investments in U. S. Treasury securities. Prior to fiscal year 2002 these securities were reported at fair market value in accordance with Statement of Financial Accounting Standards (SFAS) No. 115, *Accounting for Investment in Debt and Equity Securities*, with unrealized holding gains and losses reported as a component of net position. OCRWM changed its accounting practices in fiscal year 2002 to value these investments at net amortized cost effective October 1, 2001. As a result, the fiscal year 2002 balance of cumulative results of operations was reduced by the unrealized gain on the investment balance reported in fiscal year 2001. Premiums and discounts are amortized using the effective interest yield method (see note 4).

**General Property, Plant, and Equipment** – Purchases of general property, plant, and equipment (PP&E) exceeding $25 are capitalized if they have a useful life greater than two years. PP&E is depreciated on a straight-line basis over the estimated useful lives of the assets. Useful lives range from 5 to 30 years. Maintenance costs are borne by OCRWM for equipment either on loan from or shared with other programs.

**Accounts Receivable** – Payment of accounts receivable will not be complete until OCRWM starts accepting waste, which is currently expected in the year 2010. Interest is accrued quarterly on the outstanding amount receivable including accrued interest. The interest rate used is the 13-week U.S. Treasury bill rate. An allowance for doubtful accounts related to one-time spent fuel fees has not been recorded as of September 30, 2002, as OCRWM is not obligated to accept waste without payment of fees.

**Accrued Investment Interest Receivable** – Investment interest is accrued on the outstanding investment balance using the applicable interest rate for the investments.

**Liabilities** – Liabilities represent the amount of monies or other resources that are likely to be paid by OCRWM as the result of a transaction or event that has already occurred. However, no liability can be paid by OCRWM absent an appropriation. Liabilities for which an appropriation has not been enacted are therefore classified in these notes as liabilities not covered by budgetary resources and there is no certainty that the appropriation will be enacted. Also, liabilities other than contracts can be abrogated by the Government acting in its sovereign capacity.

**Accrued Annual Leave** – Federal employees' annual leave is accrued as it is earned, and the accrual is reduced annually for actual leave taken. Each year, the accrued annual leave balance is adjusted to reflect the latest pay rates and unused annual leave balances. To the extent that current or prior year appropriations are not available to fund annual leave earned but not taken, funding will be obtained from future financing sources. Sick leave and other types of non-vested leave are expensed as taken.

**Tax Status** – OCRWM, as a part of the Department of Energy, which is a Federal agency, is not subject to federal, state, or local income taxes.

**First Repository Costs** – For the years ended September 30, 2002 and 2001, first repository costs consist primarily of Yucca Mountain costs.

**Reclassifications** – Certain fiscal year 2001 amounts in the financial statements have been reclassified to ensure consistency with the presentation of fiscal year 2002 amounts.

**Retirement Plans** – *Federal Employees* – There are two primary retirement systems for Federal employees. Employees hired prior to January 1, 1984, may participate in the Civil Service Retirement System (CSRS). On January 1, 1984, the Federal Employees Retirement System (FERS) went into effect pursuant to Public Law 99-335. Most employees hired after December 31, 1983, are automatically covered by FERS and Social and Security. Employees hired prior to January 1, 1984, elected to either join FERS and Social Security or remain in CSRS. A primary feature of FERS is that it offers a savings plan to which the Department automatically contributes 1 percent of pay and matches any employee contribution up to an additional 4 percent of pay. For most employees hired since December 31, 1983, OCRWM also contributes the employer's matching share for Social Security. The OCRWM does not report CSRS or FERS assets, accumulated plan benefits, or unfunded liabilities, if any, applicable to its employees. Reporting such amounts is the responsibility of OPM and the Federal Employees Retirement System. OCRWM does report, as an imputed financing source and a program expense, the difference between its contributions to Federal employee pension and other retirement benefits and the estimated actuarial costs as computed by OPM.

*Contractor Employees* – OCRWM's primary integrated contractor maintains a defined benefit pension plan under which they promise to pay employees specified benefits, such as a percentage of the final average pay for each year of service. OCRWM's cost under the contract includes reimbursement of annual employer contributions to the pension plans.

Each year an amount is calculated for employers to contribute to the pension plan to ensure the plan assets are sufficient to provide for the full accrued benefits of contractor employees in the event that the plan is terminated. The level of contributions is dependent on actuarial assumptions about the future, such as the interest rate, employee turnover and deaths, age of retirement, and salary progression. OCRWM reports assets and liabilities of these pension plans as if it were the plan sponsor.

## (3) Fund Balance with Treasury

A summary of fund balance with the U.S. Treasury for appropriated funds as of September 30, 2002 and 2001, is as follows:

| | 2002 | 2001 |
|---|---|---|
| Unobligated budgetary resources | | |
| Available | $ 8,454 | $ 7,607 |
| Unavailable | 29 | 14 |
| Obligated balance not yet disbursed | | |
| Undelivered orders | 51,702 | 51,460 |
| Accounts payable and deposit fund liabilities | 49,009 | 44,576 |
| Budgetary resources invested in Treasury securities | (82,478) | (93,559) |
| Total fund balance with Treasury | $ 26,716 | $ 10,098 |

## (4) Investments

For the years ended September 30, 2002 and 2001, the NWF received proceeds of $2,887,535 and $1,245,987, respectively, from the sale of securities. The realized gain on the sale using the specific identification method for the years ended September 30, 2002 and 2001, was $171,382 and $56,222, respectively.

OCRWM changed its method of accounting for investments in fiscal year 2002 to be consistent with the U. S. Treasury's valuation of investments which is at amortized cost. As a result, investments on the *Balance Sheets* are reported at amortized cost in FY 2002, and at fair value in fiscal year 2001 (see note 2).

Accrued interest receivable on investments as of September 30, 2002 and 2001, totaled $71,180 and $70,149, respectively.

Investments in U.S. Treasury securities held as of September 30 of each year consisted of the following:

| | 2002 | 2001 |
|---|---|---|
| Face value | $ 23,421,219 | $ 21,059,563 |
| Unamortized discounts, net of premiums | (10,956,487) | (10,028,299) |
| Investments, net | $ 12,464,732 | $ 11,031,264 |
| Unrealized market gains | 1,544,215 | 642,949 |
| Investments at market value | $ 14,008,946 | $ 11,674,214 |

## (5) Receivables Due from Utilities

Owners and generators of civilian SNF and HLW have entered into contracts with the Department for disposal services and for payment of fees to the NWF.

The NWPA specifies two types of fees to be paid to the NWF for disposal services: (a) a one-time charge per kilogram of heavy metal in solidified SNF or HLW existing prior to April 7, 1983; and (b) a one mil per kWh fee on all net electricity generated and sold by civilian nuclear power reactors on and after April 7, 1983. The Secretary of Energy shall annually review the adequacy of the fees established. In the event the Secretary of Energy determines either insufficient or excess revenue is being collected, the Secretary of Energy shall propose an adjustment to the fee to ensure full cost recovery. The kWh fees are due when billed. The contracts between the Department and the owners and generators of the waste provide three options for payment of the one-time spent fuel fee, one of which must have been selected by June 30, 1985, or within two years of contract execution. The options were:

1. Payment of the amount due, plus interest earned from April 7, 1983, in 40 quarterly installments with the final payment due on or before the first scheduled delivery of SNF to the Department;

2. Payment of the amount due, plus interest from April 7, 1983, in a single payment anytime prior to the first delivery of SNF to the Department; or

3. Payment of the amount due any time prior to June 30, 1985, or two years after contract execution, in the form of a single payment, with no interest due.

Under options (1) and (2), interest accrues from April 7, 1983, to date of first payment at the 13-week U.S. Treasury bill rate compounded quarterly. Under option (1), beginning with the first payment, interest is calculated at the 10-year Treasury note rate in effect at the time. Two utilities selected option (1); neither has begun making payments.

In fiscal year 2002, there were no payments or adjustments of one-time spent fuel fees by owners and generators of civilian SNF and HLW. During fiscal year 2001, $100 was credited to a utility to offset current quarterly fees. It was based upon an adjustment to its one-time SNF fee, which had been previously paid in its entirety.

Prior to fiscal year 2001, the Department had executed a settlement agreement with PECO – now Exelon Generation Company (Exelon) – in which the Department amended its disposal contract by giving the utility an "equitable adjustment" to its fees, in effect, an offset against future payments that the utility would pay into the Nuclear Waste Fund. However, the United States Court of Appeals recently decided, in a case entitled Alabama Power Company, Carolina Power & Light Company, et al. v. U. S. Department of Energy, that the Department is not authorized to spend Nuclear Waste Fund monies on settlement agreements aimed at compensating utilities for their on-site storage costs that result from the Department's breach of their Standard Contracts. Therefore, the Court held that the fee adjustments provided by the amendment to the Exelon contract were null and void. Accordingly, based on the Alabama Power decision, the Department will be required to recoup the fee adjustments of $38,405 extended to Exelon. The Department has recorded these amounts as accounts receivable to the Office of Civilian Radioactive Waste Management and are included in public kWh fees in fiscal year 2002.

Accounts receivables from public and intragovernmental utilities at September 30 of each year were as follows:

| | 2002 | 2001 |
|---|---|---|
| Accounts receivable – utilities | | |
| Accounts receivable - intragovernmental utilities | | |
| Kilowatt hour fees | $ 11,104 | $ 11,087 |
| Total accounts receivable – intragovernmental utilities | $ 11,104 | $ 11,087 |
| Accounts receivable - public utilities | | |
| Kilowatt hour fees | $ 205,777 | $ 164,986 |
| Total public utilities kilowatt hour fees | $ 205,777 | $ 164,986 |
| One-time spent nuclear fuel fees: | | |
| Option (1) | $ 143,531 | $ 143,531 |
| Option (2) | 736,958 | 736,958 |
| Total one-time spent nuclear fuel fees | $ 880,489 | $ 880,489 |
| Accrued Interest on one-time spent nuclear fuel fees: | | |
| Option (1) | $ 300,968 | $ 292,574 |
| Option (2) | 1,540,733 | 1,496,808 |
| Total accrued interest on one-time spent nuclear fuel fees | $ 1,841,701 | $ 1,789,382 |
| Total accounts receivable – public utilities | $ 2,927,967 | $ 2,834,857 |
| Total accounts receivable – utilities | $ 2,939,071 | $ 2,845,944 |

## (6) General Property, Plant, and Equipment, Net

General property, plant, and equipment and related accumulated depreciation consisted of the following at September 30, 2002 and 2001:

| | 2002 | 2001 |
|---|---|---|
| General property, plant, and equipment | $ 81,077 | $ 83,697 |
| Less accumulated depreciation | (64,372) | (66,591) |
| General property, plant, and equipment, net | $ 16,705 | $ 17,106 |

## (7) Transactions With the Department and Other Federal Government Agencies

The NWPA established OCRWM within the Department to carry out the provisions of the NWPA and created the Nuclear Waste Fund in the U.S. Treasury. The investment and borrowing powers of the NWF are limited to transactions with the U.S. Treasury. In discharging its obligations under the NWPA, the Department contracts for services with numerous contractors including other Federal Government agencies. Further, significant administrative services are provided by the Department.

As of September 30, 2002 and 2001, OCRWM owed other Federal Government agencies $11,177 and $1,646, respectively, for services and costs provided to OCRWM. For the years ended September 30, 2002 and 2001, OCRWM had incurred costs of $41,113 and $39,141, respectively, for services and costs provided by other Federal Government agencies. The incurred costs in 2002 and 2001 include Congressional authorized transfers of funds from the NWF to the following entities to pay for necessary expenses of OCRWM. Amounts transferred consisted of:

| | 2002 | 2001 |
|---|---|---|
| Nuclear Regulatory Commission | $ 23,650 | $ 21,552 |
| Nuclear Waste Technical Review Board | 3,100 | 2,900 |
| Total transfers of appropriations | $ 26,750 | $ 24,452 |

OCRWM has entered into Memoranda of Agreement (MOA) with the Department's Office of Environmental Management and the Department's Office of Naval Nuclear Propulsion. The MOA established the terms and conditions for acceptance of Department-owned SNF and HLW (Defense Waste) for disposal. Those estimated liabilities are included in the TSLCC that is used to calculate the estimate of the Department's share of total current and future Program costs. The TSLCC in fiscal year 2000 dollars was $57,520,000. Based on the TSLCC, the Department's estimated share as of September 30, 2002 and 2001, was $13,849,085 and $13,681,725, respectively.

The Department's Defense Waste total cost share as of September 30, 2002, is estimated to be $2,909,895, including interest amounting to $918,058, based on the methodology published in the Federal Register in August 1987. As of September 30, 2002 and 2001, the NWF was due $1,213,285 and $1,359,871 from the Department, respectively.

## (8) Liabilities Not Covered by Budgetary Resources

A summary of liabilities not covered by budgetary resources as of September 30, 2002 and 2001, is as follows:

| | 2002 | 2001 |
|---|---|---|
| Pensions and actuarial liabilities | $ 5,289 | $ 352 |
| Other liabilities | 4,318 | 3,993 |
| Estimated liability for waste acceptance obligation | 2,000,000 | 2,000,000 |
| Total liabilities not covered by budgetary resources | $ 2,009,607 | $ 2,004,345 |
| Total liabilities covered by budgetary resources | 16,715,189 | 15,323,823 |
| Total liabilities | $ 18,724,796 | $ 17,328,168 |

## (9) Litigation

In accordance with the NWPA, the Department entered into contracts with more than 45 utilities in which, in return for payment of fees into the NWF, the Department agreed to begin disposal of spent SNF by January 31, 1998. Because the Department has no facility available to receive SNF under the NWPA and does not anticipate that there will be such a facility until at least 2010, the Department has been unable to begin disposal of the utilities' SNF as required by the contracts.
Significant litigation has ensued as a result of this delay.

To date, that litigation has conclusively established that the Department's obligation to begin disposal is legally binding notwithstanding the lack of a facility to receive SNF, Indiana Michigan Power Co. v. Department of Energy, 88 F.3d 1272 (D.C. Cir. 1996); that the utilities' remedies for the Department's failure to begin disposal of their SNF are to be determined as a matter of contract law, Northern States Power Co. v. U.S., 128 F.3d 754 (D.C. Cir. 1997), cert. Denied, 119 S. Ct. 540 (1998); and that the Department cannot deny liability on the ground that its delay was unavoidable, Ibid. In addition, the Court of Appeals for the Federal Circuit has held that the Department is in partial breach of its contracts and that utilities are entitled to recover damages for that breach. Maine Yankee Atomic Power Company v. United States, 225 F.3d 1336 (Fed. Cir. 2000); Northern States Power co. v. U.S., 224 F.3d 1361 (Fed. Cir. 2000).

Currently, 23 utilities have filed suit in the Court of Federal Claims for breach of contract in which they collectively seek $5.95 billion. The industry is reported to estimate that damages for all utilities with which the Department has contracts could be $50 billion. The Department, however, believes that the industry estimate is highly inflated, and if the Department prevails on some key issues, the actual total damages suffered by all utilities as a result of the delay in beginning SNF disposal is more likely to be in the range of between $2 billion and $3billion and has recorded as a liability the low end of that range.

Liability is certain in this matter, and the managing judge for the Court of Federal Claims cases has directed the utilities to file dispositive motions on liability in those cases. Other than ascertaining the actual amount of damages, the only outstanding issue is how that liability is to be satisfied. It is uncertain whether damages will be paid from the Judgment Fund or some other source. The Alabama Power decision suggests that the Nuclear Waste Fund would not be an appropriate source for paying damages.

## (10) Additional Waste

The allocation of Program costs to the Department is dependent on the amount of Department-owned waste requiring geological disposal. As additional waste requiring geological disposal is identified and incorporated into the technical Program baseline and MOA, OCRWM will update its cost estimate and cost share allocation to the Department. Certain wastes that may require geological disposal are described below.

The Department's Office of Environmental Safety and Health has identified additional waste owned by the Department, from both commercial and defense projects, that may require disposal in a repository for SNF and HLW. However, this waste has not been sufficiently characterized and quantified to be included in the MOA.

HLW owned by the State of New York and currently stored at the West Valley Demonstration Project site is of a type that may be disposed of in a Federal repository if the State of New York were to enter into a contractual agreement with the Department, similar to the provisions of 10 CFR Part 961. To date, the State of New York has not entered into such an agreement. No amount has been recorded in the financial statements as of September 30, 2002, because, at this time, the Department is not legally required to take title to or dispose of the West Valley HLW, nor is the State of New York required to enter into a disposal contract with the Department if it does not plan to dispose of the HLW in a Federal repository.

## (11) Deferred Revenue

As described in note 2, all fees, both kWh fees and Defense high-level radioactive waste fees, as well as the related interest, are recognized as revenue to the extent of expenses incurred. Amounts in excess of current expenses are deferred. Deferred revenue at September 30, 2002 and 2001, was as follows:

| | 2002 | 2001 |
|---|---|---|
| Fees billed (credited): | | |
| One-time spent nuclear fuel fees: | | |
| Public | $ - | $ (100) |
| kWh fees: | | |
| Public | 712,622 | 673,861 |
| Intragovernmental | 42,114 | 42,511 |
| Defense high-level waste fees, intragovernmental | 111,674 | 113,850 |
| Interest on one-time spent nuclear fuel fees, public | 52,320 | 129,203 |
| Interest, intragovernmental: | | |
| Income on investments | 683,400 | 638,083 |
| Defense high-level waste fees | 22,198 | 60,712 |
| Other revenue | 171,927 | 56,382 |
| Total revenues | $ 1,796,255 | $ 1,714,502 |
| Less earned revenue | (407,543) | (425,112) |
| Change in deferred revenue | $ 1,388,712 | $ 1,289,390 |
| Deferred revenue - beginning balance | 15,277,020 | 13,987,630 |
| Deferred revenue - ending balance | $ 16,665,732 | $ 15,277,020 |

Other revenue primarily consists of net gains on sale of investments. The net gain on sale of investments was $171,382 and $56,222 for the years ended September 30, 2002 and 2001, respectively.

# UNITED STATES DEPARTMENT OF ENERGY
# OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

Required Supplementary Stewardship Information for Research and Development (Unaudited)

(Dollars in thousands unless otherwise noted)

| | For Fiscal Years Ending September 30, | | | |
|---|---|---|---|---|
| | 2002 | 2001 | 2000 | 1999 |
| **Applied Research and Development** | | | | |
| Environmental Quality | $ 62,523 | $ 60,393 | $ 58,662 | $ 59,006 |

Applied research activities were carried out on the long-term storage of high-level nuclear waste in a permanent underground repository.

# UNITED STATES DEPARTMENT OF ENERGY
# OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

Supplementary Information - Schedule I
Schedule of Cumulative Net First and Second Repository Costs
for the Twenty Years Ending September 30, 2002

(Dollars in thousands unless otherwise noted)

| | |
|---|---|
| First Repository Costs | $ 5,306,232 |
| All Other Program Costs: | |
| Program Support | $ 1,396,848 |
| Transfers of Appropriations | 287,015 |
| Waste Acceptance, Storage, and Transportation | 362,441 |
| Imputed and Other Costs | 138,943 |
| Total All Other Program Costs | $ 2,185,247 |
| Second Repository Costs | 108,896 |
| Total First and Second Repository Costs and Other Program Costs | $ 7,600,375 |
| Less Earned Revenues | (7,593,595) |
| Cumulative Net First and Second Repository Costs | $ 6,780 |

# UNITED STATES DEPARTMENT OF ENERGY
# OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

Supplementary Information - Schedule II
Schedule of Cumulative Revenues and Deferred Revenue as of and for the
Twenty Years Ended September 30, 2002

(Dollars in thousands unless otherwise noted)

| | |
|---|---|
| Fees Billed: | |
| One-time Spent Nuclear Fuel Fees: | |
| Public | $ 2,174,802 |
| Intragovernmental | 174,598 |
| kWh fees: | |
| Public | 10,160,856 |
| Intragovernmental | 450,817 |
| Defense High-Level Waste Fees, Intragovernmental | 1,991,837 |
| Interest on One-time Spent Nuclear Fuel Fees, Public | 1,871,469 |
| Interest, Intragovernmental: | |
| Income on Investments | 5,921,493 |
| Defense High-level Waste Fees | 918,058 |
| Other Revenue | 595,397 |
| Total Revenues | $ 24,259,327 |
| Less Earned Revenue | (7,593,595) |
| Deferred Revenue | $ 16,665,732 |

# *Appendix B*

# *Program Overview*

## Statutory Authorities and Mission

The Nuclear Waste Policy Act (NWPA) of 1982 (Public Law 97-425) established the Office of Civilian Radioactive Waste Management (OCRWM) within the Department of Energy (DOE). OCRWM's function is to develop and manage a Federal system for disposing of all spent nuclear fuel from commercial nuclear reactors and high-level radioactive waste resulting from atomic energy defense activities. The statute provided detailed direction for the scientific, technical, and institutional development of the system, and required that the Nuclear Regulatory Commission license waste management facilities.

The NWPA established a process to dispose of commercial spent nuclear fuel in a geologic repository. In 1985, under provisions of the NWPA, President Reagan determined that a separate repository for defense-related high-level radioactive waste would not be required; this radioactive waste could be disposed of along with commercial spent nuclear fuel in the geologic repository. The Nuclear Waste Policy Amendments Act of 1987 (Public Law 100-203) directed the Secretary of Energy to characterize only the Yucca Mountain site in Nevada as a potential location for a repository. Under OCRWM's current schedule, and given adequate funding, waste emplacement at Yucca Mountain could begin in 2010.

The NWPA authorized the Secretary to enter into contracts with the generators and owners of commercial spent nuclear fuel and high-level radioactive waste. A *Standard Contract for Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste* was promulgated in 1983 at 10 CFR Part 961. Individual contracts based on the standard contract have been executed between DOE and those parties. The NWPA also directs OCRWM to develop a Nation-wide system for transporting commercial spent nuclear fuel to Federal facilities, utilizing private industry to the fullest extent possible.

The *Civilian Radioactive Waste Management Program Plan, Revision 3,* released in March 2000, covers the planning period of Fiscal Year (FY) 2001 through FY 2005. It describes the Program's mission, vision, and strategic objectives; establishes performance goals and performance measures; and identifies milestones and funding requirements to achieve the performance goals. The planned activities reflected an ongoing transition from predominately investigative science to data synthesis, model development, and performance assessment for an overall safety analysis, and finalization of repository and waste package designs in support of the potential site recommendation. The Program Plan will be revised following completion of Program replanning in FY 2003.

## Sources of Funding

The NWPA provides that the costs of disposing of spent nuclear fuel and high-level radioactive waste are to be borne by the parties responsible for their generation. Fees levied on the owners and generators of commercial spent nuclear fuel are defined in the standard contract. Fees paid are deposited in the Nuclear Waste Fund, a

separate account in the U.S. Treasury that is managed and administered by DOE. OCRWM, however, can only expend monies from the Fund that are appropriated by Congress. Amounts not appropriated for current expenses are invested in U.S. Treasury securities and managed strategically to ensure that the long-term costs of disposal can be met.

Since civilian and defense materials would be emplaced in the same repository, each party must pay its proportional share of costs. DOE developed a methodology for allocating civilian and defense costs and published the result in the *Federal Register* in August 1987. Funding to meet the costs of disposing of defense materials in a repository is provided through a Defense Nuclear Waste Disposal appropriation from the general (taxpayer-supported) fund of the U.S. Treasury.

## Program Organization

OCRWM is headquartered in Washington, D.C., in DOE's Forrestal Building. Its Director reports to the Secretary through the Under Secretary for Energy, Science and Environment. In FY 2002, OCRWM carried out its mission through a Management Center and two Projects.

- The Program Management Center provided overall Program policy formulation, Program planning, and strategic direction for the Civilian Radioactive Waste Management Program. In addition, the Center was responsible for Program management, integration, and performance measurement and reporting; nuclear safety, security, and quality assurance; and Program budget development and execution.

- The Yucca Mountain Project is located on the western edge of the Nevada Test Site, approximately 100 miles northwest of Las Vegas, Nevada. For two decades, the Project conducted scientific and engineering investigations at the Yucca Mountain site to determine its suitability as a nuclear waste repository.

- The Waste Acceptance, Storage and Transportation Project in Washington, DC., was responsible for the development of waste acceptance, storage and transportation systems, and for interactions with other waste owners, generators and international waste management programs.

In October 2002, OCRWM implemented a reorganization that will be reflected in the *Fiscal Year 2003 Annual Report to Congress.*

# *Appendix C*

# *Materials Destined for Geologic Disposal*

Spent nuclear fuel generated by commercial nuclear reactors constitutes by far the largest stock of nuclear materials destined for geologic disposal. However, a repository is also essential for the disposition of an array of other nuclear materials that are managed by the Department of Energy (DOE). This appendix summarizes current planning assumptions about how the disposal capacity of the repository would be allocated among all waste forms. It also consolidates some historical, technical, and policy information about these DOE-managed nuclear materials, and reports current and projected inventories of those materials and of commercial spent nuclear fuel.

## Allocation of Repository Capacity: Current Planning Assumptions

***Projected inventories and the statutory limit on the quantity of waste emplaced***

The Nuclear Waste Policy Act (NWPA) of 1982 provides that the Nuclear Regulatory Commission (NRC) may approve the emplacement in the first repository of a quantity of spent fuel containing no more than 70,000 metric tons of heavy metal (MTHM) or a quantity of solidified high-level waste resulting from the reprocessing of such quantity of spent fuel. The 1987 Nuclear Waste Policy Amendments Act requires the Secretary to report to the President and to Congress on or after January 1, 2007, but not later than January 1, 2010, on the need for a second repository. The total inventory of commercial spent nuclear fuel and DOE managed nuclear materials requiring geologic disposal, projected through 2035, exceeds 70,000 MTHM. Due to projected nuclear power reactor license renewals, the total may reach approximately 105,000 MTHM by 2035.

Based on a Presidential decision to use disposal capacity at repositories developed pursuant to the NWPA for disposal of high-level radioactive waste resulting from atomic energy defense activities, the Office of Civilian (OCRWM's) Radioactive Waste Management's planning basis allocates 7,000 MTHM of the 70,000 MTHM statutory limit to DOE managed nuclear materials. Of that 7,000 MTHM, DOE has specified that two thirds would be high level radioactive waste and one third would be DOE and naval spent nuclear fuel.

For planning purposes, we analyze a range of design and operational capacities. The lower bound of the proposed repository capacity for spent fuel is consistent with the 70,000 MTHM statutory limit. The upper bound is based on projections of the total quantity of spent nuclear fuel and high-level radioactive waste requiring disposal. Analyses of the upper bound enable us to evaluate the actual physical capability of a potential repository at the Yucca Mountain site to safely isolate these wastes. The analyses of lower and upper bounds support site characterization, design work, site recommendation, the environmental impact statement (EIS), preparation of a license application, and a definition of repository operations.

## Description of Materials Destined for Geologic Disposal

This section provides background information on projected quantities of material destined for geologic disposal. The projections are subject to change as decisions on materials disposition are made and carried out.

Consistent with information presented in the final EIS for the proposed repository at Yucca Mountain, this section divides the materials destined for geologic disposal into three groups: (1) commercial spent nuclear fuel, (2) DOE-managed spent nuclear fuel, and (3) DOE-managed high-level radioactive waste.

### *Commercial spent nuclear fuel*

*Background*

Commercial spent nuclear fuel is fuel that has been withdrawn from a nuclear reactor following irradiation. Nuclear power reactors store spent nuclear fuel using a combination of storage options licensed by the NRC: (1) under water in spent fuel pools and (2) above ground in dry storage in an independent spent fuel storage installation.

The primary final form of commercial spent nuclear fuel to be disposed of in the proposed repository would be reactor fuel assemblies as they are discharged from reactors. The proposed repository would receive spent fuel assemblies or spent nuclear fuel packaged in canisters.

*Current and projected inventories*

By December 2002, spent nuclear fuel containing 46,900 MTHM was stored at 72 commercial power reactor sites and one independent storage site (this projection does not include DOE-owned sites). Those sites are located in 33 States. Of the 118 reactors at these 72 sites, 14 are no longer in operation. Twenty-three reactor sites have added NRC-licensed (as per 10 CFR 72) onsite independent spent fuel storage installations utilizing above-grade dry storage to supplement their in-pool storage capacity; others are approaching full pool capacity and will require additional storage. Twelve other sites have announced plans to implement dry storage.

### *DOE-managed spent nuclear fuel*

*Background*

DOE stores most of its spent nuclear fuel at three locations: (1) the Hanford site in Washington State, (2) the Idaho National Engineering and Environmental Laboratory (INEEL), and (3) the Savannah River site in South Carolina. A relatively small amount is stored at the Fort St. Vrain dry storage facility in Colorado. Small quantities remain at other locations. The inventory of spent nuclear fuel created by the Department of the Navy from propulsion of its submarines and surface vessels is included in DOE's spent nuclear fuel inventory.

Over the past 40 years, DOE and its predecessor organizations have generated about 250 varieties of spent nuclear fuel from weapons production, nuclear propulsion, and various research endeavors.

*Current and projected inventories*

The total inventory of DOE spent nuclear fuel is projected to be approximately 2,500 MTHM. The following paragraphs provide an overview of the materials and their respective quantities that constitute the total inventory.

- ***Hanford Site***. Most of the DOE inventory of spent nuclear fuel, 2,100 MTHM, is now at the Hanford site in Washington State. DOE plans to continue with efforts to move this fuel, which is metallic-based, from wet storage to dry storage at the Hanford site.

- ***Idaho National Engineering and Environmental Laboratory***. DOE spent nuclear fuel stored at this site originated in activities to promote the peaceful uses of atomic energy, beginning with the passage of the Atomic Energy Act of 1954. (The naval spent nuclear fuel stored at this site is discussed below.) The approximately 240 MTHM inventory, projected to remain essentially unchanged through 2035, includes spent nuclear fuel from demonstration reactors, from research and development activities, and from activities to demonstrate storage technologies and characterization for disposal. The research reactor fuel stored at this site is not aluminum-based; it will include 1.0 MTHM of foreign research reactor spent nuclear fuel. Debris from the Three Mile Island reactor in Pennsylvania is also stored at this site. Under a consent agreement between DOE, the Department of the Navy, and the State of Idaho, DOE shall complete removal of spent nuclear fuel stored in Idaho by January 1, 2035.

- ***Savannah River Site***. Spent nuclear fuel from production reactors has been stored at this South Carolina site, and some of it has been converted to high-level radioactive waste for disposal. The 44 MTHM of spent nuclear fuel in storage includes remaining unprocessed production reactor fuel and some domestic research reactor fuel. DOE has also designated this site for storage of aluminum-clad spent nuclear fuel from domestic and foreign research reactors. In keeping with nuclear nonproliferation policies, foreign research reactor fuel is being returned to this country and placed under DOE's management. Up to 16 MTHM is projected to be returned, of which approximately 15 MTHM will be stored at the Savannah River site.

- ***Naval Spent Nuclear Fuel***. The Department of the Navy fabricates its own nuclear fuel for its nuclear-powered vessels using highly enriched uranium. For many years, naval spent nuclear fuel was shipped to the Idaho Chemical Processing Plant, where DOE reprocessed it to recover the uranium. Following DOE's termination of reprocessing activities in 1992, an agreement was reached in October 1995 between the Federal Government and the State of Idaho to allow the temporary storage of naval spent nuclear fuel at INEEL. Under the consent agreement, naval spent nuclear fuel will be among the early shipments to a repository. In 1996, the Navy decided that it would store its spent nuclear fuel in dual-purpose canisters in Idaho prior to shipping it to a geologic repository for disposal. The current inventory consists of approximately 14 MTHM and is projected to total approximately 65 MTHM by 2035.

The total projected inventory of DOE's spent nuclear fuel includes approximately 15 MTHM stored at other sites, including some commercially irradiated spent nuclear fuel now under DOE management. In addition to the quantities of DOE-managed spent nuclear fuel discussed above, 60 metric tons of sodium-bonded spent nuclear fuel, most of it stored at INEEL and Argonne National Laboratory-West in Idaho, are being evaluated to determine whether it requires treatment to make it suitable for disposal. DOE is preparing an EIS for proposed disposition of this spent nuclear fuel, as required by the National Environmental Policy Act. If the fuel is treated, it could be disposed of as high-level radioactive waste.

## *High-level radioactive waste*

### *Background*

High-level radioactive waste inventories have resulted from past reprocessing of spent nuclear fuel to recover plutonium and uranium. DOE originally intended to reprocess most of its spent nuclear fuel, and reprocessing began at a number of Federal sites as early as the 1940s. In 1985, when President Reagan decided that high-level

radioactive waste resulting from atomic energy defense activities could be disposed of in the civilian repository, DOE and naval spent nuclear fuel were still being reprocessed. Reprocessing continued until 1992, when the Administration discontinued the practice.

*Surplus Plutonium*

The Department has identified approximately 50 metric tons of surplus weapons-usable plutonium for disposition. The Department plans to fabricate mixed oxide (MOX) fuel for use in existing commercial power reactors for most of the surplus plutonium. Once irradiated in the reactor, this MOX SNF would be disposed of in the repository as commercial spent nuclear fuel.

*Current and projected inventories*

Radioactive wastes from reprocessing are stored as aqueous solutions, sludges, and calcines at the INEEL and the Hanford and Savannah River sites. Current plans are to send a portion of these wastes to the repository, DOE will solidify them as borosilicate glass in canisters prior to transport. The canisters will be safely stored near the vitrification site until they are transported to a repository for disposal. At the Savannah River site, the production of borosilicate glass canisters has already begun. About 22,000 canisters of high-level radioactive waste are projected to be produced at DOE sites through 2035. In addition, the West Valley Demonstration Project in New York State, a facility now managed by DOE, completed vitrification of high-level radioactive waste that resulted from commercial reprocessing of spent nuclear fuel; 275 canisters of vitrified commercial high-level waste were produced at West Valley and are in storage there.

## *Other nuclear materials no longer essential to national security needs*

Through the work of its Nuclear Materials Stewardship Initiative, DOE is examining whether certain nuclear materials no longer essential to national security needs should be maintained as a national resource or disposed of, possibly in the geologic repository that OCRWM would develop. These materials include curium and americium, now in solutions; metals and oxides of neptunium-237 at the Savannah River site; and uranium-233-rich materials at Oak Ridge, Tennessee, and INEEL. If DOE determines that disposal in a repository is warranted, total system performance assessment analyses would evaluate the impacts on repository system performance of disposing of these materials in a repository.

# *Appendix D*

# *Legislative and Regulatory Requirements*

The Office of Civilian Radioactive Waste Management (OCRWM) must comply with the requirements of the Nuclear Waste Policy Act of 1982 (NWPA) and other applicable laws. OCRWM must also comply with the regulations of other Federal agencies, including the Nuclear Regulatory Commission (NRC), the Department of Transportation (DOT), and the Environmental Protection Agency (EPA), and with State laws and regulations. This appendix summarizes the most important Federal requirements. OCRWM's Program Plan presents a much fuller account of statutory requirements, as well as a history of the Program.

## Key Federal Laws

The NWPA established basic policies to govern development of a Federal radioactive waste management system.

- **Development of geologic repositories.** The NWPA established a framework for siting, characterizing, constructing, operating and monitoring, and closing two permanent geologic repositories for disposal of spent nuclear fuel and high-level radioactive waste.
- **Storage.** It provided the authority for the Federal Government to contract for a limited amount of emergency Federal interim storage; that authority has expired. It also provided for development of a proposal to site and construct a monitored retrievable storage facility on a firm schedule. That authority has also expired.
- **Intergovernmental relations.** It established requirements for interactions between the Federal Government and States, local governments, and Native American tribes.
- **Other Federal responsibilities.** It assigned other Federal agencies responsibility for facilitating the radioactive waste management mission. Most notably, it required that radioactive waste management facilities be licensed by NRC in keeping with environmental standards set by EPA.
- **Nuclear Waste Fund.** It provided for the owners and generators of radioactive materials to be disposed of in a repository to cover the costs of disposal, and it established a fund into which utilities operating reactors pay fees on nuclear electricity generated and sold by them.
- **Office of Civilian Radioactive Waste Management.** It established OCRWM within the Department of Energy (DOE).

## The Nuclear Waste Policy Amendments Act of 1987

This act retained the basic policies set forth in the 1982 NWPA regarding Federal responsibilities, the Nuclear Waste Fund, and OCRWM. However, it significantly modified the original act.

- **Site characterization.** The Amendments Act directed DOE to characterize only the Yucca Mountain site in Nevada as a potential repository site and to postpone consideration of the need for a second repository until no sooner than 2007 and no later than 2010. It established a process that would lead to a determination by the Secretary of Energy on whether to recommend that the President approve Yucca Mountain for development as a geologic repository.
- **Monitored retrievable storage.** It subjected the siting, construction, and operation of a monitored retrievable storage facility to certain conditions that link the construction and operation of the facility to construction and licensing of a repository. It also prohibited siting it in a State in which a site has been approved for repository site characterization or repository construction.
- **State and Tribal involvement.** It provided financial incentives for States and Native American Tribes on whose land a repository or monitored retrievable storage facility is sited. It authorized States, Native American Tribes, and units of local government within whose jurisdictions a candidate site is located to designate onsite oversight representatives, and it provided that the reasonable expenses of those representatives be paid from the Nuclear Waste Fund.
- **Local government involvement.** It also authorized the Secretary to designate other units of local government as affected and, therefore, entitled them to exercise oversight of site characterization activities and to receive financial assistance to cover the costs of that oversight.
- **External oversight.** It increased external oversight of OCRWM's work by establishing the Nuclear Waste Technical Review Board.
- **Nuclear Waste Negotiator.** It established the Office of the Nuclear Waste Negotiator and directed the Negotiator to attempt to reach an agreement with a State or Native American Tribe willing to host a repository or monitored retrievable storage facility. These provisions have expired.

## The Energy Policy Act of 1992

This act includes key elements of the National Energy Strategy proposed by the Administration in 1990. Section 801 of the act directed EPA to contract with the National Academy of Sciences (NAS) to provide "findings and recommendations on reasonable standards for protection of the public health and safety" that would govern the long-term performance of a high-level radioactive waste repository at the Yucca Mountain site. Within one year of receiving NAS recommendations, EPA was to promulgate public health and safety standards that "shall prescribe the maximum annual effective dose equivalent to the individual members of the public from releases to the accessible environment from radioactive materials stored or disposed of in the repository." NRC was also required to modify its technical requirements and criteria to be consistent with EPA standards.

## Site Designation

On July 23, 2002, President Bush signed the Yucca Mountain Development Act designating Yucca Mountain as the Nation's first geological radioactive waste disposal site for spent nuclear fuel and high-level radioactive waste. Currently, DOE is in the process of submitting a license application to NRC and developing transportation capability.

## Key Regulations

Federal regulations are published in the Code of Federal Regulations, which is divided into volumes organized by Title and Part. For example, 10 CFR 60 refers to Title 10, Code of Federal Regulations, Part 60.

10 CFR 2 (NRC) Rules of Practice for Domestic Licensing Proceedings and Issuance of Orders. Specifies the licensing process and requires an electronic record-keeping system to preserve data needed for licensing.

10 CFR 50, Appendix B (NRC) Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants. Establishes quality assurance requirements.

10 CFR 63 (NRC) Disposal of High-Level Radioactive Wastes in a Proposed Geological Repository at Yucca Mountain. NRC promulgated the final 10 CFR Part 63 on November 2, 2001, in the *Federal Register* (66 FR 55733).

10 CFR 71 (NRC) Packaging and Transportation of Radioactive Material. Defines requirements for packaging and transporting spent nuclear fuel and high-level radioactive waste.

10 CFR 72 (NRC) Licensing Requirements for the Independent Storage of Spent Nuclear Fuel and High-Level Radioactive Waste. Sets forth technical requirements for licensing private storage facilities to receive and store spent nuclear fuel, and outlines procedures for licensing DOE to receive and store spent nuclear fuel at a temporary facility.

10 CFR 73 (NRC) Physical Protection of Plants and Materials. Prescribes requirements for physical protection systems to protect against radiological sabotage of special nuclear materials.

10 CFR 74 (NRC) Material Control and Accounting of Special Nuclear Material. Establishes requirements for control and accounting of special nuclear material, including documentation of transfer of material.

10 CFR 75 (NRC) Safeguards on Nuclear Material—Implementation of US/IAEA Agreement. Establishes a system to implement the agreement between the United States and the International Atomic Energy Agency (IAEA) on the application of safeguards.

10 CFR 960 (DOE) General Guidelines for the Recommendation of Sites for Nuclear Waste Repositories. Establishes guidelines to compare candidate sites; used as the basis for the 1988 Site Characterization Plan for the Yucca Mountain Site Characterization Project. In 1996, DOE issued proposed amendments to these rules. In 1999, DOE issued a revised proposal, which included site-specific guidelines for Yucca Mountain as 10 CFR 963. It was then finalized on November 14, 2001.

10 CFR 961 (DOE) Standard Contract for Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste. Outlines DOE's contract with utilities to receive, transport, and dispose of spent nuclear fuel and high-level waste.

10 CFR 963 (DOE) Yucca Mountain Site Suitability Guidelines. DOE's siting guidelines, which use a total system performance assessment method to evaluate suitability of the Yucca Mountain site were published in the *Federal Register* on November 14, 2001 (66 FR 57298).

40 CFR 197 (EPA) Environmental Radiation Protection Standards for Yucca Mountain, Nevada, for site-specific health and safety standards. Establishes limits on doses received by individual members of the public from repository releases and establishes standards for groundwater contamination and limits doses from releases from human intrusion. EPA finalized the standards and issued the final 40 CFR Part 197 in the *Federal Register* on June 13, 2001 (66 FR 32074).

40 CFR 191 (EPA) Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes. Originally issued in 1985 pursuant to the NWPA, the regulations were remanded in 1987. The disposal section does not apply to Yucca Mountain. Pursuant to Section 801 of the Energy Policy Act of 1992, the EPA has proposed a site-specific radiation protection standard applicable to the Yucca Mountain site.

49 CFR 171-179 (DOT) Hazardous Materials Regulations. Specifies DOT requirements for the transportation of radioactive materials.

49 CFR 397 (DOT) Transportation of Hazardous Materials; Driving and Parking Rules. Contains routing requirements and procedures that apply to motor vehicles engaged in the transportation of hazardous materials.

# *Appendix E*

# *Review, Regulation and Oversight*

Because of the unprecedented nature of the mission of the Office of Civilian Radioactive Waste Management (OCRWM), Congress designed the Civilian Radioactive Waste Management Program to be one of the most closely scrutinized in the public arena, subject to exceptionally broad and intensive review, regulation, and oversight. This appendix presents an overview of the formal interactions in which we are engaged.

Parties that regulate, formally review, and oversee our Program are identified below, followed by a list of the hearings, briefings, and meetings they held in Fiscal Year (FY) 2002 and the topics discussed at each. Appendix F includes a list of selected publications issued by some of these parties in FY 2002.

- ***Congress –*** Congress defines our statutory basis, appropriates funds, and monitors our progress. The congressional committees that exercise primary oversight of our work are the Senate Committee on Energy and Natural Resources, Subcommittee on Energy Research, Development, Production, and Regulation; the House Committee on Commerce, Subcommittee on Energy and Power; and the Energy and Water Development Subcommittees of the House and Senate Appropriations Committees.

- ***General Accounting Office (GAO) –*** The Nuclear Waste Policy Act (NWPA) directs GAO to conduct an annual audit of OCRWM. GAO also reviews and reports on Program activities in response to specific congressional inquiries and requests.

- ***Nuclear Regulatory Commission (NRC) –*** NRC exercises a statutory role under the NWPA. It implements regulatory standards for the protection of the public and the environment from radioactive releases associated with storage and disposal of high-level radioactive waste and spent nuclear fuel. It is responsible for certifying and licensing the components of the radioactive waste management system, including the repository, facilities for storing spent nuclear fuel, and transportation casks. NRC mandates quality assurance requirements and content requirements for license applications.

  We also provide information to NRC's Advisory Committee on Nuclear Waste, which reviews the work of NRC staff and makes recommendations to NRC regarding the adequacy of that work.

- ***Nuclear Waste Technical Review Board (NWTRB) –*** The NWTRB exercises a statutory and independent role established in the Nuclear Waste Policy Amendments Act of 1987. It evaluates the validity of technical and scientific work at the Yucca Mountain site and activities relating to the packaging and transportation of high-level radioactive waste and spent nuclear fuel. The NWTRB is required to report its findings, conclusions, and recommendations to Congress and the Secretary of Energy at least twice a year. The NWTRB's meetings provide the public with an opportunity to observe and comment on technical exchanges between the NWTRB, Program and contractor staff, and other scientists.

- ***National Academy of Sciences (NAS) –*** The NAS Board on Radioactive Waste Management reviews our Program on an as-requested basis, offering technical expert review and advice on Program issues.
- ***Environmental Protection Agency (EPA) –*** The Energy Policy Act of 1992 directs the EPA to promulgate a site-specific radiation protection standard for the management and disposal of spent nuclear fuel and high-level radioactive waste at the Yucca Mountain site.
- ***Department of Transportation (DOT) –*** In general, DOT regulates commercial transportation. The Department transports highly radioactive materials, including spent nuclear fuel, in a manner consistent with the DOT regulations. Those regulations cover handling of shipping containers, labeling of containers and placarding of transport vehicles for identification purposes, driver training and certification, and highway routing.
- ***State of Nevada and affected units of local government –*** Under the NWPA, the State of Nevada and Nye County, the county within which the Yucca Mountain site is located, are entitled to exercise oversight of site characterization activities and to receive financial assistance for this purpose. Pursuant to the Amendments Act of 1987, the Secretary of Energy designated nine counties contiguous to Nye County (including Inyo County in California) as affected units of local government and, therefore, eligible to receive Federal financial assistance to review and monitor site characterization activities.

  The Amendments Act also gave the State and Nye County the right to designate onsite representatives to oversee site characterization and to receive funding for associated "reasonable expenses." The State has never designated such a representative; Nye County has.

  In FY 2002, by congressional direction, $2.5 million was provided to support the State's oversight functions and $6 million was designated for affected units of local government.

## *Fiscal Year 2002 Congressional Testimony and Meetings with Regulators and Oversight Bodies*

### *Joint congressional briefings/hearings*

**Date**

None

### *U.S. Senate*

| Date | Committee/Subcommittee | Witness(es) |
|---|---|---|
| December 5, 2001 | Energy and Natural Resources (Confirmation hearing) | Dr. Margaret Chu, Director, OCRWM |
| March 15, 2002 | Appropriations/Energy and Water Development | Lake Barrett, Acting Director, OCRWM |
| May 16, 2002 | Energy and Natural Resources | Secretary of Energy Spencer Abraham |
| May 22, 2002 | Energy and Natural Resources | Coordinated by State of Nevada |
| May 23, 2002 | Energy and Natural Resources | Under Secretary Card |

### *U.S. House of Representatives*

| Date | Committee/Subcommittee | Witness(es) |
|---|---|---|
| March 14, 2002 | Appropriations/Energy and Water Development | Lake Barrett, Acting Director, OCRWM |
| April 18, 2002 | Energy and Commerce/ Energy and Air Quality | Secretary of Energy Spencer Abraham |
| April 25, 2002 | Transportation and Infrastructure | Lake Barrett, Acting Director, OCRWM |

### *NRC meetings*

| Date | |
|---|---|
| October 11, 2001 | Appendix 7 Meeting on Unsaturated Zone* |
| November 27-29, 2001 | 130th Advisory Committee on Nuclear Waste |

*Appendix 7 is part of the agreement between DOE/OCRWM and NRC/Nuclear Material Safety and Safeguards regarding prelicensing interactions. Appendix 7 describes the role of NRC's On-Site Representative and how it will interact with DOE.

| | |
|---|---|
| December 5, 2001 | Quarterly Quality Assurance Meeting |
| December 6, 2001 | Quarterly Management Meeting |
| January 8-9, 2002 | 131st Advisory Committee on Nuclear Waste |
| February 7-8, 2002 | 132nd Advisory Committee on Nuclear Waste |
| February 5, 2002 | Discussion of Future Issue Resolution Meetings |
| Feb. 27-March 1, 2002 | Advisory Committee on Nuclear Waste — Policy and Planning |
| March 12-13, 2002 | Appendix 7 Meeting on Repository Design and Thermal-Mechanical Effects |
| March 19-21, 2002 | 133rd Advisory Committee on Nuclear Waste |
| April 15-16, 2002 | Technical Exchange on Electronic-Submissions |
| April 16-18, 2002 | 134th Advisory Committee on Nuclear Waste |
| April 18, 2002 | Quarterly Quality Assurance Meeting |
| April 19, 2002 | Quarterly Management Meeting |
| June 25-26, 2002 | Technical Exchange on Electronic-Submissions |
| July 9-10, 2002 | Appendix 7 Meeting on Criticality |
| June 18-20, 2002 | 135th Advisory Committee on Nuclear Waste |
| July 23, 2002 | Technical Exchange on KTI Agreement Item Status |
| July 23-25, 2002 | 136th Advisory Committee on Nuclear Waste |
| July 30, 2002 | Quarterly Quality Assurance Meeting |
| July 31, 2002 | Quarterly Management Meeting |
| August 6-8, 2002 | Appendix 7 Meeting on Geotechnical Investigation Results/Seismic Design Inputs Approach and Postclosure Seismic Approach |
| September 23-26, 2002 | 137th Advisory Committee on Nuclear Waste |
| September 30, 2002 | Appendix 7 Meeting on Interpretation of Aeromagnetic Data |

### *NAS*

### *National Research Council: Board on Radioactive Waste Management*

**Date**

| | |
|---|---|
| April 16-17, 2002 | Board on Radioactive Waste Management |
| July 30-31, 2002 | Board of Radioactive Waste Management Summer Meeting |

### *Tribal, State and Local Governments*

| **Date** | |
|---|---|
| October 5, 2001 | Tribal Update Meeting |
| December 4, 2001 | Paiute Indian Tribes of Utah, Cedar City, Utah |
| December 10, 2001 | Bishop Paiute Indian Tribal Council, Bishop, California |
| January 28, 2002 | Lander County Board of Commissioners, Battle Mountain, Nevada |
| February 19, 2002 | Affected Units of Local Government, Las Vegas, Nevada |
| March 20, 2002 | Churchill County Board of Commissioners, Fallon, Nevada |
| March 21, 2002 | Mineral County Board of Commissioners, Hawthorne, Nevada |
| April 1, 2002 | Inyo County Board of Supervisors, Independence, California |
| April 16, 2002 | Nye County Board of Commissioners, Pahrump, Nevada |
| April 22, 2002 | Lincoln County Board of Commissioners, Pioche, Nevada |
| May 2, 2002 | Affected Units of Local Government, Las Vegas, Nevada |
| May 20, 2002 | Eureka County Board of Commissioners, Eureka, Nevada |
| June 3, 2002 | Esmeralda County Board of Commissioners, Goldfield, Nevada |
| June 12, 2002 | White Pine County Board of Commissioners, Ely, Nevada |

### *Nuclear Waste Technical Review Board*

| **Date** | |
|---|---|
| September 10, 2001 | Full Board Meeting |
| January 29-30, 2002 | Full Board Meeting |
| May 7-8, 2002 | Full Board Meeting |
| September 10, 2002 | Full Board Meeting |

**This page intentionally left blank.**

# *Appendix F*

# *Publications From OCRWM and Other Organizations*

This appendix lists publications released by the Office of Civilian Radioactive Waste Management (OCRWM) that are relevant to work discussed in this Annual Report. The appendix also lists selected publications issued by other parties whose work bears on the Program, as well as a number of trade publications that report on OCRWM's work and related activities on a regular basis. Those publications were identified in the course of a limited survey; the list is not intended to be comprehensive.

To inform the public about its studies, OCRWM has placed thousands of documents, photographs, and publications on its web site at http://www.ocrwm.doe.gov/. Most Project-related information is also available at the Yucca Mountain Project Reading Room in Las Vegas, Nevada. Documents also can be ordered by calling OCRWM's toll-free information line at 1-800-225-6972.

## OCRWM Publications

*OCRWM Fiscal Year 2001 Annual Report to Congress*, October 2002 (DOE/RW-0556) [http://www.ocrwm.doe.gov:80/pm/program_docs/annualreports/01ar/01ar-cp.htm]

*Yucca Mountain Science and Engineering Report, Revision 1,* February 2002 (DOE/RW-0539-1) [www.ocrwm.doe.gov/documents/ser_b/index.htm]

*Final Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada*, February 2002 (DOE/EIS-0250) [www.ocrwm.doe.gov/documents/feis_a/index.htm]

*Yucca Mountain Site Suitability Evaluation,* February 2002 (DOE/RW-0549) [http://www.ocrwm.doe.gov/documents/sse_a/index.htm]

*10 CFR Part 963 - Yucca Mountain Site Suitability Guidelines*, November 14, 2001 [www.ocrwm.doe.gov/newsroom/documents/10cfr960_frn.pdf]

*Alternative Means of Financing & Managing the Civilian Radioactive Waste Management Program,* August 2001 (DOE/RW-0546) [www.ocrwm.doe.gov:80/pm/pdf/amfm_report.pdf]

*Analysis of the Total System Life Cycle Cost of the Civilian Radioactive Waste Management Program,* May 2001 (DOE/RW-0533) [www.ocrwm.doe.gov/pm/pdf/tslccr1.pdf]

*Nuclear Waste Fund Fee Adequacy: An Assessment*, May 2001 (DOE/RW-0534) [http://www.ocrwm.doe.gov:80/pm/pdf/feeadr1.pdf]

*Civilian Radioactive Waste Management Program Plan, Revision 3,* February 2000, (DOE/RW-0520) [http://www.ocrwm.doe.gov/pm/pdf/pprev3.pdf]

## Publications From Other Organizations

Note: OCRWM makes no warranty, express or implied, concerning the authenticity, accuracy, completeness, or usefulness of the information in any of the publications listed below.

### *Nuclear Waste Technical Review Board*

*Report to the U.S. Congress and the Secretary of Energy,* April 2002 [www.nwtrb.gov/reports/reports.html]

*Letter Report to Congress and the Secretary of Energy,* January 24, 2002 [www.nwtrb.gov/reports/reports.html]

U.S. Nuclear Waste Technical Review Board Strategic Plan for FY 2001-2006, revised March 2001 [www.NWTRB.gov/plans/plans.html]

*U.S. Nuclear Waste Technical Review Board FY 2001 Performance Plan and Evaluation,* revised March 2001 [www.NWTRB.gov/plans/plans.html]

### *Environmental Protection Agency*

*Final Public Health and Environmental Radiation Protection Standards for Yucca Mountain, Nevada,* June 6, 2001 [www.epa.gov/radiation/yucca/pubs.htm#rad_protect_issues]

*Public Health and Environment Radiation Protection Standards of Yucca Mountain, Nevada (40 CFR Part 197) Final Rule, Response to Comments Document,* June 2001 (EPA 402-R-01-009) [www.epa.gov/radiation/yucca/docs/rtc/yucca_rtc_061801_cvr.pdf]

### *Nuclear Regulatory Commission*

*Office of the Inspector General, Semiannual Report to Congress – April 1, 2002, to September 30, 2002,* November 2002 (NUREG-1415, Vol. 15, No. 1) [http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1415/v15n1/]

Letter from the Chairman, Advisory Committee on Nuclear Waste, to the Chairman, U.S. Nuclear Regulatory Commission – *High-Level Waste Performance Assessment Sensitivity Studies,* August 7, 2002 [www.nrc.gov/reading-rm/doc-collections/acnw/letters/2002/1360189.html]

Letter from the Chairman, Advisory Committee on Nuclear Waste, to the Chairman, U.S. Nuclear Regulatory Commission –Yucca *Mountain Review Plan, Revision 2,* August 2, 2002 [www.nrc.gov/reading-rm/doc-collections/acnw/letters/2002/1360187.html]

Letter from the Chairman, Advisory Committee on Nuclear Waste, to the Chairman, U.S. Nuclear Regulatory Commission – *FY 2002 and FY 2003 Action Plan for the Advisory Committee on Nuclear Waste,* June 27, 2002 [www.nrc.gov/reading-rm/doc-collections/acnw/letters/2002/1350183.html]

*Information Digest 2002 Edition,* June 2002 (NUREG-1350, Vol. 14) [www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/v14/index.html]

*Yucca Mountain Review Plan Draft Report, Revision 2,* March 2002 [www.nrc.gov/waste/hlw-disposal/draft-yucca-plan.pdf]

## General Accounting Office

*Nuclear Waste: Technical, Schedule, and Cost Uncertainties of The Yucca Mountain Repository Project,* December 2001 (GAO-02-191) [www.gao.gov/new.items/d02191.pdf]

## Affected Units of Local Government

*Nuclear Waste Update, The Eureka County Yucca Mountain Information Office Newsletter*, Fall 2002 and Summer 2002 [www.yuccamountain.org/newslet.htm]

*Eureka County Nevada, Testimony* — Comments presented by Donna Bailey, Vice-Chairman of the Eureka County Board of Commissioners, at the U.S. Department of Energy Public Hearing on the Possible Site Consideration of Yucca Mountain as a High-Level Radioactive Waste Repository, October 10, 2001 [www.yuccamountain.org/pub.htm]

*Nye County Nuclear Waste Repository Project Office, Independent Scientific Investigations Program Final Report, Fiscal Years 1996 - 2001*, August 2001 (NWRPO-2001-04) [www.nyecounty.com/Reports.htm]

*Impact Assessment Report on Proposed Shipments of Spent Nuclear Fuel and High-Level Radioactive Waste through Eureka County, Nevada* — Prepared for the Board of Eureka County Commissioners, August 2001 [www.yuccamountain.org/pub.htm]

*Nye County Nuclear Waste Repository Office Update* [www.nyecounty.com/Newsletters.htm]

- March 2001, Vol. III, Issue 6
- October 2000, Vol. III, Issue 5

## Organizations with which the Department has Cooperative Agreements

Directory of Personnel Responsible for Radiological Health Programs, January 2001 [www.crcpd.org/publications_other.asp]

## Other Offices within the Department of Energy

*Long-Term Stewardship Study, Volume I - Report*, October 2001 [http://lts.apps.em.doe.gov/center/reports/pdf/SS_VolI.pdf]

*Long-Term Stewardship Study, Volume II – Response to Comments*, October 2001 [http://lts.apps.em.doe.gov/center/reports/pdf/ssVolII-frontend.pdf]

*EM Progress Newsletter, Vol. 11, No. 2*, Summer 2002 [http://www.em.doe.gov/emprog/Prog_Sum02v4_508.pdf]

## Trade Publications

A number of trade publications report on OCRWM and related activities on a regular basis.

*Arms Control Today* [www.armscontrol.org/ACT/act.html]

*Bulletin of the Atomic Scientists* [www.bullatomsci.org]

*Energy Daily* [www.kingpublishing.com/publications/ed] – by subscription only

*Greenwire* [www.nationaljournal.com/greenwire] – by subscription only

*Inside Energy with Federal Lands* [www.infostore.mhenergy.com/cgi-bin/infostore] – by subscription only

*Inside NRC* [www.infostore.mhenergy.com/cgi-bin/infostore] – by subscription only

*National Radioactive Waste Management Exchange* – by subscription only [www.exchangemonitor.com/newsorder.htm]

*Nuclear Fuel* [www.infostore.mhenergy.com/cgi-bin/infostore] – by subscription only

*Nuclear News Flashes* [www.infostore.mhenergy.com/cgi-bin/infostore] – by subscription only

*Nuclear Waste News* [www.bpinews.com/enviro/pages/nwn.htm] – by subscription only

*Nuclear Weapons & Materials Monitor* [www.exchangemonitor.com/newsorder.htm] – by subscription only

*Nucleonics Week* [www.infostore.mhenergy.com/cgi-bin/infostore] – by subscription only

*Science* [www.sciencemag.org]

*Weapons Complex Monitor: Waste Management & Cleanup* [www.exchangemonitor.com/newsorder.htm] – by subscription only