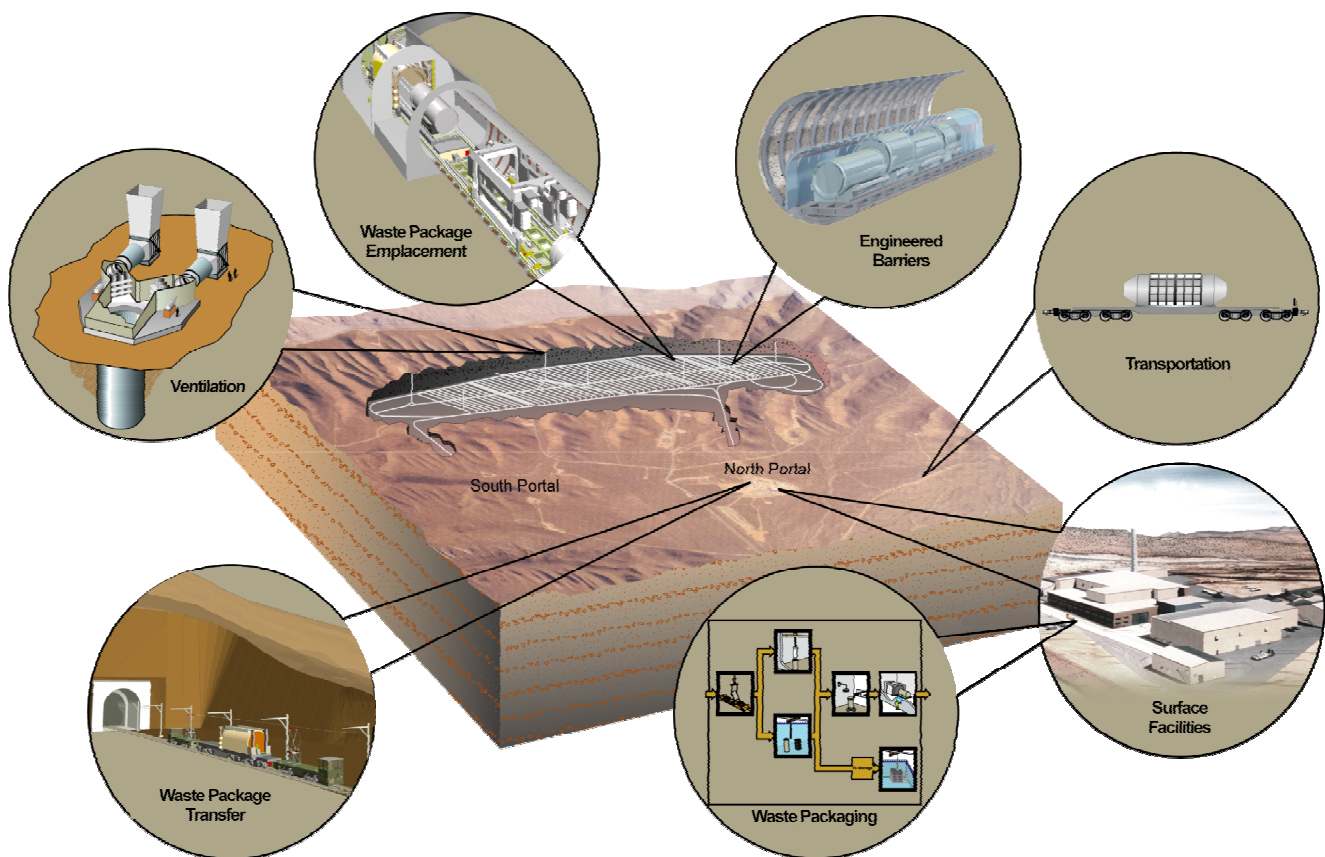


Alternative Means of Financing and Managing the Civilian Radioactive Waste Management Program



August 2001

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Note to Reader

This report was written with the assumption that the reader has an interest in the Civilian Radioactive Waste Management Program. There is an assumption that the reader is also familiar with relevant current events, U.S. budget processes, and legislation pertaining to the budget and the Office of Civilian Radioactive Waste Management.

The report does not attempt to provide the reader with a detailed, comprehensive analysis on how the management and funding alternatives in the report were selected, as compared to the other alternatives not discussed in the report. A thorough discussion of all the funding and management alternatives identified and analyzed, along with a detailed discussion of the methodology, would have been extremely lengthy and beyond the scope of Congress' direction. It was decided for breadth and read-ability that the report only describe the findings of the research and input from management and financial experts utilized for this report.

A list of documents used to initiate the research is included at the end of the report. If anyone has any questions on how the research was conducted please write:

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I. Executive Summary

This report is in response to the directive of the House Appropriations Subcommittee for Energy and Water Development that the Department of Energy (DOE) update a 1984 report of alternative means of financing and managing (AMFM) the Office of Civilian Radioactive Waste Management (OCRWM) in the DOE. The President's FY 2002 budget also stated: "DOE will submit to Congress an updated report regarding alternative approaches to finance and manage the program by June 30, 2001[.] DOE will identify in this report models of effective organizations that might benefit the operation of its civilian program." OCRWM contracted with Booz·Allen & Hamilton, Inc. to conduct research on alternatives and received input from financial and management experts.

This report acknowledges the views of the experts that the current funding mechanism is the highest priority issue in need of immediate action and proposes specific near-term funding actions that could be implemented as part of the FY 2003 budget process. Near-term management initiatives were also identified. OCRWM reviewed the near-term management initiatives and decided to initiate implementation of five initiatives this year. The report also addresses longer-term funding and management alternatives for further consideration after the process for selecting the site for a permanent repository has been completed.

This report describes four near-term funding mechanisms that could remedy the limitations that are now imposed on the Nuclear Waste Fund (NWF). The alternatives are to: (1) re-classify the NWF spending from a discretionary account to a mandatory account; (2) re-classify the annual user fee from a mandatory receipt to a discretionary offsetting collection; (3) establish a separate Budget Enforcement Act (BEA) discretionary spending category for the repository construction period; and (4) request a lump sum appropriations for construction.

Three longer-term management and funding alternatives were identified with the assumption that any action on the longer-term management and funding alternatives would take place only after the national decision process on site suitability has been completed. While all three alternatives have benefits, no decision has been made to proceed to implement any of them. Further detailed analysis would be required on the specifics of the alternatives' application to OCRWM if a decision on the repository site is made and the site recommendation process is completed.

Current Status of the Program

The Nuclear Waste Policy Act of 1982, as amended, (NWPA) assigned to OCRWM the mission of developing and implementing a national program for the safe management of commercial spent nuclear fuel (SNF) and high level nuclear waste from Atomic Energy Defense programs. Research have been ongoing for years to study and design a permanent geologic repository for SNF and high level nuclear waste. These efforts have laid a robust, scientifically sound foundation for the process of reaching a national decision on the selection of a suitable site for a permanent geologic repository and implementation of the project.

The Challenges Ahead

When the site characterization process is completed, it will signal a major transition in the program. If a decision is made on the suitability of a site for a repository, the future program requirements will pose multiple challenges: (1) managing a large, one-of-a-kind project in a Federal setting subject to many regulatory requirements; (2) continuing to plan and execute a program on the scientific frontier; (3) integrating an unusually broad array of scientific, technical, and managerial disciplines; (4) complying with a complex and lengthy NRC licensing proceeding; and (5) addressing the political sensitivities associated with an inherently controversial mission.

Discussion of the AMFM Update Analysis

The analysis focused on one overarching objective: to maintain and enhance national confidence in the ability of OCRWM to carry out its mission under the NWPA safely, effectively, and efficiently. A number of concepts, business models and budget mechanisms were studied to accomplish this purpose.

Funding Mechanism: The report results indicate that the funding mechanism for the program, the NWF, has lost its original funding intent and should be addressed immediately. The capability and effectiveness of the original design for the funding mechanism has eroded over time due to the layering of new government-wide Federal budget rules. Absent a change in the funding mechanism, the contractual user fee revenues collected in the NWF are not available to meet their intended purposes. For example, using current Office of Management and Budget (OMB) and Congressional Budget Office (CBO) budget scoring procedures, the recently enacted Concurrent Resolution on the Budget for FY 2002 projects a NWF surplus balance of approximately \$11 billion, while the program is appropriated only \$200 million for the fiscal year even though the amount requested exceeded \$200 million.

Management: The report results further indicate that the current OCRWM organization and management structure has the capability to manage the tasks at hand. The management processes can be further augmented in the near-term in the areas of planning, budgeting, personnel management, performance measurement, and accountability. The augmentations are consistent with the goals of the Bush Administration's government reform efforts and sound business management principles. The analysis also identified alternative longer-term organizational and management structures, each of which could enhance program performance in the project implementation phase after the site suitability process is complete.

Conclusions and Recommendations

The results of the analysis can be summarized in three broad conclusions and recommendations:

Adopt a near-term funding mechanism for the President's FY 2003 budget: Four near-term funding mechanisms are identified in the report: (1) re-classify the NWF spending from a discretionary account to a mandatory account; (2) re-classify the annual user fee from a mandatory receipt to a discretionary offsetting collection; (3) establish a separate BEA discretionary spending category for the repository construction period; and (4) request a lump sum appropriations for construction.

Complete interim management augmentations within the existing OCRWM organization and management structure in the FY 2003 budget: Five specific interim measures were identified and are being adopted by OCRWM after analysis and strategic planning for the near-term: (1) re-assess and enhance the

baseline estimate of project scope, cost and schedule; (2) institute necessary budget practices for increased annual costs for capital expenditures, including establishing a separate OMB budget planning target for the NWF and preparation and submission to Congress of a three-year budget; (3) clarify contractor and federal staff annual performance measures to facilitate greater accountability; (4) adopt new personnel management procedures to transition the staff skill mix; and, (5) augment the existing process to manage and control project design changes. These measures are being adopted in conjunction with the transition of the Management and Operating (M&O) contract this year to Bechtel/SAIC. These augmentations will enhance management in the near-term.

These measures have four characteristics: (1) they build upon and can be easily integrated into existing OCRWM management processes; (2) they complement a near-term funding mechanism; (3) they are responsive to the management reform initiatives of the Bush Administration; and, (4) they are fully compatible with the longer-term management and funding alternatives.

Continue to analyze and refine the three longer-term management and funding alternatives: The research on alternative management and financial concepts was reviewed by a panel of experts and synthesized into three alternatives: (1) transform OCRWM into a performance-based organization within DOE, relying upon administrative action; (2) establish an autonomous internal authority within DOE with its own personnel and procurement systems, funded through a public enterprise revolving fund; and (3) establish an independent authority, governed by a corporate-style board of directors, financed through a revolving fund, supplemented with new revenue bonding authority.

All three alternatives have the potential to be successful in carrying out the program's functions as it moves into the implementation phase. The three alternatives each have a sound conceptual foundation, and have models in other government programs. Further detailed analysis is required on the specifics of their application to OCRWM, and on the transitional issues that would be encountered. In addition, public comment should be sought from the program's constituencies on the alternatives, and on specific areas for further analysis. No decision on whether to implement any of these alternatives or other approaches should be made until the Site Recommendation process is completed.

Relationship to National Energy Policy

The Report of the President's Energy Task Force includes a number of recommendations that encourage the use of nuclear power as part of a comprehensive national energy supply strategy. To support the use of nuclear power, it is essential that the waste be removed from utility sites, as agreed to under the Standard Contracts between the Department of Energy and utilities.

The Energy Policy states, "The Federal Government must also provide for the safe disposal of nuclear waste... The Department of Energy is over a decade behind schedule for accepting nuclear waste from utilities, but has made progress toward characterization of the Yucca Mountain, Nevada site." An effective nuclear waste management program, directed by a performance-based management structure, and financed through a reliable funding mechanism, is critical to the future of nuclear power.

In addition to the impact on future nuclear power options, there is the very real need to consider current environmental and health considerations associated with existing and past civilian reactor operations and the related waste issues. The President has stated that his Administration will be attentive to the well being of the

environment, balanced by our national energy needs. On-site storage of spent nuclear fuel indefinitely would not meet this standard.

Absent an effective program, the uncertainties surrounding nuclear waste management could become an issue in re-licensing and license amendment actions by the Nuclear Regulatory Commission for nuclear power generators, and could dampen interest in future nuclear power projects. Moreover, adverse collateral impacts would include: (1) non-compliance with the Idaho agreement regarding military spent nuclear fuel removal; and (2) non-compliance with the DOE's agreements with the Governors regarding cleanup of atomic defense sites.

II. *Introduction and Context for the Report*

A. **Overview of Nuclear Waste Policy Act Requirements**

1. **The Government's Role:** The Nuclear Waste Policy Act of 1982, as amended, (NWPA) established a national program in the Department of Energy (DOE) for the disposal of all spent nuclear fuel from commercial nuclear reactors and high-level radioactive waste from atomic energy defense activities. The legislation created a three-part structure.
 - a. **Organization & Management:** (Part 1) The NWPA created the Office of Civilian Radioactive Waste Management (OCRWM) within the DOE to manage the program.
 - b. **Funding:** (Part 2) The NWPA created a user fee on spent nuclear fuel and nuclear waste to fund fully the cost of the program. The proceeds from fees, along with interest, were credited to the Nuclear Waste Fund and subject to congressional appropriations.
 - c. **Program Specifications:** (Part 3) The NWPA established a complex set of requirements for siting a geologic repository, transporting spent nuclear fuel and nuclear waste, and designing of the repository to safely store nuclear waste for thousands of years. The NWPA also established an elaborate process for obtaining approval of a proposed site for a permanent disposal facility.

The project is a business-like venture that was assigned to the government. Management and disposal of nuclear waste have certain characteristics that are analogous to commercial waste management for chemical wastes. However, the regulations and standards set for health and environmental risks associated with nuclear waste management are more stringent and the timeframes for management are much longer. To provide public assurance of a stable, long-term institutional structure capable of continuous compliance, the management of spent nuclear fuel and high level nuclear waste was vested in the Federal Government.

2. **Government – Industry Contractual Relationship:** Congress authorized that disposal services be specified through contracts between the DOE and the electric utilities generating spent nuclear fuel. The basic framework for the contracts was established in law. The contracts themselves establish specific obligations on the part of the respective parties. The contracts also establish the requirements for the payment of user fees. As discussed in more detail later in this report, these contractual commitments contain requirements affecting the design of alternative management and financial mechanisms.

B. The Original AMFM Report

1. **Rationale for the Report:** The NWPA contains a provision (Section 303) requiring a report on alternative means of financing and managing the program. This provision resulted from extensive discussions in Congress debating the NWPA and whether the proposed funding and managing structure was optimal for the long-term. The 1984 report on alternative means of financing and management (AMFM) was commissioned by DOE and recommended an organizational structure and funding mechanism that would support the program during the repository construction and operations phases.
2. **The Proposed FEDCORP Concept:** The AMFM report was prepared by an advisory panel established by the Secretary of Energy. The Panel's report in 1984, "Managing Nuclear Waste – A Better Idea," recommended the establishment of a FEDCORP, a federally chartered, government-owned corporation, to be responsible for the siting and construction of the repository, transportation of material to the site, and operation of the repository. Post closure monitoring and custodial functions would revert to the Government. The FEDCORP would be governed by a Presidentially-appointed Board of Directors who would select a Chief Executive Officer. Two special oversight commissions would provide advice on siting and funding. A small corporate staff would oversee contractors who would be exempt from most Government personnel and procurement regulations. The Panel concluded that the funding mechanism in the NWPA was adequate.
3. **Lack of Follow-Up Action:** In early 1985, a group of senior DOE executives reviewed the AMFM report and recommended against adoption of the FEDCORP concept, on the grounds that:
 - A Federal agency would be more effective in decision-making because it could better balance the dichotomy between a tight performance schedule and the need for extensive public consultation and intergovernmental relations;
 - A FEDCORP might be less politically accountable;
 - A FEDCORP could introduce special considerations in licensing and regulatory activities.

C. Review of Steps Taken by Management Since the Original AMFM Report

The 1984 report was written within the first two years of the program. Although many of the basic insights contained in the report remain valid, this updated AMFM analysis now accounts for the experience of the program over a period of almost two decades. The organizational structure, Federal/contractor structure, and site characterization effort have evolved through the past two decades.

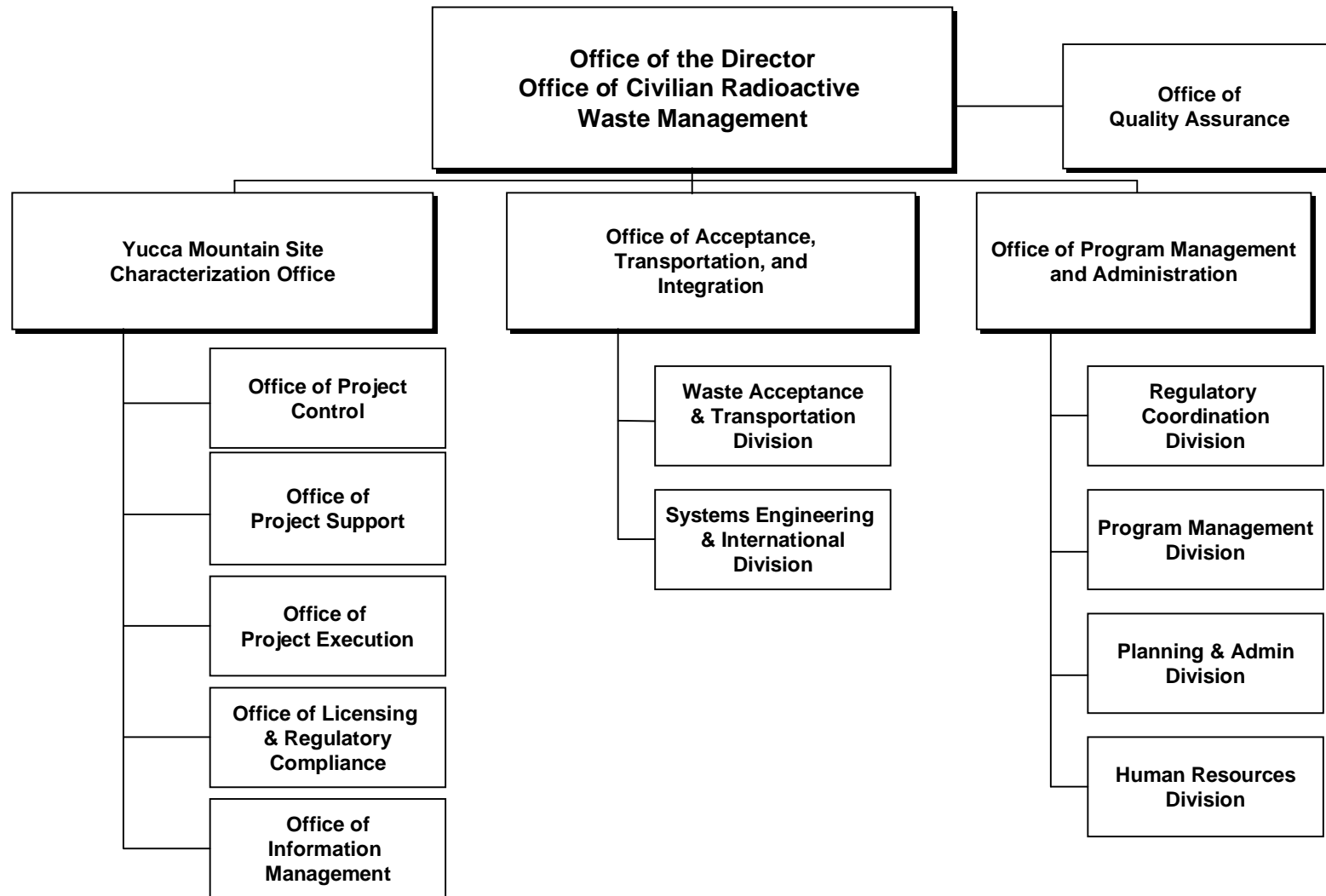
1. **Organizational and Management Structure:** The Civilian Radioactive Waste Management program is currently implemented by an office (OCRWM) within the Department of Energy, with the office Director reporting to the Secretary. The Director is appointed by the President and confirmed by the Senate. The program's organizational structure includes:
 - The Yucca Mountain Site Characterization Project in Las Vegas, which is responsible for scientific and engineering investigations at the Yucca Mountain site to develop the information required to support a determination of the site's suitability for development as a repository;
 - The Waste Acceptance, Storage and Transportation Project in Washington, DC, which is responsible for relations with waste owners and generators and for development of storage and transportation systems; and
 - The Program Management Center in Washington, DC, which is responsible for quality assurance, program management and integration, external interactions, human resources, and budget.

The Program relies on DOE for support functions, including legal support and personnel, procurement, and financial management services.

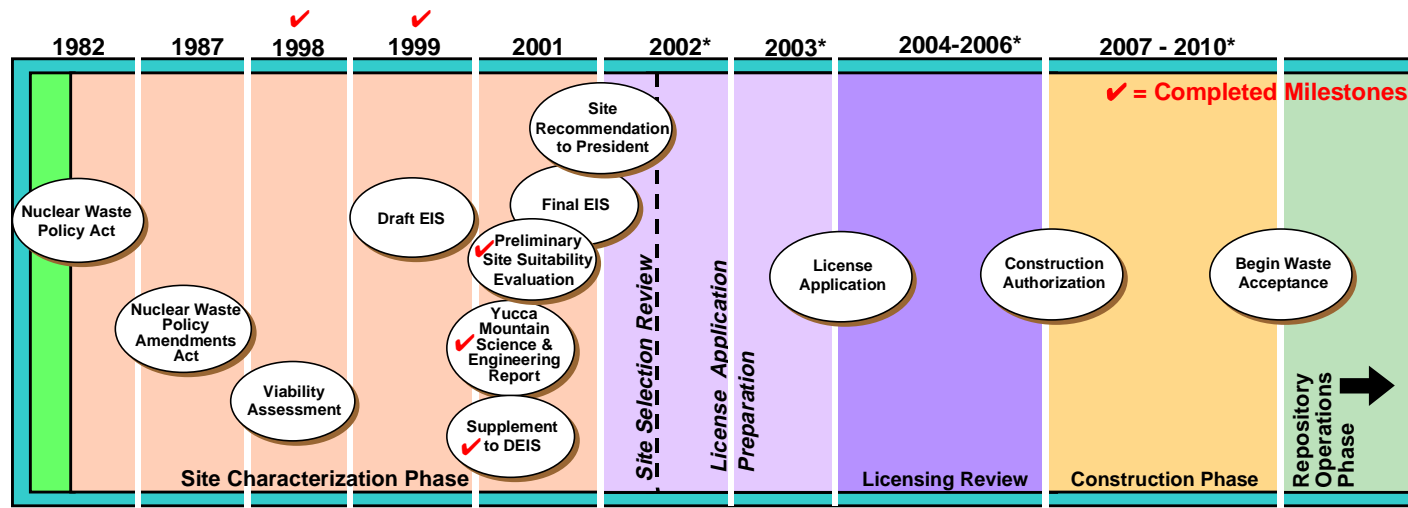
The current organizational chart is shown in Figure 1. The OCRWM currently has a personnel level of 160, with 54 in Washington and 106 at the site office in Las Vegas, Nevada.

2. **Management and Operating Contractor:** OCRWM adopted the general DOE management philosophy of having a relatively small core of Federal personnel, and relying upon a single management and operating (M&O) contractor to conduct most tasks. The current M&O contractor, Bechtel/SAIC, has a staff of about 1,200 persons assigned to the contract. The M&O contract is for a period of five years with a five-year option (i.e., to 2010), and the contract is structured as a cost plus award fee contract, where the fee level is set based upon performance criteria.
3. **Site Characterization:** The 1987 amendments to the NWPA directed OCRWM to characterize a single site at Yucca Mountain, Nevada. OCRWM has developed an extensive underground laboratory at the Yucca Mountain site that gives scientists direct access to geologic formations within which a repository would be housed. Nearly two decades have been invested in scientific characterization of the site, design of the engineered barriers that would isolate radionuclides, and a total system performance assessment that synthesizes the results of scientific investigations and engineering into a forecast of how the repository system would perform over many thousands of years. The major accomplishments and milestones of the OCRWM program to date are shown in Figure 2.

**Figure 1.
OCRWM Current Organization Structure**



**Figure 2.
OCRWM Program Accomplishments and Milestones in the
Implementation of the Nuclear Waste Policy Act**



* Milestones are dependent on FY 2002 and out-year budgets, and if the site is found suitable.

D. Current Requirement for an Updated AMFM Report

1. **Legislative Directive:** The report of the House Appropriations Committee on the Energy & Water Development Appropriations Act, Fiscal Year 2001 contained a directive to the Department to update the 1984 AMFM report. The report states:

“The Department is directed to update the report required by Section 303 of the Nuclear Waste Policy Act regarding alternative approaches to financing and managing this program. In conducting these studies, the Department shall consult with other Federal agencies and with financial and organizational management experts who would provide salient input to this study. As part of the study, the Department should identify models of effective organizations that might benefit the operation of the program. An updated report regarding alternative means of financing and managing this program shall be submitted to the Congress by June 30, 2001.”

This requirement was reinforced in the President’s FY 2002 Budget: “DOE will submit to Congress an updated report regarding alternative approaches to finance and manage the program by June 30, 2001[.] DOE will identify in this report models of effective organizations that might benefit the operation of its civilian program.”

2. **Study Methodology:** OCRWM contracted with Booz·Allen & Hamilton, Inc. to conduct research on alternative business models and perform a preliminary screening evaluation. These results were then reviewed by financial and management experts who formulated the final management and financing alternatives.
3. **Implementation After Site Suitability:** While unstated in the Congressional directive, it is assumed that the purpose of the AMFM update is to inform Congress on possible changes to the management and funding of the program as it reaches the decision point for site suitability and, if suitable, transitions into a major construction program. As a result, the AMFM update assumes that any action on the longer term management and funding alternatives would take place only after the national decision process on site suitability has been completed.

III. Requirement for a Near-Term Funding Mechanism

The adoption of a near-term funding mechanism is critical for the stepwise decision-making process appropriate to the period of technical and social uncertainty prior to a site recommendation. This step is vital to ensuring the success of the phases after site recommendation. If a decision to pursue a mechanism to alleviate the current funding impediments continues to be delayed, the funding of the project will drive the technical and scientific work needed for licensing, preparation for transportation mobilization and operations, and repository construction, and will become the determining factor whether the Government will accept waste by 2010. The original design of the Nuclear Waste Fund (NWF) was to allow adequate resources for the demands this project will require.

A. Erosion of the NWF Funding Capability

1. **The Original Design of the NWF Funding Mechanism:** The NWF is financed through contracts between nuclear utilities and the Department of Energy (DOE) that incorporate the statutorily prescribed one mill per kwh user fee on all nuclear power generated and sold after April 7, 1983, and an equivalent one-time fee for electricity generated from spent nuclear fuel used prior to that time. The principal features of the original funding mechanism include:
 - ***Life Cycle Cost Basis:*** The level of the user fee was established on an annualized, levelized basis to provide an adequate level of funding, on a life cycle cost basis, over the life of the program. DOE assessments of life cycle costs and fee adequacy cover a period of at least 125 years. It was intended that, in the early years of the program, the fee would result in more revenue than needed to defray program costs. This “surplus” and interest generated would be needed later in the program to cover program costs as nuclear plants were retired from service and no longer paying fees.
 - ***Special Financial Oversight:*** The program was subject to financial oversight by the President and Congress in two ways: (1) preparation by DOE of 3-year budgets as the basis for spending authorizations, and (2) review and approval of annual spending levels through appropriations acts. Once approved in appropriations acts, annual spending was exempted from Office of Management and Budget (OMB) apportionment controls.
 - ***Borrowing Authority:*** The Nuclear Waste Policy Act of 1982, as amended, authorized the Secretary of Energy to borrow funds from the Treasury, if the balances in the NWF were insufficient to meet immediate needs. The borrowing would be repaid from future fee revenues. The exercise of the borrowing authority was subject to appropriations limits.

- **Fee Adjustment Mechanism:** The Nuclear Waste Policy Act provided a mechanism for DOE to administratively adjust the fee level, either higher or lower. The Secretary was required to annually prepare a fee adequacy assessment to determine if a fee of one mill per kwh was sufficient to defray program costs over the life of the program. The Secretary's recommendation was subject to veto by one House of Congress, but such veto provisions were subsequently held to be unconstitutional by the Supreme Court in SNS v. Chadha.

2. The Layering of New Budget Requirements on the NWF: Since the establishment of the NWF in 1982, Congress enacted several budget control acts that dramatically reduced the funding flexibility originally envisioned in the Nuclear Waste Policy Act.

- The Balanced Budget and Emergency Deficit Control Act of 1985, also known as Gramm-Rudman-Hollings (GRH) made the Nuclear Waste Fund subject to the government-wide budget sequestration process.
- The 1987 amendments to GRH placed the appropriations from the NWF under the spending cap applicable to all domestic discretionary programs, even though the NWF was self-financed. This had the effect of forcing spending for the NWF to compete with other spending programs, which did not have dedicated funding sources. Also, as a result, OMB dropped its historical practice of setting separate budget planning targets for the NWF, forcing it to compete against other DOE programs within a single DOE budget target for domestic discretionary spending.
- The Budget Enforcement Act of 1990 (BEA) set new caps on discretionary spending accounts. The BEA also established new pay-as-you-go (PAYGO) requirements applicable to mandatory spending and receipts, in order to ensure that the net effects of legislative changes affecting mandatory spending were budget neutral.
- In the Conference Report accompanying the Omnibus Budget Reconciliation Act of 1990, the NWF spending was designated as part of the domestic discretionary appropriation accounts for FY 1991, subject to the spending cap set in the BEA.
- The 1997 Amendments to the Balanced Budget Act (BBA) extended the caps on discretionary spending accounts and the PAYGO requirements for mandatory spending accounts through FY 2002.

The layering of these new budget requirements seriously eroded the NWF funding capability in two ways:

- It imposed annual spending and revenue controls on a fund that was designed to finance a 125-year program on a life cycle cost basis – not unlike Social Security and other retirement trust funds.

- It made the NWF dysfunctional by creating separate and unrelated rules applicable to the revenue and spending components of the Fund.

In short, the layering of the new budget rules has had the effect of preventing the NWF from being used for its intended purpose. The baseline funding level of the program was set at a level for the program that was established during its earlier years, when less resources were needed. That level is far below the amount needed to construct and operate a repository. Due to the limit on spending to comply with the budget laws, increasing the program funds would require funding reductions in other programs within the annual discretionary appropriations caps. As a result, spending amounts for the program remain below program needs and the balance of the receipts are retained in the U.S. Treasury. The legislative requirement for annual appropriations from the NWF was part of a mechanism to exercise control over the program, but it was not the intent of Congress to limit funding needed to implement the program.

3. **The Current NWF Surplus:** The NWF has a large budgetary surplus that is significantly higher than ever anticipated. This surplus, in turn, has created the impression among stakeholder groups that the current budget arrangement treats nuclear waste fees as a general revenue tax, for Federal budget policy purposes, rather than a contractually based user fee.
 - The President's FY 2002 budget projects a surplus of approximately \$11 billion in FY 2002 for the Nuclear Waste Fund.
 - Current budget projections show the NWF surplus increasing at a rate of over \$1 billion per year, gaining an additional \$10 billion by FY 2011.

However, under BEA rules, the current budget baseline projections make no provision for the future spending increases needed for construction and operation of the nuclear waste repository.

4. **Prior Efforts to Restructure NWF Funding:** For several years, both the Executive Branch and Congress have been aware that the constraints of the federal process limited the ability of the Office of Civilian Radioactive Waste Management (OCRWM) to carry out its mission under the NWPA. Legislation introduced in the 105th and 106th Congresses contained provisions to modify the NWF funding mechanism. Unfortunately, while there was general acknowledgement of the problem, there was no consensus on a solution. Several legislative proposals were introduced to restructure the NWF receipts as an offsetting collection user fee, consistent with the structure of most new Government user fees enacted since the BEA. These proposals had several factors that limited their ability to succeed. First, most of the proposals were tied to other controversial issues involving the program. There was no consensus on all the factors in the legislation. There was also less impetus to address future cost increases when a possible site recommendation was not an immediate milestone. A summary of the previous proposals to modify the NWF funding structure is shown in Figure 3.

B. Funding Capability and OCRWM Contractual Obligations

In accordance with the NWPAs, DOE entered into contracts with more than 45 utilities in which, in return for payment of fees into the Nuclear Waste Fund, the Department agreed to begin disposal of spent nuclear fuel (SNF) by January 31, 1998. Because DOE has no facility available to receive SNF under the NWPAs, and does not anticipate there will be such a facility until at least 2010, DOE 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 DOE's obligation to begin disposal of SNF 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 DOE'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 DOE 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 DOE 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, 42 Fed. Cl. 582 (1998), aff'd, No. 99-5139 (Fed.Cir. Aug. 31, 2000), petition for rehearing and suggestion for rehearing en banc denied Dec. 12, 2000; Northern States Power Co. v. U.S., 43 Fed. Cl. 374 (1999), rev'd, No 99-5096 (Fed. Cir. Aug. 31, 2000), petition for rehearing and suggestion for rehearing en banc denied Dec. 12, 2000.

Liability is certain in this litigation. Other than ascertaining the actual amount of damages, the only outstanding issue is how that liability is to be satisfied. At this time, it is uncertain whether damages would be paid from the Judgment Fund, the Nuclear Waste Fund or some other source.

C. Discussion of Near-Term Funding Mechanisms

- 1. General Principles:** The development of the following near-term funding mechanisms (alternatives) were guided by four principles: (1) ensure that the NWF is used for its intended purpose, by allowing a better match between NWF spending and contractual obligations; (2) maintain budgeting oversight within both the Executive Branch and Congress; (3) allow access to the corpus of the fund, i.e., the \$20 billion surplus that has accrued from prior years; and (4) ensure compatibility between the near-term funding mechanism and any longer-term management and funding alternatives.
- 2. Two General Approaches to Restructuring the NWF:** The overall objective in developing a near-term funding mechanism is to eliminate the disjointed application of different budget rules to the spending and revenue components of the NWF. This can be accomplished in either of two ways: (1) modifying the budget rules on NWF receipts, or (2) modifying the requirements on NWF spending. The four alternatives suggested below fall within these two general approaches.

Figure 3.
Summary of Past Proposals to Change Nuclear Waste Fund (NWF)
Funding Structure

DATE	PROPOSAL	DESCRIPTION
1994	Mandatory Spending (President's FY 1995 Budget)	Proposed legislation to authorize one-half of annual fees to be spent directly without appropriations. PAYGO offset proposed elsewhere in the budget.
1995	Mandatory Spending (President's FY 1996 Budget)	Proposed legislation to reclassify NWF spending as a mandatory account, not subject to appropriations. PAYGO offset proposed elsewhere in the budget.
1997 (105 th Congress)	Annual user fee H.R. 1270 (Passed House)	Authorized an annual user fee not to exceed annual appropriations (less defense share) of up to 1.5 mill per kwh in any year until the opening of the repository, so long as the average annual fee over the period does not exceed 1.0 mill. Spending subject to annual appropriations. Required payment of one-time fee as PAYGO offset.
1997 (105 th Congress)	Split Fee S. 104 (Passed Senate 4-15-1997)	Authorized a two-part fee, consisting of offsetting collection user fee not to exceed annual appropriations (less defense share), and mandatory fee in the amount of the difference, up to 1 mill per kwh total fee. Spending subject to annual appropriations. Required payment of one-time fee as PAYGO offset
1998	Deferred Fee (Secretary of Energy)	The Secretary proposed as part of a litigation settlement concept, a proposal to amend the contract to allow utilities to retain the portion of the 1 kwh fee that exceeded the annual appropriations level. Upon waste acceptance, the utilities would pay the deferred fees plus interest at the Treasury rate.
1999 (106 th Congress)	Off-Budget H.R. 45 (Reported by House Commerce Committee 4-21-1999)	Gave off-budget status for NWF. Requirements for 1 mill per kwh fee and annual appropriations unchanged from original Act.

3. **Near-Term Funding Mechanisms:** The following options are identified as possible near-term funding mechanisms. Figure 4 provides a summary of the options, including the policy rationale, implementation feasibility, and any budget or PAYGO impacts the option may have.

A. Reclassification of NWF Spending to Mandatory:

A near-term funding mechanism can be achieved through re-classification of the spending side of the account, from a discretionary spending account to a mandatory (or direct) spending account. Annual spending levels would continue to be subject to appropriations, as required by the Nuclear Waste Policy Act. The budget classification of the NWF receipts as part of the direct spending portion of the budget would remain unchanged.

The rationale for this change is that the character of the spending for the NWF is more in the nature of mandatory rather than discretionary. This is underscored by Section 302 of the Nuclear Waste Policy Act and the recent court decisions interpreting the NWPA and the Standard Contract to mean that reciprocal to the utilities' obligation to pay, the U.S. Government has an unconditional obligation to start disposing of SNF no later than January 31, 1998.

The BEA and OMB Circular No. A-11¹ provide no criteria or characteristics for "discretionary spending," other than the fact that the spending authority is provided in appropriation acts. The BEA and OMB Circular No. A-11 refer to mandatory spending as spending authority resulting from permanent laws. For example, permanent laws authorize payments to individuals for Medicare and Medicaid, unemployment insurance and farm price supports. Further, the BEA established a special class of mandatory spending programs, "Appropriated Entitlements and Mandatories," where appropriations acts nominally provide the budget authority, but the authorization law creates the entitlement.

There are over 100 appropriated entitlements accounts in the Federal budget. There are no formalized criteria for these accounts. Many of these accounts fund entitlement benefits to individuals, including retirement, veterans, and disability benefits. Others fund statutory entitlement commitments to the program beneficiaries where the service is provided through a third party, primarily the states (Social Service block grants, Medicaid). In such cases, the payments of the entitlement claims to the third party service provider is governed through contracts. Finally, there are appropriation entitlements for direct contractual obligations to beneficiaries (e.g., food stamps). The legal and budget framework for some of these programs have elements in common with nuclear waste management.

¹Circular No. A-11, Preparation and Submission of Budget Estimates, U.S. Office of Management and Budget, Washington, DC, July 19, 2000.

Figure 4.
Funding Options For the Nuclear Waste Fund (NWF)
(Continued)

CONCEPT/DESCRIPTION	POLICY RATIONALE	IMPLEMENTATION/ FEASIBILITY	BUDGET/ PAYGO
<p>3. Separate BEA Spending Cap:</p> <p>Establish a separate discretionary spending category for NWF spending as part of the discretionary spending cap. A subset of this option is a separate cap to fund repository construction and transportation costs, similar to the mechanism used for the Internal Revenue Service's enforcement and modernization program. Spending would continue to be subject to annual appropriations. Fees would continue to be scored as mandatory receipts.</p>	<p>Separate spending caps have been adopted in other cases of discretionary spending programs that are self-financed (highways, mass transit, airports, land and water conservation). The separate sub-caps allow for spending control without forcing the self-financed program to compete for funds against other programs that are not self-financed (i.e. supported by general revenues). It prevents reductions in the Nuclear Waste Fund funding as offsets to other discretionary spending increases.</p>	<p><i>Legislative</i> – Requires both an agreement to establish a new spending category in the Congressional Budget Resolution, and separate authorizing legislation. The concept would be proposed in the President's FY 2003 Budget and incorporated into negotiation of future year spending caps.</p>	<p>No PAYGO impact.</p>
<p>4. Lump Sum Appropriation:</p> <p>Seek a one-time lump sum appropriation for the construction costs of the repository. All other program costs would continue to be subject to annual appropriations. Fees would continue to be scored as mandatory receipts.</p>		<p><i>Legislative</i> – Requires a lump sum appropriation request in FY 2003 budget. A lump sum appropriation would ensure greater certainty in the repository development schedule, and could facilitate cost savings through multi-year contracting. However, budget caps do not have sufficient flexibility to support large lump sum requests, and lump sum appropriations lessen Appropriations Committee spending control.</p>	<p>No PAYGO impact.</p>

The NWF funding requirements, as established in the NWPA and interpreted through court decisions, are generally consistent with the mandatory classification. OCRWM's statutory and contractual commitment to dispose of SNF and high-level waste is unconditional, subject only to the payment of the fee. The authorization of borrowing authority provides additional evidence that Congress did not intend for shortfalls in fund balances to prevent OCRWM from meeting contractual obligations. Finally, the statutory requirement for appropriations can be applied consistent with the operation of other current appropriated entitlements and mandatory accounts.

B. Offsetting Collection User Fee:

This option would reclassify the annual user fee from mandatory receipt to discretionary offsetting collection. Fees can be used to offset annual appropriations. The level of fee receipts is subject to appropriations control, up to the one mill per kwh cap. Any unappropriated fee could be accrued by utilities and applied in future years. This option could be implemented through a combination of administrative and legislative actions. The Administration could re-classify the receipts from mandatory to discretionary under the current procedures of the Budget Enforcement Act. The Department could use its existing authority under the Nuclear Waste Policy Act to modify the procedures for collection and payment of the fee (including timing of payment) while maintaining the statutory requirement that utilities accrue an obligation to pay one mill per kwh. Any resulting changes to the annual fee revenue would have no PAYGO impact. Appropriations language would be required to limit fee collections to appropriation amounts and credit the fee to the appropriation.

Spending above the annual collections would still impact funding for other programs under the discretionary caps, so while it would be possible to increase funding above current levels without causing a problem, it would be difficult to tap the existing balances. Also, the discretionary offset provided by the collections could be used as offsets for other discretionary programs, instead of being used to fully fund the Office of Civilian Radioactive Waste Program. The appropriators could accomplish this by appropriating less than the full amount of the collections.

C. Separate BEA Discretionary Spending Category for Repository Construction:

A third approach is to create a special discretionary spending category within the BEA for repository construction. Scientific-related expenditures would continue to be appropriated from the existing spending targets and allocations for the Department of Energy. The funding mechanism prevents using reductions in the Nuclear Waste Fund funding as offsets to other discretionary spending increases. Typically, these provisions would also establish a limit on the amount of the funding adjustment for each fiscal year and provide the adjustment only for the amount appropriated. If this new BEA category were implemented, it could address further adjustments required during

repository operations, since annual expenditures of over \$1 billion would be required for facility operations, additional tunneling, and on-going waste package procurement through 2033.

D. Lump Sum Appropriations:

This option would have the Department seek a one-time lump sum appropriation for the construction costs of the repository. All other program costs would continue to be subject to annual appropriations. Fees would continue to be scored as mandatory receipts. The Office of Management and Budget Government-wide budget guidance (A-11) recommends use of a lump sum appropriation for major construction projects. This option could only be implemented legislatively and would have not have a PAYGO impact. A lump sum appropriation could be requested in the FY 2003 appropriation request. Budget caps do not have sufficient flexibility to support large lump sum requests and a lump sum appropriations would lessen Appropriations Committee spending control.

4. **Implementation of a Near-Term Funding Mechanism:** The proposed near-term funding mechanisms could be implemented administratively or legislatively. The first near-term funding mechanism could qualify for administrative implementation. However, accounts can not be reclassified or adjustments made unless all of the scorekeepers agree. To reclassify or adjust the account the House and Senate Budget Committees, the Congressional Budget Office (CBO), and the Office of Management and Budget (OMB) must agree. The Budget Enforcement Act (BEA) permits certain administrative adjustments to the caps on discretionary spending for several factors, including “changes in concepts and definitions.” Such changes are proposed in the BEA Preview report submitted to Congress by OMB as part of the President’s Budget, or proposed in BEA update reports later in the year. Proposed changes are coordinated by OMB scorekeepers with their counterparts in the Congressional budget committees and CBO. Any administrative reclassification could require an adjustment to the discretionary spending cap to reduce the cap by the level of NWF spending previously assumed in the budget baseline. Legislative proposals could trigger PAYGO requirements.
5. **Need for Action Now:** For the last several years the need for a new funding mechanism has been identified as a high priority issue in need of immediate action. Since the establishment of the original funding mechanism in the NWPA, the series of incremental actions by Congress, the Executive Branch, and the Courts have had the cumulative effect of diminishing the ability of OCRWM to utilize the NWF funding mechanism to carry out its mission.
 - The new budget requirements have imposed separate and unrelated rules on the spending and revenue components of the fund.
 - The requirements also impose annual cash flow limits on a fund designed to serve the program on a long-term, life-cycle basis.

- The court decisions clarify the Government's unconditional obligation to fulfill the waste disposal contracts, which are not conditioned on funding availability.
- The court decisions provide new information on the interpretation of the NWPA and the contracts that may not have been generally understood when the revised budget rules were applied to the NWF.
- The application of current budget scoring conventions in the recently adopted Congressional Budget Resolution projects a surplus of approximately \$11 billion in the NWF.
- The current funding mechanism does not meet the stated objective in the President's FY 2002 Budget of "ensuring the use of the fund for its intended purpose."

Because a near-term funding mechanism affects the budget, the timing for the adjustment is determined by the Federal budget process and schedule. Initiation of a near-term funding mechanism can be initiated in the FY 2003 budget process. To maintain the current schedule for waste acceptance at a repository by 2010, capital costs for the ramp up of a transportation program, waste package procurement, and repository construction must begin prior to the receipt of a license from the Nuclear Regulatory Commission. Contingency planning, if there is not a site, will also need resources in addition to those currently budgeted in the OMB baseline for OCRWM. If access to the funds is delayed until political certainty, years of delay would ultimately cost billions.

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IV. Longer-Term Management and Funding Alternatives

A. Objectives for a New Management and Funding Arrangement

Programmatic Requirements: The completion of the site suitability process and approval for repository development would result in a major transformation of the program, from a largely scientific endeavor to a large-scale implementation program. The principal program components would include:

1. ***Construction Management:*** Construction of a first-of-a-kind multi-billion dollar repository, on schedule and within budget.
2. ***Transportation Services:*** Management of a major transportation program to move waste safely from over 100 locations nationwide to the repository site.
3. ***Operations Management:*** Safe and efficient on-site operations, including packaging and emplacement of waste in the repository.
4. ***Maintenance and Closure:*** Long-term performance monitoring to ensure safety and minimize environmental risk, ultimately leading to permanent closure of the facility.
5. ***On-Going Science and Technology Base:*** Continued development and application of new science and technology in the project over time.

Additional details related to these requirements will be determined during the process of site recommendation (SR) and approval. For example, the SR process will determine whether the Yucca Mountain site will be the site for the repository. Other key requirements to be pursued soon after SR, if the site is approved, include the transportation deployment strategy and the license application to the Nuclear Regulatory Commission.

Management Objectives: There are a number of management objectives that can be applied to the analysis of new management approaches. The Bush Administration's "A Blueprint for New Beginnings" articulates a new formulation for reforming the management of Government, through new efforts to empower persons "to make decisions; ensure results through accountability; and promote innovation through competition." Specific strategies to implement these reform efforts should be:

1. Citizen-centered — Not bureaucracy-centered
2. Results-oriented — Not process-oriented
3. Market-based — Actively promoting, not stifling, innovation and competition

The blueprint has been incorporated into the framework for evaluating longer-term management and funding alternatives for OCRWM.

B. Methodology for the Research and Analysis

The methodology for the analysis of the management alternatives consists of the following elements:

- 1. Program-Specific Assumptions:** It was assumed that certain program elements and requirements would be maintained and supported under all management and funding alternatives. These programmatic assumptions are listed in Figure 5.
- 2. Criteria for Evaluation:** The various business models were screened using a set of criteria derived from the programmatic and management objectives described above. The key functions were used to develop the criteria starting with the criteria used in the original AMFM report, in conjunction with the Baldrige Criteria. The detailed criteria included safety, political accountability, autonomy, stakeholder involvement, customer services, financial stability, financial control, personnel excellence, technical excellence, management flexibility, continuity, and performance management. After consultation with management experts it was suggested that the criteria be grouped into a more concise list of five elements: constituency involvement, customer service, availability of financial resources, cost-effectiveness, and performance management (which includes safety). The evaluation of alternative management structures assessed not only the implications for the program if it transitioned to an alternative, but also the implications for the alternative to impact elements outside the organization, such as the program's ability to maintain stakeholder credibility and political responsiveness. Figure 6 outlines the criteria used in this analysis.
- 3. Standard for the Waste Management Program's Organizational Effectiveness:** The integration of the objectives, requirements, assumptions, and criteria for evaluation generates a description of the ideal performance of a model waste program operating at its maximum capability with respect to each of the criteria. The alternatives were assessed based on the following standards:

Constituency Involvement: The organization is highly respected for its accessibility by political officials; political entities trust the leadership to serve their constituencies' needs; due to the high regard only minimal oversight is needed. Stakeholders have an efficient and effective system for access to the organization to express their views and concerns, and there is high confidence that the management considered the views of the stakeholders prior to making decisions. At the same time, the organization has the ability to maintain its primary purpose and mission without being unduly affected by excessive or inconsistent directions from external organizations with special interests.

Customer Service: The waste producers and the ratepayers pay into the Nuclear Waste Fund (NWF) for a service the Government is obligated to perform. The organization provides evidence of meeting the Government's obligation by performance and direct service, and interacts with customers on a regular basis to determine how the program might be adjusted to better meet their needs.

**Figure 5.
Specific Programmatic Assumptions Regarding the Three
Long-Term Management and Funding Alternatives**

- The new management entity would become the license holder for the permanent repository.
- The current role of the Management and Operating contractor could, but may not necessarily have to, continue unchanged under all alternatives. The contractor's roles and responsibilities could be changed at the discretion of the DOE Program Managers.
- Under the third alternative, the Independent Authority, the responsibility for setting the user fee would be transferred to the new Authority. Under the first two alternatives – a performance based organization and an Internal Authority within DOE – the user fee authority would continue to be assigned to the Secretary of Energy.
- All three alternatives are fully flexible with regard to mechanisms for stakeholder involvement and for coordination with the host State. The specific provisions for stakeholders or the host State can be addressed separately.
- Current Environmental Protection Agency and Nuclear Regulatory Commission regulatory responsibilities remain unchanged under all three alternatives.
- The existing Nuclear Waste Technical Review Board would continue as intended and provided for in the Nuclear Waste Policy Act.
- Funding mechanisms were matched to specific management alternatives on the basis of overall compatibility, but can be re-packaged as appropriate.
- A transitional funding mechanism would be compatible with and would support all three management alternatives.

Figure 6.
Criteria for the Evaluation of Longer-Term Management and Funding Alternatives

KEY FUNCTIONS	AMFM	Baldrige Framework	2001 Performance Criteria	Management Experts Criteria
1. General Management	<ul style="list-style-type: none"> • Programmatic Authority • Freedom from Political Interference • Internal Flexibility • Stability/Continuity • Effectiveness in Federal System 	<ul style="list-style-type: none"> • Leadership • Strategic Planning • Performance Management 	<ul style="list-style-type: none"> • Political Accountability • Autonomy 	<ul style="list-style-type: none"> • Constituency Involvement
2. Stakeholder Relations	<ul style="list-style-type: none"> • Political Accountability • Stakeholder Accountability 	<ul style="list-style-type: none"> • Stakeholder Relationship Management • Corporate Citizenship 	<ul style="list-style-type: none"> • Stakeholder Involvement 	
3. Customer Relations		<ul style="list-style-type: none"> • Customer Relationship Management 	<ul style="list-style-type: none"> • Customer Service 	<ul style="list-style-type: none"> • Customer Service
4. Financial Management	<ul style="list-style-type: none"> • Assurance of Funding • Financial Accountability 	<ul style="list-style-type: none"> • Financial Results • Process Management 	<ul style="list-style-type: none"> • Financial Stability • Financial Control 	<ul style="list-style-type: none"> • Availability of Sufficient Financial Resources • Financial Control
5. Safety		<ul style="list-style-type: none"> • Results 	<ul style="list-style-type: none"> • Performance Management 	
6. Information Management		<ul style="list-style-type: none"> • Information Management • Information Analysis 	<ul style="list-style-type: none"> • Information Management 	
7. Human Resources Management	<ul style="list-style-type: none"> • Internal Flexibility • Technical Excellence 	<ul style="list-style-type: none"> • Human Resource Management • Work Design • Reward System 	<ul style="list-style-type: none"> • Personnel Excellence 	
8. Operations Management	<ul style="list-style-type: none"> • Stability/Continuity 	<ul style="list-style-type: none"> • Process Management • Results 	<ul style="list-style-type: none"> • Technical Excellence 	<ul style="list-style-type: none"> • Performance Management
9. Contract and Property Management	<ul style="list-style-type: none"> • Stability/Continuity 	<ul style="list-style-type: none"> • Process Management • Partner and Supplier Relationships 	<ul style="list-style-type: none"> • Contract and Property Management Flexibility • Continuity 	
10. Performance Management	<ul style="list-style-type: none"> • Effectiveness in Federal System 	<ul style="list-style-type: none"> • Process Management • Performance Review • Results 	<ul style="list-style-type: none"> • Performance Management 	

Availability of Financial Resources: The organization can have confidence that funds are available when needed. The financing mechanism provides sufficient certainty of stable and adequate funding to allow effective long-term planning for capital expenditures and system operation and facilitate multi-year contractual commitments.

Cost-Effectiveness: The organization has superior controls on planning and spending making the most cost effective use of the funds, taking into account both the near-term cost needs and constraints and the total system life cycle costs. Outside parties are confident that funds are, in fact, being spent prudently and for their intended purpose.

Performance Management: The organization has the ability to maintain the quality of workmanship, service, efficiency, safety and innovation needed to ensure the development, operation, and continuous improvement of a highly effective waste management system through the duration of the program. Safety is the first priority. The organization is able to recruit, train, and compensate employees to maintain a high competency level to meet the organization's mission. There is sufficient flexibility to recruit from the marketplace the most capable individuals in the specific fields needed by the program, and to provide incentives and rewards that can encourage workforce stability and continuity. The organization has the flexibility to change the mix of personnel significantly as the phases of the program require different combinations of technical experts, e.g. scientists, designers, construction managers, or waste handlers. The organization has the authority, funding, and procedures to allow for flexible and cost-effective contract and property management. Confidence in the organization would reduce outside interventions in its operations, enhancing program stability, and continuity.

4. **Research on Possible Business Models:** Research on other Federal and state government programs was conducted in order to identify and assess potential management models for the nuclear waste program. Examples included: Texas Natural Resources Conservation Commission, Tennessee Valley Authority, Massachusetts Turnpike Authority, Veterans' Health Administration, Internal Revenue Service, U.S. Enrichment Corporation, Bonneville Power Administration, the U.S. Postal Service, and the Metropolitan Washington Airports Authority. The research was conducted to obtain insights about each organization that could be used in developing alternative organizational approaches for this report.
5. **Panel of Experts Input:** The preliminary results of the screening evaluation were presented to a panel of experts with multidisciplinary experience in organization and business management, public/private partnerships, energy policy, finance and the Federal budget. Discussions with the experts included both meetings with multiple panelists and individual interviews. These experts synthesized the analysis into three long-term management and funding alternatives, each of which was judged to be fully successful in meeting the programmatic and management objectives of the nuclear waste program. The panel included:

– *Mr. James Asselstine*, a Managing Director of Lehman Brothers. He previously served as an NRC Commissioner, Associate Counsel to the U.S. Senate Committee on Environment and Public Works, and Assistant Counsel to the Joint Committee on Atomic Energy of the U.S. Congress.

– *Mr. Mitchell Diamond*, a retired partner of Booz·Allen & Hamilton, Inc. A specialist in business analysis, strategic planning, and technical management, he worked with major corporations to improve their business and operating performance.

– *Mr. Joseph Hezir*, Vice President and managing partner of the EOP Group. He previously served as the Deputy Associate Director for Energy and Science at the Office of Management and Budget, as a member of the NASA Advisory Council, and as a member of the Board of Directors of the National Capital Area Chapter of the American Red Cross.

– *Mr. James Edwin (Jed) Kee, PhD*, a professor of public administration in the School of Business and Public Management at George Washington University. He has served as the managing editor of *Public Budget and Finance*, and is a widely published author on public management issues.

– *Mr. Bruce Pasternack*, the managing partner of the Booz·Allen & Hamilton, Inc. San Francisco Office with responsibility for the Strategic Leadership Practice, which is focused on top management strategy, organization, transformation, and leadership issues. He previously served as the managing partner for the firm's Energy, Chemicals, and Pharmaceuticals Practice, as Associate Administrator for Policy and Program Evaluation at the Federal Energy Administration, and as a member of the President's Energy Resources Council.

– *Mr. Marvin Runyon*, the founder and chairman of the Runyon Group. He previously served as Postmaster-General of the United States, Chairman of the Board of the Tennessee Valley Authority, senior executive at Ford Motor Company, and President and CEO of Nissan Motor Manufacturing Corporation, USA.

– *Mr. James Wilding*, the President and CEO of the Metropolitan Washington Airports Authority that operates Ronald Reagan National and Washington Dulles International Airports. Previously he was the Director of the FAA Metropolitan Washington Airports and played a role in the creation of the Airports Authority.

C. Discussion of the Three Longer-Term Management and Funding Alternatives

1. Performance-Based Organization (PBO), Within DOE, With Enhanced Management Authority and Flexibility

Description: A PBO is a relatively new concept in government management that provides an organization with a set of powerful incentives to manage for results. The PBO has evolved as a concept from its origin in the British “Next Steps” Initiative in the late 1980s. In the U.S., the groundwork was laid for PBOs through the Chief Financial Officers Act, the Government Performance and Results Act, the Government Management Reform Act, and other administrative initiatives in procurement reform and development of government-wide financial standards.

A PBO has three general characteristics: (1) a commitment to accountability for results through clear objectives, specific measurable goals and targets for improved performance; (2) a focus on management, by separating program operations from department-level policy-making; and (3) management expertise in the form of a Chief Operating Officer, hired on the equivalent of an employment contract, and selected on the basis of management experience as distinguished from policy expertise. A PBO is provided with enhanced tools to enable it to meet its performance objectives, primarily in the areas of personnel management and procurement. A PBO concept, as applied to OCRWM, could include the following changes:

- Full or partial exemptions from Federal personnel rules covering recruitment, bonuses, compensation, retention, and removal of managers and employees. This would require partial waivers to certain requirements of Title 5, United States Code, and adoption of a labor-management demonstration agreement.
- Flexibility in contracting procedures, including two-phase procurements, simplified procedures for acquisition of commercial items, modular contracting, increased incentives for contractors, and fixed price and multi-year contracts. Many of these changes could be accomplished within the current Department of Energy Acquisition Regulation and the Federal Acquisition Regulation (FAR).
- Implementation of capital budgeting procedures, consistent with the provisions of OMB Circular No. A-11, regarding acquisition of capital assets. Under these procedures, OCRWM would budget for the construction phase of the repository in whole, or in operable units. Funding would continue to rely upon annual appropriations, but either in a lump sum amount or in a series of advance appropriations, based on the capital budget estimate.
- Execution of multi-year contracts for services either through an M&O or direct services, with cost certainty and greater funding certainty through up-front obligation of funds.

An organization would be a good candidate to become a PBO if it had:

- A clear mission, measurable services, and a performance measurement system;
- A focus on external, not internal customers;
- Separation of operations and policy-making with a clear line of accountability to the Secretary with policy responsibility;
- Funding levels that corresponded to business operations, such as self-sustaining funding;
- Full, top-level support for the transformation.

It would appear that the current OCRWM organization could meet these pre-requisites. However, it is clear from this analysis that the transformation process would likely not be effective until the national decision on site selection was completed and the funding mechanism in the Nuclear Waste Fund was reformed to enable multi-year self-sustaining operation.

It is likely that the funding and procurement aspects of a PBO would have a greater benefit to OCRWM than the increased personnel flexibility.

- The ability to enter into stable, multi-year contracts, coupled with advance appropriations, could have a significant impact on program efficiency. The availability of committed, long-term funding lowers the financial risk faced by contractors and should result in lower costs to the Government and greater willingness to enter into risk-sharing contracts. In addition, the reduced likelihood of unanticipated funding changes can result in cost avoidances. Capital intensive activities are very sensitive to inconsistent or interrupted funding because of the complex interrelationships among tasks and the high cost of idling resources. Unanticipated changes in annual funding inevitably lead to cost growth and schedule slippage.
- Increased personnel management flexibility would likely have limited benefits to OCRWM, significantly less than the impact achieved in other Federal organizations, because OCRWM already relies upon the M&O contractor for a substantial portion of program execution.

A PBO can be established either through legislative or administrative action. Several early PBO pilot projects in other Federal agencies were implemented through special legislation. This history provides a clear mandate and comprehensive charter for the PBO transformation. However, since many of the elements of a PBO are derived from other Government management reforms, the essential elements of a PBO could be achieved through administrative action. This would avoid the need to amend the Nuclear Waste Policy Act.

Evaluation: The advantages of the Performance-Based Organization model are:

- The performance-based focus of the PBO concept would provide increased accountability for performance to the program customers and other stakeholders.
- The PBO would take advantage of much of the existing DOE administrative infrastructure, thereby reducing its startup and ongoing operational costs.
- The establishment of the PBO within the OCRWM structure maintains the current, established policy processes within DOE for continuity purposes.
- Successful precedents exist for the proposed exemptions to human resource requirements.
- The use of advance or lump sum appropriations, coupled with utilization of multi-year or fixed price contracts, can achieve significant cost savings and even larger cost avoidances.

The principal disadvantages of this alternative are:

- Continued reliance upon annual appropriations does not provide the assurance of increased funding required to support large, multi-year contracting commitments needed for the construction phase of the project.
- Managing a more flexible personnel system, with separate recruitment, retention, and compensation policies and higher compensation levels than the existing DOE system, may create the perception of an inequitable “two-tier” system within the Department.
- There are also limits to administrative authority even with Office of Personnel Management approval under the existing laws.

2. **Internal Authority Within DOE With Broad Autonomy**

Description: An Internal Authority within the Department of Energy would be largely autonomous, with a stature and a degree of self-direction focused on repository construction, logistics design and transportation management, and ongoing disposal operations. The organization would report directly to and be subject to policy direction from the Secretary of Energy.

The Internal Authority or Administration is a well-established management model within the Federal system. This model has been used for activities that have distinct charters or relatively narrow missions within the overall policy framework of the parent organization. Examples of the Internal Authority model include the Internal Revenue Service and the Bonneville Power Administration. Specifics of both organizations are

unique. For example, Bonneville reports to the Secretary through the Deputy Secretary of Energy.

The Internal Authority would have its own personnel, procurement, and other administrative systems. It is assumed that these systems would have to correspond to Federal government systems, but be more streamlined and have a greater emphasis on performance. The performance of the Internal Authority would be reviewed by an independent Performance Review Board. Certification of organizational performance by the independent Performance Review Board would provide the basis for implementing individual personnel bonuses and other forms of recognition.

Financing for the Internal Authority would be provided through a Public Enterprise Revolving Fund. All future civilian and defense payments would be credited to the revolving fund, which would be available for expenditure without further appropriation.

Evaluation: The Internal Authority within DOE would have the following advantages:

- All of the strengths of the PBO concept, but with greater operational autonomy of within the Department.
- Strong oversight of program performance through the independent Performance Review Board.
- Continued policy guidance and coordination through the Secretary of Energy.
- An assured funding mechanism to support multi-year contracting and management commitments.

The principal disadvantages of this alternative are:

- The need to secure changes to the DOE Organization Act and the NWPA.
- Increased administrative requirements to transition OCRWM into an autonomous authority within the Department of Energy.
- The need to meet the Pay-As-You-Go (PAYGO) budget scoring requirements of the Budget Enforcement Act in order to establish the Revolving Fund.
- Potential resistance with OMB, Congress, and stakeholder groups to the relinquishment of annual appropriations controls over the Authority's budget.

3. Independent Federal Authority

Description: An Independent Federal Authority is the Federal Government's closest equivalent to a private business. The Independent Federal Authority model has generally been used for organizations in which the Government has a monopoly interest and that have distinct charters or missions for providing products and/or services to the public. Some of these organizations were initially created as Government agencies (e.g., U.S. Postal Service and Metropolitan Washington Airports Authority), while others have been independent from their outset (e.g., Tennessee Valley Authority and the Federal Deposit Insurance Corporation). Several of the researched organizations operating under this model have demonstrated substantial flexibility and adaptability in meeting new challenges and/or changes in their operating environments, including the Tennessee Valley Authority, the U.S. Postal Service, and the Metropolitan Washington Airports Authority.

The oversight and management of the Independent Federal Authority would be vested in a corporate-style board of directors. The board of directors would be comprised of business executives and technical experts selected by the President (and confirmed by the Senate) to serve multi-year terms. The board would have responsibility for setting the strategic direction for the Authority and reviewing performance against targets and goals.

The board of directors would retain a Chief Executive Officer (CEO), who would serve at the pleasure of the Board. The Board would have the full authority to set performance goals, salary, and bonus for the CEO. The CEO, in turn, would have full authority and responsibility over the internal management functions and recruitment and selection of senior management. The authority would operate with its own personnel, procurement, and administrative support systems.

The funding mechanism to support the Independent Federal Authority would be a public enterprise revolving fund. The funding mechanism also could provide for the issuance of revenue bonds (without the full faith and credit backing of the U.S. Government) to help finance the construction phase of the repository. The financial policy of the Government, as stated by the U.S. Treasury, is that Federal agencies with borrowing authority should be required to borrow exclusively from the Treasury in order to minimize interest and transaction costs to the borrowing agency. Further the Treasury would want a statutory ceiling on the amount of debt which the proposed entity could have outstanding at any one time, and the amount of debt would be limited to the amounts specified in annual appropriations. The bonds would be backed by the fees from nuclear power generators. The surplus balance of the Nuclear Waste Fund would provide secondary support for the repayment of bonds. The use of bonding authority to defray a portion of repository construction and operations costs would help preserve the current surplus balance in the NWF to meet final closure expenses and/or contingencies.

Evaluation: The principal advantages of the Independent Federal Authority model are:

- The establishment of a new authority provides full flexibility to optimize all organizational and management elements, including human resources, procurement, administrative services, financial management, etc.
- The governance structure, centered on a “corporate-style” board of directors, encourages a business-like operation.
- The model has been applied successfully in various programs and projects.
- The revolving fund, coupled with bonding authority, provides full assurance of meeting the funding and contractual requirements of the program.
- The use of bonding authority can help optimize the annual cash flows of the NWF.

The major disadvantages of the independent authority are:

- Significant revisions will be required to the DOE Organization Act and the NWPA.
- Existing OCRWM personnel would be subjected to a major change in personnel rules, including pay and benefits, if they transition to the new authority.
- Legislation to establish the revolving fund and bonding authority will trigger the PAYGO requirements of the Budget Enforcement Act.
- In the event of a default, the Authority bondholders likely would file claims against the Federal government, creating a financial risk to the Treasury.

A comparison of these three alternatives is presented in Figure 7.

D. Transition Issues Requiring Further Analysis

- 1. Importance of the Transition Process:** In addition to evaluating the strengths and weaknesses of various management approaches, the process of transitioning the current programs to a new model also must be considered. The transition process for each of the three alternatives differs in scope and degree of complexity. Problems in the transition process, if not effectively addressed, will diminish the long-term benefits of any new management and financing structure.
- 2. Transition Issues:** The major transition issues encompass the areas of personnel, support systems, continuity of operations and accountability, and include the following specific items:

**Figure 7.
Program Management and Funding Alternatives**

ALTERNATIVE	PERFORMANCE BASED ORGANIZATION	AUTHORITY WITHIN DOE	INDEPENDENT FEDERAL AUTHORITY
Funding			
Funding	Annual Nuclear Waste Fund and Defense Nuclear Waste Disposal appropriations subject to discretionary spending limits. Fee change by S-1, with possible Congressional override.	Revolving fund would receive all future civilian & defense payments and would be available without appropriation. Current NWF balance remains in Treasury for long-term/liabilities. Appropriate "loans" from NWF to Revolving Fund. Fee change by S-1, with possible Congressional override.	Future civilian & defense payments directly to Independent Authority would be available without appropriation. Issue revenue bonds to meet construction spike. Current NWF balance remains in Treasury for long-term/liabilities. Guarantees bonds. Fee change approved by Board of Directors on recommendation of FERC.
Financial Reporting	Annual audited financial statements using government accounting principles.	Annual audited financial statements using government accounting principles.	Annual audited financial statements using government accounting principles.
Management Structure			
Organization Type	Performance Based Organization	Authority within DOE	Independent Federal Authority
A Unit of	Office of Civilian Radioactive Waste Management	Department Of Energy	Independent Executive Branch Agency
Headed by	Chief Operating Officer selected by RW-1.	Chief Executive Officer selected by S-1.	Chief Executive Officer selected by Board of Directors.
Compensation	Multi-year, fixed term, performance-based renewable contract. Base salary subject to Federal salary caps, bonus up to 50%.	Multi-year, fixed term, performance-based renewable contract.	Multi-year, fixed term, performance-based renewable contract. Compensation controlled by Board under broad Federal guidelines.
Reports to	Director, Office of Civilian Radioactive Waste Management	Secretary of Energy	Board of Directors and President of U.S.
Located at	Repository Site	Repository Site	Repository Site
Functions of New Organization	Repository and Transportation Licensing Requirements, Repository Construction, Repository Operations, Logistics Design and Transportation Management.	Repository and Transportation Licensing Requirements, Repository Construction, Repository Operations, Logistics Design and Transportation Management.	Repository and Transportation Licensing Requirements, Repository Construction, Repository Operations, Logistics Design and Transportation Management.
Functions of Current OCRWM	Scientific and Technical Research and Development, Oversight of Disposal Operations, Policy Coordination, Public Outreach/Stakeholder Involvement.	Nuclear Waste Management Research and Development, (Office Director reports to Energy Secretary; would maintain office co-located with Internal Authority). Policy Coordination	Nuclear Waste Management Research and Development, (Office Director reports to Energy Secretary; would maintain office co-located with Independent Authority). Policy Coordination w/in DOE.
Transition Functions	Oversight of some M&O Contractor functions, License Application and Maintenance.	Oversight of some M&O Contractor functions, License Application and Maintenance.	Oversight of some M&O Contractor functions, License Application and Maintenance.
Licensee	DOE (RW)	DOE (Internal Authority)	Independent Authority

**Figure 7.
Program Management and Funding Alternatives
(Continued)**

ALTERNATIVE	PERFORMANCE BASED ORGANIZATION	AUTHORITY WITHIN DOE	INDEPENDENT FEDERAL AUTHORITY
Established by	Legislation or Administrative Action	Legislation	Legislation
Personnel	Limited Exemption from parts of Title 5, U.S.C. COO and Senior management under multi-year, fixed term, performance based, renewable contracts. Base salary subject to Federal salary caps, bonus up to 50%. Flexibility in hiring and compensating scarce professional and technical staff. Pay banding where appropriate.	Routine Exemption from parts of Title 5, U.S.C. COO and Senior management under multi-year, fixed term, performance based, renewable contracts. Base salary and bonus limits set in enabling legislation. Flexibility in hiring and compensating scarce professional and technical staff.	Significant Exemption from parts of Title 5, U.S.C. Independent Authority develops systems that comply with spirit of Title 5. COO and Senior management under multi-year, fixed term, performance based, renewable contracts. Base salary and bonus limits set in enabling legislation. Market based salary system; may participate in Fed benefits systems (including health & retirement). Transferring Fed employees convert to new system.
Procurement	Performance based contracts for major procurements. Incentives for financial risk sharing and exceptional performance. Two-phase, modular, and simplified acquisition.	Performance based contracts for major procurements. Incentives for financial risk sharing and exceptional performance. Two-phase, modular, and simplified acquisition.	Independent Authority develops own system. Performance based contracts for major procurements. Incentives for financial risk sharing and exceptional performance. Two-phase, modular, and simplified acquisition.
Oversight			
Oversight – Statutory	Director, OCRWM	Nuclear Waste Management Oversight Board to provide technical, managerial, and policy expertise.	Board of Directors, Senate confirmed, fixed, staggered terms. Technical or managerial experience with large, complex construction/logistics projects. Purposes: set direction, review performance, oversee fiscal accountability.
Oversight – Regulatory	Nuclear Regulatory Commission, Environmental Protection Agency, Dept of Transportation, Occupational Safety and Health Administration, Mine Safety and Health Administration, Other Regulatory Agencies.	Nuclear Regulatory Commission, Environmental Protection Agency, Dept of Transportation, Occupational Safety and Health Administration, Mine Safety and Health Administration, Other Regulatory Agencies.	Nuclear Regulatory Commission, Environmental Protection Agency, Dept of Transportation, Occupational Safety and Health Administration, Mine Safety and Health Administration, Other Regulatory Agencies.
Oversight – Administrative	Office of Management and Budget, Department of Energy, Other Executive Agencies, Congressional Agencies.	Office of Management and Budget, Department of Energy, Other Executive Agencies, Congressional Agencies.	Other Executive Agencies, Congressional Agencies.

**Figure 7.
Program Management and Funding Alternatives
(Continued)**

ALTERNATIVE	PERFORMANCE BASED ORGANIZATION	AUTHORITY WITHIN DOE	INDEPENDENT FEDERAL AUTHORITY
Oversight – Advisory	Nuclear Waste Disposal Advisory Committee (of stakeholders) supporting RW-1. Nuclear Waste Technical Review Board	Nuclear Waste Disposal Advisory Committee (of stakeholders) supporting . Nuclear Waste Technical Review Board	Advisory Commission (of stakeholders) supporting Board of Directors. Nuclear Waste Technical Review Board
Comparative Models	Office of Student Financial Aid (Dept. of Education) Air Traffic Control (FAA)	Bonneville Power Administration Internal Revenue Service	U.S. Postal Service Tennessee Valley Authority Washington Metropolitan Airports Authority
Establishment	Relatively easy – may be possible with administrative action only.	More difficult – needs legislation that requires consensus building and routine exemptions from existing laws.	Most difficult – needs legislation that requires consensus building and significant changes to/exemptions from existing laws.
Transition	Relatively easy – may create perception of "two-tier" compensation structure within OCRWM.	More complicated because functions transfer to new organization.	More complicated because functions transfer to new organization and some employees transfer to new system.
Mission Execution	Success depends heavily on support from Administration and Congress for funding, and flexibility granted in enabling Administrative Orders or Legislation.	Funding issues are resolved. Compensation and contracting strengthened. Oversight improved.	Funding, compensation and contracting issues are resolved. Oversight improved.

- a. Staffing and Hiring:** Part of the benefit of transitioning to a new organizational and management structure is the opportunity to re-staff the organization. The analysis of all three alternatives, including the PBO alternative, assumes that the new entity has the option to establish a new staffing structure and fill positions based upon merit, drawing from both the existing OCRWM organization and other sources. This creates a major transition issue in determining those persons from the existing OCRWM that will be selected into the new organization, and providing alternative employment opportunities for existing OCRWM employees who do not transition.
- b. Personnel Management Systems:** The three alternatives would have new personnel management systems. The current rights and benefits of personnel who transfer would need to be addressed. Similarly, consideration of the personnel management and benefits of those employees who do not make the transition need to be considered.
- c. Administrative Systems:** The new organizations would need to develop new or modified administrative management systems, including payroll, financial management, and property management. These systems would need to be designed in a manner that supports a more performance-oriented organization, and should not simply be a “clone” of existing systems within DOE.
- d. Continuity in Operations:** The transition process needs to ensure continuity of operations, including Congressional and intergovernmental relations, public information and awareness and environmental, safety and health compliance.
- e. M&O Contractor:** The future scope of the M&O contractor would need to be considered further. All three alternatives assume a continued reliance on the M&O contractor, but the specific role and responsibility of the contractor could be modified, if necessary, to improve overall organizational performance within a new organizational structure.
- f. Accountability and Oversight:** Processes for accountability and oversight would need to be similar to the current OCRWM processes or improved.
- g. Need for further analysis of transition issues:** Typically, transition planning begins after the decision is made on a new organizational and management framework. Because of the significance of the transition issues to the performance of the Program, these issues need to be fully considered prior to a decision on new management and funding alternatives. For example, any organizational change will take at least one year, which will create short-term delays. The long-term value of such a change should be beneficial enough to outweigh the impact of the transition.

E. Next Steps in the Analysis of Longer-Term Management and Funding Alternatives

The longer-term management and funding alternatives provide a framework for considering management performance goals and objectives for the program. This analysis represents a work-in-progress that will require further refinement. The next steps include:

Further Management Analysis: Additional detailed analysis will be required of the personnel, procurement, and administrative systems concepts embodied in the three alternatives. In particular, the transition issues need to be fully addressed. Before proceeding with any proposal to implement a long-term management and financial alternative, DOE should obtain and analyze specific information such as: What specific human resources management problems will the change address? What current flexibilities have been used to try to solve any management problems? Are the current flexibilities being used to the maximum extent now? How have the current flexibilities not been satisfactory?

Open and Transparent Process for Obtaining Comments: OCRWM should solicit input from various stakeholder groups in order to help identify issues for further consideration and develop plans for on-going stakeholder involvement.

Relationship to Site Recommendation Process: The site recommendation process, and the decision on the site, could raise additional issues, such as the relationship with the host state, that will need to be considered.

F. Management Initiatives for Immediate Implementation

The research and analysis on the longer-term organizational and management alternatives have identified several concepts and strategies that could be applied now to augment the current management of the program. These initiatives have been incorporated into on-going OCRWM program planning and management functions. The proposed augmentations included:

Enhance Baseline Definition: As the program enters a new phase, it is an opportunity to re-assess and enhance the baseline estimate of project scope, schedule, and cost. This will provide a solid point of departure for OCRWM managers and external stakeholders in tracking the progress of the program. The baseline estimates will be utilized for the next update of total system life cycle cost.

Strengthened Budget Formulation Process: The budget formulation process for OCRWM is being enhanced by instituting the following two measures. First, DOE is seeking a separate budget planning target for the nuclear waste program from OMB. A separate planning target would enhance OCRWM's ability to formulate the budget, particularly emphasizing capital budgetary requirements. It also would facilitate the DOE budget formulation process, because it would help reduce budget conflicts and trade-offs between the nuclear waste program and other Department of Energy priorities. The second measure is a three-year budget plan for the NWF, as originally authorized in the NWPA. The three-year budget would enhance program

cost efficiency, performance measurement, and accountability. These measures will be an important step toward full implementation of the OMB Circular No. A-11 guidelines for capital budgeting.

Clarify Contractor and Federal Staff Annual Performance Management Measures:

Increased funding flexibility should be accompanied by increased accountability. This requires enhanced measures of program performance. Additional performance measures, adapted from the PBO concept, could be incorporated into the OCRWM management process as part of the strategic planning process required by the Government Performance and Results Act.

Management of Personnel Skill Mix: As the program enters a new phase, the personnel skills required for project implementation will differ from those in the program planning phase. OCRWM has initiated a skill mix review and will assess, as the normal process of attrition creates personnel vacancies, whether the vacant positions can be modified in anticipation of future, rather than historical, program needs. An orderly personnel change process will move the program forward while minimizing the requirements for staffing increases.

Design Configuration Controls: One of the most effective strategies for managing cost and schedule during design and construction is to exercise tight management controls over design changes. In many cases, design changes are handled on an ad hoc basis as issues arise during construction. By having the prime contractor augment the existing process to manage an effective change control process contemporaneously with project design, the quality of the initial baseline will be improved, and the benefits and costs of subsequent design changes will be better assessed and controlled.

V. *Conclusion and Recommendations*

The success of the national nuclear waste management program is a critical part of a national energy policy for commercial nuclear power, and is also needed to meet national security and environmental commitments.

The analysis identified opportunities to augment and enhance the current OCRWM organization and management, consistent with the goals of the Bush Administration's Government reform efforts and with sound business management principles. The results of this analysis can be summed up in three broad conclusions and recommendations:

- 1. Adopt a near-term funding mechanism for the President's FY 2003 budget:** Four near-term funding mechanisms are identified in the report: (1) re-classify the Nuclear Waste Fund spending from a discretionary account to a mandatory account; (2) re-classify the annual user fee from a mandatory receipt to a discretionary offsetting collection; (3) establish a separate Budget Enforcement Act of 1990 discretionary spending category for the repository construction period; and (4) request a lump sum appropriation for construction.
- 2. Complete interim management augmentations within the existing OCRWM organization and management structure in the FY 2003 budget:** Five specific interim measures are being adopted by OCRWM for the near-term: (1) re-assess and enhance the baseline estimate of project scope, cost and schedule; (2) institute necessary budget practices for increased annual costs for capital expenditures, including establishing a separate OMB budget planning target for the NWF and preparation and submission to Congress of a three-year budget; (3) clarify contractor and Federal staff annual performance measures to facilitate greater accountability; (4) adopt new personnel management procedures to transition the staff skill mix; and, (5) augment the existing process to manage and control project design changes. These measures are being adopted in conjunction with the transition of the M&O contract this year to Bechtel/SAIC. These augmentations will enhance management in the near-term. These measures were identified in the process of the research on alternative management models. These measures have four characteristics: (1) they build upon and can be easily integrated into existing OCRWM management processes; (2) they complement a near-term funding mechanism; (3) they are responsive to the management reform initiatives of the Bush Administration; and, (4) they are fully compatible with the longer-term management and funding alternatives.
- 3. Continue to analyze and refine the concepts in the three longer-term management and funding alternatives:** All three alternatives have the potential to improve the performance of the current program, particularly as it moves into the implementation phase. A comparison of the features of the three alternatives was shown in Figure 7. Each alternative each has a sound conceptual foundation, and has successful models in other government programs. Further detailed analysis is required on their specific application to OCRWM, and on the transition

issues that would be encountered. In addition, public comment should be sought from stakeholder groups on the alternatives and on specific areas for further analysis. Further decisions on longer-term management and funding will be more informed after the site recommendation process is completed.

List of Acronyms Used in the Report

BEA	Budget Enforcement Act of 1990, amended in 1993 and 1997
CBO	Congressional Budget Office
DEAR	Department of Energy Acquisition Regulation
FAR	Federal Acquisition Regulation
DOE	U.S. Department of Energy
GPRA	Government Performance and Results Act
GRH	Gramm-Rudman-Hollings (Balanced Budget and Emergency Deficit Control Act of 1985)
HLW	High Level Waste
EPA	U.S. Environmental Protection Agency
M&O	Management and Operating Contractor
NRC	U.S. Nuclear Regulatory Commission
NWPA	Nuclear Waste Policy Act of 1982, amended in 1987
NWTRB	Nuclear Waste Technical Review Board
OCRWM	Office of Civilian Radioactive Waste Management
OMB	U.S. Office of Management and Budget
OPM	U.S. Office of Personnel Management
PAYGO	Pay-As-You-Go Requirement Established in the Budget Enforcement Act
PBO	Performance-based Organization
SNF	Spent nuclear Fuel
SR	Site Recommendation (Refers to the process established in the Nuclear Waste Policy Act for selection of a suitable site for the permanent geologic repository)
TVA	Tennessee Valley Authority

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