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FINAL

SITEWIDE ENVIRONMENTAL ASSESSMENT

EA-1236

for

PREPARATION FOR TRANSFER OF OWNERSHIP OF NAVAL PETROLEUM RESERVE NO. 3 (NPR-3)

Natrona County, Wyoming

Prepared By
U.S. Department of Energy
Casper, Wyoming

April 1998

DEPARTMENT OF ENERGY

Preparation for Transfer of Ownership of Naval Petroleum Reserve No. 3

AGENCY: Naval Petroleum and Oil Shale Reserves
U.S. Department of Energy (DOE)

ACTION: Finding of No Significant Impact (FONSI) for the Transfer of Naval Petroleum Reserve No. 3 (DOE/EA-1236)

SUMMARY: The Secretary of Energy is authorized to produce the Naval Petroleum Reserves No. 3 (NPR-3) at its maximum efficient rate (MER) consistent with sound engineering practices, for a period extending to April 5 2000 subject to extension. Production at NPR-3 peaked in 1981 and has declined since until it has become a mature stripper field, with the average well yielding less than 2 barrels per day. The Department of Energy (DOE) has decided to discontinue Federal operation of NPR-3 at the end of its life as an economically viable oilfield currently estimated to be 2003. Although changes in oil and gas markets or shifts in national policy could alter the economic limit of NPR-3, it productive life will be determined largely by a small and decliing reserve base.

DOE is proposing certain activities over the next six years in anticipation of the possible transfer of NPR-3 out of Federal operation. These activities would include the accelerated plugging and abandoning of uneconomic wells, complete reclamation and restoration of abandoned sites including dismantling surface facilities, batteries, roads, test satellites, electrical distribution systems and associated power poles, when they are no longer needed for production, and the continued development of the Rocky Mountain Oilfield Testing Center (RMOTC).

Restoration activities elther have no potential to result in adverse environmental impacts or would only result in adverse impacts that could be readily mitigated. Restoration is expected to substantially decrease the types and quantities of air emissions and wastewater discharges already generated by existing operations at NPR-3. Restoration would result in some ground disturbance but only as it is related to returning the site back to its original natural state.

Further development of RMOTC entails the use of existing facilities on NPR-3. RMOTC provides the support to govemment and private industry for testing and evaluating new oilfield and environmental technologies. The results from these test projects would continue to be transferred to the petroleum industry through a consortium of private, state, and academic institutions. DOE intends to involve the consortium in helping to making basic decisions about which facilities and wells would be retained for experimental use or abandoned and reclaimed.

DOE has prepared an environmental assessment (DOE/EA-1236) that analyzes the proposed plugging and abandonment of wells, field restoration and development of RMOTC. Based on the analysis in the EA, the DOE finds that the proposed action is not a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act of 1969 (NEPA). The preparation of an environmental impact statement is not required, and DOE is issuing this Finding of No Significant Impact (FONSI).

PUBLIC AVAILABILITY: Copies of the EA and FONSI will be distributed to persons and agencies known to be interested in or affected by the proposed action and will be made available for public inspection at the Natrona County Public Library, Kelly Walsh High School, Natrona County High School and the U.S. Department of Energy Reading Room. Anyone wishing to receive copies of either document, or further information on the proposal, should contact:

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SUPPLEMENTAL INFORMATION: Section 7422 of Title 10, United States Code, directs the Secretary of Energy to "explore, prospect, conserve, develop, use, and operate the naval petroleum reserves." NPR-3, or Teapot Dome, is a 9,481-acre (3,837 ha) oilfield located in Natrona County, Wyoming, approximately 35 miles (56 km) north of the City of Casper. Production at the Naval Petroleum Reserve No. 3 in Natrona County, Wyoming, began in the 1920's during a time of substantial exploration and production, when leases were issued by the Interior Department under the Mineral Leasing Act. Production was discontinued after 1927 and renewed in 1959 and 1976 in a limited program to prevent the loss of U.S. Government oil to privately-owned wells on adjacent land.

In 1976, Congress passed the Naval Petroleum Reserves Production Act (Public Law 94-258), which authorized the production of the Naval Petroleum Reserves at its maximum efficient rate (MER), consistent with sound engineering practices, for a period of six years. The law also provides that at the conclusion of the initial six-year production period, the President (with the approval of Congress) could extend production in increments of up to three years each, if continued production was found to be in the national interest. The President has authorized six three-year extensions since 1982, extending production continuously through April 5, 2000.

The Proposed Action is comprised of three principal components: plug and abandonment of uneconomic wells, reclamation and restoration of well sites, batteries, roads, power lines, test satellites, and any facility that would not benefit the future transfer of NPR-3, and further development of the Rocky Mountain Oilfield Testing Center. Uneconomic wells are operating wells which can no longer cover their direct and indirect costs. DOE estimates there are 900 wells to be plugged and abandoned over the next six years, leaving approximately 200 wells for transfer by the end of fiscal year 2003. Complete reclamation and restoration of abandoned sites would typically include all activities required to return NPR-3 to its original natural state. Roads, facilities, batteries, and well sites would be ripped up, recontoured, disked and seeded with native vegetation. The actual number of wells and facilities to remain through year 2003 would be dependent upon project economics and whether facilities would benefit the RMOTC demonstration program. It is DOE's intent to utilize NPR-3 as a show-place for remediation and reclamation for other stripper fields by exploring unique and experimental techniques that industry desires to test and demonstrate with RMOTC.

Plug and abandonment of wells, field restoration and RMOTC development activities either have no potential to result in adverse environmental impacts or would only result in adverse impacts that could be readily

mitigated. The Sitewide EA summarizes the potentially affected environment at NPR-3 as of 1997, discusses all potentially adverse environmental impacts, and proposes specific mitigation measures that offset each identified adverse impact. Resource types discussed in detail include land resources, air quality and acoustics, water resources, geology and soils, biological resources, cultural resources, socioeconomics, and waste management.

Plug and abandonment of wells, field restoration and RMOTC development, as outlined in the Proposed Action, may substantially alter the character of existing operations but would not significantly affect the quality of the human environment. The historic value of NPR-3, including its significance as an oilfield would be preserved. These activities are expected to result in a reduction in types and quantities of air emissions and wastewater discharges generated by existing operations at NPR-3. Restoration would result in some ground disturbance but only as it is related to returning the site back to its original natural state.

Alternatives to the Proposed Action that were reviewed include: a no-action alternative of continuing operation of NPR-3, immediate decommissioning of the project or divestiture of NPR-3 by the Federal government.

DETERMINATIONS: Based on the findings of the EA, DOE has determined that the proposal does not constitute a major Federal action significantly affecting the quality of the human environment within the meaning of NEPA. Therefore, an environmental impact statement is not required, and DOE is issuing this FONSI.

SIGNATURE PAGE

Issued in Casper, WY, March 27, 1998

Clarke D. Turner
Director
Naval Petroleum and Oil Shale Reserves in Colorado, Utah and Wyoming

Cover Sheet

Proposed Action:	The Proposed Action is to plug and abandon over 900 marginally productive or shut in wells between 1998 and 2003, complete reclamation and restoration of the field not utilized for the Rocky Mountain Oil Field Testing Center (RMOTC) or economically producing beyond 2003, and continue development of RMOTC to prepare it for new ownership after 2001.
Type of Statement:	Predecisional Environmental Assessment (EA)
Lead Agency:	The United States Department of Energy
Cooperating Agencies:	None
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EXECUTIVE SUMMARY

This Sitewide Environmental Assessment (EA) has been prepared by the United States Department of Energy (DOE) in anticipation of the proposed future transfer of Naval Petroleum Reserve No. 3 (NPR-3) out of Federal ownership and operation. NPR-3, or Teapot Dome, is a 9,481-acre (3,837 ha) oilfield located in Natrona County, Wyoming, approximately 35 miles (56 km) north of the City of Casper. DOE has had jurisdiction over NPR-3 since 1977, and is required to produce the reserve at the "maximum efficient rate" (MER) consistent with sound engineering practices. DOE has prepared this EA in compliance with the National Environmental Policy Act of 1969 (NEPA) (42 USC 4321, et seq.), DOE's implementing regulations for NEPA (10 CFR 1021) and DOE's NPOSR-CUW NEPA Guidance Manual (DOE, 1992a).

The Proposed Action includes the following principal elements:

- The accelerated plugging and abandoning of uneconomic wells over the next six years. Uneconomic wells are operating wells which can no longer cover their direct and indirect costs. DOE estimates that there are 900 wells to be plugged and abandoned over the next six years, leaving approximately 200 wells for transfer by 2003.

- Complete reclamation and restoration of abandoned sites. Restoration would include dismantling surface facilities, batteries, roads, test satellites, electrical distribution systems and associated power poles, when they are no longer needed for production. Soil contaminated by hydrocarbons would be biologically treated. Roads, facilities, batteries, and well sites would be ripped up, recontoured, disked and seeded with native vegetation.

  The actual number of wells and facilities to remain through year 2003 would be dependent upon project economics and whether facilities would benefit the RMOTC demonstration program. This plan assumes an oil price of $18 per barrel and minimal new RMOTC activity and provides a worst case scenario for environmental restoration activities required through year 2000. It is DOE's intent to utilize NPR-3 as a show-place for remediation and reclamation for other stripper fields by exploring unique and experimental techniques that industry desires to test and demonstrate with RMOTC.

- The continued development of the Rocky Mountain Oilfield Testing Center (RMOTC) through the establishment of a consortium of university, state and private institutions. RMOTC would continue to provide facilities and support to government and private industry for testing and evaluating new oilfield and environmental technologies.

The Plan would have a beneficial effect on the environment by restoring disturbed land to its natural state. Alternatives to the Proposed Action are No Action, Decommissioning, and Divestiture.

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ABBREVIATIONS AND ACRONYMS

AQCR	Air Quality Control Region
ASP	Alkaline-Surfactant-Polymer (flood)
AUM	Animal Unit-Month
CAEDA	Casper Area Economic Development Alliance, Inc.
CERCLA	Comprehensive Environmental Response, Compensation & Liability Act
COE	U.S. Army Corp of Engineers
CO_2	Carbon Dioxide Gas
CX	Categorical Exclusion
DOE	U.S. Department of Energy
EA	Environmental Assessment
EOR	Enhanced Oil Recovery
FD	Fluor Daniel (NPOSR), Inc. (Formerly FD Services)
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
FWS	U.S. Fish & Wildlife Service
H_2S	Hydrogen Sulfide
JBEC	John Brown E&C, Inc. (previous M&O contractor)
LPG	Liquified Petroleum Gas
MEOR	Microbial Enhanced Oil Recovery
MER	Maximum Efficient Rate
M&O	Management and Operation
NEPA	National Environmental Policy Act
NORM	Naturally Occurring Radioactive Material
NOx	Nitrogen Oxides
NOSR	Naval Oil Shale Reserves
NPDES	National Pollutant Discharge Elimination System
NPOSR-CUW	Naval Petroleum and Oil Shale Reserves in Colorado, Utah and Wyoming
NPR-3	Naval Petroleum Reserve No. 3
NTCHS	National Technical Committee for Hydric Soils
NWI	National Wetland Inventory
OSHA	Occupational Safety & Health Administration
PCB	Polychlorinated Biphenyl
RCRA	Resource Conservation & Recovery Act
RMOTC	Rocky Mountain Oilfield Testing Center
SARA	Superfund Amendment Reauthorization Act
SCS	U.S. Soil Conservation Service
SHPO	State Historic Preservation Officer
T&E	Threatened and Endangered
TDS	Total Dissolved Solids
TPQ	Threshold Planning Quantities
TSD	Treatment, Storage and Disposal
TSP	Total Suspended Particulates
UIC	Underground Injection Control
USDA	U.S. Department of Agriculture
USDW	Underground Sources of Drinking Water
USGS	U.S. Geological Survey
UST	Underground Storage Tank
VPD/ADT	Vehicles Per Day/Average Daily Totals
WGFD	Wyoming Game and Fish Department
WNDDB	Wyoming Natural Diversity Data Base
WYDEQ	Wyoming Department of Environmental Quality

Table i-1
ISSUES TRACKING MATRIX

Issue	Executive Summary	Section 1.0 Purpose & Need	Section 2.0 Alternatives	Section 3.0 Affected Environment	Section 4.0 Environmental Consequences
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Air Quality	i	1-2	2-1, 2-2, 2-4	3-2, 3-4, 3-5	4-4, 4-5
Water Resources	i	1-2	2-1, 2-2, 2-4	3-5, 3-6, 3-7, 3-14	4-6, 4-7, 4-8, 4-9
Geology & Soils	i	1-2	2-1, 2-2, 2-4	3-8, 3-10, 3-13	4-9, 4-10, 4-11
Biological Resources	i	1-2	2-1, 2-2, 2-4	3-13, 3-15, 3-16, 3-17 3-18, 3-21	4-11, 4-12, 4-13, 4-14, 4-15, 4-16
Cultural Resources	i	1-2	2-4	3-22	4-17
Socio-economics	i	1-2	2-3, 2-4	3-23, 3-24, 3-25	4-17, 4-18, 4-19
Waste Management	i	1-2	2-1, 2-2	3-26, 3-27, 3-28, 3-29	4-20, 4-21

1.0 PURPOSE OF AND NEED FOR ACTION

1.1 Introduction

The U.S. Department of Energy (DOE) has prepared this Sitewide Environmental Assessment (EA) to address transition activities related to the proposed transfer of Naval Petroleum Reserve No. 3 (NPR-3, or Teapot Dome) out of Federal ownership. NPR-3 is a 9,481-acre (3,837 ha) oilfield in Natrona County, Wyoming (Figure 1-1), which DOE has operated since 1977. The Sitewide EA has been prepared to comply with the National Environmental Policy Act of 1969 (NEPA) (42 USC 4321, et seq.), DOE's implementing regulations for NEPA (10 CFR 1021), and DOE's NPOSR-CUW NEPA Guidance Manual (DOE, 1992a).

NPR-3 was created by an Executive Order of President Wilson in 1915 as an emergency source of liquid fuels for the military. Production began in the 1920's during a time of substantial exploration and production, under leases issued by the Interior Department under the Mineral Leasing Act. Production was discontinued after 1927 and renewed between 1959 and 1976 in a limited program to prevent the loss of U.S. Government oil to privately-owned wells on adjacent land.

In response to the Arab oil embargo of 1973-74, which demonstrated the nation's vulnerability to oil supply interruptions, Congress passed the Naval Petroleum Reserves Production Act in 1976 (Public Law 94-258). Public Law 94-258 authorized the production of the Naval Petroleum Reserves at its maximum efficient rate (MER), consistent with sound engineering practices, for a period of six years. The law also provided that at the conclusion of the initial six-year production period, the President (with the approval of Congress) could extend production in increments of up to three years each, if continued production was found to be in the national interest. The President has authorized six 3-year extensions since 1982, extending production continuously through April 5, 2000.

This EA addresses transition activities at NPR-3 over the next six years. These activities represent substantial changes to the scope and character of existing production activities at NPR-3 and necessitate new NEPA documentation beyond that approved in 1995. These activities are related primarily to environmental restoration efforts. This document provides an organized approach to restoration activities while allowing the Government to maximize both profits and benefits to industry through RMOTC.

1.2 Decisions needed

Decisions that must be made regarding the material in this document include:

- Whether any significant issues have been raised by the Proposed Action or any of the alternatives;

- Whether the Proposed Action or any of the alternatives would result in significant impact to the environment; and

- Whether the DOE would prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI) in response to this Environmental Assessment.

1.3 Scoping Summary

1.3.1 Internal Scoping

Meetings were held among the Management staff of DOE to determine the probable level of activity over the next six year period and supply the necessary background information. DOE conducted site surveys, reviewed available background information, and adopted the general scope of the EA as it appears in Sections 3.0 and 4.0.

1.3.2 External Scoping

1.4 Discussion of Major Issues

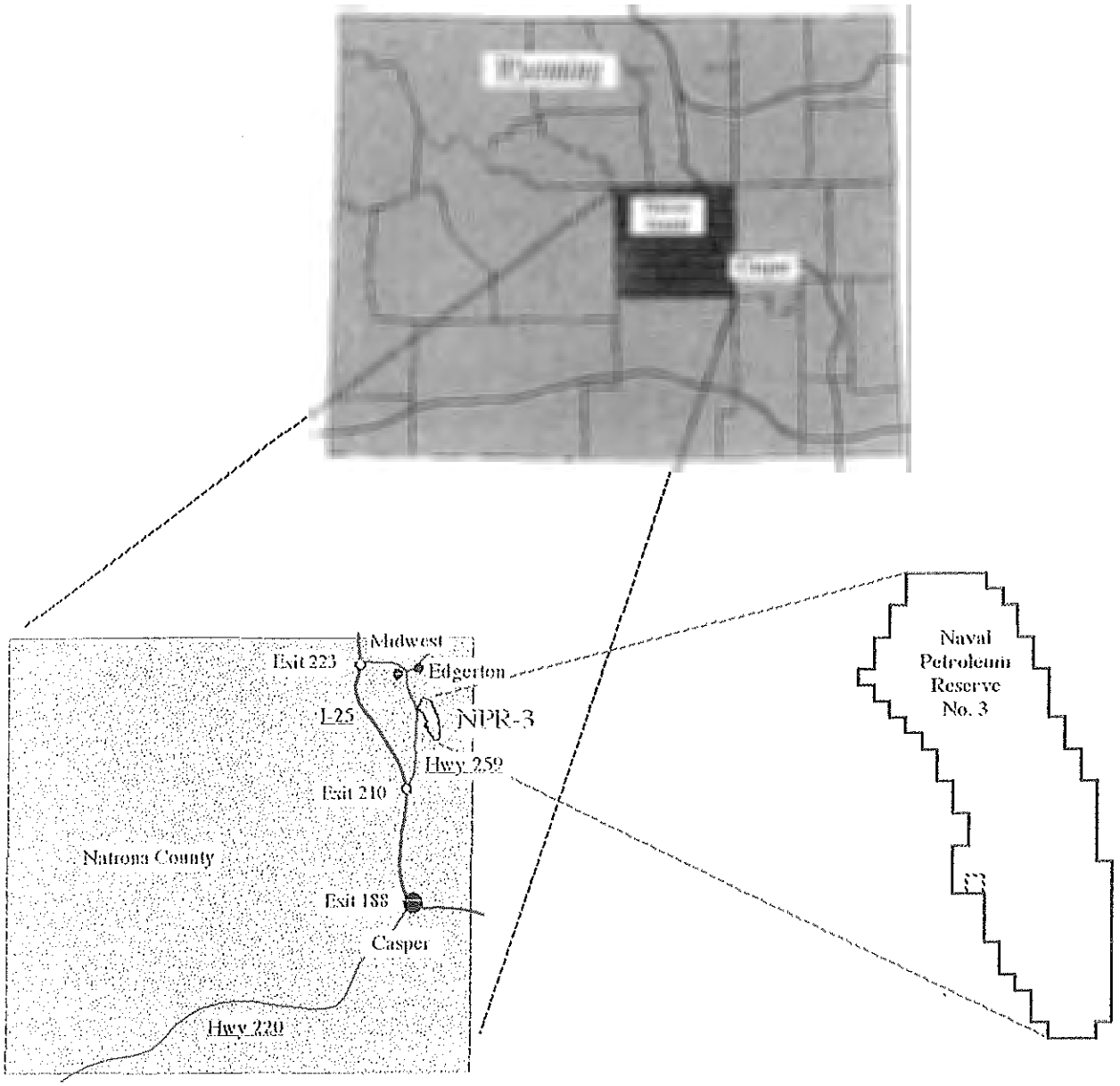
1.5 Summary of Federal Permits, Licenses, and Entitlements

Table 1-1 presents information regarding environmental permits held by DOE for activities at NPR-3. Most of the permits presented in this table are for Federal programs for which the State of Wyoming has obtained primacy. For example, the Wyoming Department of Environmental Quality (WYDEQ) regulates and permits wastewater discharges under the National Pollutant Discharge Elimination System (NPDES), as described in the Clean Water Act.

It is envisioned that the number of active NPDES permits would be substantially reduced over the next six year, since many of the permitted facilities would be decommissioned.

A reduced number of Underground Injection Control (UIC) permits for oilfield water injection in Class II wells would be needed with the closure of the steamflood operations.

There may no longer be a need for an Operating Permit under Title V of the Clean Air Act. Although the Title V permit has been prepared and is currently under technical review by Wyoming Department of Environmental Quality, Air Quality Division, most of the facilities, such as the Steam Generators, have been shut in and will be dismantled.



NPR-3 Vicinity Map

FIGURE 1-1

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Table 1-1
Federal Permits In Effect at NPR-3

Item	Permit No.	Facility
Air Quality	30-092 (Title V)	NPR-3
	CT-360	LTS Heat Medium Heater
	CT-361A	Gas Plant Smokeless Flare
	CT1202	LTS Gas Plant Amine Reboiler
	CT-361A-2	Steam Generator No. 1
	CT-778	Steam Generator No. 2
	CT-850	Steam Generator No. 3
	CT-874	Steam Generator No. 4
	CT-937	Steam Generator No. 5
Water Quality (NPDES Permits)	WY-0028894	B-1-3 Tank Battery
	WY-0028908	B-1-10 Tank Battery
	WY-0028274	B-TP-10 Tank Battery
	WY-0028916	B-1-28 Tank Battery
	WY-0028924	B-1-33 Tank Battery
	WY-0032115	Water Disposal Facility
	WY-0034037	Water Treatment Facility
	WY-0034126	North Waterflood Floor Drains
Solid Waste	NPR-Ind #2	Operation of NPR-3 Industrial Landfill
	96-057	NPR-3 Roads-Application of oil sludge to roads
Ground Water Appropriation	UW-60713	B-1-3 Tank Battery
	UW-60714	B-1-10 Tank Battery
	UW-60715	B-2-10 Tank Battery
	UW-60716	B-TP-10 Tank Battery
	UW-60717	B-1-14 Tank Battery
	UW-60718	B-1-20 Tank Battery
	UW-60719	B-1-28 Tank Battery
	UW-60720	B-2-28 Tank Battery
	UW-60721	B-1-33 Tank Battery
	UW-60722	B-1-35 Tank Battery
	UW-43810	17-WX-21 Madison Water Well
	UW-85156	57-WX-3 Madison Water Well
Underground Injection Control	No permit number issued	124 Water Injection Wells
	No permit number issued	34, 51 & 74-CMX-10 for Oilfield Brine Disposal
	No permit number issued	86-LX-10, 25-LX-11, 14-LX-28
Underground Storage Tanks	963-1	Diesel Storage Tank
	963-2	Unleaded Gasoline Storage Tank
	963-3	Unleaded Gasoline Storage Tank
EPA Hazardous Waste ID No.	WY 4890090042	Hazardous Waste Disposal ID for NPR-3 (Also amended for PCB activity) Conditionally Exempt Small Quantity Generator Status

1.6 Preview of Remaining Chapters

Four alternatives, including the Proposed Action are considered in this Sitewide EA and are discussed in Section 2.0. They include:

1) The Proposed Action, which is composed of three principal components:

   Plug and abandonment of wells.

   Reclamation of well sites, batteries, roads, power lines, test satellites, and any facilities that would not benefit the future transfer, sale or lease of NPR-3 to one or more private concerns.

   Further development of the Rocky Mountain Oil Field Testing Center (RMOTC) at NPR-3 through the establishment of a consortium of institutions to provide facilities and necessary support to government and private industry for testing and evaluating new oilfield and environmental technologies, and to transfer these results to the petroleum industry through seminars and publications.

2) A No-Action Alternative, under which NPR-3 would continue to be produced using present conventional and enhanced oil recovery technologies.

3) Decommissioning Alternative under which DOE would cease production activities at NPR-3 and begin environmental restoration. The abandonment of the oilfield while it is still economic to produce would have a negative impact on the assets value to the government and is inconsistent with the statutory mandate to produce NPR-3 at MER.

4) Divestiture Alternative under which DOE would cease RMOTC development prematurely without fully exploring opportunities for RMOTC to become a self-sufficient entity by 2001. Until the abandoned wells have been plugged and the field is restored, NPR-3 retains a negative value to potential owners.

The affected environment on and surrounding NPR-3 is described in Section 3.0. This description has been updated from earlier characterizations provided in the 1990 and 1995 NEPA documents to reflect present conditions at NPR-3. Environmental consequences potentially resulting from the Proposed Action and each alternative are discussed in Section 4.0, which also details the mitigation measures necessary to offset any potential adverse environmental consequences identified for the Proposed Action. A discussion of potential cumulative impacts from the Proposed Action is also provided in Section 4.0, as are the potential impacts from the Alternatives to the Proposed Action. Sections 5.0, 6.0 and 7.0 provide a list of preparers, agencies and persons consulted, and bibliography, respectively.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

Elements of the Proposed Action for closure of NPR-3 are described below. Although the disposition of NPR-3 is not authorized currently, this EA covers the measures DOE would take to prepare NPR-3 for future transfer.

2.1 Proposed Action

DOE anticipates the Federal government will discontinue operation of NPR-3 at the end of the oilfield's economic life, currently estimated to be the end of fiscal year 2003. Changes in oil and gas markets or shifts in national policy could alter the economic limit of NPR-3, but its productive life will be determined largely by a small and declining reserve base. There are several components encompassed by the Proposed Action, all of them focused on closing out operations at NPR-3 while accommodating DOE's continuing production of remaining proved reserves.

DOE proposes to abandon and reclaim succeedingly less productive wells. In addition, DOE proposes the further development of RMOTC, under the guidance of a public/private consortium for transition to new ownership after 2001. To accomplish this goal RMOTC would increase industry participation and funding to fully recover USG costs, expand university and national laboratory participation and training opportunities, increase state and Federal participation, implement a profit sharing program, and reduce administrative costs. The future environmental liabilities to the United States Government (USG) are minimized by this approach.

The Proposed Action would optimize production benefits, maximize remaining future field assets in concert with RMOTC, comprehensively restore the field, and limit future environmental liabilities.

2.1.1 Plug and Abandonment of Wells

A plan to carefully abandon and reclaim NPR-3 is the critical objective of this Sitewide EA. This requires the systematic identification of least productive wells for plugging and abandonment and eventually the remainder of the field not utilized for RMOTC, or the core of wells economically producing beyond 2003.

In addition to a well's productivity, DOE would identify candidates for plug and abandonment based on the well's uniqueness and availability for experimental use by RMOTC. Much of the technique for plug and abandonment methods would be developed in conjunction with RMOTC. It would be essential that a different set of evaluation criteria be applied to wells having high experimental value. Wells that are prematurely plugged would be difficult to reactivate, so careful evaluation of each well is necessary. The candidates already selected for initial plug and abandonment work have little potential value for RMOTC.

The Proposed Action would include the plugging and abandonment of over 900 marginally operating wells in accordance with Wyoming Oil and Gas Conservation Commission standards. Beginning in April of 1998, DOE would plug and abandon a minimum of 150 wells. DOE would continue to plug and abandon wells at the same aggressive rate of 150 wells per year through the end of fiscal year 2003. This schedule would leave approximately 200 operating wells open for future RMOTC projects.

2.1.2 Reclamation Activity

Reclamation activities scheduled to occur in concert with the plug and abandonment program include dismantling of an estimated 30 surface facilities, such as treater batteries, test satellites, tanks, and buildings no longer required for production operations; closure and reclamation of approximately 286 total acres of roads and 30 abandoned pits; dismantling of an estimated 540,000 feet of electrical distribution systems and 1,200 associated electrical poles; and prescribed soil sampling and soil remediation.

Eligible and unevaluated cultural resource sites would not be affected by reclamation activities since well sites and associated power lines, and auxiliary roads have been limited near these sites. Secondary and auxiliary roads would be reclaimed but main roads would remain intact.

Table 2-1 **List of Plug and Abandonment Activities Under the Proposed Action (2.1.1)**
Evaluate individual well potential as related to RMOTC.
Select appropriate wells.
Plug and abandon selected wells in accordance with Wyoming Oil and Gas Conservation Commission rules and regulations.
Prepare Sundry Notices for well abandonment, and pit closure in accordance with Wyoming Oil and Gas Conservation Commission standards.

Table 2-2 **List of Reclamation Activities Under the Proposed Action (2.1.2)**
Dismantle surface facilities including but not limited to test satellites, treater batteries, pits, and roads.
Dismantle electrical distribution lines and removing electrical poles to abandoned wells, reclaimed locations and surface facilities.
Dismantle bolted storage tanks.
Demolish buildings no longer required for production operations and add no value to the property.
Collect soil samples for laboratory analysis.
Plug and abandon existing groundwater monitoring wells.
Drill four (4) new groundwater monitoring wells for closure of landfarm/landfill..

Table 2-2 List of Reclamation Activities Under the Proposed Action (2.1.2)
Close landfarm/landfill in accordance with Wyoming Department of Environmental Quality Standards.
Reclaim all abandoned, dismantled, or demolished well sites, surface facilities, pits, and roads back to their natural state.
Flush underground pipes with hot water prior to capping.
Cut underground pipes at a depth of 3 to 5 feet below surface level and weld shut.
Conduct emergency response, fire and safety training.
Decommission and remove three (3) underground storage tanks and replace with two (2) aboveground storage tanks in accordance with Wyoming Department of Environmental Quality Standards.
Cease grazing activities during the spring and summer months due to reseeding of large portions of NPR-3.
Move salt contaminated soil to central location for treatment.
Soil contaminated by hydrocarbons would be treated onsite either by landfarming or through the use of biodegradable chemicals or both.

2.1.3 RMOTC Development

RMOTC was established in 1993 as an industry-driven endeavor to help strengthen the domestic energy industry by testing new petroleum and environmental technologies in operating oil and gas fields owned by the United States Government in Wyoming and Colorado. Partnering with industry, other government organizations and academic institutions, RMOTC has completed 32 major projects as of September 1997. RMOTC is working with the National Petroleum Technology Office, private companies, National Laboratories, and universities to develop partnerships and combine resources for selected projects.

DOE proposes an independent RMOTC through the establishment of a consortium of university, state and private institutions, which can rely on a reasonable strong and consistent customer base. The goal is to provide a turnkey operation to a new owner by fiscal year 2001. It is intended that the consortium would then become involved in helping to make basic decisions about which facilities and wells would be retained for experimental use or abandoned and reclaimed.

Table 2-3 List of RMOTC Development Goals (2.1.3)
Increase industry participation and funding to fully recover USG costs
Expand university and national laboratory participation and training opportunities
Increase state and Federal participation
Implement a profit sharing program
Reduce administrative costs

2.2 Alternatives to the Proposed Action

2.2.1 No-Action Alternative

The No-Action Alternative assumes that none of the actions outlined in the Proposed Action would be initiated. Existing wells and related facilities would continue to be operated on a well-by-well basis until the costs to lift a barrel of oil exceed revenue gained. Implementation of the No-Action Alternative would not be consistent with the DOE March 1997 Report to Congress, which was required by section 3416 of the National Defense Authorization Act for Fiscal Year 1996, Public Law 104-106. The overall purpose of Section 3416 was to explore the options for future management of all the assets other than Elk Hills that are managed by the NPOSR program, and to recommend to Congress the option that would maximize asset value to the United States Government.

Under the No-Action Alternative plug and abandonment of wells would not be accelerated. Decommissioning, dismantling, and rehabilitation of surface facilities would not occur.

Impact on biological and cultural resources would remain the same.

2.2.2 Decommissioning Alternative

Under this alternative, NPR-3 would cease production and begin environmental restoration. The abandonment of NPR-3 while it is still economic to operate would have a negative impact on the asset's value to the Government. Implementation of this alternative would also be inconsistent with the statutory mandate to produce NPR-3 at MER.

Although production of wells would cease, activity would remain high for approximately 3 years while restoration and decommissioning occurs. All activity would cease at the completion of remedial action. There would be little to no mineral value.

Relationships and partnerships developed by RMOTC would be negatively impacted as wells selected for their high experimental potential would be plugged and abandoned.

As a result, RMOTC would never realize its full operating capacity as a self-sufficient entity.

Finally, this alternative would result in the least impact to land because no new disturbance or construction would occur.

2.2.3 Divestiture Alternative

This alternative would result in a financial loss to the Government due to environmental liabilities that need to be mitigated prior to transfer to the property. Until the abandoned wells have been plugged and the field is restored, NPR-3 retains a negative value to potential owners.

3.0 AFFECTED ENVIRONMENT

3.1 Land Resources

3.1.1 Land Use

The principal land use of Natrona County (5,300 square miles or 13,700 square km) is sheep and cattle ranching. Areas adjacent to the NPR-3 are utilized primarily for oil production, with limited livestock grazing. Under the Zoning Ordinance of Natrona County, these lands are zoned RF (Ranching and Farming) although mineral extraction activities are exempt from the Zoning Resolution (Natrona County, 1978). No residential development is currently present or proposed for the immediate area surrounding NPR-3 (Halliburton NUS, 1993), largely because of the lack of potable water.

Land at NPR-3 is utilized primarily for oil production. Sheep grazing is a secondary use of land resources at NPR-3. During restoration, grazing activities would cease during the summer months. To ensure the boundaries are accurate for future transfer NPR-3 would be re-surveyed.

The land surface is characterized by prairie with occasional sagebrush, severely cut ravines, and sandstone bluffs. Developed features on NPR-3 include gravel and dirt roads, wellheads and pumping units, oil and gas production facilities and equipment, storage areas, and an office complex. Existing well locations, are concentrated in a 2,500-acre (1,000 ha) area located in the center of NPR-3, with substantially less development taking place in the northern and southern portions of the site. Most wells are located within the basin and at a considerable distance from the surrounding bluffs. Several wells in the extreme southern portion of NPR-3 are located near steeper slopes. Existing roads and facility locations, similarly concentrated in the center of NPR-3, are depicted in Figure 3-2.

Construction of facilities and supporting infrastructure requirements from 1915 to 1997 have resulted in the disturbance of approximately 1,723 acres (657 ha), approximately 17% of the total acreage of NPR-3. As of 1997, approximately 939 of these disturbed acres (380 ha) had been reclaimed (revegetated) and the other 684 acres (277 ha) were required to support ongoing production operations (DOE, 1997). Between 1990 and the present, additional construction of wells, roads and pipelines have disturbed approximately 100 additional acres, although 80 acres of previous well sites and roads have been reclaimed.

3.1.2 Aesthetics

NPR-3 is typical of much of the central portion of Wyoming. It consists of rolling terrain covered with native grass and sagebrush, and is fragmented by numerous small gullies. NPR-3 is surrounded by a rim of sandstone bluffs. Although portions of NPR-3 operations are visible from the north along Wyoming Route 259, bluffs to the south, east and west generally isolate NPR-3 visually from the public (Halliburton NUS, 1993).

The southern-most end of this rim does provide a panoramic view of the entire project, although this viewpoint is limited to NPR-3 employees and a few local ranchers (DOE, 1990). Access to oilfield structures and activities associated with NPR-3 operations are aesthetically consistent and a common visual feature of adjacent offsite conditions.

Much of the area inside the sandstone bluffs at NPR-3 has been altered to some degree by installation of facilities and service roads since operations first began in the 1920's, and particularly since full scale development (at MER) was ordered in 1976. To ensure each reclaimed well site can be located, a GPS reading will be taken using an Omni LR 3000. This survey instrument has an accuracy reading of within 3 feet. The coordinates for each well will be properly logged and kept for future reference.

3.1.3 Recreation

There are no public recreation facilities in the immediate vicinity of NPR-3, and no areas within NPR-3 are open to the public (Halliburton NUS, 1993). The nearest public recreation facility to NPR-3 is the Moses Ballfield, located approximately 7 miles (11 km) north near the town of Midwest. Additional recreational facilities maintained within Natrona County include several county parks, reservoirs, and recreation areas. These offer a large variety of activities including picnicking, camping, fishing, boating, swimming, and hiking (Natrona County, 1978).

3.2 Air Quality and Acoustics

3.2.1 Meteorology and Climate

The climate of NPR-3 is characterized as semi-arid with approximately 9-12 inches (23 - 30 cm) of precipitation annually. Precipitation is seldom sufficiently abundant and evenly distributed to keep the soil moist throughout the entire summer. Typical high temperatures in the summer are 80-85°F (27-30°C), and low temperatures in the winter are around 0°F (-18°C). However, temperatures reach 100°F (38°C) in summer and -40°F (-40°C) in winter. Winds are usually westerly or southwesterly and are most predominant during the late fall and spring months. (FD Services, 1992a)

3.2.2 Air Quality

NPR-3 is located in Natrona County, Wyoming, which is part of the Casper Intrastate Air Quality Control Region (AQCR)(40 CFR 81.213), designated as being in attainment by the EPA for all criteria pollutants (40 CFR 81.351). An ambient air quality monitoring program was established at NPR-3 to monitor air quality parameters set forth by the Wyoming Department of Environmental Quality (WYDEQ), Division of Air Quality, and as recommended by the June 1989 Environmental Survey Team. Ambient air quality meets State of Wyoming standards at the perimeter of the property (FD Services, 1992a). The air quality program includes ambient air monitoring for H_2S, nitrogen oxides (NOx) and hydrocarbons. In order to address worker health and safety, H_2S sampling has been conducted in the areas of highest potential concentrations (FD

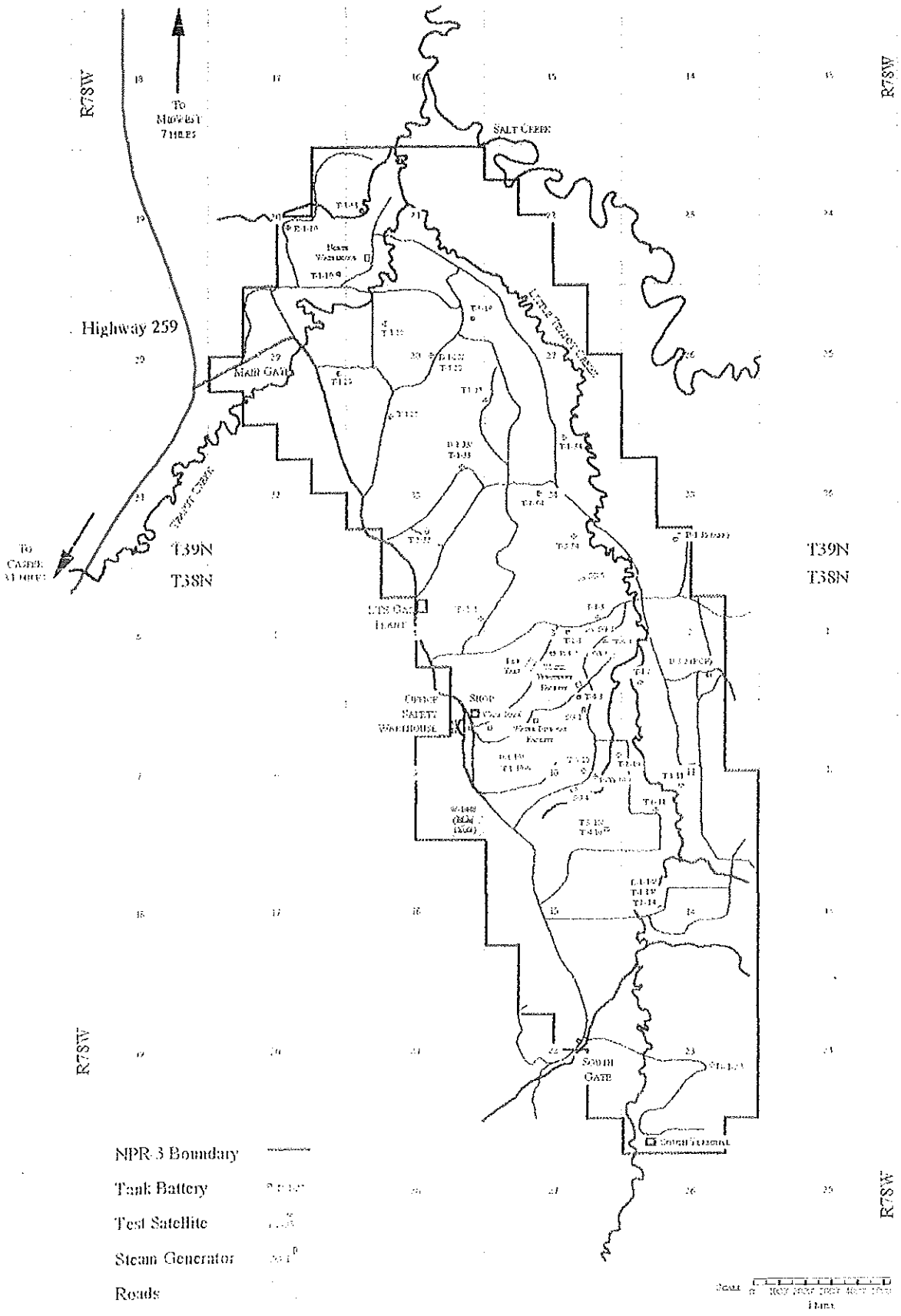

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FIGURE 3-1

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Services, 1992a). The primary areas associated with elevated H_2S levels include facilities in the steamflood patterns, the main ones being T-5-3, T-5-10, and B-3-3/T-4-3 tank batteries (FD Services, 1992b).

Prior to the NPR-3 studies, ambient air quality data for Natrona County generally, and NPR-3 specifically, were limited. Data prior to 1976 indicate that background levels of suspended particulates in the area ranged from 20 to 30 mg/m^3. No values for hydrocarbons were available for Natrona County. However, hydrocarbon sampling done in Converse County (adjacent to Natrona County) revealed that background levels there were apparently exceeding state standards. Levels of H_2S measured on NPR-3 in June 1976 were less than 4 ppm.

From July 1 through December 31, 1981, ambient air monitoring for total suspended particulates (TSP), sulfur dioxide (SO_2), nitrogen dioxide (NO_2) and hydrogen sulfide (H_2S) was done to establish background levels of the above parameters and to monitor emissions associated with the Fireflood Pilot Project which was initiated at NPR-3 in 1982. During this period, the sampling results for TSP, SO_2, NO_2 and H_2S were lower than the annual regulated standard. Additional ambient air monitoring for TSP, SO_2, H_2S, and NO_2 was also conducted between July 1982 and March 1983. During this period the sampling results for hydrocarbons, TSP, NO_2, and SO_2 were also less than the annual standard. (DOE, 1990)

Although continuous monitoring for SO_2 has not been required by WYDEQ, it has requested periodic analyses. Monitoring for SO_2 is conducted by onsite personnel. The ambient SO_2 concentration around the flares is undetectable with a Sensidyne Detector tube. Air sampling and analysis, using gas chromatography and flame photometry, was conducted by a subcontractor on September 9, 1993. Results from these samples showed the highest SO_2 concentration to be 0.081 ppm, well within the WYDEQ limits (0.1 ppm max 24-hr and 0.5 ppm max 3-hr concentration).

In August 1986 the annuli between the casing and tubing on various steamflood wells were sampled for H_2S. Prior to steam injection these wells did not produce H_2S. As the steam front spread through the formation, the growth of anaerobic sulfate-reducing bacteria was stimulated, resulting in the formation of the gas. H_2S levels were stabilized by means of chemical treatment of the wells with biocides. (DOE, 1990)

Hydrogen sulfide gas was flared at NPR-3 between November 1992 and March of 1995. Since March of 1995 H_2S flares have not operated and operating permits for the flares have never been required by Wyoming Department of Environmental Quality (WYDEQ) for NPR-3.

Sampling of ambient H_2S at the appropriate tank batteries is conducted monthly. The ambient readings are taken at points around the batteries which are relative to those used for sampling prior to flare installation.
Earlier sampling of ambient H_2S, ozone, PM-10 and hydrocarbons occurred in 1989. Again, sampling results indicated that PM-10, ozone and H_2S levels were less than the standard. (DOE, 1990)

Table 3-1 lists the NPR-3 facilities currently operating under air quality permits issued by the Wyoming Department of Environmental Quality and their respective emission inventories for calendar year 1996.

NPR-3 currently holds construction permits for the LTS Gas Plant, its associated flare and amine reboiler. Permits for Steam Generators 1, 2, 3, 4, and 5 have been deactivated. Of the five steam generators, steam generator 2 has been removed from the Title V permit. The four remaining steam generators are no longer operating.

In 1990, Title V of the Clean Air Act amendments required that all major sources of pollutants obtain an operating permit. WYDEQ has primacy for enforcement of the CAA Title V. New or modified sources are subject to operating permit requirements under Section 30 of the Wyoming Air Quality Standards and Regulations. In August 1995 a Title V permit application was submitted to WYDEQ and is currently under technical review.

3.2.3 Acoustics

The major noise sources within NPR-3 include various facilities, equipment and machines (steam generators, engines, pumps, drilling rigs, vehicles, etc.). Buildings associated with the Water Disposal Facility and all steam generators have been identified as having inside noise levels exceeding 85 decibels, and hearing protection is required for workers within these areas (FD Services, 1992b). Although sound-level monitoring of ambient acoustic conditions at NPR-3 has not been conducted, the contribution from NPR-3 operations to ambient noise levels beyond the Reserve boundary is estimated to be minimal, and no residences are located within audible range of general operations.

Table 3-1
Permitted Air Quality Emission Sources at NPR-3

Source	Permit Number	1996 Emissions Data			
		Particulate Matter	Sulfur Dioxide	Nitrogen Oxide	Carbon Monoxide
LTS Gas Plant Heater	CT-360 (replaced by CT-1202)	0.32 x 10^{-4} lb/hr 1.4 x 10^{-4} tpy[a]	3.9 x 10^{-6} lb/hr 2.8 x 10^{-3} tpy	0.64 x 10^{-4} lb/hr 2.8 x 10^{34} tpy	1.3 x 10^{-4} lb/hr 5.6 x 10^{-4} tpy
Gas Plant Smokeless Flare	CT-361A (inactivated 1987)	b	b	b	b

[a] tpy = Metric tons per year

[b] Facility was not tested

[c] Began operation in 1993

Source: 1996 Emissions Inventory Report for Criteria Pollutants at NPR-3, submitted by FD to WY DEZ on 3/24/97

3.3 Water Resources

3.3.1 Surface Water Quantity

NPR-3 is drained by a series of ephemeral or intermittent stream channels that flow through steep topographic swales, locally referred to as draws. Little Teapot Creek originates in the highlands south of NPR-3 and enters NPR-3 in a northerly direction across the southern boundary as an intermittent stream. Teapot Creek originates approximately 15 miles (24 km) southwest of NPR-3 and enters NPR-3 in an easterly direction across the northwestern boundary as an intermittent stream. All other ephemeral and intermittent streams on NPR-3 drain into Little Teapot or Teapot Creeks. Little Teapot and Teapot Creeks merge immediately south of NPR-3's northern boundary and exit NPR-3 in a northerly direction. The merged stream flows into Salt Creek less than 1 mile (1.6 km) north of NPR-3, which flows to the Powder River, approximately 25 miles (40 km) to the north. (USGS, 1974)

Several small impoundments, none larger than 10 acres (4 ha), have been constructed in the draws to serve as reservoirs during earlier operations on NPR-3 in the 1920's (Halliburton NUS, 1993). The remains of several of these impoundments still exist, but the basins only support wetlands.

Produced water obtained from all producing formations is discharged to Little Teapot Creek and its tributaries through the biotreatment facility NPDES discharge allowed by the Clean Water Act. This facility was constructed in 1996. Its primary function is to clean the produced water formerly injected underground. Discharges through each outfall are regulated under NPDES permits issued by WYDEQ, Water Quality Division. Only one outfall, the B-Tp-10 tank battery, discharged during 1996. The remaining permitted outfalls did not discharge. Sampling indicated compliance with NPDES permit limits. Current operations at NPR-3 do not involve the withdrawal of any surface water from the streams or ponds.

3.3.2 Ground Water Quantity

There are no high quality fresh water aquifers in the strata underlying NPR-3. Those strata that produce fluids either produce water with excessive levels of total dissolved solids (TDS) or a mixture of hydrocarbons and water. The Steele Shale formation occupies the interval from the surface to an approximate depth of 2,000 feet (610 m). There are two porous and permeable sandstone formations within the Steele Shale. The Sussex sandstone outcrops in a ring near the center of the Teapot Dome structure, but does not appear to contain an aquifer. The second sandstone body is the Shannon sandstone which is an oil reservoir in much of the field. A fault separates the oil reservoir from the Shannon outcrop at Salt Creek to the north. Groundwater is encountered in the Shannon in some areas north of the fault, but the concentration of Total Dissolved Solids exceeds 10,000 mg/l. No Underground Sources of Drinking Water (USDWs) or other shallow fresh water aquifers have been detected in the 795 wells drilled since 1976.

It should be noted that there is a strong distinction at NPR-3 between "fresh water aquifers" and "USDWs". Exempted aquifers are not USDW's under the Safe Drinking Water Act, which permits aquifer exemptions for fresh water aquifers being used for Class II injection. Several such aquifer exemptions exist at NPR-3. In addition, aquifers that contain crude oil, natural gas, or other contaminants that make it undesirable for a water supply could also be exempted. Several other aquifers at NPR-3 qualify for exemption under this criteria, although the actual exemption has not been pursued with the Wyoming Oil & Gas Conservation Commission. Produced water from oil and gas production is put to beneficial use for livestock and wildlife at NPR-3, but there would be no intention to protect it as a source of municipal water supply.

The Madison formation, which could be a high yield, fresh water aquifer, lies below the deepest producing geologic unit within NPR-3 at a depth of below 6,000 feet (1,800 m) but yields water of only fair quality, with a TDS level of approximately 3000 mg/L. (DOE, 1990) The Madison could be considered a USDW, but activities at NPR-3 are not likely to impact this aquifer.

Although not suitable as drinking water, water from the Madison and Tensleep formations (at a depth approximately 5400 feet or 1,600 m from the surface) is utilized to supply make-up water for existing steamflooding and waterflooding EOR activities at NPR-3. (Fosdick, 1992b)

3.3.3 Surface Water Quality

The effluent limits from each National Pollutant Discharge Elimination System (NPDES) permit under which water is discharged to the draws at NPR-3 are listed in Table 3-2. The DOE submits semi-annual Discharge Monitoring Reports to the WYDEQ. Samples are taken bimonthly to monitor discharge water quality. (DOE, 1990; Dunn, 1993)

Water is discharged in large quantities only from the Tensleep Battery (B-TP-10) (NPDES Permit WY-0028274). The other NPDES permits listed in Table 3-2 are either inactive, represent highly occasional discharges, or represent discharges of very small quantities of effluent. Water discharged from the Tensleep Battery is formation water produced with the Tensleep oil. Although the natural temperature of water at the time of withdrawal from Tensleep formation is 180°F (82°C), temperatures of the effluent are typically under 100°F (38°C) (Doyle, 1993). Because the streams are generally less than 1 foot (0.3 m) deep, the elevated temperatures at the point-of-discharge rapidly diminish to ambient levels through atmospheric cooling.

The WYDEQ has determined that the streams at NPR-3 are all Category IV streams (Doyle, 1993). Category IV streams are defined in the Wyoming Water Standards as "surface waters, other than those classified as Class I, which are determined by the Wyoming Game and Fish Department not to have the hydrologic or natural water quality potential to support fish." Thermal effluent limits are not established by the WYDEQ for NPDES Permits for discharges to Class IV streams.

3.3.4 Ground Water Quality

Groundwater produced with crude oil and natural gas is disposed of through the biotreatment facility or by underground injection into the Crow Mountain formation. The water treatment plant softener regeneration water is also injected into a disposal well. These wells are permitted through EPA's Underground Injection Control (UIC) program, which is managed by the Wyoming Oil and Gas Conservation Commission. Geologic formations that receive injected water also have an aquifer exemption authorized by the Oil and Gas Conservation Commission, which has primacy for regulating class II injection wells under the Safe Drinking Water Act.

3.3.5 Potable Water

Because there are no potable water wells in the vicinity of NPR-3, all potable water must be trucked to NPR-3 from either the city of Casper or the town of Midwest. Both supplies are community water systems and have been approved by the EPA as drinking water systems. Drinking water samples are taken quarterly at NPR-3 to monitor for chloroform and confluent bacteria. Samples are analyzed by the Natrona County Health Department. A copy of the analytical results is retained and a copy is sent to the EPA Region VIII by the Natrona County Health Department (DOE, 1990). Sampling is also conducted for lead and copper levels as required by the Lead and Copper Rule.

Table 3-2
Summary of NPDES Permit Limits

Permit Number	Name of Source	Oil and Grease[1]	Specific Conductance[2]	COD[3]
WY-0028274	B-Tp-10 Tank Battery	10	7500	N/A
WY-0034126	North Waterflood Floor Drains	10	7500	100
WY-0028894	Tank Battery B-1-3	10	7500	N/A
WY-0028908	Tank Battery B-1-10	10	7500	N/A
WY-0028916	Tank Battery B-1-28	10	7500	N/A
WY-0028924	Tank Battery B-1-33	10	7500	N/A
WY-0034037	Water Treatment Facility	10	7500	100
WY-0032115	Water Disposal Facility	10	7500	N/A

1 In mg/l, daily maximum
2 In umhos/cm, daily maximum
3 In mg/l, daily maximum

3.4 Geology, Soils, and Prime and Unique Farmlands

3.4.1 Geology

NPR-3 is centered over the crestal axis of an asymmetrical doubly-plunging anticline called the Teapot Dome, which is the southern extension of the much larger Salt Creek anticline. The Salt Creek anticline underlies the prolific Salt Creek Oilfield, located to the north of NPR-3. (DOE, 1990)

The geologic column for the Teapot Dome is shown in Figure 3-3. The oil productive horizons are the Shannon, Steele Shale, Niobrara Shale, Second Wall Creek, Third Wall Creek, Muddy, Dakota, Lakota, and Tensleep formations. Currently, enhanced oil recovery operations affect only the Shannon formation. 3,000 bbls/day of chase water is injected into Steam Pattern 2-B. There are no plans to expand EOR beyond this level of effort.

The topography of the region surrounding NPR-3 is characterized by rolling plains interspersed with ridges and isolated bluffs. The central part of NPR-3 consists of a large plain, dissected by ravines (draws), that is encircled to the east, west, and south by a rim of sandstone (U.S. Navy, 1976). The area surrounding NPR-3 is not known to be seismically active (Halliburton NUS, 1993).

3.4.2 Soils

The USDA Soil Conservation Service (SCS) has completed a Class III soil survey of portions of Natrona County, including NPR-3 and surrounding lands. Map pages from the soil survey covering NPR-3 are provided in Table 3-3. Soils throughout NPR-3 are largely derived from sodic (alkaline) parent materials and are highly alkaline and saline. The high salinity of soils on NPR-3 limits plant growth. All soils on NPR-3 are well drained. Most soils on NPR-3 are highly or moderately susceptible to erosion caused by heavy downpours (Davis, 1993a).

Most upland soils throughout all parts of NPR-3 other than the peripheral ridges are mapped as Cadoma-Renohill-Samday clay loams. The Cadoma soil series is typically found on hillsides of 3 to 12 percent slope, the Renohill soil series is typically found in swales of 3 to 6 percent slope, and the Samday soil series is typically found on ridges of 3 to 12 percent slopes. These soils are derived from slopewash alluvium and residuum derived dominantly from sodic shale. The Cadoma and Renohill soils are moderately deep and well drained, while the Samday soils are shallow and well drained. All of these soils are highly susceptible to water erosion. (Davis, 1993a)

Scattered areas of upland soils are mapped under other names and comprise soils mapped in other soil series. Most of these other upland soils are also derived from sodic materials. All are well drained but differ widely in their susceptibility to water erosion (Davis, 1993a). Soils in the major draws on NPR-3 are mapped in the Haverdad-Clarkelen complex, a mosaic of soils in the Haverdad series (Haverdad loam) and the Clarkelen series (Clarkelen sandy loam). The Haverdad and Clarkelen

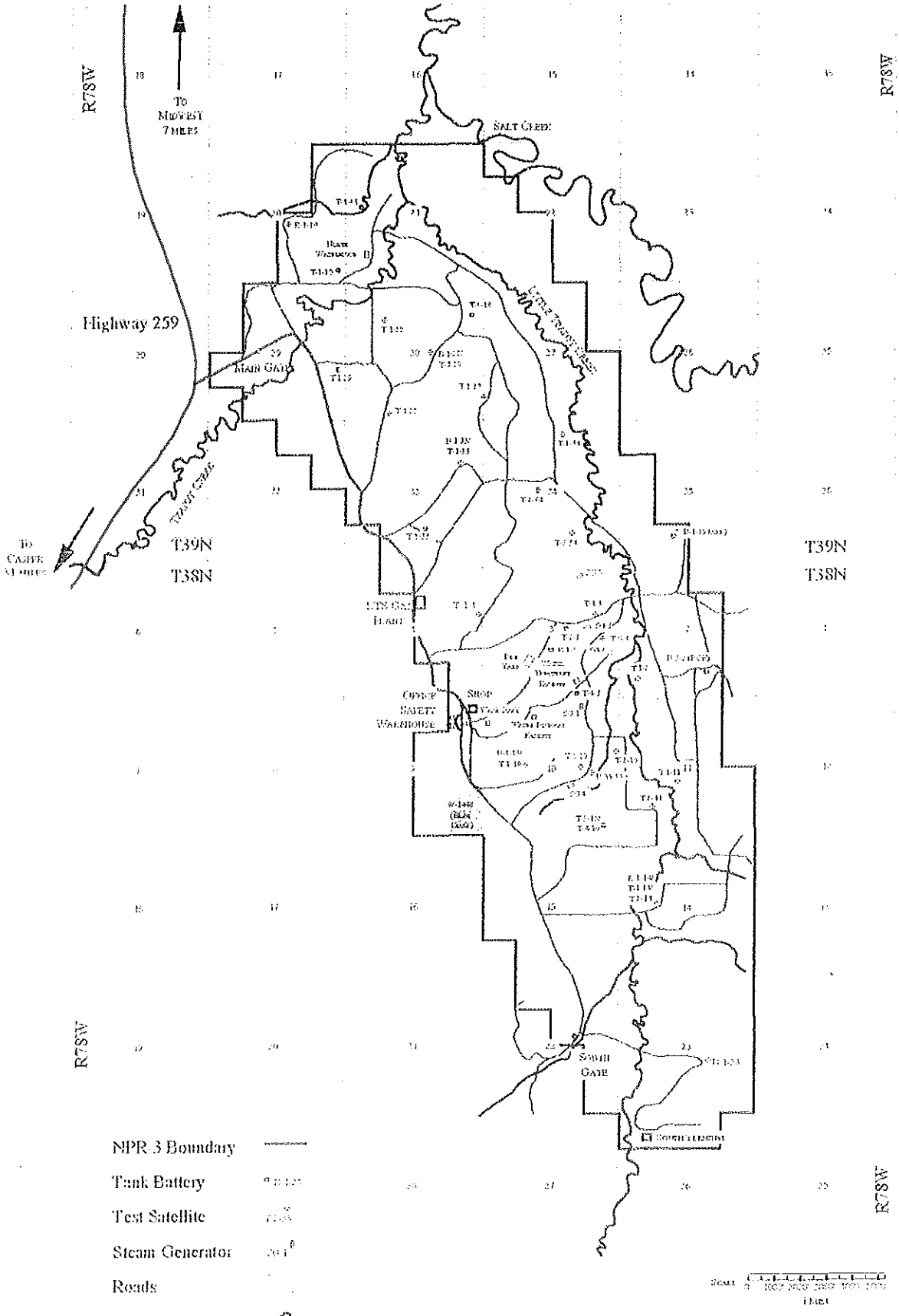

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FIGURE 3-1

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soils are very deep and well drained, and they are only slightly susceptible to water erosion. (Davis, 1993a)

Table 3-3
Soil Survey Mapping Units

Map Unit 112: Arvada-Absted-Slickspots complex, 0 to 6 percent slopes	
Location on NPR-3:	Scattered upland areas throughout all parts of the reserve except for the bluffs.
Composition:	35% Arvada clay loam; 30% Absted clay loam; and 15% Slickspots.
Origin:	Alluvium derived dominantly from sodic shale (Arvada and Absted soils).
Drainage:	Well drained (Arvada and Absted soils).
Hazard of Water Erosion:	Slight (Arvada and Absted).
Capability Subclass:	VIs (Arvada and Absted soils)
Map Unit 113: Arvada, runon-Slickspots complex, 0 to 3 percent slopes	
Location on NPR-3:	Isolated upland area in the northern part of the reserve.
Composition:	60% Arvada loam, overflow and 25% Slickspots.
Origin:	Alluvium derived dominantly from sodic shale (Arvada soil).
Drainage:	Well drained (Arvada soil).
Hazard of Water Erosion:	Slight (Arvada soil).
Capability Subclass:	VIs (Arvada soil).
Map Unit 125: Blackdraw-Lolite-Gulli ed land complex, 3 to 20 percent slopes	
Location on NPR-3:	Scattered upland areas in the northern part of the reserve.
Composition:	45% Blackdraw clay loam; 20% Lolite clay loam; and 20% gullied land.
Origin:	Slopewash alluvium and residuum derived dominantly from noncalcareous sodic shale (Blackdraw soil); residuum derived dominantly from noncalcareous sodic shale (Lolite soil).
Drainage:	Well drained (Blackdraw and Lolite soils).
Hazard of Water Erosion:	Severe (Blackdraw and Lolite soils)
Capability Subclass:	VIe (Blackdraw soil); VIIe (Lolite soil).
Map Unit 134: Bowbac-Taluce-Terro complex, 6 to 20 percent slopes	
Location on NPR-3:	Scattered upland areas in the northern part of the reserve.
Composition:	40% Bowbac sandy loam; 25% Taluce sandy loam; and 15% Terro fine sandy loam.
Origin:	Slopewash alluvium and residuum derived dominantly from sandstone (Bowbac soil); residuum derived dominantly from sandstone (Taluce soil); alluvium derived dominantly from sandstone (Terro soil).
Drainage:	Well drained.
Hazard of Water Erosion:	Moderate (Bowbac and Terro soils); High (Taluce soil)
Capability Subclass:	IVe (Bowbac and Terro soils); VIIe (Taluce soil).

Table 3-3
Soil Survey Mapping Units

Map Unit 140: Cadoma-Renohill-Samday clay loams, 3 to 12 percent slopes

Location on NPR-3:	Characteristic soil on the uplands throughout all parts of the reserve except for the bluffs.
Composition:	40% Cadoma clay loam; 25% Renohill clay loam; and 25% Samday clay loam.
Origin:	Slopewash alluvium and residuum derived dominantly from sodic shale (Cadoma and Renohill soils).
Drainage:	Well drained.
Hazard of Water Erosion:	Severe.
Capability Subclass:	VIe (Cadoma soil); IVe (Renohill soil); VIIe (Samday soil).

Map Unit 195: Haverdad-Clarkelen complex, saline, 0 to 3 percent slopes

Location on NPR-3:	Characteristic soil within the larger draws throughout all parts of the reserve.
Composition:	50% Haverdad loam, saline and 35% Clarkelen sandy loam, saline
Origin:	Stratified alluvium from mixed sources.
Drainage:	Well drained.
Hazard of Water Erosion:	Slight.
Capability Subclass:	IVS - irrigated; VIs - nonirrigated.

Map Unit 208: Kayner sandy clay loam, 3 to 10 percent slopes

Location on NPR-3:	Characteristic soil on the high ground at the foot of the bluffs near the eastern, western, and southern boundaries.
Composition:	Over 80% of this map unit is Kayner sandy clay loam.
Origin:	Alluvium derived dominantly from sodic sandstone and shale.
Drainage:	Well drained.
Hazard of Water Erosion:	Moderate.
Capability Subclass:	VIe.

Map Unit 209: Keyner-Absted-Slickspots complex, 0 to 6 percent slopes

Location on NPR-3:	Small, isolated area of uplands near the western boundary.
Composition:	50% Keyner sandy loam; 20% Absted sandy clay loam; and 15% slickspots.
Origin:	Alkaline alluvium derived from mixed sources (Keyner soil); alluvium derived dominantly from sodic shale (Absted soil).
Drainage:	Well drained.
Hazard of Water Erosion:	Slight (Keyner and Absted soils).
Capability Subclass:	No information.

Map Unit 214: Lolite-Rock outcrop complex, 10 to 40 percent slopes

Location on NPR-3:	Small, scattered areas of uplands in the northern part of the reserve.
Composition:	60% Lolite clay and 20% Rock outcrop.
Origin:	Residuum derived dominantly from sodic shale (Lolite soil).
Drainage:	Well Drained.
Hazard of Water Erosion:	Severe (Lolite soil).
Capability Subclass:	VIIe.

Table 3-3
Soil Survey Mapping Units

Map Unit 215: Lolite, dry-Rock outcrop, 5 to 50 percent slopes	
Location on NPR-3:	Isolated area of uplands near the interior of NPR-3.
Composition:	50% Lolite clay, dry and 30% Rock outcrop.
Origin:	Residuum derived dominantly from noncalcareous, sodic shale (Lolite soil).
Drainage:	Well drained (Lolite soil).
Hazard of Water Erosion:	High (Lolite soil).
Capability subclass:	VIIe (Lolite soil).
Map Unit 256: Rock outcrop-Ustic torriorthents, shallow-Rubble land complex, 30 to 100 percent slopes	
Location on NPR-3:	Characteristic soil on the bluffs near the eastern, western, and southern boundaries.
Composition:	40% Rock outcrop; 25% Ustic torriorthents, shallow; and 15% Rubble land
Drainage:	Well to excessively well drained (Ustic torriorthents).
Hazard of Water Erosion:	Moderate to severe. (Ustic torriorthents)
Capability Subclass:	VIII.
Map Unit 278: Silhouette-Petrie clay loams, 1 to 6 percent slopes	
Location on NPR-3:	Small upland area in northwestern corner.
Composition:	50% Silhouette clay loam and 30% Petrie clay loam
Origin:	Alluvium derived dominantly from shale (Silhouette soil); alluvium derived dominantly from sodic shale (Petrie soil).
Drainage:	Well drained.
Hazard of Water Erosion:	Moderate.
Capability Subclass:	VIII.
Map Unit 283: Theedle-Shingle-Kishona complex, 6 to 40 percent slopes, gullied	
Location on NPR-3:	Small area on extreme west-central periphery
Composition:	30% Theedle clay loam, 25% Single loam, and 20% Kishona clay loam
Origin:	Slopewash alluvium and residuum derived dominantly from sedimentary rocks
Drainage:	Well drained.
Hazard of Water Erosion:	High (Theedle and Single soils); Moderate (Kishona soil)
Capability Subclass:	VIe (Theedle and Kishona soils); VIIe (Shingle soil)

Higher elevation lands approaching the peripheral ridges are mapped as Keyner sandy clay loam. These soils are deep and well drained. The hazard of water erosion is moderate. Soils on and immediately at the base of the bluffs are mapped in the Rock outcrop-Ustic Torriorthents, shallow-Rubble land complex. These areas are characterized by exposed rock, colluvial boulders, and shallow soil. (Davis, 1993a)

3.4.3 Prime and Unique Farmlands

The SCS does not presently recognize any prime or unique farmlands or farmlands of local importance within the boundaries of NPR-3 (Davis, 1993b). All soils on NPR-3

are mapped in Capability Classes IV or higher, and the majority are mapped in Capability Classes VI and higher (Davis, 1993a). The SCS defines Class IV soils as soils that have very severe limitations that reduce the choice of plants or that require very careful management, or both. The SCS defines Class VI soils as soils having severe limitations that make them unsuitable for cultivation. In general, soils in the higher numbered Capability Classes are less suitable for cultivation than soils in the lower numbered Capability Classes.

3.5 Biological Resources

3.5.1 Aquatic Biology

Aquatic habitats at NPR-3 are limited to intermittent streams within the draws, shallow perennial streams fed primarily by produced water discharged under NPDES permits, and man-made ponds. Fish have not previously been reported in the draws on NPR-3 (DOE, 1990). The Wyoming Game and Fish Department (WGFD) stocked fingerling (5 to 6 inch/14 cm) rainbow trout in two of the abandoned impoundments at NPR-3 between 1987 and 1989. Water in one of the impoundments comprises run-off from snow melt and rain, and water in the other comprises produced water originating from the Madison formation on an adjoining privately owned oilfield. One year later, the trout in the second pond had grown to 11-14 inches (28-36 cm) in length, while the first pond dried up. The following year, they had reached a length of approximately 18 inches (46 cm) (DOE, 1990).

A fish survey of the surface waters on NPR-3 has not been conducted. NPR-3 lies within the geographic range of approximately 17 fish species. Although only a few of these species (such as creek chub or killifish) would be expected in streams onsite, NPR-3 is within the watershed of the Powder River, which may contain most of these species (Page and Burr, 1991).

3.5.2 Terrestrial Vegetation

NPR-3 is located in part of North America where vegetation is characterized by shortgrass prairie. The last vegetation survey of NPR-3, performed prior to intensive development of the Reserve by the DOE in 1978, identified six major vegetation associations. These include three rangeland associations on the upland plains, two riparian associations in the bottoms of the draws, and a pine-juniper association on the peripheral ridges. (U.S. Navy, 1976)

Much of the rangeland vegetation has been physically disturbed by construction of wells, drill pads, access roads, and other DOE activity since 1978. Disturbance is generally continuous throughout certain areas of intensive activity in the center of the Reserve east of the office and warehouse complexes. Disturbance elsewhere is generally localized around scattered wells and other work areas. The pine-juniper vegetation on the peripheral ridges has not generally been disturbed by DOE operations since 1978. Except at a few road crossings, riparian vegetation in the draws has not generally been physically disturbed by DOE operations. However, riparian

vegetation downstream of NPDES-permitted points of discharge has experienced increased water flows and increased water temperatures. (Halliburton NUS, 1993)

The DOE reclaims and reseeds drill pads, flowline rights-of-way, and abandoned well sites on NPR-3, using guidelines provided by the SCS (SCS, 1992). The reseeded areas provide browse for the larger mammals, habitat for smaller animals, and reduce water and wind erosion.

The DOE presently leases the rangeland within NPR-3 for grazing. The last lease will terminate in 1998. Prior to 1986, the rangeland within NPR-3 was overgrazed (Young, 1986; Watson, 1987).

Trees at NPR-3 are largely limited to piñon pine, ponderosa pine, and juniper within small zones of pine-juniper forests on the peripheral ridges, and to a few cottonwood trees among the riparian vegetation in the draws (DOE, 1990). Except for the peripheral ridges, uplands throughout NPR-3 lack trees. No land on NPR-3 is managed for timber production (Doyle, 1993).

During the summer of 1987, and spring of 1988, a pilot project was initiated to introduce narrow leaf cottonwood (*Populus angustifolia*) and Russian olive (*Eleagnus angustifolia*) trees to NPR-3. Both species are hardy and were expected to adapt to the dry summers and cold winters. Four hundred and fifty cottonwood trees, Russian olive trees, and wouldow (*Salix* sp.) shrubs were planted along streams and ponds on the Reserve. Due to drought conditions that occurred during these years and damage done by wildlife, few of the trees survived (DOE, 1990). This project may be tried again, but using indigenous species to increase the probability of success.

3.5.3 Biotreatment Facility

In January 1996, the Biotreatment Facility constructed adjacent to the B-Tp-10 tank battery began treating produced water. The project was constructed at the discharging outfall of the majority of produced water at NPR-3. This system is the final process for waste water treatment under an issued NPDES permit allowed by the Clean Water Act. The facility consists of a mixing and skimming pit, cooling trench, aeration stairstep and surface flow wetland. The wetland contains a growth of emergent wetland plants.

The process naturally cleans produced water from the field production facilities by utilizing algae, bacteria, and plants. Water discharges from the existing B-Tp-10 pit (used as a skimming and mixing pond) through a cooling canal on the northern boundary of the pit designed to cool the produced water. Produced water then flows through a series of stairsteps for aeration and further cooling, finally reaching the constructed wetland. The water then discharges from the wetland into a lagoon and finally into an unnamed tributary to Little Teapot Creek (the original receiving waters for the B-Tp-10 discharge).

This biological treatment allows produced water from the NPR-3 oilfield to be discharged. Prior to the operation of the biotreatment facility, up to 12,000 barrels a

day of produced water were injected into the Crow Mountain reservoir at a cost of $180,000 per year. The project is beneficial to the oil industry and to the environment as a whole by lowering costs per barrel of oil produced while providing a wetland habitat and more flowing water for fisheries, livestock, wildlife and NPR-3's neighboring ranchers. The NPDES discharge parameters have consistently been met after treatment at the Biotreatment Facility.

3.5.4 Terrestrial Wildlife

The Wyoming Game and Fish Department (WGFD) maintains a database (Wildlife Observation System) of wildlife sightings throughout the state by township, range, and section. A list of species recorded in the database for those townships and ranges in the immediate vicinity of NPR-3 is provided in Table 3-4. This list also includes several other species which have been observed over the years on NPR-3 by the DOE staff and its contractors (US Navy, 1976; Stark, 1993). This does not represent a systematic inventory of terrestrial wildlife known to occur on NPR-3. According to a bird and mammal distributive study for Wyoming, approximately 222 bird species and 49 mammal species have been observed in the region containing the NPR-3 site (WGFD, 1991). NPR-3 lies within the geographic range with at least 6 amphibians and 9 reptile species (Stebbins,1985). Table 3-4 indicates recorded observations of 3 amphibian, 4 reptile, 61 bird, and 20 mammal species at NPR-3.

Pronghorn antelope and mule deer are the principal big game mammals seen at NPR-3 (DOE, 1990). The DOE does not presently allow any hunting on NPR-3 (Doyle, 1993). NPR-3 does not contain any Critical Winter Range for either antelope or deer. Range within NPR-3 is classified by the WGFD as Winter Year-Long Range for both species. The range is utilized by both species throughout the year but is not depended upon during the winter by transient deer or antelope populations that reside elsewhere during the growing season (Thiele, 1993).

Other characteristic mammal species of NPR-3 include: raccoons, striped skunk, porcupine, badger, fox, bobcat, prairie dog (three known colonies), cotton-tail rabbit, and deer mouse. Apparently common species among the variety of birds found at NPR-3 are the red-tailed hawk, American kestrel, golden eagle, horned lark, western meadowlark, Brewer's blackbird, vesper sparrow, Brewer's sparrow, lark bunting, and sage thrasher. Characteristic amphibians and reptiles found on NPR-3 include: toad species, sagebrush lizard, short-horned lizard, garter snake, and western rattlesnake (DOE, 1990; WGFD, 1991; WGFD, 1993).

3.5.5 NPR-3 Raptor Study

The office of the U.S. Fish and Wildlife Services (FWS) requested a survey of NPR-3 for possible raptors and raptor nesting sites present on the property. The survey was conducted during the month of July 1996.

Surveying began at the southern-most end of the field. Sandstone bluffs encircle NPR-3 on the south, east, and west ends. Although these bluffs are not within NPR-3

boundary lines they do border the property. Special care and attention was taken to survey these bluffs as they provide an appropriate nesting sites for raptors hunting on NPR-3. Beyond surveying the bluffs and overhead for signs of raptors, ground surveys and interviews with field personnel were also conducted for possible sightings.

Survey sightings included golden eagles (*Aquila chrysaetos*), short-eared owls (*Asio flammeus*), red-tail hawks (*Buteo jamaicensis*), northern harrier hawks (*Circus cyaneus*), bald eagle (*Haliaeetus leucecephalus*), and loggerhead shrike (*Lanius ludovicianus*). Two occupied nests were found, a golden eagle nest containing one eaglet and a red-tail hawk nest containing three fledglings. It is important to note that while a bald eagle was sited during the survey , the sighting was outside of reserve boundaries. There was no evidence that the bald eagle was nesting on NPR-3.

To ensure that Federal actions are not likely to jeopardize the continued existence of an endangered or threatened species, regulatory protection is provided under Section 7 of the Endangered Species Act (ESA) of 1973 (16 USC 1536). Results from the July 1996 survey did not identify any raptors classified as threatened or endangered species at NPR-3.

3.5.6 Ute Ladies'-tresses Orchid Survey

Surveys were completed for the Ute ladies'-tresses orchid (*Spiranthes diluvialis*) on the NPR-3 study area the first week of August and again in the third week of August 1997. Survey dates were based on site conditions and discussions with experts familiar with the ecology of this species. Survey conditions were excellent due to the abundant moisture for this year and the fact no grazing occurred onsite to affect vegetation in the study area and potential habitats. No Ute ladies'-tresses orchids were found within the study area during these surveys. Potential habitats based on hydrological criteria were abundant on the study area. However, most of these habitats were alkaline to extremely alkaline which, based on the survey guidelines, may limit the potential for this species to occur within the survey area.

3.5.7 Threatened and Endangered Species

The offices of the U.S. Fish and Wildlife Service (FWS) and the WGFD, both in Cheyenne, Wyoming, and the Nature Conservancy in Laramie, Wyoming, were consulted to determine which federally and/or state listed threatened, endangered, or candidate species or critical habitats could potentially occur at NPR-3.

In a letter dated July 7, 1997, (attached) the FWS indicated that several of the species shown in Table 3-5 could be present in the area of NPR-3. According to the FWS, the black-footed ferret (Federally-listed endangered) could inhabit prairie dog towns in the vicinity of NPR-3 (Davis, C. P., 1993). Two prairie dog colonies, each less than 100 acres (40 ha) in area, are known to occur near the northern boundaries of NPR-3 on rangeland that is undisturbed by present oil drilling operations. The colonies are large enough to potentially support the black-footed ferret. A black footed ferret survey was conducted beginning December 1, 1997 and ending March 1, 1998. No evidence of

the black-footed ferret was found during this survey. Based on the results of the survey, it appears that black-footed ferrets do not inhabit the prairie dog colonies on the NPR-3 area. The proposed land transfer is not expected to impact black-footed ferrets. (West, Inc., 1997).

A third prairie dog colony was observed near the southwestern boundary of NPR-3 on rangeland that is presently undisturbed by oil drilling operations. The area was walked off and estimated to be 150 ft. x 150 ft. One prairie dog was observed along with 15 fresh mounds. (Miles, 1997).

The FWS also indicated that the bald eagle (Federally-listed endangered) could be a winter resident or a migrant to the area of NPR-3 and that the peregrine falcon (Federally-listed endangered) could be a migrant to the area (Davis, C. P., 1993). An adult bald eagle has been observed perched on the bluffs immediately west of the administration building on NPR-3 (Soehn, 1993) and an adult bald eagle was spotted just east of NPR-3 near the entrance gate (Clark, 1996). There are no known bald eagle or peregrine falcon nests in the vicinity of NPR-3. The closest known bald eagle nests to NPR-3 are on the Platte River east of Glenrock and in Ednes Kimball Wilkens Park in Casper (Thiele, 1993).

Other Federally listed species which may be present in the project area are the piping plover and western prairie fringed orchid (Federally-listed threatened) and eskimo curlew, least tern, whooping crane, pallid sturgeon and American burying beetle (Federally-listed endangered), all of which are known to occur downstream in the Platte River system.

Table 3-5
Threatened, Endangered or Other Special Status Species
Potentially in the Vicinity of NPR-3

Common Name	Scientific Name
AMPHIBIANS	
Boreal chorus frog	*Pseudacris triseriata malculata*
Tiger salamander[b]	*Ambystomia tigrinum*
Toad sp.[c]	*Bufo sp.*
REPTILES	
Sagebrush lizard[b]	*Sceloporus graciosus*
Short-horned lizard[b]	*Phrynosoma douglassi*
Western terrestrial garter snake[bc]	*Thamnophis elegans*
Western rattlesnake[bc]	*Crotalis viridis*

Table 3-5
Threatened, Endangered or Other Special Status Species
Potentially in the Vicinity of NPR-3

Common Name	Scientific Name
FISH	
Minnow sp.[c]	*Undetermined species*
BIRDS	
American robin[a]	*Turdus migratorius*
American kestrel[ab]	*Falco sparverius*
American wigeon[ab]	*Anas americana*
American avocet[ac]	*Recurvirostra americana*
BIRDS	
Bald eagle[ac]	*Haliaeetus leucocephalus*
Black-billed magpie[abc]	*Pica pica*
Blue-winged teal[ab]	*Anas discors*
Brewer's blackbird[a]	*Euphagus cyanocephalus*
Brewer's sparrow[ab]	*Spizella breweri*
Chukar[a]	*Alectoris chukar*
Cliff swallow[a]	*Hirundo pyrrhonota*
Common poorwould[ab]	*Phalaenoptllus nuttaillii*
Common nighthawk[a]	*Chordeiles minor*
Common snipe[b]	*Capella gallinago*
Double-crested cormorant[c]	*Phalacrocorax auritus*
European starling[a]	*Sturnus vulgaris*
Gadwall[ab]	*Anas strepera*
Golden eagle[abc]	*Aquila chrysaetos*
Great horned owl[ab]	*Bubo virginianus*
Green-winged teal[ab]	*Anas crecca*
Horned lark[ab]	*Eremophila alpestris*
House wren[ab]	*Troglodytes aedon*
Killdeer[ab]	*Charadrius vociferus*
Lark bunting[a]	*Calamospiza melanocorys*

Table 3-5 Threatened, Endangered or Other Special Status Species Potentially in the Vicinity of NPR-3	
Common Name	**Scientific Name**
Lark sparrow[b]	*Chondestes grammacus*
Lesser yellowlegs[b]	*Tringa flavipes*
Loggerhead shrike[abc]	*Lanius ludovicianus*
Mallard[bc]	*Anas platyrhyndios*
McCown's longspur[a]	*Calcarius mccownil*
Mountain bluebird[ab]	*Sialia currucoides*
Mourning dove[ab]	*Zenaidura macroura*
BIRDS	
Northern shrike[a]	*Lanius excubitor*
Northern (red-shafted) flicker[a]	*Colaptes (cafer) auratus*
Northern (yellow-shafted) flicker[ab]	*Colaptes auratus*
Northern harrier[ab]	*Circus cyaneus*
Northern rough-winged swallow[b]	*Stelgidopteryx serripennis*
Pectoral sandpiper[b]	*Calidris melanotos*
Pintail[b]	*Anas acuta*
Pinyon jay[b]	*Gymnorhinus cyanocephalus*
Plover sp.[c]	*Charadrius sp.*
Prairie falcon[ab]	*Falco mexicanus*
Red-tailed hawk[abc]	*Buteo jamalcensis*
Red-winged blackbird[ab]	*Agelaius phoeniceus*
Rock wren[ab]	*Salpinctes obsoletus*
Rough-legged hawk[c]	*Buteo lagopus*
Sage sparrow[ab]	*Amphispiza belli*
Sage grouse[ab]	*Centrocercus urophasianns*
Sage thrasher[ab]	*Oreoscoptes montanus*
Say's phoebe[ab]	*Sayornis saya*
Sharp-shinned hawk[a]	*Accipiter striatus*
Short-eared owl[a]	*Aslo flammeus*
Spotted sandpiper[a]	*Actitis macularia*

Table 3-5
Threatened, Endangered or Other Special Status Species
Potentially in the Vicinity of NPR-3

Common Name	Scientific Name
Swainson's hawk[ab]	*Buteo swainsoni*
Turkey vulture[a]	*Cathartes aura*
Vesper sparrow[ab]	*Pooecetes gramineus*
Violet-green swallow[b]	*Tochycineta thalassina*
Western grebe[c]	Aechmophorus occidentalis
Western meadowlark[abc]	*Sturnella neglecta*
BIRDS	
Western kingbird[ab]	*Tyrannus verticalis*
White-throated swift[a]	*Aeronautes saxatalis*
Wilson's phalarope[a]	*Phalaropus tricolor*
MAMMALS	
Black-tailed prairie dog[a]	*Cynomys ludovicanus*
Bobcat[ac]	*Lynx rufus*
Brush-tailed woodrat[b]	*Neotoma cinerea*
Coyote[bc]	*Canus latrans*
Deer mouse[b]	*Peromyscus maniculatus*
Desert cottontail[b]	*Sylvilagus audubonl*
Eastern cottontail[a]	*Sylvilagus floridanus*
Least chipmunk[b]	*Eutamias minimus*
Mountain lion[a]	*Felis concolor*
Mountain cottontail[a]	*Sylvilagus nuttallii*
Mule deer[ac]	*Odocoileus hemlonus*
Muskrat[c]	*Ondatra zibethica*
Northern pocket gopher[b]	*Thomomys talpoides*
Porcupine[bc]	*Erethizon dorsatum*
Pronghorn[ac]	*Antilocapra americana*
Raccoon[c]	*Procyon lotor*
Red fox[ac]	*Vulpes vulpes*

Table 3-5
Threatened, Endangered or Other Special Status Species
Potentially in the Vicinity of NPR-3

Common Name	Scientific Name
Striped skunk[bc]	*Mephitis mephitis*
Swift fox[b]	*Vulpes velox*
Wyoming pocket mouse[c]	*Perognathus fasciatus*

Source: WGFD, 1993; US Navy, 1976; Stark, 1993; Soehn, 1993.
[a] Species observed within Township T 38-39N, Range R78W (on or in the vicinity of NPR-3).
[b] Species observed during survey of NPR-3, August 1975 (US Navy, 1976).
[c] Species observed by FD staff.

The FWS identified several Federal candidate species which potentially occur in the vicinity of NPR-3 (Table 3-5). The FWS is especially interested in the narrow-foot hygrotus diving beetle, which is currently known only from Dugout, Cloud, and Dead Horse Creeks, all intermittent streams in draws within a 25-mile (40-km) radius of NPR-3. (Davis, C. P., 1993; Leech, 1966)

The loggerhead shrike (Category 2) has been observed at NPR-3 and is a known breeder in the region. The ferruginous hawk (Category 2) is also a known breeder and year-round resident to the region. Suitable habitat exists at NPR-3, but there are no documented occurrences. The white faced ibis and black tern (both Category 2) have been observed within the region, but there is very little suitable habitat at NPR-3 to attract these species. The mountain plover (Category 1) has also been observed in the region but it is not known to breed in the region. Although suitable habitat exists at NPR-3, this species has not been observed. (WGFD, 1992)

There are no known threatened, endangered or other special status fish species known to occur at NPR-3. The Powder River provides important habitat for the sturgeon chub (Category 2) and the shovelnose sturgeon, both considered to be "Sensitive Species" in Wyoming. (Collins, 1993)

The Nature Conservancy maintains the Wyoming Natural Diversity Data Base (WNDDB), a data base of species sightings recorded by township, range, and section. The WNDDB has no records of threatened or endangered species within Townships 37 - 40N or Ranges 77 - 79W which constitute the area within and immediately surrounding the NPR-3 site (Neighbours, 1993). The WNDDB does contain two records of a plant species, Barr's Milkvetch (Category 2), in the area surrounding NPR-3. However, this species has been recommended for downlisting to Category 3 (not appropriate for listing as threatened or endangered) because it has been found to be more common than originally believed. The Barr's Milkvetch generally grows where vegetative cover is sparse, and is thought to prefer a whitish, sandy-silty soil that may be calcareous. (Neighbors, 1993).

3.5.8 Floodplains and Wetlands

Although Flood Insurance Rate Maps (FIRM's) are available for certain parts of Natrona County, none have been prepared for the area around NPR-3 (Keller, 1993a). The FWS prepared National Wetland Inventory (NWI) Maps for the area surrounding NPR-3 in February 1993, which document the many impoundments and reservoirs within NPR-3. Some portions of the major stream beds are also classified as wetlands.

The topography of NPR-3, characterized by gently rolling uplands punctuated by narrow draws with steep embankments, suggests that floodplains are limited to lands within the embankments of the draws. It is likely that the areal extent of floodplains on NPR-3 roughly corresponds to Map Unit 195 in the soil survey in Table 3-3. The low permeability of the sodic soils which predominate in much of the watershed of the draws (Davis, 1993a) suggests that brief but very intense floods could occur following infrequent downpours.

Wetlands and other areas at NPR-3 that are regulated under Section 404 of the Clean Water Act appear to be limited to man-made ponds, stream channels, and to certain areas within the embankments of the draws. The basins of several small impoundments constructed in the larger draws on NPR-3 during the 1920's to create reservoirs to support early oil drilling efforts (Doyle, 1993) are likely to be wetlands. No soils on the list of hydric soils compiled by the SCS for Natrona County (Davis, 1993c) or Hydric Soils of the United States (NTCHS, 1991) appear on the soil survey for areas at NPR-3 outside of the draws.

The channels of perennial and intermittent streams within the draws are regulated under Section 404 of the Clean Water Act, even if they lack vegetation and therefore do not technically meet the definition of wetlands. Available information suggests that some portions of the draw bottoms are wetlands, although further study would be required to determine exactly how much. Areas with the Flowing and Impounded (Wet) Riparian Vegetation Association, which is dominated by sedges (*Carex* sp. and *Cyperus* sp.), rushes (*Juncus* sp.), and cattails (*Typha* sp.), were likely to have met the definition of wetlands at the time that the figure was generated. Areas mapped with the Upland (Dry) Riparian Vegetation Association, which is characterized by thistle (*Cirsium flodmanii*), yarrow (Achillea *lanulosa*), goldenrod (*Solidago* sp.) and occasional grasses and grass-like species, were likely not to have met the definition of wetlands (US Navy, 1976). The distribution of riparian vegetation may have changed since 1976 in draw bottoms downstream of NPDES-permitted points of discharge.

The partial extent of wetlands within the draw bottoms is also supported by soil survey data. The soil survey mapping unit which encompasses the draw bottoms (Figure 3-3) is primarily comprised of soils in the Haverdad and Clarkelen soil series, which are not listed as hydric by the National Technical Committee for Hydric Soils (NTCHS, 1991). However, the SCS notes that inclusions of other soil series which are hydric are known to occur within Map Unit 195. (Davis, 1993c)The FWS has developed a system to classify wetlands and other waters of the United States (Cowardin, 1979). The man-made ponds discussed in Section 3.5.1 could be classified as Palustrine Open Water

(POW) wetlands. The intermittent stream channels could be classified by the FWS as Riverine Intermittent Streambeds (R4SB). The perennial stream channels could be classified as Riverine, Upper Perennial Streambeds (R3SB). Areas within the draw bottoms but outside of the channels could be classified as Palustrine Emergent (PEM) or Palustrine Scrub-Shrub (PSS) Wetlands.

3.6 Cultural Resources

Shoshoni and Sioux tribes lived on the Wyoming Plains until the 1840's, when westward movement brought settlers on their way to Oregon via the Oregon Trail. The Oregon Trail followed a portion of the North Platte River Valley through Fort Laramie, Fort Caspar, and Fort Bridger. The land on which NPR-3 is located was used as hunting grounds by Native American tribes in the area. (Halliburton NUS, 1993)

Surveys of NPR-3 which were conducted in 1976 were unable to identify specific tribal groups which may have used the property. Six areas were identified as having a concentration of flakes and/or artifacts. Only one of these areas was recommended for additional survey work in 1976, and the remaining areas were determined to be of no importance. The one area identified for additional work is located in the southeast part of NPR-3. This area was classified as lithic, ceramic scatter, with possible rock shelters. The area contained a large number of scattered tools and ceramic shards, suggesting that the area could have been occupied on a seasonal basis. All of the artifacts collected during the survey were estimated to date back to AD 400. (U.S. Navy, 1976)

During the comment period for the 1995 EA-1008, the Wyoming State Historic Preservation Office (SHPO) requested that additional surveys be done to locate cultural resources at NPR-3. The resulting Class III cultural resource inventory was completed in June 1995. The inventory identified 17 prehistoric sites, 13 isolated artifacts, and one historic site. Two of the 17 prehistoric sites are recommended for additional survey work and are considered eligible for listing on the National Register of Historic Places. Both of these sites contain hearth and rock shelter features which could provide additional information.

Petroleum development has shaped the history of NPR-3 and its immediate surroundings since the turn of the century. NPR-3 was established in 1915 in the wake of a national emphasis toward mineral resource conservation. Public versus private use of petroleum resources on these lands was a hotly contested political issue in the early 1900's, culminating in the "Teapot Dome Scandal" of 1924 (US Navy, 1976). Oil production at NPR-3 was discontinued in 1927 and did not resume again until 1959. From 1959 until 1976, oil production operations were established at NPR-3 in order to prevent the loss of oil to adjacent lands (Lawrence Allison, 1987; Halliburton NUS, 1993). In response to the oil shortages of the mid-1970's, President Carter authorized the production of NPR-3 at the maximum efficient rate (MER). Since that time, oil has been continuously pumped from NPR-3.

Teapot Dome Oil Field (Site 48NA831) has been determined to be eligible for inclusion in the National Register of Historic Places. This was confirmed by the 1995 inventory. Four additional sites sites (48NA198, 48NA261, 48NA2401 and 48 NA2403) are currently unevaluated for NRHP eligibility. These four unevaluated sites will be evaluated in 1998 or 1999. All cultural sites identified on NPR-3 will be avoided during field reclamation activities. If the property is to be transferred out of Federal ownership, DOE will work closely with the Wyoming State Historic Preservation Office to mitigate the effect of the transfer to all cultural sites on NPR-3.

Several other sites which are eligible for listing or are listed on the National Register are located close to NPR-3. These include: Casper Buffalo Trap, Casper (6/25/74); Fort Casper, Casper (8/12/71 and 7/19/76); Independence Rock, Casper (10/15/66); Martin's Cove, Casper (3/8/77); Midwest Oils Company Hotel, Casper (11/17/83); South Wolcott Street Historic District, Casper (11/23/88); Stone Ranch Stage Station, Casper (11/01/82), Teapot Rock, 6 miles SW of NPR-3 (12/30/74); and Townsend Hotel, Casper (12/25/83). (U.S. National Park Service, 1991)

3.7 Socioeconomics

3.7.1 Population and Employment

The socioeconomic study area is defined for the purposes of this EA as Natrona County (including the City of Casper and other incorporated municipalities). The estimated 1990 population of Natrona County was 61,226 (CAEDA, 1993). The estimated 1990 population of the City of Casper was 46,742, which accounted for 76.3 percent of the total population of Natrona County (CAEDA, 1993). A 1996 estimate for Natrona County predicts the population of Casper has risen to 50,308, up 7 percent from the 1990 census. There appears to be an increase for the entire county up 6 percent from the 1990 census bringing the population up to 65,154 residents. (CAEDA 1996).

Population growth in the county is expected to occur at a slow but steady rate, with the population projected to near 70,000 by the year 2000. This is a projected 13 percent increase over the 1990 total population, but is still less than the peak 1980 population of 71,856 (State of Wyoming, 1992a). This growth rate is approximately the same as that projected for the entire state, which is also expected to grow by about 6 percent over the same period (State of Wyoming, 1992a). The majority of Natrona County's population growth is expected to occur in and around the City of Casper.

Total employment in Natrona County was 32,749 for 1996 (Economic Conditions, Casper and Natrona County, 2nd Quarter, 1997). Unemployment in Natrona County during the same period was 6.3 percent, down from 6.9 percent in 1989, and slightly higher than the statewide average of 4.9 percent (Economic Conditions, Casper and Natrona County, 2nd Quarter, 1997). The largest employment sectors in the county (for non-proprietary employees) are in services (26.3%), retail trade (21.0%), government and government enterprises (19.3%), and mining and construction (14.9) which

together as of February 1995 employed 82 percent of all workers in the study area (CAEDA 1996). On a statewide level, these sectors accounted for about 62.3 percent of all jobs in 1990 (State of Wyoming, 1992b).

Average weekly income in Natrona County was $476 in the fourth quarter of 1996 up from $447/wk in the same quarter of 1995 and slightly higher than the statewide average of $465/wk for the fourth quarter in 1996 (Economic Conditions, Casper and Natrona County, 2nd Quarter, 1997).

3.7.2 Housing

Natrona County has approximately 29,082 housing units, of which approximately 69 percent are owner-occupied and approximately 31 percent renter-occupied. Within the City of Casper, the ratio is 66 percent owner-occupied to 34 percent renter-occupied (Morris, 1993). Eighteen percent of all housing units in Natrona County were vacant in 1990, compared to 14.7 percent in Casper that same year (Morris, 1993). The median home value in Natrona County in 1990 was $53,100, approximately 16 percent lower than the median value of $61,600 for the state of Wyoming. For the renter-occupied housing units, the median rent in 1990 was $252, compared to the statewide average of $270 (Wyoming State Data Center, 1992). New construction in Natrona County (as indicated by the number of building permits issued) decreased by 43 percent between 1980 and 1990, from 1,343 to 764 (CAEDA, 1992).

3.7.3 Transportation

Interstate Highway 25 provides the major north-south access through much of Natrona County, and is located approximately 8 miles (13 km) west of the NPR-3 site. Interstate 25 is a four-lane interstate highway with a median and narrow shoulders. Wyoming Route 259 is a two-lane secondary road with no median and narrow shoulders, which runs in a general north-south direction, connecting Interstate 25 with Wyoming Route 387. The NPR-3 site is accessed by a gravel road which is entered from Route 259, approximately 5 miles (8 km) south of the town of Midwest.

In 1991, the estimated Vehicles Per Day/Average Daily Totals (VPD/ADT) for Interstate 25 at the north Casper city limit was 3,710 (both directions). The VPD/ADT for Interstate 25 at Ormsby Road was also 3,710, and the VPD/ADT for Interstate 25 at Wyoming Route 259 was 3,270 in 1991. Wyoming Route 259 had an estimated VPD/ADT of 1,490 in 1991 (Leek, 1993). VPD/ADT totals show the current level of service on these road segments to be well below their carrying capacity. Traffic conditions on these roads, therefore, could be characterized as free-flowing with no congestion (Leek, 1993).

Air transportation services in Natrona County are provided at the Natrona County International Airport in Casper. The airport offers both freight and passenger services. Private airstrips are likely to exist in the county, although information concerning their exact number and location is not available (Keller, 1993b).

Rail transportation services are provided by the Burlington Northern Railroad and the Chicago and Northwestern Railroad. Both railroads run in a northwest-southeast direction and are located approximately 35 miles (56 km) south of NPR-3. Both railroads provide freight service only (no passenger service) to the Casper area.

3.7.4 Community Services

Public education in Natrona County is provided by the Natrona County School District No. 1, which has jurisdiction over the entire county. Total enrollment during the 1997-1998 school year was 12,588 students. The total number of certified teachers was 950. The district operates a total of 39 schools, including 30 elementary schools, 4 high schools, 5 junior high schools. Attendance in these schools is generally below capacity (Kirk, 1997).

Health services in Natrona County are provided by the Wyoming Medical Center in Casper, which has a maximum capacity of 225 beds.

Police protection in Natrona County is provided by the Natrona County Sheriff's Office, which has one police station and approximately 73 sworn officers (CAEDA, 1996). The City of Casper also maintains a police force, consisting of one station and approximately 75 sworn officers (Taylor, 1997).

Fire protection services in the county are provided by the Natrona County Fire Department, which has 1 fire station and 9 full-time firefighters (Baker, 1997). Additional fire protection is provided by 6 volunteer fire departments, which are located throughout the county. Fire protection services for NPR-3 are provided by the Midwest and Edgerton volunteer fire departments, approximately 15-20 minutes away (Sullivan, 1993). The City of Casper Fire Department consists of 5 stations and 69 firefighters (Miller, 1997).

The chief provider of electric service in Natrona County is the Pacific Power & Light Company. Gas service is provided by K N Energy, Inc. (CAECA, 1996).

Municipal water for the city of Casper is derived from the North Platte River and local wells, and is treated locally by chlorination. Total capacity is 40 million gal (151,000 m^3)/day, with a storage capacity of 21.5 million gallons (81,400 m^3). Peak demand is 28 million gal (106,000 m^3)/day (CAECA, 1996). The town of Midwest receives its potable water from Casper through an underground pipeline, and Edgerton has three main wells which supply the town with water (U.S. Navy, 1976).

The Casper sewage treatment system serves the Casper metropolitan area. The system consists of primary and secondary treatment, chlorination and chlorine removal. The current capacity is 14 million gal (52,990 ^{M3})/day and the current load is 6 million gal (22,710 m^3)/day. (CAECA, 1996)

Residential garbage collection in the city of Casper is provided primarily by the City of Casper. Private hauling services are provided in Natrona County by BAI, as well as

other smaller garbage haulers. The county has three landfills: in Casper, Alcova, and Midwest. (Dundas, 1993)

3.8 Waste Management

3.8.1 Hazardous Waste

The Resource Conservation and Recovery Act (RCRA) (42 USC 9601-9675 et. seq.) regulates the treatment, storage, and disposal of solid waste (both hazardous and non-hazardous). Much of the waste generated at the site is exempt under 40 CFR 261.4 (b)(5), which defines the following solid wastes as exempt from the designation of hazardous: "drilling fluids, produced waters, and other wastes associated with the exploration, development, or production of crude oil, natural gas, or geothermal energy". Crude oil, natural gas, and associated liquid petroleum gasses (LPG) are produced at NPR-3. (Lawrence Allison, 1987)

NPR-3 is listed as a conditionally exempt small quantity generator under RCRA. As such, NPR-3 could generate no more than 100 kg (220 lb) of hazardous waste per month and total on-site accumulation could not exceed 1,000 kg (2,205 lb) of hazardous waste, or 1 kg (2.2 lb) of acutely hazardous waste, at one time.

Drilling and production wastes at NPR-3 include oil, water, drilling mud, cuttings, well cement, produced waters, and sediments and sledges from produced water pits. Oil from wells is routed to test satellites and tank batteries, and water from the tank batteries is discharged into pits or injected into a USC-permitted well. This water contains residual oil. Other RCRA-exempt wastes generated at NPR-3 include sediment and tank bottoms from pits and storage tanks, pigging wastes, soil contaminated with crude oil, and spent filters (DOE, 1992b).

In accordance with the Superfund Amendment Reauthorization Act (SARA) Title III, chemicals are evaluated to determine if any are listed as extremely hazardous substances, and if any of these are utilized at NPR-3 in reportable threshold planning quantities (TPQ). NPR-3 submits annual Tier II reports for items such as treating chemicals, hydrochloric acid, gasoline, diesel fuel, ethylene glycol, propane, and butane-gasoline mixture. The current maximum quantity of all chemicals stored at NPR-3 at any given time is 25,000 gallons (95 m^3) (DOE, 1990). Table 3-6 lists substances currently used at NPR-3 and the approximate annual usage.

There are three Underground Storage Tanks (USTs) at NPR-3: one 4,000 gallon (15.1 m^3) diesel tank, one 4,000 gallon (15.1 m^3) gasoline tank, and one 2,000 gallon (7.6 m^3) gasoline tank. Two other USTs were on-site: one 1,260 gallon (4.8 m^3) used oil tank and one 2,000 gallon (7.6 m^3) methanol tank, but these have since been removed. (Fosdick, 1990; FD Services, 1993)

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 USC 9601-9675 et. seq.), establishes liability, compensation, clean-up,

and emergency response by the Federal Government for hazardous substances released into the environment and for the clean-up of inactive hazardous waste disposal sites. A Phase I study of the site was completed in 1987 (Lawrence Allison, 1987). A Phase I study is designed to evaluate site history and records to locate and identify hazardous waste disposal sites. Historically, a variety of CERCLA-regulated substances have been used at NPR-3 (Table 3-7).

Other substances used in the past on NPR-3 include additives to drilling mud (crude oil, quebracho, phosphate), dehydrators (sulfonated oleic acid), aromatic solvents, emulsion breakers, polymers, oxyalkyl phenols, glycol, and isopropyl alcohol.

3.8.2 Pesticides

Onsite personnel began using the general-use herbicides Roundup, Banvil and Karmex for clearing parking lots, fence lines and areas around production equipment and buildings. Herbicides are stored in a shed at the chemical dock. Herbicides are purchased in small quantities and return agreements made with vendors whenever possible to limit the amount stored onsite.

3.8.3 Radioactive Waste

NPR-3 generates radioactive waste which is classified as "Naturally Occurring Radioactive Material" (NORM). These wastes are the by-products of oil and gas production in an area with naturally high radioactivity in the subsurface (UNC Remediation, 1990). Tests done to detect NORM have indicated a NORM level below proposed State limits.

The project also uses logging tools, which contain sealed radioactive sources, to measure the properties of the rock formations. In the event of an accident involving a sealed radioactive source, emergency procedures have been coordinated between the DOE, Contractor, and owner of the tools. These procedures would be used to minimize the potential exposure to radiation, and ensure that the source is properly contained. Small amounts of liquid radioactive tracers are also occasionally used. These isotopes are specially selected for their short half-life and quick decay.

3.8.4 Waste Disposal

Disposal sites at NPR-3 include an industrial solid waste landfill, reserve pits and, injection wells (DOE, 1992). Past disposal practices are fully covered in the Phase I study (Lawrence Allison, 1987) and are repeated here only when clarification is needed.

Thirteen solid waste disposal areas have been identified on the property. Eleven of these sites were used for non-hazardous waste. Two sites were used for the disposal of drilling mud (Lawrence Allison, 1987). Presently, NPR-3 has one industrial solid waste landfill which is 7.55 acres (1.9 ha) in size. The landfill is currently in Phase I,

which consists of the eastern third of the landfill (FD Services, 1992c). The landfill would be closed as a part of this plan.

Table 3-6
Substances Presently Used at NPR-3

Substance	Monthly Amount (gal)	Use
NALCO 97K037	110.0	Paraffin Control
NALCO EC1137A	45.0	Corrosion Inhibitor
NALCO EC1348A	45.0	Biocide
NALCO EC2007A	142.5	Demulsifier
NALCO EC2043A	34.5	Desalting Emulsion Breaker
NALCO EC6027A	165.0	Water Clarifier
NALCO EC9041A	8.0	Surfactant
NALCO EC9044A	110.0	Acid (HCl) Treat Steam Flood Wells
Solvent	700.0	Parrafin Control
Ethly Mercaptan	0.5	Stenching Propane
NALCO 3403	0.5	Corrosion Inhibitor
NALCO 1073	2.0	pH Conditioner

Notes: Substances are noted by Manufacturers name. Usage rate is based on gallons per month.

Table 3-7
Hazardous Substances Historically Used at NPR-3

Substance	Approximate Dates of Usage	Use
Caustic Soda (Anhydrous sodium hydroxide)	1940-1950, 1970's- 1980's, 1993-Present	Treatment of native mud, drilling additive, water treatment plant
Chrome lignosulfonate	1960's	Corrosion inhibitor
Hydrochloric Acid	1950's - Present	Cleaning of wells and flowlines
Sodium chromate	Late 1970's	Drilling additive
Sodium bichromate	Late 1970's	Drilling additive
Xylene	Unknown to present	Well production
Ethylene glycol	Unknown to present	Gas processing
Methanol	Unknown to present	Gas processing
n-butyl alcohol	Unknown to present	Well production

The NPR-3 industrial landfill is operated in a trench-and-fill method. The total landfill capacity is 15,500 cubic yards (11,900 cubic meters) (DOE, 1992; FD Services, 1992c). Industrial waste entering the landfill includes office waste, shipping boxes, oil-absorbent pads and booms, water filters, and other non-hazardous RCRA-exempt wastes. Special wastes entering the landfill include gas plant glycol filters and an occasional bag of unused non-hazardous chemicals such as potassium chloride or polyacrilimide (FD Services, 1992c). Spent iron sponge was disposed of three times in the last seven years with WYDEQ approval. However, iron sponge is no longer used at the gas plant, and has been replaced by Sulfatreat (FD Services, 1992c). Recycling of scrap metal, office paper, and aluminum cans is part of the Waste Minimization Program. In addition to the landfill, there is a landfarm which is used for the treatment of oil-contaminated soil. (FD Services, 1992c)

At the present time, NPR-3 contracts for solid waste collection and disposal. One 30-yard roll-off container is stationed in the field and is picked up and hauled to Casper as needed. On-going labor costs for operation and maintenance of the facility makes daily operation of the landfill impractical. Even though most of the solid waste is hauled offsite, the landfill/landfarm remains in operation to maintain the WYDEQ permit, for treating oil-contaminated soils and for disposing of large quantity waste such as tank bottoms and empty sacks from drilling and workover operations.

Reserve pits handle wastes generated during well drilling, completion and workover (DOE, 1992). There are also four injection (disposal) wells on-site, used for backwash water from the water softener, produced water from oil reservoirs, and for disposal of other exploration and production (E&P) exempt wastes. Finally, there is a Bad Oil Facility which is used to hold oil for recycling, and sludge recovered from drilling pits, well servicing, tank and treater cleaning. Sludge from the Bad Oil Facility is collected in aboveground storage tanks and then applied to roads on-site in accordance with permits issued by WYDEQ (DOE, 1992).

3.9 Summary of the Affected Environment

The affected environment at NPR-3 considered by this Sitewide EA is summarized in Table 3-8.

Table 3-8
Summary of Affected Environment

LAND RESOURCES	**3.1**	
Land Use	3.1.1	Intensive development in central third, scattered development in northern third, little or no development in southern third and on bluffs.
Aesthetics	3.1.2	Typical of oilfields. Cleaner than most.
Recreation	3.1.3	No recreational facilities within or adjoining NPR-3

Table 3-8
Summary of Affected Environment

AIR QUALITY AND ACOUSTICS	**3.2**	
Meteorology and Climate	3.2.1	Semi-arid with approximately 9 to 12 inches (23-30 cm) of precipitation annually; average low temperature in winter about 0°F (-18°C); average max temperature in summer 80 to 85°F (27-30 °C).
Air Quality	3.2.2	H_2S emissions from EOR activities.
Acoustics	3.2.3	Typical of oilfields.
WATER RESOURCES	**3.3**	
Surface Water Quantity	3.3.1	Ephemeral and intermittent streams in draws, small man-made ponds.
Ground Water Quantity	3.3.2	No high quality freshwater aquifers under NPR-3.
Surface Water Quality	3.3.3	Oil well production water discharged to draws under NPDES permits from WYDEQ.
Ground Water Quality	3.3.4	Water injection under UIC permits from WYOGCC.
Potable Water	3.3.5	Purchased from town of Midwest.
GEOLOGY AND SOILS	**3.4**	
Geology	3.4.1	Series of oil-bearing strata (reservoirs), several faults evidenced by the draws, seismically inactive.
Soils	3.4.2	Highly alkaline and saline soils derived from alkaline parent materials.
Prime Farmlands	3.4.3	None present within NPR-3 according to USDA Soil Conservation Service.
BIOLOGICAL RESOURCES	**3.5**	
Aquatic Biology	3.5.1	No fish reported in ephemeral and intermittent streams. One stocked pond exists at NPR-3.
Terrestrial Vegetation	3.5.2	Primarily rangeland, small areas of riparian vegetation (in draws) and pine-juniper forest (on bluffs). No forest management.
Biotreatment Facility	3.5.3	Biological treatment of produced water. Effluent discharged under existing NPDES permit. Provides wetland habitat.
Terrestrial Wildlife	3.5.4	Typical of eastern Wyoming; No hunting or active wildlife management.
Raptor Study	3.5.5	No evidence that raptors classified as threatened or endangered were nesting on NPR-3.

Table 3-8
Summary of Affected Environment

Ute Ladies'-tresses Orchid Survey	3.5.6	Potential habitats based on hydrological criteria were abundant however, most were alkaline to extremely alkaline which may limit the potential for this species to occur on NPR-3.
Threatened and Endangered Species	3.5.7	Federally-listed species possible: Blackfooted ferret, bald eagle (sighted, but no known nest within NPR-3), peregrine falcon. Previous blackfooted ferret survey negative.
Floodplains and Wetlands	3.5.5	Narrow zones within draws.
CULTURAL RESOURCES	**3.6**	Evidence of previous habitation by Native American tribes (likely Shoshoni and Sioux); Historical value of site due to Teapot Dome scandal in 1920's.
SOCIOECONOMICS	**3.7**	
Population and Employment	3.7.1	Natrona County characterized by slow population growth and unemployment rates similar to the state average.
Housing	3.7.2	No housing at NPR-3; housing availability abundant in Natrona County.
Transportation	3.7.3	All public highways servicing NPR-3 are free-flowing with no congestion.
Community Amenities	3.7.4	No shortages in Natrona County.
WASTE MANAGEMENT	**3.8**	
Hazardous Waste	3.8.1	Small quantities present at NPR-3. Off-site disposal if required.
Pesticides	3.8.2	Small quantities used and stored onsite at chemical dock.
Radioactive Waste	3.8.3	Only concern is low level of naturally occurring radioactive material (NORM's) generated by oil and gas production operations. Past tests show that the site is below proposed State limits for NORM.
Waste Disposal	3.8.4	Small quantities of waste disposal at the following on-site facilities: industrial solid waste landfill, reserve pits, injection wells, and bad oil facility.

4.0 ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES

Section 4.0 discusses environmental consequences (impacts) that could result from implementation of the Proposed Action and each alternative. The potential impacts of the Proposed Action are presented first. For each potential impact identified, specific mitigation measures have been proposed that would render the impact inconsequential. No potential impacts to any resource area from the Proposed Action have been identified for which practicable mitigation measures could not be developed.

Resource areas are addressed in the same order as the affected environment discussions in Section 3.0: land resources (Section 4.1), air quality and acoustics (Section 4.2), water resources (Section 4.3), geology and soils (Section 4.4), biological resources (Section 4.5), cultural resources (Section 4.6), socioeconomics (Section 4.7), and waste management (Section 4.8). The discussion under each resource area includes environmental consequences (impacts) and mitigation measures. Section 4.9 covers a brief discussion of cumulative impacts.

4.1 Land Resources

4.1.1 Land Use

Environmental Consequences of the Proposed Action: Under the Proposed Action, approximately 900 wells would be plugged, abandoned, and respective well pads restored to natural habitat. An estimated 30 surface facilities would be dismantled and reclaimed in the same manner. Roughly 540,000 feet of electrical distribution systems and 1,200 associated electrical poles would be dismantled along with reclaiming around 286 acres of road, and 30 abandoned pits. All previously disturbed acreage would be returned to natural habitat. Livestock grazing would cease during the summer months due to the potential damage grazing may cause to newly seeded locations. Summer grazing activities may resume after reclamation of NPR-3 is complete.

A limited number of new wells may be drilled to accommodate the development of the Rocky Mountain Oilfield Testing Center. Land disturbance due to drilling activities would be minimal. Most land disturbance would be confined to the particular well pad on which testing activities would be taking place.

> Mitigation Measures: Disturbed areas would be mitigated in accordance with recommended reclamation procedures included in this plan cooperatively developed for NPR-3 by DOE and the Wyoming Oil and Gas Conservation Commission. Remaining areas used for testing purposes would be revegetated upon completion of those activities or when wells selected for testing purposes no longer meet the evaluation criteria applied to wells having high experimental value.

Environmental Consequences of No-Action Alternative: Under the No-Action Alternative, existing wells and facilities would continue to operate until the costs to lift a barrel of oil exceed the revenue gained on a well-by-well basis. There would be no newly disturbed acreage, resulting in slightly lower levels of fugitive dust and less disturbance of natural habitat. Roads and facilities would be reclaimed to natural habitat as wells become uneconomical to continue production.

Mitigation Measures: There are no mitigation measures required under this alternative.

Environmental Consequences of Decommissioning Alternative: Under this alternative, NPR-3 would cease production and begin environmental restoration. The level of activity would remain relatively high for 3 years while restoration and decommissioning occurs, but would cease at the completion of remedial action.

Mitigation Measures: There are no mitigation measures required under this resource

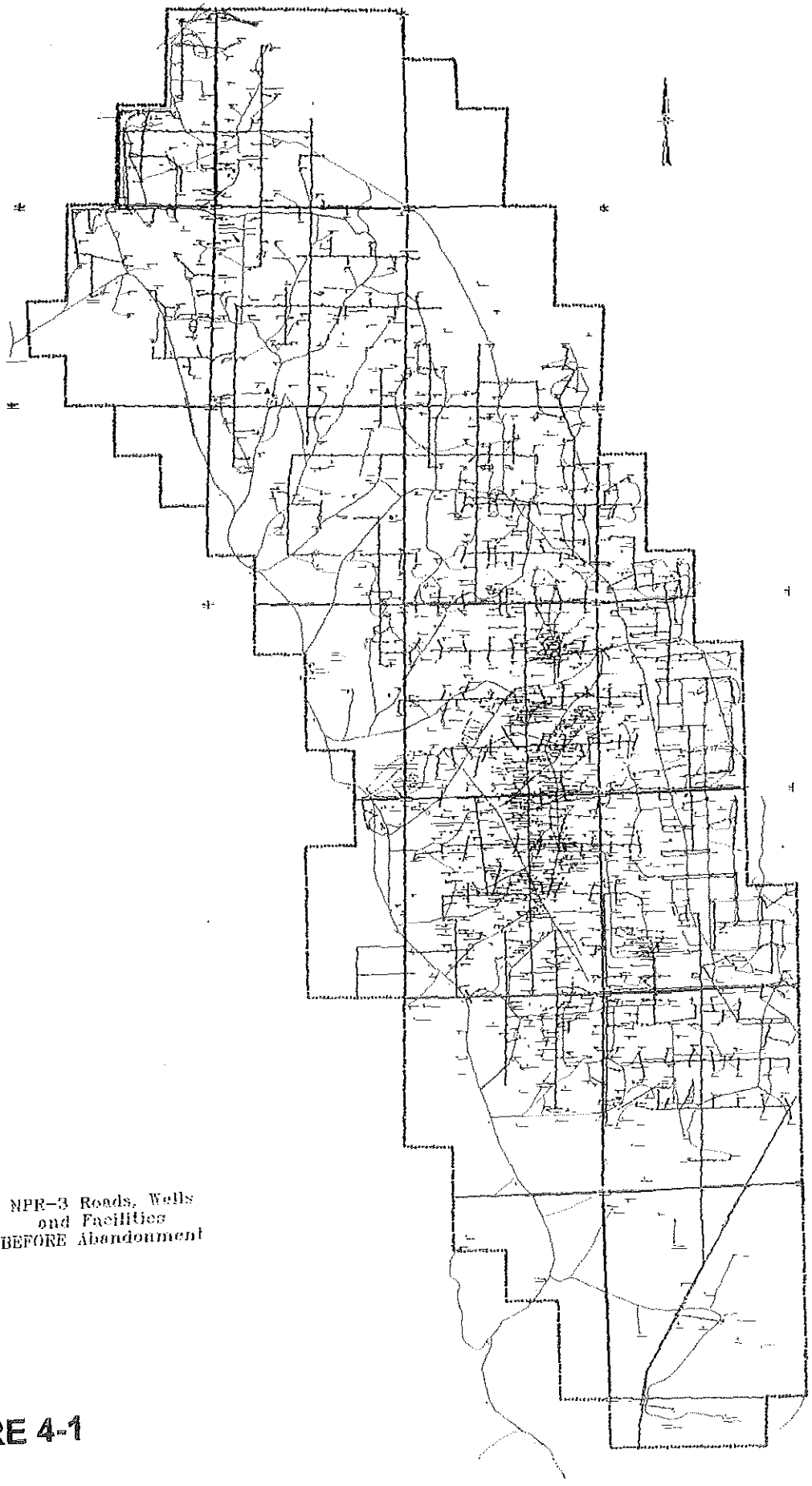
Environmental Consequences of Divestiture Alternative: DOE operation of NPR-3 is expected to continue until all environmental liabilities can be mitigated. Until the abandoned wells have been plugged and the field is restored, NPR-3 retains a negative value to potential owners.

Mitigation Measures: Mitigation measures might include provisions for oversight of operations, or by cooperative agreements between the DOE and Wyoming Oil and Gas Conservation Commission. Covenants in the sale contract might also be used to ensure that long-term environmental protection continues after the sale.

4.1.2 Aesthetics

Environmental Consequences of the Proposed Action: Because of the existing state of disturbance throughout most of NPR-3 and the presence of other privately owned oilfields in the surrounding area, activities under the Proposed Action would have significant positive visual impacts. The Proposed Action would result in restoration of roads, well locations, and support facilities to natural habitat. Well locations left undisturbed for Rocky Mountain Oilfield Testing Center purposes would remain consistent with existing visual characteristics of the region. Because of the rim of bluffs surrounding much of NPR-3 the Proposed Action would not have an impact on any regional viewsheds nor would those sites be visible to the general public or from the Wyoming Highway 259 corridor.

Mitigation Measures: No mitigation measures to offset minor visual changes resulting from the Proposed Action are necessary.



NPR-3 Roads, Wells
and Facilities
BEFORE Abandonment

FIGURE 4-1

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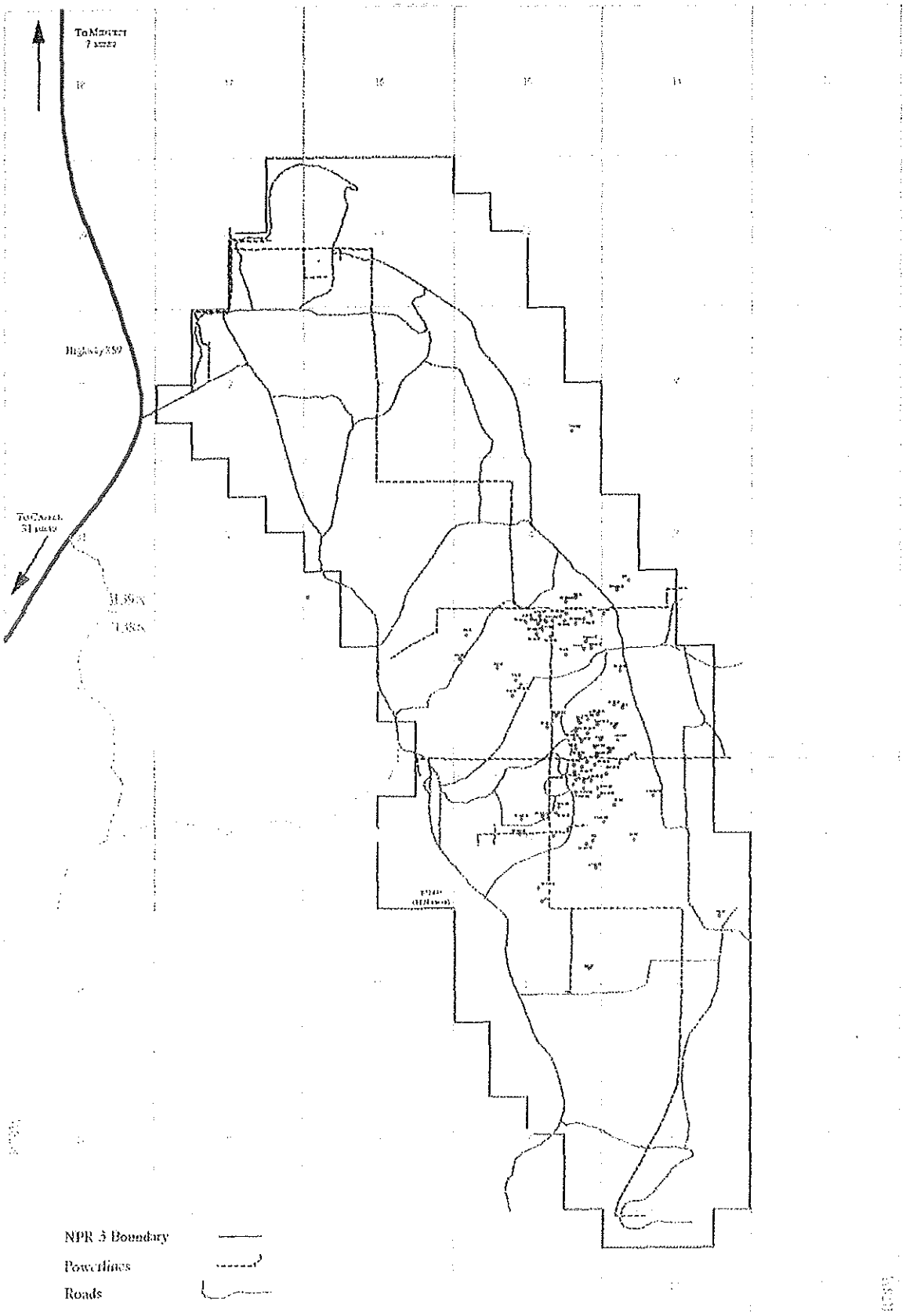

FIGURE 4-2

Naval Petroleum Reserve No. 3
Wells, Roads and Powerlines
After Abandonment

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Environmental Consequences of the other Alternatives: None of the alternatives would generate any visual impacts, for the same reasons as discussed in the Proposed Action.

Mitigation Measures: No mitigation measures to offset minor visual changes resulting from the alternatives are necessary.

4.1.3 Recreation

Environmental Consequences of the Proposed Action: There would be no impacts on recreational facilities as a result of the Proposed Action. No major recreational facilities exist at or in the immediate vicinity of NPR-3. The anticipated demand for regional recreational facilities would not be increased since work force requirements associated with restoration of NPR-3 would be reduced.

Mitigation Measures: Because there are no major existing recreational facilities that could be adversely impacted by the Proposed Action and because the Proposed Action would not increase the demand for regional recreational facilities, no mitigation measures are necessary.

Environmental Consequences of the other Alternatives: None of the alternatives would generate any impacts to recreational resources, for the same reasons as discussed in the Proposed Action.

Mitigation Measures: No mitigation measures to offset resulting from the alternatives are necessary.

4.2 Air Quality and Acoustics

4.2.1 Meteorology and Climate

Environmental Consequences of the Proposed Action: No impacts on the meteorology and climate of the region containing NPR-3 would result from the Proposed Action at NPR-3.

Mitigation Measures: Because the Proposed Action would not adversely affect the regional climate, no mitigation measures are necessary.

Environmental Consequences of the other Alternatives: No significant impacts on meteorology and climate of the region containing NPR-3 would result from adoption of any of the alternatives.

Mitigation Measures: Because the alternatives would not adversely affect the regional climate, no mitigation measures are necessary.

4.2.2 Air Quality

Environmental Consequences of the Proposed Action: Impacts on air quality from the Proposed Action would be limited. Although some petroleum operations would continue, operations are expected to be minimal in comparison to previous levels of activity at NPR-3. Emissions of air pollutants, including particulates, sulfur dioxide, carbon monoxide, hydrogen sulfide, nitrogen oxides and hydrocarbons would be well below permitted levels. Such activities may cause negligible fugitive dust levels, however, those levels would be significantly lower than levels experienced from past activities.

> Mitigation Measures: Fugitive dust emissions would be in direct proportion to disturbed acreage, and with reclamation, would not exceed the WYDEQ standard within the project area or at the boundary. During project dismantling, fugitive dust would be reduced by wetting problem areas using water obtained from the Madison formation, and by restricting vehicle travel wherever practicable. Application of crude oil sludge to the roads would continue but in lesser quantities as those roads currently receiving crude oil sludge applications are reclaimed. The application of sludge to the roads is permitted by WYDEQ for dust control.

Environmental Consequences of the No-Action Alternative: Air emissions would start at the same level and then slowly decrease in all criteria as production becomes non-profitable and related activities decrease or cease.

> Mitigation Measures: Mitigation measures would be similar to those of the Proposed Action, except that only those measures that make sense in the context of a short remaining project life would be executed.

Environmental Consequences of the Decommissioning Alternative: Most major emissions sources would stop immediately. Other sources, such as fugitive dust and hydrocarbon emissions, would cease upon completion of restoration activities.

> Mitigation Measures: No mitigation measures for the Decommissioning Alternative would be required.

Environmental Consequences of the Divestiture Alternative: It is believed that private owners would manage the project in a manner similar to current operations. Impacts would be similar to those of No-Action Alternative.

> Mitigation Measures: Mitigation measures would be similar to those of No-Action Alternative.

4.2.3 Acoustics

Environmental Consequences of the Proposed Action: Noise emissions from restoration activities and onsite operation of RMOTC activities are not anticipated to increase ambient noise levels outside of the boundaries of NPR-3. During restoration and testing activities, limited increases to ambient noise levels may potentially occur on NPR-3, and would primarily be associated with heavy equipment, drilling rigs, and vehicle traffic.

Mitigation Measures: No increase in noise levels are expected to occur from the Proposed Action outside the boundaries of NPR-3. Ongoing measures for the protection of workers' hearing inside the boundaries of NPR-3 would continue to be implemented. These measures would include the use of standard silencing packages on heavy equipment, and the use of OSHA-approved earmuffs or earplugs in designated areas or building which experience elevated noise levels.

Environmental Consequences of Alternatives: Noise levels from the alternatives would generate environmental consequences similar to those in the Proposed Action. A generally reduced level of activity would not reduce high noise levels at specific sites. However, fieldwide noise levels would decrease over time as wells were shut in and activities reduced.

Mitigation Measures: Mitigation measures would be similar to those in the Proposed Action.

4.3 Water Resources

4.3.1 Surface Water Quantity

Environmental Consequences of the Proposed Action: Water withdrawn from any surface water bodies under the Proposed Action would decrease.

The present discharges to surface water bodies (Little Teapot Creek and its tributaries) would decrease under the Proposed Action. Closure of production wells would decrease the amount of produced water currently discharged through the NPDES permit at the biological treatment facility.

Mitigation Measures: Decommissioning of support facilities, access roads and well pads would decrease storm water runoff discharges following rainfall events. The biological treatment facility would continue to operate until it is uneconomical or there are no more wells generating produced water. This facility may be used by RMOTC for future experimental wetland projects or decommissioned if no longer needed.

Environmental Consequences of the No-Action Alternative: Surface water flow would return to pre-development levels after production reaches its economic limit and decommissioning begins.

Mitigation Measures: Mitigation measures would include possible use of Madison water supply wells to compensate for lost oilfield discharges.

Environmental Consequences of the Decommissioning Alternative: Surface water flow would be quickly returned to pre-development levels.

Mitigation Measures: Mitigation measures would include possible use of Madison water supply wells to compensate for lost oilfield discharges.

Environmental Consequences of the Divestiture Alternative: Surface water impacts from a similar level of industrial activity would generate environmental consequences similar to those in No-Action Alternative. No increase in produced water discharge from the biological treatment area would be anticipated, therefore discharges would be expected to remain the same or decrease over time, as the amount of produced water decreases.

Mitigation Measures: Mitigation measures would be similar to those in No-Action Alternative.

4.3.2 Ground Water Quantity

Environmental Consequences of the Proposed Action: Because no aquifers bearing high quality fresh water exist in the immediate vicinity of NPR-3, no such aquifers can be potentially depleted or contaminated by the Proposed Action. Oil extraction by conventional technologies would decrease over time, as would the withdrawal of water from the oil bearing formations. RMOTC test projects would involve withdrawal of water from oil bearing formations. The water withdrawn from the formations is high in total dissolved solids (TDS) and hydrocarbons and is not suitable for use as potable water. In particular, the salinity of the Madison formation water renders it unsuitable as potable water, therefore no adverse competition with regional demands for potable water is possible. Since the Madison formation is deep and overlain by rigid strata not susceptible to compression, there is no potential for land subsidence due to groundwater withdrawals resulting from RMOTC test projects.

Mitigation Measures: As there are no potentially competing uses for Madison formation water or other groundwater resources present at NPR-3, and because there is no potential for land subsidence, there is no need to mitigate any potential overdraft of groundwater at NPR-3.

Environmental Consequences of the other Alternatives: No impacts on groundwater quantity at NPR-3 would result from adoption of any of the Alternatives.

Mitigation Measures: Because the Alternatives would not adversely affect groundwater quantity, no mitigation measures are necessary.

4.3.3 Surface Water Quality

Environmental Consequences of the Proposed Action: All produced water is currently pumped to the biological treatment facility and discharged through a NPDES permit into the Little Teapot Creek. The quality of this water is equal to or better than that of current discharges. The process water effluent originating from the deep Tensleep and Madison formations continue to be hot but engineering controls and the in-stream temperature rapidly cools the water to ambient temperatures through atmospheric exchange. The amount of surface water discharged through the biological treatment facility would decrease as wells are taken off of production. All discharges would continue to comply with the terms of NPDES permits. Existing NPDES permits would not be renewed as those facilities are no longer required for production operations.

Minor quantities of surface runoff may reach the streams at NPR-3. Both the quantity of and quality of this runoff is similar to that runoff presently reaching the streams. As sites are restored to natural habitat, surface runoff would decrease. Engineering controls would be instituted to ensure surface disturbance during reclamation does not result in sedimentation of the intermittent and ephemeral streams does not occur.

Spills of oil, produced water or hazardous chemicals can also affect surface water quality.

Mitigation Measures: Corrective action would be taken if monitoring detects discharges from the biological treatment facility in excess of NPDES-permit levels. Because the Water Treatment Facility would no longer be operating and well production would be decreasing over time, surface water contamination is unlikely. No mitigation measures are necessary to offset minor surface runoff. The existing Spill Prevention Control and Countermeasure Plan would be revised as needed to ensure information is current. Existing spill response procedures would be maintained to ensure spills are remedied in a timely manner. Finally, field inspections would continue to be performed regularly by environmental staff to verify clean-up and to check for undetected leaks.

Environmental Consequences of the Decommissioning Alternative: All production would cease immediately. All NPDES permits would be deactivated.

Mitigation Measures: Mitigation measures would include possible use of Madison water supply wells to make up for lost oilfield discharges.

Environmental Consequences of the No-Action Alternative: NPR-3 would continue to be out of compliance with Wyoming Oil and Gas Commission and EPA regulations for plugging and abandoning wells.

Mitigation Measures: Mitigation measures would include possible use of Madison water supply wells to make up for lost oilfield discharges.

Environmental Consequences of the Divestiture Alternative: Operation by private industry would be expected to continue largely unchanged from current practices. Therefore, surface water quality impacts would not change from the No-Action alternative.

Mitigation Measures: Mitigation measures would be similar to those in the No-Action alternative.

4.3.4 Ground Water Quality

Environmental Consequences of the Proposed Action: Dilution of the formation water present in the various oil producing formations is not expected since Steamflooding and Waterflooding EOR activities using water from the Madison and Tensleep formation would desist under the Proposed Action. Due to the depth of Madison formation water, surface activities are not expected to affect ground water quality under the Proposed Action.

Mitigation Measures: Surface facilities such as reserve pits and disposal ponds would be restored to natural habitat. Soil samples would be tested by a certified independent laboratory to ensure soil contamination is fully remediated prior to restoring sites to natural habitat. Spills of crude oil and other chemicals would be fully remediated and locations restored to natural habitat. Finally, routine groundwater monitoring would continue around the NPR-3 landfill.

Environmental Consequences of the other Alternatives: Consequences of the other alternatives are similar to those of the Proposed Action.

Mitigation Measures: Mitigation measures would be similar to those in the Proposed Action.

4.3.5 Potable Water

Environmental Consequences of the Proposed Action: The potable water demands of NPR-3 would decrease due to the Proposed Action. Water would continue to be provided from the Casper and Midwest municipal systems and monitored as it is presently.

Mitigation Measures: Mitigation measures are not necessary to offset the limited use of potable water attributable to the Proposed Action.

Environmental Consequences of the other Alternatives: Potable water requirements at NPR-3 would decrease as a result of adoption of any of the alternatives, but operation and monitoring of the potable water system would continue unchanged until decommissioning.

Mitigation Measures: Mitigation measures are not necessary to offset the limited use of potable water attributable to any of the alternatives.

4.4 Geology, Soils, and Prime and Unique Farmlands

4.4.1 Geology

Environmental Consequences of the Proposed Action: Activities under the Proposed Action would involve restoring areas of surface soil previously disturbed by construction and drilling activities to their natural habitat. Grazing would cease during the summer months under the Proposed Action because migration of livestock is difficult to control and would interfere with restoration activities. Surface soil disturbed by activities associated with RMOTC would be restored to natural habitat.

Mitigation Measures: No mitigation measures are necessary under the Proposed Action.

Environmental Consequences of the other Alternatives: No impacts to the geology of NPR-3 would result from adoption of any of the alternatives.

Mitigation Measures: Because the alternatives would not adversely affect the local geology, no mitigation measures are necessary.

4.4.2 Soils

Environmental Consequences of the Proposed Action: Activities under the Proposed Action would involve restoring areas of surface soil previously disturbed by construction and drilling activities. Severe water erosion hazards typically associated with intense downpours would be virtually eliminated. In the past, surface disturbance has been shallow and has not involved removal of large quantities of soil. Erosion in these areas has been minimal.

Summer grazing in conjunction with restoration activities would have a negative impact on the areas being restored because migration of livestock is difficult to control and it would interfere with restoration activities.

Mitigation Measures: Mitigation measures would involve restoring most areas of surface disturbance with the exception of those wells and their respective locations determined to have experimental value benefiting RMOTC operations. The greatest need for soil replacement and expanded restoration activities would occur at those locations constructed for past EOR activities. Surface soil restoration would involve replacing areas of topsoil where necessary, bio-remediation of contaminated soils and restoring locations to natural habitat.

Environmental Consequences of No-Action Alternative: No new construction or surface disturbance would occur under the No-Action Alternative.

Mitigation Measures: Mitigation measures would be similar to those in the Proposed Action.

Environmental Consequences of the Decommissioning Alternative: The project site would immediately begin decommissioning and restoration. Most surface occupancy would end. Leasing of the property for summer livestock grazing would desist.

Mitigation Measures: Mitigation measures would be similar to those in the Proposed Action.

Environmental Consequences of the Divestiture Alternative: Operation by private industry would continue largely unchanged from current practices. Therefore, soil impacts would not change from current operations.

4.4.3 Prime and Unique Farmlands

Environmental Consequences of the Proposed Action: Because no prime or unique farmlands are present within NPR-3 (Davis, 1993b), no part of the Proposed Action has any potential for impact.

Mitigation Measures: As there are no prime farmlands present on or in the vicinity of NPR-3, no mitigation measures are necessary.

Environmental Consequences of the other Alternatives: None of the proposed alternatives has any potential for impact because no prime or unique farmlands are present within NPR-3.

Mitigation Measures: As there are no prime farmlands present on or in the vicinity of NPR-3, no mitigation measures are necessary.

4.5 Biological Resources

4.5.1 Aquatic Biology

Environmental Consequences of the Proposed Action: Ground disturbance could result in a temporary increase of sedimentation of streams at NPR-3. The Powder River is already adversely affected by poor water quality from other sources other than NPR-3, and the river provides important habitat for sturgeon chubs and shovelnose sturgeon. However, as discussed in Section 4.3.3, the use of a biological treatment area for the treatment of produced water originating from NPR-3 may actually improve the quality of water discharged, thereby offsetting impacts on the Powder River system.

Mitigation Measures: Mitigation measures would be developed in consultation with the WGFD. To ensure that impacts on fisheries in the Powder River basin are minimized, WGFD has recommended that special precautions be taken to prevent the release of pollutants from work areas at NPR-3. Where effluent must be discharged under existing NPDES permits, WGFD recommends that the creation of appropriately sized wetlands be considered as a means of improving water quality. The DOE has already implemented this suggestion through the use of a biological treatment facility. As discussed previously, effluent discharged under the NPDES permit for the biotreatment facility may actually improve the quality of water discharged to the Powder River System.

Another alternative is the use of Madison water in the event that Tensleep water is no longer being produced and treated through the biological treatment area. The water from the Madison formation comes from a free-flowing well and is not pressurized through any type of engineering controls.

Environmental Consequences of the No-Action Alternative: As facilities and wells are shut in the amount of produced water discharged would gradually decrease. This would have an effect on the streams and wetlands at NPR-3, and may also have a negative effect on the aquatic organisms.

Mitigation Measures: Mitigation measures employed to protect aquatic biological resources would be similar to those of the Proposed Action.

Environmental Consequences of the Decommissioning Alternative: As facilities and wells are shut in, the discharge of produced water would cease. This would have a profound effect on the streams and wetlands at NPR-3 and their associated aquatic organisms.

Mitigation Measures: Mitigation measures employed to protect aquatic biological resources would be similar to those of the Proposed Action. Water derived from the Madison formation could be used in the event that Tensleep water is no longer being produced and treated through the biological treatment area. The water from the Madison formation comes from a free-flowing well and is not pressurized through any type of engineering controls.

Environmental Consequences of the Divestiture Alternative: Impacts of the Divestiture Alternative on surface water quality and quantity have been previously discussed. Impacts that may be expected from implementing this alternative are similar to the No-Action Alternative, although an independent operator may choose not to utilize the biological treatment facility thus the amount of water discharged into Little Teapot Creek would decrease dramatically.

Mitigation Measures: Mitigation measures employed to protect aquatic biological resources would be similar to those of the No-Action Alternative.

4.5.2 Terrestrial Vegetation

Environmental Consequences of the Proposed Action: Under the Proposed Action surface areas previously disturbed by construction and drilling operations would be revegetated. Road crossings, and utility lines and poles would be removed and restored to natural habitat. Particular care would be taken to restore riparian areas. Leasing of NPR-3 rangeland for summer livestock grazing would cease during restoration operations. Sites used for RMOTC test projects would be revegetated when it is determined those wells have no further experimental value.

> Mitigation Measures: Exposed soils would be reclaimed following a plan developed cooperatively by DOE and Wyoming Oil and Gas Conservation Commission. No summer grazing would be allowed during restoration in order to minimize grazing impacts on newly restored areas.

Environmental Consequences of the No-Action Alternative: Additional surface disturbance would be negligible. Displacement of vegetation from new construction would not occur.

> Mitigation Measures: To the extent necessary, mitigation measures would be similar to those in the Proposed Action.

Environmental Consequences of the Decommissioning Alternative: Surface disturbance would cease and the project would proceed to restoration of the original prairie.

> Mitigation Measures: To the extent necessary, mitigation measures would be similar to those in the Proposed Action.

Environmental Consequences of the Divestiture Alternative: Operation by private industry would continue largely unchanged from current practices. Therefore, soil impacts would not change from the Proposed Action.

> Mitigation Measures: Mitigation measures employed to protect vegetation would be similar to those in the Proposed Action.

4.5.3 Terrestrial Wildlife

Environmental Consequences of the Proposed Action: Natural habitat, particularly native grasses destroyed by previous construction and drilling activities would be restored. More area would be available for wildlife and future livestock grazing. Increased activity in localized parts of NPR-3 due to restoration activities would not impact the pronghorn antelope and mule deer population, whose natural mobility allows for movement throughout NPR-3 and adjoining undisturbed lands. The less mobile wildlife species (amphibian, reptiles and small mammals) would have more natural habitat available to repopulate due to the revegetation of NPR-3.

Noise generated by activities under the Proposed Action would be generally consistent with noise generated by existing activities at NPR-3. Workers at NPR-3 have noticed that antelope and deer have become conditioned to the noise (Halliburton NUS, 1993). Noise levels associated with oil drilling , restoration and demolition activities, such as those already present at NPR-3 are not unusually high for industrial operations. Noise generated by heavy equipment under the Proposed Action would be minimal. Ambient drilling noise associated with RMOTC test projects and continued production have been measured 50 feet (15 m) from a drill rig and recorded at 75 dbA (DOE, 1990).

Produced water discharged to the Little Teapot Creek under an existing NPDES permit exceeds the Water Quality Standards established by the WYDEQ.

Hydrogen sulfide (H_2S) generated during steamflooding and waterflooding operations has decreased to negligible quantities over the last two years. Monitoring still continues although, the potential for wildlife mortality is minimal.

Mitigation Measures: No mitigation measures are necessary to compensate for the increases in noise that would result from the Proposed Action. Mitigation measures for hydrocarbon exposure have been developed in consultation with the FWS and the WGFD. Most of the containment ponds would be closed, and the remaining few would be netted or closed when no longer needed for RMOTC test operations.

With the Steam Generators shut-in and no hot water flooding operations taking place, hydrogen sulfide gas is returning to safe levels. All potential sources for hydrogen sulfide gas emissions except those flares at the LTS Gas Plant have been turned off.

Finally, some utility poles would be left and nesting stands would be constructed to provide additional habitat for raptors using NPR-3 for nesting and hunting grounds.

Environmental Consequences of the No-Action Alternative: The potential impacts due to noise and hydrocarbon emissions would decrease over time as operations cease to be profitable. The generation of hydrogen sulfide gas would decrease with time as the existing steam injection patterns became uneconomic to operate. Encroachment on habitat by demolition is minimal.

Mitigation Measures: The decrease in production of hydrogen sulfide gas would require no mitigation. Reclamation of oilfield pits and other facilities hazardous to wildlife would require no mitigation.

Environmental Consequences of the Decommissioning Alternative: Since current operations would be curtailed immediately, oilfield facilities that are hazardous to wildlife would immediately shut down and be promptly reclaimed.

Mitigation Measures: Mitigation of impacts under the Decommissioning Alternative would not be required, since the impacts would not be adverse to wildlife or the environment.

Environmental Consequences of the Divestiture Alternative: Operation by private industry would continue largely unchanged from current practices. Therefore, impacts on wildlife would be similar to the No-Action Alternative.

4.5.4 Threatened and Endangered Species

Environmental Consequences of the Proposed Action: There are no Federally-listed threatened or endangered species known to consistently inhabit NPR-3. Since the bald eagle and peregrine falcon (both endangered) are rare migrants, and the black-footed ferret (endangered) is believed to be absent from the area, none of these species would be impacted by the Proposed Action.

Most of the Federal candidate species, although they occur in the region of NPR-3, are not known to exist at the NPR-3 site and thus are not expected to be adversely affected by the Proposed Action. NPR-3 lies within the breeding range and contains suitable habitat for both the mountain plover (Category 1) and ferruginous hawk (Category 2), a field study conducted in July 1996 did not reveal nests of these species on NPR-3.

The loggerhead shrike (Category 2) is the only special status species known to occur regularly at NPR-3. Loggerhead shrikes, especially the young, have been shown to be vulnerable to oil contamination from oil pits in Wyoming (Esmoil, 1991). A loggerhead shrike was sited during the July 1996 study. Under the Proposed Action, oil contamination at NPR-3 would become less of a threat to the species due to restoration of the field to natural habitat.

The sturgeon chub (Category 2) and shovelnose sturgeon (Site Sensitive) are not known to occur at NPR-3. Neither of these species were observed during the July 1996 study. The distribution of the narrow-foot hygrotus diving beetle (Category 2) is unknown at NPR-3.

Mitigation Measures: No mitigation measures are necessary under the Proposed Action.

Environmental Consequences of the other Alternatives: Continued operations under any of the proposed alternatives would result in impacts similar to those current operations. The difference would be in the remaining life of the project, and the time until the project site would be returned to its former condition.

Mitigation Measures: Mitigation measures would be similar to those used for current operations. The restoration of the project after termination of operations would require no mitigation.

4.5.5 Floodplains and Wetlands

Environmental Consequences of the Proposed Action: Pipelines and utility lines would be removed and draws would be returned to natural habitat. Wetlands receiving NPDES discharges may be impacted by the Proposed Action since many areas of wetlands within the draws owe their existence to these discharges. The manmade wetland created by the biological treatment facility would experience the greatest effect from the Proposed Action. Closure of existing wells by DOE, when they become uneconomic, would result in a decrease in water discharges through the biological treatment facility and may result in the shrinkage or elimination of some wetlands.

Since summer grazing would not take place under the Proposed Action, damage to riparian vegetation, stream banks, or fouling of surface water is not a concern.

> Mitigation Measures: DOE would investigate all practicable alternatives meeting the objectives of its mission at NPR-3 prior to even minor modifications to wetlands or floodplains. Under the Proposed Action, mitigation of lost wetlands would include the construction of nearby wetlands as compensation. Alternatively, the Madison water supply wells can continue to produce water and feed the existing wetlands at NPR-3. If an activity under the Proposed Action would adversely affect a wetland, mitigation measures would be developed in consultation with the Corps of Engineers. Since summer livestock grazing would not take place under the Proposed Action, mitigation measures are not necessary.

Environmental Consequences of the other Alternatives: Activities under the other alternatives would be conducted in a manner similar to that of the Proposed Action, in that wetlands would be generally avoided. Discharges of produced water would generally decrease with time, as production becomes uneconomic. None of the alternatives propose drilling additional wells in the Tensleep formation, thereby increasing water discharge volumes to the biological treatment facility. Mitigation of lost wetlands is covered under the Proposed Action.

> Mitigation Measures: During operation of the project, mitigation would be similar to that of the Proposed Action.

4.6 Cultural Resources

Environmental Consequences of the Proposed Action: All activities at NPR-3 would decrease and the major portion of the property would be restored to its former state. No further disturbance of the surface would occur.

> Mitigation Measures: Since no new ground would be disturbed there is no potential for disturbance of any cultural sites. All cultural sites previously identified on NPR-3 would be avoided during field reclamation activities. If the property is to be transferred out of Federal ownership, DOE will work closely

with the Wyoming State Historic Preservation Office to mitigate the effect of the transfer on all cultural sites on NPR-3.

Environmental Consequences of the Other Alternatives: New construction under the No-Action Alternative would be halted. Only minor surface disturbance would occur until decommissioning of the field. Disturbance of cultural resource sites would be avoided.

Mitigation Measures: Mitigation measures outlined in EA-1008, Continued Development of Naval Petroleum Reserve No. 3 would be used.

4.7 Socioeconomics

4.7.1 Population and Employment

Environmental Consequences of the Proposed Action: Under the Proposed Action, employment levels at NPR-3 would initially be reduced by approximately one-third and remain at or close to this level for approximately three years and then generally decline as oil production rates decline. Minor fluctuations are expected in response to project scheduling and political and economic shifts.

Mitigation Measures: Because the Proposed Action would not substantially change regional population or employment levels, no mitigation measures are necessary.

Environmental Consequences of the No-Action Alternative: Employment levels would generally decline since oil production rates would begin to decline almost immediately.

Mitigation Measures: Job retraining and severance benefits would be awarded to those employees who are displaced as a result of declining activity at NPR-3.

Environmental Consequences of the Divestiture Alternative: Private ownership of NPR-3 would result in a lower level of activity from that of current operations. A private operator would not likely use as large a work force to accomplish its goals. Unemployment would increase in Natrona County and there would likely be an adverse impact on the towns of Midwest and Edgerton.

Mitigation Measures: Although an adverse impact on employment levels might result, no mitigation of this Alternative would be possible because the new operator would not be under any obligation to mitigate staff reductions. However, it might be possible to incorporate such provisions into the sale contract.

Environmental Consequences of the Decommissioning Alternative: Adverse impact to the towns of Midwest and Edgerton would be immediate since NPR-3 is currently a significant employer for these towns.

Mitigation Measures: Qualified employees would be offered positions for the decommissioning and reclamation work. Job retraining and severance benefits would be awarded to those employees who are displaced as a result of declining activity at NPR-3, and for the remainder of the work force after reclamation is complete.

4.7.2 Housing

Environmental Consequences of the Proposed Action: Because the Proposed Action would not immediately change employment levels at NPR-3, the value of housing units in Natrona County would not be affected.

Mitigation Measures: No mitigation necessary.

Environmental Consequences of the No-Action Alternative: As employment levels decline with the oil production a slight effect might be seen in local housing values.

Mitigation Measures: No mitigation necessary.

Environmental Consequences of the Divestiture Alternative: Private ownership of NPR-3 would likely reduce the size of the workforce and could in turn result in a decline in the housing values in Midwest and Edgerton.

Mitigation Measures: Although this would be an adverse impact no mitigation of this alternative is possible because the new operator would not be under any obligation to maintain staffing levels.

Environmental Consequences of the Decommissioning Alternative: Because a significant portion of the positions at NPR-3 would be eliminated immediately this alternative would have an immediate effect on housing values in the area.

Mitigation Measures: This effect could not be mitigated.

4.7.3 Transportation

Environmental Consequences of the Proposed Action: Transportation of heavy machinery and materials to and from NPR-3 using Interstate 25 and Wyoming Route 259 would be necessary under the Proposed Action. Because the current level of service on these roads is substantially below capacity, no disruption of traffic flow would occur as a result.

Mitigation Measures: Because of the adequacy of regional transportation facilities, no mitigation measures are necessary.

Environmental Consequences of the other Alternatives: Highway traffic resulting from the adoption of any of the alternatives would be less than or approximately equal to that resulting from continued development.

Mitigation Measures: Because of the adequacy of regional transportation facilities, no mitigation measures are necessary.

4.7.4 Community Services

Environmental Consequences of Proposed Action: Because employment and population levels are expected to remain generally constant under the Proposed Action, community services in Natrona County would not be affected.

Mitigation Measures: Because of the adequacy of regional community services, no mitigation measures are necessary.

Environmental Consequences of the other Alternatives: Employment and population levels resulting from the adoption of any of the alternatives would be less than or approximately equal to that resulting from the Divestiture Alternative discussed in Section 4.7.1.

Mitigation Measures: Because of the adequacy of regional community services, no mitigation measures are necessary.

4.8 Waste Management

Environmental Consequences of the Proposed Action: Hazardous waste generated by production activities would decrease with declining oil production rates, but there would be a slight increase in hazardous waste generated by dismantling activities.

High level radioactive waste is not expected, but might be generated by an accident involving sealed radioactive sources. Naturally Occurring Radioactive Materials (NORM) would be present in production equipment in extremely low levels and below proposed state and Federal regulations.

Mitigation Measures: Mitigation measures for hazardous substances would include waste minimization, product substitution and the monitoring of usage to ensure compliance with applicable laws and regulations. Proper disposal of all hazardous and non-hazardous materials would be ensured by training and environmental compliance audits. Full disclosure would be required by all RMOTC clients to ensure any releases of hazardous substances during test operations would not have a long-term effect on the environment and could be fully mitigated.

Solid waste would be hauled offsite by a commercial hauler. The landfill and landfarm would be closed, reclaimed and long-term monitoring as required by WYDEQ would begin.

Mitigation for high level radioactive wastes would include training in operational procedures intended to prevent accidental releases. Prompt and effective spill response would minimize the quantity of waste generated in the event of a release.

NORM would be mitigated by continuing to assess the extent of its occurrence at NPR-3. If it is found to be at regulated levels, a scale prevention program would be investigated as a means to prevent the deposition of NORM-containing carbonate/sulfate scale. Inspection procedures would ensure that contaminated equipment is discovered, decontaminated, and that disposal of the NORM debris is properly administered.

Environmental Consequences of the No-Action Alternative: Impacts are similar to those discussed in the Proposed Action.

Mitigation Measures: Mitigation measures would also be similar to those in current practice. At decommissioning, a priority would be placed on salvaging and auctioning the decommissioned equipment. Other materials would be recycled as market conditions permitted.

Environmental Consequences of the Decommissioning Alternative: At the point of decommissioning, generation rates for all types of wastes would dramatically increase as facilities are dismantled.

Mitigation Measures: At decommissioning, a priority would be placed on salvaging and auctioning the decommissioned equipment. Other materials would be recycled as market conditions permit.

Environmental Consequences of the Divestiture Alternative: Operation by private industry would continue largely unchanged from current practices. Therefore, volumes of waste generated would not be expected to change from current operations.

Mitigation Measures: Private industry would be required to meet the same local regulations, therefore no mitigation is necessary.

4.9 Cumulative Impacts of the Proposed Action and Alternatives

The cumulative impacts of plug and abandonment of wells, field restoration and development of the Rocky Mountain Oilfield Testing Center under the Proposed Action are expected to be minimal if any. Most areas within NPR-3 previously used for petroleum development and extraction would be restored to natural habitat. The number of operating wells would decrease by 75 percent over the next six years. By

employing environmentally sound restoration techniques, engineering controls where necessary, and mitigation practices, adverse impacts associated with RMOTC test projects would be negligible.

The environmental impacts of the No-Action Alternative would slowly decrease as wells and facilities were shut in and abandoned as production rates declined.. Coinciding with the decrease in environmental impacts would be a rise in socioeconomic impacts from the resultant reduction in force. Again, the reduction of staffing levels at NPR-3 would have a negative effect on the economy of the surrounding communities, especially Midwest and Edgerton. A skeleton staff would be required for environmental monitoring and compliance activities but additional staff for reclamation activities would not be necessary. As a result as many as two-thirds of the staff would be displaced. Although most of these impacts could be mitigated through career placement programs and other methods, the impacts on local housing values could not be mitigated. Additionally, the No-Action Alternative would not be consistent with the Congressional mandate to operate NPR-3 at the MER.

The cumulative impacts of the Decommissioning Alternative would be similar to those of the Proposed Action and the No-Action Alternative, except that the rates of all impacts would be increased. Under this alternative, operations at NPR-3 would cease immediately. Therefore, negative impacts on the socioeconomics of the region would also be immediate. Although most of these impacts could be mitigated through career placement programs and other methods, the impacts to local housing values could not be mitigated.

Divestiture of NPR-3 would produce individual impacts similar to those of the Proposed Action in regard to environmental concerns, however, the socioeconomic impacts would be greater. The methods that would be used by a private operator to manage NPR-3 may be similar to those proposed under the Proposed Action, but the number of employees required may be less. The resultant impacts from a reduction in force would be felt by all of the surrounding communities.

The greatest cumulative impact from the Divestiture Alternative, however, would be the difficulty in ensuring mitigation of the impacts of routine oilfield operation. Effects that would be detrimental to the environment, but that are not regulated by Federal, state or local laws, would be difficult, if not impossible, to mitigate even through covenants attached to the sale of the property.

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APPENDIX A - RESPONSE TO COMMENTS

The following concerns and comments were noted during the public comment phase. Each issue is listed below and is immediately followed by a response, in bold. Copies of all letters received appear at the end of this section.

Issues raised by the Wyoming State Historic Preservation Office (SHPO).

1a. The first issue pertains to four unevaluated cultural resource sites (48NA198, 48NA261, 48NA2401, and 48NA2403). The Wyoming SHPO is requesting DOE have these sites evaluated prior to any determination of effect.

DOE has agreed to have these sites evaluated in 1998 or 1999.

1b. In Section 4.6 (pp 4-17 and 4-18) DOE indicates that no previously undisturbed ground will be disturbed.

This is true, no undisturbed ground will be disturbed. DOE intends to return as much of Naval Petroleum Reserve No. 3 (NPR-3) as possible to its natural state. Although this would involve disturbing previously constructed areas such as roads, well sites and facilities, these activities do not encompass any of the cultural sites identified on NPR-3.

1c. How would the 3-D seismic survey as mentioned in the "Teapot Dome Transition Plan, Privatization by 2003" affect the eligible and unevaluated cultural resources.

Page 11 of the transition plan specifically mentions conducting seismic testing on sections three and ten. The 1995 cultural resources survey did not identify any archeological sites present in these sections. The nearest site is located in the northeast corner of section 15 which is adjacent to section 10. This site consists of a stone circle and two lithic artifacts. It is unlikely that seismic operations would adversely affect this site. However, if it is determined that conducting seismic testing in section 10 would degrade the integrity of this site, an alternate section could be used.

1d. Section IV of the Teapot Dome Transition Plan indicates NPR-3 would be transferred to different ownership. It is unclear whether this area will be transferred to another Federal Agency or into private or state ownership. In accordance with Advisory Council Regulations 36 CFR Part 800.9(5), the transfer [out of Federal ownership], lease, or sale of property is considered an "adverse effect" to historic properties.

This EA is not intended to cover the actual transfer of NPR-3, only the measures DOE would take to prepare the property for future transfer. Another EA will be prepared around the year 2000 to address the final

transfer of the property if this is mandated by Congress. If the property is to be transferred out of Federal ownership, DOE would work closely with the Wyoming SHPO to mitigate the effect of the transfer to all cultural sites on NPR-3.

2. Concerns were raised by adjacent landowners Buck Allemand and Mary Owens over DOE's plan to build a new main access road since portions of the existing road cross the Owens' property. They also expressed concern regarding future grazing leases on NPR-3.

   Department of Energy representatives met with Buck Allemand and Mary Owens. It was decided that the most cost effective solution for everyone was for each party to grant the other an easement and keep the existing road. DOE also explained to Mary Owens who currently holds a grazing lease on NPR-3, grazing would not be allowed during the spring and summer months. DOE agreed to allow grazing during November, December, January, February and March.

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DIVISION DIRECTOR
Karyl Denison Robb, Ph. D.

WYOMING

RECEIVED
FEB 23 1998
NP & WYO

DIVISION OF CULTURAL RESOURCES

State Historic Preservation Office
6101 Yellowstone Road
Cheyenne, WY 82002

(307) 777-7697
FAX (307) 777-6421

February 24, 1998

Clarke D. Turner, Director
Department of Energy
Naval Petroleum and Oil Shale Reserves
907 N. Poplar, Suite 150
Casper, Wyoming 82601

RE: Predecisional Sitewide Environmental Assessment, EA-1236, for Transfer of Ownership of Naval Petroleum Reserve No. 3 (NPR-3), Natrona County, Wyoming; SHPO #0193JKW012

Dear Mr. Turner:

Richard Currit of our staff has received information concerning the aforementioned project. Thank you for allowing us the opportunity to comment.

On page 3-23 of the Environmental Assessment (EA) it is correctly reported that site 48NA831, the Teapot Dome Oil Field, and two prehistoric sites (48NA182 and 48NA199) have been determined to meet the criteria of eligibility for the National Register of Historic Places (NRHP). However, this section does not mention the fact that four additional sites (48NA198, 48NA261, 48NA2401 and 48NA2403) are currently unevaluated for NRHP eligibility. These four unevaluated sites need to be evaluated prior to any determination of effect.

Pages 4-17 and 4-18 indicate that no previously undisturbed ground will be disturbed. However, the Executive summary (page i) indicates that during reclamation activities "Roads, Facilities, batteries, and well sites would be ripped up, recontoured, disked and seeded with native vegetation." It is unclear whether or not the previously mentioned eligible and unevaluated sites will be avoided by these activities. We ask that information concerning the relationship of these activities to the aforementioned cultural resources be provided to our office.

In addition, the "Teapot Dome Transition Plan, Privatization by 2003" indicates that the entire NPR-3 area will be analyzed by 3-D seismic operations. Will the eligible and unevaluated cultural resources be avoided or affected by this operation? We will need to review this information prior to a determination of effect for this project.

The final phase of this project, Section IV of the Teapot Dome Transition Plan, is the transfer of the NPR-3 area to different ownership. At this time it is unclear whether this area will be transferred to another Federal Agency, or into private or state ownership. In accordance with Advisory Council Regulations 36 CFR Part 800.9(5), the transfer, lease, or sale of property is considered an "adverse effect" to historic properties. If this land is to leave federal management mitigative measures for the eligible sites will need

to be developed, in consultation with our office, prior to the transfer of this property. Additionally, the unevaluated sites will need to be evaluated for NRHP eligibility to determine if mitigative measures will be necessary.

The cover letter for this EA indicates that this undertaking will have "no effect" to historic properties. We feel that insufficient information is currently available to make an effect determination. Further consultation with our office will be required to determine the eligibility of the four currently unevaluated prehistoric sites, and to determine the effect of the planned activities.

Please refer to SHPO project control number #0193JKW012 on any future correspondence dealing with this project. If you have any questions contact Richard Currit at 307-777-5497 or me at 307-777-6311.

Sincerely,

Judy K. Wolf
State Historic Preservation Officer
for
John T. Keck
State Historic Preservation Officer

JTK:RLC:jh

APPENDIX B - SECTION 107 OF ENDANGERED SPECIES ACT

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
4000 Morrie Avenue
Cheyenne, Wyoming 82001

ES-61411
eob/W.35(navalpet.doc)#1016

July 7, 1997

RECEIVED
JUL 10 1997
NPR-3 WYO

David Miles
REM/NEPA Compliance Officer
NPOSR-CUW
907 N. Poplar, Suite 150
Casper, Wyoming 82001

Dear Mr Miles:

Thank you for your letter of May 26 requesting a list of threatened and endangered species that may exist in and around Township 38 and 39 North, Range 78 West, in Natrona County, Wyoming.

Threatened and Endangered Species: In accordance with section 7(c) of the Endangered Species act of 1973, as amended (ESA), the following threatened or endangered species may be present in the project area.

Bald eagle (*Haliaeetus leucocephalus*)	Threatened	Nesting, winter resident, migrant
Peregrine falcon (*Falco pererginus*)	Endangered	Nesting, migrant
Black-footed ferret (*Mustela nigripes*)	Endangered	Potential resident in prairie dog colonies
Ute Ladies-tresses[1] (*Spiranthes diluvialis*)	Threatened	Platte River drainages below Casper, Cheyenne and Niobrara drainages

If your proposed action will lead to water depletion (consumption) in the Platte River System, these species may be present or effected:

Piping plover (*Charadrius melodus*)	Threatened	Downstream resident of Platte River system
Ute ladies'-tresses[1] (*Spiranthes diluvialus*)	Threatened	"

Wester prairie fringed orchid (*Platanthera praeclara*)	Threatened	"
Eskimo curlew (*Numenius borealis*)	Endangered	"
Least tern (*Sterna antillarum*)	Endangered	"
Whooping crane (*Grus americana*)	Endangered	"
Pallid sturgeon (*Scaphirhynchus albus*)	Endangered	"
American burying beetle (*Nicrophorus americanus*)	Endangered	"

From the information provided it is impossible to determine if prairie dog towns occur within the proposed project area. Black-footed ferrets may be effected if prairie dog colonies are impacted. All prairie dog towns are considered potential habitat for black-footed ferrets and such areas should be avoided if possible. If black-tailed prairie dog (*Cynomys ludovicianus*) colonies or complexes greater than 79 acres or white-tailed prairie dog (*C. leucurus*) colonies or complexes greater than 200 acres will be disturbed, surveys for ferrets should be conducted. This is true even if only a portion of the colony or complex will be disturbed. The analysis should include the location of any prairie dog towns that may be impacted by the project as well as the size of the prairie dog complex of which the town is part and provide for further coordination with the Service to determine the need for black-footed ferret surveys on the prairie dog town. Prairie dog towns may be directly impacted by surface disturbing activities, access roads, etc., as well as indirectly impacted in a number of ways including increases in disease potential or shooting, contamination, and hydrological changes. The Service has identified the following measures that may be implemented to minimize impacts to prairie dog towns:

* Align roads to avoid significant effects to prairie dog colonies and sensitive vegetation.

* Install adequate devices to maintain natural waterways and prevent erosion. Changes in water flow regimes can cause unnecessary flooding or prairie dog burrows.

* Incorporate present and future land uses in the design and alignment of facilities and roads to minimize total habitat loss and repeated disturbance.

* Use the minimum width roadway necessary to meet short- and long-term land use plans.

* If roads cannot avoid prairie dog colonies, design and lay-out roads that cross prairie dog colonies through: (1) the lowest prairie dog density areas (< eight burrows per acre), (2) the edge of prairie dog colonies, or (3) the shortest transect of the colony as possible.

* Avoid locating well sites in prairie dog colonies. Directional drilling techniques could be utilized when possible to access reserves under such areas.

* Minimize area affected by containing equipment and activities within the well sites and rights of way.

* Well sites in prairie dog colonies should be located in density prairie dog areas (< eight burrows per acre).

* Oil residue and other contaminants from waste pits may be hazardous to wildlife. Remove hazardous materials to an approved offsite facility before filling the reclaiming pits.

* Avoid placing pipelines through prairie dog colonies.

* Where avoidance is not possible, pipelines should be routed through prairie dog colonies less than 30 acres and with prairie dog burrow densities less than eight burrows per acre.

* In larger colonies, pipelines should transect the colony at its narrowest point and near the colony edge to minimize disturbance within the colony.

* Prevent waste water discharges in or near prairie dog colonies, unless appropriate State and Federal water quality standards are met. Even then, the quantity of discharge should not result in burrow inundation.

* Low-impact cleanup techniques should be used for spills within 1/8 mile of a prairie dog colony. Cleanup techniques should avoid effects on vegetation or prairie dog burrows.

* Any hazardous materials spills should be contained to avoid contamination of prairie dog colonies.

* Due to the fossorial activities of prairie dogs, burial of drilling mud and other wastes is not recommended. Waste removal from prairie dog colonies is recommended to avoid future significant impacts.

* Removal of concrete or other impervious surfaces and equipment (once the project is ended, or a well is no longer producing, etc.) that may preclude future re-establishment

of prairie dog burrows in the area is recommended.

* Dry hole markers greater than 12 inches above ground level should be avoided or made inaccessible to raptors for perching to avoid increasing the potential for predation on ferrets. Retrofitting existing dry hole markers to discourage raptor perching is also recommended.

[1]*Spiranthes diluvialis* (Ute Ladies'-tresses) a threatened species may occur in the project area. The Ute ladies'-tresses is endemic to moist soils near wetland meadows, springs, lakes, and perennial streams. Ute ladies'-tresses is a perennial, terrestrial orchid with stems 2 to 5 dm tall, narrow leaves, and flowers consisting of few to many small white or ivory flowers clustered into a spike arrangement at the top of the stem. It blooms from late July through August, however, depending on location and climatic conditions, orchids may bloom in early July or still be in flower as late as early October. The Ute ladies'-tresses is found in moist soils near wetland meadows, springs, lakes, and perennial streams. It occurs generally in alluvial substrates along riparian edges, gravel bars, old oxbows, and moist to wet meadows at elevations from 4,200 to 7,000 feet. The orchid colonizes early successional riparian habitats such as point bars, sand bars, and low lying gravelly, sandy, or cobbly edges, persisting in those areas where the hydrology provides continual dampness in the root zone through the growing season. Recent discoveries of orchid colonies in Wyoming and Montana indicate that surveys for and inventories of orchid occurrences continue to be an important part of orchid recovery planning and implementation.

In order to recover the orchid, it is important that surveys be conducted in areas of potential habitat and in response to impending impacts. Ute ladies'-tresses seems generally intolerant of shade and is found primarily in open grass and forb-dominated sites where vegetation is relatively open and not dense or overgrown. The plants usually occur in small scattered groups. Ute ladies'-tresses orchid can only be reliably located and identified when it is flowering, which typically occurs sometime during the period from mid-July through mid-September. Surveys are conducted by walking or otherwise closely scrutinizing areas of potential habitat looking for flowering stalks. Surveys conducted at other times of the year area not reliable and are therefore not acceptable to the Service for purposes of clearance under Section 7 of the ESA. Surveys should be conducted by knowledgeable botanists trained in conducting rare plant surveys. The Service does not maintain a list of "qualified" surveyors but can refer those wishing to become familiar with the orchid to experts who can provide training or services.

Candidate Species: Candidate Species that may occur within your

project area are identified below. Many Federal agencies have policies to protect candidate species from further population declines. I would appreciate receiving any information available on the status of these species in or near the project area.

Swift fox (*Vulpes velox*)	Grasslands of southeast Wyoming
Mountain plover (*Charadrius montanus*)	Grasslands statewide

Migratory Birds: If it appears your work will impact a migratory bird or eagle, their young, eggs, nests, roosts, feeding habitat or nest trees (for example, if a road or activity will occur in the vicinity of a nest, etc.), you need to coordinate with our office prior to doing any work in theses areas. Removal or destruction os such nests, or causing abandonment of a nest could constitute violation of the Migratory Bird Treaty Act, 16 U.S.C. 703, enacted in 1918. In many cases, timing the project activity to avoid critical nesting periods may be all that is necessary. Removal of nests or nest trees is prohibited, but may be allowed once young have fledged and/or a permit has been issued. in either case, timing is a significant consideration and you may need to allow for this in your project planning. If nests will be effected by this project, please coordinate with our office prior to doing any work in these areas to minimize impacts to nesting birds. Also, with regard to waste water pits and ponds, the Service does not recommend flagging as a deterrent for birds. To protect migratory birds, open waste pits or ponds should not be used, if possible. If the use of waste pits is unavoidable, tanks and exposed waste pits and ponds should be screened, netted, or covered to prevent birds from entering pits. These potential threats should be identified in any analysis of the project, and considered in any leasing documents. However, the best deterrent for preventing migratory bird deaths is to remove the pits and use a closed-containment system or keep oil from entering the pits in the first place.

If you have any question regarding the above information, please contact Erik Bray in the Wyoming field office at the letterhead address or phone (307) 772-2374, extension 24.

Sincerely,

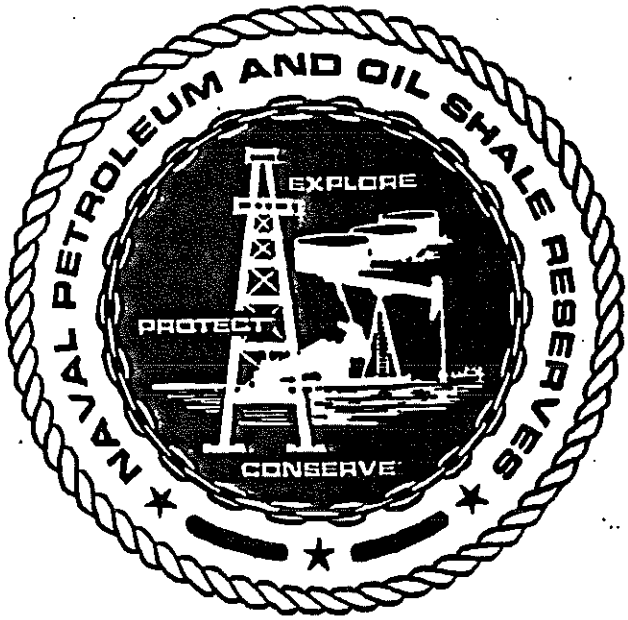
Jane P. Roybal

Jane P. Roybal
Acting Field Supervisor
Wyoming Field Office

cc: Director, WGFD, Cheyenne, WY
Non-Game Coordinator, WGFD, Lander, WY

APPENDIX C - WELL ABANDONMENT PROGRAM FOR NAVAL PETROLEUM RESERVE NO. 3, NATRONA COUNTY, WYOMING

WELL ABANDONMENT PROGRAM FOR NAVAL PETROLEUM RESERVE NO. 3, NATRONA COUNTY, WYOMING



Prepared by
U.S. Department of Energy,
Naval Petroleum and Oil Shale Reserves in Colorado, Utah and Wyoming
Environmental Department

Revised as of December 18, 1997

WELL ABANDONMENT PROGRAM FOR NPR-3

The purpose of this well abandonment program is to bring all wells located on Naval Petroleum Reserve No. 3 (NPR-3), Natrona County, Wyoming, into compliance with the Wyoming Oil and Gas Conservation Commission Rules and Regulations for the Production and Conservation of Oil and Gas (WOGCC Rules & Regulations) by Fiscal Year (FY) 2003. DOE estimates that seventy (70) of these wells will drop off production each fiscal year. An estimated 190 wells will still be producing by the end of FY 2003.

Well Selection Criteria

1. Specific wells have been selected for plug and abandonment for FY 1998 (see attached list). These wells are non-producing, have casing integrity problems, or will not be required for future test projects by the Rocky Mountain Oilfield Testing Center (RMOTC).

2. For FY 1999 through FY 2003, DOE will provide the WOGCC with a list of specific wells no later than the April 1 prior to the beginning of the fiscal year. However, if a well already scheduled for plug and abandonment is designated for use by RMOTC, DOE will notify the WOGCC of DOE's intention to remove that particular well from the scheduled list and substitute another well.

Well Abandonment Procedures

The following procedures will be used to plug and abandon a "well", as defined in the WOGCC Rules & Regulations (Definition 245):

1. Cement plugs of at least one hundred (100) feet will be placed:

   (a) over openhole porous and permeable formations;
   (b) at least every twenty-five hundred (2500) feet if porous and permeable formations are not encountered;
   (c) over the "stub" of casing left in the wellbore;
   (d) in the base of the surface casing; and
   (e) at any other depth determined necessary after inspection.

2. Cast iron bridge plugs set inside casing will be capped with at least two (2) sacks of cement. Open perforations will be squeeze cemented.

3. No substance other than those prescribed by the WOGCC Rules & Regulations will be used in plugging operations.
4. Flowlines will be flushed with hot water.
5. Flowlines will be cut and plugged five (5) feet below ground level.
6. All equipment will be removed and stockpiled for salvage.
7. DOE will vary plugging and abandonment procedures only when required to protect fresh water-bearing formations.
8. When a well has been plugged and abandoned, DOE will notify the WOGCC and request inspection.

Reclamation of Surface Facilities, Pits, and Roads

DOE will close surface facilities, such as treaters and batteries, pits, and roads, when they are no longer required for production operations. The first facility scheduled for closure is B-1-33. Reclamation of these sites will be performed as described below:

1. Soil samples will be collected and analyzed for Total Petroleum Hydrocarbon (TPH), pH, and salt concentration by an independent laboratory contractor.
2. Soil with TPH concentration above the WOGCC limits may be treated with a cleaner, degreaser dispersant known as Superall 38 and landfarmed.
3. Soil with salt concentration above the WOGCC limits for saturated soils will be removed and deposited at B-1-35, a site already high in salt content but not in a saturated area.
4. All abandoned sites will be ripped, disked, and fertilized prior to reseeding.
5. Topsoil will be replaced as needed.
6. All abandoned pits, well sites and surface facilities to be reclaimed will be contoured to the natural slope of the land.
7. All abandoned sites will be reseeded using the hand-broadcasting method.
   (a) Seed mixtures are made up of the following types and amounts of pure live seed (pls):

Seed		Cultivar Seeding Rate (lbs pls/acre)	(%pls)
Western Wheatgrass	Rosana	1.0	9.0
Indian Ricegrass	Paloma	1.25	11.0
Yellow Sweet Clover	(inoculated) common	1.25	11.0
Sandberg Bluegrass	common	0.50	4.0
Thickspike Wheatgrass	Critana	3.02	6.0
Four-Wing Saltbush	(dewinged) Wytanna	1.0	9.0
Slender Wheatgrass	Pryor	2.0	17.0
Winterfat	common	1.0	9.0
Wyoming Big Sagebrush	common	0.5	4.0
Total PLS (mixture + hand broadcast)		11.5 lbs	100.0

(b) Seeds shall be certified pure live.
(c) Grazing of reseeded areas is restricted for a minimum of one growing season.

8. After seed is broadcast, sites will be dragged with cyclone fence pulled behind an all-terrain vehicle.
9. Water may be applied as a final step in this process.
10. Associated power lines and power poles will be removed.
11. Roads no longer needed will be reclaimed using method described above, as applicable.

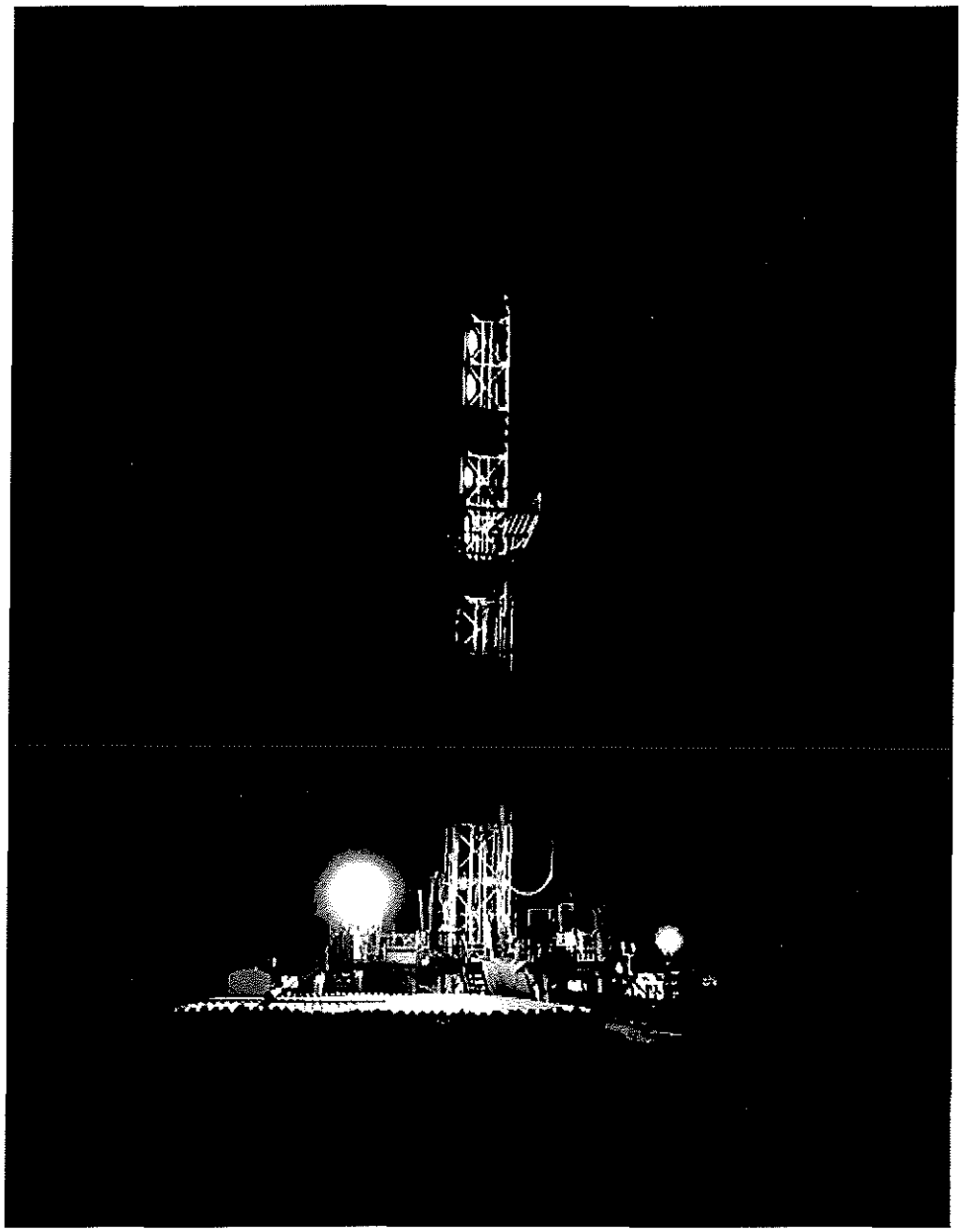
	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Totals
	150 Wells	150 Wells	150 Wells	150 Wells	150 Wells	110 Wells	900 Wells
Well Abandonment	$630,000	$630,000	$630,000	$630,000	$630,000	$630,000	$3,780,000
Waste Disposal	$11,000	$11,500	$11,500	$11,500	$11,500	$30,000	$87,000
NORM testing*	$5,000	$5,000	$5,000	$5,000	$5,000	$16,000	$41,000
Removal of Elec. Equip.	$57,000	$100,000	$100,000	$100,000	$100,000	$100,000	$557,000
Pit Closures	$65,000	$34,000	$34,000	$34,000	$34,000	$50,000	$251,000
Landfill/Landfarm Closure	$56,000	$6,500	$6,500	$6,500	$6,500	$6,500	$88,500
Closure of Batteries	$100,000	$168,000	$168,000	$168,000	$168,000	$168,000	$940,000
Reclaim Roads	$107,000	$200,000	$200,000	$200,000	$200,000	$200,000	$1,107,000
Demolition of Buildings	$64,000	$54,000	$54,000	$54,000	$54,000	$54,000	$334,000
TOTALS	$1,095,000	$1,209,000	$1,209,000	$1,209,000	$1,209,000	$1,254,500	$7,185,500

*NORM (Naturally Occurring Radiological Material)

APPENDIX D - NAVAL PETROLEUM AND OIL SHALE RESERVES IN COLORADO, UTAH AND WYOMING TRANSITION PLAN

TEAPOT DOME TRANSITION PLAN

PRIVATIZATION BY 2003



December, 1997

Naval Petroleum and Oil Shale Reserves in Colorado, Utah and Wyoming
U.S. Department of Energy
907 North Poplar Suite 150 Casper, Wyoming 82601 307/261-5161

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TEAPOT DOME TRANSITION PLAN

TEAPOT DOME TRANSITION PLAN

Privatization By 2003

INTRODUCTION

The Naval Petroleum Reserve in Wyoming (NPR-3) is nearing the end of its life as an economically viable oil field. The Department of Energy (DOE) has decided to discontinue Federal operation at the end of that economic life, currently estimated to be 2003. Changes in oil and gas markets or shifts in national policy could alter the economic limit of NPR-3, but its productive life is dominated by the fundamentals of a small and declining reserve base.

Production at NPR-3 peaked in 1981 and has declined since until it has become a mature stripper field, with the average well yielding 1-2 barrels per day (b/d). After extensive review and evaluation of future options, our Transition Plan focuses on achieving the following goals:

- profitably produce the over 800,000 barrels of economically recoverable oil and 1.5 BCF of natural gas that are estimated to remain (See June 1997 Team Planning Report)
- plug and abandon over 900 marginally productive or shut-in wells, and reclaim and restore the field to full State and Federal standards
- maintain a small core of productive wells by 2003, which may assist transition to longer term stewardship under new owners
- continue to evaluate our concept for the Rocky Mountain Oil Field Testing Center (RMOTC), and with the guidance of a public/private consortium, prepare it for new ownership after 2001
- continue to downsize operations to improve management efficiency and lower costs by phasing out the Management and Operations contract
- reduce overhead costs substantially at the beginning of FY98
- operate the Reserve in an efficient manner and restore the surface acreage with Federal staff and limited service contracts until transfer to new ownership or ultimate shut-down.

The Plan is organized around three critical functions that generate both revenue and budget requirements:

- **Commercial Operations--maintaining profitable production**
- **Abandonment and restoration--closing down and restoring the unproductive parts of the field**
- **RMOTC--demonstration, testing and evaluation of a wide range of engineering concepts**

BACKGROUND

This Transition Plan for NPR-3 implements the recommendations of the DOE's March 1997 report to Congress, which was required by Section 3416 of the National Defense Authorization Act for Fiscal Year 1996, Public Law 104-106 (NDA Act). The overall purpose of Section 3416 was to explore the options for future management of all the assets other than Elk Hills (NPR-1) that are managed by the NPOSR program, and to recommend to Congress the option that will maximize asset value to the United States Government (USG). This Plan executes the March 1997 report to Congress: Report and Recommendations on the Management and Disposition of the Naval Petroleum and Oil Shale Reserves (Excluding Elk Hills).

The Department's report reviewed the findings of an independent petroleum consultant (required by the NDA Act). This consultant evaluated a limited range of future management options for the three Naval Oil Shale Reserves (NOSRs: Nos. 1 and 3 in Colorado, No. 2 in Utah), NPR-2 in California, and NPR-3. **The DOE endorsed the independent report, which concluded that retaining and operating Teapot Dome under current law would maximize its asset value.**

Legislative authority will be required to change the status of the reserve from that outlined in the above mentioned report. Once the Program has demonstrated progress on implementing the objectives of this transition plan, the Department will submit legislation tailored to implement the optimal disposition strategy stemming from the success of the transition. It is likely that the legislation will be submitted for consideration, as part of the FY 1999 Defense Authorization Act.

This Plan is designed to embody our recommended approach to eventually abandoning the bulk of NPR-3, reclaiming the field, and transitioning the remaining economic core to longer term stewardship.

NPR-3 HISTORY

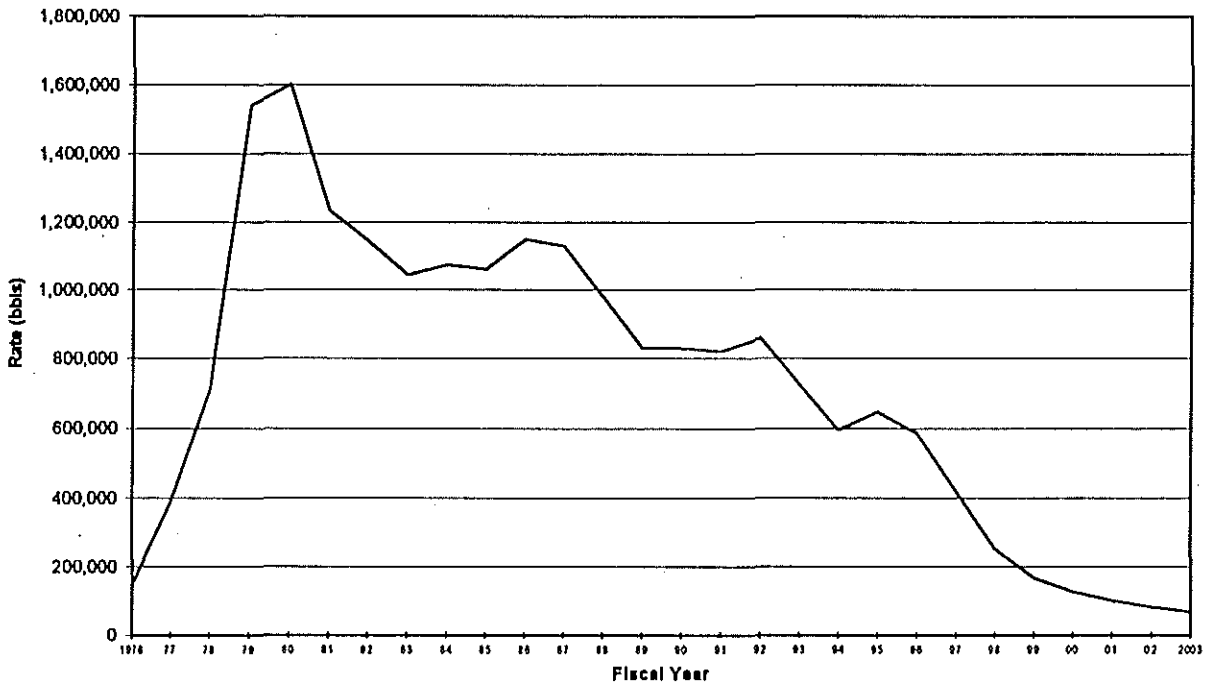
Teapot Dome is a Federally owned oil and gas field of 9481 acres located 35 miles north of Casper, WY. (See location maps at Appendix A). Lands including the eventual Reserve were withdrawn from the public domain by Executive Order in 1912,

and NPR-3 was created in 1915. Both the US Geological Survey and the Navy had become concerned about long term damage to the resource base from administration of oil claims patented under the Mining Laws of 1866 and 1872, and the need for a secure source of liquid fuels for the Fleet. Except for a period of lease production in the 1920s, highlighted by the Teapot Dome scandal, and limited offset drilling in the 1950s and 1960s, NPR-3 remained largely undeveloped until 1976.

As a result of the worldwide impact of supply disruptions in the mid-1970s, the Naval Petroleum Reserves Production Act was passed in 1976 (P.L. 94-258). The NPRs were to be explored, developed, and produced at their maximum efficient rates, and their hydrocarbons sold directly into commercial markets at public sale to the highest qualified bidders. Operating expenses are authorized by Congress through the annual appropriations process, and revenues are deposited into the U.S. Treasury.

Oil production at Teapot Dome peaked in 1981 at slightly over 5000 b/d. As shown in Figure 1, decline has been steady since; present production averages 1000 b/d, with associated production of natural gas and its liquids.

Figure 1. Annual NPR-3 Oil Production

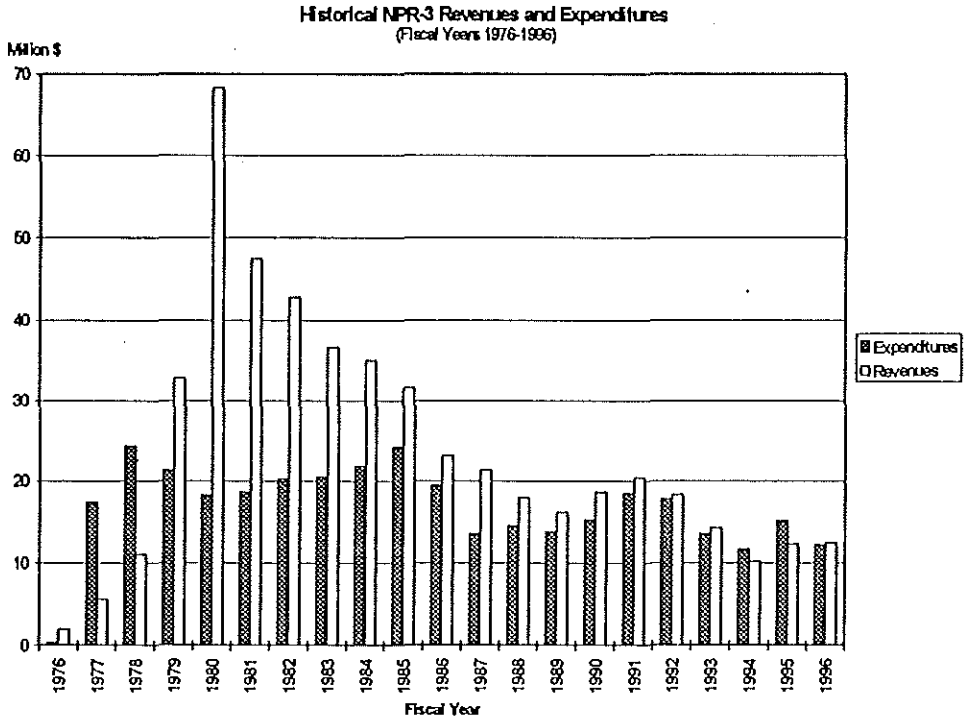


Beginning in 1992, it became evident that, due to declining annual production levels, it could no longer be assumed that the field could be operated every year at a net profit. Enhanced production techniques that were being used to sustain volume were no longer economic and payout periods for capital projects began to lengthen. Teapot Dome had become a classic, mature stripper field, where six hundred wells average between one and two barrels per day

and another five hundred wells are currently shut-in. Nonetheless, Teapot Dome has been a demonstrated success over its productive history.

From the initiation of full development in 1976 through FY 1996, NPR-3 has generated nearly $500 million (M) in total revenues with net revenues of over $150 million - for a return on costs of over 42%. Historical financial performance is shown in Figure 2.

Figure 2



VALUE OF THE RESERVE

There are several components of a successful transition. Closing out operations at the field must enable profitable production of remaining proved reserves, while abandoning and reclaiming succeedingly less productive wells. The future environmental liabilities to the USG are minimized by this approach.

Analyses have indicated that the USG will realize more profit from optimizing production at NPR-3 of the proved reserves, while reducing costs and rationalizing its management structure, than from an outright sale with its associated costs, at the present time.

An efficiently operated and cautiously remediated Teapot Dome, with an effectively functioning RMOTC program, opens many opportunities regarding the future disposition of the asset - including potential sale.

This Transition Plan optimizes production benefits, maximizes remaining future field assets in concert with RMOTC, comprehensively restores the field, and limits future environmental liabilities. **Under conservative energy price assumptions, we can profitably produce under this plan over 803,000 barrels of oil, 1.5 billion cubic feet (Bcf) of natural gas and 1.8 million (M) gallons of natural gas liquids (1996 Reserves Report). Total future gross production revenues (through 2003) from operations could range from $17.6 M to $19.8 M, with net revenues of from $8.6 million to $6.4 million - a return on costs of from 57% to 77%.** Abandonment and restoration are likely to cost an additional $7.3 M, with up to $3.8 M recovered in salvage value of recycled equipment and materials from the field. These costs would be incurred regardless of whether production operations were continued. Each of the distinct missions (profitable operations, environmental restoration, and the Rocky Mountain Oilfield Testing Center) are presented separately in the ensuing sections.

VALUE OF THE RESERVE TO THE RMOTC PROGRAM

The fact that Teapot Dome is a stripper field with established facilities, knowledgeable on-site personnel, and over 1000 active wells in various formations, makes it an extremely valuable asset to the research, development, and testing community. The mission of RMOTC is to serve the petroleum and environmental industries and related academic users by providing first-rate facilities for field-testing technologies in an oil field environment. The field is 100% Government-owned and is largely self-sustaining due to the technical expertise and wide range of support equipment available at the site. Capabilities include the availability of drilling rigs, well logs, cores, production data bases, pulling and workover rigs, access to heavy equipment, gas handling and processing facilities, and training facilities. These assets which are on-site to operate a profitable field operation are readily available for scheduled test projects, in a neutral setting where test results are held in the strictest confidence.

I. FIRST OBJECTIVE: MAINTAIN PRODUCTION UNTIL FIELD REACHES ECONOMIC LIMIT

Teapot Dome is currently producing sufficient oil and natural gas to be economic. In FY 1997, it is estimated that the net income of this Reserve, including reasonably attributed overhead, was $3.4 million.

Essential to achieving an efficient operational structure and continuing to achieve net return is phasing out the current Management and Operations contract, reducing the work force and fully utilizing the human capital available from a downsized NPOSR program, particularly in moving engineering and contract staff from Elk Hills to Casper to support RMOTC operations. Overhead costs can be reduced significantly by this method, as will be shown in a later section. Overhead costs were assumed to be reduced at the beginning of FY98. (Conclusions from the NPR-3 Planning Team Report, based upon applying commercial profitability criteria to all aspects of costs and revenues, will be utilized throughout the succeeding sections of the Transition Plan).

BASELINE PRODUCTION

Based on decline curve analysis and assuming no new capital expenses, it was determined that ending U. S. Government ownership by 2003 should be the goal of this Transition Plan. A production forecast was derived which helps to determine the levels and rates of several associated activities, such as well abandonment, RMOTC operation, environmental reclamation, etc. (See Table 1).

Table 1. Production Forecast (Reserves Report 6/30/96)

Year	# Sweet Wells	Sweet Oil Prod. (bbls)	# Sour Wells	Sour Oil Prod. (bbls)	Total Oil Prod. (bbls)	NGL Prod. (gals)	Gas Prod. (mcf)
1996	583	439,952	8	147,842	587,794	2,582,600	-
1997	545	330,718	8	87,753	418,471	2,347,400	-
1998	425	191,842	8	63,875	255,717	1,825,000	1,500,000
1999	361	131,692	6	36,500	168,192	-	-
2000	307	101,552	5	25,550	127,102	-	-
2001	261	80,892	5	20,075	100,967	-	-
2002	222	65,877	5	16,425	82,302	-	-
2003	189	54,304	4	14,600	68,904	-	-
Total		1,396,829		412,620	1,809,449	6,755,000	1,500,000

Gas

Under current market assumptions, the gas cap is likely to be produced for sale in FY98--this increases NPV under present market and field engineering assumptions, and effectively precludes further use of the steamflood in the Shannon reservoir, while eliminating the need for the gas processing plant for liquids extraction.

Liquids

Liquids are only forecast through FY98 since the Low Temperature Separation Plant (LTS) is likely to be shut down and salvaged. Based on the 1.5 Bcf of gas reserves, approximately 1.825 M gallons of natural gas liquids (NGL) will be extracted and sold. Any upside in the produced gas stream will yield a corresponding increase in liquids for sale. Again, these decisions will be reviewed in detail during late FY98.

Oil

Oil is produced from up to nine distinct zones at Teapot Dome. Due to profitability considerations coupled to market conditions, the Shannon reservoir steamflood project is scheduled to end in FY97. Hot water from the Tensleep reservoir will be injected into the Shannon in place of the steam for pressure maintenance to slow the production decline rate. Recoverable oil over 1998-2003 is conservatively estimated to be 803,000 barrels. Prevailing market conditions nearer to the time of the actual decision may alter present perspectives.

Figures 3 and 4 show expected costs and revenues for commercial operation of Teapot Dome through 2003. Tables 2 and 3 provide annual details for both baseline and the more optimistic EIA path assumptions. Well abandonment costs and reclamation, as well as salvage values, are not included. Operations, maintenance and overhead costs are included, as well as revenues under both Baseline and EIA energy price path assumptions. Net present values are estimated without upside potential, which could increase annual budget requirements by approximately 20%-25%, with improvements in gross revenues expected to be in the range of 36%-40%. Price path forecasts are shown in Appendix B.

REMEDIALS AND WORKOVERS

Under this Plan baseline, only the best wells will be reworked when a mechanical failure occurs. Investment assumptions preclude extensive recompletions, and remedials are minimized. The current workover rate is about 300 wells/year, and would be reduced by this Plan to approximately 60 wells/yr subject to economic evaluation at the time. This reduction assumes that the short life of the field precludes extensive maintenance, although market conditions, RMOTC requirements, and longer term stewardship options could alter this approach.

EVALUATION OF UPSIDE ZONES

Over 1100 existing well bores could feasibly add to the upside potential of NPR-3, in addition to benefitting RMOTC, due to the vertical array of as many as nine separate geological formations accessible in these well bores. Systematic recompletion of existing wells in their respective upper levels could result in an increase in gross revenues to NPR-3 of another $7 million, or about 36%-40% above the baseline estimate shown in the cash flows (Tables 2 and 3). Potentially, another 1.26 million barrels of oil and 1.5 billion cubic feet of gas could be realized through the optimal exploitation of these existing well bores. These upside reserves were valued at in-the-ground prices of $5.00/barrel and $0.46/mmbtu, consistent with the prices being paid at oil property auctions by private oil companies. For the purpose of this study, this potential upside production, resultant revenues, and capital investment costs are not included in the cash flow numbers presented.

The majority of the upside revenue potential would be realized in the Shannon and Shale formations, where as many as 400 recompletions could foreseeably be performed. Achieving this, of course, depends upon the availability of funds, market performance and engineering success. Further engineering review is needed to assess the risk involved and justify any capital dollars expended prior to undertaking a recompletion program. The revenues that could be expected could also benefit the future owner of NPR-3.

Additional revenue could be generated by a wider variety of non-traditional uses of the field, such as gas storage. (A Memorandum of Understanding was negotiated, for instance, in 1994 with the Veteran's Administration to supply storage, but was never implemented). Available reservoir void volume and NPR-3's geographical location with respect to major gas pipelines suggests further marketing efforts of such services. Enhanced value could be realized by other imaginative uses of this property.

Total future revenues under this Baseline Plan for commercial operations could range from $17.6 M to $19.8 M, against $11.2 M in total costs, or a return on costs of from 57% to 77%. Corresponding NPV (at 10%) would range from $5.9 M to $7.7 M. Total budget outlays in the fiscal years 1998-2003 would be $11.2 M for commercial operations.

3-D SEISMIC ANALYSIS

An important part of this Transition Plan is the prompt conducting of 3-D seismic tests. The use of 3-D seismic at NPR-3 would benefit the NPOSR-CUW operation and enhance the value of the field in many ways for a relatively low investment. Information would be learned about the deeper Tensleep reservoir whose structure is extremely complex as a result of the natural fracturing present. Individual fault blocks may be distinctly shown that would indicate potential drilling locations that could tap into unproduced compartments.

Seismic acquisition would be most beneficial in Sections Three and Ten, the area where the Tensleep and the other shallower formations combine to form the most productive part of the field. Having this data would also add value to the NPR-3 property when the field is sold, would also provide additional reservoir characterization information which would be useful in planning future RMOTC tests, and would also provide further understanding of how the natural fracturing systems work in the sand and shale producing formations.

A recent request for bids to conduct seismic work at NPR-3 resulted in a representative price quote of $80,000 for one square mile (equal to one section) which was detailed to include $60,000 for mobilization and use of the Vibroseis equipment, $10,000 for processing of the data and $10,000 for interpretation of the data. Additional square miles of seismic conducted would cost $40,000 each for equipment use and processing and interpretation of the data. For a minimum cost of $120,000, sections three and ten could be thoroughly analyzed for geologic and productive potential.

An ideal scenario for NPR-3 to obtain the results of a 3-D seismic survey at low cost would involve an industry geophysical company/RMOTC testing partnership whose objective would be to evaluate the improvements made in their seismic acquisition process. The high density of wellbores located in the center of the field would provide an excellent control feature with the comparison of available well logs to the seismic data collected. As an incentive to potential partners, a comparison of information could also be made with the results realized from a recent RMOTC test involving the geochemical analysis of soils that was conducted to determine the presence of hydrocarbons at depth, as an economic alternative to seismic acquisition. Marketed correctly, RMOTC should be able to attract interested geophysical companies desiring to test their latest technologies at NPR-3 and thus lower the costs of seismic acquisition for these properties considerably. Seismic work should be commenced in FY 98.

Figure 3

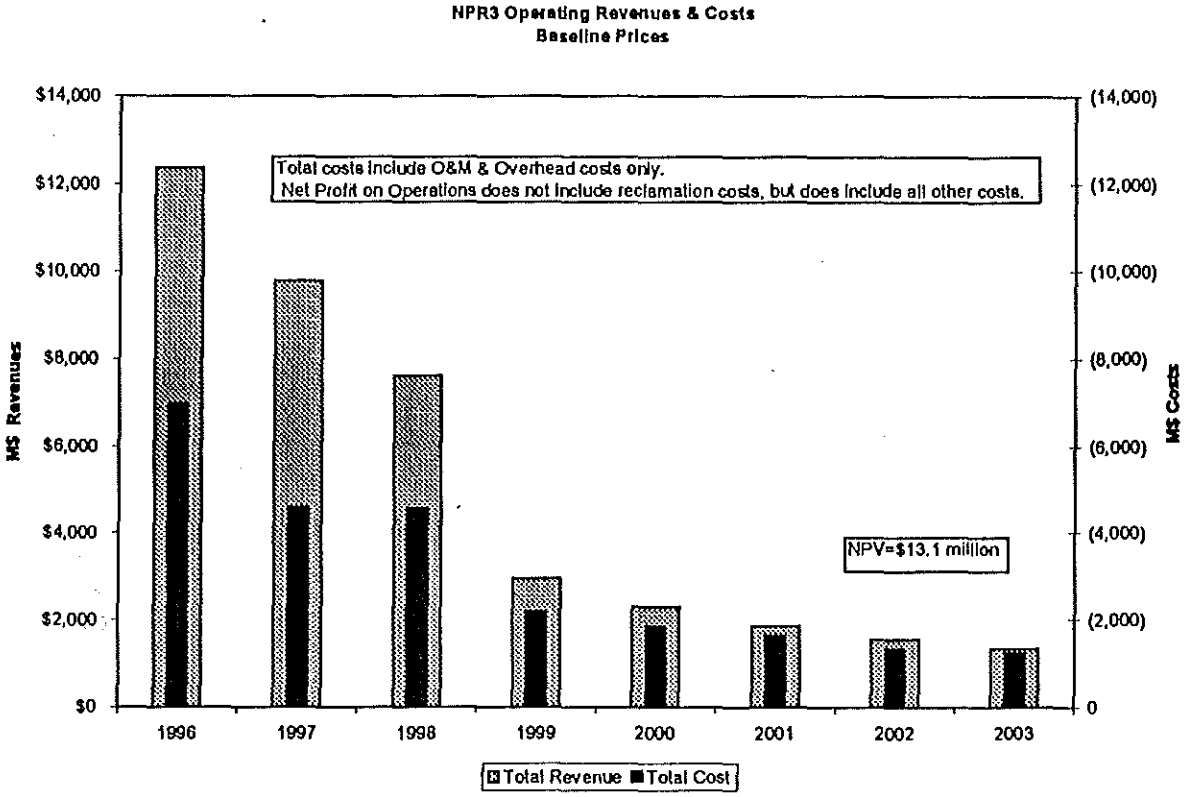


Table 2. Operations Cash Flow, Baseline Prices

	Production			Revenue				Net Cash Flow		
Year	Total Oil Prod. (mbbls)	NGL Prod. (mgals)	Gas Prod. (bcf)	Prod. Revenue (000$)	Salvage (000$)	Total Revenue	Total Cost[1] (000$)	Net Cash Flow (000$)	Net Profit on Operations[2]	PV
1996	586.1	2,582.6	-	$12,387	0.0	$12,387	(7,002.3)	5,385.0	76.9%	5,134.4
1997	418.5	2,347.4	-	$9,777	0.0	$9,777	(4,594.5)	5,182.7	112.8%	4,492.3
1998	255.7	1,825.0	1.50	$7,623	0.0	$7,623	(4,583.4)	3,039.6	66.3%	2,395.1
1999	168.2	-	-	$2,950	0.0	$2,950	(2,190.0)	760.2	34.7%	544.6
2000	127.1	-	-	$2,291	0.0	$2,291	(1,854.9)	435.8	23.5%	283.8
2001	101.0	-	-	$1,864	0.0	$1,864	(1,644.4)	219.3	13.3%	129.8
2002	82.3	-	-	$1,555	0.0	$1,555	(1,338.1)	216.8	16.2%	116.7
2003	68.9	-	-	$1,329	0.0	$1,329	(1,244.8)	84.4	6.8%	41.3
Total	*1,807.8*	*6,754.9*	*1.50*	*39,776.0*	*0.0*	*39,776.0*	*(24,452.4)*	*15,323.7*		*13,137.9*

Discount Rate= 10%

Notes:
[1] Total costs include O&M & Overhead Only
[2] Net Profit on Operations does not include reclamation costs, but does include all other costs.

Figure 4

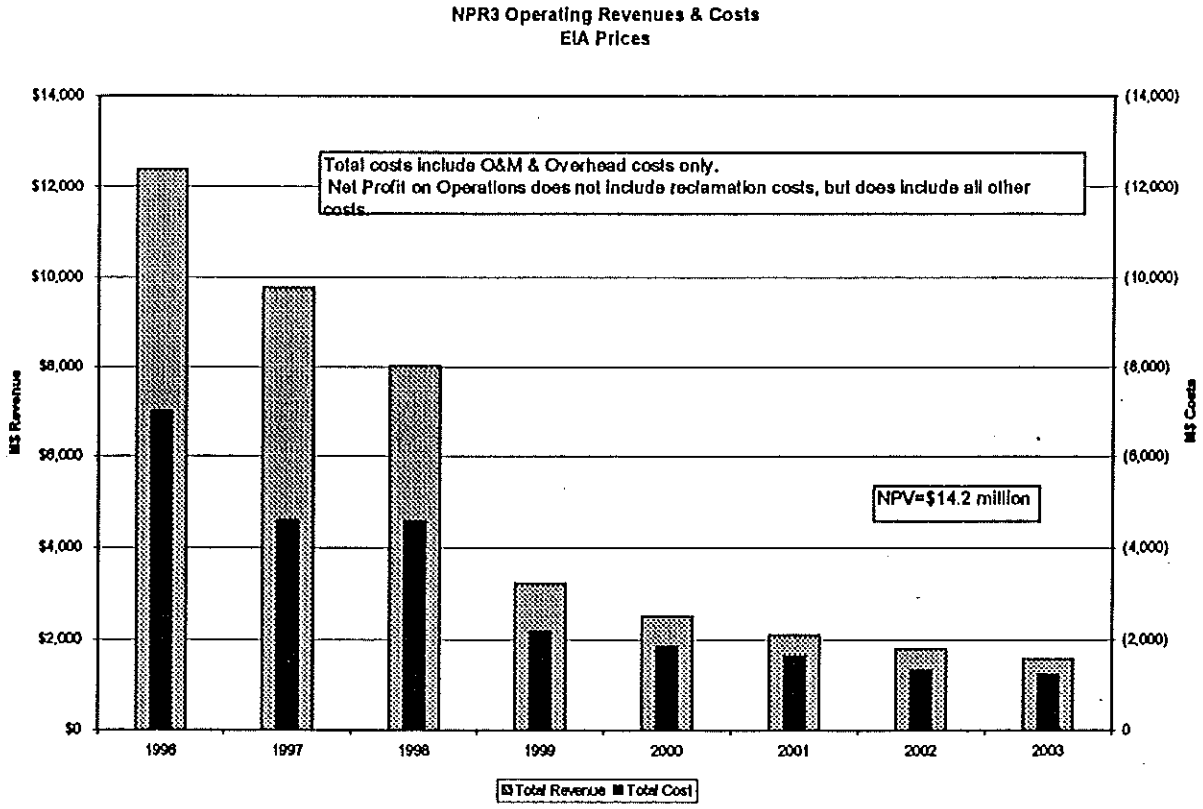


Table 3. Operations Cash Flow, EIA Prices

	Production			Revenue				Net Cash Flow		
Year	Total Oil Prod. (mbbls)	NGL Prod. (mgals)	Gas Prod. (bcf)	Prod. Revenue ($000)	Salvage ($000)	Total Revenue	Total Cost[1] ($000)	Net Cash Flow ($000)	Net Profit on Operations[2]	PV
1996	586.1	2,582.6	-	$12,387	0.0	$12,387	(7,002.3)	5,385.0	76.9%	5,134.4
1997	418.5	2,347.4	-	$9,777	0.0	$9,777	(4,594.5)	5,182.7	112.8%	4,492.3
1998	255.7	1,825.0	1.50	$8,019	0.0	$8,019	(4,583.4)	3,435.9	75.0%	2,707.5
1999	168.2	-	-	$3,230	0.0	$3,230	(2,190.0)	1,039.6	47.5%	744.7
2000	127.1	-	-	$2,514	0.0	$2,514	(1,854.9)	658.7	35.5%	428.9
2001	101.0	-	-	$2,108	0.0	$2,108	(1,644.4)	463.3	28.2%	274.3
2002	82.3	-	-	$1,803	0.0	$1,803	(1,338.1)	465.3	34.8%	250.4
2003	68.9	-	-	$1,577	0.0	$1,577	(1,244.8)	332.6	26.7%	162.7
Total	*1,807.8*	*6,754.9*	*1.50*	*41,415.3*	*0.0*	*41,415.3*	*(24,452.4)*	*16,963.0*		*14,195.2*
								Discount Rate=		10%

Notes:
[1] Total costs include O&M & Overhead Only
[2] Net Profit on Operations does not include reclamation costs, but does include all other costs.

II. SECOND OBJECTIVE: UNDERTAKE ENVIRONMENTALLY SENSITIVE RESTORATION AND SALVAGE PROGRAM

A properly abandoned and reclaimed field is a critical objective of the NPR-3 Transition program. It is the program's intent to undertake its reclamation applying the highest standards. This requires the systematic identification of least productive wells for plugging and abandonment, and complete reclamation of the sites and eventually all the remainder of the field not utilized for RMOTC, or the core of wells economically producing beyond 2003. Cost effectiveness will be achieved by carefully managing well abandonment and environmental compliance with Federal staff, and utilizing task-specific, service support contracts after the M&O contract has been phased out.

The approach to closing down the field will be described in the "Sitewide Environmental Assessment for Transfer of Ownership of the Naval Petroleum Reserve No. 3". The DOE will close all surface facilities, such as treaters, batteries, pits and roads, and remove electrical poles and wires as they are no longer required for production operations. Stakeholders and those entities interested in future ownership will have opportunities to provide input and comments into the restoration program through the normal NEPA process associated with the Environmental Assessment development process and a series of formal meetings with the consortium of potential owners.

Soil samples will be collected from pits, batteries, and test satellite sites as they are being reclaimed. A Total Petroleum Hydrocarbon (TPH) analysis will be performed by an independent laboratory contractor. Soil with TPH concentration above Wyoming Department of Environmental Quality limits will be treated with an approved cleaner, degreaser, dispersant known as SuperAll 38. Soil with salt concentration above Wyoming Department of Environmental Quality limits will be removed from each pit and deposited at a central location. Upon final closure, this location will be lined and capped with five (5) feet of uncontaminated soil. Batteries will be dismantled by unbolting tanks, removing buildings, flushing all pipes with hot water and cutting them off three to five feet below ground and welding shut. All oil-contaminated soil will be landfarmed or treated with SuperAll 38.

Electrical poles will be removed. All poles will be stacked at a central site in the field and will be salvaged if possible. We will use an independent electrical contractor to open disconnects and ground main lines. There will be no prescribed soil analysis or other testing for this work unless obvious contamination has occurred. In these cases, appropriate soil samples will be taken and restoration of the site will take place in accordance with CERCLA standards.

Table 4. Reclamation Costs

Estimated Site Reclamation Costs			
Roads	**Electrical Poles & Wire**	**Batteries & Test Satellites**	**Pits**
286 total acres	1,200 poles 540,000 ft. of wire	30 batteries and test satellites	30 pits
7.5 acres per sq. mile	34 total miles of poles and wire		
$3,846/acre	$16,382/mile	$31,300/site	$7,300/pit
$1.1M Total Cost	$557,000 Total Cost	$940,000 Total Cost	$220,000 Total Cost

The following methods will be used for reclaiming well sites, surface facilities, pits, and roads.

1. Soil samples will be collected and analyzed for Total Petroleum Hydrocarbon (TPH), pH, and salt concentration by an independent laboratory contractor.
2. Soil with TPH concentration above Wyoming Department of Environmental Quality limits will be treated with an approved cleaner, degreaser, dispersant known as SuperAll 38.
3. Soil with salt concentration above Wyoming Department of Environmental Quality limits will be removed and deposited at a central location on site.
4. All abandoned sites will be ripped, disked, and fertilized prior to reseeding.
5. Topsoil will be replaced as needed.
6. All abandoned pits, well sites and surface facilities to be reclaimed will be contoured to the natural slope of the land.
7. All abandoned sites will be reseeded using the hand broadcasting method.
   (a) Seed mixtures are made up of the following types and amounts of pure live seed (pls):

Seed		Cultivar	Seeding Rate
		(lbs pls/acre)	(%pls)
Western Wheatgrass	Rosana	1.0	9.0
Indian Ricegrass	Paloma	1.25	11.0
Yellow Sweet Clover	(inoculated) common	1.25	11.0
Sandberg Bluegrass	common	0.50	4.0
Thickspike Wheatgrass	Critana	3.02	6.0
Four-Wing Saltbush	(dewinged) Wytanna	1.0	9.0
Slender Wheatgrass	Pryor	2.0	17.0
Winterfat	common	1.0	9.0
Wyoming Big Sagebrush	common	0.5	4.0
Total PLS (mixture + hand broadcast)		11.5 lbs	100.0

   (b) Seeds shall be certified pure live.
   (c) Grazing of reseeded areas is restricted for a minimum of one growing season.

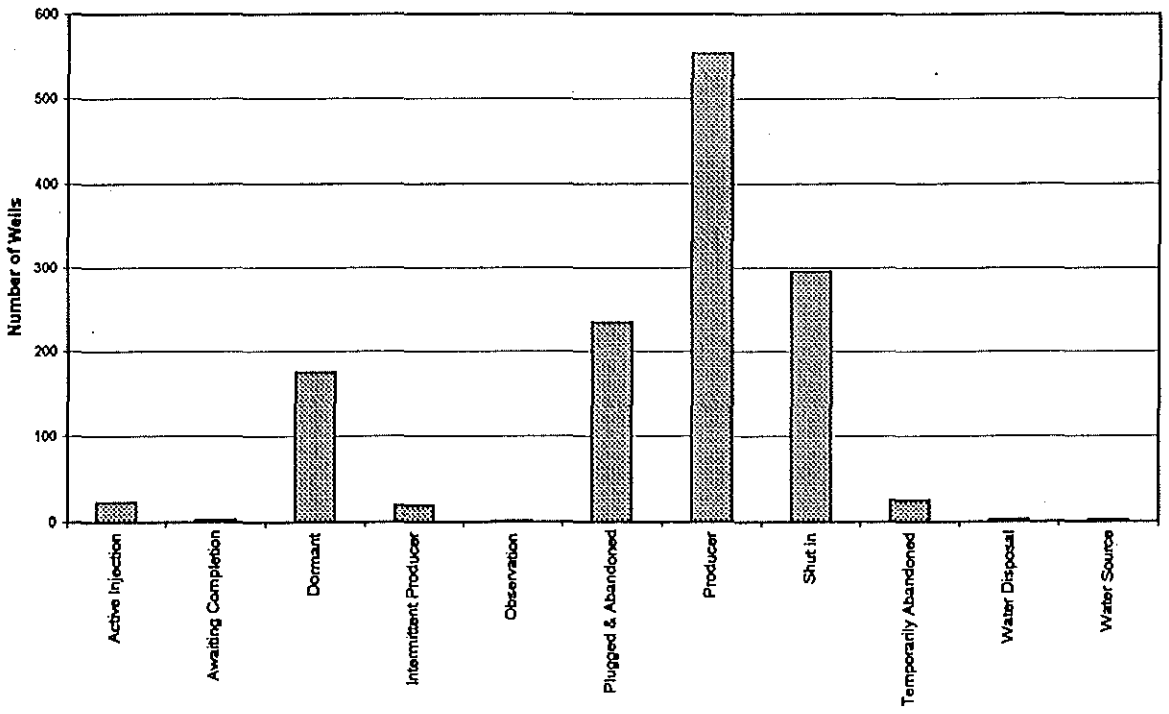
8. After seed is broadcast, sites will be dragged for seed coverage.
9. Water will be applied as a final step in this process.
10. Associated power lines and power poles will be removed.
11. Roads no longer needed will be reclaimed using the method described above.

Figure 5 shows the status of wells at NPR-3. There are 573 producing wells currently at NPR-3, while another 495 wells are in various stages of being shut in. An additional 237 wells have already been plugged and abandoned. All wells will be plugged and capped at the appropriate depth below ground level. Wells previously plugged, with casing protruding above-ground, will be recapped below ground. Detailed well descriptions are provided in Appendix C. As production declines, more wells will become economically marginal. Planning and scheduling P&A activity will be approved by the Wyoming Oil and Gas Conservation Commission (WYOGCC), which manages compliance activity for the State.

Status	# Wells
Active Injection	23
Awaiting Completion	3
Dormant	175
Intermittent Producer	20
Observation	1
Plugged & Abandoned	237
Producer	553
Shut-In	295
Temporarily Abandoned	25
Water Disposal	3
Water Source	2
Total	1337

Figure 5

Well Count by Status



Our office has begun discussions with the WYOGCC regarding alternative P&A schedules. The Plan demonstrates a commitment to an aggressive abandonment plan beginning in FY 98 through 2003. This schedule has been presented to the WYOGCC, and final approval is pending. Table 5 illustrates the annual costs associated with Plugging and Abandoning on the schedule discussed above. Total costs for compliance and restoration are shown in Table 6.

Figure 6

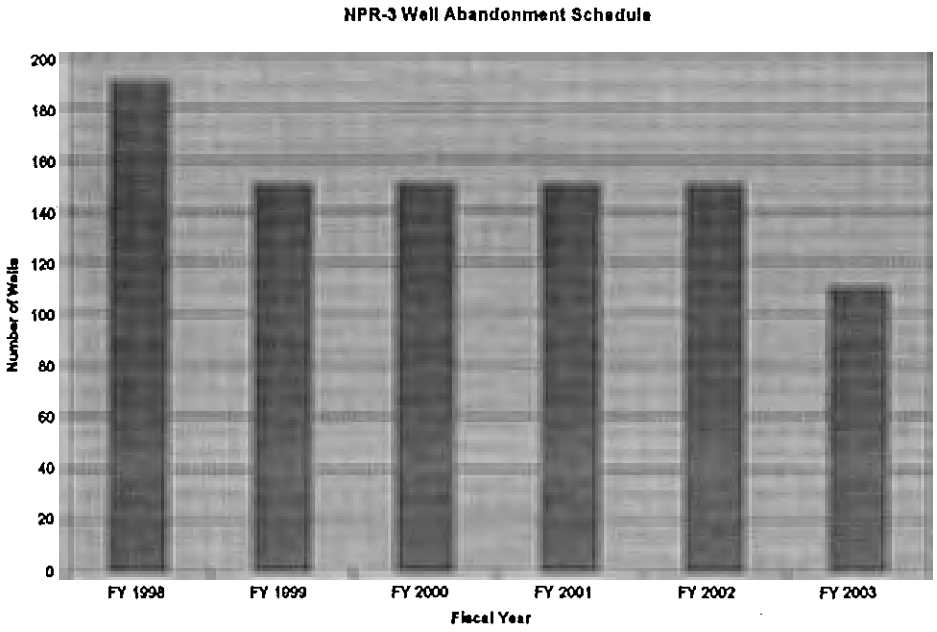


Table 6. Annual NPR-3 Restoration Costs and Salvage Values

Yr	#Wells	P&ACost	Reclaim Total Cost[1]	Salvage Value	Total Field Salvage Value
FY98	190	798,000	1,200,000	0	$170,000
FY99	150	630,000	1,208,500	0	$275,000
FY00	150	630,000	1,208,500	$357,000	$432,000
FY01	150	630,000	1,208,500	$527,000	$1,532,000
FY02	150	630,000	1,230,000	$514,000	$614,000
FY03	110	462,000	1,262,000	$390,000	$826,000
Total	900	3,780,000	7,317,500	$1,788,000	$3,849,000

[1] Total Costs and Salvage Value do not include inflation.

Table 6. ES&H Program Compliance and Restoration Costs

	1998 ($)	1999 ($)	2000 ($)	2001 ($)	2002 ($)	2003 ($)	TOTAL ($)
OSHA Compliance Items	31000	28100	26100	25100	24000	20000	154300
General Safety & Health Program-NPOSR-CUW	62000	57000	52000	50000	20000	10000	251000
Occupational Medical Program	31000	30000	29000	24000	12000	6000	132000
NPR-3 Fire Protection Program	18500	17500	15000	14000	7000	3000	75000
NPR-3 Industrial Hygiene Program	11000	10000	9000	8000	4000	1000	43000
NPR-3 Training Program	20700	19700	18700	17700	8000	2000	86800
NPR-3 Emergency Preparedness Programs	22400	21400	20400	19400	8000	3000	94600
Routine Environmental Monitoring	34100	30100	28000	26000	14000	7000	139200
ES&H Materials	12000	13000	15000	9000	4500	2000	55500
Air Quality Permits/Emissions	17600	16600	15000	14000	7000	2000	72200
Noxious Weed Control	32000	32000	32000	32000	12300	1000	141300
Bio-Treatment Facility	10000	10000	10000	10000	10000	10000	60000
Underground Storage Tank Removal	63000	0	0	0	11000	0	74000
Reclamation Costs	1200000	1208500	1208500	1208500	1230000	1262000	7317500
Total ES&H Activity from 1998 -2003	1565300	1493900	1478700	1457700	1371800	1329000	8696400

After 2003, the presently identifiable, profitable wells, excluding those that may be needed by RMOTC for experimental uses, constitute a core group of 200 wells, producing 62,000 barrels of oil per year (initial rate of 150 b/d). At forecast prices, this translates into a revenue stream of $1.2M to $1.5M per year.

RECLAMATION SHOWCASE

An important factor in identifying candidates for P&A is their uniqueness and availability for experimental use by RMOTC. NPOSR has its objective to be a show-piece for remediation and reclamation for other stripper fields. In the first years of the Plan, much of the technique for P&A methods and reclamation efforts will be developed in conjunction with RMOTC, and it will be essential that a different set of evaluation criteria be applied to wells having high experimental value. Wells that are prematurely plugged will be impossible to reactivate, so careful evaluation of each well is necessary. An analysis has been performed on the 190 wells scheduled for plugging and abandonment in FY 1998. Although these wells have some limited value to RMOTC, the abandonment of these wells should not significantly affect the overall RMOTC mission. Eventually, wells retained for RMOTC use will be included in the transition to a consortium of new owners, and environmental compliance obligations for these wells should also transfer.

SALVAGE

An important cost recovery factor in reclaiming NPR-3 will be the revenue from salvaging surplus equipment and piping from the field. Estimating its market value in anticipation of the eventual transfer of ownership of NPR-3 has been done using three approaches since 1995. A conservative estimate of $3.8M in revenues was determined, to be taken in assuming approximately 200 wells and their producing infrastructure would be left intact at the end of 2003. A recent sale of 26 used pumping units and approximately 2,400 joints of tubing in July 1997 resulted in $281,000 in revenues. This sale confirmed high surplus equipment prices that can be expected to be received.

Surplus equipment and materials would become available for marketing to the industry as P&A activity accelerates. It was assumed that equipment would be salvaged as soon as producing wells became uneconomic and are subsequently plugged and abandoned. The resulting revenue stream helps to offset the cost of reclamation through receipts to the Treasury.

With no capital activity included in the baseline scenario, two of the field's three workover rigs will be used to P&A wells and one will be sold. One underutilized DOE drilling rig may be auctioned in FY98, while three of the four surplus steam generators from the Shannon steamflood will be dismantled in FY99. Inventory from the warehouse will be auctioned in FY98 and the gas plant and one steam generator are scheduled to remain intact until FY 2001 for potential RMOTC usage.

Table 7. Salvage

FY Salvage Values - Accelerated Restoration Activities Beginning FY 98			
FY 98	Item	Anticipated Value	
	DOE #3 Drilling Rig	$100,000	
	Warehouse Inventory	$70,000	
	Total	$170,000	
FY 99	Item	Anticipated Value	
	Water Treatment Facility	$160,000	
	Steam Generators (Three)	$90,000	
	Electrical	$25,000	
	Total	$275,000	
FY 00	Item	Anticipated Value	
	Electrical	$75,000	
	104 Pumping Units	$250,000	
	Tubing/Rod Recovery-104 Wells	$107,000	
	Total	$432,000	
FY 01	Item	Anticipated Value	
	DOE #2 Drilling Rig	$375,000	
	Steam Generators (One)	$30,000	
	Electrical	$100,000	
	150 Pumping Units	$360,000	
	Tubing/Rod Recovery-150 Wells	$154,000	
	Wellheads-254 Wells	$13,000	
	Gas Plant		
	Compressors	$172,000	
	Process Vessels	$166,000	
	Process Storage	$77,000	
	Process Control	$64,000	
	Pipe/Fittings	$21,000	
	Total	$1,532,000	
FY 02	Item	Anticipated Value	
	Electrical	$100,000	
	150 Pumping Units	$360,000	
	Tubing/Rod Recovery-150 Wells	$154,000	
	Total	$614,000	
FY 03	Item	Anticipated Value	
	Electrical	$100,000	
	110 Pumping Units	$264,000	
	Tubing/Rod Recovery-110 Wells	$113,000	
	Heavy Equipment	$131,000	
	Two Kremco WO Rigs	$170,000	
	P-6 WO Rig	$35,000	
	Wellheads-260 Wells	$13,000	
	Total	$826,000	
	Grand Total	$3,849,000	

NEPA REQUIREMENTS

The Department of Energy is in the process of rewriting the Environmental Assessment for the operation of Teapot Dome. The new assessment is scheduled for completion in May 1998 and will incorporate all of the actions contained in this Transition Plan. It will also analyze the potential impact of transfer and/or sale to a private operator or RMOTC consortium at the economic limit of the field. Prior to completion, the Draft Environmental Assessment will be reviewed by all stakeholders with an interest in the future of Teapot and the quality of its environment.

It should be noted that the general plan for Teapot is one that engenders less development than in the past and a concentration on environmental remediation and restoration of native vegetation and habitat. It is the goal of the Department to showcase Teapot Dome as an example for the reclamation of oil field properties.

BEYOND 2003

In this Baseline Plan, restoration of all the field except that portion to be used by RMOTC and 193 wells would be complete in 2003. Major equipment and facilities remaining will be the infrastructure needed to support approximately 200 producing wells and the facilities determined to be important in connection with the RMOTC. These approximate 200 producing wells would be located primarily in the center of the field. All non-essential electrical equipment would have been removed, and the majority of tanks and buildings gone. Most of the test treaters and the other eight production facilities would have been removed and those areas restored. Before the end of FY 2003, essential roadways will be retained to preserve emergency and facilitate restoration efforts; others will be reclaimed.

During 2003, the final subassemblies from the LTS plant will be removed and the site restored. Production at the beginning of FY 2004 is estimated to be 150 b/d of oil.

III. THIRD OBJECTIVE: ESTABLISH A VIABLE PRIVATIZED ROCKY MOUNTAIN OILFIELD TESTING CENTER (RMOTC)

RMOTC was established in 1993 as an industry-driven endeavor to help strengthen the domestic energy industry by testing new petroleum and environmental technologies in operating oil and gas fields owned by the USG in Wyoming and Colorado. Partnering with industry, other government organizations and academic institutions, RMOTC has completed 32 major projects as of September 1997. RMOTC is working with the National Petroleum Technology Office, private companies, National Laboratories, and universities to develop partnerships and combine resources for selected projects. The State of Wyoming contributed $500,000 toward a five-year plan for RMOTC implementation. RMOTC hosted the first of several planned Native American training courses in November 1995 at Bartlesville, Oklahoma which were attended by members of the Osage, Arapahoe, and Apache Tribes, under the auspices of the Bureau of Indian Affairs.

Overall, benefits to the industry are estimated to be as high as $174 for every $1 expended in testing and evaluating new oilfield technologies. All projects have been cost shared, with the bulk of the expense for overhead and facilities support provided by the NPOSR program. Several national laboratories and the DOE In-House Energy Management Program have sponsored research projects with RMOTC. There are 16 tests currently underway, with 33 future projects now in some stage of the planning process. In addition, RMOTC has provided a valuable laboratory and training experience for several dozen college students. A program was developed for the DOE's Historically Black Colleges and Universities (HBCU) program to provide petroleum and environmental engineering students internships at NPR-3 for hands-on experience.

RMOTC Demonstration Program

The RMOTC Demonstration Program will serve as a pilot operation over the next three years under Government ownership and operation as the DOE prepares for privatization. There are five principal elements of the RMOTC demonstration plan:

- **Increase industry participation and funding to fully recover USG costs**
- **Expand university and national laboratory participation and training opportunities**
- **Increase state and Federal participation**
- **Implement a profit sharing program**
- **Reduce administrative costs.**

PRIVATIZATION

The best chance to create an independent RMOTC may be through a consortium of university, state and private institutions, which can rely on a reasonably strong and

consistent customer base. The goal is to provide a turnkey operation to a new owner by FY2001. It is intended that the consortium will then become involved in helping to make basic decisions about which facilities and wells will be retained for experimental use or abandoned and reclaimed.

One possible approach to this objective is to establish a public/private consortium to receive RMOTC programs, facilities and assets upon Federal abandonment of NPR-3. The State of Wyoming has been an important partner in RMOTC since its inception in 1993, and should have the first opportunity to lead in establishing any consortium. A business plan will be developed by NPOSR-CUW to demonstrate the various benefits and opportunities that could be realized from a State-sponsored RMOTC or its successor.

Through our many training and laboratory efforts and numerous student internships, we have also developed considerable interest from several colleges and universities. Also, several historically black colleges and universities and Native American tribes have participated in RMOTC training and are active stakeholders as well.

Of our present oilfield engineering partners, executives of Schlumberger/Anadril, Cameron, Halliburton and Smith International have shown interest in helping form the RMOTC consortium. Other international private and governmental research organizations from Norway, China, Japan and Canada interested in testing with RMOTC could also be an important part of a consortium. The Gas Research Institute (GRI), an industry/Government funded organization, has visited RMOTC and expressed an interest in possible joint ownership.

RMOTC FOCUS GROUP

The RMOTC Focus Group was formed at the inception of the program in 1993 and currently consists of Federal, State and industry officials. This group meets annually to advise the DOE on RMOTC operations. Current members of the Focus Group are listed in Appendix D.

RMOTC PRIVATIZATION TASK FORCE

A RMOTC Privatization Task Force has been established, including members from various organizations of Fossil Energy. This group, chaired by the Director of the Naval Petroleum and Oil Shale Reserves, is scheduled to make its initial report to the Assistant Secretary for Fossil Energy in March 1998. This will be done after the Task Force has completed a survey of industry, academic, and Government interest in the RMOTC program and has had full opportunity to provide input into the future design of the enterprise.

RMOTC BUDGET

A RMOTC budget forecast was developed, considering the projects that are now in the planning stage, a fully operating Federal cost recovery program, successful efforts to identify the more valuable experimental wells in the field, and past experience with

representative costs. Table 8 is the RMOTC budget forecast through transition to new ownership in 2001.

COST SHARING

RMOTC personnel have identified a successful cost recovery agreement method which has been used frequently by the DOE's Office of Clean Coal Technology. Cost sharing agreements would be based on a DOE policy that aims to recover up to the USG's actual contribution to the project. Additional benefits could accrue to the USG at NPR-3 or at the NOSRs if new incremental hydrocarbon production resulted from testing, or a cost savings were gained from developing improved oilfield management techniques. The full text is in Appendix E.

CURRENT AND POTENTIAL RMOTC PROJECTS

The total combined cost for industry partners and RMOTC projects completed during FY 97 will exceed $8 M. Potential projects for FY98 are worth in excess of $6 M. Appendix F includes a detailed listing of past, current and potential projects.

Table 8.

RMOTC Budget Forecast (1998 - 2000)

Year	Project Type	Estimated Total Value ($)	Estimated RMOTC Share ($)	Estimated RMOTC Share (%)
FY-1998	Drilling	$5,000,000	$2,000,000	40.00%
FY-1998	Production	$1,600,000	$800,000	50.00%
FY-1998	Environmental	$280,000	$140,000	50.00%
FY-1998	Energy Conservation	$120,000	$60,000	50.00%
FY-1998	Total	$7,000,000	$3,000,000	42.86%
FY-1999	Drilling	$6,000,000	$2,000,000	33.33%
FY-1999	Production	$1,662,000	$500,000	30.08%
FY-1999	Environmental	$600,000	$300,000	50.00%
FY-1999	Energy Conservation	$400,000	$200,000	50.00%
FY-1999	Total	$8,662,000	$3,000,000	34.63%
FY-2000	Drilling	$10,000,000	$2,000,000	20.00%
FY-2000	Production	$3,750,000	$750,000	20.00%
FY-2000	Environmental	$1,000,000	$200,000	20.00%
FY-2000	Energy Conservation	$250,000	$50,000	20.00%
FY-2000	Total	$15,000,000	$3,000,000	20.00%

IV. FOURTH OBJECTIVE: TRANSFER TEAPOT TO NEW OWNERSHIP

The Department of Energy's March 1997 Report and Recommendations on the Management and Disposition of the Naval Petroleum and Oil Shale Reserves (Excluding Elk Hills) to Congress recommended:

> "That the United States retain ownership of NPR-3 and that the DOE continue to operate it under the Naval Petroleum Reserves law until the field reaches its economic life (projected to be 2003). DOE would be authorized to sell or otherwise dispose of the United States interest in NPR-3, upon depletion of the field, in a manner that would maximize its value."

In 2003, the Department projects that there will remain approximately 200 operating oil wells with commercial oil production from between 160 and 190 BOD. Most of those wells will be concentrated in Sections 10 and 3 in the central part of the Reserve. The Government will remediate all of the environmental problems and restore the majority of the field to close to its natural state. What will remain for either transfer or sale will be a small core production facility, surrounded by a large reclaimed area. Of the approximately 9,600 acres currently comprising Teapot Dome, it is estimated that 80% or roughly 7600 acres will be returned to its natural state, leaving a small producing field of 2000 acres.

At that point in time, reserves will be depleted and production reduced to a point where it will no longer be cost-effective to continue Government operation. And, although Government operation of the field will conclude, oil and gas activity will likely continue for years, albeit under a much reduced scale. There are a variety of operational alternatives that may evolve over the next several years, as the Department implements the core objectives of this Plan:

1. Competitive Sale to Private Company.

   There are many small independent oil companies that might be interested in attempting to operate the residual Teapot Dome profitably and produce the remaining wells to their economic limit. The purchaser should be selected by a competitive bid process from the universe of interested parties after adequate public notice. The attractiveness of this opportunity should benefit from the Government's remediation and restoration activities prior to sale, as well as the 3-D seismic studies which will have been undertaken.

2. Transfer in Conjunction with Establishment of a Privatized RMOTC.

   The transfer or sale of Teapot may facilitate the privatization of RMOTC while at the same time accomplishing the objective of transferring this field to non-government ownership at the end of its commercial life. At a minimum, the RMOTC organization will need to be assured of its access to the field for testing purposes. In addition, the residual value of the field may be an essential component of a viable RMOTC program. Without such remaining value and the assurance of access, it may be difficult to find a party willing or able to assume

the RMOTC program. This approach, of course, assumes at least some residual value to the field at the time of sale or transfers.

3. Use in Whole or Part as a Park or Conservation Area.

At the conclusion of commerciality as a government-operated field, the portion of Teapot Dome not in production or use by RMOTC may have value as a recreation or conservation area. In such case, it could be transferred in whole or in part to the U. S. Department of Interior, the State of Wyoming or a private trust or conservation program for use as a park or wildlife conservation area. Even with full scale petroleum production underway, the area possesses abundant wildlife including mule deer, pronghorn antelope, prairie dogs and numerous wild fowl. With escarpments, abundant grassland, and year-around streams and ponds, it is an area with considerable wildlife potential.

4. **Use as a Commercial Grazing Area.**

Once remediation has been substantially completed, the area will be suitable for grazing leases or for competitive sale for such purposes. This sale could be limited to surface rights which could be exercised in conjunction with continued oil and gas operations by a purchaser or lessee of mineral rights.

SUMMARY:

Regardless of the approach taken, the objective will be to (a) continue to realize the value of the petroleum reserves through production or sale, (b) continue to use the field with its rich store of data for testing and research purposes and (c) to put the non-productive portion of the field into the hands of a responsible steward who will maximize the non-petroleum value of the area.

V. MANAGEMENT RESOURCES

This Transition Plan is organized around four major objectives: Commercial Operations, Abandonment and Restoration, the Rocky Mountain Oilfield Testing Center, and Privatization. **The successful achievement of these goals we have established in this Plan is highly dependent upon our foresight, the correct mix of human and financial resources, and the clear agreement from the Department that this Plan embodies the correct critical elements to transition NPR-3 to the closure of Federal ownership.**

The FY 1999 DOE Congressional Budget Request for NPOSR will be referenced for near term resources, with outyears derived from actions outlined in this Plan. Appendix G includes the key sections from the FY99 Budget Request.

BUDGET AND FINANCIAL REQUIREMENTS

NPR-3 is a Federal Government program, and as such, is dependent upon the Congressional appropriations process for the resources (both financial and staffing) necessary to accomplish its objectives. Historically, NPR-3 has requested funding for operational and capital investment requirements in three areas. These are Operations and Maintenance (O&M), Development Drilling and Development Facilities. O&M provides for the day-to-day activities necessary to operate a commercial oilfield. Development Drilling provides for the drilling of wells necessary to develop and maintain production including new producers, water and gas injection wells, water source wells and water disposal wells. Development Facilities provides for the design, construction or modification of facilities necessary to sustain field production, increase profitability, or meet environmental and safety compliance requirements. Through the 1980's, NPR-3 budgets averaged $21.6 million annually, including $4.5 million for drilling and $2.5 million for facilities as significant capital investments were made in the field infrastructure. As the field declined into a stripper field in the 1990's, capital investments in field development decreased substantially. The drilling program was completed in FY 1996, and no funds were budgeted for drilling in FY 1997 or FY 1998. With the decision not to continue the steam drive project, facilities investments have also been essentially completed. The decrease in capital investment projects has also resulted in reducing O&M requirements. The FY 1997 budget was $8.4 million. The FY 1998 budget, $8.5 million, includes O&M activities, RMOTC, restoration, and general overhead.

The FY 1999 budget for NPR-3 requests funding of $8.4 million. Of this amount, $2.2 million is for O & M. NPOSR-CUW overheads and potential M&O closeout costs will require another $2 million in funding. This assumes that the M & O contractor services will have been terminated, reducing overhead monitoring costs. The remaining $4.2 million includes $1.2 million for plugging, abandonment and field restoration, and $3 million for RMOTC. Outyear funding requirements through FY 2003 for O&M are estimated at $3 million, decreasing to $1.5 million per year. Environmental restoration costs are $2 million per year. RMOTC is budgeted for $3 million per year to FY 2001. Overhead costs will remain at $1.2 million per year.

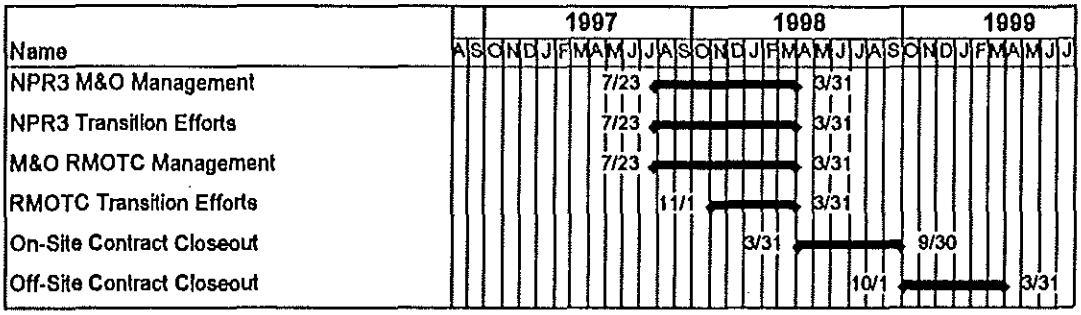
MANAGEMENT AND OPERATING (M&O) CONTRACT STRUCTURE

Since 1985, NPR-3 has been operated under an M&O contract structure as required by DOE policy. The contractor managed daily administrative and business activities while applying technical and engineering operating expertise at the site - all under the direction of the Government. This integrated contract structure provided increased flexibility in an operational setting.

The Government has reexamined its operational strategies and determined that the M&O contract structure no longer makes economic sense for NPR-3. It was concluded that overhead can be substantially reduced by eliminating the M&O contract and having Federal personnel assume direct management and operating authority for the site. This will eliminate one layer of oversight in the monitoring and administration of the M&O contract and will give the DOE greater control over costs and other business decisions involving level of risks versus cost. Work beyond the Government's ability to perform directly will be provided through a support services contract using task orders, and other limited contracts, as needed. There is precedence for this action. The M&O contract was restructured in FY 1996 to enable the DOE to take on direct management of the Naval Oil Shale Reserves (NOSRs), which conserved costs and simplified contract administration. Extending that concept to NPR-3 will enhance cost savings by streamlining its management and administrative processes.

The M&O contract with Fluor Daniel will be extended for one year, divided into two six-month periods: the first as a closeout of operations, and the second as a transition to full Federal operation. Both phases will require different levels of staffing, funding and fee, with negotiations completed in early FY 99. The transition is dependent upon the timing of transfer of DOE engineering and contract staff from Elk Hills (as it transitions to new owners) to NPR-3. Transition and contract closeout costs are not included in this Plan and will be negotiated in the future. NPR-3 operational costs forecasted for FY98 assumed no M&O cost structure. Actual costs incurred will be higher as a result of retaining the M&O structure in FY98. Upon approval of this Transition Plan, NPOSR-CUW and the Office of Headquarters Procurement Operations (HR-542) will work with Fluor Daniel to conclude negotiations.

Figure 7. Milestones



The DOE recognizes the importance of experienced contractor staff in ensuring a quality performance in the field. NPOSR-CUW will make every effort to offer Fluor Daniel staff now assigned to NPR-3 the opportunity to be hired by the new support service contractor(s) to the

extent that those positions are necessary. As shown below, it is expected that staffing levels will be reduced from current M&O levels.

STAFFING

The proposed organization of NPOSR-CUW during the initial stages (FY98 through FY00) of operation is indicated in the organization chart in Figure 8. The following list briefly describes each functional area and core resources needed to implement and continue operations as planned. It should be noted that contract personnel listed below are considered core support (report to work full time every work day, just as the Federal staff will do). All other short term work for services required will be contracted out on an as-required basis. With the exception of RMOTC, no additional Federal FTEs are required to transition from a Management and Operations contractor. By converting DOE staff duties to 100% direct management and control of operations instead of both management and control of some portion of operations and also oversight and control of a prime contractor, numerous layers of management and control can be cut out and a flatter organizational structure achieved. This simplifies risk management issues, streamlines administrative systems, and enhances employee empowerment at the lowest operational levels.

NPR-3 Continued Operation

NPR-3 Field Operations and Maintenance
14 contract personnel plus 1 federal Full-Time Equivalent (FTE) (15)

NPR-3 Restoration
8 contract plus 60% of 1 federal FTE (8.6)

NOSR Operations and Maintenance*
3 contract plus 1 federal FTE (4)

* These personnel will be required until the transfer to the Department of the Interior (DOI) is completed and the DOI completes its leasing of NOSRs 1 and 3.

RMOTC

RMOTC will require ten federal FTEs plus various support contractors, as needed. These 10 FTEs will be needed if Congress allows RMOTC to grow and become a viable business unit that lends itself to privatization. RMOTC is a unique business unit, needing a matrix of highly skilled R&D based personnel to deal with complex technical issues.

This section identifies the positions needed to continue operation of RMOTC without an M&O contractor, by utilizing a combination of additional Federal FTEs and service support personnel. The following lists ten FTEs needed for RMOTC to continue operations. All are considered inherently governmental functions and cannot be contracted out.

RMOTC Manager (1) - Develop policy, direct and control Federal employees. Liaison with Director, NPOSR-CUW, Federal Laboratory Consortium, Headquarters, RMOTC Focus Group, and State of WY.

Marketing Specialist (1) - Coordinate and develop public relations and marketing programs required to support customers and generate new business. Perform Contracting Officer Representative duties on marketing and public relations contracts.

Project Manager Team Leader (1) - Perform Contracting Officer Representative duties on all project support contracts. Coordinate contractors, project managers, and other federal employees' efforts on all operational projects.

Project Managers (2) - Perform Contracting Officer Representative duties. Examine and approve vouchers and invoices. Manage petroleum/chemical/electrical/environmental and geological projects with industry partners and support contractors.

Field Engineering Technician (1) - Perform Contracting Officer Representative duties. Examine vouchers and invoices. Coordinate field data with project managers and partners.

Technical Writer (1) - Write government reports. Coordinate training program. Perform Contracting Officer Representative duties on contracts associated with Internet. Maintain and prepare public relations materials.

Contract Specialist (1) - Perform Contracting Officer duties. Develop and negotiate testing agreement. Award contracts. Procure materials and services.

Legal (1) - Interpret legal and agency policy as it applies to RMOTC's unique mission. Determine applicability of regulations, Cooperative Research and Development Agreements (CRADAs), grants, Memorandums of Understanding (MOUs), Interagency Agreements (IAs), and patents to RMOTC's operations.

Accountant (1) - Determine budget policy, guidance, and strategy. Track and report individual projects and RMOTC program costs. Review and examine invoices and vouchers.

Elk Hills and Headquarters employees will be recruited to fill these positions. Transferring FTEs to Casper lowers costs under the retention program. Moving these FTEs will not negatively impact overall FTE levels in the DOE. In addition, the final mix of personnel who transfer to Casper will determine the final organizational structure, number of contracted employees and/or remaining FTEs to be filled in the future. In addition, a variety of support service contractors will be established to accomplish work on an as-needed basis.

SCHEDULE FOR TRANSFER OF FTE'S FOR RMOTC

		1997
1.	Canvass Elk Hills and HQs staff interested in transfer to NPOSR-CUW under retention program	8/2 - 9/30
2.	M&O begins to transition out of RMOTC	11/1
3.	Final list of interested transfers completed and approved by NPOSR	11/15
4	Begin Position Descriptions and Organizational structure/contract Requirements.	11/30/97
5.	First FTEs begin to arrive in Casper	12/1
		1998
6.	Last FTEs arrive in Casper	2/15
7	Complete Position Descriptions and Organization Chart	2/28
8.	Full transition of management of RMOTC by M&O to the DOE	3/31

General Support
5 contract plus 11.4 federal FTEs (16.4)

These personnel will perform management, administrative, and engineering support for the following:

NPR-3 operations
NPR-3 abandonment and restoration activities
ES&H compliance
NOSR operations and maintenance
RMOTC operations
M&O phase-out administration activities.

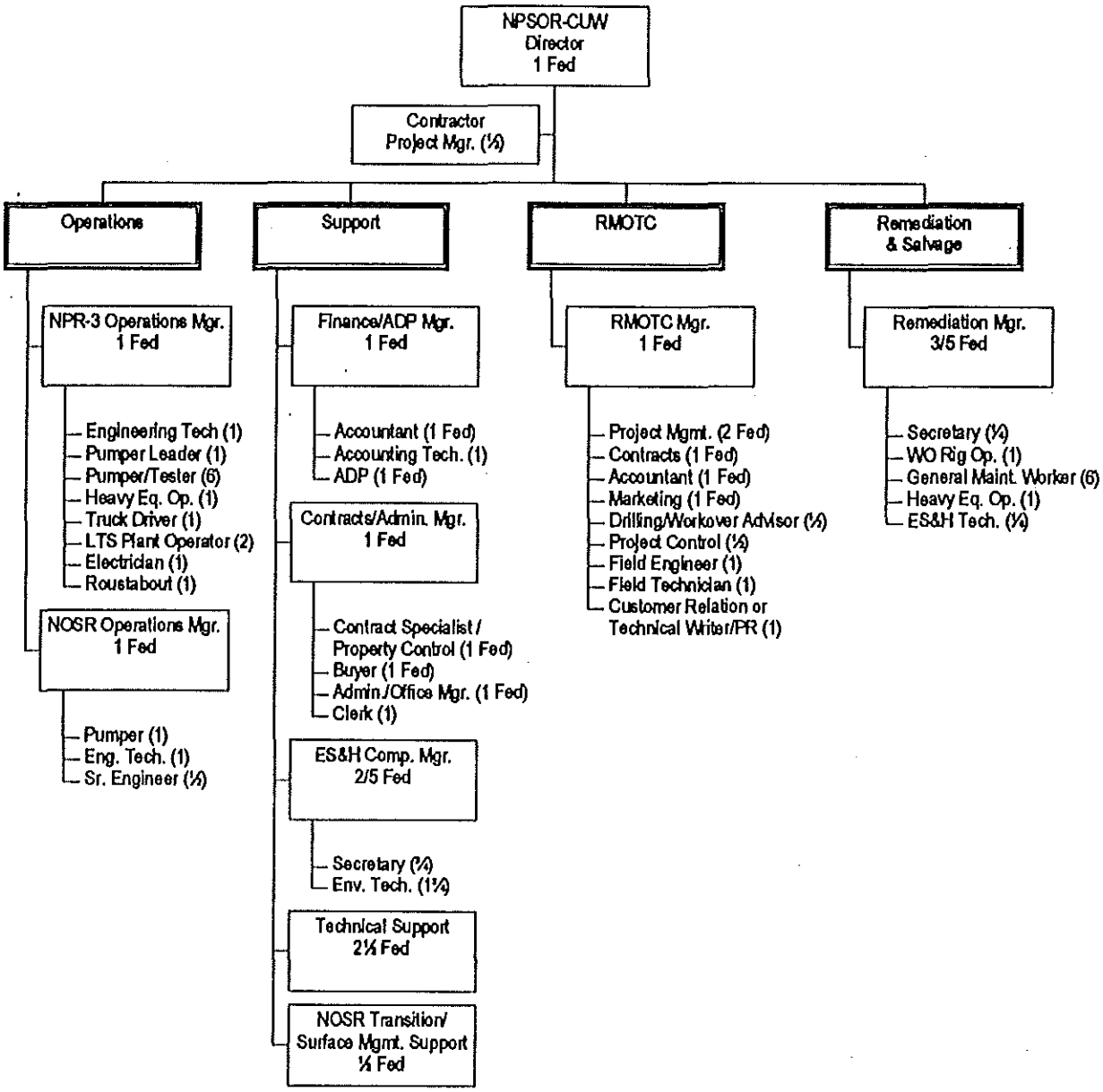
An organizational chart (Figure 8) for the previously mentioned responsibilities follows.

The contractor's RMOTC staff will continue to have management and operating responsibilities, functioning as normal throughout the first six months of FY98. The DOE transition to assume RMOTC operations will begin November 1, 1997 and be complete by March 31, 1998.

HQ's procurement operations and/or other FE sites will assist the NPOSR-CUW contracting officers with training, review, and temporary limited signature authority until such time as formal warrants to award financial assistance agreements can be provided to NPOSR-CUW Contracting Officers. NPOSR-CUW will begin to receive training on financial assistance agreements upon approval of this plan.

Figure 8

NPOSR-CUW Organization



PROCUREMENT AUTHORITY

A critical part of the successful implementation of this Plan is the necessity for increasing procurement authority to $5 M for more efficient management of NPR-3. Authority must be received from the DOE Office of Headquarters Procurement Operations (HR-56) to match field capability with respect to the NOSRs ($5M) and our hydrocarbon sales and marketing (unlimited). The increased field responsibility required by this Plan necessitates having the administrative tools to fully capture its benefits.

Authority for award of "work for others", grants, and financial agreements with our cost recovery efforts will begin with Headquarters procurement operations. Current and new Federal staff at NPR-3 will receive additional training in administering these instruments.

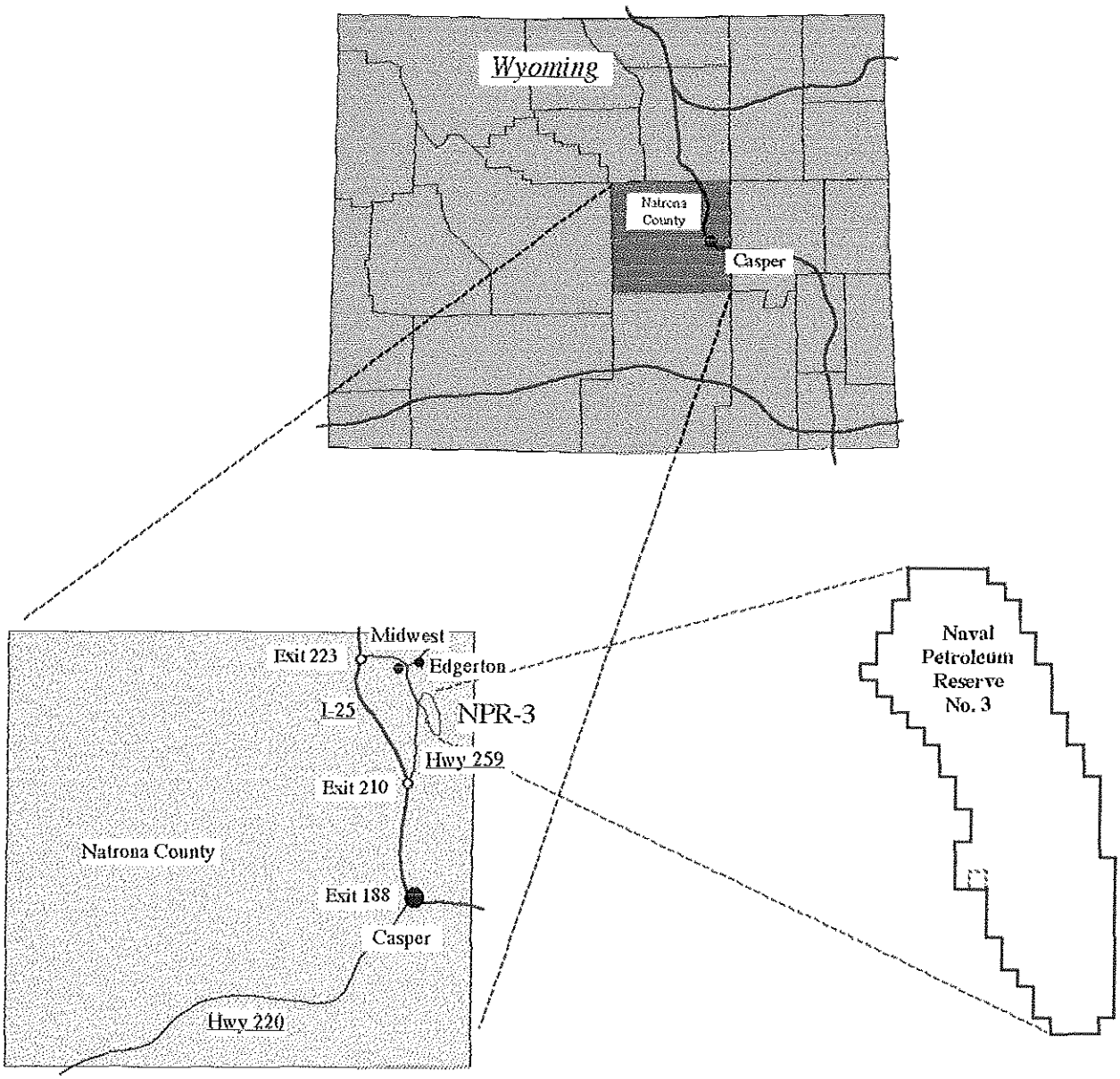
VI. CONCLUSION

Based on commercial performance criteria, NPR-3 can be profitably managed beyond 2003 to produce its proved reserves. Some additional upside opportunities could be available with limited new capital investment. Over the next five years, a significant abandonment and restoration program would eliminate many hundreds of shut in and marginal wells, leaving a core of approximately 200 profitable wells by 2003.

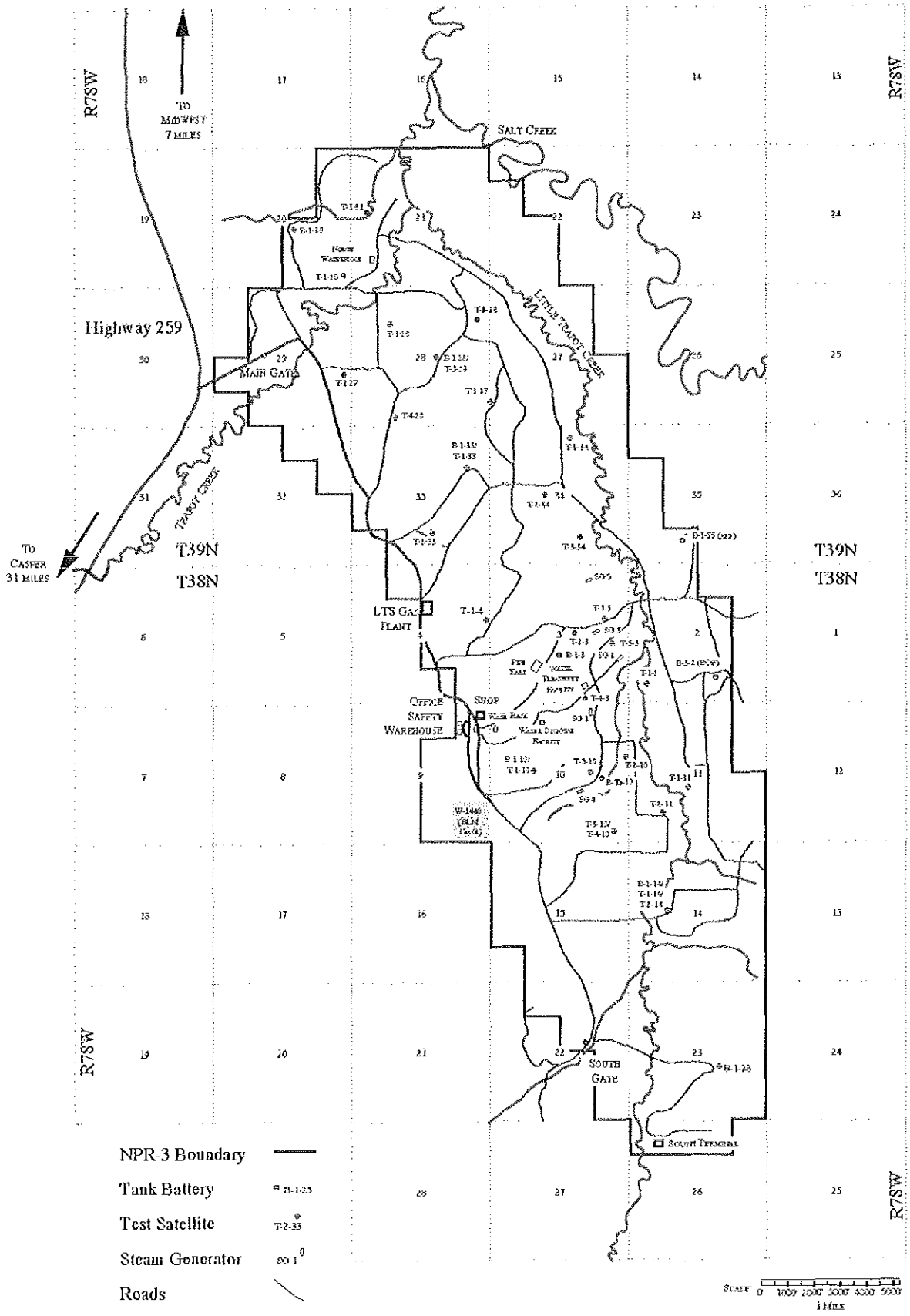
The Rocky Mountain Oilfield Testing Center will continue as a demonstration program, partnered with the oil and gas industry. Its future will eventually be managed by a public/private consortium--the goal is to privatize it by 2001.

Long-term stewardship of Teapot Dome after 2003 will be explored with a variety of stakeholders. The goal is to design a management configuration that best enhances public benefits when the field is transferred to new ownership.

As a means of reviewing this Plan, we also hope to sponsor a regional colloquium in Casper early next year for various stakeholders to examine our final Plan, and invite them to explore their own visions of what our future partnership alternatives should be. This will be done in conjunction with the our RMOTC Focus Group, the State of Wyoming, local industry, educational institutions, and the Wyoming Chapter of the Nature Conservancy. From this we expect to gain a fuller understanding of how the public benefit could be enhanced by the eventual transition of NPR-3 to other ownership.



NPR-3 Vicinity Map



Naval Petroleum Reserve No. 3
Roads and Facilities

Appendix B

Production Forecast

The most important estimate for predicting life of the field is the production forecast. The following table summarizes the production forecast for NPR-3 based on decline curve analysis:

Year	Oil (bbl/yr)		Gas	Liquids
	Sweet	Sour	(mcf/yr)	(gals/yr)
FY98	191,842	63,875	1,500,000	1,825,000
FY99	131,692	36,500	0	0
FY00	101,552	25,550	0	0
FY01	80,892	20,075	0	0
FY02	65,877	16,425	0	0
FY03	54,304	14,600	0	0

Baseline Hydrocarbon Price Forecast

Year	Sweet Oil ($/bbl)	Sour Oil ($/bbl)	Gas ($/mcf)	Liquids ($/gal)
FY98	18.00	14.00	1.77	0.34
FY99	18.41	14.41	1.82	0.35
FY00	18.83	14.83	1.86	0.36
FY01	19.25	15.25	1.91	0.37
FY02	19.69	15.69	1.96	0.38
FY03	20.14	16.14	2.01	0.39

EIA (AEO97) Hydrocarbon Price Forecast

Year	Oil ($/bbl)	Gas ($/mcf)	Liquids ($/gal)
FY98	19.55	1.90	0.54
FY99	20.07	1.99	0.58
FY00	20.58	2.06	0.61
FY01	21.67	2.14	0.64
FY02	22.71	2.21	0.66
FY03	23.74	2.32	0.69

Appendix C

NPR-3 PRODUCTION
Ranked in Declining Order
(as of August, 1997)

	WELL-NO	WELL-STATUS	BOPM
1	63-TPX-10	PR	1120
2	82-3-SX-10	PR	682
3	73-TPX-10	PR	676
4	76-TPX-10	PR	603
5	75-TPX-10	PR	544
6	47-1-STX-11	PR	437
7	43-2-TPX-10	PR	416
8	55-TPX-10	PR	401
9	72-TPX-10	PR	350
10	72-TX-33	PR	325
11	27-SHX-14	PR	313
12	54-TPX-10	PR	305
13	56-TPX-10	PR	301
14	51-AX-3	PR	286
15	72-1-SX-10	PR	282
16	78-1-SX-3	PR	279
17	46-1-STX-11	PR	271
18	88-1-SX-3	PR	240
19	52-6-SX-3	PR	236
20	71-42-SX-10	PR	234
21	55-STX-23	PR	227
22	25-SX-11	PR	222
23	73-31-SX-10	PR	213
24	77-35-SX-3	PR	213
25	53-1-STX-34	PR	210
26	18-1-AX-2	PR	190
27	36-STX-23	PR	185
28	83-SX-10	PR	182
29	63-STX-29	PR	181
30	38-1-AX-34	PR	174
31	75-1-STX-29	PR	172
32	72-5-SX-3	PR	167
33	85-S-10	PR	158
34	81-11-SX-10	PR	157
35	52-1-SX-3	PR	151
36	62-16-SX-3	PR	148
37	61-TX-10	PR	146
38	22-STX-3	PR	144
39	72-SX-3	PR	142
40	52-SX-3	PR	140
41	78-31-SX-3	PR	137
42	84-A-20	PR	135
43	81-16-SX-10	PR	134
44	83-61-SX-10	PR	134
45	88-4-SX-3	PR	134
46	88-2-SX-3	PR	132

Appendix C

NPR-3 PRODUCTION
Ranked in Declining Order
(as of August, 1997)

	WELL-NO	WELL-STATUS	BOPM
47	63-4-SX-3	PR	130
48	101-S-3	PR	128
49	72-2-SX-10	PR	128
50	73-2-SX-3	PR	126
51	47-STX-14	PR	122
52	77-AX-20	PR	119
53	22-AX-21	PR	117
54	34-STX-10	PR	117
55	81-1-SX-10	PR	115
56	18-1-SX-2	PR	114
57	44-1-SX-3	PR	114
58	83-5-STX-10	PR	113
59	62-AX-3	PR	112
60	72-41-SX-10	PR	112
61	14-1-STX-35	PR	110
62	47-A-34	PR	110
63	12-AX-14	PR	108
64	72-12-SX-10	PR	108
65	66-AX-28	PR	105
66	72-9-SX-3	PR	104
67	25-STX-23	PR	103
68	88-3-SX-3	PR	103
69	53-3-SX-3	PR	101
70	77-S-3	PR	101
71	78-2-SX-3	PR	101
72	84-AX-3	PR	101
73	85-14-SX-10	PR	100
74	81-AX-10	PR	98
75	73-1-SX-3	PR	97
76	13-SX-11	PR	96
77	17-SX-2	PR	96
78	71-2-SX-10	PR	96
79	88-5-SX-3	PR	96
80	22-AX-14	PR	91
81	33-SX-3	PR	91
82	83-AX-10	PR	91
83	32-66-SX-11	PR	89
84	44-SX-3	PR	89
85	61-66-SX-3	PR	87
86	75-1-SHX-34	PR	87
87	12-AX-11	PR	84
88	58-66-SHX-10	PR	84
89	88-66-SX-3	PR	84
90	63-64-SX-10	PR	83
91	32-A-34	PR	80
92	73-61-SX-3	PR	80
93	44-S-11	SI	80

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NPR-3 PRODUCTION
Ranked in Declining Order
(as of August, 1997)

	WELL-NO	WELL-STATUS	BOPM
94	63-S-11	PR	79
95	33-1-SHX-29	PR	77
96	55-41-SX-10	PR	77
97	71-SX-14	PR	75
98	72-2-SX-3	PR	75
99	83-2-SX-3	PR	75
100	86-2-SX-3	PR	75
101	48-2-SHX-34	PR	73
102	71-1-SX-3	PR	73
103	82-7-SX-10	PR	72
104	88-10-SX-3	PR	72
105	35-1-SHX-10	IP	70
106	77-2-SX-34	PR	69
107	77-A-33	PR	69
108	87-5-SX-3	PR	69
109	73-45-SX-10	PR	67
110	74-1-SX-10	PR	67
111	27-16-SX-35	PR	66
112	66-46-SX-3	PR	66
113	77-32-SX-3	PR	66
114	14-1-SX-11	PR	65
115	58-S-10	PR	65
116	73-66-SX-10	PR	65
117	85-AX-20	PR	64
118	63-3-SX-10	PR	62
119	64-STX-3	PR	62
120	84-SX-15	PR	62
121	88-1-AX-33	PR	62
122	13-61-SX-11	PR	60
123	27-STX-11	PR	59
124	38-AX-34	PR	59
125	45-A-34	PR	59
126	62-1-SX-3	PR	59
127	78-SX-34	PR	59
128	82-2-SHX-3	PR	59
129	62-1-STX-10	PR	58
130	12-SX-3	PR	57
131	68-1-SX-34	PR	57
132	72-3-SX-10	PR	57
133	87-1-SX-10	PR	57
134	58-21-SX-10	PR	55
135	61-SX-3	PR	55
136	72-5-SX-10	PR	55
137	11-61-SX-11	PR	53
138	17-16-SHX-35	PR	53
139	18-SX-2	PR	53
140	23-1-SX-2	PR	53

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NPR-3 PRODUCTION
Ranked in Declining Order
(as of August, 1997)

	WELL-NO	WELL-STATUS	BOPM
141	45-SX-3	PR	53
142	65-1-SX-10	PR	53
143	74-51-SX-10	PR	53
144	87-SX-3	PR	53
145	41-AX-3	PR	51
146	71-SX-10	PR	51
147	11-1-SX-2	PR	50
148	203-SH-3	PR	50
149	27-S-35	PR	50
150	53-1-SX-3	PR	50
151	54-51-SX-10	PR	50
152	58-61-SX-3	PR	50
153	68-66-SX-34	PR	50
154	71-3-SX-3	PR	50
155	73-4-SX-10	PR	50
156	73-AX-15	PR	50
157	77-3-SX-3	PR	50
158	82-SX-10	PR	50
159	88-1-SX-10	PR	50
160	63-1-SX-3	PR	48
161	73-S-10	PR	48
162	77-1-SHX-34	PR	48
163	77-1-SX-27	PR	48
164	78-SX-3	PR	48
165	13-SX-3	PR	46
166	71-2-SX-3	PR	46
167	81-S-3	PR	46
168	36-MX-10	PR	45
169	53-16-SX-10	PR	45
170	84-S-14	PR	45
171	16-2-SX-2	PR	43
172	26-STX-14	PR	43
173	28-AX-27	PR	43
174	52-62-SX-10	PR	43
175	64-SX-3-FP	PR	43
176	81-4-SX-10	PR	43
177	83-56-SX-10	PR	43
178	87-2-SX-10	PR	43
179	15-1-STX-35	PR	41
180	15-AX-11	PR	41
181	16-SX-2	PR	41
182	31-SHX-34	PR	41
183	35-SHX-34	PR	41
184	37-AX-10	PR	41
185	42-AX-34	PR	41
186	57-1-SX-34	PR	41
187	82-1-SX-3	PR	41

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NPR-3 PRODUCTION
Ranked in Declining Order
(as of August, 1997)

	WELL-NO	WELL-STATUS	BOPM
188	86-S-11	PR	41
189	87-S-10	PR	41
190	61-36-SX-10	PR	40
191	12-1-STX-3	PR	39
192	18-AX-34	PR	39
193	34-AX-34	PR	39
194	44-SHX-33	PR	39
195	51-1-SX-3	PR	39
196	72-46-SX-10	PR	39
197	86-3-SX-3	PR	39
198	12-SX-11	PR	38
199	14-AX-11	PR	38
200	17-AX-11	PR	38
201	18-STX-14	PR	38
202	53-SX-10	PR	38
203	62-2-SX-3	PR	38
204	62-S-14	PR	38
205	63-1-SX-14	PR	38
206	26-S-2	PR	37
207	36-1-SX-11	PR	37
208	45-AX-28	PR	37
209	46-STX-34	PR	37
210	61-A-3	PR	37
211	78-34-SX-3	PR	37
212	83-SX-3	PR	37
213	86-A-20	PR	37
214	88-AX-28	PR	37
215	13-AX-14	PR	36
216	18-SHX-11	PR	36
217	28-1-SX-11	PR	36
218	52-31-SX-10	PR	36
219	57-SHX-14-H	PR	36
220	72-4-SX-10	PR	36
221	74-SX-14	PR	36
222	81-SX-10	PR	36
223	83-4-SX-10	PR	36
224	87-2-SX-3	PR	36
225	28-STX-14	PR	35
226	15-S-35	PR	34
227	16-AX-3	PR	34
228	24-SX-3	PR	34
229	28-SX-2	PR	34
230	47-12-SX-3	PR	34
231	51-63-SX-10-UP3	PR	34
232	52-5-SX-3	PR	34
233	54-SX-3-FP	PR	34
234	56-16-SX-3	PR	34

Appendix C

NPR-3 PRODUCTION
Ranked in Declining Order
(as of August, 1997)

	WELL-NO	WELL-STATUS	BOPM
235	57-SX-3	PR	34
236	62-6-SX-3	PR	34
237	73-3-SX-3	PR	34
238	81-AX-4	PR	34
239	84-S-3	PR	34
240	22-1-STX-10	PR	33
241	51-AX-15	PR	33
242	51-SX-15	PR	33
243	52-45-SX-10	PR	33
244	54-SHX-23	PR	33
245	82-1-SX-10	PR	33
246	26-AX-11	PR	32
247	36-S-2	PR	32
248	62-SX-34	PR	32
249	65-1-SX-3	PR	32
250	48-1-SHX-34	PR	31
251	51-1-AX-15	PR	31
252	53-1-SX-10	PR	31
253	76-SX-10	PR	31
254	17-STX-27	PR	30
255	28-S-35	PR	30
256	301-ST-2	PR	30
257	31-61-SX-2	PR	30
258	34-SX-3	PR	30
259	35-SX-11	PR	30
260	41-SX-10	PR	30
261	53-SH-2	PR	30
262	55-S-3-FP	PR	30
263	61-1-SX-34	PR	30
264	62-S-3	PR	30
265	71-SX-3	PR	30
266	84-1-SX-3	PR	30
267	85-1-SX-3	PR	30
268	12-11-SX-11	PR	29
269	57-SX-34	PR	29
270	64-25-SX-10	PR	29
271	73-1-SX-10	PR	29
272	84-6-SX-10	PR	29
273	84-STX-15	PR	29
274	16-1-SX-2	PR	27
275	18-S-35	PR	27
276	23-SX-3	PR	27
277	25-SX-3	PR	27
278	26-1-SX-35	PR	27
279	27-SX-2	PR	27
280	32-S-11	PR	27
281	46-SX-3	PR	27

Appendix C

NPR-3 PRODUCTION
Ranked in Declining Order
(as of August, 1997)

	WELL-NO	WELL-STATUS	BOPM
282	55-S-34	PR	27
283	65-SX-34	PR	27
284	68-1-SX-3	PR	27
285	75-S-3	PR	27
286	82-S-3	PR	27
287	24-AX-10	PR	26
288	26-SX-11-WP	PR	26
289	36-SHX-10	PR	26
290	45-S-10	PR	26
291	48-STX-10	PR	26
292	57-S-10	PR	26
293	61-SX-15	PR	26
294	68-61-SX-10	PR	26
295	68-S-10	PR	26
296	17-S-35	PR	25
297	33-S-11	PR	25
298	35-1-SHX-34	PR	25
299	41-1-SX-3	PR	25
300	51-SX-3	PR	25
301	53-2-SX-3	PR	25
302	53-S-3	PR	25
303	54-66-SX-3-FP	PR	25
304	54-S-11	PR	25
305	54-S-34	PR	25
306	67-SX-34	PR	25
307	72-2-SX-34	PR	25
308	86-AX-3	PR	25
309	87-16-SX-34	PR	25
310	87-AX-20	PR	25
311	88-S-34	PR	25
312	88-ST-11	PR	25
313	22-S-11	PR	24
314	28-AX-34	PR	24
315	32-AX-10	PR	24
316	38-AX-10	PR	24
317	38-S-35	PR	24
318	45-S-14	PR	24
319	52-SX-15	PR	24
320	57-21-SX-10	PR	24
321	77-22-STX-10	PR	24
322	15-S-2	PR	23
323	21-16-SX-2	PR	23
324	24-S-11	PR	23
325	43-SX-3	PR	23
326	51-61-SX-14	PR	23
327	62-42-SX-10	PR	23
328	63-SX-3	PR	23

Appendix C

NPR-3 PRODUCTION
Ranked in Declining Order
(as of August, 1997)

	WELL-NO	WELL-STATUS	BOPM
329	66-S-11	PR	23
330	72-S-14	PR	23
331	73-S-14	PR	23
332	73-SX-33	PR	23
333	76-S-34	PR	23
334	84-S-34	PR	23
335	85-S-11	PR	23
336	87-S-11	PR	23
337	44-64-SX-10	PR	22
338	47-S-10	PR	22
339	63-2-SX-10	PR	22
340	64-5-SX-10	PR	22
341	64-65-SX-10	PR	22
342	73-S-15	PR	22
343	78-53-SX-10	PR	22
344	38-61-SX-34	PR	21
345	41-66-SX-11	PR	21
346	44-16-SX-11	PR	21
347	48-SX-35	PR	21
348	56-31-SX-3-FP	PR	21
349	66-1-SX-2	PR	21
350	66-S-2	PR	21
351	67-66-SX-11	PR	21
352	68-1-SX-2	PR	21
353	73-S-3	PR	21
354	76-S-11	PR	21
355	85-24-SX-3	PR	21
356	85-55-SX-3	PR	21
357	88-AX-33	PR	21
358	45-1-SHX-3	PR	20
359	77-STX-28	PR	20
360	17-1-STX-2	PR	19
361	53-41-SX-10	PR	19
362	56-66-SX-10	PR	19
363	62-23-SX-10	PR	19
364	63-1-SX-10	PR	19
365	67-13-SX-3	PR	19
366	73-8-SX-10	PR	19
367	74-32-SX-10	PR	19
368	84-1-SX-14	PR	19
369	28-AX-3	PR	18
370	32-1-SX-14	PR	18
371	32-SX-3	PR	18
372	33-SH-29	PR	18
373	35-S-2	PR	18
374	41-SX-2	PR	18
375	42-SX-2	PR	18

NPR-3 PRODUCTION
Ranked in Declining Order
(as of August, 1997)

	WELL-NO	WELL-STATUS	BOPM
376	44-AX-34	PR	18
377	45-S-2	PR	18
378	47-45-SX-3	PR	18
379	51-1-SX-11	PR	18
380	57-22-SX-3	PR	18
381	57-S-2	PR	18
382	62-3-SX-3	PR	18
383	87-61-SX-34	PR	18
384	25-SX-14	PR	17
385	63-4-SX-10	PR	17
386	76-46-SX-3	PR	17
387	76-SX-14	PR	17
388	78-46-SX-3	PR	17
389	81-66-SX-15	PR	17
390	83-6-SX-10	PR	17
391	88-AX-3	PR	17
392	22-S-2	PR	16
393	23-S-2	PR	16
394	42-11-SX-11	PR	16
395	56-S-3	PR	16
396	68-S-34	PR	16
397	77-SHX-10	PR	16
398	78-SX-11	PR	16
399	82-S-14	PR	16
400	16-1-SHX-11	PR	15
401	72-1-SX-3	PR	15
402	78-1-STX-34	PR	15
403	11-SX-14	PR	14
404	12-15-SHX-2	PR	14
405	15-S-11	PR	14
406	21-16-SX-14	PR	14
407	21-S-2	PR	14
408	24-SX-14	PR	14
409	31-11-SX-2	PR	14
410	37-SX-11-WP	PR	14
411	38-SX-11	PR	14
412	47-SX-3	PR	14
413	48-S-11	PR	14
414	53-S-11	PR	14
415	57-S-11	PR	14
416	61-S-11	PR	14
417	61-S-34	PR	14
418	64-S-11	PR	14
419	67-S-2	PR	14
420	68-61-SX-34	PR	14
421	68-SX-11	PR	14
422	75-S-11	PR	14

NPR-3 PRODUCTION
Ranked in Declining Order
(as of August, 1997)

	WELL-NO	WELL-STATUS	BOPM
423	75-S-14	PR	14
424	75-S-34	PR	14
425	85-S-34	PR	14
426	12-STX-34	PR	13
427	88-DX-3	PR	13
428	26-66-SX-11-WP	PR	12
429	27-64-SX-11-WP	PR	12
430	32-SX-14	PR	12
431	38-1-SHX-35	PR	12
432	41-SX-15	PR	12
433	52-15-SX-10	PR	12
434	56-SX-10	PR	12
435	81-11-SX-15	PR	12
436	18-1-SHX-28	PR	11
437	31-S-3	PR	11
438	35-AX-34	PR	11
439	37-STX-35	PR	11
440	42-S-11	PR	11
441	43-21-SX-10	PR	11
442	48-S-2	PR	11
443	56-S-2	PR	11
444	65-S-3-FP	PR	11
445	66-SHX-28	PR	11
446	67-SX-11	PR	11
447	23-SX-14	PR	10
448	26-AX-3	PR	10
449	36-26-SX-11-WP	PR	10
450	38-11-SX-35	PR	10
451	72-7-SX-3	PR	10
452	72-S-10	PR	10
453	56-SHX-15	IP	9
454	13-SX-2	PR	9
455	51-SX-14	PR	9
456	62-S-11	PR	9
457	71-1-SX-10	PR	9
458	73-SHX-15	PR	9
459	77-S-10	PR	9
460	86-1-SX-3	PR	9
461	57-64-SX-3	SI	9
462	16-61-SHX-11	PR	8
463	23-A-34	PR	8
464	58-SX-34	PR	8
465	64-SHX-15(/)	PR	8
466	76-14-SX-3	PR	8
467	85-AX-3	PR	8
468	17-STX-21	PR	7
469	34-SX-14	PR	7

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	WELL-NO	WELL-STATUS	BOPM
470	43-1-SX-10	PR	7
471	43-DX-10	PR	7
472	43-S-11	PR	7
473	55-S-11	PR	7
474	71-AX-15	PR	7
475	73-AX-3	PR	7
476	88-AX-10	PR	7
477	77-2-SX-3	IP	6
478	11-STX-11	PR	6
479	16-1-AX-21	PR	6
480	38-SHX-14	PR	6
481	42-S-34	PR	6
482	55-66-SX-3-FP	PR	6
483	83-AX-20	SI	6
484	22-STX-26	PR	5
485	24-11-SX-11	PR	5
486	24-SX-2	PR	5
487	25-SX-2	PR	5
488	32-SHX-15	PR	5
489	43-SX-10	PR	5
490	55-63-SX-3-FP	PR	5
491	71-14-SX-10	PR	5
492	74-SX-3	PR	5
493	76-65-SX-3	PR	5
494	11-AX-34	PR	4
495	13-AX-21	PR	4
496	18-25-SHX-11	PR	4
497	202-A-34	PR	4
498	404-ST-33	PR	4
499	51-SHX-3	PR	4
500	68-61-SX-3	PR	4
501	14-SX-14	PR	3
502	15-MX-11	PR	3
503	24-15-STX-2	PR	3
504	41-1-STX-2	PR	3
505	41-S-14	PR	3
506	51-S-11	PR	3
507	52-AX-15	PR	3
508	52-SHX-15	PR	3
509	57-AX-28	PR	3
510	61-1-STX-15	PR	3
511	63-SX-14	PR	3
512	64-S-14	PR	3
513	67-42-SX-3	PR	3
514	74-2-SX-10	PR	3
515	21-AX-21	PR	2
516	22-S-14	PR	2

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	WELL-NO	WELL-STATUS	BOPM
517	23-STX-11	PR	2
518	28-SX-11	PR	2
519	33-S-14	PR	2
520	37-STX-10	PR	2
521	42-1-SX-14	PR	2
522	43-1-SX-34	PR	2
523	51-TX-33	PR	2
524	52-SX-14	PR	2
525	57-STX-10	PR	2
526	58-MX-10	PR	2
527	63-31-SX-10	PR	2
528	66-SX-10	PR	2
529	67-2-SX-3	PR	2
530	67-SX-10	PR	2
531	71-45-SX-10	PR	2
532	78-26-SX-10	PR	2
533	81-SX-15	PR	2
534	85-S-3	PR	2
535	88-SX-3	PR	2
536	12-S-14	PR	1
537	12-SX-2	PR	1
538	21-1-SHX-2	PR	1
539	403-SH-33	PR	1
540	43-SX-14	PR	1
541	58-36-SX-3	PR	1
542	62-1-SHX-15	PR	1
543	65-S-2	PR	1
544	66-SX-3	PR	1
545	77-S-34	PR	1
546	83-SX-15	PR	1
547	87-S-34	PR	1
548	27-1-X-10	AC	0
549	31-X-29	AC	0
550	45-1-X-14	AC	0
551	52-X-23	AC	0
552	67-X-10	AC	0
553	74-66-SX-10	AC	0
554	74-X-29	AC	0
555	302-A-3	AI	0
556	401-A-10	AI	0
557	73-5-SX-10	AI	0
558	73-7-SX-10	AI	0
559	77-5-SX-3	AI	0
560	77-6-SX-3	AI	0
561	78-3-SX-3	AI	0
562	78-4-SX-3	AI	0
563	81-2-SX-10	AI	0

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	WELL-NO	WELL-STATUS	BOPM
564	81-3-SX-10	AI	0
565	82-2-SX-10	AI	0
566	82-4-SX-10	AI	0
567	82-5-SX-10	AI	0
568	82-6-SX-10	AI	0
569	83-2-SX-10	AI	0
570	83-3-SX-10	AI	0
571	87-3-SX-3	AI	0
572	87-4-SX-3	AI	0
573	88-6-SX-3	AI	0
574	88-7-SX-3	AI	0
575	88-8-SX-3	AI	0
576	88-9-SX-3	AI	0
577	52-1-RDPK-10	DA	0
578	52-1-TPX1-10	DA	0
579	101-A-15	DR	0
580	101-A-20	DR	0
581	102-A-20	DR	0
582	102-A-33	DR	0
583	104-A-33	DR	0
584	105-A-20	DR	0
585	107-A-29	DR	0
586	11-AX-33	DR	0
587	13-A-10	DR	0
588	13-S-35	DR	0
589	14-S-35	DR	0
590	15-1-SHX-2	DR	0
591	16-AX-28	DR	0
592	16-S-14	DR	0
593	17-S-34	DR	0
594	18-SX-11	DR	0
595	201-A-10	DR	0
596	201-A-21	DR	0
597	203-A-34	DR	0
598	204-A-29	DR	0
599	204-A-34	DR	0
600	21-A-28	DR	0
601	21-S-11	DR	0
602	21-S-14	DR	0
603	22-2-X-10	DR	0
604	23-16-SHX-14	DR	0
605	23-S-11	DR	0
606	24-AX-28	DR	0
607	24-S-35	DR	0
608	25-AX-27	DR	0
609	26-46-SX-11-WO	DR	0
610	26-66-1-SX-11-WO	DR	0

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	WELL-NO	WELL-STATUS	BOPM
611	27-42-SX-11-WO	DR	0
612	27-A-27	DR	0
613	27-AX-28	DR	0
614	27-S-3	DR	0
615	28-AX-10	DR	0
616	28-AX-28	DR	0
617	28-S-3	DR	0
618	28-S-34	DR	0
619	301-A-14	DR	0
620	301-A-21	DR	0
621	302-A-21	DR	0
622	31-AX-34	DR	0
623	31-S-11	DR	0
624	31-S-14	DR	0
625	31-S-2	DR	0
626	32-66-SX-2	DR	0
627	32-A-28	DR	0
628	32-S-2	DR	0
629	33-S-2	DR	0
630	34-AX-33	DR	0
631	34-S-11	DR	0
632	34-X-15	DR	0
633	35-SX-3	DR	0
634	35-SX-34	DR	0
635	36-2-SHX-10(/)	DR	0
636	36-SX-3	DR	0
637	36-SX-34	DR	0
638	37-21-SX-11-WO	DR	0
639	37-S-2	DR	0
640	37-SX-34	DR	0
641	38-A-21	DR	0
642	38-A-27	DR	0
643	38-S-2	DR	0
644	38-S-3	DR	0
645	401-A-20	DR	0
646	402-ST-29	DR	0
647	404-A-20	DR	0
648	404-A-28	DR	0
649	409-A-20	DR	0
650	41-A-28	DR	0
651	41-A-34	DR	0
652	41-AX-11	DR	0
653	41-AX-29	DR	0
654	42-AX-29	DR	0
655	42-S-3	DR	0
656	42-STX-3(/)	DR	0
657	43-SX-2	DR	0

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	WELL-NO	WELL-STATUS	BOPM
658	43-SX-34	DR	0
659	44-S-2	DR	0
660	44-SX-34	DR	0
661	45-SX-11	DR	0
662	46-1-X-3	DR	0
663	46-AX-11	DR	0
664	46-S-11	DR	0
665	46-S-2	DR	0
666	47-A-21	DR	0
667	47-S-2	DR	0
668	47-SX-11	DR	0
669	47-SX-34	DR	0
670	48-S-3	DR	0
671	48-S-34	DR	0
672	51-53-SX-10	DR	0
673	51-AX-28	DR	0
674	51-AX-29	DR	0
675	51-S-34	DR	0
676	52-A-28	DR	0
677	52-S-11	DR	0
678	53-AX-15	DR	0
679	53-SX-15	DR	0
680	54-A-28	DR	0
681	54-S-2	DR	0
682	55-35-SX-3-FO	DR	0
683	55-41-SX-3-FO	DR	0
684	55-44-SX-3	DR	0
685	55-46-SX-3-FO	DR	0
686	55-52-SX-3-FO	DR	0
687	55-54-SX-3-FO	DR	0
688	55-56-SX-3	DR	0
689	55-61-SX-3	DR	0
690	55-64-SX-3	DR	0
691	55-65-SX-3	DR	0
692	55-S-2	DR	0
693	55-SX-14	DR	0
694	56-LX-10	DR	0
695	56-STX-15	DR	0
696	56-SX-11	DR	0
697	56-SX-34	DR	0
698	57-A-33	DR	0
699	58-AX-21	DR	0
700	58-S-2	DR	0
701	58-SX-11	DR	0
702	58-SX-14	DR	0
703	61-61-SX-14	DR	0
704	61-A-28	DR	0

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	WELL-NO	WELL-STATUS	BOPM
705	61-SX-14	DR	0
706	63-A-28	DR	0
707	63-S-2	DR	0
708	64-AX-28	DR	0
709	64-AX-29	DR	0
710	64-AX-34	DR	0
711	64-AX-4	DR	0
712	64-S-34	DR	0
713	65-15-SX-3	DR	0
714	65-22-SX-3-FO	DR	0
715	65-24-SX-3	DR	0
716	65-26-SX-3-FO	DR	0
717	65-35-SX-3-FO	DR	0
718	65-S-11	DR	0
719	66-A-29	DR	0
720	67-SX-27	DR	0
721	68-11-SX-11	DR	0
722	68-26-SX-3-LP2	DR	0
723	68-S-2	DR	0
724	68-S-27	DR	0
725	71-3-X-10	DR	0
726	72-AX-20	DR	0
727	72-S-34	DR	0
728	73-A-29	DR	0
729	74-A-28	DR	0
730	74-AX-20	DR	0
731	74-S-34	DR	0
732	75-AX-20	DR	0
733	76-MX-3	DR	0
734	76-SX-27	DR	0
735	77-AX-29	DR	0
736	78-AX-34	DR	0
737	81-5-X-10	DR	0
738	81-S-34	DR	0
739	81-STX-4	DR	0
740	82-8-X-10	DR	0
741	82-AX-29	DR	0
742	83-A-28	DR	0
743	83-AX-3	DR	0
744	83-S-34	DR	0
745	84-A-15	DR	0
746	85-AX-15	DR	0
747	85-FX-33	DR	0
748	85-STX-15	DR	0
749	85-STX-3(/)	DR	0
750	85-X-29	DR	0
751	86-AX-29	DR	0

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	WELL-NO	WELL-STATUS	BOPM
752	87-SX-27	DR	0
753	21-A-34	IP	0
754	32-STX-23	IP	0
755	33-MX-10	IP	0
756	33-SHX-23	IP	0
757	34-1-SHX-14	IP	0
758	44-1-TPX-10	IP	0
759	45-SHX-23	IP	0
760	47-S-35	IP	0
761	53-TPX-10	IP	0
762	54-SX-2	IP	0
763	58-16-SX-2	IP	0
764	61-STX-15	IP	0
765	65-56-SHX-34	IP	0
766	72-MX-10	IP	0
767	73-SX-10-H	IP	0
768	58-55-SX-3-OB1	OB	0
769	1-S-10	PA	0
770	1-TP-3	PA	0
771	1-TP-33	PA	0
772	101-A-28	PA	0
773	101-A-29	PA	0
774	101-SH-10	PA	0
775	102-A-29	PA	0
776	102-SH-10	PA	0
777	103-A-29	PA	0
778	104-A-29	PA	0
779	105-A-29	PA	0
780	106-SH-29	PA	0
781	108-A-29	PA	0
782	109-A-29	PA	0
783	11-1-PWW-15	PA	0
784	11-2-PWW-15	PA	0
785	11-MX-10	PA	0
786	11-SHX-10	PA	0
787	11-SHX-15	PA	0
788	11-SHX-23	PA	0
789	11-SX-11	PA	0
790	11-SX-3	PA	0
791	11-TPX-23	PA	0
792	110-A-29	PA	0
793	111-A-29	PA	0
794	13-10	PA	0
795	14-10	PA	0
796	14-14-SX-11	PA	0
797	14-15-SX-11	PA	0
798	14-SX-11	PA	0

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	WELL-NO	WELL-STATUS	BOPM
799	15-10	PA	0
800	15-SHX-2	PA	0
801	15-SHX-27	PA	0
802	16-10	PA	0
803	16-TX-34	PA	0
804	17-10	PA	0
805	18-10	PA	0
806	18-SHX-28	PA	0
807	19-10	PA	0
808	2-S-3	PA	0
809	20-10	PA	0
810	201-A-11	PA	0
811	201-A-2	PA	0
812	201-A-28	PA	0
813	201-A-29	PA	0
814	201-A-3	PA	0
815	201-A-33	PA	0
816	201-A-34	PA	0
817	202-A-28	PA	0
818	203-A-28	PA	0
819	205-A-28	PA	0
820	21-10	PA	0
821	21-S-3	PA	0
822	21-SX-10	PA	0
823	21-X-10	PA	0
824	22-10	PA	0
825	22-S-10	PA	0
826	22-SHX-11	PA	0
827	23-10	PA	0
828	24-10	PA	0
829	24-AX-14	PA	0
830	24-JX-34	PA	0
831	25-10	PA	0
832	25-JX-10	PA	0
833	25-LX-11-WD	PA	0
834	25-MX-11	PA	0
835	25-S-35	PA	0
836	25-SHX-11	PA	0
837	25-SHX-2	PA	0
838	26-10	PA	0
839	26-36-SX-11-WI	PA	0
840	27-10	PA	0
841	27-51-SX-11-WI	PA	0
842	27-X-10	PA	0
843	28-1-X-2	PA	0
844	28-10	PA	0
845	29-10	PA	0

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	WELL-NO	WELL-STATUS	BOPM
846	30-10	PA	0
847	301-A-11	PA	0
848	301-A-34	PA	0
849	301-T-27	PA	0
850	302-A-27	PA	0
851	302-A-28	PA	0
852	303-A-21	PA	0
853	303-A-27	PA	0
854	304-A-21	PA	0
855	304-A-28	PA	0
856	31-10	PA	0
857	32-AX-21	PA	0
858	33-JX-23	PA	0
859	34-SHX-33	PA	0
860	34-X-27	PA	0
861	35-X-33	PA	0
862	36-1-SHX-10(/)	PA	0
863	37-11-SX-11-WI	PA	0
864	37-22-1-SX-11-WI	PA	0
865	37-22-SX-11-WI	PA	0
866	37-53-SX-11-WI	PA	0
867	38-X-10	PA	0
868	4-S-3	PA	0
869	401-ST-29	PA	0
870	402-A-28	PA	0
871	403-A-28	PA	0
872	405-A-20	PA	0
873	405-A-28	PA	0
874	406-A-20	PA	0
875	407-A-20	PA	0
876	408-A-20	PA	0
877	41-AX-15	PA	0
878	41-MX-10	PA	0
879	41-SHX-10	PA	0
880	410-A-20	PA	0
881	43-JX-34	PA	0
882	44-A-29	PA	0
883	45-X-27	PA	0
884	45-X-29	PA	0
885	45-X-33	PA	0
886	46-AX-21	PA	0
887	46-JX-27	PA	0
888	47-66-1-SX-3	PA	0
889	47-66-SX-3	PA	0
890	48-41-SX-3	PA	0
891	48-SHX-2	PA	0
892	5-S-3	PA	0

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	WELL-NO	WELL-STATUS	BOPM
893	51-35-SX-10	PA	0
894	51-41-SX-10-UP4	PA	0
895	51-46-SX-10-OB4	PA	0
896	51-56-SX-10-OB3	PA	0
897	51-61-SX-10-UI1	PA	0
898	51-62-SX-10-LP3	PA	0
899	51-65-SX-10-OB2	PA	0
900	51-66-SX-10-UI2	PA	0
901	51-MX-MYX-26	PA	0
902	51-SHX-15	PA	0
903	51-SX-10	PA	0
904	52-51-SX-10-OB5	PA	0
905	52-61-SX-10-LI2	PA	0
906	52-66-1-SX-10	PA	0
907	52-66-SX-10	PA	0
908	52-X-10	PA	0
909	54-1-SX-10	PA	0
910	54-2-SX-10	PA	0
911	54-3-SX-10	PA	0
912	54-4-SX-10	PA	0
913	55-42-SX-3-FI	PA	0
914	55-45-SX-3-FI	PA	0
915	55-55-SX-3-FI	PA	0
916	55-TX-34	PA	0
917	55-X-15	PA	0
918	55-X-27	PA	0
919	56-MX-10	PA	0
920	56-SHX-23	PA	0
921	57-36-1-SX-3	PA	0
922	57-36-SX-3	PA	0
923	58-46-SX-3-LP4	PA	0
924	58-64-1-SX-3	PA	0
925	58-64-SX-3-LP1	PA	0
926	58-66-SX-3-LI1	PA	0
927	58-JX-28	PA	0
928	58-S-3	PA	0
929	6-A-20	PA	0
930	6-A-21	PA	0
931	61-21-SX-10-UP2	PA	0
932	61-42-STX-10	PA	0
933	61-42-SX-10	PA	0
934	62-36-SX-10	PA	0
935	62-46-SX-10	PA	0
936	62-S-10	PA	0
937	62-TPX-11	PA	0
938	63-SHX-23	PA	0
939	65-1-SST-10	PA	0

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	WELL-NO	WELL-STATUS	BOPM
940	65-2-SST-10	PA	0
941	65-21-SX-3-FI	PA	0
942	65-25-1-SX-3-FI	PA	0
943	65-25-SX-3-FI	PA	0
944	65-3-SST-10	PA	0
945	65-34-SX-3	PA	0
946	65-S-15	PA	0
947	66-JX-33	PA	0
948	66-X-23	PA	0
949	67-15-1-SX-3	PA	0
950	67-15-SX-3	PA	0
951	67-61-SX-3	PA	0
952	67-62-SX-3	PA	0
953	67-65-1-SX-3	PA	0
954	67-65-SX-3	PA	0
955	68-52-1-SX-3	PA	0
956	68-52-SX-3	PA	0
957	68-63-SX-3	PA	0
958	71-1-SHX-15	PA	0
959	71-12-1-SX-10	PA	0
960	71-12-SX-10	PA	0
961	71-16-1-SX-10	PA	0
962	71-16-SX-10	PA	0
963	71-DX-15	PA	0
964	72-15-1-SX-10	PA	0
965	72-15-SX-10	PA	0
966	73-X-23	PA	0
967	74-MX-10	PA	0
968	75-SX-15	PA	0
969	76-2-SX-3	PA	0
970	76-25-SX-3	PA	0
971	76-26-SX-3	PA	0
972	76-53-1-SX-3	PA	0
973	76-53-SX-3	PA	0
974	76-STX-23	PA	0
975	76-SX-3	PA	0
976	78-16-1-SX-3	PA	0
977	78-16-SX-3	PA	0
978	82-X-22	PA	0
979	83-1-X-29	PA	0
980	83-S-14	PA	0
981	83-SST-10	PA	0
982	83-SX-4	PA	0
983	84-SHX-4	PA	0
984	84-SX-10	PA	0
985	85-25-SX-3	PA	0
986	85-35-SX-3	PA	0

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NPR-3 PRODUCTION
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	WELL-NO	WELL-STATUS	BOPM
987	85-LX-9	PA	0
988	85-SHX-28	PA	0
989	85-X-9	PA	0
990	86-11-1-SX-3	PA	0
991	86-11-SX-3	PA	0
992	86-23-SX-3	PA	0
993	86-X-27	PA	0
994	86-X-33	PA	0
995	88-S-33	PA	0
996	11-SX-2	PR	0
997	14-AX-2	PR	0
998	22-16-SX-14	PR	0
999	23-SHX-33	PR	0
1000	44-SHX-27	PR	0
1001	46-S-10	PR	0
1002	46-S-14	PR	0
1003	53-62-SX-10	PR	0
1004	54-S-14	PR	0
1005	76-41-SX-3	PR	0
1006	83-STX-15	PR	0
1007	101-SH-33	SI	0
1008	103-A-20	SI	0
1009	103-A-33	SI	0
1010	11-A-14	SI	0
1011	11-AX-11	SI	0
1012	11-DX-26	SI	0
1013	12-AX-33	SI	0
1014	13-16-STX-2	SI	0
1015	13-MX-11	SI	0
1016	13-STX-11	SI	0
1017	13-SX-14	SI	0
1018	14-LX-28-WD	SI	0
1019	14-S-2	SI	0
1020	14-SX-3	SI	0
1021	14-X-10	SI	0
1022	15-1-STX-14	SI	0
1023	15-S-14	SI	0
1024	15-STX-14	SI	0
1025	15-X-3	SI	0
1026	16-S-35	SI	0
1027	16-SX-11	SI	0
1028	17-16-SX-11	SI	0
1029	17-61-SX-11	SI	0
1030	17-AX-2	SI	0
1031	17-AX-21	SI	0
1032	17-S-11	SI	0
1033	17-STX-10	SI	0

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	WELL-NO	WELL-STATUS	BOPM
1034	17-STX-14	SI	0
1035	18-1-SHX-35	SI	0
1036	18-AX-2	SI	0
1037	18-SHX-27	SI	0
1038	18-SX-34	SI	0
1039	202-A-3	SI	0
1040	203-A-29	SI	0
1041	204-ST-3	SI	0
1042	21-A-10	SI	0
1043	21-AX-33	SI	0
1044	21-SHX-23	SI	0
1045	22-1-STX-3	SI	0
1046	22-2-STX-3	SI	0
1047	22-AX-28	SI	0
1048	22-STX-10	SI	0
1049	22-SX-3	SI	0
1050	23-61-STX-10	SI	0
1051	23-61-SX-2	SI	0
1052	23-A-10	SI	0
1053	23-A-21	SI	0
1054	23-A-28	SI	0
1055	23-A-33	SI	0
1056	23-AX-11	SI	0
1057	23-S-35	SI	0
1058	24-51-STX-10	SI	0
1059	24-STX-14(/)	SI	0
1060	25-1-STX-10	SI	0
1061	25-A-21	SI	0
1062	25-AX-10	SI	0
1063	25-AX-28	SI	0
1064	25-STX-10	SI	0
1065	25-STX-3	SI	0
1066	26-26-SX-11-WP	SI	0
1067	26-44-SX-11-WP	SI	0
1068	26-AX-21	SI	0
1069	26-S-35	SI	0
1070	26-SHX-10	SI	0
1071	26-STX-10	SI	0
1072	26-SX-23	SI	0
1073	26-SX-3	SI	0
1074	27-26-STX-11	SI	0
1075	27-32-SX-11-WP	SI	0
1076	27-62-SX-11-WP	SI	0
1077	27-AX-11	SI	0
1078	27-AX-21	SI	0
1079	27-AX-34	SI	0
1080	27-S-11-WP	SI	0

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	WELL-NO	WELL-STATUS	BOPM
1081	28-A-11	SI	0
1082	301-A-28	SI	0
1083	301-A-3	SI	0
1084	303-A-28	SI	0
1085	305-ST-28	SI	0
1086	306-ST-28	SI	0
1087	31-1-SHX-14	SI	0
1088	31-AX-14	SI	0
1089	31-S-10	SI	0
1090	31-X-3	SI	0
1091	32-11-STX-2	SI	0
1092	32-MX-22	SI	0
1093	32-SX-10	SI	0
1094	33-1-SHX-2	SI	0
1095	33-16-SX-11	SI	0
1096	33-66-SX-10	SI	0
1097	33-A-28	SI	0
1098	33-AX-15	SI	0
1099	33-S-10	SI	0
1100	33-S-34	SI	0
1101	34-61-SX-11	SI	0
1102	34-66-SX-10	SI	0
1103	34-S-2	SI	0
1104	34-STX-3	SI	0
1105	34-SX-10	SI	0
1106	34-TX-3	SI	0
1107	35-1-SHX-14	SI	0
1108	35-S-10	SI	0
1109	35-S-14	SI	0
1110	36-1-STX-10	SI	0
1111	36-11-SX-2	SI	0
1112	36-AX-34	SI	0
1113	36-SX-11-WP	SI	0
1114	37-AX-28	SI	0
1115	37-AX-3	SI	0
1116	37-MX-10	SI	0
1117	37-SX-3	SI	0
1118	38-S-34	SI	0
1119	401-A-28	SI	0
1120	401-A-33	SI	0
1121	402-A-20	SI	0
1122	402-T-33	SI	0
1123	403-A-20	SI	0
1124	41-1-AX-15	SI	0
1125	41-11-SX-10	SI	0
1126	41-11-SX-11	SI	0
1127	41-16-SX-10	SI	0

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	WELL-NO	WELL-STATUS	BOPM
1128	41-66-SX-3	SI	0
1129	41-MX-3	SI	0
1130	41-SX-11	SI	0
1131	41-SX-3	SI	0
1132	41-SX-34	SI	0
1133	42-61-SX-10	SI	0
1134	42-S-10	SI	0
1135	42-S-14	SI	0
1136	43-A-34	SI	0
1137	43-AX-28	SI	0
1138	43-TPX-10	SI	0
1139	44-55-SX-10	SI	0
1140	44-MX-10	SI	0
1141	44-SX-10	SI	0
1142	44-SX-14	SI	0
1143	45-65-SX-10	SI	0
1144	45-AX-33	SI	0
1145	45-SHX-3	SI	0
1146	46-1-STX-34	SI	0
1147	46-A-28	SI	0
1148	46-AX-34	SI	0
1149	46-SHX-33	SI	0
1150	46-SX-34	SI	0
1151	46-TPX-10	SI	0
1152	47-64-SX-3	SI	0
1153	48-TX-34	SI	0
1154	51-41-SX-3	SI	0
1155	51-STX-26	SI	0
1156	51-X-26(/)	SI	0
1157	52-1-TPX-10	SI	0
1158	52-2-SX-3	SI	0
1159	52-3-SX-3	SI	0
1160	52-4-SX-3	SI	0
1161	52-SX-10	SI	0
1162	52-SX-34	SI	0
1163	53-1-STX-15	SI	0
1164	53-LX-3	SI	0
1165	53-S-34	SI	0
1166	53-STX-15	SI	0
1167	53-SX-14	SI	0
1168	53-TX-33	SI	0
1169	54-36-SX-3-FO	SI	0
1170	54-43-SX-10	SI	0
1171	54-52-SX-10	SI	0
1172	54-SX-10	SI	0
1173	55-11-SX-10	SI	0
1174	55-42-1-SX-3-FO	SI	0

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	WELL-NO	WELL-STATUS	BOPM
1175	55-51-SX-3-FP	SI	0
1176	55-61-SX-10	SI	0
1177	55-66-SX-10	SI	0
1178	55-AX-33	SI	0
1179	55-STX-28	SI	0
1180	55-SX-10	SI	0
1181	56-LX-3	SI	0
1182	56-TX-20	SI	0
1183	57-1-SX-3	SI	0
1184	57-2-SX-3	SI	0
1185	57-3-SX-3	SI	0
1186	57-AX-20	SI	0
1187	58-12-SX-3	SI	0
1188	58-42-SX-3	SI	0
1189	58-61-STX-10	SI	0
1190	58-65-SX-3-UP1	SI	0
1191	58-A-34	SI	0
1192	58-STX-34	SI	0
1193	61-SX-10	SI	0
1194	62-4-SX-3	SI	0
1195	62-5-SX-3	SI	0
1196	62-AX-15	SI	0
1197	62-AX-29	SI	0
1198	62-S-15	SI	0
1199	62-STX-15	SI	0
1200	62-TPX-10	SI	0
1201	63-1-STX-29	SI	0
1202	63-2-SX-3	SI	0
1203	63-3-SX-3	SI	0
1204	63-5-SX-10	SI	0
1205	63-51-SX-10	SI	0
1206	63-6-SX-10	SI	0
1207	63-S-15	SI	0
1208	63-S-34	SI	0
1209	63-STX-33	SI	0
1210	63-SX-10	SI	0
1211	64-1-SX-10	SI	0
1212	64-2-SX-10	SI	0
1213	64-3-SX-10	SI	0
1214	64-4-SX-10	SI	0
1215	64-63-SX-10	SI	0
1216	64-S-2	SI	0
1217	65-12-SX-3-FI	SI	0
1218	65-36-SX-3-FP	SI	0
1219	65-A-28	SI	0
1220	65-AX-20	SI	0
1221	65-S-10	SI	0

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	WELL-NO	WELL-STATUS	BOPM
1222	65-STX-15	SI	0
1223	65-SX-14	SI	0
1224	66-SHX-14	SI	0
1225	66-SX-34	SI	0
1226	67-1-SX-3	SI	0
1227	67-S-3	SI	0
1228	68-31-SX-3	SI	0
1229	68-46-SX-3	SI	0
1230	68-AX-28	SI	0
1231	68-S-3	SI	0
1232	71-26-STX-15	SI	0
1233	71-AX-29	SI	0
1234	71-S-34	SI	0
1235	71-STX-10	SI	0
1236	71-SX-15	SI	0
1237	72-1-STX-34	SI	0
1238	72-3-SX-3	SI	0
1239	72-4-SX-3	SI	0
1240	72-8-STX-3	SI	0
1241	72-A-4	SI	0
1242	72-AX-15	SI	0
1243	72-DX-10	SI	0
1244	72-S-15	SI	0
1245	72-SX-4	SI	0
1246	73-2-SX-10	SI	0
1247	73-3-SX-10	SI	0
1248	73-4-SX-3	SI	0
1249	73-5-SX-3	SI	0
1250	73-6-SX-10	SI	0
1251	73-61-SX-10	SI	0
1252	73-S-34	SI	0
1253	74-11-SX-10	SI	0
1254	74-AX-3	SI	0
1255	74-S-10	SI	0
1256	74-SHX-15	SI	0
1257	75-65-SX-3	SI	0
1258	75-AX-28	SI	0
1259	75-SX-10	SI	0
1260	76-1-SX-3	SI	0
1261	76-21-SX-10	SI	0
1262	77-1-SX-3	SI	0
1263	77-13-SX-3	SI	0
1264	77-4-SX-3	SI	0
1265	77-AX-28	SI	0
1266	77-S-27	SI	0
1267	77-SHX-4	SI	0
1268	77-SX-11	SI	0

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	WELL-NO	WELL-STATUS	BOPM
1269	78-AX-33	SI	0
1270	78-SX-27	SI	0
1271	81-AX-33	SI	0
1272	81-S-4	SI	0
1273	82-51-STX-3	SI	0
1274	82-A-15	SI	0
1275	82-AX-20	SI	0
1276	82-S-34	SI	0
1277	82-SX-15	SI	0
1278	82-SX-4	SI	0
1279	83-1-SX-10	SI	0
1280	83-A-4	SI	0
1281	84-STX-33	SI	0
1282	85-A-28	SI	0
1283	85-AX-10	SI	0
1284	85-AX-33	SI	0
1285	85-AX-4	SI	0
1286	85-MX-10	SI	0
1287	85-SX-14	SI	0
1288	86-31-SX-3	SI	0
1289	86-AX-28	SI	0
1290	86-JX-10	SI	0
1291	86-S-10	SI	0
1292	86-S-3	SI	0
1293	86-S-34	SI	0
1294	86-SX-14	SI	0
1295	87-AX-28	SI	0
1296	87-AX-3	SI	0
1297	87-AX-33	SI	0
1298	88-2-SX-33	SI	0
1299	88-S-10	SI	0
1300	88-SX-27	SI	0
1301	12-AX-21	TA	0
1302	12-AX-28	TA	0
1303	13-STX-10	TA	0
1304	14-A-27	TA	0
1305	14-AX-21	TA	0
1306	14-AX-28	TA	0
1307	16-A-27	TA	0
1308	16-AX-21	TA	0
1309	18-AX-3	TA	0
1310	23-AX-2	TA	0
1311	34-A-21	TA	0
1312	34-AX-28	TA	0
1313	36-A-21	TA	0
1314	36-A-28	TA	0
1315	44-DX-10	TA	0

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	WELL-NO	WELL-STATUS	BOPM
1316	52-AX-29	TA	0
1317	55-A-29	TA	0
1318	56-A-28	TA	0
1319	63-AX-29	TA	0
1320	64-S-10	TA	0
1321	65-AX-15	TA	0
1322	72-A-28	TA	0
1323	75-AX-29	TA	0
1324	76-AX-20	TA	0
1325	81-S-14	TA	0
1326	34-CMX-10-WD	WD	0
1327	51-CMX-10-WD	WD	0
1328	74-CMX-10-WD	WD	0
1329	77-TX-20	WD	0
1330	17-WX-21	WS	0
1331	57-WX-3	WS	0
1332	202-A-34-LP	ZN	0
1333	23-A-34-LP	ZN	0
1334	32-A-34-LP	ZN	0
1335	34-AX-34-LP	ZN	0
1336	43-A-34-LP	ZN	0
1337	45-A-34-LP	ZN	0
			29,425

Status Codes
AC - Awaiting Completion
AI - Active Injection
DA - Dry & Abandoned
DR - Dormant
IP - Intermittent Producers
OB - Observation
PA - Plugged & Abandoned
PR - Producer
SI - shut In
TA - Temporarily Abandoned
WD - Water Disposal
WS - Water Source
ZN - Zone Well - Not Counted as Producer

Rocky Mountain Oilfield Testing Center

RMOTC FOCUS GROUP

Revised: January 20, 1998

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Appendix E

MODEL REPAYMENT AGREEMENT

ARTICLE I. GENERAL OBJECTIVE

The purpose of this agreement is to set forth the terms and conditions under which _____ (defined herein as the Participant) shall repay to the United States Department of Energy (DOE) an amount up to (i.e., not to exceed) the Government's share of total project costs paid under Cooperative Agreements No. DE-_____.

ARTICLE II. DEFINITIONS

"Contracting Officer" means the DOE official authorized to execute awards, financial agreements, and amendments thereto on behalf of the DOE and who is responsible for administering this Repayment Agreement.

"Cooperative Agreement" means the financial assistance award made by the United States Department of Energy (DOE) to the Participant, Instrument Number _____ on _____, 1991 and subsequent amendments.

"DOE" means the United States Department of Energy and any successor department or agency.

"DOE share" means the portion of the total project costs paid by DOE under the Cooperative Agreement.

"Government" means the government of the United States, including DOE.

"Participant" means [INSERT NAME OF ORGANIZATION SIGNING THE REPAYMENT AGREEMENT] and its successors and assigns.

"Project" means the set of activities described in Article IX (Allowable Preaward Costs) and in Attachment A, Statement of Work, of the Cooperative Agreement.

"Total project costs" means the total amount of allowable direct and indirect costs incurred by the Participant and paid, in part, by DOE under the Cooperative Agreement.

"United States" means any of the several States of the United States, the District of Columbia, the Commonwealth of Puerto Rico, and any territory or possession of the United States.

ARTICLE III. TERM OF THIS REPAYMENT AGREEMENT

This Repayment Agreement shall become effective on the date specified in the Cooperative Agreement as the end of Phase 3 (Operation), except that if the Participant unilaterally withdraws or terminates its participation under the Cooperative Agreement is terminated. This Repayment Agreement shall expire 20 years from its effective date or on the date the entire DOE share has been repaid. This Repayment Agreement may be terminated upon a determination by the Secretary of Energy or designee that repayment places the Participant at a competitive disadvantage in domestic or international markets.

ARTICLE IV. DEMONSTRATION TECHNOLOGY

For purposes of this Repayment Agreement, the "Demonstration Technology" shall consist of [DOE and the Participant will agree on this description].

ARTICLE V. AMOUNT OF REPAYMENT

The amount of the Participant's repayment obligation shall be based only on the sale, lease, or licensing of the Demonstration Technology, as defined in Article IV, in applications and for use at facilities located in the United States. The amount of repayment shall be based upon the revenues from the sum of one or both of the following sources during commercialization of Demonstration Technology:

Repayment Amount	Revenue Source
0.5%	Gross revenues from equipment sales/leases
5.0%	Royalties and licensing fees

For purposes of determining the amount of repayment, commercialization shall be deemed to have begun on the effective date of this Repayment Agreement or [INSERT DESCRIPTION OF TRIGGERING EVENT(S) WHICH DEFINE THE GRACE PERIOD: E.G., ALL SALES AFTER THE 3RD UNIT OF THE DEMONSTRATION TECHNOLOGY], whichever comes later.

(A) Sales/Leases of Equipment

The Participant shall pay DOE an amount equal to 0.5% of the gross revenues from the sale or lease of equipment manufactured, fabricated, or assembled as a result of commercialization of the Demonstration Technology. The Participant shall include in all contracts or agreements with any entity which is involved, directly or indirectly, in manufacturing, selling, leasing, or licensing the use of Demonstration Technology equipment, a provision requiring that sales and leases of such equipment and associated revenue be reported on a annual basis to the Participant. A list of entities (including name, address, and telephone number of responsible official) subject to this reporting requirement is provided in Attachment A and shall be updated, as necessary, by Participant.

(B) License Fees

The Participant shall pay DOE an amount equal to 5.0% of the gross revenues from license fees paid for use of the demonstration Technology. The Participant shall include in all contracts or agreements with any entity which acquires the right to license the use of the Demonstration Technology, a provision requiring that all such licenses and sub-licenses and associated revenues be reported on an annual basis to the Participant. A list of entities (including name, address, and telephone number of responsible official) subject to this reporting requirement is provided in Attachment B and shall be updated , as necessary, by the Participant.

(C) Alternative Sources

[INSERT ANY PERTINENT PROVISIONS DURING NEGOTIATIONS]

ARTICLE VI. REPORTING AND RECORD RETENTION REQUIREMENTS

(A) Annual Report to DOE

Within 60 days after the end of each one-year period, the Participant shall submit a written report to DOE which, for the one-year period just elapsed, provides the applicable data described below:

(1) The total dollar amount of sales and leases of Demonstration Technology equipment;

(2) Quantities and descriptions of Demonstration Technology equipment sod and leased;

(3) the total dollar amount of license fees paid for use of the Demonstration Technology;

(4) Quantities and descriptions of Demonstration Technology equipment sold and leased;

(5) The total amount of revenue reported by each entity identified in Attachments A and B;

(6) Sum of the total amounts of gross revenues from each of the sources described in Article V, Sections A and B; and

(7) the total amount owned or paid to DOE, and the amount of the DOE share remaining to be paid in succeeding years under this Repayment Agreement.

(B) Period of Retention

With respect to each annual report to DOE, the Participant shall retain, for the period of time prescribed in this paragraph, all related financial records, supporting documents, statistical records, and any other records the Participant reasonably considers to be pertinent to this Repayment Agreement. The period of required retention shall be from the date each such record is created or received by the Participant until three years after one of the following

dates, whichever is earlier: the date the related annual report is received by DOE;or the date this Repayment Agreement expires or the final payment to DOE is received. If any claim, litigation, negotiation, investigation, audit, or other action involving the records starts before the expiration of the three-year retention period, the Participant shall retain the records until such action is completed and all related issues are resolved, or until the end of the three-year retention period, whichever is later. The Participant shall not be required to retain any records which have been transmitted to DOE by the Participant.

(C) Authorized Copies

Copies made by microfilm, photocopying, or similar methods may be substituted for original records. Records originally created by computer may be retained on an electronic medium, provided such medium is "read only" or is protected in such a manner that the electronic record can be authenticated as an original record.

(D) Access to Records

DOE and the Comptroller General of the United States, or any of their authorized representatives, shall have the right of access to any books, documents, papers, or other records (including those on electronic media) which are pertinent to this Repayment Agreement. The purpose of such access is limited to the making of audits, examinations, excerpts, and transcripts. The right of access described in this paragraph shall last as long as the Participant retains records which are pertinent to this Repayment Agreement.

(E) Restrictions on Public Disclosure

The Federal Freedom of Information Act (5 U.S.C./552) does not apply to records the Participant is required to retain by the terms of this Repayment Agreement. Unless otherwise required by law or a court of competent jurisdiction, the Participant shall not be required to disclose such records to the public.

(F) Flow Down of Records Retention and Access Requirements

In any contract or other agreement subject to the reporting requirements described in Article V, Sections A and B, the Participant shall include clauses substantially similar to the records retention and access requirements set forth in sections (B) and (D) of this Article.

ATTACHMENTS

A. Purchasers and Lessees of Demonstration Technology Equipment.
B. Entities Required to Pay License Fees.

Signature of Authorized Official

Date

Name

Title

Signature of DOE Contracting Officer

Date

Name

Title

Appendix F

CURRENT AND POTENTIAL RMOTC PROJECTS

Company	Project	Project Status	Action Items	Status
BDM/Oklahoma	Paraffin Control	SPE paper submitted. Field work complete. Abstract submitted.	Revise paper draft& write field application.	ACTIVE
Bull Dog Tool Co. #1	Bull Dog Auger	Waiting on field to run	Draft report written.	ACTIVE
Cameron Elastomers	New elastomer for light oil in PC pumps	Test on Hold. Stators molded. Griffen legrand to machine rotors.	Submit contract extension, currently expires 9/30/97.	ACTIVE
ERIP	Status Report		Update ERIP status report.	ADMIN
Fed Lab Consortium		Admin. Info request	Complete Questionnaire.	ADMIN
American Society of Mechanical Engineers	Energy Sources Technology Conference	Abstract Sent	Wait on Acceptance	ADMIN
Phillip Crouse and Associates	Water Control Seminar	Abstract accepted	Complete paper	ADMIN
Phillip Crouse and Associates	Multilateral Drilling Seminar	Abstract accepted	Complete paper	ADMIN
DOE	Reserves Report	Gather Data	Calculate Reserves Based on 1997	ADMIN
WOGCC	P&A Variance	Submitted request waiting for meeting	Write P&A Plan	ADMIN
Drilling Projects		Feasibility review of rig, tech training.	Contact drilling contractors.	ADMIN
State of Wyoming (MOU)	State Funded Projects	Admin	Write SOW for 98 Projects	ADMIN
Fluor Daniel	Review/Revise P&P on office security.	Admin.	Not a Priority	ADMIN
DOE	FY-97 INTERNS	ACTIVE	Presentation Training	ADMIN
Fluor Daniel	IRAT	Admin	Attend meetings and report to office staff	ADMIN
BLM	Training Room	Training room functional. Schedule for activities.	Maintain Schedule	ADMIN
RMOTC	Field Core Facility	Facility ready and in use.	Maintenance and scheduling of use.	ADMIN
RMOTC	Marketing	Attend Conferences	Cross train Jeanette	ADMIN
Native American Interns	Three interns from Assoc. Western Univerisities			ADMIN.
Double M. Electric	Tank Level Gauging System	Field tested. Write reports. Draft field application completed 7/03/97.	Write field application	COMPLETE

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CURRENT AND POTENTIAL RMOTC PROJECTS

AJUSTAPUMP	Test Pumping Unit	Field Tested. Completed field application 7/02/97	Done	COMPLETE
Cambria Valve	Automatic Shutdown Valve	Final Report Complete. Draft field application complete 7/8/97.	Draft complete.	COMPLETE
Basil International #1	Beam Mounted Gas Compressor	Test Complete. Draft field application done. Close out.	Write final report. Review field application.	COMPLETE
Centech	3 Phase Centrifuge	Test complete. Write final report. Write Field application.	Write final report.	ACTIVE
Gallager	Geochemical Reservoir Characterization.	Report to Gallager, waiting on tie to field data.	Review Report. AAPG paper 8/27/97.	ACTIVE
GMT/Injectech	Microbial EOR	SPE paper written, presented.	Write field application.	ACTIVE
Halliburton Energy Services	Bottom Hole Kickoff Assembly	SPE Dallas rejected. Completed field test. Submitted abstract..	Field application. Final report.	ACTIVE
Halliburton Energy Services	Multilateral Drilling	Completed field test. Submitted abstract.	Write SPE paper on Hollow Whipstock.	ACTIVE
Rockman Enterprises	Low cost mini frac	Waiting on available data/comparisons	Need field application and final report written.	ACTIVE
Sandia National Laboratories #1&2	Wireless Down Hole Telemetries	Tests complete. Sandia published papers.	Write field application. Write report.	ACTIVE
Schlumberger	IDS Project	Field Test Complete	Draft report.	ACTIVE
Smith Drilling & Completions	One trip drill through (trackmaster)	Test Complete. Draft field application completed.	Write field application.	ACTIVE
Smith Drilling & Completions	Steerable Stabilizer	Tested twice. Two failures. Possible retest.	Follow up on retest. Write field application and final report.	ACTIVE
Sperry Sun	Continuous Down Hole Pressure Measurement	Removed bomb for analysis. Sent draft contract for retest 6/24/97.	Follow-up on possible retest.	ACTIVE
Texaco	Dual Action Pumping System	Need post dyno at equiv. rate, then close out.	Production data. Write field application.Write final report. Co- Author SPE paper.	ACTIVE

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CURRENT AND POTENTIAL RMOTC PROJECTS

Basil International #2	Beam Mounted Gas Compressor	First test complete, waiting for decision about doing second test.	Write project plan for second test.	POTENTIAL
Biomin	Remove oil emulsion from water on flowback	Proposal - clean emulsion acid flow back?	Follow up	POTENTIAL
BLM	Training	BLM training program for oil and gas inspectors. End of September.	Document Details	POTENTIAL
Bull Dog Tool Co. #2	Bull Dog Auger	Prepare project plan if small business	Field test 7/28	POTENTIAL
Cassin Development	Pipeline Coupling	Developing a proposal	Wait for proposal	POTENTIAL
Chuck Southard	Drilling Tool	Emailed info to Caracas	Wait for answer	POTENTIAL
Coil Tubing Americas	Slim Hole Completions	Sent preliminary letter, client working on funding	Follow up call	POTENTIAL
Darcova	Pump Barrel	Sent packet. Push on pump barrel.	Follow up call	POTENTIAL
Environmental Solutions	Biosolve	Awaiting Proposal. Internal Review.	Contact client.	POTENTIAL
Geophysical Research Corp	Production Logging Tool	Sent cost estimate. Still working on logging tool.	Follow-up call	POTENTIAL
Halliburton Related.	Well Bore Stabilization Testing for Shale.	Prospective Proposer.	Follow up. Find out who is contact.	POTENTIAL
Houston Engineers	Hydraulic Jars	Sent Packet	Follow-up Phone Call	POTENTIAL
Hydro Technology	Vibration Stimulation	Shoot for September. Working on test proposal.	Call Bill Wooden	POTENTIAL
Interra	Enercat Quartz crystal paraffin tool.	Sent cost estimate. Look for internal funding.	Follow up call	POTENTIAL
Kaldair	Flare test (100%)	Received proposal, sent cost estimate, awaiting reply	Environmental requirements. Facility mod and cost estimate	POTENTIAL
Maurer Engineering	Tandem Mud Motors - 3 1/8"	Received test proposal.	Cost Estimate . Contract.	POTENTIAL
Morrison International.	Iron Horse Beam Compressor.	Proposed for mid September. Well # 58-MX-10	Do project plan. Check status of contract.	POTENTIAL
Owen Oil Tools	Wire Line Window Cutting	Working on test proposal.	Contacted 7/16/97. Scheduled site visit.	POTENTIAL
Palmour Group (TRICO)	Stuffing Box Test	Call back on funding. Visit 7/23/97.	Follow up on specific test proposal.	POTENTIAL

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CURRENT AND POTENTIAL RMOTC PROJECTS

Pentastics	Petropen. Computerized Data Acquisition	Reviewing project.	Review test requirements. Write project plan.	POTENTIAL
Petro Geo Resources	Seismic in Vertical Well Bores.	Awaiting test proposal.	Follow up.	POTENTIAL
Petroplug #2 Small Business	Bentonite Plugging	Proposed.	Project Planning Forms	POTENTIAL
Plan B Pipeline	Pipeline recoating machine	Needs further definition.	M. Taylor to define.	POTENTIAL
REDA	Hydorcyclone in submersible pump	Prospective Proposer.	Follow up. Find out if test is feasible.	POTENTIAL
Sandia National Laboratories #3	Wireless Down Hole Telemetries	Brian - well selection Russ - prepare proposal Steph - contract Draft proposal received.	Write Project Plan	POTENTIAL
Schlumberger	Partnership with Delta X on monitoring system.	Joe Corbett working on test proposal.	Wait for Proposal.	POTENTIAL
Schlumberger	Series of 100% proprietary tests	Possible tests.	Clair follow up.	POTENTIAL
Schlumberger IDS	Multilateral Joint	Intend to retest with new parter	Follow up.	POTENTIAL
Smith Drilling & Completions	Test new cutting edges on bits, underreamers & sidetrack	Preparing Proposal.	Schedule Rig Crew.	POTENTIAL
Smith Drilling & Completions	Steerable Stabilizer	Intend to Retest	Follow up.	POTENTIAL
University of New Mexico	Fracture Study Consortium	Jay reviewed, faxed questions to Teufel	Review for value added for joining	POTENTIAL
IHEM	IHEM	Admin.	Finalize report & billings. Submit studies. Develop energy plan.	ADMIN
University of Texas	12 day Engineering Short Course	Proposal submitted. Soliciting industrial support.	N/A	POTENTIAL
Vortex Ventures	Mixing Eductor	Piggy back with other drilling test?	Follow up call	POTENTIAL
Western Atlas	Logging Tool Proprietary	Proposal Submitted.	Write Project Plan.	POTENTIAL
Baker Inteq-Hughes Christensen	Multilateral Completion Technique	Prospective Proposer	Wait For Proposal	POTENTIAL

Appendix F

CURRENT AND POTENTIAL RMOTC PROJECTS

Integrated Drilling Services	Stacked Multidrain System	Replied to 97-98 RMOTC Testing Inquiry	Wait For Proposal	POTENTIAL
Integrated Drilling Services	Sealed Tiltable Casing	Replied to 97-98 RMOTC Testing Inquiry	Wait For Proposal	POTENTIAL
Double M Electric	Micro-Impulse Radar Electronic Tank Gauage (MIR)	Replied to 97-98 RMOTC Testing Inquiry	Wait For Proposal	POTENTIAL
Double M Electric	Satellite Data Acquisition of MIR Electronic Tank Data	Replied to 97-98 RMOTC Testing Inquiry	Wait For Proposal	POTENTIAL
Halliburton Energy Services	SlickLine Collar Locator Test In Horizontal Well	Replied to 97-98 RMOTC Testing Inquiry	Wait For Proposal	POTENTIAL
Halliburton Energy Services	Geophone System	Replied to 97-98 RMOTC Testing Inquiry	Wait For Proposal	POTENTIAL

Appendix F

Completed Projects

COMPANY	PROJECT	STATUS	COMPLETION DATE
V-Ger	Lubricator for Oil Wells	Completed	6/1/94
Western Research Institute	Downhole Steam Generator	Completed	6/28/94
University of Wyoming	Motor Efficiency Study	Completed	7/1/94
Double M Electric	Tank Level Gauging System	Completed	7/26/94
Double M Electric	Oil Well Power Controller	Completed	7/26/94
D-Jax	Oil Well Power Controller	Completed	10/30/94
MAG Well	Paraffin & Scale Control with Magnets	Completed	10/30/94
Mud Devil	Mud Mixing System	Completed	1/30/95
Magnaflow	Paraffin & Scale Control with Magnets	Completed	3/7/95
Schlumberger	Slim Hole Drill Stem Tester	Completed	4/21/95
AMOCO	Short Radius Lateral Drilling	Completed	6/1/95
Novatek	Percussion Drilling	Completed	9/15/95
Cambria Value Corp.	Auto Shut-Off Value (Hydraulic)	Completed	10/17/95
Anadrill	Mud Motor	Completed	10/25/95
Allied Oil Tool	Power Jet Slotting Tool	Completed	1/10/96
Hopenfeld	Smart Cable Fiber-optic Leak Detector	Completed	1/18/96
Hopenfeld	Auto shut-off valve (Mechanical)	Completed	6/6/96
ET Ventures	Bentonite Oil Filtration	Completed	7/12/96
Anadrill	Logging While Drilling Tools	Completed	8/3/96
GMT Injectech	Insitu H2S Remediation	Completed	8/15/96
Security DBS	ERA Rock Bit Hydraulics	Completed	9/13/96
Petroplug	Bentonite Well Plugging	Completed	9/30/96
Anadrill	Logging While Drilling #2	Completed	10/7/96
University of Wyoming	Field Core Facility	Completed	10/15/96
Baker Hughes	Reaming while Drilling Tools	Completed	10/17/96
BLM	RMOTC Training Center	Completed	10/30/96
Anadrill	Qualification Well	Completed	11/6/96
Smith Drilling & Completions	Steerable Stabilizer	Completed	2/25/97
Hopenfeld	Liquid Level Sensor	Completed	3/22/97
Adjusta Pump	Energy Efficient Pumping Unit	Completed	7/3/97
Basil International #1	Beam Mounted Gas Compressor	Completed	7/8/97

DEPARTMENT OF ENERGY
FY 1999 OMB BUDGET REQUEST
NAVAL PETROLEUM AND OIL SHALE RESERVES
(Dollars in thousands)

PROGRAM FUNDING PROFILE

Naval Petroleum and Oil Shale Reserves

Activity	FY 1997 Enacted	FY 1998 Enacted	FY 1999 Base	FY 1999 Request	Program Change Request vs. Base Dollar	Program Change Request vs. Base Percent
Reserves Nos. 1 & 2						
Operations & Maintenance	$102,050	$83,900	$83,900	$3,594	($80,306)	-96%
Development Drilling	17,000	0	0	0	$0	0%
Exploration Drilling	0	0	0	0	$0	0%
Development Facilities	0	15,600	15,600	0	($15,600)	-100%
Subtotal	$119,050	$99,500	$99,500	$3,594	($95,906)	-96%
Reserve No. 3						
Operations & Maintenance	$7,400	$8,500	$8,500	$10,180	$1,680	20%
Development Drilling	0	0	0	0	$0	0%
Development Facilities	1,000	0	0	0	$0	0%
Subtotal	$8,400	$8,500	$8,500	$10,180	$1,680	20%
Naval Oil Shale Reserves	$1,400	$1,200	$1,200	$1,850	$650	54%
Program Direction	$22,636	$7,800	$7,800	$6,876	($924)	-12%
Subtotal, NPOSR	$151,486	$117,000	$117,000	$22,500	($94,500)	-81%
Use of Prior Year Balances	($7,700)	$0	$0	$0	$0	0%
Total, NPOSR	$143,786	$117,000	$117,000	$22,500	($94,500)	-81%
Staffing (FTEs)						
Headquarters	16	16	16	13		
Field	56	56	56	49		
Total Staffing	72	72	72	62		

Authorizations:
P.L. 104-106, National Defense Authorization Act for Fiscal Year 1996
P.L. 95-91, DOE Organization Act

DEPARTMENT OF ENERGY
FY 1999 OMB BUDGET REQUEST
NAVAL PETROLEUM AND OIL SHALE RESERVES
(dollars in thousands)

SUMMARY OF CHANGES

Naval Petroleum and Oil Shale Reserves

FY 1998 Base	$117,000
Reserves Nos. 1&2	
- Operations & Maintenance	(80,306)
Decrease due to sale of NPR-1	
- Development Facilities	(15,600)
Decrease due to sale of NPR-1	
Reserve No. 3	
- Operations & Maintenance	1,680
Increase due to plugging and abandonment of wells	
Naval Oil Shale Reserves	650
Increase due to activities required for transfer/sale of NOSRs	
Program Direction	(924)
Decrease due to reduction in program requirements and FTEs	
FY 1999 OMB BUDGET REQUEST	$22,500

NAVAL PETROLEUM AND OIL SHALE RESERVES

RESERVE 3 (WYOMING)

I. Mission Supporting Goals and Objectives:

The objective at NPR-3 is to operate and produce the reserve so as to maximize profitability while preparing for orderly abandonment of a declining field. Funding is required to continue conventional oilfield management and operations. Operations & Maintenance provides for the necessary daily activities to produce oil and gas from the Reserve. This includes operation, maintenance and repair of facilities and equipment; petroleum and reservoir engineering support; financial management; administrative support; technical support; purchase of field equipment; and environmental, safety, and quality assurance support. No funding is requested for either Development Drilling or Development Facilities. Due to the declining nature of the field, there is not expected to be any new drilling or facility requirements in the future.

As part of P.L. 104-106, a study was conducted by an independent petroleum consultant to evaluate and recommend which future course of action would best maximize the value of NPR-3 to the United States. The recommendation of the study, concurred in by the Department, was to retain NPR-3 as long as it could be operated profitably, and then either abandon the field or turn it over to a small private operator. To prepare the field for future abandonment or privatization, funding of $3 million is included to begin environmental restoration. This consists primarily of plugging and abandonment of wells, and is planned to be accomplished over a four to five year period.

NPR-3 plans to accelerate operation of the Rocky Mountain Oilfield Testing Center (RMOTC), established in 1995 in accordance with the Department's Domestic Natural Gas and Oil Initiative. RMOTC serves as a training center as well as a facility for demonstration, testing and evaluating new technologies and equipment in an operating oilfield environment. Funding for the center is through a cost/resource sharing arrangement with industry; Federal, State and local governments; Native American tribes; trade associations; technology centers; national labs; and academia. The DOE In-House Energy Management program has sponsored a number of tests at NPR-3 by applying new technologies and equipment to its operation. NPR-3's objective is to privatize RMOTC by FY 2001. It is planned that by increasing the activity at RMOTC, its' potential as a profitable operation can be demonstrated to the private sector.

NPR-3 is committed to operating a profitable baseline program. Management initiatives which have contributed to cost savings in prior years will be continued, and new initiatives evaluated. The continued use of Total Quality Management procedures to improve operational efficiencies and reduce costs is also expected to contribute to the profitability of NPR-3.

PROGRAM MISSION - NAVAL PETROLEUM AND OIL SHALE RESERVES (Cont'd)

1,279 development wells and 44 exploration wells have been drilled. Nine Stevens horizontal development wells and one SOZ horizontal well have been drilled, completed and put on production in FY 1997 to help maintain production until sale and transfer of NPR-1. Exploration activity in FY 1997 will be limited to completing the FY 1996 program. The FY 1997 program completes drilling and exploration activity.

Development facilities provides for the design, construction and/or modification of capital facilities for the major facilities systems (oil, gas, water and electricity) necessary to sustain field production, increase profitability and ensure compliance with environmental, safety, and health regulations. Facilities funding in FY 1998 is essentially limited to environmental compliance. The major project planned is the Rule 4701 project, which requires the reduction of NOx emissions. A plan is being developed to meet Rule 4701 requirements by the compliance date. This plan is scheduled to be completed in December 1997.

NPR-3, Teapot Dome, located near Casper, Wyoming, is estimated to produce an average of 1,137 BOPD, 6 MMCFPD of natural gas and 6.3 MGPD of natural gas liquids in FY 1997. Production is estimated to average 1,186 BOPD in FY 1998 and 460 BOPD in FY 1999. NPR-3 plans to blow down the gas cap in FY 1998. In FY 1999, only residual gas, if any, will be produced. The gas plant will be mothballed. NPR-3 will begin an environmental restoration effort in FY 1999. This involves plugging and abandonment of wells. Funding of $3 million is included in FY 1999 which will cover about 225 wells. This effort will continue for another three to four years. Funding is also increased to $3 million for RMOTC, with the goal of privatizing the test center by FY 2001. An increased level of effort is needed to generate the participation necessary for a profitable operation. Efforts will continue to be directed toward maintaining a positive net cash flow through normal operations. It is not anticipated that there will be any future development activities. Currently, NPR-3 is projected to operate through approximately FY 2003. At that time, it would be turned over to the private sector or abandoned. This time frame coincides with completion of the well abandonment program so that these environmental liabilities would not be passed on, making the property more attractive to potential new owners.

The Secretary's recommendation to Congress on the disposition of the NOSRs was to transfer the NOSRs to DOI for leasing. This matter is still before Congress. Funding is provided for surface managment, environmental monitoring, operation and maintenance of gas wells, and divestment support. The divestment support would consist of engineering, administrative and environmental activities (principally preparation of an EIS or EA). Drilling and communitization of wells to meet gas protection requirements will be funded from retained revenues as necessary and to the extent of available funds. Currently, there are 54 wholly Government owned or communitized wells at NOSR-3. No new drilling activity is planned at this time.

Program Direction provides funding for 36 FTEs to direct, manage and oversee NPOSR operations, including

I. Mission Supporting Goals and Objectives: RESERVE 3 (WYOMING) (Cont'd)

II. A. Funding Schedule:

Activity	FY 1997	FY 1998	FY 1999	$ Change	% Change
Operations & Maintenance					
Production Operations	$ 5,506	$ 4,945	$ 2,950	$ -1,995	- 40
Management & Administration	749	520	310	-210	- 40
Technical Services	1,145	3,035	6,920	3,885	+128
Subtotal, Operations & Maintenance	$ 7,400	$ 8,500	$ 10,180	$ 1,680	+ 20
Development Drilling	$ 0	$ 0	$ 0	$ 0	0
Development Facilities	1,000	0	0	0	0
Production	0	0	0	0	0
Sales	0	0	0	0	0
Revenues	0	0	0	0	0
Total, Reserve 3 (Wyoming)	$ 8,400	$ 8,500	$ 10,180	$ 1,680	+ 20

II. B. Laboratory and Facility Funding Schedule:

All Other	$ 8,400	$ 8,500	$ 10,180	$ 1,680	+ 20
Total, Reserve 3 (Wyoming)	$ 8,400	$ 8,500	$ 10,180	$ 1,680	+ 20

III. Performance Summary: RESERVE 3 (WYOMING)

Activity	FY 1997	FY 1998	FY 1999
Operations & Maintenance Production Operations	Continue to provide routine O&M activities for production related facilities; petroleum handling facilities; gas collection, processing, and injection facilities; waterflood facilities; well servicing and maintenance; electricity and utility systems; buildings, roads, and grounds; DOE-owned heavy field equipment and motor vehicles; continued operation of the EOR steam drive development	Continue to provide routine O&M activities for production related facilities; petroleum handling facilities; gas collection, processing, and injection facilities; waterflood facilities; well servicing and maintenance; electricity and utility systems; buildings, roads, and grounds; DOE-owned heavy field equipment and motor vehicles; and operator fee. Decrease is due to implementation of	Continue to provide routine O&M activities for production related facilities; petroleum handling facilities; waterflood facilities; well servicing and maintenance; electricity and utility systems; buildings, roads, and grounds; DOE-owned heavy field equipment and motor vehicles; decommissioning of the gas plant; and operator fee. Decrease is due to a reduction in operational

III. Performance Summary: RESERVE 3 (WYOMING) (Cont'd)

Activity	FY 1997	FY 1998	FY 1999
Development Drilling	Complete FY 1996 drilling program with prior year years if necessary. No new activity is planned.	No new activity is planned.	No new activity is planned.
	$ 0	$ 0	$ 0
Development Facilities	Perform up to three steam drive development pattern modifications/expansions if the economics are favorable.	No new activity is planned.	No new activity is planned.
	$ 1000	$ 0	$ 0
Production	Produce an estimated 1,137 BOPD and process 6.3 MGPD of liquid products. NPR-3 also produces natural gas which is used for field injection and as a fuel for steam generators.	Produce an estimated 1,186 BOPD and process 3.5 MGPD of liquid products.	Produce an estimated 460 BOPD.
	$ 0	$ 0	$ 0
Sales	Sell an estimated 1,137 BOPD and 6.3 MGPD of liquid products.	Sell an estimated 1,186 BOPD and 3.5 MGPD of liquid products.	Sell an estimated 460 BOPD.
	$ 0	$ 0	$ 0
Revenues	Generate estimated revenues of $9.7 million.	Generate estimated revenues of $8.8 million.	Generate estimated revenues of $4.0 million.
	$ 0	$ 0	$ 0
Reserve 3 (Wyoming) Total	$ 8400	$ 8500	$ 10180