

GW - 28

WORK PLANS

New Mexico Environment Department
September 2003

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Navajo Refining Company
RCRA Permit No. NMD048918817

SEP 09 2003

OIL CONSERVATION
DIVISION

ATTACHMENT 1

NAVAJO REFINING COMPANY ARTESIA REFINERY
RCRA PART B POST-CLOSURE PERMIT APPLICATION
SECTIONS 4.0 THROUGH 9.0, APPENDIX 2 AND APPENDIX 3

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**NAVAJO REFINING COMPANY ARTESIA REFINERY
RCRA PART B POST-CLOSURE PERMIT APPLICATION
SECTIONS 4.0 THROUGH 9.0, APPENDIX 2 AND APPENDIX 3**

4.0 SECURITY

[40 CFR 270.14(b)(4)]

This section describes the means by which Navajo will prevent the unknowing entry and minimize the possibility for unauthorized entry of persons or livestock onto North Colony Landfarm, the closed TEL Site or the Evaporation Ponds in accordance with §264.14.

The North Colony Landfarm and the closed TEL Site are within the fenced boundaries of the refinery. The refinery is completely surrounded by a six foot chain-link, steel post fence topped with three strands of barbed wire. Entry through the fence is through limited access gates controlled by either electronic access card or by security guards posted at the main gate 24 hours per day, 365 days per year. This exterior facility fence, and gates, are posted with signs bearing the warning "Danger - Unauthorized Personnel Keep Out". The signs are legible from at least 25 feet and can be seen from any approach to the refinery. Pictures of the fences, gates and signs around the refinery and each of the units can be found in Attachment A-3 with Part A of the application.

4.1 North Colony Landfarm

The north and west sides of the NCL are bounded by the refinery property boundary and are fenced as described above. The remaining two sides are enclosed by a five foot , four strand barbed wire fence. Warning signs are prominently posted around the perimeter and are noticeable from any approach. The warning legend on these signs is printed in both English and Spanish and states "Danger - Unauthorized Personnel Keep Out. the signs are legible from 25 feet.

The only entry to the NCL is through a single locked galvanized steel gate on the east side of the NCL, accessible only from within the refinery property. The locked gate is opened only when Navajo personnel or contractors require entry for sampling, monitoring, maintenance or inspections. The North Division Foreman is responsible for supervision of all activities in this plant area. The North Division Foreman, or his designee, must authorize access to the NCL.

4.2 TEL Site (closed)

The TEL Site is a closed hazardous waste management unit currently in Post-Closure care. The TEL Site is located entirely within the main refinery property and does not share the refinery property fence. The TEL Site is completely surrounded by a five foot 4-strand barbed wire fence with a single locked entry gate. Signs are posted on the fence and the gate in English and Spanish warning "Danger - Unauthorized Personnel Keep Out". The signs are visible from any approach and legible from a distance of 25 feet. The locked gate is opened only when Navajo personnel or contractors require entry for

sampling, monitoring, maintenance or inspections. The North Division Foreman is responsible for supervision of all activities in this plant area.

4.3 Evaporation Ponds

The Evaporation Ponds are located three miles east of the main refinery on separate property owned by Navajo. The entrance to the Evaporation Ponds is via a three quarter mile dirt road off of paved state highway 82. The dirt road crosses private property (not owned by Navajo) which is fenced and gated along the highway. The gate providing access to the dirt road leading to the ponds is typically locked but not under Navajo's control and may therefore not always be locked.

The Evaporation Ponds are completely surrounded by a five foot 5-strand barbed wire fence set on steel posts. There is a single entry gate which is kept locked. Warning signs legible from 25 feet are posted in English and Spanish approximately every 1000 feet stating, "Danger - Unauthorized Personnel Keep Out".

5.0 INSPECTION REQUIREMENTS

[40 CFR 270.14(b)(5)]

The NCL, TEL and Evaporation Ponds will be inspected at least semiannually, and after severe storm events, per the applicable Post-Closure Plan for that unit as identified below:

- North Colony Landfarm - Tab B, Section 13.1.2; Attachment B-4, Section 3.1.3
- TEL Site - Tab B, Section 13.2.2; Attachment B-6, Section 2.2.3
- Evaporation Ponds - Tab B, Section 13.3.2; Attachment B-7, Section 4.0

The NCL, TEL and Evaporation Ponds have no operating equipment so the inspections are primarily focused on condition of the following items:

- * Security (fences, gates, locks, signs)
- * Dikes
- * Cap or cover (if any)
- * Run-on/Run-off drainage systems (if any)
- * Monitoring wells

All inspections will be recorded in an inspection log to be retained for at least three years from the date of the inspection. The inspection log will include the date and time of inspection, the name of the inspector, a notation of the observations made and the date and nature of any repairs or other remedial actions. Examples of inspection logs for the NCL, TEL and Evaporation Ponds are provided in Figures B2-B4 on the next pages.

FIGURE B-2
INSPECTION LOG: NORTH COLONY LANDFARM

At least semiannually and after major storm events the following should be inspected, observations recorded, and repairs made if necessary

Dikes:

1. Any surface erosion? _____
2. Is the dike height approximately 3 feet all around the exterior? _____
3. Any presence of burrowing animals? _____
4. Any deep rooted vegetation (trees, bushes) that need removed? _____

Security and Control:

1. Is the integrity of the fence and gate intact? _____
2. Is the gate locked and the lock in good condition? _____
3. Are the warning signs in place (any missing) and legible? _____
4. Any signs of vandalism or prohibited trespass _____

Monitor Wells: (also inspect at each monitoring event)

1. Any damage to surface casing that would prevent sampling? _____
2. Any indication of vandalism? _____
3. Any weathering of concrete pad? _____
4. Any evidence of standing water or subsidence of well structure? _____
5. Are wells locked and locks/caps in good condition? _____

Final Vegetative Cover (when placed)

1. Any evidence of standing water? _____
2. Any erosion or evidence of burrowing animals? _____
3. Is vegetation distressed? Any areas that require re-seeding? _____
4. Does grass need mowing, watering, fertilization? _____

General:

1. Any standing water on the landfarm? _____
2. Does the landfarm need to be tilled? _____
3. Does the landfarm need to be watered (evidence of wind erosion extreme dusting)? _____
4. Other observations: _____

Work Memo Number: _____

Date Issued: _____ Date Completed: _____

Inspection Date: _____ Inspection Signature: _____

NOTE: this inspection log and any related work orders to be retained for at least three years from inspection date.

FIGURE B-3
INSPECTION LOG: TEL SITE

At least semiannually and after major storm events the following should be inspected, observations recorded, and repairs made if necessary

Security and Control:

1. Is the integrity of the fence and gate intact? _____
2. Is the gate locked and the lock in good condition? _____
3. Are the warning signs in place (any missing) and legible? _____
4. Any signs of vandalism or prohibited trespass _____

Monitor Wells: (also inspect at each monitoring event)

1. Any damage to surface casing that would prevent sampling? _____
2. Any indication of vandalism? _____
3. Any weathering of concrete pad? _____
4. Any evidence of standing water or subsidence of well structure? _____
5. Are wells locked and locks/caps in good condition? _____

Cap/Cover

1. Any evidence of differential settling of cap (standing water, slumping surfaces, radiating cracks)? _____
2. Any cracks ,crevices? _____
3. Any erosion or evidence of burrowing animals? _____
4. Is vegetation distressed? Any areas that require re-seeding? _____
- 5 Does grass need mowing, watering, fertilization? _____

General:

1. Is drainage clear of debris, overgrowth or other obstructions? _____
2. Is the survey marker present and in good condition? _____
3. Other observations: _____

Work Memo Number: _____

Date Issued: _____ Date Completed: _____

Inspection Date: _____ Inspection Signature: _____

NOTE: this inspection log and any related work orders to be retained for at least three years from inspection date.

FIGURE B-4
INSPECTION LOG: EVAPORATION PONDS

At least monthly (unless otherwise noted) and after major storm events the following should be inspected, observations recorded, and repairs made if necessary

Dikes:

1. Any surface erosion? _____
2. Any evidence of wave erosion (while ponds are active)? _____
3. Any presence of burrowing animals? _____
4. Any deep rooted vegetation (trees, bushes) that need removed? _____
5. Any evidence of subsidence or slumping? _____
6. Any evidence of seepage or leakage? _____
7. Any evidence that erosion of riverbank threatens dikes? _____

Security and Control:

1. Is the integrity of the fence and gate intact? _____
2. Is the gate locked and the lock in good condition? _____
3. Are the warning signs in place (any missing) and legible? _____
4. Any signs of vandalism or prohibited trespass _____

Monitor Wells: (also inspect at each monitoring event)

1. Any damage to surface casing that would prevent sampling? _____
2. Any indication of vandalism? _____
3. Any weathering of concrete pad? _____
4. Any evidence of standing water or subsidence of well structure? _____
5. Are wells locked and locks/caps in good condition? _____

General:

1. Any standing water on the interior (after ponds removed from service)? _____
2. Can the survey benchmark be located and is it in good condition? _____
3. Does the landfarm need to be watered (evidence of wind erosion extreme dusting)? _____
4. Other observations: _____

Work Memo Number: _____

Date Issued: _____ Date Completed: _____

Inspection Date: _____ Inspection Signature: _____

NOTE: this inspection log and any related work orders to be retained for at least three years from inspection date.

6.0 PREPAREDNESS AND PREVENTION

[40 CFR 270.14(b)(6)]

Navajo has no active hazardous waste treatment, storage, or disposal facilities. The North Colony Landfarm received its last application of waste in September 1990, and no waste remains stored at the site. The TEL Site was closed in 1989 and is in post-closure care. The Evaporation Ponds no longer receive any wastewater. Wastes are no longer handled at these facilities so there are no hazards posed which could require any of the preparedness and prevention measures identified in §264 Subpart C. Requirements of this section are generally satisfied by the facility SPCC Plan and Contingency Plan presented in the following Section 7.0, therefore Navajo requests a waiver from the preparedness and prevention requirements of part 264 Subpart C.

7.0 CONTINGENCY PLAN

[40 CFR 270.14(b)(7)]

The facility maintains a *Spill Prevention, Control, and Countermeasures (SPCC) Plan* and a *Facility Response Plan* in compliance with 40 CFR Part 112 requirements. The facility also maintains a contingency plan in compliance with any generator standards required by 40 CFR 262. There are no active hazardous waste treatment, storage or disposal operations at the facility, therefore no specific changes to these plans are necessary for compliance with this section. The SPCC plan is effective for all units at the refinery.

The *Spill Prevention, Control, and Countermeasures (SPCC) Plan* and *Facility Response Plan* are found in Appendix-2 and -3.

8.0 HAZARD PREVENTION

[40 CFR 270.14(b)(8)]

This permitting requirement (40 CFR 270.14(b)(8)) requires a description of hazard prevention measures that will be taken at the facility when operating hazardous waste units. Specifically, it requires a description of procedures, structures, or equipment used at the facility to:

- (i) Prevent hazards in unloading operations;
- (ii) Mitigate effects of equipment failure and power outages;
- (iii) Prevent contamination of water supplies;
- (iv) Prevent releases to atmosphere;
- (v) Prevent run-off from hazardous waste handling areas, or to prevent flooding; and
- (vi) Prevent undue exposure of personnel to hazardous waste.

The Navajo refinery is a hazardous waste generator only. Since there are no hazardous waste TSD operations, none of the above items are applicable to ongoing TSD operations. This information is not specifically required for post-closure permit applications.

Several of these items are (or will be) addressed in Closure and/or Post-Closure plans for the NCL, TEL and Evaporation Ponds (Tab-B, Section 13). Contamination of groundwater is being addressed through Corrective Action on NCL and the Evaporation Ponds. The TEL has an approved cap which prevents percolation of rainwater through the unit and potential contamination of water supplies. All three units have post-closure groundwater monitoring. The NCL is the only unit with potential for release to atmosphere (through wind-blown dust) and the closure/post-closure plan addresses this potential through placement of a vegetative cover and watering. Run-on and run-off from all units is addressed through design of dikes, berms or caps, and in post-closure care requirements.

The refinery has in place a variety of safety and risk management procedures intended to minimize hazards associated with operating the refinery. These include various training programs and unit operating procedures as well as SPCC and Facility Response Plan provided as Appendix 2 and 3.

9.0 PREVENTION OF ACCIDENTAL IGNITION / REACTION

[40 CFR 270.14(b)(9)]

Navajo has no active hazardous waste management units and therefore manages no ignitable, reactive, or incompatible wastes for which this section would be applicable.

The refinery has in place a variety of safety and risk management procedures intended to minimize hazards associated with operating the refinery. These include various training programs and unit operating procedures as well as SPCC and Facility Response Plan provided as Appendix 2 and 3.

**NAVAJO REFINING COMPANY
ARTESIA, NEW MEXICO REFINERY**

**RCRA PERMIT APPLICATION
TECHNICAL RESOURCE DOCUMENTS**

APPENDIX 2

**SPILL PREVENTION, CONTROL,
and
COUNTERMEASURES PLAN
(September 1997)**

June 2001



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CH2M HILL HOUSTON OFFICE

SPILL PREVENTION CONTROL

AND

COUNTERMEASURE PLAN

NAVAJO REFINING COMPANY

ARTESIA REFINERY

Prepared by

Response Management Associates, Inc.
16000 Stuebner Airline, Suite 520
Spring, Texas 77379
Phone (281) 251-9200 • (281) 320-9700 FAX

Updated by:



Waid and Associates
March 2001

Copy No. 11

CERTIFICATION PAGE

Facility Information

- Name of Facility: Navajo Refining Company - Artesia
P. O. Box 159
Artesia, NM 88211-0159
- Physical Address: Navajo Refining Company - Artesia
501 East Main Street
Artesia, NM 88211-0159
- Name and Address of Owner/
Operator: Holly Corporation
100 Crescent Court, Suite 1600
Dallas, TX 75201-1800
- Date of Initial Operation: 1920's
- Designated person accountable for
oil spill prevention at this facility: Randy Howes
Refinery Vice President/Manager
- Directions to Facility: The Facility is located in the northeast quadrant of the city
of Artesia on U. S. Highway 82 in Eddy County, New
Mexico
- This Facility did not experience a reportable oil spill event during the 12 months prior to
January 10, 1974 (effective date of 40 CFR Part 112).

Management Approval

- The spill prevention, control, and countermeasures for the referenced facilities will be
implemented and maintained as described in this Spill Prevention, Control, and
Countermeasures (SPCC) Plan.
- The manpower, equipment, and materials required to control and remove any quantity of oil
that may be discharged are hereby authorized.

Signature: _____

Date: _____

Name: Randy Howes

Title: Refinery Vice President/Manager

Certification

I hereby certify that:

- I am familiar with the requirements of 40 CFR Part 112;
- I have examined the facility;
- This Plan has been prepared in accordance with good engineering practice and the requirements
of 40 CFR Part 112.

This certification shall in no way relieve the owner/operator of the duty to prepare and fully
implement this Plan in accordance with 40 CFR Part 112.

(Seal)



Registered Professional Engineer

Sara A. Hutson
Sara A. Hutson, P.E.

State of New Mexico Registration No: 15037

Date: 3-29-01

SPILL PREVENTION, CONTROL, AND COUNTERMEASURES PLAN

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SPILL PREVENTION, CONTROL, AND COUNTERMEASURES PLAN

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SPILL PREVENTION, CONTROL, AND COUNTERMEASURES PLAN

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REVISION RECORD

- Remove and discard obsolete pages.
- Replace obsolete pages with the updated pages.
- Record each revision on this form.

March 2001

DISTRIBUTION LIST

COPY NUMBER	PLAN HOLDER	LOCATION
1	Refinery Manager	Artesia, NM
2	Safety Director	Artesia, NM
3	Environmental Director	Artesia, NM
4	Operations Manager	Artesia, NM
5	Maintenance Superintendent	Artesia, NM
6	Senior Vice President	Artesia, NM
7	Manager of Environmental Affairs for Water & Waste	Artesia, NM
8	Environmental Library at Artesia	Artesia, NM
9	Environmental Library at Artesia	Artesia, NM
	OTHER COPIES DISTRIBUTED TO:	
10	Waid and Associates 14205 Burnet Road, Suite 600 Austin, TX 78728	Austin, TX
11	CH ₂ M Hill 7600 W. Tidwell Road, Suite 400 Houston, TX 77040-5719	Houston, TX

1.0 INTRODUCTION AND PLAN CONTENT

1.1 INTRODUCTION

Throughout this Plan the Artesia Refinery is referred to as the Facility. In some areas of this Plan it will be explicitly stated that the data are for one specific area of the Facility. Appendix A details all of the Facility-specific information including location, description of operation, Facility equipment/structures, etc.

The Facility is a petroleum refinery which processes crude oil into asphalt, diesel fuel, naphtha, gasoline, kerosene, and liquefied petroleum gas (LPG). This Facility:

- Processes crude at a rate of 60,000 barrels per day (bbls/day) (currently, but is expanding to 70,000 bbls/day).
- Receives 30,000 bbls/day of this volume from the Lovington Refinery
- Has an approximate total storage capacity of 1,256,902 barrels (bbls).
- Has an average storage volume of 500,000 to 750,000 bbls.

Loading/unloading operations are conducted on a 24 hour, seven (7) day per week basis, and consist of:

Truck Loading

- Asphalt
- Carbon Black Oil
- Diesel Fuel/Gasoline
- LPG

Rail Car Loading

- Asphalt
- Carbon Black Oil
- Diesel Fuel
- Slurry

Truck Unloading

- Asphalt
- Gas Oil
- Crude Oil
- Bulk Chemicals

Rail Car Unloading

- LPG

In the event of a spill, corrective actions would be taken immediately upon discovery in order to eliminate or mitigate a pollution incident. Section 2.0 provides the Notification Procedures and Section 3.0 provides the Spill Response Actions for the Facility. Sections 4.0 through 9.0 address the spill prevention and control practices and procedures in place at the Facility. In addition, the Facility has developed and maintains a Facility Response Plan in accordance with OPA 90.

1.2 PLAN PURPOSE/OBJECTIVES

This Spill Prevention Control and Countermeasures (SPCC) Plan is intended to provide a ready reference and guide to assist Facility personnel in establishing and maintaining an efficient and effective prevention, control, and countermeasures program for potential discharge incidents from the Facility.

1.2 PLAN PURPOSE/OBJECTIVES (Cont'd)

The specific objectives of the Plan are to:

- Define the typical Navajo Refining Company and specific Facility spill prevention control and countermeasures practices and procedures.
- Identify the designated person accountable for oil spill prevention.
- Provide notification and response procedure guidelines for the initial stages of a response effort.

1.3 PLAN DISTRIBUTION PROCEDURES

The Facility office will coordinate the distribution of this Plan. Distribution will be handled in the following manner:

- Distribution of the Plan is controlled by the number on the cover page. A distribution list is included in the Foreword to facilitate control and to identify the current holders of the Plan.
- The Facility shall maintain a complete copy of the Plan at the Facility. The Plan will be available to the EPA Regional Administrator for on-site review during normal working hours.

1.4 PLAN REVIEW AND UPDATE PROCEDURES

The "Designated Person Accountable for Oil Spill Prevention" (identified on the Certification Page in the Foreword), with support from the Facility office, will coordinate the following Plan review and update procedures.

Facility Changes requiring Plan Revision

- This Plan will be revised when there are changes in the Facility's design, construction, operation, or maintenance that materially affects the Facility's potential for the discharge of oil into or upon the navigable waters of the United States or adjoining shorelines. Such amendments shall be implemented as soon as possible, but not later than six (6) months after such change occurs.

Changes requiring revision may include, but are not limited to:

- Commission or decommission of tanks.
- Replacement, reconstruction, or movement of tanks.
- Reconstruction, replacement, or installation of piping systems.

1.4 PLAN REVIEW AND UPDATE PROCEDURES (Cont'd)

- Construction or demolition that might alter secondary containment structures and/or drainage systems.
- Revision of standard operating or maintenance procedures at the Facility.

Triennial Review

- At least once each three (3) years, the Facility will complete a review and evaluation of this SPCC Plan and make amendments within six (6) months of the review. This review will include at a minimum a review of the following:
 - Applicability of new prevention and control technology which may significantly reduce the likelihood of a spill event from the Facility if such technology has been field-proven at the time of the review.
 - Accuracy of the SPCC Plan as compared to the current Facility operation and SPCC Regulations.
 - Capacity and structural integrity of secondary containment structures.
 - Spill prevention inspections and record retention to insure continuity for a minimum period of three (3) years.

Certification of Revisions

- All amendments to this Plan, except for changes to personnel and telephone references, must be certified by a Registered Professional Engineer to satisfy the requirements of 40 CFR Part 112 (see the Certification Page).

Inclusion of Amendments into the Plan

- The Facility office will coordinate the word processing, publication, and distribution efforts of completing the revisions and maintaining the Plan.
- The Plan holder, immediately upon receipt of any revisions, shall review and insert the revised pages into the Plan and discard the obsolete pages. This action should then be recorded on the "Revision Record" page in the Foreword.

1.5 REGULATORY COMPLIANCE

This Plan addresses the following regulatory requirements:

- Federal Spill Prevention Control and Countermeasures Regulations: U.S. EPA Final Rule for Oil Pollution Prevention; Non-Transportation Related On-shore and Offshore Facilities (40 CFR Part 112 - as published on December 11, 1973 and modified August 25, 1993, July 1, 1994 and March 11, 1996).

1.5 REGULATORY COMPLIANCE (Cont'd)

A detailed cross reference between the format of this Plan and that of the regulations is provided in Appendix B.

General Applicability

This requirement applies to owners or operators of non-transportation-related onshore and offshore facilities engaged in drilling, producing, gathering, storing, processing, refining, transferring, distributing or consuming oil and oil products, and that meet each of the following criteria:

- Due to their location, could reasonably be expected to discharge oil in harmful quantities into or upon the navigable waters of the United States or adjoining shorelines and;
- Has a single aboveground storage tank with a storage capacity in excess of 660 gallons or an aggregate aboveground storage capacity in excess of 1,320 gallons or;
- Has an underground storage capacity in excess of 42,000 gallons.

Submission of Plan

The Facility shall submit this SPCC Plan along with the necessary documentation (as defined in 40 CFR Part 112.4) to the EPA Regional Administrator within 60 days when the Facility has a discharge event(s) which meets one of the following conditions:

- Discharge more than 1,000 gallons of oil into or upon the navigable waters of the United States or adjoining shorelines in a single spill event or,
- Discharges oil in harmful quantities into or upon the navigable waters of the United States or adjoining shorelines in two spill events within any twelve month period.

Documentation to be included with this Plan submission includes the following:

- Name of the facility;
- Name(s) of the owner or operator of the facility;
- Location of the facility;
- Date and year of initial facility operation;
- Maximum storage or handling capacity of the facility and normal daily throughput;
- Description of the facility, including plot plans, flow diagrams, and topographical maps;

1.5 REGULATORY COMPLIANCE (Cont'd)

- A complete copy of the Spill Prevention Plan with any amendments;
- The cause(s) of such spill, including a failure analysis of system or sub-system in which the failure occurred;
- The corrective actions and/or countermeasures taken, including an adequate description of equipment repairs and/or replacements;
- Additional preventive measures taken or contemplated to minimize the possibility of recurrence;
- Such other information as the Regional Administrator may reasonably require, pertinent to the Plan or spill event.

CORPORATE ENVIRONMENTAL POLICY

STATEMENT OF ENVIRONMENTAL AND SAFETY POLICY FOR HOLLY CORPORATION AND SUBSIDIARIES

1. The Company seeks to comply with all applicable laws and regulations that are intended to protect the environment or the safety of people.
2. The Company strives to protect the environment and protect the safety of people both within the Company and in the communities in which the Company operates.
3. The Company devotes substantial resources to compliance with applicable laws and regulations and to the protection of the environment and the safety of employees and the public.
4. The company devotes substantial resources to training its personnel on environmental protection matters and to prevention of and planning for accidents or spillages.
5. Necessary records on environmental and safety matters are kept accurately. Reports filed by the Company on environmental and safety matters are accurate to the best knowledge of the Company personnel involved.
6. The Company seeks to use energy and natural resources efficiently.
7. The Company will diligently investigate any assertion that it is liable for harm or for violation of laws and regulations and will take appropriate corrective action when warranted. The Company will exercise its rights to defend itself against any such assertion that the Company believes to be unjustified.
8. Employees who become aware of a situation that may be a violation of law or of the Company's policies are required to report the situation to their superiors. Company personnel who receive such a report are required in all cases to investigate the report and provide a response to the reporting employee within a reasonable time. Any employee who is dissatisfied with the response he or she receives to a report of a possible violation of law or Company policy should communicate with higher authorities within the Company.

2.0 SPILL NOTIFICATION PROCEDURES

2.1 INTERNAL NOTIFICATIONS

In the event of a reportable spill or discharge (as defined in Appendix H), the following internal notifications should be made.

In no event shall notification be delayed because the immediate supervisor is inaccessible. Authorization is given to bypass management levels if necessary to provide immediate notification to upper management.

Navajo telephone references are provided in Figure 2.2, Internal Notification References.

First Navajo Person Notified/On-Scene

- Immediately notify **Central Dispatch** by:
- Activating the Emergency Alarm System.
- Announce twice over the operating channel for that location "(type of emergency) at (location)". Example: "Gasoline Spill at Tank 106".
- Refer to the Artesia Refinery Facility Response Plan for additional response guidance.

Shift Foreman / Division Foreman

- Coordinate response with the Safety Department.
- Notify the Environmental Affairs Officer.

Central Dispatch

- Notify the Incident Commander (Process Safety Superintendent) and the Emergency Response Team.

Incident Commander (typically the Fire Chief)

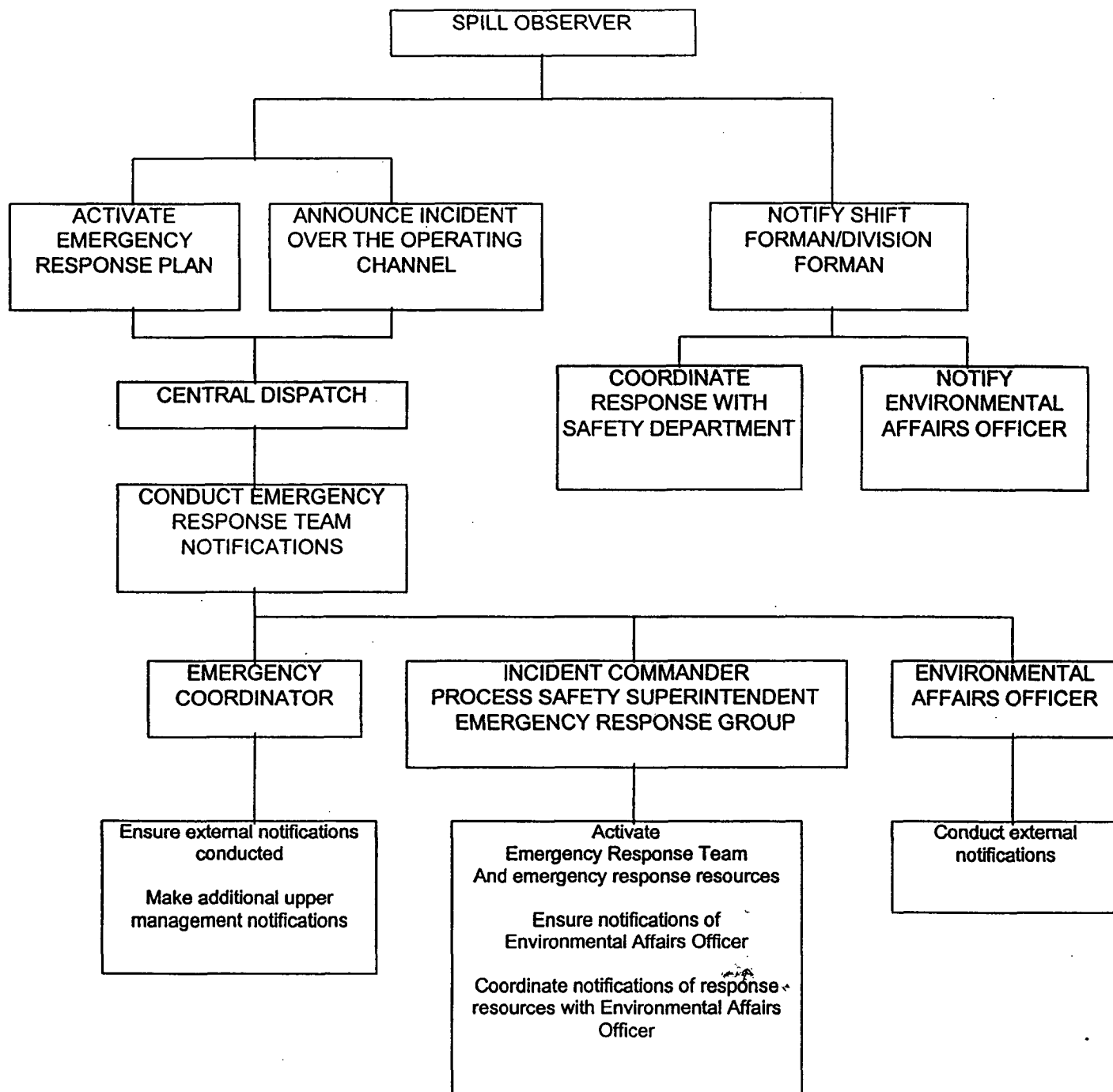
- Activate additional Emergency Response Team members, as the situation demands.
- Activate local emergency response resources (*Oil Spill Removal Organizations (OSRO)*, fire, police, medical, etc.).
- Ensure notification of the Environmental Affairs Officer.
- Coordinate activation of additional response and clean-up resources with the Environmental Affairs Officer.

Environmental Affairs Officer

- Ensure that all regulatory/governmental agencies and other external organizations as detailed in Section 2.2 and Figures 2.4, 2.5 have been notified.
- Make additional upper management and head office notifications as the situation demands.

FIGURE 2.1

INTERNAL NOTIFICATION SEQUENCE



FAX = Facsimile Machine
MBL = Mobile Phone
PGR = Pager

FIGURE 2.2

INTERNAL NOTIFICATION REFERENCES

TITLE	NAME	LOCATION	OFFICE	HOME	CELLULAR
Artesia Refinery	—	501 East Main St. Artesia, NM 88211-0159	(505) 748-3311	—	(505) 748-9077 FAX
Operations Manager	Frank Guinan		Ext. 244	(505) 746-4559	(505) 365-7875
Risk Manager	Duke Younger		Ext. 212	(505) 748-3180	
Refinery Manager	Randy Howes		Ext. 233	(505) 746-1588	
Spill Management Team					
<i>Env. Mgr. for Water & Waste</i>	Darrell Moore	Artesia, NM	(505) 748-3311 Ext. 281	(505) 748-2455	(505) 365-8365
<i>Logistics Section Mechanical Superintendent</i>	Jessie Hilliard	Artesia, NM	(505) 748-3311 Ext. 243	(505) 746-6686	(505) 365-5736 or (505) 365-7084
<i>AMS</i>	David Bolding	Artesia, NM	(505) 748-3311 Ext. 354	(505) 365-2694	(505) 365-7877
<i>Logistics Section Maintenance Department Coordinator</i>	Oscar Sosa	Artesia, NM	(505) 748-3311 Ext. 327	(505) 746-6562	
<i>Finance Section Purchasing Department</i>	Manuel Madrid	Artesia, NM	(505) 748-3311 Ext. 254	(505) 746-4369	

FIGURE 2.3

NOTIFICATION DATA SHEET
SPILL REPORT (SR-2)

1. Time of Spill ☐AM ☐PM Date _____

2. Time Spill Reported to Shift Foreman ☐AM ☐PM Date _____

3. Name of Person on Duty at Time of Spill _____

3a. Name of Person Who Discovered Spill If Different from above _____

4. Location of Spill _____

5. Type of Spill (Material) _____

6. Quantity of Spill _____ bbl Size of Spill (Area) _____

7. Time Spill Contained ☐AM ☐PM Date _____

8. Disposition of Spilled Material _____

9. How was the Spill Contained _____

10. Did spill leave the Facility boundary?
☐Yes ☐No

11. Corrective Action Taken to Prevent Further Spills

12. Physical Location of Responsible Person at the Time of Spill _____

13. Department _____

14. Supervisor's Signature _____

NOTE: In order to comply with state and federal laws, the Navajo Refining Company must report spills as soon as possible. Call to report all spills as soon as possible to the refinery Environmental Department. The 24 hour phone number for the Environmental Department is (505) 365-8365 (alternate phone number: Safety Dept. (505) 365-8364). This form must be filled out completely and returned to the refinery Environmental Department whenever a spill occurs.

Form SR-2 - 4-7-95

2.2 EXTERNAL NOTIFICATION

SPILL REPORTING GUIDELINES

- Never include information which has not been verified.
- Never speculate as to the cause of an incident or make any acknowledgment of liability.
- **DOCUMENT:**
 - ☐ Agency notified
 - ☐ Date/time of notification
 - ☐ Person notified
 - ☐ Content of message given
- **DO NOT DELAY** reporting due to incomplete information.

The following external notifications should be made in accordance with federal, state, and local regulations for all reportable discharges. A "Notification Data Sheet" (Figure 2.3) should be used to facilitate documentation and data retrieval for these notifications. The Refinery Vice President/Manager shall ensure that the following "Required Notifications" and "Other Notifications" are made as the situation demands. The typical reporting flowchart is demonstrated in Figure 2.1 for internal notifications, with telephone references in Figure 2.2. The external notification flowchart is detailed in Figure 2.4, with telephone references in Figure 2.5.

Except for "ALL CALL" emergencies at night, on weekends, evenings, noon, or interior structure fires, the responsibility for calling outside agencies rests with the Incident Commander (Process Safety Superintendent), and Environmental Affairs Officer (Manager, Safety & Risk Management).

Required Notifications

- Oil Spill Removal Organization (OSRO)

*Immediately for all spills that exceed the Facility's response capabilities.
Figure 2.5 details the OSRO phone references for 24 hour contact.*

2.2 EXTERNAL NOTIFICATION (Cont'd)

- **National Response Center (NRC)**

Verbal: Immediately for all spills that impact or threaten navigable water.

(800) 424-8802 (24 hour number)

(202) 267-2675 (Alternate)

Written: In accordance with the applicable SPCC regulations, within 60 days to the U.S. Environmental Protection Agency for a spill in excess of 1,000 gallons (24 Bbls.) in a single event or two spill events within a twelve month period into or upon navigable waters of the United States or adjoining shorelines.

U.S. Environmental Protection Agency - Region VI

1445 Ross Ave.

12 th Floor, Suite 1200

Dallas, TX 75202

(214) 665-2222

- **Roswell State Police (SERC)**

Immediately for all spills that impact state waters and spills greater than one barrel to land.

(505) 827-9223 (24 hour number)

(505) 622-7200 (alternate)

Written: As requested by the agency.

- **New Mexico Energy, Minerals, and Natural Resources Department - Oil Conservation Division (OCD)**

Verbal: Immediate notification (within 24 hours) of discovery of a major release. A major release fits any of the following criteria:

- (a) *an unauthorized release of a volume, excluding natural gases, in excess of 25 barrels;*
- (b) *an unauthorized release of any volume which:*
 - (i) *results in a fire;*
 - (ii) *will reach a water course;*
 - (iii) *may with reasonable probability endanger public health; or*
 - (iv) *results in substantial damage to property or the environment;*

2.2 EXTERNAL NOTIFICATION (Cont'd)

Required Notifications (Cont'd)

- (c) *an unauthorized release of natural gases in excess of 500 mcf; or*
- (d) *a release of any volume which may with reasonable probability be detrimental to water or cause an exceedance of the standards in 19 NMAC 15.A.19. B(1), B(2) or B(3). [3/15/97]*

Notification shall be made to the OCD District office for the area where the release occurred as well as to the OOD Environmental Bureau Chief (if water is impacted).

(505) 393-6161 (*District 1 - Hobbs, NM*)
(505) 748-1283 (*District 2 - Artesia, NM*)
(505) 334-6178 (*District 3 - Aztec, NM*)
(505) 827-7131 (*District 4 - Santa Fe, NM*)

Written: A complete written report within 15 days of any release greater than 5 bbl or greater than 50 mcf.

The report shall include OCD Form C-141 (see Appendix F) and be submitted to the OCD District office. If water is impacted, the report must also be submitted to the OCD Environmental Bureau Chief.

New Mexico Energy, Minerals, and Natural Resources Department - Oil Conservation Division:

District 1
1000 West Broadway
P. O. Box 1980
Hobbs, NM 88240

District 3
1000 Rio Brazos Rd.
Aztec, NM 87410

District 2
811 South 1st Street
Artesia, NM 88210

District 4
2040 South Pacheco
Santa Fe, NM 87501

Bureau of Land Management (BLM)

Verbal: Immediately [within 24 hours] for oil, salt water, and toxic liquid spills in excess of 100 Bbls that leave the firewall or any spill in a sensitive area (i.e. parks, recreation sites, wildlife refuges, lakes, reservoirs, streams, and urban/suburban areas)

(505) 438-7501

2.2 EXTERNAL NOTIFICATION (Cont'd)

Required Notifications (Cont'd)

Written: *Within 15 days for oil, salt water, and toxic liquid spills in excess of 10 Bbls and less than 100 Bbls or oil, salt water, and toxic liquid spills in excess of 100 Bbls contained within the firewall*

Bureau of Land Management
P. O. Box 27115
Santa Fe, NM 87502-7115

Local Emergency Planning Committee (LEPC)

Verbal: *Calls to the SERC concerning petroleum spills will usually alert the LEPC, however, it is advisable to notify them directly for any spill that requires notification.*

Local Emergency Planning Committee (LEPC)
A. J. Hill
(505) 887-9511
(505) 887-7551

Written: *As the agency may request, depending on circumstances.*

Other Notifications

New Mexico Department of Game and Fish

The New Mexico Department of Fish and Game will typically be notified by the New Mexico SERC; however, it is advisable to follow up with verification that notice was received.

Occupational Safety and Health Administration (OSHA)

Within eight (8) hours for incidents involving three (3) or more hospitalizations or immediately in the event of one (1) or more deaths.

New Mexico Occupational Safety and Health Administration (OSHA)

Immediately for any hospitalizations or deaths.

U.S. Fish and Wildlife Service (USFWS)

Immediately for Wildlife Protection/Rehabilitation

Local Water Supply System

The New Mexico SERC typically notifies the Local Water Supply System. For incidents involving underground tanks or for any spill of such magnitude that the underground water sources might be impacted, it would be advisable to follow up with verification that notice was received.

2.2 EXTERNAL NOTIFICATION (Cont'd)

- *Other Notifications (Cont'd)*

Local Emergency Services

Immediately for all Police, Fire, and Medical Emergencies

Dial 911

Artesia Police Department: (505) 746-2703 (*Alternate*)

Eddy County Sheriff - Artesia: (505) 746-9888 (*Alternate*)

Eddy County Sheriff - Carlsbad: (505) 887-7551 (*Alternate*)

Artesia Fire Department: 911 (505) 746-2701 (*Alternate*)

Ambulance Service: 911

Wildlife Rehabilitation Resources

International Bird Rescue Center (Berkeley, CA): (510) 841-9086

Tri-State Bird Rescue (Newark, NJ): (302) 737-9543

- **Neighbors**

Directly or with assistance from local police and fire agencies, inform all adjacent businesses and private citizens that might be immediately impacted.

FIGURE 2.4
EXTERNAL NOTIFICATION FLOWCHART

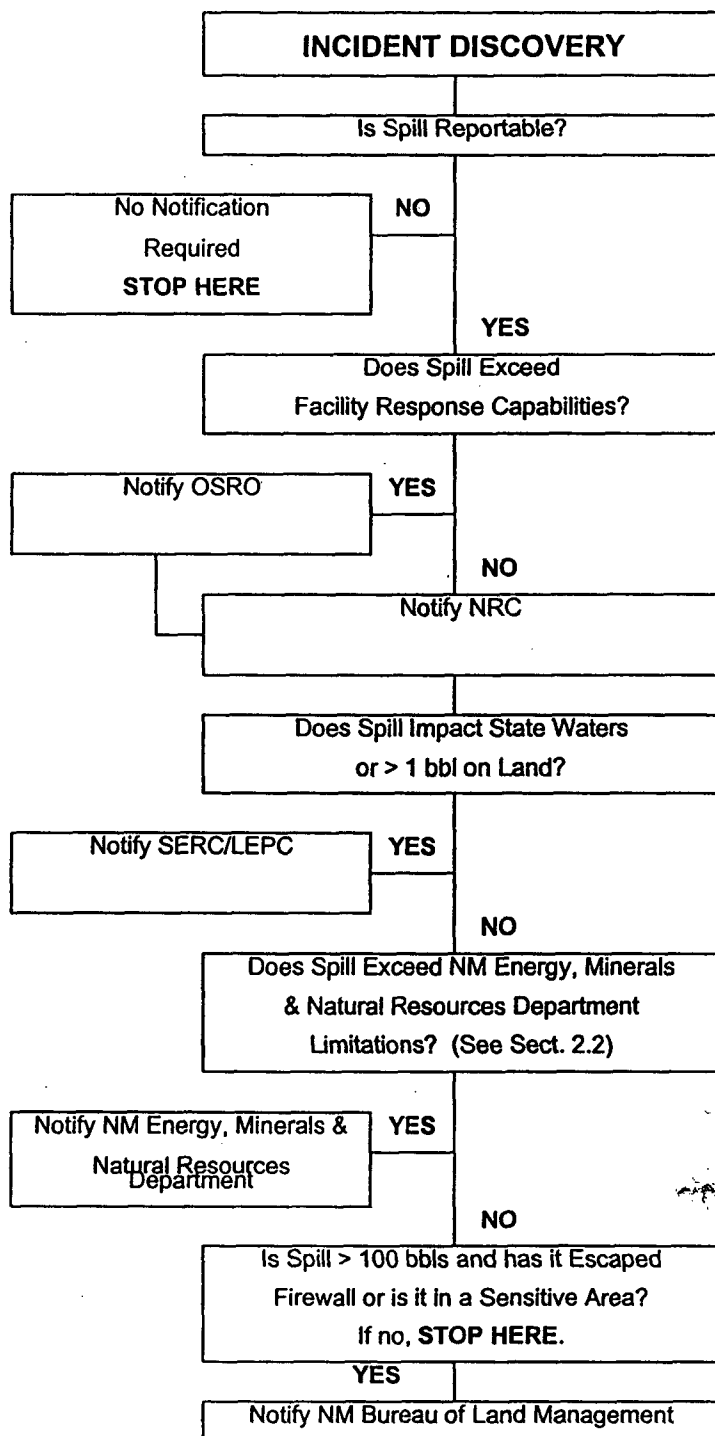


FIGURE 2.5

EXTERNAL NOTIFICATION REFERENCES

REQUIRED EXTERNAL NOTIFICATIONS			
AGENCY	LOCATION	OFFICE	ALTERNATE
National Response Center (NRC)	Washington, DC	(800) 424-8802	(202) 267-2675
Roswell State Police (SERC) - evenings, weekends, holidays	Roswell, NM	(505) 827-9223	(505) 622-7200
SERC	Santa Fe, NM	(505) 827-9223	

ASSISTANCE/ADVISORY NOTIFICATIONS (outside resources)			
AGENCY	LOCATION	OFFICE	ALTERNATE
New Mexico Department of Game and Fish	Roswell, NM	(505) 624-6135	(505) 748-3036
New Mexico OSHA Bureau	Santa Fe, NM	(505) 827-2888	
OSHA (For Reportable Injury or Death)	Washington, DC	(800) 321-6742	
U.S. Environmental Protection Agency (EPA) Region VI	Dallas, TX	(214) 665-2222	
U.S. Fish and Wildlife Service (USFWS)	(505) 248-6911		
Bureau of Land Management (BLM)	Santa Fe, NM	(505) 438-7501	
New Mexico Health and Environmental Department	Santa Fe, NM	(505) 827-9329	
NM Energy, Minerals, and Natural Resources Department (OCD)	Artesia, NM (District 3)	(505) 748-1283	
New Mexico Fire Marshal	Roswell, NM	(505) 885-2111	
National Weather Service (Recorded Forecasts) (NOAA)	Roswell, NM	(505) 347-5700	
Local Emergency Planning Committee (LEPC)	Carlsbad, NM	(505) 887-9511	(505) 887-7551
Local Water Supply System	Artesia, NM	(505) 746-2122	(505) 746-2703

FIGURE 2.5 (Cont'd)

EXTERNAL NOTIFICATION REFERENCES

LOCAL EMERGENCY SERVICES			
DIAL 911 for All Police, Fire, and Ambulance Emergencies			
SERVICE	LOCATION	OFFICE	ALTERNATE
Artesia Fire Department	Artesia, NM	911	(505) 746-2701
Eddy County Sheriff	Artesia, NM	911	(505) 746-9888
Eddy County Sheriff	Carlsbad, NM	(505) 887-7551	
Artesia City Police	Artesia, NM	911	(505) 746-2703
Artesia Ambulance	Artesia, NM	911	(505) 746-2701
Artesia General Hospital	Artesia, NM	(505) 748-3333	
Eastern New Mexico Medical Center	Roswell, NM	(505) 622-1110	
Guadalupe Medical Center	Carlsbad, NM	(505) 887-4100	

OIL SPILL REMOVAL ORGANIZATIONS (OSRO)			
COMPANY	LOCATION	OFFICE	ALTERNATE
Gamer Environmental Services	Dallas, TX	(817) 535-7222	(800) 442-7637
Safety & Environmental Solutions	Hobbs, NM	(505) 392-6167	(800) 390-6167
Indian Fire & Safety	Artesia, NM	(505) 393-3093	(800) 530-8693

ADDITIONAL RESPONSE RESOURCES			
COMPANY	LOCATION	OFFICE	ALTERNATE
I/W Hot Oil - Transports Service	Artesia, NM	(505) 746-4214	
O.K. Hot Oil	Loco Hills, NM	(505) 746-6233	
Gandy Corporation - Transports Service	Lovington, NM	(505) 396-4948	
Jim's Water Service - Transports Service	Artesia, NM	(505) 748-1358	(505) 748-1352

ADDITIONAL RESPONSE RESOURCES			
COMPANY	LOCATION	OFFICE	ALTERNATE
Sweatt Construction - Dirt Equip.	Artesia, NM	(505) 748-1238	
Davis Welding - Dirt Equip.	Artesia, NM	(505) 746-6306	
T & C Tank Rental - Temporary Storage	Artesia, NM	(505) 746-9788	
International Bird Rescue Center	Berkeley, CA	(510) 841-9086	
Tri-State Bird Rescue	Newark, NJ	(302) 737-9543	
KBIM - TV	Roswell, NM	(505) 622-2120	
KSVP - AM Radio	Artesia, NM	(505) 746-2751	

3.0 SPILL COUNTERMEASURES

3.1 SPILL RESPONSE ACTIONS

Protect Yourself

Personal protective equipment shall be worn by all personnel in the spill area. Use testing and sampling equipment to determine potential safety hazards.

Eliminate Ignition Sources and Restrict Access to the Spill Area

e.g., all gasoline/diesel engines (all motor vehicles), smoking, cutting/welding operations, flaming devices, and metal-to-metal contacts that could create a spark.

If Safe, Take Immediate Steps to Shut off the Spill Source

e.g., close valves, shut off pumps, and/or activate Emergency Shutdown (ESD) stations

Contain the Spill Utilizing Facility and/or Locally Available Response Equipment

Section 2.1 outlines contacts for Facility/Navajo resources and Section 2.2 outlines the local external response resources.

Assess the Spill

Utilize Figure 2.3 [Notification Data Sheet Spill Report (SR-2)] as guidance and documentation for the required data.

Notify the Supervisor

Describe the spill and any actions taken that may affect Facility operations. Internal and External Notifications will be made by designated personnel.

Clean up the Spill, as Necessary

Section 2.2 outlines the local external response resources and telephone references.

Remember, Without Exception, PERSONNEL SAFETY IS FIRST PRIORITY. Excessive Exposure to the Vapor and Liquid Stages of the Spilled Product Should Be Avoided.

4.0 TRAINING AND INSPECTIONS

4.1 PERSONNEL, TRAINING, AND SPILL PREVENTION PROCEDURES

Personnel training and spill prevention procedures are in place at the Facility and include the following:

- All maintenance and operating personnel receive on-the-job training on the proper operation and maintenance of the Facility's discharge prevention equipment.
- Navajo has a continuing program of informing operating personnel of the laws and regulations that concern pollution prevention and control. Personnel are kept informed of their obligation to prevent any pollution incident during annual training meetings and regularly scheduled safety meetings.
- All employees who work in operating areas of the refinery or have the potential to be exposed to the operating areas receive an initial 40 hours of comprehensive training emphasizing occupational safety, environmental compliance and process safety management. Each year following, employees are required to complete a computer-based training refresher program which includes a module covering the SPCC Plan. Both the initial 40-hour course and the annual Refresher Training Course are designed to comply with requirements found in:
 - 40 CFR 112.7 (e) - SPCC Plan
 - 40 CFR 112.21 - Facility Response Plan
 - 40 CFR 122.26 - Storm Water Management Plan

Common elements of all three of these programs include prevention, detection, and response to releases of oils and other hazardous materials. Training common to all three also includes emphasis on good house keeping practices (Best Management Practices), secondary containment, and prompt initial notification of an incident.

- Operation and Maintenance Manuals for major equipment are maintained in the Facility office.
- A detailed training syllabus is maintained as a part of the records kept by the Safety Training Coordinator. All training records pertinent to this program are available for inspection during normal business hours by contacting the Safety Training Coordinator.

4.2 INSPECTIONS AND RECORDS

Facility inspection and record keeping requirements are detailed throughout the pertinent sections of this Plan.

- Inspection procedures are provided in procedures manuals for the following:
 - Cathodic protection system inspections.
 - Truck inspections.
 - Tank inspections and tank alarm testing.
 - Mechanical and electrical equipment inspections.
 - Storm water discharges.
- Daily inspections of the Facility are conducted by operating personnel during routine surveillance rounds, and are documented in the Daily Checklist.
- Records of the inspections are maintained on file at the Facility for a minimum period of three (3) years.

5.0 FACILITY DRAINAGE

5.1 DIKED STORAGE AREA DRAINAGE

Drainage of accumulated storm water or other liquids which may be discharged or spilled from the storage facilities into the diked storage area is typically controlled as follows:

- The preferred method of removal of uncontaminated storm water is by natural dissipation (evaporation and percolation) provided that the accumulation does not damage the equipment/ structures or inhibit operations conducted within the containment area. The desert environment will facilitate natural dissipation.
- Accumulated water is visually inspected for oil, oil product, and/or chemical contamination (a sample Secondary Containment Checklist is provided in Appendix G) and discharged only if no contamination is observed.
- In the event that drainage of an area becomes necessary due to uncontaminated accumulated storm water, the containment area drain valves are opened and the water is drained to the Facility's surface drainage system.
- A natural diversion swale situated on the south side of the Eagle Draw provides a natural barrier to the Pecos River. This swale minimizes erosion from natural run-off, as well as uncontaminated discharged storm water, thus providing a redundant containment system.
- In the event that removal of contaminated liquids from a containment area is required, the use of a vacuum truck, pump, or other means will be evaluated for the removal. Contaminated liquids will be transferred to the API separator for oil separation and treatment in the wastewater treatment plant.
- Dike drains are secured in the closed position.
- Flapper-type drain valves are not used to drain diked areas.
- Adequate records are kept of drainage events (refer to Appendix G, Containment Area Drainage).

Loading and Unloading Areas

Drainage from the loading and unloading areas is managed as follows:

- The loading and unloading areas are equipped with open sumps which are capable of holding the contents of the single largest compartment of a rail car (30,000 gallons) or a tank truck (6,000 gallons). These sumps are pumped out via vacuum truck, as needed.

5.1 DIKED STORAGE AREA DRAINAGE (Cont'd)

Loading and Unloading Areas (Cont'd)

- The Facility's central sump system flows to one (1) of three (3) API separators for oil separation.
- Facility effluent water is monitored and discharged via injection well.
- A diagram demonstrating Facility drainage is provided in Appendix G.

5.2 UN-DIKED AREA DRAINAGE

The undiked storage area (including parking areas) are contained as follows:

- The Facility is designed so that the natural drainage would direct spills to secondary containment areas. Redundant containment is provided by a plant ditch and containment pond with a capacity of ~30,000 bbls.
- The undiked process area, as well as the diked storage areas, are visually inspected during daily operating surveillance, usually at two hour intervals.
- In the event that a small spill or discharge is discovered, actions to contain and remove the spilled liquids will commence immediately upon discovery.
- Catchment basins are not located in areas subject to periodic flooding.
- Additional storm water management and spill response measures can be found in the following:
 - Artesia Storm Water Management Plan
 - Artesia Refinery Facility Response Plan
 - Artesia Emergency Response Plan

5.3 STORM WATER DRAINAGE PROCEDURES

Containment Area Drainage Procedures consist of:

- **Primary:** Natural Dissipation of storm water. The accumulation, however, will not be allowed to significantly impact containment capacity or the operations of facilities within the containment area.
- **Secondary:** Removal of storm water by pumping using vacuum trucks after the water has successfully passed a visual inspection for contamination. Water is pumped to the Facility's Waste Water Treatment System.

6.0 BULK STORAGE TANKS

6.1 TANK DESIGN AND CONSTRUCTION

The Facility's bulk oil and oil products storage tanks have been designed in accordance with industry standards. The tanks have the following design characteristics:

- Tanks are constructed of a material that is compatible with the oil and oil products stored and the conditions of storage.
- Tanks are constructed of welded or bolted steel to API standards.
- Tanks are operated within "Safe Fill" levels positioned below the capacity limits of the tank.
- Tanks are equipped with flame arrestors and pressure/vacuum relief, as appropriate.
- The process facilities are controlled from a control room with pressure and flow safety devices including audio and visual alarms and shut downs. These safety devices are tested regularly to ensure proper operation.
- Oil storage tanks are gaged once per day, at a minimum.
- Visible oil leaks which result in a loss of oil from tank seams, gaskets, rivets and bolts sufficiently large to cause the accumulation of oil in diked areas are promptly corrected.

6.2 SECONDARY CONTAINMENT

Facility bulk oil and oil products storage tanks and associated facilities are situated within secondary containment constructed of compacted earthen or concrete containment walls. The containment areas are designed as follows:

- The containment areas are designed to contain the contents of the single largest tank, plus sufficient freeboard to allow for precipitation.
- Diked areas are sufficiently impervious to contain spilled oil.
- A natural swale on the south face of Eagle Draw provides a barrier against spills entering the Pecos River.
- Some containment is not sufficient on its own to contain the entire volume of the largest tank. However, should the primary containment be breached, additional capacity is provided by the plant ditch and containment pond. All drainage from the plant would flow to the plant ditch and into the containment pond, which has a capacity of ~30,000 bbls. In case of discharge

6.2 SECONDARY CONTAINMENT (Cont'd)

from this containment pond the material would flow onto additional Navajo property which is also diked. The potential for a leak to reach navigable waters is miniscule.

- Additional detail on secondary containment is provided in Appendix A.

6.3 UNDERGROUND AND PARTIALLY BURIED METALLIC STORAGE TANKS

- There are no underground or partially buried metallic storage tanks at the Facility.

6.4 MOBILE OR PORTABLE OIL STORAGE TANKS

- Mobile or portable oil storage tanks are positioned or located so as to prevent spilled oil from reaching navigable waters.
- A secondary means of containment, such as dikes or catchment basins, have been furnished for the largest single compartment or tank.
- These tanks are located where they will not be subject to periodic flooding or washout.

6.5 INTERNAL HEATING COILS

- Internal heating coils are used on asphalt and heavy oil storage tanks.
- Internal heating coils do not discharge into open water courses.

6.6 TANK INSPECTION PROGRAMS

All tanks containing oil and oil products are inspected in the following manner:

- Each storage tank is inspected at least annually by management personnel. Inspection records are retained on file at the Facility for a minimum period of three (3) years. The annual inspection consists of a detailed review of the following:
 - Appurtenances
 - Firewalls
 - Foundation
 - Paint
 - Structure
- The API Procedure, the Guide for Inspection for Refinery Equipment, Chapter XII - Atmospheric and Low Pressure Storage Tanks, provides the basic tank inspection procedures used at this Facility.

6.6 TANK INSPECTION PROGRAMS (Cont'd)

- Tanks are ultrasonically tested every five (5) years at a minimum. More frequent and more in-depth tests are conducted if visual inspections reveal problem areas.
- The outside of the tanks are visually inspected by operating personnel for signs of deterioration, leaks, or accumulation inside the containment areas.
- Tank inspection summaries and recommendations are forwarded to the appropriate management personnel.
- Sample Tank Inspection Checklist and documentation forms are provided in Appendix E. The schedule and records of examinations are maintained on file at the Facility office for a minimum period of three (3) years.

7.0 TRANSFER OPERATIONS, PUMPING AND IN-PLANT PROCESS

7.1 BURIED PIPING INSTALLATIONS

Corrosion protection for buried piping is provided as follows:

- Buried piping installations are coated and wrapped to reduce corrosion.
- When a section of buried pipe is exposed, it is carefully examined for deterioration and corrective action taken as necessary.

7.2 OUT-OF-SERVICE PIPELINES

In the event that a Facility pipeline is removed from service or is placed in standby service for an extended time:

- The terminal connection at the transfer point is capped or blind-flanged.
- The origin of the line is marked.

7.3 ABOVEGROUND VALVES AND PIPELINES

- All aboveground valves, piping, and associated facilities are regularly examined by operating personnel in the following manner.
 - Informal inspections are conducted during daily operating personnel's surveillance. Inspections and testing results are submitted to management for review and corrective action.
 - Aboveground valves and piping are examined (monthly at a minimum) for the general conditions of items such as:
 - Flange joints
 - Valve glands and bodies
 - Drip / catch pans
 - Pipe supports
 - Bleeder and gauge valves
 - Valve locks / seals
 - Expansion joints
 - Metal surfaces

7.3 ABOVEGROUND VALVES AND PIPELINES (Cont'd)

- Records of negative findings from these examinations are documented in the operating personnel logs.
- In the event that a problem is located, the operator would implement repairs or turn in a work authorization request for prompt repair.
- Pipe supports are designed to minimize abrasion and corrosion and allow for expansion and contraction. Insulated lines are typically equipped with guide shoes to permit expansion while un-insulated lines are bare against supports.
- An equipment inspection checklist can be found in Appendix D.
- Records of these examinations are maintained on file at the Facility for a minimum period of three (3) years.

7.4 VEHICLE WARNING PROCEDURES

Vehicular traffic granted entry into the Facility are warned orally or by appropriate signs to be sure that the vehicle, because of its size, will not endanger aboveground piping or other oil transfer operations as follows:

- No vehicles are allowed in the pipe manifold area without supervisory permission and/or a safe work permit (when required).
- Only emergency, maintenance, and other authorized vehicles have access to the processing areas.
- Electrical grounding protection is required on all load-in/load-out operations.
- Access to containment areas by vehicle is restricted.

8.0 TANK TRUCK LOADING/UNLOADING RACK

8.1 LOADING/UNLOADING PROCEDURES

The Facility's tank truck loading/unloading operations are conducted as follows:

- Tank truck loading/unloading procedures meet the requirements and regulations established by the Department of Transportation.
- Operations are monitored periodically to ensure that proper procedures are utilized.
- Prior to filling and departure of any truck, the lower drains and outlets on tank trucks are closely examined for leakage. Any sign of leakage is immediately corrected to prevent liquid leakage while in transit.

8.2 DRAINAGE SYSTEMS

- Sumps and concrete containment pads and curbing is provided at all liquid loading/off-loading locations.
- Load-out sumps drain to the API separator for separation and disposition.

9.0 SECURITY

9.1 FENCES AND ENTRANCE GATES

The security measures in place for the Facility perimeter include fences and gates as follows:

- The refinery property is fully fenced and monitored by contract security guards 24 hours per day, 7 days per week.
- All plant entrances have automatic gates or are staffed with guard 24 hours per day.
- The Facility is manned by operating personnel 24 hours per day, 7 days per week.

9.2 OIL AND OIL PRODUCT STORAGE TANK VALVES

The security measures in place for the oil and oil product storage tank valves are as follows:

- Emergency cut-off capability is provided by manual operation of crude and product line valving. The flow is monitored by pipeline control systems that are capable of determining if an emergency exists. Upon detection, personnel are directed to close the appropriate valves.
- Tank master flow and drain valves with outward flow of storage tank contents to the surrounding surface area are locked in the non-operating or stand-by status.
- Tank loading or unloading connections are securely capped or blind flanged when not in service for a period of six months.

9.3 OIL, OIL PRODUCT PUMPS AND STARTER CONTROLS

The security measures in place for the oil, oil product pumps and starter controls are as follows:

- All pumps are located within the security system of the Facility and are accessible only to authorized personnel.
- Product pumps are visually monitored and inspected during operating personnel's routine surveillance.
- When tanks and pumps are not operating or on standby status, they are locked or accessible only by authorized personnel. Energy isolation procedures or lockout/tag procedures are employed.

9.4 FACILITY LIGHTING

Facility lighting is commensurate with the type and location of the Facility.

- Process areas and transfer stations are illuminated during periods of darkness.
- Lighting is adequate for spill detection and control, and for the prevention of vandalism.
- Portable lighting and power supplies are available, should additional lighting be required.

**NAVAJO REFINING COMPANY
ARTESIA, NEW MEXICO REFINERY**

**RCRA PERMIT APPLICATION
TECHNICAL RESOURCE DOCUMENTS**

APPENDIX 3

**FACILITY RESPONSE PLAN
(December 1997)**

June 2001

FACILITY RESPONSE PLAN

Navajo Refining Company

Artesia Refinery

Prepared for:

ARTESIA REFINERY
501 East Main St.
Artesia, New Mexico 88211-0159

Prepared by:

Response Management Associates, Inc.
16000 Stuebner Airline, Suite 520
Spring, TX 77379
(281) 251-9200 Phone • (281) 320-9796 Metro • (281) 320-9700 FAX

Copy # _____

Response Plan Cover Sheet

General Information	
Owner/Operator of Facility:	Holly Corporation 100 Crescent Court, Suite 1600 Dallas, Texas 75201-1880
Facility Name:	Navajo Refining Company, Artesia Refinery
Facility's Physical Address:	501 East Main St. Artesia, New Mexico 88211-0159
Facility Phone Number:	(505) 748-3311 (505) 748-9077 FAX
Latitude:	32° 50' 40" N
Longitude:	104° 23' 30" W
Dun & Bradstreet Number:	04 - 891 - 8817
Standard Industrial Classification (SIC) Code:	2911
Number of Aboveground Oil Storage Tanks:	one hundred one (101)
Capacity of Largest Aboveground Oil Storage Tank:	108,000 (Bbls)
Maximum Oil Storage Capacity:	1,796,119 (Bbls)
Worst Case Oil Discharge Amount:	108,000 (Bbls)
Facility Distance to Navigable Water:	<div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> 0 - ¼ mile <input type="checkbox"/> ½ - 1 mile </div> <div> <input type="checkbox"/> ¼ - ½ mile <input checked="" type="checkbox"/> > 1 mile </div> </div>

FACILITY RESPONSE PLAN

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REVISION RECORD

- Remove and discard obsolete pages.
- Replace obsolete pages with the updated pages.
- Record each revision on this form.

**Navajo Refining Company
Artesia Refinery**

**CERTIFICATION OF THE APPLICABILITY OF THE
OPA 90 SUBSTANTIAL HARM CRITERIA**

FACILITY NAME: Navajo Refining Company; Artesia Refinery

FACILITY ADDRESS: 501 East Main Street, Artesia, NM 88210

1. Does the facility have a total oil storage capacity greater than or equal to 42,000 gallons? If yes, does the facility transfer oil over water to or from vessels?

YES _____ NO X

2. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons? If yes, does the facility lack secondary containment that is sufficiently large to contain the capacity of the largest aboveground oil storage tank plus sufficient freeboard to allow for precipitation within any aboveground oil storage tank area?

YES _____ NO X

3. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons? If yes, is the facility located at a distance¹ such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments²?

YES X NO _____

4. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons? If yes, is the facility located at a distance¹ such that a discharge from the facility would shut down a public drinking water intake³?

YES _____ NO X

5. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons? If yes, has the facility experienced a reportable oil spill in an amount greater than or equal to 10,000 gallons within the last 5 years?

YES X NO _____

CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining this information, I believe that the submitted information is true, accurate, and complete.

Virgil R. Langford
Signature

Refinery Vice President / Manager
Title

Virgil Langford
Name (please type or print)

7-10-96
Date

¹ Calculated using the appropriate planning distance calculation provided in 40 CFR 112 (Attachment C-III) or a comparable formula. If a comparable formula is used, documentation of the reliability and analytical soundness of the comparable formula must be attached to this form.

² For further description of fish and wildlife and sensitive environments, see Appendices I, II, and III to DOC/NOAA's "Guidance for Facility and Vessel Response Plans: Fish and Wildlife and Sensitive Environments" (59 FR 14713, March 29, 1994) and the applicable Area Contingency Plan.

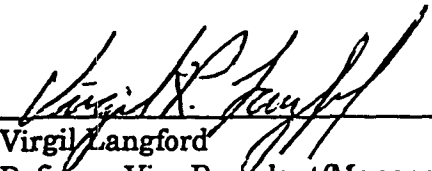
³ For the purposes of 40 CFR part 112, public drinking water intakes are analogous to public water systems as described at 40 CFR 141.2(c).

ACKNOWLEDGMENT AND PLAN APPROVAL

The information and procedures in this Plan must be treated as guidelines only. The user should determine to what extent it is practical and advisable to follow them.—This decision may involve considerations not discussed in this Plan.

The information and procedures contained herein are considered to be accurate as of December, 1995 and are consistent with the National Contingency Plan (NCP) and applicable Area Contingency Plans (ACP) as detailed in Section 1.5.

Plan Approved:



Virgil Langford
Refinery Vice President/Manager
Qualified Individual (QI)
Navajo Refining Company - Artesia Refinery

Date: 7-10-96

NOTE: Response Management Associates, Inc. (RMA) provided consulting and plan development services in the preparation of this plan utilizing data provided by Navajo Refining Company and/or the Facility. RMA assumes no liability for injury, loss, or damage of any kind resulting directly or indirectly from the use of the regulatory interpretation, response planning, or information contained in this plan.

FACILITY RESPONSE PLAN

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FACILITY RESPONSE PLAN

LIST OF AFFECTED PAGES

(December 1997 Change)

To: Plan Holder

Upon receipt of this package, check the attached pages with the "Insert" column to ensure that the package is complete. After checking the pages, move down the list in order, removing and adding pages as indicated. For non-agency copies, after removing all of the appropriate pages, send the removed pages along with a copy of this List of Affected Pages to the holder of plan number "1", as indicated on the "Distribution List" of the Plan. Insert this List of Affected Pages behind the Revision Record (Page vi) and any previous Lists of Affected Pages when completed. Finally, make a single entry record of the completed change on the Revision Record.

Item #	Remove	Insert
1	Title page, Response Plan cover sheet, v, vi	Title page, Response Plan cover sheet, v, vi
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3	2-1, 2-3 through 2-6, 2-8, 2-9, 2-11, 2-14, 2-15	2-1, 2-3 through 2-6, 2-8, 2-9, 2-11, 2-14, 2-15
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7	A-1 through A-7	A-1 through A-7
8	C-1, C-9 through C-12	C-1, C-9 through C-12
9	H-3, H-6 through H-9, H-11	H-3, H-6 through H-9, H-11
10	I-5, I-6	I-5, I-6
11	N / A	This List of Affected Pages after page vi

1.0 INTRODUCTION AND PLAN CONTENT

1.1 PLAN PURPOSE/OBJECTIVES

The purpose of this Facility Response Plan (hereinafter referred to as "Plan") is to assist the Navajo Refining Company - Artesia Refinery (hereinafter referred to as "Facility") personnel prepare for and respond quickly and safely to a discharge originating from the Facility. The Plan provides techniques and guidelines for achieving an efficient, coordinated, and effective response to a discharge incident which may occur at the Facility.

The specific objectives of the Plan are to:

- Establish a Spill Management Team, assign individuals to fill the positions on the team, and define the roles and responsibilities of team members.
- Define notification, activation, and mobilization procedures to be followed when a discharge occurs.
- Define organizational lines of responsibility to be adhered to during a response operation.
- Document equipment, manpower, and other resources available to assist with the response.
- Ensure compliance with applicable federal, state, and local oil pollution regulations.
- Ensure consistency with the National Contingency Plan and Area Contingency Plan(s) for the area of operation.

1.2 SCOPE OF PLAN

This Plan contains prioritized procedures for Facility personnel to mitigate or prevent any discharge resulting from in-plant operations. A description of the operations conducted at the Facility has been detailed in Figure 1.3 with additional information provided in the "Hazard Evaluation" in the appendices. Facility spill mitigation procedures and response guidelines are provided in Section 3.0 for discharges that could result from any of the following scenarios:

- Tank overfill/failure
- Piping rupture/leak
- Explosion and/or fire
- Equipment failure (e.g. pumping system failure, relief valve failure, etc.)

1.2 SCOPE OF PLAN (Cont'd)

These scenarios could result in the following discharge volumes (as defined in EPA Final Rule 40 CFR Part 112):

Discharge Scenario	Potential Oil Group	EPA Planning Volumes
Small	1 (Carbon Black Oil, Asphalt)	50 Bbls
Medium	1 (Carbon Black Oil, Asphalt)	857 Bbls
Worst Case	Sour Crude (Tank #439)	108,000 Bbls

These worst case discharge volumes are utilized in calculating the planning volume for response resources. The planning volume is used to determine the necessary on-water recovery capacity to respond within the three tiered response times. The identified oil-spill recovery devices should be capable of arriving at the scene of a discharge within the time specified for the applicable response tier. The tier requirements for this non-high volume area are for response in 12 hours (Tier 1), 36 hours (Tier 2), and 60 hours (Tier 3). Appendix G of this Plan demonstrates a series of calculations and planning volume determinations based on guidance provided by the U. S. Environmental Protection Agency (EPA) in 40 CFR Part 112 *Final Rule* dated July 1, 1994. The inclusion of these calculations is for demonstration of the response planning volumes and response capability necessary for on-water and on-shore recovery requirements as the result of the discharge scenarios outlined in the table above.

1.3 PLAN DISTRIBUTION PROCEDURES

The Manager of Environmental Affairs for Water and Waste shall have the responsibility for distribution of the Plan. Distribution will be handled in the following manner:

- Distribution of the Plan is controlled by the number on the cover page. A distribution list is included in the Foreword to facilitate control.
- Company personnel who may be called upon to provide assistance during discharge response activities will have access to a copy of the plan for their use and training.
- It is the responsibility of any person holding a copy of the Plan to ensure that the copy is transferred to their replacement in the event of reassignment or change in responsibility.

1.4 PLAN REVIEW AND UPDATE PROCEDURES

The Manager of Environmental Affairs for Water and Waste will coordinate the following plan review and update procedures.

- At least once each year review and make appropriate revisions as required by operational or organizational changes.
- At least once each year review and make appropriate revisions as required by changes in the names and telephone numbers detailed in Section 2.0.
- The Manager of Environmental Affairs for Water and Waste will coordinate the word processing, publication, and distribution efforts of completing the revisions and maintaining the Plan.
- Plan review opportunities may also occur during:
 - Response Team Tabletop Exercises
 - Actual emergency responses
- The plan holder, immediately upon receipt of any revisions, shall review and insert the revised pages into the Plan and discard the obsolete pages. This action should then be recorded on the "Revision Record" page in the Foreword.

EPA Revision Requirements

The Facility shall revise and resubmit revised portions of the Plan to the EPA Regional Administrator within 60 days of each facility change that may materially affect the response to a Worst Case Discharge, including:

- Change in the Facility's configuration that materially alters the information included in the Plan.
- Change in the type of oil handled, stored, or transferred that materially alters the required response resources.
- Material change in capabilities of the Oil Spill Removal Organization(s) (OSROs) that provide equipment and personnel.
- Material change in the Facility's spill prevention and response procedures.
- Any other changes that materially affect the implementation of the Plan.

Except as provided above, amendments to the following do not require approval by the Regional Administrator (RA):

- Personnel and telephone number lists included in the Plan.
- OSRO(s) change which does not result in a material change in support capabilities.

The RA shall be provided with a copy of such revisions. Facility shall submit the EPA issued Facility Identification Number with the changes (the Facility Identification Number is listed in Figure 1.3).

1.5 REGULATORY COMPLIANCE

The development, maintenance, and utilization of this Plan implements company policy and addresses the following regulatory requirements and guidelines:

- Federal Oil Pollution Act of 1990: U.S. EPA Final Rule for Non-Transportation Related On-shore Facilities (40 CFR Part 112 - as published on July 1, 1994).

The applicable Area Contingency Plan for the Facility is:

- U.S. Environmental Protection Agency - Region VI, Dallas, TX; published June, 1994.

The applicable National Contingency Plan for the Facility is:

- U.S. Environmental Protection Agency; National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule; published September 15, 1994.

1.6 DISCHARGE CLASSIFICATION

The severity of a discharge will have a bearing on the level of management involvement and the extent of resource mobilization necessary to respond to the incident. The following discussion provides guidance in the early classification of discharges (Response implementation is more fully defined in the "Emergency Response Plan"):

For the purpose of implementation, a distinction is made between spills that are contained on refinery property as opposed to spills that leave or have the potential to leave refinery property. In the latter case, the threat of environmental harm to the public and the waters of the United States is much greater. In addition, the agency reporting requirements and the response personnel and equipment requirements vary depending on the scenario. The initial response actions for these are outlined in Section 3.1 and Figure 3.1 of this plan.

The potential for a spill to migrate out from refinery property is reduced since the Artesia refinery provides secondary containment protection through a process wastewater collection system from each process unit and loading area, as well as, providing secondary containment dikes around the bulk storage tanks. These structures in conjunction with the diversion swale along the south face of Eagle Draw, flat slopes on-site, and a desert environment combine to effectively contain most spills on facility property. However, in the unlikely event that discharges escape the confines of the facility, emergency procedures have been established.

FIGURE 1.1

AREA MAP

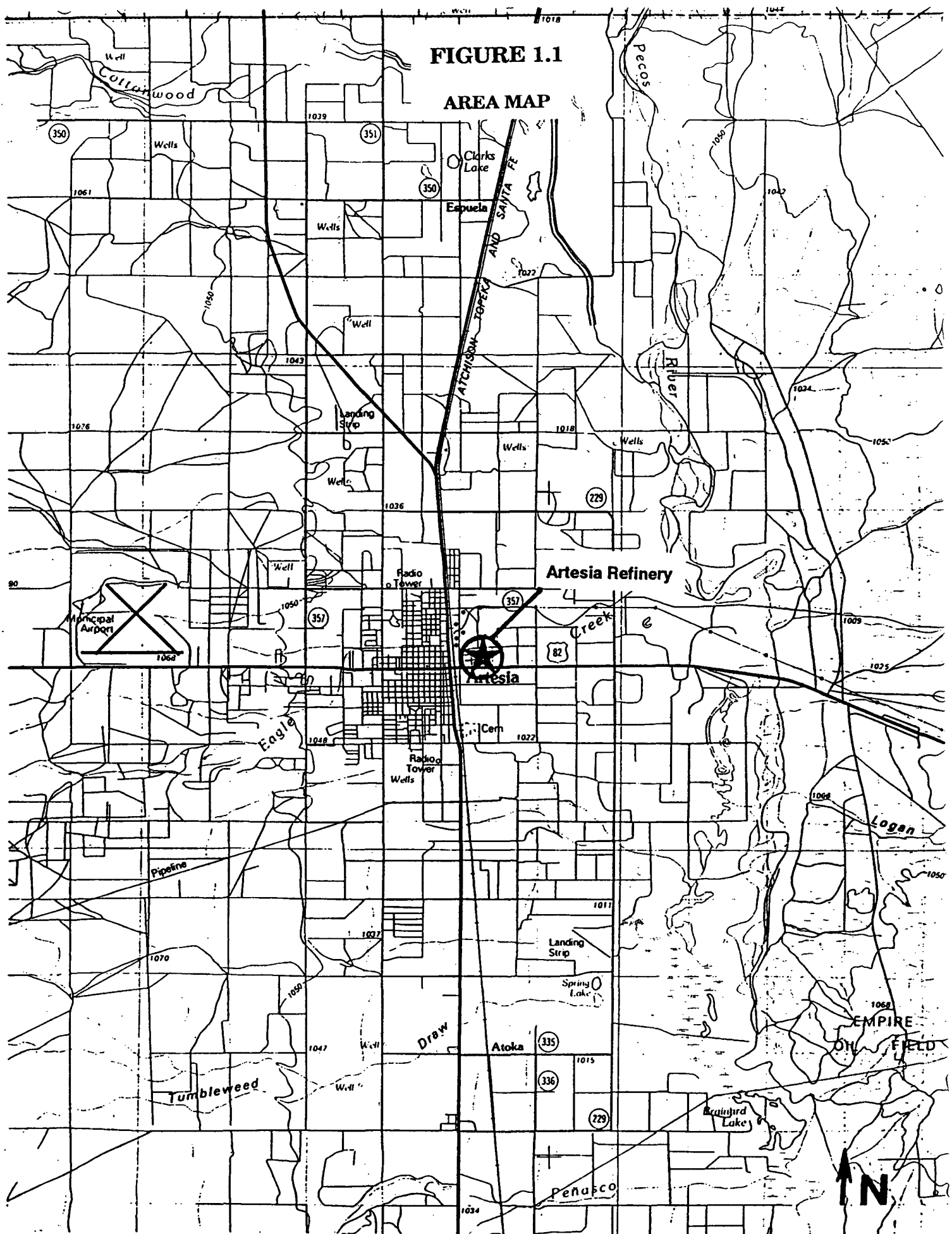


FIGURE 1.3**FACILITY INFORMATION**

GENERAL INFORMATION	
Facility Name:	Navajo Refining Company - Artesia 501 East Main Street Artesia, New Mexico 88211-0159 (505) 748-3311 (505) 748-9077 FAX
FRP ID#:	FRP-06-NM-00010
Owner Name:	Holly Corporation 100 Crescent Court, Suite 1600 Dallas, TX 75201-1880
Qualified Individual:	Virgil Langford - VP/Manager of Refinery P.O. Drawer 159 Artesia, New Mexico 88210 (505) 748-3714 (<i>Home</i>) (505) 365-8360 (<i>Cellular</i>)
Alternate Qual. Indiv.:	Scott Beardemphl - Operations Manager P.O. Drawer 159 Artesia, New Mexico 88210 (505) 365-8333
Telephone/FAX:	Additional telephone references, including 24 hour numbers, for the Facility, Owner, and QI/AQI are provided in Figure 2.2.
Primary SIC Code:	2911
Date of Initial Oil Storage:	1920's
FACILITY LOCATION	
County:	Eddy County, New Mexico
Latitude:	32° 50' 40" N
Longitude:	104° 23' 30" W
Area Map:	Provided in Figure 1.1
Facility Diagram:	Provided in Figure 1.2

FIGURE 1.3 (Cont'd)

FACILITY INFORMATION

PHYSICAL DESCRIPTION - GENERAL

Description of Operation:

- The Artesia Refinery is located in the northeast section of the City of Artesia, New Mexico. The facility is bordered on the south by U. S. Highway 82, on the east by farm land, on the north by residential, commercial and farmland. On the west by the Santa Fe - Southern Pacific Railroad.
- The Facility stores Crude Oil, Gasoline, Diesel Fuel, JP-8, Jet-A, Carbon Black Oil, Asphalt, Butane, and Propane.
- The Facility has a total storage capacity of 1,796,119 Bbls, with an average storage volume of 500,000 to 750,000 Bbls. Daily throughput averages 60,000 Bbls.
- Crude is received through pipelines with a volume of 60,000 bpd; 30,000 Bbls of this volume is from the Lovington Refinery, via an 8" pipeline.
- Gasoline, LPG, Diesel, Carbon Black Oil, Molten Sulfur and Asphalt are delivered by tank truck.
- Gasoline Blendstock, Gas Oil, LPG, Asphalt and Crude Oil are received by tank truck at the racks.
- Diesel, Carbon Black Oil, Asphalt, Spent Caustic, and Molten Sulfur are delivered by rail cars at the racks.

Products Handled:

- | | |
|--------------------|------------------|
| • Gasoline | • Propane |
| • Diesel Fuel | • Molten Sulfur |
| • JP-8 | • LPG |
| • Jet-A | • Gas Oil |
| • Carbon Black Oil | • Bulk Chemicals |
| • Crude Oil | • Slurry |
| • Asphalt | • Naphtha |
| • Butane | |

Note: Material Safety Data Sheets (MSDS) are maintained separately at the Facility.

FIGURE 1.3 (Cont'd)

FACILITY INFORMATION

PHYSICAL DESCRIPTION - TRUCK RACK

Description of Operation:

- The Facility is equipped with two (2) loading areas and three (3) pump-off areas
- Five (5) trucks can be loaded and three (3) trucks can be off loaded simultaneously.
- The loading/unloading operations are conducted on a 24 hour/7 day per week basis.

Loading Rate: 500 gpm/truck (*typical*)

Truck Capacity: 6,000 gallons (*maximum*)

Discharge Prevention:

- A combination of sumps, containment areas, diversion swale and connections to the Refinery process sewer system provide secondary containment.
- The loading system is equipped with a loading system shutdown switch, a brake interlock to prevent movement during operation, and is a continuously supervised operation.
- Safe operating procedures are posted.
- Continuous monitoring of loading and unloading operations at the truck racks (except Light Ends) by Navajo personnel; normal manned hours: 0600 - 2200.
- The Light Ends Truck Rack is a 24 hour/day 7 day/week operation and requires a Card Key to gain access to the rack.
- More detailed information is provided in Appendix H.

FIGURE 1.3 (Cont'd)

FACILITY INFORMATION

PHYSICAL DESCRIPTION - RAIL RACK	
Description of Operation: <ul style="list-style-type: none">• The facility is equipped with two (2) loading areas.• Eighteen (18) loadings spots that can load (4) spots simultaneously.• Rail Loading Area A: Loads six (6) - eight (8) rail cars per week with Diesel, Asphalt, spent Caustic and Carbon Black Oil.• Rail Loading Area B: One loading spot that loads 1 car/week with molten sulfur.	
Loading Rate: 500 barrels per hour (typical)	
Rail Rack Capacity: 30,000 gallons (maximum)	
Discharge Prevention: <ul style="list-style-type: none">• The loading/unloading operations are conducted on a 24 hour/day 5 day/week basis. Rack is supervised 0600 - 2200.• Rail Loading Area "A" contains two sumps, one on each end of the rail rack with a capacity for 150% of the largest tank spilled.• Safe operating procedures are posted.• More detailed information is provided in Appendix H.	
DATES AND TYPES OF SUBSTANTIAL EXPANSIONS	
1920's	Plant owned by Continental Oil
1974	S.D. Crude Unit expansion
1976	Plant process added to North Section Refinery
1981	FCC Unit added
1991	Process expansion including CCR Reformer
1992	HF Alkylation Unit addition
1993	Process expansion including Diesel Desulfurization
OTHER FACILITY DATA	
<ul style="list-style-type: none">• Additional facility data (including storage information) is provided in Appendix H and discharge detection and inspection information is provided in Appendix I.	

2.0 NOTIFICATION PROCEDURES

This section is a guide for notification procedures that should be implemented immediately after discovering a discharge incident and securing the source (if at all possible). Internal and external notifications are described separately for clarification purposes only. All notifications are of extreme importance and must be completed in a timely manner.

2.1 INTERNAL NOTIFICATION

The following internal notifications should be made for each emergency incident to the extent that the incident demands (telephone reference is provided in Figure 2.2). In no event shall notification be delayed because the immediate supervisor is inaccessible. **Authorization is given to bypass management levels if necessary to provide immediate notification to upper management.** The typical internal notification responsibilities for each person potentially involved in the initial response are as follows:

First Navajo Person Notified/On-Scene

- ☐ Immediately notify Central Dispatch by:
- ☐ Activating the Emergency Alarm System.
- ☐ Announce twice over the operating channel for that location
"(type of emergency) at (location)". Example: "Gasoline Spill at Tank 106".

Shift Foreman / Division Foreman

- ☐ Coordinate response with the Safety Department.
- ☐ Notify the Environmental Affairs Officer.

Central Dispatch

- ☐ Notify the Incident Commander (Process Safety Superintendent) and the Emergency Response Team.

Incident Commander (Process Safety Superintendent)

- ☐ Activate additional Emergency Response Team members, as the situation demands.

2.1 INTERNAL NOTIFICATION (Cont'd)

- ☐ Activate local emergency response resources (*Oil Spill Removal Organizations (OSRO)*, fire, police, medical, etc.).
- ☐ Ensure notification of the **Environmental Affairs Officer**.
- ☐ Coordinate activation of additional response and clean-up resources with the **Environmental Affairs Officer**.

Environmental Affairs Officer

- ☐ Ensure that all regulatory/governmental agencies and other external organizations as detailed in Section 2.2 and Figures 2.4, 2.5 have been notified.
- ☐ Make additional upper management and head office notifications as the situation demands.

FIGURE 2.1

INTERNAL NOTIFICATION SEQUENCE

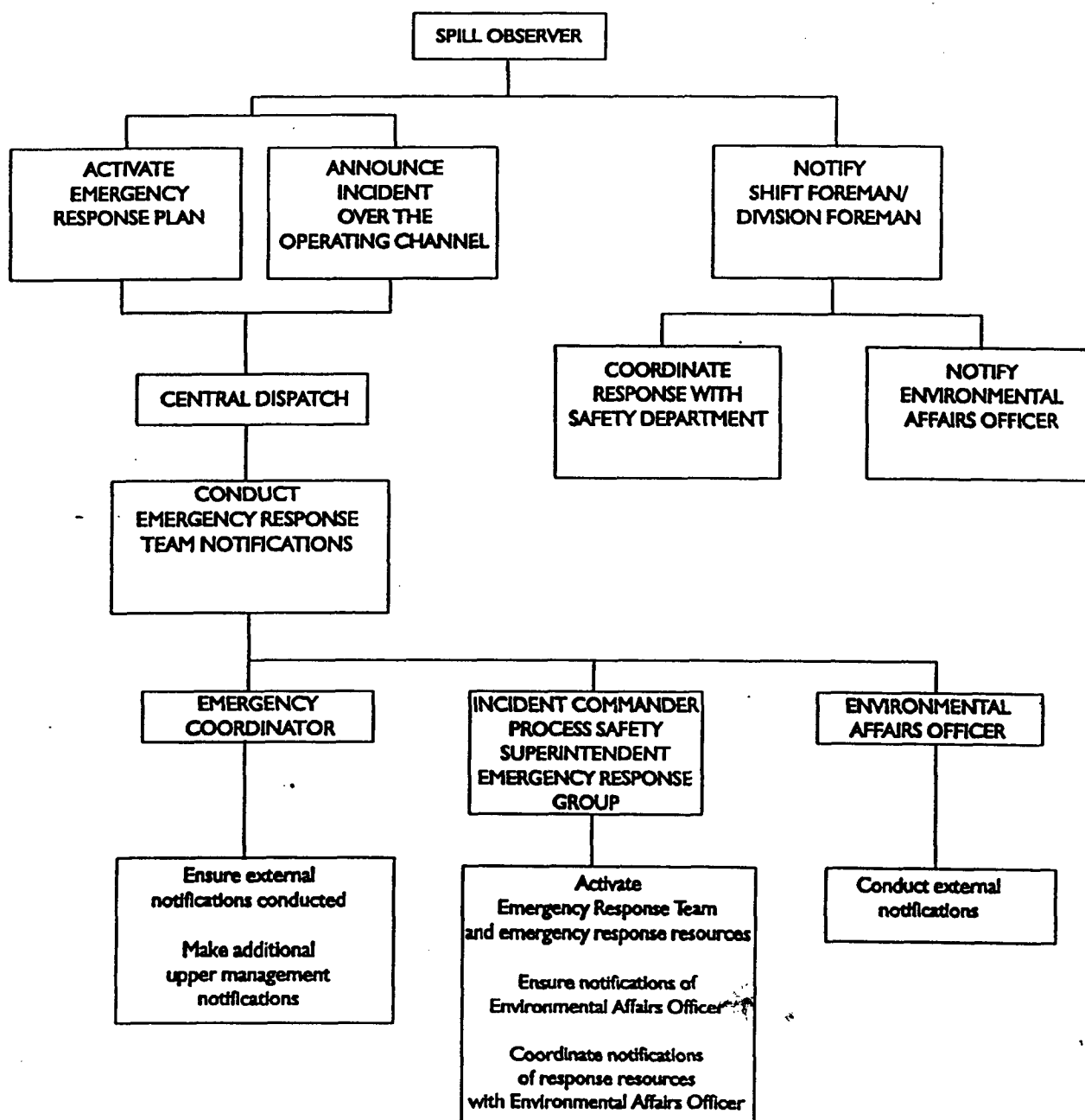


FIGURE 2.2

INTERNAL NOTIFICATION REFERENCES

EME = Emergency Phone
FAX = Facsimile Machine
MBL = Mobile Phone

INTERNAL NOTIFICATIONS - GENERAL FACILITY			
FACILITY AREA	ADDRESS	OFFICE	FAX NUMBER
Artesia Refinery	501 East Main St. Artesia, NM 88211-0159	(505) 748-3311	(505) 748-9077

INTERNAL NOTIFICATIONS - SPILL MANAGEMENT TEAM					
POSITION/ROLE	NAME	RESPONSE TIME	TRAINING/LEVEL	OFFICE	HOME
Qualified Individual / Emergency Coordinator Refinery VP/Manager	Virgil Langford Randy Howes	15 minutes	<ul style="list-style-type: none"> • SPCC Plan / FRP. • Plant and routine safe operating procedures. 	(505) 748-3311 ext. 234	(505) 746-6249 746-1522
Alt. Qualified Individual / Process Manager Engineering M	Scott Beardemphl	15 minutes	<ul style="list-style-type: none"> • SPCC Plan / FRP. • Plant and routine safe operating procedures. 	(505) 748-3311 ext. 333	(505) 746-6249
Incident Commander Process Safety Manager	Joe Ysusi	15 minutes	<ul style="list-style-type: none"> • HAZWOPER Trained. • SPCC Plan / FRP. • Plant and routine safe operating procedures. 	(505) 748-3311 ext. 289	(505) 746-2213
Fire Chief	Bob Worthington	15 minutes	<ul style="list-style-type: none"> • HAZWOPER Trained. • SPCC Plan / FRP. • Plant and routine safe operating procedures. 	(505) 748-3311 ext. 334	(505) 746-2533
Safety Officer / Medical Officer / Safety Department	Tom Aston	15 minutes	<ul style="list-style-type: none"> • HAZWOPER Trained. • SPCC Plan / FRP. • Plant and routine safe operating procedures. 	(505) 748-3311 ext. 206	(505) 748-3249

FIGURE 2.2 (Cont'd)

INTERNAL NOTIFICATION REFERENCES

EMF = Emergency Phone
FAX = Facsimile Machine
MBL = Mobile Phone

INTERNAL NOTIFICATIONS - SPILL MANAGEMENT TEAM					
POSITION/TITLE	NAME	RESPONSE TIME	TRAINING LEVEL	OFFICE	HOME
Manager of Director of Environmental Affairs for Water and Waste	David Gattlin Phil Young - b loed	15 minutes	<ul style="list-style-type: none"> HAZWOPER Trained. SPCC Plan / FRP. Plant and routine safe operating procedures. 	(505) 748-3311 ext. 223	(505) 365-8365 MBL (505) 746-6686 505-746-6988
Logistics Section/ Mechanical Superintendent	Jessie Hilliard	15 minutes	<ul style="list-style-type: none"> SPCC Plan / FRP. Plant and routine safe operating procedures. 	(505) 748-3311 ext. 243	(505) 746-6686 or (505) 365-7084 MBL
AMS	Joe Rivera	15 minutes	<ul style="list-style-type: none"> HAZWOPER Trained. SPCC Plan / FRP. Plant and routine safe operating procedures. 	(505) 748-3311 ext. 354	(505) 365-2149 (505) 365-5985 MBL
Planning Section / Mechanical Department	David Bolding	15 minutes	<ul style="list-style-type: none"> HAZWOPER Trained. SPCC Plan / FRP. Plant and routine safe operating procedures. 	(505) 748-3311 ext. 327	(505) 365-2694 (505) 365-7877 MBL
Logistics Section / Maintenance Department Coordinator	Oscar Sosa	15 minutes	<ul style="list-style-type: none"> HAZWOPER Trained. SPCC Plan / FRP. Plant and routine safe operating procedures. 	(505) 748-3311 ext. 327	(505) 746-6562
Finance Section / Purchasing Department	Harry Bastie Manuel Madrid	15 minutes	<ul style="list-style-type: none"> HAZWOPER Trained. SPCC Plan / FRP. Plant and routine safe operating procedures. 	(505) 748-3311 ext. 371	(505) 746-6562 505-748-1074
Finance Section - expediter / Purchasing Department	Harry Manuel Madrid	15 minutes	<ul style="list-style-type: none"> HAZWOPER Trained. SPCC Plan / FRP. Plant and routine safe operating procedures. 	(505) 748-3311 ext. 371	(505) 746-6562 505-748-1074

FIGURE 2.3

NOTIFICATION DATA SHEET

SPILL REPORT (SR-2)

1. Time of Spill _____ AM/PM Date _____
2. Time Spill reported to Shift Foreman _____ AM/PM Date _____
3. Name of person on duty at time of spill _____
- 3.a. Name of person who discovered spill if different from above _____
4. Location of Spill _____
5. Type of Spill (Material) _____
6. Quantity of Spill _____ bb. Size of Spill (area) _____
7. Time Spill Contained _____ AM/PM Date _____
8. Disposition of Spilled Material _____
9. How was the Spill contained _____
10. Did spill leave Facility boundary?
YES ☐ NO ☐
11. Corrective action taken to prevent further spills: _____

12. Physical location of responsible person at the time of spill _____

13. Department _____
14. Supervisor's Signature _____

- NOTE -

In order to comply with state and federal laws, the Navajo Refining Company must report spills as soon as possible. Call to report all spills as soon as possible to the refinery Environmental Department. The 24 hour phone number for the Environmental Department is (505) 365-8365 (alternate phone number: Safety Department (505) 365-8364). This form must be filled out completely and returned to the refinery Environmental Department whenever a spill occurs.

Form SR-2 - 4-7-95

FIGURE 2.4
EXTERNAL NOTIFICATION FLOWCHART

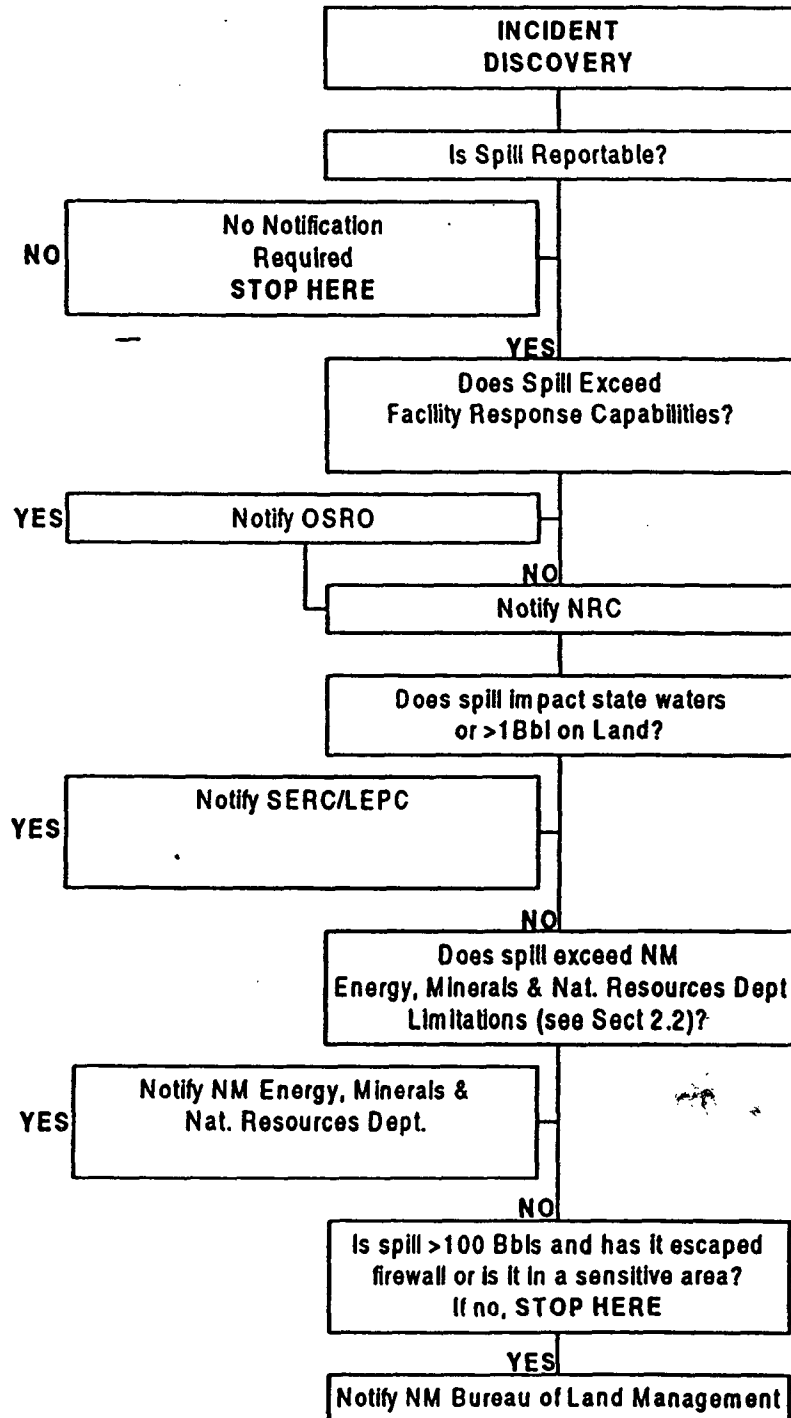


FIGURE 2.5

EXTERNAL NOTIFICATION REFERENCES

REQUIRED EXTERNAL NOTIFICATIONS			
AGENCY	LOCATION	OFFICE	ALTERNATE
National Response Center (NRC)	Washington, D.C.	(800) 424-8802	(202) 267-2675
Roswell State Police (SERC)	Roswell, NM	(505) 827-9223	(505) 622-7200
NM Energy, Minerals, and Natural Resources Department (OCD)	Artesia, NM (District 3)	(505) 748-1283	
Local Emergency Planning Committee (LEPC)	Carlsbad, NM	(505) 887-9511	(505) 887-7551

ASSISTANCE/ADVISORY NOTIFICATIONS (outside resources)			
AGENCY	LOCATION	OFFICE	ALTERNATE
New Mexico Department of Game and Fish	Roswell, NM	(505) 624-6135	(505) 748-3036
New Mexico OSHA Bureau	Santa Fe, NM	(505) 827-2888	
OSHA (For Reportable Injury or Death)	Washington, D.C.	(800) 321-6742	
U.S. Environmental Protection Agency (EPA) Region VI	Dallas, TX	(214) 665-2222	
U.S. Fish and Wildlife Service (USFWS)			
Bureau of Land Management (BLM)	Santa Fe, NM	(505) 438-7501	
New Mexico Health and Environmental Department	Santa Fe, NM	(505) 827-9329	
New Mexico Fire Marshal	Roswell, NM	(505) 885-2111	
National Weather Service (Recorded Forecasts) (NOAA)	Roswell, NM	(505) 347-5700	
Local Water Supply System	Artesia, NM	(505) 746-2122	(505) 746-2703

FIGURE 2.5 (Cont'd)

EXTERNAL NOTIFICATION REFERENCES

LOCAL EMERGENCY SERVICES			
<i>DIAL 911 for All Police, Fire, and Ambulance Emergencies</i>			
SERVICE	LOCATION	OFFICE	ALTERNATE
Artesia Fire Department	Artesia, NM	911	(505) 746-2701
Eddy County Sheriff	Artesia, NM	911	(505) 746-9888
Eddy County Sheriff	Carlsbad, NM	911	(505) 887-7551
Artesia City Police	Artesia, NM	911	(505) 746-2703
Artesia Ambulance	Artesia, NM	911	(505) 746-2701
Artesia General Hospital	Artesia, NM	(505) 748-3333	
Eastern New Mexico Medical Center	Roswell, NM	(505) 622-1110	
Guadalupe Medical Center	Carlsbad, NM	(505) 887-4100	

OIL SPIEL REMOVAL ORGANIZATIONS (OSRO)			
COMPANY	LOCATION	OFFICE	ALTERNATE
Gamer Environmental Services, Inc.	Fort Worth, TX	(888) 654-0111	(817) 535-7222

ADDITIONAL RESPONSE RESOURCES			
COMPANY	LOCATION	OFFICE	ALTERNATE
Indian Fire & Safety	Artesia, NM	(505) 393-3093	(800) 530-8693
IWM Hot Oil - Transports Service	Artesia, NM	(505) 746-4214	
Gandy Corporation - Transports Service	Lovington, NM	(505) 396-4948	
Jim's Water Service - Transports Service	Artesia, NM	(505) 748-1358	(505) 748-1352
O.K. Hot Oil	Loco Hills, NM	(505) 746-6233	

FIGURE 2.5 (Cont'd)

EXTERNAL NOTIFICATION REFERENCES

ADDITIONAL RESPONSE RESOURCES			
COMPANY	LOCATION	OFFICE	ALTERNATE
Sweatt Construction - Dirt Equip.	Artesia, NM	(505) 748-1238	
Davis Welding - Dirt Equip.	Artesia, NM	(505) 746-6306	
T & C Tank Rental - Temporary Storage	Artesia, NM	(505) 746-9788	
International Bird Rescue Center	Berkeley, CA	(510) 841-9086	
Tri-State Bird Rescue	Newark, NJ	(302) 737-9543	
KBIM - TV	Roswell, NM	(505) 622-2120	
KSVP - AM Radio	Artesia, NM	(505) 746-2751	

2.2 EXTERNAL NOTIFICATION

The following external notifications should be made in accordance with federal, state, and local regulations for all reportable discharges. A "Notification Data Sheet" (Figure 2.3) should be used to facilitate documentation and data retrieval for these notifications. The Refinery Vice President/Manager shall ensure that the following "Required Notifications" and "Other Notifications" are made as the situation demands. Telephone reference is provided in Figure 2.5 and the typical reporting flowchart is demonstrated in Figure 2.4. Except for "ALL CALL" emergencies at night, on weekends, evenings, noon, or interior structure fires, the responsibility for calling outside agencies rests with the Incident Commander (Process Safety Superintendent), and Environmental Affairs Officer (Manager, Safety & Risk Management).

Required Notifications



Oil Spill Removal Organization (OSRO)

Immediately for all spills that exceed the Facility's response capabilities.

Figure 5.1 details the OSRO response resources with their respective response times and Figure 2.5 details the OSRO phone references for 24 hour contact.



National Response Center (NRC)

Verbal

Immediately for all spills that impact or threaten navigable water.

(800) 424-8802 (24 hour number)

(202) 267-2675 (Alternate)

Written

In accordance with the applicable SPCC regulations, within 60 days to the U.S. Environmental Protection Agency for a spill in excess of 1,000 gallons (24 Bbls.) in a single event or two spill events within a twelve month period into or upon navigable waters of the United States or adjoining shorelines.

U.S. Environmental Protection Agency - Region VI

1445 Ross Ave.

12 th Floor, Suite 1200

Dallas, TX 75202

(214) 665-2222



Roswell State Police (SERC)

Immediately for all spills that impact state waters and spills greater than one barrel to land.

(505) 827-9223 (24 hour number)

(505) 622-7200 (alternate)

Written

As requested by the agency.

2.2 EXTERNAL NOTIFICATION (Cont'd)

Required Notifications (Cont'd)

- ☐ New Mexico Energy, Minerals, and Natural Resources Department - Oil Conservation Division (OCD)

Verbal

Immediate notification of any fire, break, leak, spill, or blowout occurring at any oil or gas drilling, producing or refining facility that fits any of the following criteria:

- *Well blowouts and/or fires*
- *25 or more Bbls of crude oil or condensate, or 100 Bbls or more of salt water, none of which reaches a watercourse or enters a stream or lake; breaks, spills, or leaks in which one or more barrels of crude oil or condensate or 25 barrels or more of salt water does reach a watercourse or enters a stream or lake; and breaks, spills, or leaks of hydrocarbons or hydrocarbon waste or residue, salt water, strong caustics or strong acids, gases, or other deleterious chemicals or harmful contaminants of any magnitude which may with reasonable probability endanger human health or result in substantial damage to property*
- *Fires in tanks or other receptacles caused by lightning or any other cause, if the loss is, or it appears that the loss will be, 25 or more barrels of crude oil or condensate, or fires which may with reasonable probability endanger human health or result in substantial damage to property*

(505) 393-6161 (District 1 - Hobbs, NM)

(505) 748-1283 (District 2 - Artesia, NM)

(505) 334-6178 (District 3 - Aztec, NM)

(505) 827-7131 (District 4 - Santa Fe, NM)

Written

A complete written report in duplicate within 10 days of any fire, break, leak, spill, or blowout occurring at any oil or gas drilling or producing facility that fits any of the following criteria (See Appendix K):

- *5 barrels or more but less than 25 barrels of crude oil or condensate, or 25 barrels or more but less than 100 barrels of salt water, none of which reaches a watercourse or enters a stream or lake*
- *Fires in tanks or other receptacles caused by lightning or any other cause, if the loss is, or it appears that the loss will be at least 5 barrels but less than 25 barrels*

2.2 EXTERNAL NOTIFICATION (Cont'd)

Required Notifications (Cont'd)

- ☐ New Mexico Energy, Minerals, and Natural Resources Department -
Oil Conservation Division (Cont'd)

District 1
1000 West Broadway
P. O. Box 1980
Hobbs, NM 88240

District 3
1000 Rio Brazos Rd.
Aztec, NM 87410

District 2
811 South 1st Street
Artesia, NM 88210

District 4
2040 South Pacheco
Santa Fe, NM 87501

- ☐ Bureau of Land Management (BLM)

Verbal

Immediately [within 24 hours] for oil, saltwater, and toxic liquid spills in excess of 100 Bbls that leave the firewall or any spill in a sensitive area (i.e. parks, recreation sites, wildlife refuges, lakes, reservoirs, streams, and urban/suburban areas)

(505) 438-7501

Written

Within 15 days for oil, saltwater, and toxic liquid spills in excess of 10 Bbls and less than 100 Bbls or oil, saltwater, and toxic liquid spills in excess of 100 Bbls contained within the firewall

Bureau of Land Management
P. O. Box 27115
Santa Fe, NM 87502-7115

- ☐ Local Emergency Planning Committee (LEPC)

Verbal

Calls to the SERC concerning petroleum spills will usually alert the LEPC, however, it is advisable to notify them directly for any spill that requires notification.

Local Emergency Planning Committee (LEPC)
Ralph Harris
(505) 887-9511
(505) 887-7551

Written

As the agency may request, depending on circumstances.

2.2 EXTERNAL NOTIFICATION (Cont'd)

Other Notifications

☐

New Mexico Department of Game and Fish

The New Mexico Department of Fish and Game will typically be notified by the New Mexico SERC; however, it is advisable to follow up with verification that notice was received.

☐

Occupational Safety and Health Administration (OSHA)

Within eight (8) hours for incidents involving three (3) or more hospitalizations or immediately in the event of one (1) or more deaths.

☐

New Mexico Occupational Safety and Health Administration (OSHA)

Immediately for any hospitalizations or deaths.

☐

U.S. Fish and Wildlife Service (USFWS)

Immediately for Wildlife Protection / Rehabilitation

☐

Local Water Supply System

The New Mexico SERC typically notifies the Local Water Supply System. For incidents involving underground tanks or for any spill of such magnitude that the underground water sources might be impacted, it would be advisable to follow up with verification that notice was received.

2.2 EXTERNAL NOTIFICATION (Cont'd)

Other Notifications (Cont'd)

☐

Local Emergency Services

Immediately for all Police, Fire, and Medical Emergencies

Dial 911

Artesia Police Department

(505) 746-2703 (Alternate)

Eddy County Sheriff - Artesia

(505) 746-9888 (Alternate)

Eddy County Sheriff - Carlsbad

(505) 887-7551 (Alternate)

Artesia Fire Department

(505) 746-2701 (Alternate)

Ambulance Service

911

☐

Wildlife Rehabilitation Resources

International Bird Rescue Center (Berkeley, CA)

(510) 841-9086

Tri-State Bird Rescue (Newark, NJ)

(302) 737-9543

2.2 EXTERNAL NOTIFICATION (Cont'd)

Other Notifications (Cont'd)

☐

Neighbors

Directly or with assistance from local police and fire agencies, inform all adjacent businesses and private citizens that might be immediately impacted.

SPILL REPORTING GUIDELINES

- Never include information which has not been verified.
- Never speculate as to the cause of an incident or make any acknowledgment of liability.
- DOCUMENT:
 - ☐ Agency notified
 - ☐ Person notified
 - ☐ Time agency notified
 - ☐ Content of message given
- DO NOT DELAY reporting due to incomplete information.

3.0 INITIAL RESPONSE ACTIONS

3.1 INITIAL RESPONSE ACTIONS

Initial response actions are those taken by local personnel immediately upon becoming aware of a discharge or emergency incident, before the Spill Management Team (described in Section 4.0) is formed and functioning. Timely implementation of these initial steps is of the utmost importance because they can greatly affect the overall response operation.

It is important to note that **these actions are intended only as guidelines**. The appropriate response to a particular incident may vary depending on the nature and severity of the incident and on other factors that are not readily addressed. Note that, **without exception, personnel and public safety is first priority**.

The first Navajo Refining Company person on scene will function as the person-in-charge until relieved by an authorized supervisor who will assume the position of Incident Commander (IC). Transfer of command will take place as more senior management respond to the incident. For response operations within the control of the Spill Management Team, the role of IC will typically be assumed and retained by the Manager, Safety and Risk Management.

The person functioning as Incident Commander during the initial response period has the authority to take the steps necessary to control the situation and must not be constrained by these general guidelines.

INITIAL RESPONSE ACTIONS - SUMMARY

- Personnel and Public Safety is first priority
- Eliminate sources of ignition
- Isolate the source of the discharge, minimize further flow
- Make internal notifications
- Make external notifications
- Activate the Spill Management Team as necessary
- Activate response contractors and other external resources as necessary
- Monitor and control the containment and clean-up effort

3.1 INITIAL RESPONSE ACTIONS (Cont'd)

For the purpose of implementation, a distinction is made between spills that are contained on refinery property as opposed to spills that leave or have the potential to leave refinery property. In the latter case, the threat of environmental harm to the public and the waters of the United States is much greater. In addition, the agency reporting requirements and the response personnel and equipment requirements vary depending on the scenario. The initial response actions for these are outlined in Section 3.1 and Figure 3.1 of this plan.

The potential for a spill to migrate out from refinery property is reduced since the Artesia refinery provides secondary containment protection through a process wastewater collection system from each process unit and loading area, as well as, providing secondary containment dikes around the bulk storage tanks. These structures in conjunction with the diversion swale along the south face of Eagle Draw, flat slopes on-site, and a desert environment combine to effectively contain most spills on facility property. However, in the unlikely event that discharges escape the confines of the facility, emergency procedures have been established.

FIRST NAVAJO PERSON NOTIFIED/ON SCENE

- _____ Follow the appropriate "*Specific Incident Response Checklist*" in Figure 3.1 and "*Product Specific Response Considerations*" in Figure 3.2.
- _____ Notify the Shift Foreman / Division Forman of the Incident.
- _____ Sound the Emergency Alarm, if located near an Alarm Station.
- _____ Notify twice over the operating channel for that location, the type and location of the emergency.
- _____ If not located adjacent to the Alarm Station, notify Control Room to sound alarm.
- _____ Immediately begin controlling the fuel sources and gaining control of the process

SHIFT FOREMAN/DIVISION FORMAN

- _____ Notify the Environmental Affairs Officer, during evenings, weekends, and holidays.
- _____ Utilize local emergency services as necessary (police, fire, medical).
- _____ Respond to site to direct operations.

3.1 INITIAL RESPONSE ACTIONS (Cont'd)

CENTRAL DISPATCH

- _____ Notify Emergency Response Team.
- _____ Sound the Emergency Alarm.
- _____ Respond to incident with equipment (i.e. fire trucks) as appropriate.

INCIDENT COMMANDER /SAFETY SUPERINTENDENT

- _____ Evaluate the Severity, Potential Impact, Safety Concerns, and Response Requirements based on the initial data provided by the first person on scene.
- _____ Assume the role of Incident Commander.
- _____ Confirm safety aspects at site, including need for personal protective equipment, sources of ignition, and potential need for evacuation.
- _____ Activate the Spill Management Team and primary response contractors, as the situation demands.
- _____ Initiate and direct the specific response procedures detailed in the Navajo Emergency Response Plan.
- _____ Coordinate/perform activation of additional spill response contractors, as the situation demands (telephone reference is provided in Figure 2.5).
- _____ Coordinate/perform regulatory agency notification, as the situation demands, if unable to reach Environmental Affairs Officer (notification procedures and telephone references are provided in Figures 2.4 and 2.5 respectively).
- _____ Direct containment, dispersion, and/or clean-up operations in accordance with the Product Specific Response Considerations provided in Figures 3.2, 3.3, and 3.4.

EMERGENCY COORDINATOR (typically the Vice President/Manager of Refinery)

- _____ In conjunction with the IC will coordinate the response and arrival of emergency organizations and take status reports from the Fire Chief, Process Superintendent, and Product Movement Superintendent.

3.1 INITIAL RESPONSE ACTIONS (Cont'd)

LOGISTICS SECTION CHIEF (typically the Mechanical Superintendent)

- _____ Report to the Maintenance Foreman's office, and contact the Incident Commander / Coordinator on Channel 5 to advise and await further instruction.
- _____ Provide support and services to keep the on-scene operations going.
- _____ Obtain manpower, supplies, and resources for support necessary to control the incident.
- _____ Stand by at the incident base (maintenance office) in order to provide logistical support as needed.

ENVIRONMENTAL AFFAIRS OFFICER

- _____ Fill out and maintain the spill history form and report to the Oil Conservation Division (telephone reference provided in Figure 2.5), as the situation demands.
- _____ Coordinate with Local, State, and Federal Agencies, Logistics Officer, and the IC to make sure that proper spill control is in place.
- _____ Notify appropriate agencies (NRC, LEPC, SERC, etc.)

SPILL MANAGEMENT TEAM

- _____ Assigned personnel will immediately respond to a discharge from the Facility, as the situation demands.
- _____ Perform response/clean-up operations as directed or coordinated by the Incident Commander.
- _____ Assist as directed at the spill site.

FIGURE 3.1

SPECIFIC INCIDENT RESPONSE CHECKLIST

Remember, Without Exception, Personnel Safety Is First Priority. Excessive Exposure To The Vapor And Liquid Stages Of The Spilled Product Should Be Avoided.

EMERGENCY ALARM SYSTEM

- _____ The Emergency Alarm Button is to be pushed to sound the alarm when an employee discovers an emergency or potential emergency condition.
- _____ **IF ANY DOUBT EXISTS ABOUT WHETHER AN EMERGENCY EXISTS, SOUND THE ALARM.**
- _____ After sounding the alarm the employee should announce twice over the operating channel for that location (type of emergency) AT (location). Example: "GASOLINE SPILL AT TANK 106" or "FIRE AT H-10 IN THE VACUUM UNIT".
- _____ Once the alarm is received, the alarm point will be contacted by CENTRAL DISPATCH (Laboratory) to verify the problem and gather any additional information about the situation. **THE PERSON RESPONSIBLE FOR SOUNDING THE ALARM SHOULD USE THIS OPPORTUNITY TO TELL CENTRAL DISPATCH WHERE THE EMERGENCY IS AND THE NATURE OF THE EMERGENCY (I.E., FIRE, SPILL).**
- _____ **IF A LIMITED RESPONSE IS NEEDED, ASK FOR THE FIRST ALERT STRIKE TEAM.** (The strike team is a select group of the Facility Fire Team who have specialized fire response / victim rescue training. See Appendix B)
- _____ Central Dispatch is to contact the Incident Commander (IC - typically the Safety Superintendent).

FIGURE 3.1 (Cont'd)

SPECIFIC INCIDENT RESPONSE CHECKLIST

INITIAL RESPONSE

- _____ Take appropriate personal protective measures.
- _____ Call for medical assistance if an injury has occurred.
- _____ Restrict access to the spill site and adjacent area as the situation demands. Take any other steps necessary to minimize any threat to health and safety.
- _____ Verify the type of product and quantity released (Material Safety Data Sheets are retained separately at the Facility).
- _____ Use testing and sampling equipment to determine potential safety hazards, as the situation demands.
- _____ Identify/Isolate the source and minimize the loss of product.
- _____ Take necessary Emergency Response Plan action.
- _____ Eliminate possible sources of ignition in the near vicinity of the spill.
- _____ Notify the Shift Foreman of the incident.

LINE BREAK OR LEAK, SPECIFIC RESPONSE

- _____ Shut down pumping equipment.
- _____ Close upstream and downstream block valves.
- _____ Mitigate spreading of the product, as the situation demands. Potential containment strategies include:
 - Earthen dike/berm
 - Ditching
 - Spreading absorbents over the spill
- _____ Protect the spill from entering areas such as waterways, sewers, etc.
- _____ If located within containment area, insure that drainage valve(s) is "closed".
- _____ Drain the line section, as the situation demands.
- _____ Apply foam blanket as necessary to suppress vapors.

FIGURE 3.1 (Cont'd)

SPECIFIC INCIDENT RESPONSE CHECKLIST

STORAGE TANK LEAK, SPECIFIC RESPONSE

- _____ Shut down or divert the product movement operations to / from the tank and isolate the tank.
- _____ Insure that the containment area drainage valve(s) is "closed".
- _____ If near tank bottom, fill tank with water and maintain water bottom to suspend the discharge.
- _____ Stop all traffic in hazardous area (inside and outside of property boundaries), as the situation demands.
- _____ Remove product from within the containment area (at a sump or in a low area) with an explosion proof pump, oil skimmer, and/or vacuum truck.
- _____ Empty tank as soon as possible.
- _____ Apply foam blanket as necessary to suppress vapors.

LEAK OR SPILL AT THE TRUCK RACK AND/OR RAIL RACK , SPECIFIC RESPONSE

- _____ Evacuate personnel from the truck and/or rail rack area, as the situation demands.
- _____ Shut down all loading operations, pump motors and loading valves.
- _____ Stop all traffic from entering rack or hazardous area.
- _____ If a line leak, close off riser valves and/or tank valves.
- _____ Clean area with sorbent material, flush (with water) all remaining product into the separator system.
- _____ Resume truck and/or rail loading operations as directed by the Manager, Safety and Risk Management.
- _____ Apply foam blanket as necessary to suppress vapors.

FIGURE 3.1 (Cont'd)

SPECIFIC INCIDENT RESPONSE CHECKLIST

TRUCK LEAKS/SPILLS OUTSIDE PLANT, SPECIFIC RESPONSE

- _____ Notify local fire and police departments, as appropriate.
- _____ Keep all traffic away from the area.
- _____ Notify the Manager, Safety and Risk Management of the incident with the following information:
 - Location of spill.
 - Size of spill.
 - Product type.
 - Present situation.
 - If assistance/equipment is required for cleanup.
- _____ If product spilled on highway and/or service station driveway, clean area with sorbent material, vacuum truck, or other clean-up equipment as available; wash down (Fire Department with water) all remaining product as the situation demands. If product entered sewer system, advise the local Fire Department.
- _____ Apply foam blanket as necessary to suppress vapors.

EXPLOSIONS AND/OR FIRE, SPECIFIC RESPONSE

- _____ Shut down Facility operations and mitigate fuel sources, as the situation demands.
- _____ Utilize applicable Facility firefighting capability after conducting safety assessment of the area.
- _____ Notify local fire department(s), as the situation demands (telephone references for Fire Departments are provided in Figure 2.5).
- _____ Evacuate area, as the situation demands.
- _____ Apply foam blanket as necessary to suppress vapors.

FIGURE 3.1 (Cont'd)

SPECIFIC INCIDENT RESPONSE CHECKLIST

FINAL RESPONSE

- _____ Make all necessary repairs.
- _____ Return the line/tank/rack to service when repairs are complete.
- _____ Clean up product spill to eliminate any possible environmental problems.
- _____ Complete follow-up and written reporting, as the situation demands.

FIGURE 3.2

PRODUCT SPECIFIC RESPONSE CONSIDERATIONS for DIESEL / FUEL OIL SPILLS / CRUDE / CARBON BLACK OIL / JP-8 / Jet-A

Flash Point Range:

Above 100 °F

Remember, Without Exception, Personnel Safety Is First Priority. Excessive Exposure To The Vapor And Liquid Stages Of The Spilled Product Should Be Avoided.

Suggested physical response actions for these products are detailed below. It is important to note how that each situation is unique and must be individually responded to. These procedures are considerations only. Actual circumstances may dictate that the procedures followed may differ somewhat from those listed below. The following are intended for guideline purposes only.

These materials are not extremely flammable and the preferred response is containment and mechanical recovery.

- Identify source and stop discharge if possible.
- Obtain explosimeter and other air sampling measurements to assure that areas are safe to enter for continued response operations.
- If spill occurs in Tank Farm, every effort must be made to block any drainage to ditches to prevent product from escaping the containment area. Commence containment efforts for any product which has escaped.
- Deploy spill response equipment and personnel in an attempt to contain and recover as much product as possible.
- Advise people in the area of any potential threat and/or initiate evacuation. Inform local operations such as utilities, telephone company, railway, and tunnels as the situation demands.
- Recover the product and affected soil. Be alert for underground cables and water bearing formations. Remember that product may penetrate deeper if impermeable natural layers are disturbed.
- Determine the direction and expected duration of spill movement. Refer to the maps provided in Figure 6.1 for an overview of the area.
- Request local authorities to establish traffic control in the area, as the situation demands.
- If the spill escapes the containment area, review the location of socio-economic and environmental sensitive areas identified in Section 6.0. Determine which of these may be threatened by the spill and direct the response operation to these locations. Initiate protection and recovery actions.

FIGURE 3.3
PRODUCT SPECIFIC RESPONSE CONSIDERATIONS
for
JP-4 / GASOLINE SPILLS

Flash Point Range:

Below 100 °F

Remember, Without Exception, Personnel Safety Is First Priority. Excessive Exposure To The Vapor And Liquid Stages Of The Spilled Product Should Be Avoided.

Suggested physical response actions for these products are detailed below. It is important to note however, that each situation is unique and must be individually responded to. These procedures are considerations only. Actual circumstances may dictate that procedures followed may differ somewhat from those listed below. The following are intended for guideline purposes only.

These materials float on water and are extremely flammable. Containment of these materials may allow explosive concentrations to accumulate. The preferred response is to minimize impact to water and protect shorelines (storm sewers, creeks, rivers, etc.) from contamination, allow evaporation to occur, and contain/clean-up remaining product.

- Identify source and stop discharge if possible.
- Obtain explosimeter and other air sampling measurements to assure that areas are safe to enter for continued response operations.
- Eliminate sources of vapor ignition.
- Stay upwind and evacuate nonessential personnel.
- Advise people in the area of any potential threat and/or initiate evacuation. Inform local operators such as utilities, telephone company, railway, and tunnels as the situation demands.
- Recover the product and affected soil. Be alert for underground cables and water bearing formations. Remember that product may penetrate deeper if impermeable natural layers are disturbed.
- Due to the low flash point of these products: (1) Use non-sparking systems, (2) Have fire truck or firefighting equipment nearby, (3) Warn all involved of the product's flammability, and (4) Allow product to evaporate to the greatest extent possible.
- Determine the direction and expected duration of spill movement. Refer to the maps provided in Figure 6.1 for an overview of the area.
- Request local authorities to establish traffic control in the area and to post a - "High Flammability" advisory, as the situation demands.
- If the spill escapes the containment area, review the location of socio-economic and environmentally sensitive areas identified in Section 6.0. Determine which of these may be threatened by the spill and direct the response operation to these locations. Initiate protection and recovery actions.

FIGURE 3.4
PRODUCT SPECIFIC RESPONSE CONSIDERATIONS
for
ASPHALT SPILLS

Flash Point Range:

Above 100 °F

Remember, Without Exception, Personnel Safety Is First Priority. Excessive Exposure To The Vapor And Liquid Stages Of The Spilled Product Should Be Avoided.

Suggested physical response actions for these products are detailed below. It is important to note however, that each situation is unique and must be individually responded to. These procedures are considerations only. Actual circumstances may dictate that procedures followed may differ somewhat from those listed below. The following are intended for guideline purposes only.

- Identify source and stop discharge if possible.
- Obtain explosimeter and other air sampling measurements to assure that areas are safe to enter for continued response operations.
- Eliminate sources of vapor ignition.
- Stay upwind and evacuate nonessential personnel.
- Advise people in the area of any potential threat and/or initiate evacuation. Inform local operators such as utilities, telephone company, railway, and tunnels as the situation demand
- Recover the product and affected soil. Be alert for underground cables and water bearing formations.
- If material sinks, a clam shell or other dredging device may be required to remove product from river bed.
- Due to the potential hazards involved with this product: (1) Use non-sparking systems, (2) Have fire trucks or firefighting equipment nearby, (3) Warn all involved of the product's flammability, and (4) Allow product to evaporate/cool to the greatest extent possible.
- Determine the direction and expected duration of spill movement. Refer to the maps provided in Figure 6.1 for an overview of the area.
- Request local authorities to establish traffic control in the area and to post a - "Flammability advisory, as the situation demands.
- If the spill escapes the containment area, review the location of socio-economic and environmentally sensitive areas identified in Section 6.0. Determine which of these may be threatened by the spill and direct the response operation to these locations. Initiate protection and recovery actions.

4.0 RESPONSE TEAMS

4.1 INTRODUCTION

Navajo Refining Company utilizes the Incident Command System (ICS) to manage emergency response activities. The ICS is a management tool which is readily adaptable to very small incidents as well as those of considerable significance. The ICS shall be implemented for all discharge incidents with staffing levels adjusted as required to meet the specific needs (size and severity) of the incident. Response to a discharge originating from the Facility will be provided by the Spill Management Team.

A detailed explanation of the Incident Command System and the roles and responsibilities for primary members of the Spill Management Team is provided in Appendix B.

4.2 QUALIFIED INDIVIDUAL

Vital duties of the Qualified Individual (QI) include:

- Activate internal alarms and hazard communication systems to notify all Facility personnel.
- Notify all response personnel, as needed.
- Identify the character, exact source, amount, and extent of the release, as well as the other items needed for notification.
- Notify and provide necessary information to the appropriate Federal, State, and Local authorities with designated response roles, including the National Response Center (NRC), State Emergency Response Commission (SERC), and local response agencies.
- Assess the interaction of the spilled substance with water and/or other substances stored at the Facility and notify response personnel at the scene of that assessment.
- Assess the possible hazards to human health and the environment due to the release. This assessment must consider both the direct and indirect effects of the release (i.e., the effects of any toxic, irritating, or asphyxiating gases that may be generated, or the effects of any hazardous surface water runoffs from water or chemical agents used to control fire and heat-induced explosion).
- Assess and implement prompt removal actions to contain and remove the substance released.
- Coordinate rescue and response actions as previously arranged with all response personnel.

4.2 QUALIFIED INDIVIDUAL (Cont'd)

- Use authority to immediately access company funding to initiate clean-up activities.
- Direct clean-up activities until properly relieved of this responsibility.

The Refinery Vice President/Manager serves as Qualified Individual (QI) and the Process Superintendent serves as the Alternate Qualified Individual (AQI). Arrangements will be made to ensure that either one or the other is available on a 24-hour basis and is able to arrive at the Facility in a reasonable time. The AQI shall replace the QI in the event of his absence and have the same responsibilities and authority.

4.3 SPILL MANAGEMENT TEAM

The first Navajo Refining Company person on scene will function as the person-in-charge until relieved by an authorized supervisor who will assume the position of Incident Commander (IC). Transfer of command will take place as more senior management respond to the incident. For response operations within the control of the Spill Management Team, the role of IC will typically be assumed and retained by qualified management personnel.

The number of positions/personnel required to staff the Spill Management Team will depend on the size and complexity of the incident. The duties of each position may be performed by the IC directly or delegated as the situation demands.

Refer to the job descriptions detailed in Appendix B (the "Emergency Response Plan") for the primary response team positions. The IC is always responsible for directing the response activities and will assume the duties of all the primary positions until the duties can be delegated to other qualified personnel.

The Spill Management Team is shown on the organization chart in Figure 4.1. Telephone reference is provided in Figure 2.2. Detailed job descriptions of the primary response team positions are provided in Appendix B.

4.4 RESPONSE TEAM TRAINING

Navajo has designated a Safety Training Coordinator in light of the enormous training and record keeping requirements by the many different government agencies (i.e. DOT, OSHA, EPA and various state and local agencies). The training coordinator's duties include conducting, training and maintaining records for all employees which documents the content of and the applicable regulatory requirement for the training. In addition to training records, the coordinator also maintains records of safety meetings and other meetings related to environmental and safety transportation regulations.

All employees who work in operating areas of the refinery or have the potential to be exposed to the operating areas receive an initial 40 hours of comprehensive training emphasizing occupational safety, environmental compliance and process safety management. Each year after the initial 40 hours of training, there is a four (4) day Refresher Training Course conducted. Both the initial 40 hour course and the annual Refresher Training Course are designed to comply with requirements found in:

- 40 CFR 112.7 (e) - SPCC Plan
- 40 CFR 112.21 - Facility Response Plan
- 40 CFR 122.26 - Stormwater Management Plan

Common elements of all three of these programs include prevention, detection, and response to releases of oils and other hazardous materials. Training common to all three also includes emphasis on good house keeping practices (Best Management Practices), secondary containment, and prompt initial notification of an incident.

Volunteers

- Volunteers will not be utilized by Navajo Refining Company for responding to spills and no provisions are in place to accommodate for their training.

Training Records

- A detailed training syllabus is maintained as a part of the records kept by the Safety Training Coordinator. All training records pertinent to this program are available for inspection during normal business hours by contacting the Safety Training Coordinator.
- Navajo Refining Company has a program in place to insure that each OSRO has a comprehensive maintenance program and applicable training/drills programs in place.

4.5 RESPONSE TEAM EXERCISES

Spill Management Team members, various agencies, contractors and other response resources will participate in emergency response exercises as required by federal, state, and local regulations and as detailed in the "National Preparedness for Response Exercise Program" (PREP). Navajo Refining Company will utilize announced and unannounced notification exercises, equipment deployment exercises, tabletop exercises, and/or various combinations to ensure that each component of the Plan is exercised as required. At least one equipment deployment exercise or one tabletop exercise will be unannounced annually. The Plant Manager will coordinate exercise planning and logistics in accordance with the following guidelines. The following table depicts the minimum triennial cycle for exercises at the Facility.

Triennial Cycle		
Total Number	Frequency	Exercise Type/Description
3	Annual	Response Team Tabletop Exercise
3	Annual	Equipment Deployment Exercise (<i>for facilities with OSRO's</i>)
3	Annual	Unannounced Exercise (<i>this Exercise may take the place of a required Tabletop or an Equipment Deployment Exercise</i>)
1 (maximum)	Once every 3 years	Government-initiated Unannounced Exercise (<i>credit may be taken for a required Notification and an Equipment Deployment Exercise</i>)
Note: Each component of the response plan must be exercised at least once in the Triennial Cycle.		

4.5 RESPONSE TEAM EXERCISES (Cont'd)

Quarterly QI Notification Exercise

- **Scope:** Exercise communication between facility personnel and the Qualified Individual(s) and/or designated alternate(s). At least once each year, one of the notification exercises should be conducted during non-business hours.
- **Objective:** Contact must be made with a Qualified Individual or designated alternate, as identified in the Plan.
- **General:** All personnel receiving notification shall respond to the notification and verify their receipt of the notification. Personnel who do not respond should be contacted to determine whether or not they received the notification.

Semi-Annual Equipment Deployment Exercise (for facilities with equipment)

- **Scope:** Deploy and operate facility response equipment identified in the response plan. The equipment to be deployed must include the following at a minimum:
 - 1,000' of each type of boom (solid log flotation, air inflated, self inflated, fire boom, and special purpose)
 - One (1) of each type of skimming system.or the equipment necessary to respond to a Small Discharge at the Facility, whichever is less.
- **Objective:** Demonstrate the ability of the personnel to deploy and operate response equipment. Ensure that the response equipment is in proper working order.
- **General:** The Facility may take credit for actual equipment deployment to a spill or training sessions as long as the activities are properly documented.

4.5 RESPONSE TEAM EXERCISES (Cont'd)

Annual Equipment Deployment Exercise (for facilities with OSRO's)

- **Review:** The Facility should ensure that the OSRO(s) has completed the equipment deployment exercise requirements and has maintained the necessary documentation. The OSRO is not required to deploy equipment at the Facility, they may deploy equipment at any location so long as it occurs within a similar operating environment.
- **Scope:** OSRO shall deploy and operate response equipment (OSRO) identified in the response plan. The equipment to be deployed must include the following at a minimum:
 - 1,000' of each type of boom (solid log flotation, air inflated, self inflated, fire boom, and special purpose boom)
 - One (1) of each type of skimming system.
- **Objective:** OSRO shall demonstrate the ability of the personnel (OSRO) to deploy and operate response equipment (OSRO). Ensure that the response equipment (OSRO) is in proper working order.

NOTE: The Facility does not maintain an inventory of spill response equipment.

Annual Response Team Tabletop Exercise

- **Scope:** Exercise the response team's organization, communication, and decision making in managing a spill response. Each team identified within the plan is required to conduct an annual Response Team Tabletop Exercise.
- **Objective:** Exercise the response team in a review of the following:
 - Knowledge of the Plan.
 - Proper notifications.
 - Communications system.
 - Ability to access an OSRO.
 - Coordination of internal spill response personnel.
 - Review of the transition from a local team to a regional, and national.
 - Ability to effectively coordinate response activity with the National Response System (NRS) Infrastructure.
 - Ability to access information in the Area Contingency Plan.
- **General:** A minimum of one Response Team Tabletop Exercise in a triennial cycle will involve simulation of the Worst Case Discharge scenario.

4.5 RESPONSE TEAM EXERCISES (Cont'd)

Government-Initiated Unannounced Exercise

- **Scope:** The Facility is required to participate in only one unannounced exercise every 36 months from the date of the last government-initiated unannounced exercise. These unannounced exercises are limited to a maximum of four exercises per agency region/area per year.

Exercises are limited to approximately four hours in duration.

Exercises would involve response to an Average Most Probable Discharge scenario.

Exercise would involve equipment deployment to respond to a spill scenario.
- **Objective:** Conduct proper notifications to respond to unannounced scenario of an Average Most Probable discharge.

Demonstrate that the response is timely, conducted with an adequate amount of equipment for the scenario, and properly conducted.
- **General:** This exercise is only applicable to those facilities which are randomly chosen.

Exercise Records

- These exercises should be documented on a log form and should contain the following information (sample log forms are included in Appendix K):
 - The type of exercise;
 - Date and time of the exercise;
 - A description of the exercise;
 - The objectives met in the exercise;
 - The components of the response plan exercised; and
 - Lessons learned.
- Records of these exercises will be maintained on file at the Facility for a minimum period of five (5) years.

4.6 INCREASING THE SPILL RESPONSE

In the event that the requirements are beyond the response capability of the Spill Management Team:

- The Incident Commander will notify appropriate internal and external parties.
- The Incident Commander will authorize and implement the activation of any response/clean-up contractor that may be required.

4.7 SITE SAFETY AND HEALTH PLAN(S) DEVELOPMENT

The Incident Commander or Safety Representative will be responsible for preparing a Site Safety and Health Plan that will establish site specific policies, practices, and procedures to protect workers and the public from coming into contact with potential chemical and/or physical hazards. A Site Safety and Health Plan will contain the following information:

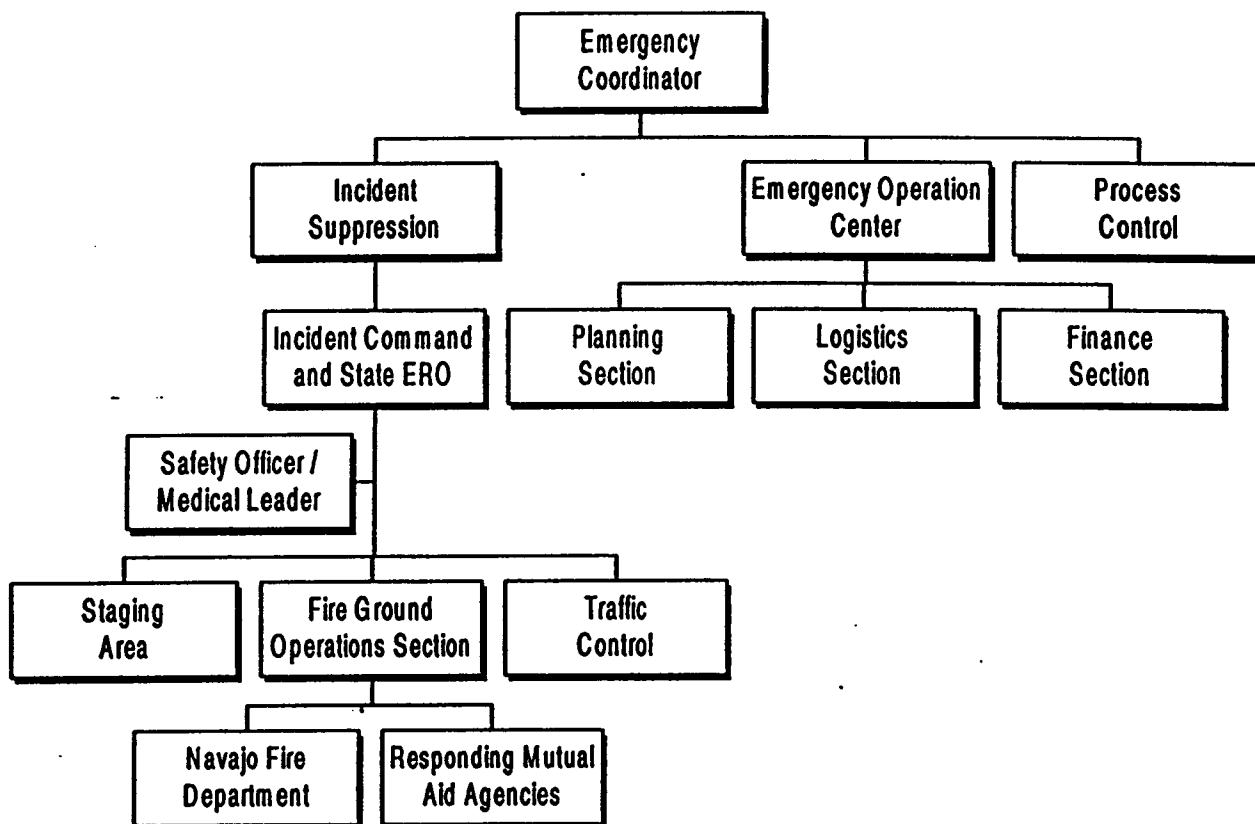
- Guidance on who is responsible for monitoring site safety.
- A characterization of the risks associated with each operation that will be conducted in the area covered by the plan.
- A description of known chemical and physical hazards, and the measures that have been instituted to eliminate the hazards or reduce them to an acceptable level.
- Guidance on the level of HAZWOPER training required for workers commensurate with their job responsibilities.
- A definition of site control measures, including a site map.
- A description of decontamination procedures for personnel and equipment.

The Site Safety and Health Plan format that will be used is presented in Appendix K.

FIGURE 4.1

SPILL MANAGEMENT TEAM

Emergency Response Team



5.0 RESPONSE EQUIPMENT/RESOURCES

The following sections outline the various response equipment / resources available from the Facility, other Navajo Refining Company facilities, Oil Spill Removal Organizations, and other outside resources.

5.1 FACILITY RESPONSE EQUIPMENT

The Facility does not have spill response equipment; a general equipment list is included in Appendix C. However, the Navajo Refining Co. Pipeline Division has spill response equipment which can be accessed (Appendix C). Additionally, the Facility has a contract in place with an Oil Spill Removal Organization and other clean-up contractors for response to a discharge.

The Qualified Individual has the authority to activate other Navajo Refining Company resources or that of private contractors and other experts and consultants as the situation demands.

5.2 OTHER COMPANY RESOURCES

Additional Navajo Refining Company spill response equipment and manpower resources may be available to supplement the response operation. These resources include the Navajo Refining Company - Lovington Refinery spill response equipment which is located within a reasonable distance of the facility.

5.3 CONTRACT RESOURCES

In the event of a discharge which is beyond the initial response capabilities of the Spill Management Team, contract manpower and equipment resources can be obtained through Oil Spill Removal Organization(s) (OSRO). These OSRO's can provide manpower and containment / clean-up equipment for the response operation on land, water, or adjacent shorelines. The resources will be secured from a Navajo Refining Company approved contractor. Notification / implementation of these resources will typically be handled by the Refinery Vice President / Manager (QI). Figure 5.1 provides a quick reference to the Oil Spill Removal Organizations and details their response capability and estimated response times. Additional OSRO data, including equipment inventories and/or USCG certification data, is provided in Appendix C. Telephone reference is provided in Figure 2.5.

5.4 MUTUAL AID RESOURCES

Mutual Aid Resources are not currently available to the Facility.

5.5 EXPERTS AND CONSULTANTS

Navajo Refining Company maintains a relationship with various environmental and technical consultants that can provide support in the event of an emergency incident. These consultants can provide expertise and support in the areas of emergency response management, environmental services, site assessment, permitting, waste treatment, recycling, dewatering, hazardous waste disposal, and remediation. Implementation of these services should be coordinated through the Environmental Manager.

5.6 VOLUNTEERS

Volunteers will not be utilized by Navajo Refining Company for responding to spills originating from the Facility. All volunteers will be referred to the State or Federal On-Scene Coordinator (EPA).

5.7 COMMUNICATIONS

Effective and efficient communications systems are essential for emergency response at every level. The communications system will be utilized to gather information and current status reports as well as to provide coordination and direction to widely separated work groups involved in search, containment/ diversion, repair, traffic control, public control or evacuation, and restoration.

Lines of communication between the Incident Commander and Spill Management Team members are demonstrated in the organization chart shown in Figure 4.1. Communication of the overall spill response operation between the Facility and the responsible government agencies in the Federal Regional Response Team (RRT) will occur between the Incident Commander and the Federal On-Scene Coordinator. Appendix J provides additional detail on the Federal Response Organization.

• Central Communications System

Prearranged communication channels are of the utmost importance in dealing with Facility emergencies. The notification procedures and telephone contacts documented in Section 2.0 will be reviewed in accordance with the earlier documented updating procedures. The predetermined communications channels include the following:

- A list of emergency telephone numbers for internal management and emergency response personnel (Figures 2.2 and 2.5).
- A list of emergency telephone numbers for various external resources such as the fire and police department, medical, and regulatory agencies (Figure 2.5).
- A list of emergency telephone numbers for contract response resources (Figure 2.5).

- **Communications Equipment**

Field communications during a spill response to a small or medium discharge will be handled via the existing Facility communications network. This network will utilize existing radios, telephones, beepers, FAX machines, and computers and will be maintained by Facility personnel (see Appendix C). In the event of a Worst Case Discharge, field communications will be enhanced with other Navajo Refining Company and contract resources as the situation demands.

- **Communication Types**

- **Radios** - Handheld and vehicle mounted radio sets are the most effective means of communication for the field response operation. The units are battery operated, multi-channelled, and have a typical range that will cover the area of the response operation. Additional radio sets and battery packs/charges will be necessary in the event of a prolonged response operation.
- **Telephone (Conventional)** - Conventional land line telephones are the most effective means of communication for regulatory and advisory notifications during a spill response operation. Additional telephone lines can be installed in the event of a prolonged response operation.
- **Telephone (Cellular)** - Cellular telephones allow for added mobility and response effectiveness. Cellular phones are commonly maintained by certain Facility personnel. Additional cellular phones can be secured in the event of a prolonged response operation.
- **Pagers** - Pagers are used for rapid notification to field personnel when radio and telephone resources are limited. Most response team members carry a pager. The pagers are activated by a system called the Plectron System.
- **FAX Machines** - FAX machines allow for a rapid transfer of information/documentation such as status reports/updates, written notifications, and purchase orders.
- **Computers** - Computers are commonly used in networks which allow access to various other locations and company personnel. Computers also speed the consolidation of information and preparation of written reports.

FIGURE 5.1

EXTERNAL RESPONSE RESOURCES

Los Angeles/Long Beach Captain of the Port (COTP) Zone

USCG Classified Oil Spill Removal Organization (OSRO)								
OSRO Name	Contract Number	Environment Type	Facility Classification Level					Shoreline Cleanup
			A	B	C	D	E	
Garner Environmental Services, Inc.	Under development	Rivers/Canals	X	X	X	X	X	Yes
		Inland/Nearshore	X	X	X	X	X	

Additional Response Resources		
Contractor Name	Contract Number	Response/Mobilization Time
Indian Fire & Safety	-----	Within one (1) hour

Note: USCG Classification letters are provided in Appendix C and telephone numbers are provided in Figure 2.5.

FIGURE 5.1 (CONT'D)

EXTERNAL RESPONSE RESOURCES

Oil Spill Removal Organizations

Environmental Spill Control Hobbs, NM		
USCG Classification:	River/Canal:	N / A
	Inland/Nearshore:	N / A
Agreement Number:	N / A	
Response/Mobilization Time:	1-2 hours	
Maximum Daily Recovery:	2,400 Bbls/Day	
Temporary Storage:	2,500 Bbls	

Note: Classification and recovery/storage capabilities are based on USCG NVIC 12-92 Interim Classification Guidelines. Additional detail is provided in Appendix C and telephone reference is provided in Figure 2.5.

FIGURE 5.1 (CONT'D)

EXTERNAL RESPONSE RESOURCES

Oil Spill Removal Organizations

Indian Fire & Safety Artesia, NM		
USCG Classification:	River/Canal:	N / A
	Inland/Nearshore:	N / A
Agreement Number:	N / A	
Response/Mobilization Time:	within 1 hour	
Maximum Daily Recovery:	12,000 Bbls/Day	
—		
Temporary Storage:	10,000 Bbls.	

Note: Classification and recovery/storage capabilities are based on USCG NVIC 12-92 Interim Classification Guidelines. Additional detail is provided in Appendix C and telephone reference is provided in Figure 2.5.

6.0 SPILL IMPACT CONSIDERATIONS

6.1 CRITICAL AREAS TO PROTECT

The critical areas to protect are classified as high, moderate, and low sensitivity to oil for non-coastal/inland environments. The Federal, State, and local authorities will further clarify these categories at the time of the response. The categories are defined as follows:

HIGH SENSITIVITY

- Areas which are high in productivity, abundant in many species, extremely sensitive, difficult to rehabilitate, or inhabited by threatened/endangered species.
- Areas which consist of forested areas, brush/grassy areas, wooded lake areas, freshwater marshes, wildlife sanctuaries/refuges, and vegetated river/stream banks.

MODERATE SENSITIVITY

- Areas of moderate productivity, somewhat resistant to the effects of oiling.
- Areas which consist of degraded marsh habitat, clay/silt banks with vegetated margins, and gravel/cobble beaches.

LOW SENSITIVITY

- Areas of low productivity, man-made structures, and/or high energy.
- Areas which consist of gravel, sand, or clay material, barren/ rocky riverbanks and lake edges, man-made structures, and concrete/compacted earthen drainage ditches.

6.2 ENVIRONMENTAL/SOCIO-ECONOMIC SENSITIVITIES

Environmental/Socio-economic Sensitivities are of extreme importance when planning a response effort. The health and safety of the public and the environment, as well as the protection of the various socio-economic sensitivities, must be promptly addressed in order to mitigate the extent of damage and minimize the cost of the clean-up effort.

6.2 ENVIRONMENTAL/SOCIO-ECONOMIC SENSITIVITIES (Cont'd)

All environmental/socio-economic sensitivities are worthy of protection, but must be prioritized during a response effort. When making decisions on which areas to designate as collection areas and which to protect, the following sources may be consulted:

- U.S. Fish and Wildlife Service and related state agencies
- Applicable Area Contingency Plans
- Other industry and private experts

The environmental and socio-economic sensitivities in the vicinity of the Facility can be divided into a number of categories. The following environmental/socio-economic sensitivity summary describes these categories which may be impacted by a discharge and should be addressed in the response:

Environmental:

- Environmentally sensitive areas are prevalent throughout any marine and/or terrestrial environment and may be effected by any potential discharge incident.
- Environmentally sensitive areas subjected to stress and sudden change may be severely damaged. All means of exclusion/diversion should be utilized during a response effort to minimize the impact on these areas.

Historical Areas:

- Properties listed in the National Register of Historic Places & Natural Landmarks are included in this category.
- These areas may need to be boomed off or otherwise protected to minimize impact.

Major Recreational Areas:

- A discharge effecting these areas may pose a public safety/health risk during a response effort.
- Shoreline access for personnel and equipment deployment (boats, boom, etc.) is typically available in these areas.

Marinas:

- These areas have a high degree of public exposure (personal and property) and should be boomed for protection.
- Boats and other water deployed equipment can often be deployed and/or obtained in these areas.

6.2 ENVIRONMENTAL/SOCIO-ECONOMIC SENSITIVITIES (Cont'd)

Residential Areas:

- These are areas with high public impact and may warrant evacuation in extreme cases.
- Cleanup must be performed with extreme caution due to extensive public exposure.

Commercial Farming/Ranching Areas:

- Commercial Farming/Ranching Areas have the potential of human and livestock impact, as well as socio-economic impact in the potential loss of crops or loss of property use.

Water Intake Points:

- Commercial, industrial, municipal, and private water intakes are subject to impact.
- These areas may need to be boomed off or otherwise protected to minimize impact.

Wildlife Management Areas and Refuges:

- These areas have a high degree of exposure to threatened/endangered species and many other types of wildlife.
- Protection booming and clean-up efforts are high priority in these areas.

6.3 WILDLIFE PROTECTION AND REHABILITATION

Navajo Refining Company will work with Federal, State, and local agency personnel to provide labor and transportation to retrieve, clean, and rehabilitate birds and wildlife affected by an oil spill, as necessary. Oversight of Navajo Refining Company's wildlife preservation activities and coordination with Federal, State, and local agencies during an oil spill is the responsibility of the Incident Commander.

Special consideration should be given to the protection and rehabilitation of endangered species and other wildlife and their habitat in the event of an oil spill and subsequent response. Jurisdictional authorities should be notified and worked with closely on all response/clean-up actions related to wildlife protection and rehabilitation. Laws with significant penalties are in place to ensure appropriate protection of these species.

6.3 WILDLIFE PROTECTION AND REHABILITATION (Cont'd)

Endangered/Threatened Species

The U.S. Fish and Wildlife Service (USFWS) and related state agencies classify the status of various wildlife species in the potentially effected states. A summary of critical birds, reptiles, mammals, and plant species status as related to the Facility's operating areas (area of highest oil spill potential) is presented in Fig 6.2.

Wildlife Rescue

Navajo Refining Company will work with Federal, State, and local agency personnel to provide labor and transportation to retrieve, clean, and rehabilitate wildlife affected by an oil spill, as the situation demands.

The following are items which should be considered for wildlife rescue and rehabilitation during a spill response:

- Bird relocation can be accomplished using a variety of deterrents, encouraging birds to avoid areas of spilled oil. Bird relocation can be accomplished by utilizing deterrent methods including:
 - Use of visual stimuli, such as inflatable bodies, owls, stationary figures, or helium balloons, etc.
 - Use of auditory stimuli, such as propane cannons, recorded sounds, or shell crackers.
 - Use of herding with aircraft, boats, vehicles, or people (as appropriate).
 - Use of capture and relocation.

Wildlife Search and Rescue - Points to Consider

- Navajo Refining Company's involvement should be limited to offering assistance as needed or requested by the agencies.
- Prior to initiating any organized search and rescue plan, authorization must be obtained from the appropriate federal/state agency.
- Initial search and rescue efforts, if needed, should be left up to the appropriate agencies. They have the personnel, equipment, and training to immediately begin capturing contaminated wildlife.
- With or without authorization it must be anticipated that volunteer citizens will aid distressed/contaminated wildlife of their own. It is important to communicate that it may be illegal to handle wildlife without express authority from appropriate agencies. Provisions should be made to support an appropriate rehabilitator, however, no support should be given to any unauthorized volunteer rescue efforts.

6.3 WILDLIFE PROTECTION AND REHABILITATION (Cont'd)

Wildlife Search and Rescue - Points to Consider (Cont'd)

- The regulatory agencies and response personnel should be provided the name and location of a qualified rehabilitator in the event contaminated wildlife is captured.
- Resources and contacts that can assist with wildlife rescue and rehabilitation and provided in Section 2.0. This list includes:
 - Outside rehabilitation organizations
 - Local regulatory agencies
 - Other resources

6.4 STAGING AREAS

When establishing personnel and equipment staging areas for a response to a Facility discharge, the following criteria should be evaluated:

- Access to waterborne equipment launching facilities and/or land equipment.
- Access to open space for staging/deployment of heavy equipment and personnel.
- Access to public services utilities (electricity, potable water, public phone, restroom and washroom facilities, etc.)
- Access to the environmental and socio-economically sensitive areas which are projected for impact.

6.5 SPILL VOLUME ESTIMATES

Quality spill volume estimates are required in order to evaluate the equipment and manpower requirements necessary to handle the response. The primary and most accurate method of estimating the spill volume is from tank gauging and/or pump rate estimates (depending on the type of incident which caused the spill). In the event that tank or pump estimates are not available, the secondary method of visual estimation can be performed by analyzing the color and size of the slick and converting that data with the following chart:

APPEARANCE	APPROXIMATE THICKNESS (mm)	BARRELS IN ONE SQUARE MILE
Barely Visible	0.00005	0.8
Silvery Sheen	0.0001	1.6
First Trace of Color	0.00015	2.4
Rainbow of Color	0.003	4.9
Dull Brown	0.01	14.0
Dark Brown	1.0	31.0

6.6 TRAJECTORY ANALYSIS

Oil spilled on water will react primarily to the effects of wind and current. The oil will tend to spread to a thin layer under the influence of gravity (primary) and chemical (secondary) forces. The following describes the behavior of oil on water:

- Oil will move in the direction and at the rate of the current under negligible wind conditions.
- Oil will move in the direction and at approximately 3.4 % of the velocity of the wind under negligible current conditions.
- The combined effects of wind and current on the oil should be carefully analyzed. A method of vector analysis can be performed to determine the net direction of movement (wind forces can work in addition to, against, or in many other combinations with the current).
- The primary method of surveillance for the Facility will be visual. Visual surveillance is not effective however in rain, fog, darkness, or heavy cloud cover. It is difficult to observe a slick on the water from a boat, dock or land due to the angle of observation. Aerial surveillance is the preferred method of visual surveillance because of the elevated view and the ability to cover a large area in a short period.

FIGURE 6.1

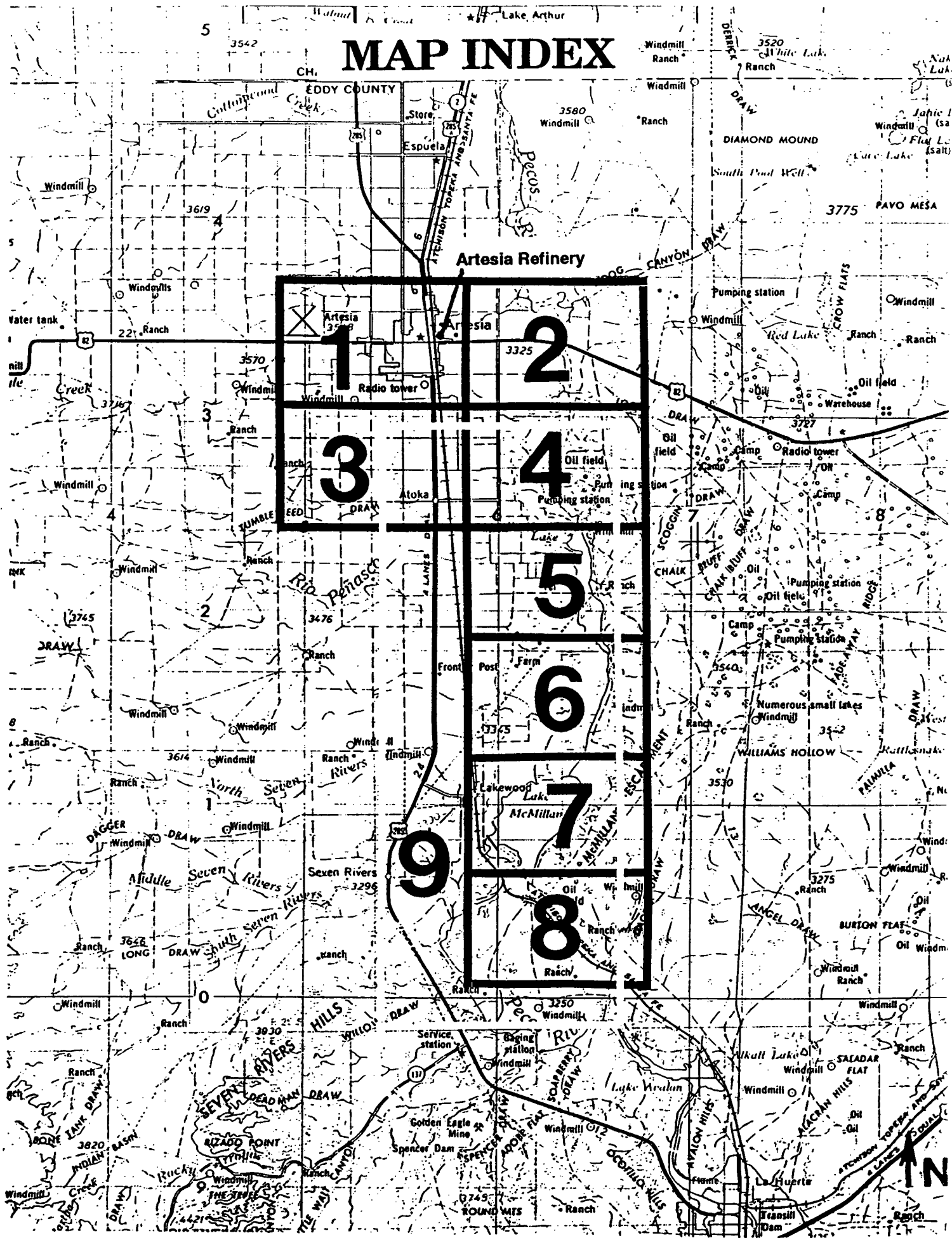
ENVIRONMENTAL SENSITIVITY MAPS

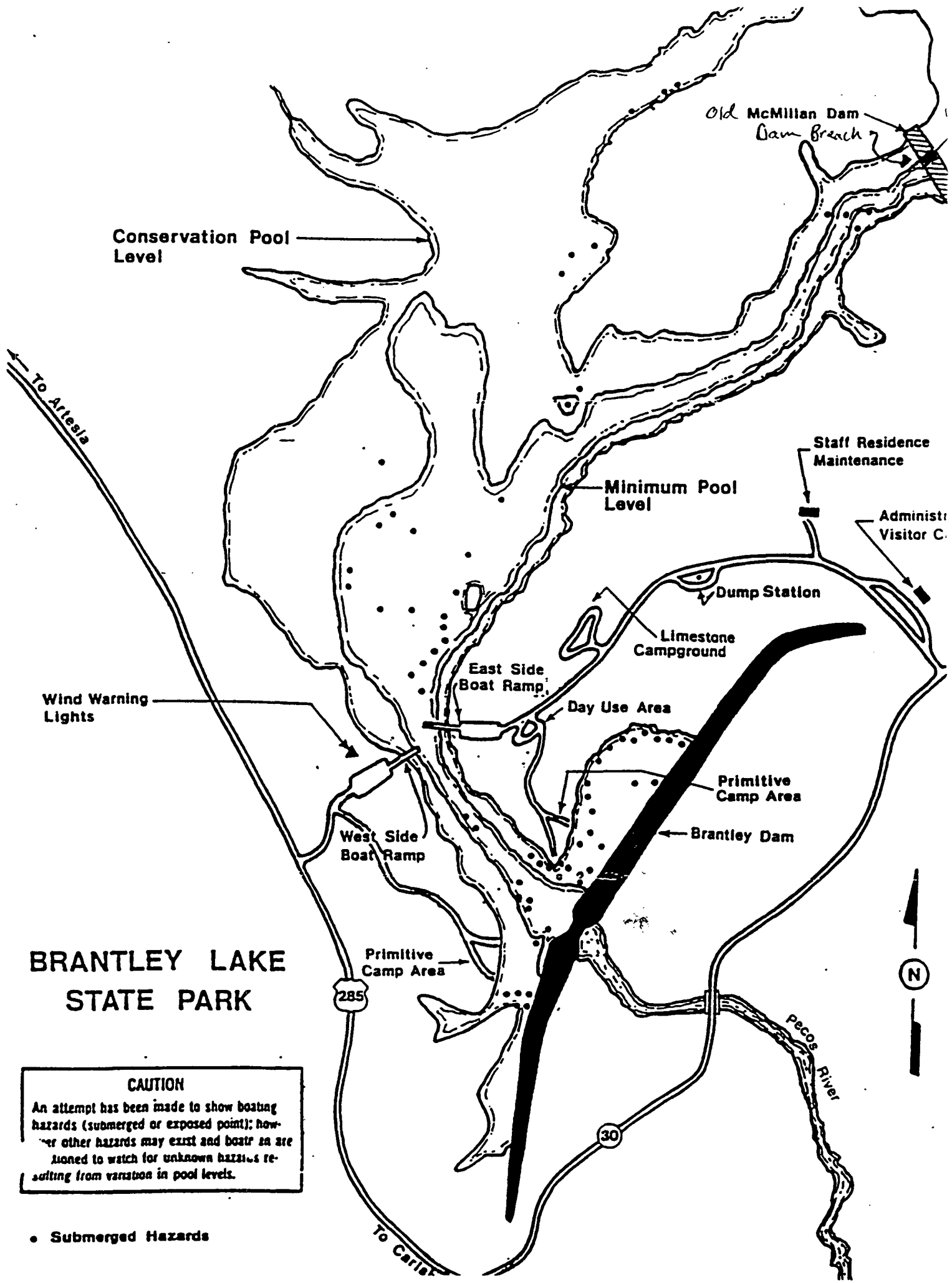
The following Environmental Sensitivity Maps have been prepared utilizing U.S. Geological Survey 7.5 Minute Quadrangle Maps as the base. The maps include a key to the reference symbols located on each map.

Remember these maps are to be utilized as guidelines only. During a real response effort Federal, State, and Local agencies should be contacted to provide further assistance in the proper identification and protection of the various environmental and socio-economic sensitive areas.

The following maps are intended as guidelines only.
Response Management Associates, Inc. assumes no liability for injury, loss, or damage of any kind resulting directly or indirectly from the use of these guidelines.

MAP INDEX





BRANTLEY LAKE STATE PARK

CAUTION

An attempt has been made to show boating hazards (submerged or exposed point); however other hazards may exist and boaters are cautioned to watch for unknown hazards resulting from variation in pool levels.

• Submerged Hazards

FIGURE 6.2

ENDANGERED/THREATENED SPECIES LISTING

The following is a listing of endangered/threatened species with known or possible occurrence in the area of the Facility.

Federally Listed Species

Pecos Gambusia
Pecos Bluntnose Shiner
Pecos Pupfish
Interior Least Tern
Bald Eagle
Brown Pelican
Peregrine Falcon
White-faced Ibis
Swainson's Hawk
Ferruginous Hawk
Western Snowy Plover
Long-billed Curlew
Western Yellow-billed Cuckoo

State Listed Species

Greenthroat Darter
Olivaceous Cormorant
Least Shrew
Pecos Sunflower

New Mexico Environment Department
September 2003

Navajo Refining Company
RCRA Permit No. NMD048918817

ATTACHMENT 2

**RCRA PART B POST-CLOSURE PERMIT APPLICATION
NAVAJO REFINING COMPANY ARTESIA REFINERY
RCRA PART B POST-CLOSURE PERMIT APPLICATION
SECTIONS 13.0, 15.0, 16.0, ATTACHMENTS B-4 THROUGH B-6 AND B-8**

13.0 CLOSURE / POST-CLOSURE PLAN [40 CFR 270.14 (b)(13)]

13.1 North Colony Landfarm

13.1.1 Closure Plan

13.1.1.1 Closure Plan Implementation

A Closure Plan for the North Colony Landfarm was submitted with Navajo's original RCRA Permit application. The NCL Closure / Post-Closure Plan was approved by NMEID and incorporated into the facility RCRA Operating Permit (Permit Number NMD048918817-1), issued to Navajo effective August 21, 1989. A copy of the permit notice and relevant pages from the permit directing Navajo to implement the Closure / Post-Closure Plan (paragraphs L.1 & O.1) is included with this application in Attachment B-4. The approved plan follows the requirements of §264.280 for land treatment units, including placement of a vegetative cover after degradation, transformation or immobilization of hazardous constituents is substantially complete. An updated closure plan that reflects actions already taken is provided in Attachment B-4. Updates to estimated closure costs and financial assurance are addressed in Tab-B, Section 15.2 of this application.

The last application of waste was made to the NCL in September 1990, when the groundwater detection monitoring system detected hazardous constituents in the groundwater and the land treatment demonstration phase of the permit was terminated by NMEID. According to the permit conditions, the NCL reverted to interim status and the operating phase of the permit was never approved. In compliance with the permit, and the requirements of §§ 264.98-99, Navajo implemented quarterly groundwater compliance monitoring which continues as of the date of this application. Under a schedule negotiated and approved by NMEID, Navajo also implemented a Corrective Action Program (CAP) to comply with §264.100. The RFI Phase II Report required by the CAP was submitted to NMED in November 1997. Additional discussion of the CAP can be found in Tab C, Section 1.8.

Completion of the approved Closure Plan has been delayed pending results of the Corrective Action Program to ensure compatibility with any corrective measures, if necessary. However, certain elements of the closure plan were implemented or have been effectively completed, including:

- submittal, to the Eddy County Clerk, of the certified survey plat required by §264.116 (April, 1989; a copy of the Notice is provided in Attachment B-5);
- operation of the landfarm to the extent necessary to maximize degradation, transformation and immobilization of the final applications of hazardous waste constituents (1990-1991; tilling continued approximately six months after last application);

- removal and decontamination of the drum storage pad (1991);
- maintenance of run-on and run-off control systems (on-going);
- control of wind dispersion of hazardous wastes (on-going);
- unsaturated zone monitoring (except soil-pore liquid monitoring) as part of RFI activities (1990, 1994, 1997); and,
- groundwater compliance monitoring (quarterly since 1991).

The most recent soil and groundwater analytical summaries are provided in Appendices 4 and 5.

The only major closure tasks which remain are those necessary for placement of the vegetative cover and certification of closure .

13.1.1.2 Schedule

Navajo will proceed with implementing the remaining activities for the approved Closure Plan on a schedule to be identified by NMED in the permit. The original schedule and activities in the closure plan will be modified as necessary to reflect actions that have already taken place and the time that has elapsed. Expected actions to complete closure are outlined below:

- Provide notice to NMED, as required in §264.112(d), that Navajo intends to begin final closure of the NCL. Navajo will begin closure upon approval from NMED. For purposes of compliance with §264.113(b) regarding time allowed for closure, the 180 day period within which closure must be completed will start on day 60 following the notice to NMED.
- Conduct soil core monitoring per the Closure Plan. Additional soil pore liquid monitoring will not be conducted since almost 10 years have elapsed since the last application of waste and the soil lysimeters are no longer in operation. Conduct soil analysis for evaluation of placement of vegetative cover (pH, nitrogen, phosphorous, potassium and organic levels)
- Incorporate soil amendments as necessary for placement of final cover and commence placement of final vegetative cover, allowing as necessary for the proper time of year conducive to establishing initial growth of the cover.

- Notify NMED if closure will not be completed within 180 days from date NMED provides approval to begin final closure and submit a permit modification requesting an extension to the closure period as required in §264.113(b) and (c).
- Complete closure by final placement of vegetative cover (within 180 days of initiating closure as required in §264.113(b)). Initiate Post-Closure Care Plan.
- Submit final closure certification to NMED in compliance with §264.115 (within 60 days of completion of closure).
- Submit certification to NMED that a notation has been placed on the deed to the facility property in compliance with §264.119 (within 60 days of certification of closure).

If an unexpected event occurs during closure which necessitates a change in the closure plan, Navajo will submit to NMED an amended closure plan and request for permit modification, within 60 days of the unexpected event in compliance with §264.112(c)(3). If it is necessary to submit an amended closure plan during the final closure period, Navajo will also submit a permit modification requesting an extension to the closure period in compliance with §264.113(b).

13.1.2 Post-Closure Plan

A Post-Closure Plan for the North Colony Landfarm was submitted with Navajo's original RCRA Permit application. The NCL Post-Closure Plan was approved by NMEID and incorporated into the facility RCRA Operating Permit (Permit Number NMD048918817-1), issued to Navajo effective August 21, 1989. A copy of the permit notice and relevant pages from the permit directing Navajo to implement the Closure / Post-Closure Plan (paragraphs L.1 & O.1) is included with this application in Attachment B-4. A revised post-closure plan reflecting actions already undertaken or completed is also provided in Attachment B-4.

The last application of waste was made to the NCL in September 1990, when the groundwater detection monitoring system detected hazardous constituents in the groundwater and the land treatment demonstration phase of the permit was terminated by NMEID. According to the permit conditions, the NCL reverted to interim status and the operating phase of the permit was never approved. In compliance with the permit, the Post-Closure Plan and the requirements of §§ 264.98-.99, Navajo implemented quarterly groundwater compliance monitoring which continues as of the date of this application. Under a schedule negotiated and approved by NMEID, Navajo also implemented a Corrective Action Program (CAP) to comply with §264.100. The RFI Phase II Report required by the CAP was submitted to NMED in November 1997. Additional discussion of the CAP can be found in Tab C, Section 1.8.

Although not specifically directed to begin post-closure care activities, implementation of the approved Post-Closure Plan effectively began the year after the last application of waste to the landfarm, following completion of essentially all closure activities except placing the final cover. Most elements of the Post-Closure Plan are being implemented or have been effectively completed, including:

- submittal, to the Eddy County Clerk, of the certified survey plat required by §264.119 (a copy of the Notice is provided in Attachment B-5);
- inspection and maintenance of access restrictions (fence, gate, warning signs);
- inspection and maintenance of run-on and run-off control systems (dikes);
- control of wind dispersion of hazardous wastes;
- unsaturated zone monitoring (except soil-pore liquid monitoring) as part of RFI activities; and,
- quarterly groundwater compliance monitoring and reporting.

Given the delay in placing a final cover which is the only task necessary to complete closure, and that post-closure activities effectively began following the last application of waste, Navajo requests that NMED stipulate that the post-closure care period for NCL began in September 1991, one year following the last application of waste. Post-Closure activities will continue for 30 years from that date..

Navajo also requests that the soil core monitoring schedule and groundwater monitoring schedule reflect the activities that have occurred over the past 10 years and be in congruence with NMOCD requirements

Updates to estimated post-closure care costs and financial assurance are addressed in Section 16.2 of this application and are based on a 20-year post-closure period reflecting the previous ten years of activities.

13.2 TEL Site

13.2.1 Closure Plan

Closure of the TEL Site, in accordance with a closure plan approved by NMEID (see next subsection), was completed in 1989 and approved by NMEID in a letter from Richard Mitzelfelt, Director - New Mexico Health and Environment Department, on June 20, 1989. Copies of the closure certification, NMEID approval letter and the notice-in-deed are provided in Attachment B-5. The cap used for TEL closure was designed and constructed according to EPA guidance for cap and cover systems. The cap effectiveness was modeled as part of the closure plan and can be found in Attachment B-6 of this application (Appendix D of original closure plan - June 17, 1988).

13.2.2 Post-Closure Plan

Navajo submitted a TEL Closure / Post-Closure Plan to NMEID in April 1988. The TEL Closure Plan was approved by NMEID in a letter from Jack Ellvinger, Chief - NMEID Hazardous Waste Bureau, on June 17, 1988. The original TEL Post-Closure Plan and the NMEID approval letter is included with this application as Attachment B-6. The June 20, 1989, letter from NMED which approved the TEL closure (Attachment B-5) instructed Navajo to "implement your post-closure care plan until the EID issues a post-closure permit".

Navajo has been implementing provisions of the April 1988 TEL Post-Closure Plan since June 1989. The unit is fenced, has it's own irrigation system, is covered with grass and is mowed as necessary. At the time of closure, compliance monitoring had been ordered for the TEL Site and continues quarterly at the time of this application as a condition of Post-Closure care. Groundwater monitoring requirements are presented in Tab C, Section 2.0. Monitoring results are provided in Appendix 5.

In the last 8 years, the product level in the monitor wells around this unit has dropped from 2 feet to a sheen. This is attributed to an aggressive product recovery system in place throughout the refinery, but most specifically to a recovery trench just east of the TEL. The source of the free product is believed to be two diesel storage tanks that were at one time located just west of the TEL and that had been identified as leaking when they were removed. Laboratory analysis has shown the recovered product to be diesel. Given the characteristics of wastes placed on the TEL, it is most likely the source of the free product was the diesel tanks, not the TEL.

Updates to estimated post-closure care costs and financial assurance are addressed in Section 16.3 of this application. Post-Closure care has been implemented for 12 years, since closure in June 1989, so financial assurance is calculated based on 18 years of remaining post-closure care.

13.3 Evaporation Ponds

13.3.1 Closure Plan

As regulated units defined in 40 CFR 264.90 (a)(2), Evaporation Ponds 2-6 are subject to the corrective action requirements of § 264. 100 as presented in Tab C, Section 3.0 (page C-13). Accordingly, a closure plan (corrective measure plan) addressing surface soils for Ponds 2-6 was developed and submitted to EPA and NMED in 1996 and is discussed in Tab C, Section 3.8 (page C-16) of this application. Information can also be located in Appendix 1 of this application (*Executive Summary*, Section V, page 68). EPA approved this closure plan and in April, 1997, EPA Region VI (Samuel Coleman, Director – Compliance Assurance and Enforcement Division) wrote a letter to NMED recommending acceptance of the plan. A copy of the letter is included in Attachment B-7.

Navajo will submit a workplan for additional investigation of Evaporation Ponds 2-6 and a revised closure/post-closure plan on a schedule to be identified in the post-closure permit. The revised closure plan may contain a provision for incorporating a Corrective Action Management Unit with the Evaporation Ponds 2-6 unit.

Requirements for Post-Closure Care (Part 264, Subpart G), and Releases From Solid Waste Management Units (Part 264, Subpart F), are addressed in the following Section 13.3.2 and Tab-C, Section 3.0 respectively.

13.3.2 Post-Closure Plan

The permitting requirements of 40 CFR 270.1(c) require that owners or operators of closed surface impoundments that received hazardous waste after July 26, 1982, must have a post -closure permit that addresses applicable Part 264 Groundwater Monitoring (264.91-99), Corrective Action (264.100) and Post-Closure Care (264.117-120) requirements. 40 CFR 264.90, Subpart F - Releases from Solid Waste Management Units, identifies surface impoundments that received hazardous waste after July 26, 1982, as a special type of solid waste management unit, referred to as a "regulated unit", subject to the groundwater monitoring and corrective action program provisions of §264.91 through 264.100, in lieu of Corrective Action for Solid Waste Management Units in §264.101. The post-closure requirements of 264.117 also encompass the provisions of 264.91-.100 for groundwater monitoring and corrective action.

Evaporation Ponds 2-6 received hazardous waste after July 26, 1982, and are therefore "regulated units" subject to post-closure requirements including a post closure plan. As part of corrective action and other enforcement activities, Navajo has prepared a Post-Closure Plan included as Attachment B-7 to this application. This Post-Closure Plan will be updated on a schedule to be identified by NMED in the post-closure permit.

**15.0 COST ESTIMATE AND FINANCIAL ASSURANCE
FOR CLOSURE
[40 CFR 270.14 (b)(15)]**

15.1 General

The North Colony Landfarm is the only hazardous waste management unit remaining to be closed subject to the permitting requirement of 40 CFR 270.14(b)(15), which requires a cost estimate for closing the facility in accordance with the requirements of §§264.111 through 264.115 and a demonstration of financial assurance in accordance with §264.142-.143. The cost estimate and financial assurance for closure of the North Colony Landfarm is discussed in Sections 15.2 and 15.3 below.

As regulated units defined in §264.90, Evaporation Ponds 2-6 are being addressed under a §264.100 Corrective Action Program (corrective action for regulated units). That section has no specific financial responsibility requirements, however, according to §264.90(a)(2), the financial responsibility requirements of §264.101 apply to regulated units. Cost estimates and financial assurance for potential corrective measures for Ponds 2-6 were prepared as part of the 1996 Closure Plan for Ponds 2-6 discussed in Tab C, Section 3.8 (also Appendix 1, page 69). These estimates have been updated and are included in Table B-8-6 of Attachment B-8, Financial Assurance for Closure, Post-Closure and Corrective Action.

Three Mile Ditch and Evaporation Pond 1 are considered to be a solid waste management unit (SWMU). This unit is being addressed under a §264.101 Corrective Action Plan (corrective action for solid waste management units) and the applicable financial requirements of §264.101(b) and (c). Potential corrective measures for Three Mile Ditch and Evaporation Pond 1 are therefore presented in Tab-D, Information Requirements for Solid Waste Management Units, Section 3.0 and 4.0. Corrective measure costs for Three Mile Ditch have been updated and are included in Table B-8-5 of Attachment B-8, Financial Assurance for Closure, Post-Closure and Corrective Action. Because Evaporation Pond 1 is co-located with Evaporation Ponds 2-6 and will undergo similar corrective actions, corrective measure costs for these units have been combined and are presented in Table B-8-6 of Attachment B-8.

15.2 Cost Estimate for Closure of North Colony Landfarm

The cost estimate for closure of the North Colony Landfarm is provided in Table B-1 on page B-47. The cost can also be found in Section 2.4 of the Closure and Post-Closure Plan for North Colony Landfarm (Attachment B-4, Table 1).

The remaining closure costs for the NCL are estimated at \$22,256 based on hiring a third party to close the facility. This estimate will be updated annually for inflation, within 30 days after the close of Navajo's fiscal year, by either recalculating the cost estimate in current dollars or using an inflation factor as specified in §264.142(b). Navajo's fiscal year currently ends July 31. Closure costs will be updated in August of each year unless the fiscal year ending date changes in which case the update will be made within 30 days of the next fiscal year end close.

15.3 Financial Assurance for Closure of North Colony Landfarm

Financial assurance for closure requirements is provided through a corporate guarantee in accordance with 40 CFR Part 264 Subpart H by Holly Corporation on behalf of its subsidiary, Navajo Refining Company. The most recent Financial Assurance certification for the Navajo facility is provided in Attachment B-8. The corporate guarantee will be updated annually and submitted to NMED within 90 days after the close of the fiscal year. Navajo's fiscal year currently ends July 31. Updated financial assurance certification will be submitted by the end of October of each year unless the fiscal year ending date changes in which case the update will be made within 90 days of the next fiscal year end close.

TABLE B-1

ESTIMATED CLOSURE COSTS FOR NORTH COLONY LANDFARM				
Activity	Unit	Quantity	Cost/Unit	Total Cost

Establish Vegetative Cover				
Obtain Soil Samples (technician, includes travel time)	Hrs	12	\$50/hr	\$600
Test Soil (pH, nutrients, organic matter)	Samples	8	\$150/sample	\$1,200
Establish grade	SY	17818	\$0.19/SY	\$3,385
Fertilize (3 times, 800 lbs/acre)	Acres	3.68	\$78.45/acre	\$870
Apply lime (3 times, 800 lbs/acre)	Acres	3.68	\$95.14/acre	\$1,050
Initial seeding (mechanical seeding, seed, mulch and water)	Acres	3.68	\$2,033/acre	\$7,481
Water (5 times, by truck)	Acres	3.68	\$54.19/acre	\$997
Survey (2-person crew)	Day	1	\$650	\$650
Subtotal Task				\$16,233

Project Management and Reporting				
Certify closure	hrs	8	\$125/hr	\$1,000
Notice in deed	hrs	8	\$125/hr	\$1,000
Travel Time (2 trips)	hrs	8	\$125/hr	\$1,000
Travel cost	Trip	2	\$500	\$1,000
Project management and subcontractor markup	10% of total cost			\$2,023
Subtotal Task				\$6,023

PROJECT TOTAL COST	\$22,256
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NOTES:

Costs last updated: May, 2001

Costs based on hiring third party for all activities.

Cost estimates based on data from R.S. Means Environmental Unit Cost Data (2000)

**16.0 COST ESTIMATE AND FINANCIAL ASSURANCE
FOR POST-CLOSURE
[40 CFR 270.14 (b)(16)]**

16.1 General

Three units (North Colony Landfarm, TEL Site and Evaporation Ponds 2-6) are subject to the permitting requirement of 40 CFR 270.14(b)(16), which requires a cost estimate for facilities subject to the post-closure requirements of §§264.117 through 264.120, and a demonstration of financial assurance in accordance with §264.144 -.145.

Post-Closure requirements for the North Colony Landfarm (NCL), TEL Site (TEL) and Evaporation Ponds 2-6 are found in Tab-B, Section 13.0. Post-closure cost estimates for these units are provided in Sections 16.2 – 16.5 below.

Three Mile Ditch and Evaporation Pond 1 are considered to be a single solid waste management unit (SWMU). This unit is being addressed under a §264.101 Corrective Action Plan (corrective action for solid waste management units) and the applicable financial requirements of §264.101(b) and (c). Potential corrective measures for Three Mile Ditch and Evaporation Pond 1 are presented in Tab-D, Information Requirements for Solid Waste Management Units, Section 3.0 and 4.0. Corrective measure costs for Three Mile Ditch include five years of groundwater monitoring as presented in Table B-8-5 of Attachment B-8, Financial Assurance for Closure, Post-Closure and Corrective Action. Because Evaporation Pond 1 is co-located with Evaporation Ponds 2-6 and will undergo similar corrective actions, on-going groundwater monitoring requirements for these units have been combined.

Cost estimates for post-closure will be updated annually for inflation, within 30 days after the close of Navajo's fiscal year, by either recalculating the cost estimate in current dollars or using an inflation factor as specified in §264.144(b). Navajo's fiscal year currently ends July 31. Post -closure costs will be updated in August of each year unless the fiscal year ending date changes in which case the update will be made within 30 days of the next fiscal year end close.

16.2 Cost Estimates for Post-Closure Care of North Colony Landfarm

Anticipated post-closure activities for the NCL are presented in Tab B, Section 13.1.2 of this application. The post-closure cost estimate for the North Colony Landfarm, is based on activities in the Post-Closure Plan provided in Attachment B-4 and is presented in Table B-2 on page B-50.

At the time this estimate was prepared in 2001, post-closure care had been implemented for ten years, beginning one year after final application of waste in September 1990 (since September 1991). At that time, compliance monitoring had been ordered for the NCL area and continues at the time of this application as a condition of post-closure care.

Navajo requests that the initial post-closure care period be set at 20 years to reflect the last ten years of post-closure activities. Post-closure cost and financial assurance is calculated based on 20 years of remaining post-closure care, including semi-annual groundwater monitoring. The post-closure costs for the NCL are estimated at \$673,560 for a 20 year post-closure period, based on hiring a third party to execute the tasks.

16.3 Cost Estimates for Post-Closure Care of TEL Site

Post-Closure activities for the TEL are presented in Tab B, Section 13.2.2 and Attachment B-6 of this application. The post-closure cost estimate for the TEL Surface Impoundment has been updated in May 2001 and is presented in Table B-3 on page B-51.

Post-Closure care has been implemented for twelve (12) years, since closure in June 1989, so financial assurance is calculated based on 18 years of remaining post-closure care. At the time of closure, compliance monitoring had been ordered for the TEL Site and continues at the time of this application as a condition of post-closure care.

Total post-closure costs, including semiannual sampling for the remaining 18 years, are estimated at \$295,956 based on hiring a third party to execute the tasks.

16.4 Cost Estimates for Post-Closure Care of Evaporation Ponds 2-6

Proposed post-closure activities for Evaporation Ponds 2-6 are presented in Tab B, Section 13.3.2 of this application. Because Evaporation Pond 1 is co-located with Evaporation Ponds 2-6, post closure activities for Evaporation Ponds 2-6 will encompass Evaporation Pond 1. The post-closure cost estimate for Evaporation Ponds 2-6 is provided in the Evaporation Ponds 2-6 Post-Closure Plan (Attachment B-7, Section 8.0) and in Table B-4 on page B-52.

Post-closure costs for the Evaporation Ponds are estimated at \$1,003,076 for the entire 30 year post-closure period based on hiring a third party to execute the tasks.

16.5 Financial Assurance

Financial assurance for post-closure is provided through a corporate guarantee in accordance with 40 CFR Part 264 Subpart H by Holly Corporation on behalf of its subsidiary, Navajo Refining Company. The most recent Financial Assurance certification for the Navajo facility is provided in Attachment B-8. The corporate guarantee will be updated annually and submitted to NMED within 90 days after the close of the fiscal year. Navajo's fiscal year currently ends July 31. Updated financial assurance certification will be submitted by the end of October of each year unless the fiscal year ending date changes in which case the update will be made within 90 days of the next fiscal year end close.

TABLE B-2

ESTIMATED RECURRING ANNUAL POST-CLOSURE COSTS FOR NORTH COLONY LANDFARM				
Activity	Unit	Quantity	Cost/Unit	Total Cost
Semiannual inspection (2/yr)	hours	4 hrs/insp	\$50/hr	\$400/yea
Security maintenance	annual	1	\$250/yr	\$250/year
Dike maintenance	annual	1	\$250/yr	\$250/year
Monitoring well mtce	wells	8 wells/yr	\$150/well	\$1,200/year
Mowing (2/yr)	Acre	3.68 acre	\$27.04/acre	\$200/year
Fertilize (annually)	Acre	3.68 acre	\$78.44/acre	\$288/year
Semiannual groundwater Sampling; (8 wells)	hours	1 tech+1geologist 16 hours/event 2 events/yr	\$45/hr-tech \$85/hr-geologist	\$4,160/year
Analysis; ground water (VOC, SVOC, DRO, RCRA VIII metals)	samples	9 samples/event (includes QA)	VOC-\$205 SVOC-\$380 DRO-\$85 Metals-\$155 Total-\$825	\$14,850/ year
Travel time (2/yr)	Hours	2 people 8 hrs/event	\$65/hr avg	\$2,080/year
Travel costs	Trip	2/yr	\$500/trip	\$1,000/year
Reporting(2/yr)	hours	16 hrs/report	\$85/hr	\$2,720/year
Project management and subcontractor markup		10% of total cost		\$2,740/year
TOTAL ANNUAL COST				\$30,138
20 YEARS ANNUAL COST				\$602,760

ESTIMATED ONE-TIME POST-CLOSURE COSTS FOR NORTH COLONY LANDFARM				
Activity	Unit	Quantity	Cost/Unit	Total Cost
Replace monitoring wells once during 30 years	Well installation	8 wells	\$3,500	\$28,000
Replace fence once during 30 years	Linear foot (LF)	1600 LF 7' chain link	\$26.80/LF	\$42,880
TOTAL ONE TIME COSTS				\$70,880

TOTAL 20 YEAR COST:	\$673,560
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NOTE:

Costs last updated: May, 2001

Costs based on hiring third party for all activities.

Cost estimates based on data from R.S. Means Environmental Unit Cost Data (2000)

TABLE B-3

ESTIMATED RECURRING ANNUAL POST-CLOSURE COSTS FOR TEL SITE				
Activity	Unit	Quantity	Cost/Unit	Total Cost
Semiannual inspection (2/yr)	hours	2 hrs/insp	\$50/hr	\$200/year
Security maintenance	annual	1	\$250/yr	\$250/year
Dike/Cap maintenance	annual	1	\$250/yr	\$250/year
Monitoring well mtce	wells	4 wells/yr	\$150/well	\$600/year
Mowing (2/yr)	Acre	0.9 acre	\$27.04/acre	\$50/year
Fertilize (annually)	Acre	0.9 acre	\$78.44/acre	\$70/year
Semiannual groundwater Sampling; (4wells)	hours	1 tech+1geologist 8 hours/event 2 events/yr	\$45/hr-tech \$85/hr-geologist	\$2,080/year\$
Analysis; ground water (VOC, SVOC, DRO, RCRA VIII metals)	samples	5 samples/event (includes QA)	VOC-\$205 SVOC-\$380 DRO-\$85 Metals-\$155 Total-\$825	\$8,250/ year
Travel time (2/yr)	Hours	Included with NCL	\$65/hr avg	
Travel costs	Trip	Included with NCL	\$360/trip	
Reporting(2/yr)	hours	8 hrs/report	\$85/hr	\$1,360/year
Project management and subcontractor markup		10% of total cost		\$1,311/year
TOTAL ANNUAL COST				\$14,421
18 YEARS ANNUAL COST				\$259,578

ESTIMATED ONE-TIME POST-CLOSURE COSTS FOR TEL SITE				
Activity	Unit	Quantity	Cost/Unit	Total Cost
Replace monitoring wells once during 30 years	Well installation	4 wells	\$3,500	\$14,000
Replace fence once during 30 years	Linear foot (LF)	835 LF 7' chain link	\$26.80/LF	\$22,378
TOTAL ONE TIME COSTS				\$36,378

TOTAL 18 YEAR COST:**\$295,956****NOTE:**

Costs last updated: May, 2001

Costs based on hiring third party for all activities.

Cost estimates based on data from R.S. Means Environmental Unit Cost Data (2000)

TABLE B-4

ESTIMATED RECURRING ANNUAL POST-CLOSURE COSTS FOR EVAPORATION PONDS				
Activity	Unit	Quantity	Cost/Unit	Total Cost
Monthly inspection (12/yr)	hours	4 hrs/insp	\$50/hr	\$2,400/year
Security maintenance	annual	1	\$500/yr	\$500/year
Dike maintenance	annual	1	\$1000/yr	\$1000/year
Monitoring well mtce	wells	15 wells/yr	\$150/well	\$2,250/year
Semiannual groundwater Sampling; (15 wells yr 1-3, then 7-8 wells)	hours	1 tech+1 geologist 24 hours/event(1-3) 12 hrs/event (4-30) 2 events/yr	\$45/hr-tech \$85/hr-geologist	\$6,240/year (1-3) \$3,120/year(4-30)
Analysis; ground water (VOC, SVOC, DRO, RCRA VIII metals)	samples	17 samples/event (includes QA) yr 1-3 9 samples/event (includes QA) yr 4-30	VOC-\$205 SVOC-\$380 DRO-\$85 Metals-\$155 Total-\$825	\$28,050/year(1-3) \$14,850/year (4-30)
Travel time (2/yr)	Hours	Included with NCL	\$65/hr avg	
Travel costs	Trip	Included with NCL	\$360/trip	
Reporting(2/yr)	hours	16 hrs/report	\$85/hr	\$2,720
Project management and subcontractor markup		10% of total cost		\$4,316/year(1-3) \$2,684/yr(4-30)
TOTAL ANNUAL COST				\$47,476(1-3) \$9,524(4-30)
30 YEARS ANNUAL COST				\$939,576

ESTIMATED ONE-TIME POST-CLOSURE COSTS FOR NORTH COLONY LANDFARM				
Activity	Unit	Quantity	Cost/Unit	Total Cost
Replace monitoring wells once during 30 years	Well installation	15 wells	\$3,500	\$52,500
Replace fence once during 30 years	Linear foot (LF)	8,800 LF 4-strand barbed wire	\$1.25/LF	\$11,000
TOTAL ONE TIME COSTS				\$63,500

TOTAL 30 YEAR COST:**\$1,003,076****NOTE:**

Costs last updated: May, 2001

Costs based on hiring third party for all activities.

Cost estimates based on data from R.S. Means Environmental Unit Cost Data (2000)

**NAVAJO REFINING COMPANY
ARTESIA, NEW MEXICO REFINERY**

PART B APPLICATION

ATTACHMENT B-4

**NORTH COLONY LANDFARM
CLOSURE / POST-CLOSURE PLAN**

- >> Revised NCL Closure and Post-Closure Plan (March 2001)**
- >> Original NCL Closure & Post-Closure Plan**
- >> Authorization for 1989 Hazardous Waste Facility Permit with pages documenting that Navajo was to implement closure/post-closure according to the plan submitted with the application and included in the permit**

June 2001

NAVAJO REFINING COMPANY
NORTH COLONY LANDFARM
CLOSURE & POST CLOSURE PLAN

March 2001

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**NAVAJO REFINING COMPANY
NORTH COLONY LANDFARM
CLOSURE & POST CLOSURE PLAN**

(cont.)

March 2001

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NORTH COLONY LANDFARM CLOSURE & POST-CLOSURE PLAN

1.0 INTRODUCTION

This Closure Plan for the North Colony Landfarm, hereafter known as NCL, satisfies the requirements of New Mexico's Hazardous Waste Regulations. A Closure/Post-Closure Plan for the NCL was originally prepared and incorporated into Navajo's 1989 RCRA Landfarm Treatment Demonstration permit. That original closure/post-closure plan is attached at the end of this revised plan.

Portions of this closure plan have been completed as described. Uncompleted portions of this closure plan have been delayed due to an order to cease landfarm operations issued by the NMED (then NMEID) in 1990 as a result of groundwater contamination discovered during routine detection monitoring. This closure plan incorporates applicable portions of the original closure plan and details modifications necessary due to the manner in which the facility ceased operations that caused certain procedures of the original closure plan to be irrelevant.

2.0 CLOSURE PLAN

The closure plan consists of three phases:

- Decontamination of the general facility and drum storage area
- In-place treatment of final waste application
- Establishment of a vegetative cover

To date, all phases but establishment of the vegetative cover have been completed.

2.1 Completed Phases of the Closure Plan

2.1.1 Decontamination and Removal of the Drum Storage Pad

All equipment used in conjunction with operation of the landfarm was drained, washed with a suitable detergent, and triple rinsed. The rinsate volume was contained and transported to the NCL for application. Once all loads of the hazardous wastes had been applied to the landfarm, the application equipment and any other equipment used on the NCL was steam cleaned over the surface of the NCL and allowed to drain over the surface of the NCL.

The drum storage area was located within the fenced boundaries of the North Colony Landfarm. It consisted of approximately 11,300 square feet of concrete pad and was constructed in 1980. The drum storage area was used for the accumulation of empty drums generated at the refinery prior to being shipped off-site within 90 days for cleaning and reclamation.

Although not a hazardous waste management unit, the disposition of the storage area was included in the original closure plan for North Colony Landfarm and has been implemented. When landfarm operations were discontinued in September 1990, use of the Drum Storage Area was discontinued shortly thereafter. All drums were removed, the concrete pad steam cleaned and the concrete removed. There are no remaining actions to be taken regarding the Drum Storage Area.

2.1.2 In-Place Treatment of Wastes

Final waste volume was applied in September 1990. In-place treatment of the wastes was conducted by tilling and application of any required soil amendments for a period of 90 to 150 days. However, installation of the final cover was delayed indefinitely as a result of the multiple phase RCRA Facility Investigation conducted at the facility.

Procedures were employed to prevent and/or monitor the migration of hazardous constituents from the NCL to adjacent soils and groundwater. As during the operating life of the facility, groundwater monitoring has continually been conducted throughout the closure implementation. During the closure process, the groundwater has been monitored on a quarterly basis and at the request of the NMED, the results of groundwater monitoring have been reported at least annually.

2.1.3 Control of Release of Contaminated Run-Off

A dike constructed surrounding the NCL was installed to control the release of contaminated runoff from the NCL. The dike was designed to contain potentially contaminated water that periodically accumulated at the surface of the NCL from flowing into contiguous areas, preventing the potential eventual migration to groundwater. Topographic maps showing surface contour elevations and dike cross sections can be found in Figures B-9 and B-10 of the Navajo Post-Closure Permit Application.

During the course of the closure since 1990, potentially contaminated surface run-off has continued to be controlled by the existing dike around the perimeter of the NCL. The dike was constructed to a minimum height of 3.5 feet above the surface of the NCL and is capable of containing approximately 3.5 times the annual rainfall for the area (13 inches) in volume assuming an average dike height of 3.5 feet and approximately 4 acres of surface area based on an estimated 13-inch rainfall accumulation total over the facility produced by a 24-hour, 25-year storm event. The integrity of the dike is routinely inspected by the closure coordinator and any eroded areas are promptly repaired in order to maintain the capacity of the impounded area.

2.1.4 Control of Airborne Particulates

To minimize soil desiccation and consequently suppress dust production during the closure period, soil moisture is maintained by irrigation. The closure coordinator inspects the NCL on a weekly basis to detect any soil desiccation. Whenever the soil appears overly dry, such that dusting could be a problem, the soil is irrigated.

2.1.5 Compliance With Food-Chain Crop Restrictions

Navajo has not allowed the cultivation of food chain crops on the during the closure period. A notice of such restriction of use of the property will be filed with the Title Deed maintained in the official land owner records of the county when final closure is certified.

2.1.6 Soil Core Monitoring

Soil core monitoring was part of the original closure plan; however, due to termination of the landfarm treatment demonstration, soil core monitoring was conducted as a part of the RFI at the facility and was eliminated from this closure plan revision. Results of soil core monitoring conducted in 1990-1994 can be found in Appendix 4 of the Navajo Post-Closure Permit Application.

2.2 Closure Actions To Be Completed

2.2.1 Placement of Final Cover

The final phase of the closure plan is the establishment of a vegetative cover. Soil samples will be submitted to an agriculture lab for analysis of nutrients and soil pH. A specialist in the field of agriculture (county agent or professional agronomist or soil scientist) should be consulted to determine what, if any, soil amendments are necessary to promote the establishment of vegetation over the surface of the NCL and appropriate grasses to be used for the cover.

When it is determined that no further in-place treatment will occur in the zone of incorporation, the surface of the NCL should be prepared for a vegetative cover. The surface of the NCL should be graded to a final slope of between 1% and 1.5% in an eastern direction. The final grade should be a smooth, planar expanse having no more than a 0.5 feet variance in the surface level at any point on its final slope, minimizing the potential for localized depressions and elevation variations caused by the effects of erosion. Once a uniformly graded surface is constructed, an evaluation of soil suitability should be performed. Soil characterizations were performed for the NCL as part of the original Part B Permit Application (Appendix II-1-3 of Part B Permit Application, Volume II; Land Treatment Facilities, March 1986.) A general evaluation made in consultation with an agricultural specialist should consider the following points:

pH Level: The pH buffering capacity (tons/acre of lime) should be determined to adjust the pH to around 6.5, \pm 0.5.

Nitrogen and Organic Matter: Since the nitrogen fertilizer requirements are directly proportional to the amount of organic matter present and dependent upon the sandiness of the soil, these two factors need to be evaluated in the soil characterization at the time of closure.

Phosphorus and Potassium Levels: Phosphorus levels are pH-dependent. At optimum pH (values of 2.6 to 6.8), amounts of 50 lbs/acre are needed, more if pH is closer to 7.5. Adequate potassium levels can be established for several growing seasons with the initial application of 26 lbs/acre.

Species Selection: A mixture of perennial grasses as suggested by documents in the original permit application and closure plan should be considered (These included alkali sacaton, side oats grama, buffalograss, bermudagrass, crested wheatgrass and salt grass, or a mixture thereof). These grasses are known to thrive locally. Characteristics of any grass species that should be considered include, rapid germination, depth of root system to prevent erosion, vegetative thickness to minimize percolation and low maintenance. Navajo can draw from experience with the vegetative cover maintained on the closed TEL unit as well.

After first considering the appropriate seeding time, and once the evaluations are made, seed bed preparations should commence. The appropriate pH and nutrient levels should be established. The NCL surface should be plowed to destroy any existing vegetation that might detrimentally compete with the grasses and to create a favorable soil density. If seeding can not proceed shortly after preparation, straw mulch (approximately 1.5 tons/acre) should be used to protect the surface against wind or rain erosion and preserve moisture. The appropriate time for seeding plays a key role in the development of a healthy, thick vegetative cover. Ideally, seeding will be conducted in the fall or spring.

Seeding will be accomplished using one of three methods – conventional planter, broadcasting, or hydroseeding. Selection of the method should consider not only the cost effectiveness of the method but also the application rate and optimum depth of seed placement.

Conventional Planter – Seeds are planted using a agricultural implement pulled by a farm tractor. The seeds are dropped from a hopper mounted over a dispensing mechanism that individually dispenses a calibrated volume of seed into a narrow, shallow trench (seed bed) cut into the soil by a narrow v-shaped, vertically-mounted blade that gouges a trench into the soil and is covered by trailing rolling wheel that pushes the disturbed soil into the trench.

Broadcast Planting – Seeds are placed in a broadcast spreader pulled by a tractor or bull dozer and distributed at a calibrated rate over the area to be seeded. This action is followed by pulling an implement over the soil using a disc or harrow pulled by a tractor or bulldozer to disturb the soil and incorporate the seed. However, the potential for dust production may limit the utility of this method.

Hydroseeding – Hydroseeding or hydromulching utilizes a truck-mounted pressure sprayer to apply a slurry of seed, fertilizer, mulch, lime, and water to area to be seeded.

Conventional planting or broadcasting followed by incorporation of the seeds into the soil would provide the best soil-seed contact for establishing the seeds.

A bench-scale test of the selected method is recommended to evaluate the effectiveness of the selected method prior to seeding the entire surface of the NCL.

The best method for establishing soil-seed contact is preferable and will likely be one of the methods that employs an agricultural implement to plant the seed. The suggested seeding rate is approximately 12 pounds per acre planted at a depth of 0.25 or 0.50 inches, but seeding rates and depths may vary depending on the seed variety, soil conditions, and season at the time of seeding.

2.2.2 Certification of Closure

Navajo will submit certification of closure to the NMED within 60 days of completion of all activities necessary to close the North Colony Landfarm (i.e. – the vegetative cover has been planted). The certification will state that the NCL has been closed in accordance with the approved closure plan. The certification must be sent by registered mail and signed by an independent registered professional engineer or an independent qualified soil scientist.

2.2.3 Survey and Notice to Local Land Authority

A survey plat performed by a professional land surveyor will indicate the location and dimensions of the NCL with respect to permanently surveyed benchmarks. The survey plat will contain a note, prominently displayed, stating that disturbance of the closed hazardous waste facility is restricted.

Navajo will record a notation in the deed to the North Colony Landfarm property that:

- The land has been used to manage hazardous waste;
- Its use is restricted under 206.D.2.g.(3); and,
- The survey plat and record of waste disposal has been filed with the local land use authority and the NMED.

Navajo will submit to the NMED a signed certification specifying that the notation in the deed has been recorded, together with a copy of the document in which the notation has been placed.

2.3 Schedule

The NMED will identify a schedule for completion of the remaining closure actions in the Post-Closure Permit.

2.4 Closure Cost Estimate

An estimate of the costs to perform the remaining closure activities is provided in Table 1 at the end of the plan.

3.0 POST-CLOSURE PLAN

3.1 Requirements for Post Closure Activities

3.1.1 Groundwater Monitoring

A compliance monitoring program was initiated for NCL in 1989-1990 following detection of hazardous constituents in the groundwater. The Compliance Monitoring Program, which meets the requirements of 40 CFR 264.99, is a part of the Groundwater Monitoring Plan of the RCRA Permit issued in 1989 and can be found in the Post-Closure Permit Application (Section 3 of Attachment C-1). Quarterly compliance monitoring continues as of the date of this application as part of the Corrective Action Program implemented under 40 CFR 264.100(d). Results of the quarterly monitoring are reported annually to NMED and NMOCD. Reports for calendar years 1999 and 2000 are included in Appendix 5 of the Post-Closure Permit Application.

Based on discussions with NMED regarding future post-closure activities, Navajo will conduct semiannual monitoring on eight (8) wells around NCL (NCL-32, NCL-33, NCL-34, NCL-44, MW-53, MW-54A, MW-55 and MW-56). Samples from these wells will be tested for VOCs (Method 8260B), SVOCs (Method 8270C), diesel range organics (DRO - Method 8015B) and RCRA VIII metals. NMED will identify the schedule such sampling and reporting is to be done.

3.1.2 Maintenance of Access Restrictions

To ensure that the surface of the NCL remains undisturbed during post closure, a 7 foot chain link fence will be maintained along with the lockable metal swing gate to restrict access to the NCL. To minimize risk of exposure to humans or livestock, the perimeter fence and lockable gate will be maintained through the post closure care period.

3.1.3 Inspection and Maintenance Procedures

During post-closure care duration, the Closure Coordinator will supervise planned inspection and maintenance activities. The inspection frequencies and maintenance procedures for these activities are listed below:

Final cover integrity will be inspected on a semiannual basis during post-closure care. Once a vegetative cover is established it will require only twice-yearly mowing to keep down weed and brush species. Annual fertilizations or liming if necessary, will promote the desirable grasses over those that offer less resistance to surface erosion. Judicious use of herbicides and pesticides may be necessary to protect the vegetative cover from competing vegetation and insects. Bi-monthly irrigation may be necessary to bring soil moisture content up to a minimum of 50% of the available soil water.

An inspection list shall include the following:

- Surface erosion
- Need for fertilization, mowing, or irrigation
- Need for herbicides and pesticides
- Burrowing animals destroying large surface areas of vegetation

Although severe surface erosion is not expected, any surface erosion should immediately be repaired and restored to pre-damaged conditions. If erosional effects are persistent, re-sculpting of the land surface should be conducted to eliminate these effects, including terracing of the area.

The run-on/run-off control system consisting of the NCL perimeter dike shall be inspected semiannually. The frequency of storm events severe enough to cause erosion damage to the dike is less than the bi-annual inspection frequency.

The following items should be inspected:

- Width of the dike base and crown
- Height of dike above exterior ground level
- Back of vegetative growth to secure dike from erosion
- Presence of burrowing animals

Specifically look for indications of severe erosion that would reduce the dike's capacity to control run-on/run-off. If erosion occurs, dirt from the refinery property may be used to restore the dike to specification.

Access control features consisting of a 7 foot chain link fence around the NCL perimeter, lockable 4 foot steel gate and warning signs in English and Spanish will be inspected semiannually.

The following items shall be inspected:

- Integrity of chain link fence and gate
- Integrity of lock on the gate
- Warning signs

Specifically look for indications of storm damage, vandalism, or mechanical failure. Additionally, check that signs are legible and securely fastened.

The NCL groundwater monitoring wells (NCL-32, NCL-33, NCL-34, NCL-44, MW-53, MW-54A, MW-55 and MW-56) will be inspected at scheduled sampling events as outlined in the groundwater monitoring program. This will be frequent enough to affect any maintenance necessary to allow the groundwater monitoring program to fulfill its schedule.

The following items shall be inspected:

- Surface casing and lockable lid
- Concrete pad around surface casing
- Indications of mechanical integrity of tubing
- Indications of standing water on vegetative growth

Specifically look for; severe damage to surface casing that would prevent sampling or compromise security, mechanical function of lock and indications of vandalism, weathering of concrete pad into fragments or subsidence of well structure, subsidence of tubing or indications of physical mechanical failure or elevated levels of PVC constituents in groundwater samples, standing water that can migrate into groundwater by seeping down the outside of the casing or vegetative growth, such as bushes or small trees whose root systems could penetrate the seal around casing in the well bore.

If replacement of a well becomes necessary, applicable regulatory guidelines on RCRA-approved well installation will be consulted. It may also be necessary to apply for a Class I Permit Modification.

An example inspection checklist is provided in Figure 1 at the end of this plan.

3.2 Post-Closure Property Use

Navajo will not allow post-closure use of the NCL that will disturb the integrity of the final cover, run-on/run-off containment system, security system, or the function of the sites monitoring systems unless the Director of the NMED approves of the use.

If such post-closure use becomes necessary, Navajo may request modification of its post-closure plan in accordance with the provisions of 40 CFR 270.42 and 40 CFR 264.117(c) as appropriate, provided that the modification or use meets either of the following conditions:

- It is necessary to the proposed use of the property and will not increase the potential hazard to human health or the environment; or
- It is necessary to reduce a threat to human health or the environment.

3.3 Length of Post-Closure Period

The post-closure period identified in the original RCRA Permit for NCL was 30 years from the date of closure. Navajo essentially commenced post-closure care in 1991 when most closure activities, except placement of the vegetative cover, were completed and the RFI was initiated. Post-closure activities have been underway for 10 years. Navajo requests that the remaining post-closure period be initially set at 20 years. The NMED will identify the remaining post-closure period and schedule in the post-closure permit.

3.4 Post Closure Contact

The individual holding the position of Environmental Coordinator, or its successor title will be the point of contact:

Environmental Coordinator
Navajo Refining
P.O. Drawer 159
501 East Main Street
Artesia, NM 88210
(505) 748-3311

3.5 Amendment of Post-Closure Plan

Navajo will amend the post-closure plan whenever changes in facility design or operating plans effect post-closure plans. This includes events that occur during partial or final closure.

Navajo will amend the post-closure plan at least 60 days prior to the proposed change or no later than 60 days after the unexpected event that affects the post-closure plan.

This includes any changes caused by amendments to the closure plan.

3.6 Certification of Post-Closure

Within 60 days after completion of post-closure care, Navajo will submit a letter of certification by registered mail to the Director.

The letter of certification will state that the post-closure care was performed in accordance with the approved post-closure plan. The signatures of a duly authorized representative of Navajo and an independent certified registered professional engineer will appear on the letter of certification.

3.7 Post-Closure Cost Estimate

The Post-Closure Plan Cost Estimate is presented in Table 2 at the end of this plan. Since post-closure activities have been underway for 10 years, Navajo is providing a cost estimate for 20 years of post-closure care and requests that that the remaining post-closure care period be initially set at 20 years.

3.8 Revision of Post-Closure Cost Estimate

Navajo will revise the post-closure cost estimates within 30 days after the Director has approved the request to modify the post-closure plan, if the change in the post-closure plan results in an increase to the cost of the post-closure care.

TABLE 1

ESTIMATED CLOSURE COSTS FOR NORTH COLONY LANDFARM				
Activity	Unit	Quantity	Cost/Unit	Total Cost

Establish Vegetative Cover				
Obtain Soil Samples (technician, includes travel time)	Hrs	12	\$50/hr	\$600
Test Soil (pH, nutrients, organic matter)	Samples	8	\$150/sample	\$1,200
Establish grade	SY	17818	\$0.19/SY	\$3,385
Fertilize (3 times, 800 lbs/acre)	Acres	3.68	\$78.45/acre	\$870
Apply lime (3 times, 800 lbs/acre)	Acres	3.68	\$95.14/acre	\$1,050
Initial seeding (mechanical seeding, seed, mulch and water)	Acres	3.68	\$2,033/acre	\$7,481
Water (5 times, by truck)	Acres	3.68	\$54.19/acre	\$997
Survey (2-person crew)	Day	1	\$650	\$650
Subtotal Task				\$16,233

Project Management and Reporting				
Certify closure	hrs	8	\$125/hr	\$1,000
Notice in deed	hrs	8	\$125/hr	\$1,000
Travel Time (2 trips)	hrs	8	\$125/hr	\$1,000
Travel cost	Trip	2	\$500	\$1,000
Project management and subcontractor markup	10% of total cost			\$2,023
Subtotal Task				\$6,023

PROJECT TOTAL COST	\$22,256
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NOTES:

Costs last updated: May, 2001

Costs based on hiring third party for all activities.

Cost estimates based on data from R.S. Means Environmental Unit Cost Data (2000)

TABLE 2

ESTIMATED RECURRING ANNUAL POST-CLOSURE COSTS FOR NORTH COLONY LANDFARM				
Activity	Unit	Quantity	Cost/Unit	Total Cost
Semiannual inspection (2/yr)	hours	4 hrs/insp	\$50/hr	\$400/yea
Security maintenance	annual	1	\$250/yr	\$250/year
Dike maintenance	annual	1	\$250/yr	\$250/year
Monitoring well mtce	wells	8 wells/yr	\$150/well	\$1,200/year
Mowing (2/yr)	Acre	3.68 acre	\$27.04/acre	\$200/year
Fertilize (annually)	Acre	3.68 acre	\$78.44/acre	\$288/year
Semiannual groundwater Sampling; (8 wells)	hours	1 tech+1geologist 16 hours/event 2 events/yr	\$45/hr-tech \$85/hr- geologist	\$4,160/year
Analysis; ground water (VOC, SVOC, DRO, RCRA VIII metals)	samples	9 samples/event (includes QA)	VOC-\$205 SVOC-\$380 DRO-\$85 Metals-\$155 Total-\$825	\$14,850/ year
Travel time (2/yr)	Hours	1 tech+1geologist 8 hrs/event	\$65/hr avg	\$2,080/year
Travel costs	Trip	2/yr	\$500/trip	\$1,000/year
Reporting(2/yr)	hours	16 hrs/report	\$85/hr	\$2,720/year
Project management and subcontractor markup			10% of total cost	\$2,740/year
TOTAL ANNUAL COST				\$30,138
20 YEARS ANNUAL COST				\$602,760

ESTIMATED ONE-TIME POST-CLOSURE COSTS FOR NORTH COLONY LANDFARM				
Activity	Unit	Quantity	Cost/Unit	Total Cost
Replace monitoring wells once during 30 years	Well installation	8 wells	\$3,500	\$28,000
Replace fence once during 30 years	Linear foot (LF)	1600 LF 7' chain link	\$26.80/LF	\$42,880
TOTAL ONE TIME COSTS				\$70,880
TOTAL 20 YEAR POST-CLOSURE COST				\$673,560

NOTE:

Costs last updated: May, 2001

Costs based on hiring third party for all activities.

Cost estimates based on data from R.S. Means Environmental Unit Cost Data (2000)

Last waste placed on NCL in 1990. Under Post-Closure for 10 years, since 1991.

FIGURE 1
INSPECTION LOG: NORTH COLONY LANDFARM

At least semiannually and after major storm events the following should be inspected, observations recorded, and repairs made if necessary

Dikes:

1. Any surface erosion? _____
2. Is the dike height approximately 3 feet all around the exterior? _____
3. Any presence of burrowing animals? _____
4. Any deep rooted vegetation (trees, bushes) that need removed? _____

Security and Control:

1. Is the integrity of the fence and gate intact? _____
2. Is the gate locked and the lock in good condition? _____
3. Are the warning signs in place (any missing) and legible? _____
4. Any signs of vandalism or prohibited trespass _____

Monitor Wells: (also inspect at each monitoring event)

1. Any damage to surface casing that would prevent sampling? _____
2. Any indication of vandalism? _____
3. Any weathering of concrete pad? _____
4. Any evidence of standing water or subsidence of well structure? _____
5. Are wells locked and locks/caps in good condition? _____

Final Vegetative Cover (when placed)

1. Any evidence of standing water? _____
2. Any erosion or evidence of burrowing animals? _____
3. Is vegetation distressed? Any areas that require re-seeding? _____
4. Does grass need mowing, watering, fertilization? _____

General:

1. Any standing water on the landfarm? _____
2. Does the landfarm need to be tilled? _____
3. Does the landfarm need to be watered (evidence of wind erosion extreme dusting)? _____
4. Other observations: _____

Work Memo Number: _____

Date Issued: _____ Date Completed: _____

Inspection Date: _____ Inspection Signature: _____

NOTE: this inspection log and any related work orders to be retained for at least three years from inspection date.

**NAVAJO REFINING COMPANY
ARTESIA, NEW MEXICO REFINERY**

PART B APPLICATION

ATTACHMENT B-5

**TETRAETHYLLEAD (TEL) WEATHERING AREA
CLOSURE CERTIFICATION**

- » **TEL Closure Certification (Navajo, to Richard Mitzelfelt, Director, New Mexico Health and Environment, Feb.13, 1989)**
- » **Correspondence Regarding Closure Period Extension**
- » **Results of Permeability Testing on Cap (Navajo to NMEID, April 19, 1989)**
- » **NMEID Approval of the Tetraethyllead Impoundment Closure (Richard Mitzelfelt, Director, New Mexico Health and Environment, June 20, 1989)**
- » **Notice Submitted to Local Land Use Authority Identifying Hazardous Waste Operations at the North Colony Landfarm and the TEL Site**

June 2001

TELEPHONE
(505) 748-3311



REFINING COMPANY

501 EAST MAIN STREET • P. O. DRAWER 159

ARTESIA, NEW MEXICO 88210

EASYLINK
62905278

February 13, 1989

Mr. Richard Mitzelfelt, Director
Environmental Improvement Div.
1190 St. Francis Drive
Santa Fe, NM 87503

RE: TEL CLOSURE CERTIFICATION NMD048918817

Dear Mr. Mitzelfelt:

Enclosed you will find two (2) copies of our executed Closure Certification as required by HWMR-4 206.C.2.f. for the TEL site. Please return one (1) copy of the certification with your signature and keep one (1) for your file.

Also, other information required to be submitted with the Closure Certification is enclosed. If I can be of further assistance to you do not hesitate to call me.

Regards,

Zeke Sherman
Environmental Engineer

ZRS/pb

enclosures

copy to C. Kelly Crossman
Environmental Supv.
Hazardous Waste Management Sect.

Post-It® Fax Note	7671	Date	2-23-89	# of pages	13
To		From	Darrell Moore		
Co./Dept.		Co.	Navajo		
Phone #		Phone #	748-3311		
Fax #		Fax #	505-746-5421		

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TEL Closure Certification

As required by HWMR-4 206.C.2.f., Navajo Refining Company certifies that the TEL site has been closed in accordance with the specifications in the approved closure plan, dated June 17, 1988 except for the following field changes:

- 1) The thickness of the substratum shown on drawing #102-27-D-2 exceeds design specifications. Additional substratum was mixed with the surface of the waste mass so that the design compaction proctor percentages could be achieved. The required 3% grade was maintained and relative elevations were increased approximately 12 inches.

Additional substratum enhances overall structural integrity of the cap and increases it's ability to minimize movement of fluid through the cap.

- 2) Closure construction was not completed until November 11, 1988, due to weather delays.
- 3) Closure costs exceeded those shown in Section 2.11 of the Closure Plan, due to the reasons stated in item #1 above.
- 4) Soil cores for undisturbed soil and test cap permeabilities were obtained December 21, 1988. Samples are still under evaluation, so data will have to be forwarded to your office when testing is complete.


NEW MEXICO ENVIRONMENTAL IMPROVEMENT DIVISION

_____ Date _____

Richard Mitzelfelt, Director
New Mexico Environmental Improvement Division
1190 St. Francis Drive
Santa Fe, New Mexico 87504-0968

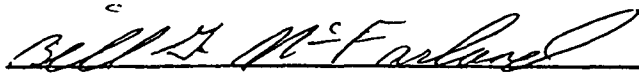
NAVAJO REFINING COMPANY

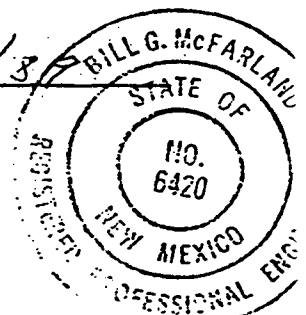
_____ Date 2/16/89


Matthew P. Clifton, Vice President
Navajo Refining Company
P.O. Drawer 159
Artesia, New Mexico 88210

INDEPENDENT REGISTERED ENGINEER

_____ Date 2/16/89


Bill G. McFarland
N.M. Registered Professional Engineer #6420
1609 Sears Avenue
Artesia, New Mexico 88210



TEL Closure Information

The following information is submitted as requested in the revisions to the TEL Closure Plan, Section 2.10.

<u>Well #</u>	<u>Screen Length</u>	<u>Amount of Bentonite</u>	<u>Amount of Fill</u>
21	5 feet	11.4 cu ft	3.15 cu ft
22	4 feet	6.6 cu ft	2.45 cu ft

Based on our experience obtained during the closure of the TEL site, we find no reason to revise the closure cost estimate for the North Colony Landfarm.



REFINING COMPANY

501 EAST MAIN STREET • P. O. DRAWER 159

ARTESIA, NEW MEXICO 88210

EASYLINK
62905278

R

March 9, 1989

Mr. Richard Mitzelfelt, Director
Environmental Improvement Division
1190 St. Francis Drive
Santa Fe, NM 87503

RE: TEL Closure Period Extension
NMD048918817

Dear Mr. Mitzelfelt:

As you know Navajo Refining Company completed closure construction at the TEL site on November 11, 1988 and submitted a closure certification to your office, on or about February 13, 1989.

In the closure certification were listed certain field changes to the approved closure plan. Item #4 on the list of changes concerns obtaining permeability data from soil and test cap cores and that the data would not be available until laboratory evaluations are complete.

Due to problems obtaining useable Shelby tube cores from the extremely hard test cap (the tubes buckled under load, creating micro fractures in the test cap material), Navajo must request an extension of the closure period as provided for in Section 2.6, TIME ALLOWED FOR CLOSURE, on the approved TEL closure plan and in HWMR-5 265.113(b)(1)(i).

Since the delay involves obtaining useable test cap cores for the permeability study, the closure activities will, of necessity, take longer than 180 days to complete. Navajo expects to have the permeability study completed no later than April 15, 1989.

Regards,

Zeke Sherman
Environmental Engineer

ZRS/pb



REFINING COMPANY

501 EAST MAIN STREET • P. O. DRAWER 159

ARTESIA, NEW MEXICO 88210

April 19, 1989

Mr. Kelly Crossman, Supervisor
Hazardous Waste Section
Environmental Improvement Division
1190 St. Francis Drive
Santa Fe, New Mexico 87503

RE: TEL CLOSURE NMD 048918817

Dear Kelly:

I am enclosing a report on the results of permeability testing performed on soil and test cap samples obtained during the TEL site closure. This submittal should satisfy the requirements of the TEL closure plan and should alleviate the concerns stated in EID's Notice of Violation letters of March 13 and March 22, 1989.

The following is a brief description of the soil core and test cap material sampling program.

On December 21, 1988, four (4) soil borings and two (2) test cap material borings were obtained from the TEL site at locations shown on the attached diagram.

The soil borings were obtained by augering an 8.0" diameter hole to a depth of approximately 10.0'. The borings were cleared of cuttings and a 3.0" O.D. by 30.0" length thin walled Shelby tube was hydraulically pressed into the soil stratum at the bottom of the bore.

The test cap material borings were obtained by pressing the Shelby tubes into the surface of the test cap. In pressing the tubes into the densely compacted material, some slight buckling of the thin walled samplers occurred. When this was observed, the tubes were withdrawn with the recovered samples.

The following table shows the recovery length and description of each Shelby tube sample:

Tube #	Sample Length	Description
1	14 3/4"	compacted tan caliche, vfn snd, clay, occ. 1" aggregate
2	14 3/4"	as above
3	22 1/4"	gy, tn, wt anhy soil, gyp. xtals
4	23 1/2"	as above, tr gravel
5	25"	gy anhy soil
6	11 1/2"	gy anhy soil, tr gravel

The tubes were capped with plastic ends and identified by core # and location. The tubes were then shipped to Geo-Test, Inc. of Santa Fe, New Mexico for permeability testing.

Sometime in early February, 1989, Navajo was informed by Geo-Test that representative permeability data could not be obtained from the test cap samples. Two attempts on each of the two test cap samples yielded results that indicated that the material had been disturbed and forced away from the Shelby tube walls during the sampling.

On February 17, 1989, a bulk sample of test cap material was obtained and shipped to Geo-Test for permeability analysis.

Using information from the attached Atterberg diagram, Geo-Test recompacted the test cap material and was able to obtain representative permeability data.

It can be seen from the bulk test cap material sample results that the test cap, hence the actual closure cap, can demonstrate a permeability of at least 10^{-7} centimeters/second as required by the TEL closure permit.

The arithmetic average permeability of the four (4) soil cores is 5.09×10^{-7} centimeters/second and the standard deviation of the data set is 9.9×10^{-13} centimeters/second.

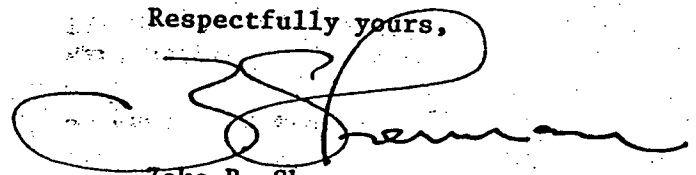
Mr. Kelly Crossman
4/19/89

Page 3

I am also enclosing a copy of the survey plat that is being submitted to the local zoning authority as required by 40 CFR, Part 265.116. It should satisfy the intent of the above mentioned HWMR-5 regulation concerning the closure of the TEL site.

Please review all the enclosed information and if you should have any questions or additional requirements, please contact me as soon as possible so that I may expeditiously address any of your concerns.

Respectfully yours,

A handwritten signature in black ink, appearing to read "Zeke R. Sherman". The signature is fluid and cursive, with a large loop at the end.

Zeke R. Sherman
Environmental Engineer

ZRS/sgp

Enclosures



New Mexico Health and Environment Department

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

JUN 26 1989

NAVAJO REFINING CO.

MARALYN BUOKE
Acting Secretary

CARLA L. MUTH
Deputy Secretary

MICHAEL J. BURKHAR
Deputy Secretary

RICHARD MITZELFELT
Director

June 20, 1989

Mr. Clovis Evans
Navajo Refining Company
P. O. Box 159
Artesia, NM 88210

RE: NMD048918817
Tetra Ethyl Lead Impoundment Closure

Dear Mr. Evans:

The Environmental Improvement Division has reviewed your correspondence of April 19, 1989, March 9, 1989, February 17, 1989 and February 13, 1989. These letters indicate that the Tetra Ethyl Lead (TEL) surface impoundment has been closed in accordance with the closure plan and the TEL surface impoundment is thereby closed. You should implement your post-closure care plan until the EID issues a post-closure care permit.

In accordance with HWMR-5, Part VI, 40CFR Section 265.143(h), Navajo Refining Company is hereby released from the closure surety requirements of the Hazardous Waste Management Regulations for this unit. Post-Closure surety must be maintained for the post-closure care period. In accordance with HWMR-5, Part VI, 40CFR Section 265.145(e), Navajo Refining Company is hereby released from the liability surety requirements for this unit.

If you have any questions, please call Mr. C. Kelley Crossman of my staff at (505) 827-2923.

Sincerely,

Richard Mitzelfelt
Director

RM:CKC:vga

cc: Lynn Prince, U.S. EPA Region VI (6H-HS)
David Griffin, Navajo Refining Co.
Jack Ellvinger, Chief, Hazardous Waste Bureau

NOTICE OF HAZARDOUS WASTE

Navajo Refining Company, a corporation, Artesia, New Mexico, gives notice that lands within the Navajo plant boundaries, which are more particularly described as being that part of the E/2 NE/4 of Section 8 and the N/2 SW/4 of Section 9, Township 17S Range 26E N.M.P.M. Eddy County, New Mexico, shown on Exhibit "A" attached hereto, has been used to manage hazardous waste and that its use is restricted by law.

WITNESS my hand and seal this 19 day of APRIL, 1989.

ATTEST:

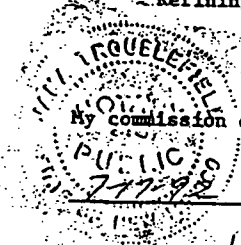
NAVAJO REFINING COMPANY



STATE OF NEW MEXICO)
: ss.
COUNTY OF EDDY)

By [Signature]
Vice President

The foregoing instrument was acknowledged before me this 19 day of April, 1989, by MATTHEW P. CLIFTON, Vice President of Navajo Refining Company.



My commission expires:

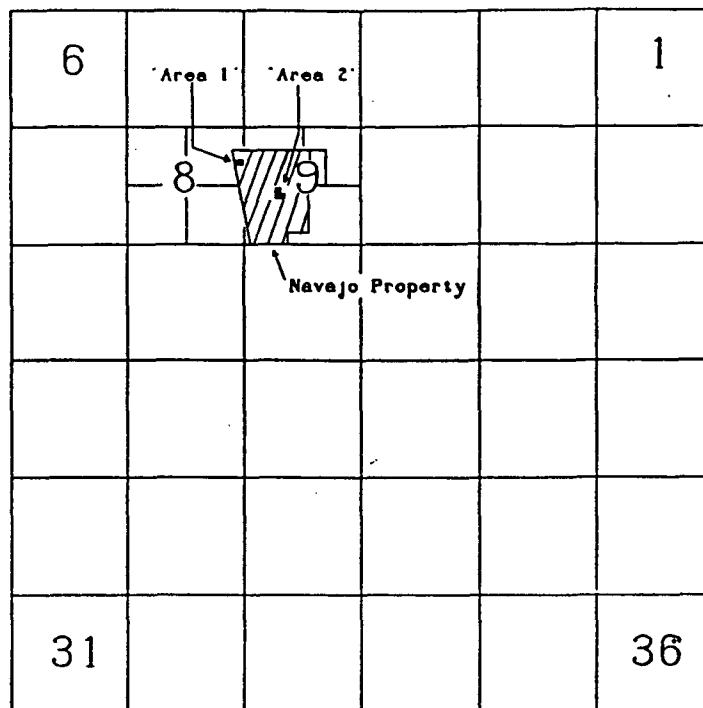
[Signature]
Notary Public

RECEPTION
893641

LOSEE LAW FIRM
P.O. DRAWER 239
ARTESIA, NM 88211-0239

Exhibit A

T 17 S



Approx Scale: 1" = 6125'

R 26 E

NAVAJO REFINING COMPANY HAZARDOUS WASTE DISPOSAL AREAS

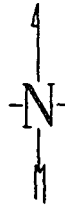
BY:

Date:

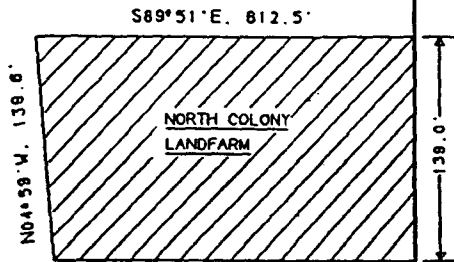


REFINING COMPANY

ENGINEERING DEPARTMENT
ARTESIA, NEW MEXICO



AREA 1



HAZARDOUS WASTE
MANAGEMENT FACILITY

This property has been used to manage
hazardous waste and its subsequent
use is restricted.

SECTION LINE

N00°08'E. 837.47'

SECTION 8

SECTION 9

N 26°40.0'

APPROX SCALE: 1" = 245'

NW CORNER of
SW 1/4 SECTION
T 17 S. R 26 E



CERTIFICATE OF SURVEY:

I, Bill Garry McFarland, duly licensed under the laws of the State of New Mexico,
do hereby certify that this plat was prepared under my supervision from field
notes of actual survey, and is true and correct to the best of my knowledge and
belief.

Bill Garry McFarland
BILL GARY MCFARLAND

R.L.S. NO. 8875

P.O. Box 1051
Artesia, N.M. 88210
P505-746-6474

McFARLAND ENGINEERING

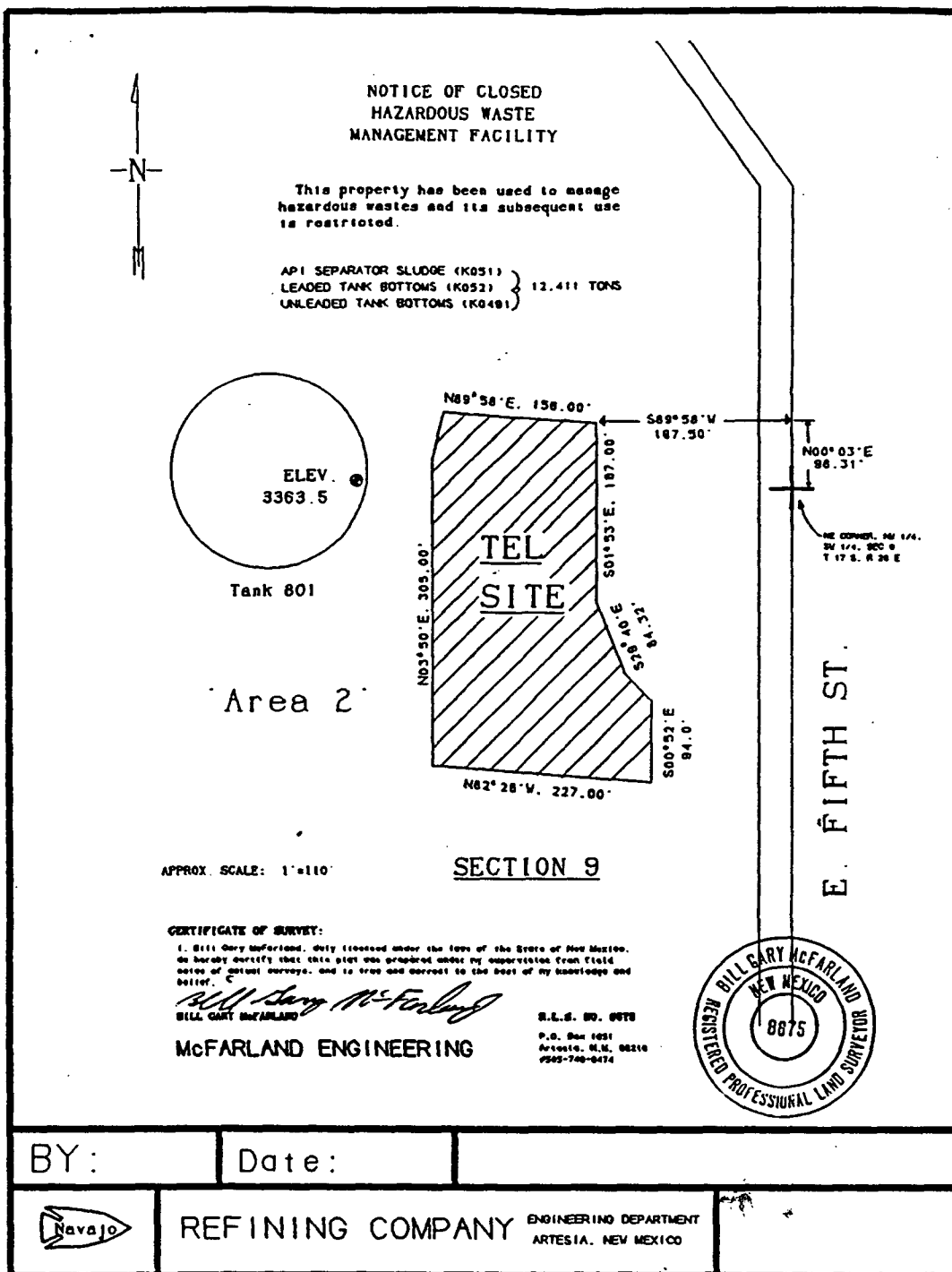
BY:

Date:



REFINING COMPANY

ENGINEERING DEPARTMENT
ARTESIA, NEW MEXICO



STATE OF NEW MEXICO, County of Eddy, ss. I hereby certify that this instrument was filed for record on the
21 day of April, A.D. 19 89 at 11:28 o'clock A. M., and duly recorded
in BOOK 43 PAGE 413 of the Eddy County Records.

KAREN DAVIS, County Clerk

By

Deputy

CLERK'S CERTIFICATE

Certified this 1st day of May

19 98, as a true and correct copy of the

original recorded in this office

KAREN DAVIS
Clerk of Eddy County, N. Mex.

Freida Unguider Deputy

**NAVAJO REFINING COMPANY
ARTESIA, NEW MEXICO REFINERY**

PART B APPLICATION

ATTACHMENT B-6

**TETRAETHYLLEAD (TEL) WEATHERING AREA
POST-CLOSURE PLAN**

June 2001

NAVAJO REFINING COMPANY
TETRAETHYLLEAD WEATHERING AREA (TEL)
CLOSURE & POST CLOSURE PLAN

June 2001

<u>Table of Contents</u>		<u>Page</u>
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2.1.3	Inspection and Maintenance.....	2
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TETRAETHYLLEAD WEATHERING AREA (TEL) POST-CLOSURE PLAN

1.0 INTRODUCTION

This Post-Closure Plan for the Tetraethyllead Weathering Area (TEL) satisfies the requirements of New Mexico's Hazardous Waste Regulations. A Closure/Post-Closure Plan for the NCL was originally prepared and incorporated into Navajo's 1989 RCRA Landfarm Treatment Demonstration permit. That original closure/post-closure plan is attached at the end of this revised plan (Attachment A).

Closure of the TEL Site, in accordance with a closure plan approved by NMEID, was completed in 1989 and approved by NMEID in a letter from Richard Mitzelfelt, Director - New Mexico Health and Environment Department, on June 20, 1989. The cap used for TEL closure was designed and constructed according to EPA guidance for cap and cover systems. The cap effectiveness was modeled as part of the original closure plan (Appendix D of the original plan - April, 1988). A hazardous waste disposal notice was placed in the property deed and filed with the local land use authority (Eddy County Clerk) at the time of closure. This notice provided a certified survey of the TEL Site including the type, location, and quantity of hazardous waste disposed of within the TEL Site, identified that the area was used to manage hazardous wastes and that its use is restricted.

Navajo has been implementing provisions of the April 1988 TEL Post-Closure Plan since June 1989. The unit is fenced, has its own irrigation system, is covered with grass and is mowed as necessary. At the time of closure, compliance monitoring had been ordered for the TEL Site and continues quarterly. Monitoring results are provided in Appendix 5 of the Post-Closure Permit Application.

In the last 8 years, the product level in the monitor wells around this unit has dropped from 2 feet to a sheen. This is attributed to an aggressive product recovery system in place throughout the refinery, but most specifically to a recovery trench just east of the TEL. The source of the free product is believed to be two diesel storage tanks that were at one time located just west of the TEL and that had been identified as leaking when they were removed. Laboratory analysis has shown the recovered product to be diesel. Given the characteristics of wastes placed on the TEL, it is most likely the source of the free product was the diesel tanks, not the TEL.

This revised post-closure plan incorporates applicable portions of the original post-closure plan

2.0 POST-CLOSURE PLAN

2.1 Requirements for Post Closure Activities

2.1.1 Groundwater Monitoring

A compliance monitoring program was initiated for the TEL in 1989-1990 following detection of hazardous constituents in the groundwater. The Compliance Monitoring Program, which meets the requirements of 40 CFR 264.99, is also part of the groundwater monitoring plan for the North Colony Landfarm and is integrated with monitoring requirements for NMOCD. The groundwater monitoring wells for the TEL consist of RCRA well numbers 35, 36, 37 and 38 and can be located in Figure C-1 of the Post-Closure Permit Application.

Results of quarterly monitoring are reported annually to NMED and NMOCD. Reports for calendar years 1999 and 2000 are included in Appendix 5 of the Post-Closure Permit Application.

Based on discussions with NMED regarding future post-closure activities, Navajo will conduct semiannual monitoring on four (4) wells around the TEL (TEL-1, TEL-2, TEL-3 and TEL-4). Samples from these wells will be tested for VOCs (Method 8260B), SVOCs (Method 8270C), diesel range organics (DRO - Method 8015B) and RCRA VIII metals. NMED will identify the schedule such sampling and reporting is to be done.

2.1.2 Maintenance of Access Restrictions

Access control features consisting of a 7 foot chain link fence around the TEL perimeter, lockable steel gate and warning signs in English and Spanish will be inspected semiannually.

The following items shall be inspected:

- Integrity of chain link fence and gate
- Integrity of lock on the gate
- Warning signs

Specifically look for indications of storm damage, vandalism, or mechanical failure. Additionally, check that signs are legible and securely fastened.

2.1.3 Inspection and Maintenance Procedures

During post-closure care duration, the Closure Coordinator will supervise planned inspection and maintenance activities. The inspection frequencies and maintenance procedures for these activities are listed below.

Final cover integrity will be inspected on a semiannual basis during post-closure care. It shall be inspected once during the summer months and once again during the winter months. This frequency will provide observations of the final cover under varying seasonal conditions. It will also allow major problems to be detected and corrected in a relatively short period of time. An inspection list for the cover shall include the following:

- Need for fertilization, mowing, or irrigation
- Need for herbicides and pesticides
- Surface erosion and settling of the cap
- Burrowing animals destroying large surface areas of vegetation

The vegetative cover is expected to require only twice-yearly mowing to keep down weed and brush species. Annual fertilizations or liming if necessary, will promote the desirable grasses over those that offer less resistance to surface erosion. Judicious use of herbicides and pesticides may be necessary to protect the vegetative cover from competing vegetation and insects. Bi-monthly irrigation may be required to bring soil moisture content up to a minimum of 50% of the available soil water. The vegetative cover will be re-established as soon as possible if partly or completely destroyed.

Although severe surface erosion is not expected, any surface erosion should immediately be repaired and restored to pre-damaged conditions. Look for signs such as small rills or gullies. A thick, healthy vegetative cover should be maintained to minimize erosion. If erosional effects are persistent, re-sculpting of the land surface should be conducted to eliminate these effects, including terracing of the area.

The final cover and specifically, the impermeable soil layer are designed to resist cracking due to shrinkage or cold weather. Look for cracks along the upper elevations of the cover surface. If any cracks are observed, the cause of the problem will be determined before repairs are made. Repairs will be made in such a manner to minimize long term maintenance and retain cap structural integrity.

The entire surface of the final cover will be inspected for animal burrows or holes. If located, such features will be backfilled with soil or clay and compacted such that the cap maintains structural integrity. Appropriate eradication procedures will be taken if the burrows or holes persist.

The cap will be inspected for any signs of differential settling such as slumping surfaces or radiating cracks on any part of the final cover. If differential settling is observed, the cause will be determined before repairs are attempted so that long term maintenance requirements are minimized and so that the waste will not be exposed. The cap can be repaired by backfilling and compacting with a spoil of similar or better characteristics than the original material used to construct the cap. The repair must have at least the same or lower permeability than the rest of the cap and be re-vegetated as quickly as possible. Repair and testing records will be maintained.

The TEL groundwater monitoring wells, TEL-1, TEL-2, TEL-3 and TEL-4, will be inspected at scheduled sampling events as outlined in the groundwater monitoring program. This will be frequent enough to affect any maintenance necessary to allow the groundwater monitoring program to fulfill its schedule. The following items shall be inspected:

- Surface casing and lockable lid
- Concrete pad around surface casing
- Indications of mechanical integrity of tubing
- Indications of standing water

Specifically look for; severe damage to surface casing that would prevent sampling or compromise security, mechanical function of lock and indications of vandalism, weathering of concrete pad into fragments or subsidence of well structure, subsidence of tubing or indications of physical mechanical failure or elevated levels of PVC constituents in groundwater samples, standing water that can migrate into groundwater by seeping down the outside of the casing or vegetative growth, such as bushes or small trees whose root systems could penetrate the seal around casing in the well bore.

If replacement of a well becomes necessary, applicable regulatory guidelines on RCRA-approved well installation will be consulted. It may also be necessary to apply for a Class I Permit Modification.

There is a brass cap survey marker set in a concrete pylon near the TEL site and shown on the survey plot. This marker will be inspected at least annually to determine that it is still present, and that it has not been disturbed or its position disturbed. If necessary, the marker will be replaced. If necessary to move the marker, a new marker will be reestablished and surveyed in relation to another permanent geodetic marker. The new marker location will be documented and the survey plat revised.

An example inspection checklist is provided in Figure 1 at the end of this plan.

2.2 Post-Closure Property Use

Navajo will not allow post-closure use of the TEL that will disturb the integrity of the final cover, security system, or the function of the sites monitoring systems unless the Director of the NMED approves of the use.

If such post-closure use becomes necessary, Navajo may request modification of its post-closure plan in accordance with the provisions of 40 CFR 270.42 and 40 CFR 264.117(c) as appropriate, provided that the modification or use meets either of the following conditions:

- It is necessary to the proposed use of the property and will not increase the potential hazard to human health or the environment; or
- It is necessary to reduce a threat to human health or the environment.

2.3 Length of Post-Closure Period

The post-closure period identified in the original RCRA Permit for TEL was 30 years from the date of closure (1989), until June 2019. Twelve (12) years of the post-closure period have been completed with 18 years remaining, unless approval for an adjustment of the remaining time period is obtained from the NMED.

2.4 Post Closure Contact

The individual holding the position of Environmental Coordinator, or its successor title will be the point of contact:

Environmental Coordinator
Navajo Refining
P.O. Drawer 159
501 East Main Street
Artesia, NM 88210
(505) 748-3311

2.5 Amendment of Post-Closure Plan

Navajo will amend the post-closure plan whenever changes in facility design or operating plans effect post-closure plans. This includes events that occur during partial or final closure.

Navajo will amend the post-closure plan at least 60 days prior to the proposed change or no later than 60 days after the unexpected event that affects the post-closure plan.

2.6 Certification of Post-Closure

Within 60 days after completion of post-closure care, Navajo will submit a letter of certification by registered mail to the Director.

The letter of certification will state that the post-closure care was performed in accordance with the approved post-closure plan. The signatures of a duly authorized representative of Navajo and an independent certified registered professional engineer will appear on the letter of certification.

2.7 Post-Closure Cost Estimate

The Post-Closure Plan Cost Estimate is presented in Table 1 at the end of this plan

2.8 Revision of Post-Closure Cost Estimate

Navajo will revise the post-closure cost estimates within 30 days after the Director has approved the request to modify the post-closure plan, if the change in the post-closure plan results in an increase to the cost of the post-closure care.

TABLE 1

ESTIMATED RECURRING ANNUAL POST-CLOSURE COSTS FOR TEL SITE				
Activity	Unit	Quantity	Cost/Unit	Total Cost
Semiannual inspection (2/yr)	hours	2 hrs/insp	\$50/hr	\$200/yea
Security maintenance	annual	1	\$250/yr	\$250/year
Dike/Cap maintenance	annual	1	\$250/yr	\$250/year
Monitoring well mtce	wells	4 wells/yr	\$150/well	\$600/year
Mowing (2/yr)	Acre	0.9 acre	\$27.04/acre	\$50/year
Fertilize (annually)	Acre	0.9 acre	\$78.44/acre	\$70/year
Semiannual groundwater Sampling; (4wells)	hours	1 tech+1geologist 8 hours/event 2 events/yr	\$45/hr-tech \$85/hr- geologist	\$2,080/year\$
Analysis; ground water (VOC, SVOC, DRO, RCRA VIII metals)	samples	5 samples/event (includes QA)	VOC-\$205 SVOC-\$380 DRO-\$85 Metals-\$155 Total-\$825	\$8,250/ year
Travel time (2/yr)	Hours	Included with NCL	\$65/hr avg	
Travel costs	Trip	Included with NCL	\$360/trip	
Reporting(2/yr)	hours	8 hrs/report	\$85/hr	\$1,360/year
Project management and subcontractor markup	10% of total cost			\$1,311/year
TOTAL ANNUAL COST				\$14,421
18 YEARS ANNUAL COST				\$259,578

ESTIMATED ONE-TIME POST-CLOSURE COSTS FOR TEL SITE				
Activity	Unit	Quantity	Cost/Unit	Total Cost
Replace monitoring wells once during 30 years	Well installation	4 wells	\$3,500	\$14,000
Replace fence once during 30 years	Linear foot (LF)	835 LF 7' chain link	\$26.80/LF	\$22,378
TOTAL ONE TIME COSTS				\$36,378

TOTAL 18 YEAR POST-CLOSURE COST:	\$295,956
---	------------------

NOTE:

Costs last updated: May, 2001

Costs based on hiring third party for all activities.

Cost estimates based on data from R.S. Means Environmental Unit Cost Data (2000)

FIGURE 1
INSPECTION LOG: TEL SITE

At least semiannually and after major storm events the following should be inspected, observations recorded, and repairs made if necessary

Security and Control:

1. Is the integrity of the fence and gate intact? _____
2. Is the gate locked and the lock in good condition? _____
3. Are the warning signs in place (any missing) and legible? _____
4. Any signs of vandalism or prohibited trespass _____

Monitor Wells: (also inspect at each monitoring event)

1. Any damage to surface casing that would prevent sampling? _____
2. Any indication of vandalism? _____
3. Any weathering of concrete pad? _____
4. Any evidence of standing water or subsidence of well structure? _____
5. Are wells locked and locks/caps in good condition? _____

Cap/Cover

1. Any evidence of differential settling of cap (standing water, slumping surfaces, radiating cracks)? _____
2. Any cracks ,crevices? _____
3. Any erosion or evidence of burrowing animals? _____
4. Is vegetation distressed? Any areas that require re-seeding? _____
- 5 Does grass need mowing, watering, fertilization? _____

General:

1. Is drainage clear of debris, overgrowth or other obstructions? _____
2. Is the survey marker present and in good condition? _____
3. Other observations: _____

Work Memo Number: _____

Date Issued: _____ Date Completed: _____

Inspection Date: _____ Inspection Signature: _____

NOTE: this inspection log and any related work orders to be retained for at least three years from inspection date.

**NAVAJO REFINING COMPANY
ARTESIA, NEW MEXICO REFINERY**

PART B APPLICATION

ATTACHMENT B-8

**FINANCIAL ASSURANCE
for
CLOSURE, POST-CLOSURE AND CORRECTIVE ACTION**

June 2001

TABLE B-8-1

NAVAJO REFINING COMPANY
Artesia, New Mexico

**SUMMARY OF ESTIMATED CLOSURE, POST-CLOSURE
AND CORRECTIVE MEASURE COSTS**

UNIT	ESTIMATED COST			TOTAL UNIT COST
	CLOSURE	CORRECTIVE MEASURES	POST- CLOSURE	
North Colony Landfarm	\$22,256	NA	\$673,560 ¹	\$695,816
TEL Site	closed	NA	\$295,956 ²	\$295,956
Three-Mile Ditch	NA	\$78,134	NA	\$78,134
Evaporation Ponds	NA	\$687,740	\$1,003,076 ³	\$1,690,816
TOTAL FACILITY	\$22,256	\$765,874	\$1,972,592	\$2,760,722

NOTE:

¹Based on 20 years of Post-Closure. NCL received last waste in 1990; post-closure actions initiated in 1991.

²Based on 18 years of Post-Closure. TEL has been in post-closure since 1989.

³Based on 30 years of Post-Closure.

All costs updated May, 2001.

Costs based on hiring third party.

TABLE B-8-2

ESTIMATED CLOSURE COSTS FOR NORTH COLONY LANDFARM				
Activity	Unit	Quantity	Cost/Unit	Total Cost

Establish Vegetative Cover				
Obtain Soil Samples (technician, includes travel time)	Hrs	12	\$50/hr	\$600
Test Soil (pH, nutrients, organic matter)	Samples	8	\$150/sample	\$1,200
Establish grade	SY	17818	\$0.19/SY	\$3,385
Fertilize (3 times, 800 lbs/acre)	Acres	3.68	\$78.45/acre	\$870
Apply lime (3 times, 800 lbs/acre)	Acres	3.68	\$95.14/acre	\$1,050
Initial seeding (mechanical seeding, seed, mulch and water)	Acres	3.68	\$2,033/acre	\$7,481
Water (5 times, by truck)	Acres	3.68	\$54.19/acre	\$997
Survey (2-person crew)	Day	1	\$650	\$650
Subtotal Task				\$16,233

Project Management and Reporting				
Certify closure	hrs	8	\$125/hr	\$1,000
Notice in deed	hrs	8	\$125/hr	\$1,000
Travel Time (2 trips)	hrs	8	\$125/hr	\$1,000
Travel cost	Trip	2	\$500	\$1,000
Project management and subcontractor markup	10% of total cost			\$2,023
Subtotal Task				\$6,023

PROJECT TOTAL COST	\$22,256
---------------------------	-----------------

NOTES:

Costs last updated: May, 2001

Costs based on hiring third party for all activities.

Cost estimates based on data from R.S. Means Environmental Unit Cost Data (2000)

TABLE B-8-3

ESTIMATED RECURRING ANNUAL POST-CLOSURE COSTS FOR NORTH COLONY LANDFARM				
Activity	Unit	Quantity	Cost/Unit	Total Cost
Semiannual inspection (2/yr)	hours	4 hrs/insp	\$50/hr	\$400/yea
Security maintenance	annual	1	\$250/yr	\$250/year
Dike maintenance	annual	1	\$250/yr	\$250/year
Monitoring well mtce	wells	8 wells/yr	\$150/well	\$1,200/year
Mowing (2/yr)	Acre	3.68 acre	\$27.04/acre	\$200/year
Fertilize (annually)	Acre	3.68 acre	\$78.44/acre	\$288/year
Semiannual groundwater Sampling; (8 wells)	hours	1 tech+1 geologist 16 hours/event 2 events/yr	\$45/hr-tech \$85/hr-geologist	\$4,160/year
Analysis; ground water (VOC, SVOC, DRO, RCRA VIII metals)	samples	9 samples/event (includes QA)	VOC-\$205 SVOC-\$380 DRO-\$85 Metals-\$155 Total-\$825	\$14,850/ year
Travel time (2/yr)	Hours	1 tech+1 geologist 8 hrs/event	\$65/hr avg	\$2,080/year
Travel costs	Trip	2/yr	\$500/trip	\$1,000/year
Reporting(2/yr)	hours	16 hrs/report	\$85/hr	\$2,720/year
Project management and subcontractor markup		10% of total cost		\$2,740/year
TOTAL ANNUAL COST				\$30,138
20 YEARS ANNUAL COST				\$602,760

ESTIMATED ONE-TIME POST-CLOSURE COSTS FOR NORTH COLONY LANDFARM				
Activity	Unit	Quantity	Cost/Unit	Total Cost
Replace monitoring wells once during 30 years	Well installation	8 wells	\$3,500	\$28,000
Replace fence once during 30 years	Linear foot (LF)	1600 LF 7' chain link	\$26.80/LF	\$42,880
TOTAL ONE TIME COSTS				\$70,880
TOTAL 20 YEAR POST-CLOSURE COST				\$673,560

NOTE:

Costs last updated: May, 2001

Costs based on hiring third party for all activities.

Cost estimates based on data from R.S. Means Environmental Unit Cost Data (2000)

Last waste placed on NCL in 1990. Under Post-Closure for 10 years, since 1991.

TABLE B-8-4

ESTIMATED RECURRING ANNUAL POST-CLOSURE COSTS FOR TEL SITE				
Activity	Unit	Quantity	Cost/Unit	Total Cost
Semiannual inspection (2/yr)	hours	2 hrs/insp	\$50/hr	\$200/yea
Security maintenance	annual	1	\$250/yr	\$250/year
Dike/Cap maintenance	annual	1	\$250/yr	\$250/year
Monitoring well mtce	wells	4 wells/yr	\$150/well	\$600/year
Mowing (2/yr)	Acre	0.9 acre	\$27.04/acre	\$50/year
Fertilize (annually)	Acre	0.9 acre	\$78.44/acre	\$70/year
Semiannual groundwater Sampling; (4wells)	hours	1 tech+1geologist 8 hours/event 2 events/yr	\$45/hr-tech \$85/hr-geologist	\$2,080/year\$
Analysis; ground water (VOC, SVOC, DRO, RCRA VIII metals)	samples	5 samples/event (includes QA)	VOC-\$205 SVOC-\$380 DRO-\$85 Metals-\$155 Total-\$825	\$8,250/ year
Travel time (2/yr)	Hours	Included with NCL	\$65/hr avg	
Travel costs	Trip	Included with NCL	\$360/trip	
Reporting(2/yr)	hours	8 hrs/report	\$85/hr	\$1,360/year
Project management and subcontractor markup		10% of total cost		\$1,311/year
TOTAL ANNUAL COST				\$14,421
18 YEARS ANNUAL COST				\$269,578

ESTIMATED ONE-TIME POST-CLOSURE COSTS FOR TEL SITE				
Activity	Unit	Quantity	Cost/Unit	Total Cost
Replace monitoring wells once during 30 years	Well installation	4 wells	\$3,500	\$14,000
Replace fence once during 30 years	Linear foot (LF)	835 LF 7' chain link	\$26.80/LF	\$22,378
TOTAL ONE TIME COSTS				\$36,378

TOTAL 18 YEAR POST-CLOSURE COST:	\$295,956
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NOTE:

Costs last updated: May, 2001

Costs based on hiring third party for all activities.

Cost estimates based on data from R.S. Means Environmental Unit Cost Data (2000)

TEL has been in Post-Closure 12 years, since 1989.

TABLE B-8-5

ESTIMATED CORRECTIVE MEASURE COSTS FOR THREE-MILE DITCH				
Activity	Unit	Quantity	Cost/Unit	Total Cost
Soil Sampling and Removal				
Labor for sampling and oversight	hours	1 tech+1geologist 80 hrs ea	\$45/hr-tech \$85/hr-geologist	\$10,400
Instrument rental for lead/PID	days	8	\$250/day	\$2,000
Soil removal, transportation & grading	cubic yard hours	200 40	(costed at hrly rate) 78.34/hr-trackloader 63.07/hr-dumptruck	\$5,656
Other misc field exp	Days	8	100	\$800
Travel and living expenses	Days Hours Nights Days	8 8 ea x 2 = 16 8 ea x 2 = 16 8ea x 2 = 16	\$75/day truck rental \$65/hr avg \$75/night lodging \$35/day meals	\$3,400
Analysis - soil	analysis	115 20	Lead -\$25 DRO-\$85	\$4,575
Reporting	hours	40	\$85/hr	\$3,500
Senior Review – certification	Hours	8	\$125	\$1000
Project management & reporting	10% of total costs			\$3,133
Subtotal Soil Sampling and Removal				\$34,464
Groundwater Monitoring				
Monitoring well mtce	wells	5 wells/yr	\$150/well	\$750/year
Groundwater sampling; (5 wells)	hours	1 tech+1geologist 12 hours/event 1 events/yr	\$45/hr-tech \$85/hr-geologist	\$1,560/year\$
Analysis; ground water (VOC, SVOC, DRO, RCRA VIII metals)	samples	6 samples/event (includes QA)	VOC-\$205 SVOC-\$380 DRO-\$85 Metals-\$155 Total-\$825	\$4,950/ year
Travel time	Hours	Included with NCL	\$65/hr avg	
Travel costs	Trip	Included with NCL	\$500/trip	
Reporting(1/yr)	hours	8 hrs/report	\$85/hr	\$680/year
Project management and subcontractor markup	10% of total cost			\$794/year
Total Annual Cost				\$8,784
Subtotal Cost for 5-Years Groundwater Monitoring				\$43,670
PROJECT TOTAL COST				\$78,134

NOTES:

Costs originally estimated in June 1998 (RCRA Permit Application, Post-Closure Plan for Evaporation ponds; preliminary estimates in December 1997, Consolidated RFI/CMS Report).

Costs based on hiring third party for all activities.

Costs last updated: May, 2001

TABLE B-8-6

ESTIMATED CORRECTIVE MEASURE COSTS FOR EVAPORATION PONDS 1-6				
Activity	Unit	Quantity	Cost/Unit	Total Cost
Initial Sampling				
Write workplan/H&S Plan	Hrs	80	\$100/hr	\$8,000
Consultant sampling labor (45 locations – 15 each Pond 1, 2 & 3-6; 2 samples/location)	Hrs	1 tech+1 geologist 100 hrs ea including prep	\$45/hr-tech \$85/hr-geologist	\$13,000
Travel and living expenses	Days Hours Nights Days	8 8 ea x 2 = 16 8 ea x 2 = 16 8ea x 2 = 16	\$75/day truck rental \$65/hr avg \$75/night lodging \$35/day meals	\$3,400
Geoprobe and crew (includes living expenses)	Mobe Days	1 8	\$1,000 \$1,500	\$13,000
Miscellaneous sampling expenses (PPP, PID, shipping, water etc)	Days	8	\$250/day	\$2,000
Analysis; soil (VOC, SVOC, DRO, RCRA VIII metals)	samples	100 samples(inc QA) for modified Skinner List	VOC-\$205 SVOC-\$380 DRO-\$85 Metals-\$155 Total-\$825	\$82,500
Write Report (data management, risk assessment, draft/final report)	Hrs	180	\$100/hr avg	\$18,000
Project management and subcontractor markup		10% of total cost		\$13,990
Subtotal Initial Sampling Task Task				\$153,890
Establish Vegetative Cover as Final Closure (107 acres)				
Write workplan/H&S Plan	Hrs	120	\$100/hr	\$12,000
Obtain Soil Samples	Hrs	16	\$50/hr	\$800
Test Soil (pH, nutrients, etc)	Samples	20	\$150/sample	\$3,000
Earthwork, create CAMU	Cubic yds	28,291	\$4.34/cy	\$122,782
Establish grade/till	Acre	107	\$919/acre	\$98,333
Fertilize (3 times, 800 lbs/acre)	Acres	107	\$78.45/acre	\$8,394
Apply lime (3 times, 800 lbs/acre)	Acres	107	\$95.14/acre	\$10,179
Seeding (mechanical seeding, seed, mulch and water)	Acres	107	\$2,033/acre	\$217,531
Survey (2-person crew)	Day	2	\$650/day	\$1,300
Final Closure Certification Report	hrs	80	\$100/hr avg	\$8,000
Notice in deed	hrs	8	\$125/hr	\$1,000
Travel Time (2 trips)	hrs	8	\$125/hr	\$1,000
Travel cost	Trip	2	\$500	\$1,000
Project management and subcontractor markup		10% of total cost		\$48,532
Subtotal Vegetative Cover Task				\$533,850
PROJECT TOTAL COST				\$687,740

NOTES:

Cost for Pond 1 originally estimated at \$82,660 in December 1997 (*Consolidated RFI/CMS Report*)Cost for Pond 2 originally estimated at \$225,560 in August 1996 (*Evaporation Ponds 2-6 Closure Plan*)Cost for Ponds 3-6 originally estimated at \$380,165 in August 1996 (*Evaporation Ponds 2-6 Closure Plan*)

Costs last updated: May, 2001. Costs based on hiring third party for all activities. Cost estimates for dirt work, seeding etc. based on data from R.S. Means Environmental Unit Cost Data (2000)

TABLE B-8-7

ESTIMATED RECURRING ANNUAL POST-CLOSURE COSTS FOR EVAPORATION PONDS				
Activity	Unit	Quantity	Cost/Unit	Total Cost
Monthly inspection (12/yr)	hours	4 hrs/insp	\$50/hr	\$2,400/year
Security maintenance	annual	1	\$500/yr	\$500/year
Dike maintenance	annual	1	\$1000/yr	\$1000/year
Monitoring well mtce	wells	15 wells/yr	\$150/well	\$2,250/year
Semiannual groundwater Sampling; (15 wells yr 1-3, then 7-8 wells)	hours	1 tech+1 geologist 24 hours/event(1-3) 12 hrs/event (4-30) 2 events/yr	\$45/hr-tech \$85/hr-geologist	\$6,240/year (1-3) \$3,120/year(4-30)
Analysis; ground water (VOC, SVOC, DRO, RCRA VIII metals)	samples	17 samples/event (includes QA) yr 1-3 9 samples/event (includes QA) yr 4-30	VOC-\$205 SVOC-\$380 DRO-\$85 Metals-\$155 Total-\$825	\$28,050/year(1-3) \$14,850/year (4-30)
Travel time (2/yr)	Hours	Included with NCL	\$65/hr avg	
Travel costs	Trip	Included with NCL	\$360/trip	
Reporting(2/yr)	hours	16 hrs/report	\$85/hr	\$2,720
Project management and subcontractor markup		10% of total cost		\$4,316/year(1-3) \$2,684/yr(4-30)
TOTAL ANNUAL COST				\$47,476(1-3) \$29,524(4-30)
30 YEARS ANNUAL COST				\$939,576

ESTIMATED ONE-TIME POST-CLOSURE COSTS FOR EVAPORATION PONDS				
Activity	Unit	Quantity	Cost/Unit	Total Cost
Replace monitoring wells once during 30 years	Well installation	15 wells	\$3,500	\$52,500
Replace fence once during 30 years	Linear foot (LF)	8,800 LF 4-strand barbed wire	\$1.25/LF	\$11,000
TOTAL ONE TIME COSTS				\$63,500

TOTAL 30 YEAR POST-CLOSURE COST:	\$1,003,076
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NOTE:

Costs last updated: May, 2001

Costs based on hiring third party for all activities.

Cost estimates based on data from R.S. Means Environmental Unit Cost Data (2000)

NAVAJO REFINING COMPANY

ARTESIA REFINERY

POST-CLOSURE CARE PERMIT

SEPTEMBER 2003

NAVAJO REFINING COMPANY
ARTESIA REFINERY
POST-CLOSURE CARE PERMIT
SEPTEMBER 2003



BILL RICHARDSON
GOVERNOR

State of New Mexico
ENVIRONMENT DEPARTMENT



RON CURRY
SECRETARY

CHARLES LUNDSTROM
DIRECTOR

HAZARDOUS WASTE FACILITY PERMIT

Permittee: Navajo Refining Company

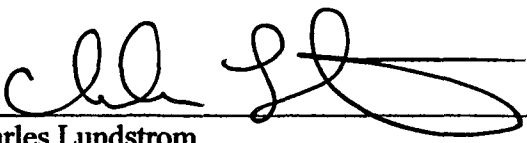
EPA Identification Number: NMD048918817
Permit Number: NMD048918817-1

The Permittee shall comply with all terms and conditions of this Permit. This Permit consists of the terms and conditions herein including those in the Attachments.

This Permit is based on the assumption that all information contained in the Permit Application and the administrative record is accurate and that post-closure care at the Facility will be conducted as specified in the Application. Any inaccuracies found in the submitted information may be grounds for the termination or modification of this Permit in accordance with 20.4.1.900 NMAC, incorporating 40 CFR '270.41, '270.42, and '270.43, and 20.4.1.901 NMAC and for potential enforcement action.

This Permit shall become effective 30 days after notice of the decision has been served on the Applicant, and shall remain in effect for ten years in accordance with the New Mexico Hazardous Waste Act, Section 74-4-4 unless modified, suspended or revoked under Section 74-4-4.2 or 20.4.1.900 NMAC, incorporating 40 CFR '270.41, '270.42, '270.43, and 20.4.1.901 NMAC, or continued in accordance with 20.4.1.900 NMAC incorporating 40 CFR '270.51, or issued for a duration that is less than the full allowable term in accordance with 20.4.1.900 NMAC incorporated at 40 CFR '270.50(c).

Signed this 2nd day of September 2003.

by 
Charles Lundstrom
Director
Water & Waste Management Division
New Mexico Environment Department

**RESOURCE CONSERVATION AND RECOVERY ACT
POST-CLOSURE CARE PERMIT
EPA ID No. NMD 048918817**

to

NAVAJO REFINING COMPANY

for the

ARTESIA REFINERY

Located in

ARTESIA, NEW MEXICO

September 2003

Prepared by the

**New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East Building 1
Santa Fe, New Mexico, 87505**

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- Appendix B Constituents of Concern for Wastes from Petroleum Processes
- Appendix C Sampling Methods and Procedures
- Appendix D Chemical Analytical Procedures
- Appendix E Reporting Requirements

ATTACHMENTS

- Attachment 1 Navajo Refining Company Artesia Refinery RCRA Part B Post-closure Permit
Application Sections 4.0 through 9.0, Appendix 2 and Appendix 3
- Attachment 2 Navajo Refining Company Artesia Refinery RCRA Part B Post-closure Permit
Application Sections 13.0, 15.0, 16.0, Attachments B-4 through B-6 and B-8

LIST OF ACRONYMS

AOC	Area of Concern
AST	Aboveground Storage Tank
ASTM	American Society for Testing and Materials
BGS	Below Ground Surface
BS/BSD	Blank Spike/Blank Spike Duplicate
CAMU	Corrective Action Management Unit
CEC	Cation Exchange Capacity
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CMS	Corrective Measure Study
COC	Chain of Custody
DOT	U.S. Department of Transportation
DQO	Data Quality Objectives
DRO	Diesel-range organics
EC	Emergency Coordinator
EPA	U.S. Environmental Protection Agency
GC/MS	Gas Chromatography/Mass Spectrometry
GRO	Gasoline-range organics
HWB	Hazardous Waste Bureau
HWA	New Mexico Hazardous Waste Act
LDR	Land Disposal Restrictions

LIST OF ACRONYMS (Continued)

MSDS	Material Safety Data Sheet
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NCL	North Colony Landfarm Regulated Unit
OCD	New Mexico Department of Energy, Minerals and Natural Resources Oil Conservation Division
ORO	Oil-range organics
PARCC	Precision, Accuracy, Representativeness, Completeness, and Comparability
PAHs	Polynuclear Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
PID	Photo-ionization Detector
PPE	Personal Protective Equipment
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plans
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SAR	SWMU Assessment Report
SSL	Soil Screening Levels
SOP	Standard Operating Procedures
SVOCs	Semivolatile Organic Compounds
SWMU	Solid Waste Management Unit
TEL	Tetra Ethyl Lead Impoundment (Regulated Unit)

LIST OF ACRONYMS (Continued)

TMD	Three-mile Ditch
TSCA	Toxic Substances Control Act
TSDF	Treatment, Storage and Disposal Facility
VOCs	Volatile Organic Compounds
WQCC	New Mexico Water Quality Control Commission

MODULE I - GENERAL PERMIT CONDITIONS

1.1 EFFECT OF PERMIT

The Secretary of the New Mexico Environment Department (Secretary) issues this Post-Closure Care Permit (the Permit) to the Navajo Refining Company (Navajo), the owner and operator of the Artesia Refinery Facility (EPA ID Number NMD 048918817). This Permit authorizes and requires Navajo (the Permittee) to conduct closure and post-closure care at a hazardous waste surface impoundment and post-closure care at a closed hazardous waste impoundment and a closed hazardous waste land treatment unit at the Artesia Refinery. This Permit establishes the general and specific standards for these activities, pursuant to the New Mexico Hazardous Waste Act (HWA), NMSA 1978, 74-4-1 *et seq.* (Repl. Pamp. 1993) and the New Mexico Hazardous Waste Management Regulations, 20.4.1.100 NMAC *et seq.*

Compliance with this Permit during its term shall constitute compliance, for purposes of enforcement, with Subtitle C of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. 6901 *et seq.* and the New Mexico Hazardous Waste Act and their implementing regulations. Compliance with this Permit shall not constitute a defense to any order issued or any action brought under Sections 74-4-10, 74-4-10.1 or 74-4-13 NMSA 1978; Section 3008 of RCRA, 42 U.S.C. 6928, Section 3013 of RCRA, 42 U.S.C. 6934, Section 7002(a)(1)(b) of RCRA, 42 U.S.C. 6972(a) or Section 7003 of RCRA; 42 U.S.C. 6973; or Sections 104, 106(a) or 107 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. 9604, 9606(a) or 9607; or any other law providing for protection of public health or the environment. This permit does not convey any property rights or exclusive privilege, nor authorize any injury to persons or property, any invasion of other private rights, or any infringement of State or local laws or regulations pursuant to 20.4.1.900 NMAC incorporating 40 CFR 270.4 and 270.30(g).

This Permit consists of Permit Modules I through IV, Permit Appendices A through E and Permit Attachments 1 and 2. The Permittee shall comply with the post-closure care, corrective action, and other activities and standards specified in this Permit and the Permit Application.

1.2 PERMIT ACTIONS

1.2.1 Permit Modification, Suspension, and Revocation

This Permit may be modified, suspended or revoked for cause, as specified in Section 74-4-4.2 NMSA 1978 and 20.4.1.901.B and .900 NMAC (incorporating 40 CFR 270.41, 270.42, and 270.43).

The filing of a request for a permit modification, suspension, or revocation, or the notification of planned changes or anticipated noncompliance on the part of the Permittee, does not stay the applicability or enforceability of any Permit condition. [20.4.1.900 NMAC incorporating 40 CFR 270.4(a) and 270.30(f)]

1.2.2 Permit Renewal

The Permittee may renew this Permit by submitting an application for a new permit at least 180 days before the expiration date of this Permit, in accordance with 20.4.1.900 NMAC (incorporating 40 CFR 270.10(h) and 270.30(b) and 40 CFR 124) and Permit Condition 1.5.3. In reviewing any

application for a Permit renewal, the Secretary shall consider improvements in the state of control and measurement technology and changes in applicable regulations. [20.4.1.900 NMAC incorporating 40 CFR 270.30(b)]

1.3 SEVERABILITY

The provisions of this Permit are severable, and if any provision of this Permit, or the application of any provision of this Permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this Permit shall not be affected thereby.

1.4 DEFINITIONS

Unless otherwise expressly provided herein, the terms used in this Permit shall have the meaning set forth in the HWA, RCRA, and/or their implementing regulations.

"AOC" means any area of concern that may have a release of hazardous waste or hazardous constituents, which is not from a solid waste management unit and is suspected or determined by the Secretary to pose a potential threat to human health or the environment.

"CAMU" means a corrective action management unit defined as an area within a facility that is used only for managing remediation wastes for implementing corrective action or cleanup at the Facility [20.4.1.100 NMAC and 20.4.1.500 NMAC (incorporating 40 CFR 260.10 and 264.552)].

"Evaporation Ponds" means Evaporation Ponds 2, 3, 5, and 6 encompassing approximately 91 acres and located approximately three miles east of the Artesia Refinery process areas adjacent to the Pecos River.

"Facility" means the Artesia Refinery owned by the Navajo Refining Company and located in Township 17 South, Range 26 East, Sections 1, 2, 9, 10, 11, 12 and the southern portion of Township 17 South, Range 27 East, Section 6, Eddy County, New Mexico, EPA ID No. NMD 048918817.

"Hazardous Constituent" means any constituent identified in 20.4.1.200 NMAC (incorporating Appendix VIII of 40 CFR Part 261), any constituent identified in 20.4.1.500 NMAC (incorporating Appendix IX of 40 CFR Part 264), any constituent identified in a hazardous waste listed in 20.4.1.200 NMAC (incorporating 40 CFR part 261 Subpart D), any constituent identified in a toxicity characteristic waste in 20.4.1.200 NMAC (incorporating 40 CFR 261.24, Table 1) or any other constituent determined to be hazardous by the Secretary.

"HWA" means the New Mexico Hazardous Waste Act, NMSA 1978, 74-4-1 *et seq.* (Repl. Pamph. 1993).

"MCLs" means Maximum Contaminant Levels under the Federal Safe Drinking Water Act, 42 U.S.C. 300f *et seq.*

"North Colony Landfarm" (NCL) means the approximately 4.25 acre land treatment unit located in the northwest corner of the Refinery North Division, adjacent to the north of above ground storage tanks 834 and 838.

"OCD" means the New Mexico Department of Energy, Minerals and Natural Resources Oil Conservation Division.

"OCD standards" means the maximum allowable soil and groundwater contaminant concentrations listed in the New Mexico OCD Guidelines for Remediation of Leaks, Spills and Releases. [19.15.A NMAC through 19.15.D NMAC]

"Permittee" means the Navajo Refining Company Artesia Refinery.

"RCRA" means the Resource Conservation and Recovery Act, 42 U.S.C. 6901 *et seq.*

"Regional Administrator" means the Regional Administrator of EPA Region VI, or his or her designee or authorized representative.

"Secretary" means the Secretary of the New Mexico Environment Department (NMED) or the Secretary's designee or authorized representative.

"Solid waste management unit" or "SWMU" means any discernible unit at which solid wastes have been placed at any time, and from which the Secretary determines there may be a risk of a release of hazardous constituents, irrespective of whether the unit was intended for the management of solid or hazardous waste. Placement of solid waste includes one time and accidental events that were not remediated, as well as any unit or area at which solid waste has been routinely and systematically placed.

"Tetra-Ethyl Lead Impoundment" (TEL) means the approximately 0.9-acre land treatment unit located in the Refinery North Division adjacent to the east side of the wastewater treatment system.

"WQCC standards" means the maximum allowable ground water contaminant concentrations as listed at 20.6.2.3103 NMAC.

1.5 DUTIES AND REQUIREMENTS

1.5.1 Duty to Comply

The Permittee shall comply with all conditions in this Permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit issued pursuant to 20.4.1.900 NMAC (incorporating 40 CFR 270.61). Any permit noncompliance, except under the terms of an emergency permit, constitutes a violation of the HWA and/or RCRA and may subject the Permittee, its successors and assigns, officers, directors, employees, parents or subsidiaries, to an administrative or civil enforcement action, including civil penalties and injunctive relief, under Sections 74-4-10 or 74-10.1 NMSA 1978, or Section 3008(a) and (g) of RCRA, 42 U.S.C. 6928(a) and (g), or Section 3013 of RCRA, 42 U.S.C. 6934; to permit modification, suspension, revocation or denial under Section 74-4-4.2 NMSA 1978; to citizen suit under Section 7002(a) of RCRA, 42 U.S.C. 6972(a); to

criminal penalties under Section 74-4-11 NMSA 1978 or Section 3008(d), (e) and (f) of RCRA, 42 U.S.C. 6928(d), (e) and (f); or to some combination of the foregoing.

1.5.2 Duty to Reapply

If the Permittee will continue an activity allowed or required by this Permit after the expiration date of this Permit, the Permittee shall submit a complete application for a new Permit at least 180 days before this Permit expires, unless an extension is granted by the Secretary. [20.4.1.900 NMAC incorporating 40 CFR 270.10(h) and 270.30(b)]

1.5.3 Permit Expiration

This Permit shall be effective for ten years from its effective date. [20.4.1.900 NMAC incorporating 40 CFR 270.50(a)] This Permit and all conditions herein will remain in effect beyond the Permit's expiration date, if the Permittee has submitted a timely, complete application for renewal of this Permit 180 days prior to the expiration date of this Permit, in accordance with 20.4.1.900 NMAC (incorporating 40 CFR 270.10 and 270.13 through 270.29) and, through no fault of the Permittee, the Secretary has not issued a new Permit on or before the expiration date of this Permit. [20.4.1.900 NMAC incorporating 40 CFR 270.10(h) and 270.51]

1.5.4 Duty to Mitigate

In the event of noncompliance with this Permit, the Permittee shall take all reasonable steps to minimize releases of petroleum, hazardous waste and hazardous constituents to the environment and shall carry out such measures as are reasonable to prevent significant adverse impacts on human health or the environment. [20.4.1.900 NMAC incorporating 40 CFR 270.30(d)]

1.5.5 Proper Operation and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control and related appurtenances which are installed or used by the Permittee to achieve compliance with the conditions of this Permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls including appropriate quality assurance/quality control procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this Permit. [20.4.1.900 NMAC incorporating 40 CFR 270.30(e)]

1.5.6 Duty to Provide Information

The Permittee shall furnish to the Secretary, within a reasonable time period specified by the Secretary, any relevant information which the Secretary requests to determine whether cause exists for modifying, suspending, or revoking this Permit, or to determine compliance with this Permit. The Permittee shall also furnish to the Secretary, upon request, copies of records required to be kept by this Permit pursuant to 20.4.1.500 and 20.4.1.900 NMAC incorporating 40 CFR 264.74(a) and 270.30(h). Permit condition 1.5.6 shall not be construed to limit, in any manner, the Secretary's

information gathering authority under Section 74-4-4.3 of the HWA, Section 3007(a) of RCRA, 42 U.S.C. 6927(a) or other applicable law.

1.5.7 Inspection and Entry

Pursuant to 20.4.1.900 NMAC, incorporating 40 CFR 270.30(i), the Permittee shall allow the Secretary, or authorized representatives, upon the presentation of credentials and other documents as may be required by law to:

- a. Enter at reasonable times upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this Permit;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Permit;
- c. Inspect, at reasonable times, any Facility equipment (including monitoring and control equipment), practices, or operations regulated or required under this Permit; and
- d. Sample or monitor, at reasonable times, for the purposes of assuring Permit compliance or as otherwise authorized by the HWA or RCRA, any substances or parameters at any location. [20.4.1.900 NMAC incorporating 40 CFR 270.30(i)]

Permit Condition 1.5.7 shall not be construed to limit, in any manner, the Secretary's inspection and entry authority under Section 74-4-4.3 of the HWA, Section 3007(a) of RCRA, 42 U.S.C. 6927(a) or any other applicable law.

1.5.8 Monitoring Records

1.5.8.a Records and Information

The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart or electronic recordings for continuous monitoring instrumentation, copies of all reports and records required by this Permit, records of all data used to complete the Application for this Permit, and records from all ground-water monitoring wells and associated ground-water surface elevations for a period of at least three years from the date of the sample, measurement, report, record, certification, or Application, or until post-closure care and corrective action are approved as complete by the Secretary, whichever is later. The Secretary may extend these periods at any time, and these periods shall be automatically extended during the course of any unresolved enforcement action regarding the Facility. [20.4.1.500 and 20.4.1.900 NMAC incorporating 40 CFR 264.74(b) and 270.30(j)(2)]

1.5.8.b Monitoring Information

Records of monitoring information shall include:

- i. The dates, exact place, and times of sampling or measurements;

- ii. Identification of the individuals who performed the sampling or measurements;
- iii. The dates analyses were performed;
- iv. The chain-of-custody records and the name and address of the laboratory that performed the analyses;
- v. The analytical techniques or methods used;
- vi. The quality assurance/quality control procedures used; and
- vii. The results of such analyses. [20.4.1.900 NMAC (incorporating 40 CFR 270.30(j)(3))]

1.5.9 Reporting Planned Changes

The Permittee shall give notice to the Secretary, as soon as possible, of any planned physical alterations or additions to the Facility, of other changes to the Facility or activities that may impact the Permittee's compliance with this Permit, or of any other instance of noncompliance with this Permit. [20.4.1.900 NMAC incorporating 40 CFR 270.30(l)(1), (2), and (10)]

1.5.10 Reporting Anticipated Noncompliance

The Permittee shall give advance notice to the Secretary of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements. [20.4.1.900 NMAC incorporating 40 CFR 270.30(l)(2)]

1.5.11 Other Information

Whenever the Permittee becomes aware that it failed to submit any relevant facts or submitted incorrect information in any document submitted to the Secretary, the Permittee shall promptly submit such facts or information in writing to the Secretary. [20.4.1.900 NMAC (incorporating 40 CFR 270.30(l)(11))]

1.5.12 Transfer of Permits

The Permittee shall not transfer this Permit to any person except after notice to the Secretary. The Secretary shall require modification or revocation and reissuance of this Permit, as specified by 20.4.1.901 and 20.4.1.900 NMAC (incorporating 40 CFR 270.40(b) and 270.41(b)(2)), to identify the new Permittee and incorporate such other requirements as may be necessary under the HWA and RCRA and implementing regulations. Before transferring ownership or operation of the Facility, the Permittee shall notify the new owner or operator in writing of the requirements of 20.4 NMAC, 40 CFR Parts 264 and 270 and this Permit. [20.4.1.500 and .900 NMAC incorporating 40 CFR 264.12(c) and 270.30(l)(3)]

1.5.13 Twenty-four Hour Reporting

1.5.13.a Oral Reporting

The Permittee shall report orally to the Secretary any noncompliance with this that may endanger human health or the environment. Such report shall be made within 24 hours from the time the Permittee becomes aware of the noncompliance and shall include:

i. Information concerning the release of any petroleum, hazardous waste or hazardous constituent that may endanger public drinking water supplies;

ii. Information concerning the release or discharge of any petroleum, hazardous waste or hazardous constituent, or of a fire or explosion at the Facility, which could threaten the environment or human health at and outside the Facility. [20.4.1.900 NMAC (incorporating 40 CFR 270.30(l)(6)(i))]

1.5.13.b Description of Occurrences

The description of the occurrence and its cause shall include:

i. Name, address, and telephone number of the Permittee and the Facility;

ii. Date, time, and type of incident;

iii. Name and quantity of materials involved;

iv. The extent of injuries, if any;

v. An assessment of actual or potential hazards to the environment and human health at and outside the Facility; and

vi. Estimated quantity and disposition of recovered material that resulted from the incident. [20.4.1.900 NMAC (incorporating 40 CFR 270.30(l)(6)(ii))]

1.5.13.c Written Notice

The Permittee also shall submit a written notice to the Secretary within ~~five~~ calendar days of the time the Permittee becomes aware of the noncompliance under Permit Condition 1.5.13.a. above. The written notice shall contain the following information:

i. a description of the noncompliance and its cause;

ii. the period(s) of noncompliance (including exact dates and times), and, if the noncompliance has not been corrected, the anticipated time it is expected to be corrected; and

iii. the steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance or imminent hazard and to eliminate any hazard or threat.

The Secretary may waive the five-day written notice requirement in favor of a written report within 15 days. [20.4.1.900 NMAC incorporating 40 CFR 270.30(l)(6)(iii)]

1.5.13.d Other Noncompliance

The Permittee shall report all other instances of noncompliance not otherwise required to be reported above, at the time monitoring reports are submitted. The reports shall contain the information listed in Permit Condition 1.5.13. [20.4.1.900 NMAC incorporating 40 CFR 270.30(l)(10)]

1.5.14 Other Information

Whenever the Permittee becomes aware that it failed to submit any relevant facts in the Permit Application, or submitted incorrect information in a Permit Application or in any report to the Secretary, the Permittee shall promptly notify the Secretary of such facts or information. [20.4.1.900 NMAC incorporating 40 CFR 270.30(l)(11)]

1.6 SIGNATORY REQUIREMENT

The Permittee shall sign and certify, as specified in 20.4.1.900 NMAC (incorporating 40 CFR 270.11), all applications, reports, or information submitted to the Secretary [20.4.1.900 NMAC incorporating 40 CFR 270.30(k)]. The certification, signed by a responsible official of Navajo Refining Company, shall state: "To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this report is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

1.7 REPORTS, NOTIFICATIONS, AND SUBMISSIONS TO THE SECRETARY

All reports, notifications, or other submissions that are required by this Permit to be submitted to the Secretary shall be sent by certified mail or hand-delivered to:

Bureau Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East
Building 1
Santa Fe, NM 87505-6303

1.8 CONFIDENTIAL INFORMATION

The Permittee may claim confidentiality for any information submitted to or requested by the Secretary or required by this Permit, to the extent authorized by Section 74-4-4.3(D) NMSA 1978 and 20.4.1.900 NMAC incorporating 40 CFR 270.12.

1.9 DOCUMENTS TO BE MAINTAINED AT THE FACILITY

The Permittee shall maintain at the Facility, until post-closure care and corrective action are approved as complete by the Secretary, the following documents and all amendments, revisions, and modifications to these documents:

- a. This Permit and its attachments;
- b. Inspection schedules, as required by 20.4.1.500 NMAC incorporating 40 CFR 264.15(b)(2) and this Permit;
- c. Operating record, as required by 20.4.1.500 NMAC incorporating 40 CFR 264.73 and this Permit;
- d. Post-Closure Plan, as required by 20.4.1.500 NMAC incorporating 40 CFR 264.118(a) and this Permit;
- e. Annually-adjusted cost estimate for facility post-closure, as required by 20.4.1.500 NMAC incorporating 40 CFR 264.144(d) and this Permit;
- f. The schedule for submittal of corrective action work plans approved by the Secretary and all corrective action work plans and other documents prepared to fulfill the requirements of this Permit.
- g. Groundwater monitoring and all other corrective action documents required by Permit Condition 1.5. above.

1.10 ENFORCEMENT

1.10.1 Waiver of Defenses

In any judicial action brought in New Mexico District Court for the First Judicial District under the HWA, or in the United States District Court for the District of New Mexico under RCRA (or under the HWA asserting supplemental jurisdiction under 28 U.S.C. 1367), the Permittee waives all objections and defenses it may have to the jurisdiction of either such State or federal court or to venue in either such State or federal district.

1.10.2 Admissibility of Data

In any administrative or judicial action to enforce this Permit, the Permittee waives any objection to the admissibility as evidence of any data generated pursuant to this Permit.

MODULE II - GENERAL FACILITY CONDITIONS

2.1 DESIGN AND OPERATION OF FACILITY

The Permittee shall maintain and operate the Facility to minimize the possibility of a fire, explosion, or any unplanned, sudden, or non-sudden release of hazardous waste constituents to air, soil, surface water, or groundwater that could threaten human health or the environment. [20.4.1.500 NMAC incorporating 40 CFR 264.31] The Permittee must comply with the requirements of 20.4.1.500 incorporating 40 CFR 264 Subparts AA, BB, and CC as applicable.

2.2 OFF-SITE WASTES

The Permittee shall not accept hazardous waste at the North Colony Landfarm (NCL) or Tetra-ethyl Lead Impoundment (TEL) from any off-site source. Remediation waste generated as part of corrective action activities at the Facility may be disposed at the Evaporation Ponds location in a corrective action management unit (CAMU) established pursuant to 20.4.1.500 NMAC incorporating 40 CFR 264.552. The design and siting of the CAMU shall be approved by the Secretary prior to the construction of the CAMU and placement of any waste materials in the CAMU.

2.3 SECURITY

The Permittee shall comply with the security provisions specified in 20.4.1.500 NMAC incorporating 40 CFR 264.14(b)(2) and (c) and in Permit Attachment 1 (Permit Application, Section 4.0), in order to prevent unknowing or unauthorized entry onto the NCL, TEL or Evaporation Ponds by persons or livestock.

2.4 GENERAL INSPECTION REQUIREMENTS

The Permittee shall implement the inspection schedule specified in Permit Attachment 1 (Permit Application Section 5.0). The Permittee shall remedy any deterioration or malfunction discovered by an inspection. The Permittee shall maintain records of inspections in accordance with Permit Attachment 1 (Permit Application, Section 5.0, Figures B-2 through B-4) and in accordance with 20.4.1.500 NMAC incorporating 40 CFR 264.15.

2.5 PERSONNEL TRAINING

The Permittee shall conduct personnel training, as required by 20.4.1.500 NMAC incorporating 40 CFR 264.16. This training program shall follow the procedures included in the computer-based training program maintained at the Navajo Refining Company Administrative offices located at the Artesia Refinery.. The Permittee shall make the computer-based training program available for review immediately upon request by the Secretary. The Permittee shall maintain training documents and records, pursuant to 20.4.1.500 NMAC incorporating 40 CFR 264.16(d) and (e).

2.6 SPECIAL PROVISIONS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE

The Permittee shall take precautions to prevent accidental ignition or reaction of ignitable or reactive waste in accordance with the requirements of 20.4.1.500 NMAC incorporating 40 CFR 264.17(a).

2.7 PREPAREDNESS AND PREVENTION

2.7.1 Required Equipment

The Permittee shall maintain at the facility, at a minimum, the emergency equipment specified in Permit Attachment 1 or the most recent version of the SPCC Plan and the Facility Response Plan (Permit Application, Section 7.0 and Appendices 2 and 3) maintained at the Facility. [20.4.1.500 NMAC incorporating 40 CFR 264.32] The Permittees shall submit updated SPCC and Facility Response Plans to the NMED within 30 days upon request by the Secretary.

2.7.2 Testing and Maintenance of Equipment

The Permittee shall test and maintain the equipment specified in Permit Condition 2.7.1 above, as necessary, to assure its proper operation in time of emergency. [20.4.1.500 NMAC incorporating 40 CFR 264.33]

2.7.3 Access to Communications and Alarm System

The Permittee shall maintain access to the communications and alarm system specified in Permit Attachment 1 of this Permit (Permit Application, Section 7.0 and Appendices 2 and 3) or the most recent version of the SPCC Plan and the Facility Response Plan maintained at the Facility. [20.4.1.500 NMAC incorporating 40 CFR 264.34] The Permittees shall submit updated SPCC and Facility Response Plans to the NMED within 30 days upon request by the Secretary.

2.7.4 Arrangements with Local Authorities

The Permittee shall maintain emergency arrangements with state and local authorities, as specified in the Permit Application, Appendices 2 and 3. [20.4.1.500 NMAC incorporating 40 CFR 264.37]

2.8 CONTINGENCY PLAN

2.8.1 Implementation of Plan

The Permittee shall immediately carry out the provisions of the Contingency Plan, Permit Attachment 1 (Permit Application Section 7.0) or the most recent version of the SPCC Plan and the Facility Response Plan maintained at the Facility, whenever there is a fire, explosion, or release of hazardous waste or constituents that could threaten human health or the environment. The plan must cover the requirements of 20.4.1.500 NMAC incorporating 40 CFR 264 subpart D. The Permittees shall submit updated SPCC and Facility Response Plans to the NMED within 30 days upon request by the Secretary.

2.8.2 Copies of Plan

The Permittee shall maintain copies of the contingency plan at the Facility and submit copies of the plan to local emergency response agencies in accordance with the requirements of 20.4.1.500 NMAC incorporating 40 CFR 264.53.

2.8.3 Amendments to Plan

The Permittee shall review and immediately amend, if necessary, the Contingency Plan, as required by 20.4.1.500 NMAC incorporating 40 CFR 264.54.

2.8.4 Emergency Coordinator

A trained emergency coordinator shall be available either on the premises or on call and able to reach the Facility within a short time at all times in case of an emergency, as required by 20.4.1.500 NMAC incorporating 40 CFR 264.55.

2.9 RECORD KEEPING AND REPORTING

In addition to the record keeping and reporting requirements specified elsewhere in this Permit, the Permittee shall comply with the following requirements:

2.9.1 Operating Record

The Permittee shall maintain at the Facility, until the end of the post-closure care period or completion of corrective action, whichever is later, a written record of waste, soil, and groundwater analyses. The written operating record shall include all waste management and other information required under 20.4.1.500 NMAC incorporating 40 CFR 264.73(b) (4), (5), (6), (8), (10), (12) and (14) and Permit Conditions 1.5.8. and 1.5.13. [20.4.1.500 NMAC incorporating 40 CFR 264.73]

2.9.2 Biennial Report

The Permittee shall comply with the biennial reporting requirements of 20.4.1.500 NMAC incorporating 40 CFR 264.75.

2.10 GENERAL CLOSURE REQUIREMENTS

2.10.1 Performance Standard

The Permittee shall close the regulated units, as required by 20.4.1.500 NMAC incorporating 40 CFR 264.111 and in accordance with this Permit. The Permittee shall implement the Closure Plans included in Permit Attachment 2 (Permit Application Section 13.0) and pursuant to the requirements of 20.4.1.500 NMAC incorporating 40 CFR 264.112(a) and (b), 264.178, 264.197, 264.228, 264.258, 264.280, 264.310, and 264.351.

2.10.2 Amendment to Closure Plan

The Permittee shall amend the Closure Plan, pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.112(c)), whenever necessary.

2.10.3 Notification of Closure

The Permittee shall notify the Secretary in writing at least 60 days prior to the date on which he expects to begin closure of the CAMU if it is constructed at the facility, as required by 20.4.1.500 NMAC incorporating 40 CFR 264.112(d) and 40 CFR 264 Subpart S and amendments (67 Federal Register (FR) 2962-3029, January 22, 2002).

2.10.4 Time Allowed For Closure

After receiving the final volume of waste, the Permittee shall treat, remove from the unit or facility, or dispose of on site all hazardous waste and shall complete closure activities, in accordance with 20.4.1.500 NMAC incorporating 40 CFR 264.113 and 40 CFR 264 Subpart S and amendments (67 FR 2962-3029, January 22, 2002).

2.10.5 Disposal or Decontamination of Equipment, Structures, and Soils

The Permittee shall decontaminate and/or dispose of all contaminated equipment, structures, and soils, as required by 20.4.1.500 NMAC incorporating 40 CFR 264.114 and Permit Attachment 2 (Permit Application Section 13.0).

2.10.6 Certification of Closure

Upon completion of closure of each hazardous waste disposal unit, the Permittee shall certify that the facility has been closed in accordance with the specifications in the Closure Plan, as required by 20.4.1.500 NMAC incorporating 40 CFR 264.115.

2.10.7 Survey Plat

The Permittee shall submit a survey plat no later than the submission of certification of closure of each hazardous waste disposal unit, pursuant to 20.4.1.500 NMAC incorporating 40 CFR 264.116.

2.11 GENERAL POST-CLOSURE REQUIREMENTS

2.11.1 Post-closure Care Period

The Permittee shall begin post-closure care for each regulated unit after completion of closure of the unit and continue for 30 years after that date. Post-closure care shall be conducted pursuant to 20.4.1.500 NMAC incorporating 40 CFR 264.117 and the Post-Closure Plan, Permit Attachment 2. The Post-Closure Plan shall meet the requirements of this Permit and be conducted in accordance with the requirements of 20.4.1.500 NMAC incorporating 40 CFR 264.118(a) and (b), 264.197, 264.228, 264.258, 264.280, and 264.310 also must be covered by the attached plan.

2.11.2 Post-Closure Security

The Permittee shall maintain security at the Facility during the post-closure care period, in accordance with the Post-closure Plan, Permit Attachment 2, and 20.4.1.500 NMAC incorporating 40 CFR 264.117(b).

2.11.3 Amendment to Post-closure Plan

The Permittee shall amend the Post-closure Plan pursuant to 20.4.1.500 NMAC incorporating 40 CFR 264.118(d), whenever necessary.

2.11.4 Post-closure Notices

2.11.5 Records

No later than 60 days after certification of closure of each hazardous waste disposal unit, the Permittee shall submit records of the type, location, and quantity of hazardous waste disposed within each cell or disposal unit, pursuant to 20.4.1.500 NMAC incorporating 40 CFR 264.119(a).

2.11.5.a Notification and Certification

Within 60 days of certification of closure of the first hazardous waste disposal unit and the last hazardous waste disposal unit, the Permittee shall do the following:

- i. Record a notation on the deed to the Facility property, pursuant to 20.4.1.500 NMAC incorporating 40 CFR 264.119(b)(1).
- ii. Submit to the Secretary a certification that a notation on the deed to the Facility property, pursuant to 20.4.1.500 NMAC incorporating 40 CFR 264.119(b)(2), has been recorded.

2.11.5.b Modifications to the Permit

The Permittee shall request and obtain a Permit modification prior to post-closure removal of hazardous wastes, hazardous waste residues, or contaminated soils, pursuant to 20.4.1.500 NMAC incorporating 40 CFR 264.119(c).

2.11.6 Certification of Completion of Post-closure Care

The Permittee shall certify that the post-closure care period was performed in accordance with the specifications in the Post-closure Plan and as required by 20.4.1.500 NMAC incorporating 40 CFR 264.120.

2.12 COST ESTIMATE FOR FACILITY CLOSURE AND POST-CLOSURE

2.12.1 Cost Estimates

The Permittee's most recent closure and post-closure cost estimates, prepared in accordance with 20.4.1.500 NMAC incorporating 40 CFR 264.142 and 264.144 shall be included in Permit Attachment 2 (Permit Application Sections 15.0 and 16.0).

2.12.2 Adjustments to the Cost Estimates

The Permittee must adjust the closure and post-closure cost estimates for inflation within 60 days prior to the anniversary date of the establishment of the financial instrument(s) used to comply with 20.4.1.500 NMAC incorporating 40 CFR 264.143 and 264.145 and the conditions included in this Permit. The Permittee must adjust the closure and post-closure cost estimates for inflation within 30 days after the close of the firm's fiscal year and before submission of updated information to the Secretary, as specified in 20.4.1.500 NMAC incorporating 40 CFR 264.142(b) and 264.144(b).

2.12.3 Revision of the Cost Estimates

The Permittee must revise the closure cost estimate or post-closure cost estimates whenever there is a change in the facility's Closure Plan or Post-closure Plan, as required by 20.4.1.500 NMAC incorporating 40 CFR 264.142(c) and 264.144(c).

2.12.4 Records of Cost Estimates

The Permittee must keep at the Facility the latest closure cost estimate and post-closure cost estimates as required by 20.4.1.500 NMAC incorporating 40 CFR 264.142(d) and 264.144(d).

2.13 FINANCIAL ASSURANCE FOR FACILITY CLOSURE AND POST-CLOSURE

The Permittee shall demonstrate continuous compliance with 20.4.1.500 NMAC incorporating 40 CFR 264.143, 264.145, 264.146 by providing documentation of financial assurance, as required by 20.4.1.500 NMAC incorporating 40 CFR 264.151 or 264.149, in at least the amount of the cost estimates required by Permit Condition 2.12. Changes in financial assurance mechanisms must be approved by the Secretary pursuant to 20.4.1.500 NMAC incorporating 40 CFR 264.143, 264.145 or 264.149.

2.14 LIABILITY REQUIREMENTS

The Permittee shall demonstrate continuous compliance with the requirement of 20.4.1.500 NMAC incorporating 40 CFR 264.147(a) to have and maintain liability coverage for sudden and accidental occurrences in the amount of at least \$1 million per occurrence, with an annual aggregate of at least \$2 million, exclusive of legal defense costs.

2.15

**INCAPACITY OF OWNERS OR OPERATORS, GUARANTORS, OR
FINANCIAL INSTITUTIONS**

The Permittee shall comply with 20.4.1.500 NMAC incorporating 40 CFR 264.148, whenever necessary in the case that the owner/operator, guarantors or financial institutions become incapable of fulfilling the financial assurance obligations required by 20.4.1.500 NMAC incorporating 40 CFR 264 Subpart H.

MODULE III – POST-CLOSURE CARE

III.A. MODULE HIGHLIGHTS

This Permit implements post-closure care requirements for soil contamination left in place after closure of the following: (1) a land treatment unit (NCL) used for treatment of RCRA-regulated hazardous waste, (2) an surface impoundment (TEL) used for the storage and weathering of regulated tetra-ethyl lead- and petroleum-contaminated soils and sludges and, (3) surface impoundments (evaporation ponds) that received treated and untreated refinery wastewater.

The NCL is an approximately 4.25-acre land treatment unit located adjacent to the north of aboveground diesel storage tanks 834 and 838. The NCL received hazardous wastes (K049, K050, K051 and K052) between 1980 and 1990. The New Mexico Health Department Environmental Improvement Division (NMEID) issued Navajo a land treatment demonstration permit for the NCL in 1989. The NMEID was the predecessor to the NMED. A land treatment permit was not issued after the land treatment demonstration permit expired in 1990. Soil and groundwater beneath the NCL has been affected by possible releases from the landfarm and from petroleum release(s) from the adjacent tank farm (tanks 834 and 838) located south of the NCL.

The TEL site (tetra ethyl lead weathering impoundment site) is an approximately 0.9-acre surface impoundment used to treat oily wastes and other hazardous materials. The unit also was used historically for weathering of pipe and other materials generated in refinery tetra ethyl lead processes.

The piping and other process materials were removed from the site after weathering. Nonhazardous wastes were placed in the TEL site between 1980 and 1983. Placement of waste in the TEL site was discontinued in 1983. The TEL surface impoundment was capped with crushed and compacted caliche and revegetated in 1989. Closure was approved by NMEID in June 1989. Post-closure care is in effect.

The Evaporation Ponds (surface impoundments) are located adjacent to the Pecos River approximately three miles east of the refinery. There are a total of five evaporation ponds. Pond 1 received refinery wastewater between the early 1930s and 1987 and is considered a part of solid waste management unit (SWMU) 4. Ponds 2, 3, 5, and 6 were constructed between 1966 and 1988. Pond 4 was never constructed. The combined surface area of evaporation ponds 2 through 6 is approximately 95 acres. Wastewater effluent discharged directly from the refinery to Pond 1 via an open ditch (Three-Mile Ditch [TMD]) until 1987. In 1987, discharge to Pond 1 was discontinued and Pond 1 was taken out of service. Refinery wastewater was discharged from the refinery through a wastewater conveyance pipe that replaced the TMD to Pond 2 between 1987 and 1994 and to pond 5 between 1994 and 1999. Ponds 3 and 6 received overflow from Ponds 2 and 5. Discharge to Ponds 2, 3, 5 and 6 was discontinued in September 1999. Navajo began operation of an on-site wastewater treatment system that discharges to the City of Artesia publicly owned treatment works (POTW) and to a Class I injection well owned by Navajo in October 1999. The Class I injection well operates under a discharge permit issued by the New Mexico Oil Conservation Division (OCD).

Post-closure care requirements shall remain in place at the NCL, TEL and Evaporation Ponds for 30 years after closure, unless the post-closure period is shortened or lengthened pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.117(a)(2)). The Permittee is required to implement a

groundwater monitoring program, consisting of monitoring and sampling monitoring wells in the vicinity of these units until completion of corrective action and the demonstration of attainment of soil and groundwater cleanup standards for three years, pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.96, 264.97 and 264.98).

3.1 UNIT IDENTIFICATION

The Permittee shall provide post-closure care for the following hazardous waste management units, subject to the terms and conditions of this permit:

North Colony Landfarm (NCL)

Tetra-ethyl Lead surface impoundment (TEL)

Evaporation Ponds 2 through 6 surface impoundments

3.2 POST-CLOSURE PROCEDURES AND USE OF PROPERTY

3.2.1 Post-Closure Care Period

The Permittee shall comply with post-closure care requirements for 30 years after completion of closure of each regulated unit, unless the Secretary approves shortening or lengthening the post-closure care period pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.117(a)(2)) or until corrective action is completed pursuant to 20.4.1.400 NMAC (incorporating 40 CFR 264.100). Post-closure care shall be conducted in accordance with 20.4.1.500 NMAC incorporating 40 CFR Part 264, Subpart G, and the Post-closure Plan included in Permit Attachment 2 (Permit Application Volume 1 Section 13.0) and subject to the terms and conditions of this Permit. [20.4.1.500 NMAC (incorporating 40 CFR 264.117)]

The Permittee shall implement the Post-closure Plan included in Permit Attachment 2 (Permit Application Section 13.0) and in accordance with the requirements of this Permit. All post-closure care activities must be conducted in accordance with the provisions of the Post-closure Plan pursuant to 20.4.1.500 NMAC incorporating 40 CFR 264.117(d) and 264.118(b) and the requirements included in this Permit.

3.2.2 Groundwater Monitoring

The Permittee shall monitor the ground water, maintain all ground water monitoring wells and comply with all other applicable requirements of 20.4.1.500 NMAC (incorporating 40 CFR Part 264, Subpart F) during the post-closure period. [20.4.1.500 NMAC (incorporating 40 CFR 264.117(a)(1))]

3.2.3 Post-closure Care of Regulated Units

Post-closure care of regulated units shall be conducted after closure has been completed. The requirements for post-closure care at each regulated unit are listed below

3.2.3.a North Colony Landfarm Post-closure Care

The Permittee shall comply with the requirements for land treatment units at the NCL in accordance with Permit Attachment 2 (Attachment B-4 of the Permit Application) and shall:

- a. maintain the integrity and effectiveness of the final vegetative cover;
- b. prevent run-on and run-off from eroding or otherwise damaging the vegetative cover;
- c. protect and maintain surveyed benchmarks used in complying with the surveying and record keeping requirements of 20.4.1.500 NMAC (incorporating 40 CFR 264.280 and 264.309). [20.4.1.500 NMAC (incorporating 40 CFR 264.310(b))]; and
- d. conduct sampling of the treatment zone (non-native soils present in the NCL at depths above the contact with native soils) and of the native soils immediately beneath the treatment zone [20.4.1.500 NMAC (incorporating 40 CFR 264.278)] at intervals of four(4) years, nine (9) years and 19 years after the effective date of this Permit. The sampling shall consist of obtaining a minimum of 24 samples from each zone (a minimum of a total of 48 samples) during each event at locations approved by the Secretary. The soil samples shall be submitted to an analytical laboratory for chemical analysis of VOCs, SVOCs, RCRA metals, GRO, DRO and ORO by analytical methods approved by the Secretary. The Permittee shall submit a Soil Sampling Work Plan for sampling the treatment zone at the NCL to the Secretary for approval no less than 30 days prior to the sampling event. If the Department disapproves the Soil Sampling Work Plan, the Secretary will notify the Permittee in writing of the Soil Sampling Work Plan's deficiencies and specify a due date for submission of a revised Soil Sampling Work Plan. Upon receipt of such notification of disapproval, the Permittee shall submit to the Secretary, within the specified timeframe, a revised Soil Sampling Work Plan that corrects the deficiencies.

3.2.3.b Tetra-ethyl Lead Surface Impoundment Post-closure Care

The Permittee shall comply with the requirements for surface impoundment units at the TEL, shall manage the TEL in accordance with Attachment B-6 of the Permit Application and shall:

- a. maintain the integrity and effectiveness of the final cover, including making repairs to the cover, as necessary, to correct the effects of settling, subsidence, erosion, or other events;
- b. prevent run-on and run-off from eroding or otherwise damaging the final cover;
- c. protect and maintain surveyed benchmarks used in complying with the surveying and record keeping requirements of 20.4.1.500 NMAC incorporating 40 CFR 264.309; and
- d. maintain and monitor the groundwater monitoring system and comply with all other applicable requirements of 20.4.1.500 NMAC incorporating 40 CFR 264 Subpart F). [20.4.1.500 NMAC incorporating 40 CFR 264.310(b)]

3.2.3.c Evaporation Ponds Post-closure Care

The Permittee shall comply with the requirements for the surface impoundments, known as the Evaporation Ponds, after closure and corrective action are completed and shall:

- a. maintain the integrity and effectiveness of the final cover, including making repairs to the cover, as necessary, to correct the effects of settling, subsidence, erosion, or other events;
- b. prevent run-on and run-off from eroding or otherwise damaging the final cover;
- c. protect and maintain surveyed benchmarks used in complying with the surveying and record keeping requirements of 20.4.1.500 NMAC (incorporating 40 CFR 264.309); and
- d. maintain and monitor the groundwater monitoring system and comply with all other applicable requirements of 20.4.1.500 NMAC incorporating 40 CFR 264 Subpart F. [20.4.1.500 NMAC (incorporating 40 CFR 264.228(b))]

3.2.3.d Corrective Action Management Units

If a corrective action management unit is constructed for the purpose of disposal of remediation waste at the Evaporation Ponds location, the Permittee shall manage CAMU, if constructed, during operation, closure and after closure is complete, in accordance with the following requirements:

- a. Site and construct the CAMU in accordance with the requirements for corrective action management units outlined in 20.4.1.500 NMAC incorporating 40 CFR 264.552 and the final CAMU rule (67FR 2962-3029, January 22, 2002);
- b. Maintain the integrity and effectiveness of the final cover, including making repairs to the cover, as necessary, to correct the effects of settling, subsidence, erosion, or other events;
- c. Prevent run-on and run-off from eroding or otherwise damaging the final cover;
- d. Protect and maintain surveyed benchmarks used in complying with the surveying and record keeping requirements of 20.4.1.500 NMAC incorporating 40 CFR 264.309; and
- e. Maintain and monitor the groundwater monitoring system and comply with all other applicable requirements of 20.4.1.500 NMAC incorporating 40 CFR 264 Subpart F. [20.4.1.500 NMAC (incorporating 40 CFR 264.228(b))]

3.2.4 Security

The Permittee shall maintain security at the Facility during the post-closure care period, in accordance with the Post-closure Care Plan and all security requirements specified in this Permit and the Permit Attachment 1 (Permit Application, Part B, Section 4.0). [20.4.1.500 NMAC incorporating 40 CFR 264.117(b)]

3.2.5 Post-closure Care Maintenance

The Permittee shall not allow any use of the Facility that will disturb the integrity of the final cover or the function of the Facility's monitoring or corrective action systems during the post-closure care period. [20.4.1.500 NMAC incorporating 40 CFR 264.117(c)]

3.2.6 Inspections

The Permittee shall inspect the components, structures and equipment at the NCL, TEL and Evaporation Ponds, as appropriate in accordance with the requirements specified in Permit Condition 2.4 and Permit Attachment 1 (Permit Application Part B, Section 5.0) pursuant to 20.4.1.500 NMAC incorporating 40 CFR 264.117(a)(1)(ii).

3.3 NOTICES AND CERTIFICATION

3.3.1 Record of Land Use

No later than 60 days after completion of the site investigations specified in this Permit and selection of corrective measures for the Evaporation Ponds in accordance with the requirements of this Permit, the Permittee shall submit to the local zoning authority, or the authority with jurisdiction over local land use, and to the Secretary, a record of the type, location, and quantity of hazardous wastes present at the Evaporation Ponds. The Permittee shall comply with the requirements of 20.4.1.500 NMAC (incorporating 40 CFR 264.119(a)) described above upon closure of a CAMU, if a CAMU is constructed at the Evaporation Ponds site. Within 60 days after this Permit is issued, the Permittee shall:

a. Record, in accordance with 20.4.1.500 NMAC incorporating 40 CFR 264.119(b)(1), a notation on the deed to the facility property or on some other instrument that is normally examined during the title search that will in perpetuity notify any potential purchaser of the property that:

- i) the land has been used to manage hazardous wastes;
- ii) use of the land is restricted under 20.4.1.500 NMAC incorporating 40 CFR 264.116 and 264.119(a); and,
- iii) the survey plats and records of the type, location, and quantity of hazardous wastes applied to the NCL, TEL and Evaporation Ponds at the Facility have been filed with the Secretary and the City of Artesia and Eddy County, New Mexico in accordance with 20.4.1.500 NMAC incorporating 40 CFR 264.119(b)(1)(iii).

b. Submit a certification to the Secretary, signed by the Permittee, that he or she has recorded the notations specified above, including a copy of the documents in which the notations have been placed [20.4.1.500 NMAC incorporating 40 CFR 264.119(b)(2)].

3.3.2 Removal of Waste or Contaminated Soils

If the Permittee wishes to remove any hazardous waste, hazardous waste residue, or contaminated soils from the NCL, TEL or the Evaporation Ponds, then he or she shall request a modification to this Permit in accordance with the applicable requirements at 20.4.1.900 NMAC incorporating 40 CFR Parts 270 and 124. The Permittee shall demonstrate that the removal of hazardous waste will satisfy all applicable HWA and RCRA requirements for generation and transport of hazardous waste. [20.4.1.500 NMAC (incorporating 40 CFR 264.119(c))]

3.3.3 Certification of Completion of Post-closure Care

No later than 60 days after completion of the established post-closure care period for each regulated unit, the Permittee shall submit to the Secretary, by registered mail, a certification that post-closure care was performed at the specific unit in accordance with the specifications in the Post-closure Plan.

The certification must be signed by the Permittee and an independent New Mexico registered professional engineer. Documentation supporting the independent, registered professional engineer's certification for each unit must be furnished to the Secretary upon request until the Secretary releases the Permittee from the financial assurance requirements for post-closure care under 20.4.1.500 NMAC incorporating 40 CFR 264.145(i). [20.4.1.500 NMAC incorporating 40 CFR 264.120]

3.4 FINANCIAL ASSURANCE

The Permittee shall maintain financial assurance and comply with all applicable requirements of 20.4.1.500 NMAC (incorporating 40 CFR Part 264, Subpart H), during the post-closure period. The Permittee shall demonstrate continuous compliance with financial assurance requirements by providing documentation of financial assurance in compliance with 20.4.1.500 NMAC (incorporating 40 CFR 264.145 and 264.151), in at least the amount of the cost estimate required by 20.4.1.500 NMAC (incorporating 40 CFR 264.144), and Permit Condition 3.4.1. Changes in financial assurance mechanisms must be approved by the Secretary pursuant to 20.4.1.500 NMAC (incorporating 40 CFR 264.145).

3.4.1 Cost Estimate for Facility Post-Closure

The Permittee's most recent closure and post-closure cost estimate for each regulated unit, prepared in accordance with 20.4.1.500 NMAC (incorporating 40 CFR 264.142 and 264.144), is included in Permit Attachment 2 (Permit Application, Part B, Sections 15 and 16 and Attachment B-8).

- a. The Permittee shall adjust the post-closure cost estimates for inflation within 60 days prior to the anniversary date of the establishment of the financial instrument used to comply with 20.4.1.500 NMAC incorporating 40 CFR 264.145, and Permit Condition 3.5. If a financial test or corporate guarantee is used as the financial instrument, the cost estimate must be updated for inflation within 30 days after the end of the Permittee's fiscal year. [20.4.1.500 NMAC incorporating 40 CFR 264.144(b)]
- b. The Permittee shall revise the post-closure cost estimate for each regulated unit whenever there is a change in the Facility's Post-Closure Plan for that regulated unit. [20.4.1.500 NMAC (incorporating 40 CFR 264.144(c))]

- c. The Permittee shall keep in the operating record at the Facility the latest post-closure cost estimates. [20.4.1.500 NMAC (incorporating 40 CFR 264.144(d))]
- d. Financial assurance funds may be released, upon approval by the Secretary, if the value of the financial assurance mechanism exceeds the remaining cost of post-closure care at a specific regulated unit. The Permittee must demonstrate to the Secretary that the value of the financial assurance mechanism exceeds the remaining cost of post-closure care, in order for the Secretary to approve a release of funds. [20.4.1.500 NMAC (incorporating 40 CFR 264.145(a)(10))]
- e. The Permittee shall submit itemized bills to the Secretary when requesting reimbursement from the trustee for post-closure care under 20.4.1.500 NMAC (incorporating 40 CFR 264.145(a)(11)).

3.5

POST-CLOSURE PERMIT MODIFICATIONS

The Permittee shall request a Permit modification to authorize a change in the approved unit-specific Post-Closure Plan when a change is made in the Post-Closure Plan. This request shall be in accordance with applicable requirements of 20.4.1.900 NMAC (incorporating 40 CFR Part 270, Subpart D and 40 CFR Part 124), and must include a class determination request and a copy of the proposed amended unit-specific Post-closure Plan for approval by the Secretary. The Permittee shall request a Permit modification whenever changes in operating plans or Facility design affect the approved Post-closure Plans for any regulated units, or other events occur that affect the approved Post-closure Plans. The Permittee shall submit a written request for a Permit modification at least 60 days prior to the proposed change in Facility design or operation, or no later than 60 days after an unexpected event has occurred which has affected any of the Post-Closure Plans. [20.4.1.500 NMAC (incorporating 40 CFR 264.118(d))]

3.6

INCAPACITY OF OWNERS OR OPERATORS, GUARANTORS, OR FINANCIAL INSTITUTIONS

The Permittee shall comply with 20.4.1.500 NMAC incorporating 40 CFR 264.148, in the event of bankruptcy proceedings naming the owner or operator or bankruptcy of the financial assurance issuing institution. [20.4.1.500 NMAC incorporating 40 CFR 264.148]

MODULE IV - CORRECTIVE ACTION

4.1 CORRECTIVE ACTION PROGRAM

The corrective action program that the Permittee shall follow to address the release to soil and groundwater from the Evaporation Ponds, NCL, TEL or other units, if detected, during the post-closure care period, is described in this Permit Module and in the Appendices to this Permit. Additional monitoring which is included in the Permit Application is incorporated herein by reference and made an enforceable part of this Permit. The investigation approach, sampling strategy, monitoring plan and remediation option, if applicable, for corrective action for detected soil and groundwater contamination is specific to the contaminants and release event(s) and is generally described in this Permit.

4.1.1 CORRECTIVE MEASURES

The Permittee shall implement corrective measures at the Facility, as necessary, in accordance with the requirements of this Section (4). The results of the investigations required in this Permit, and other information available to the Secretary, will be used as the basis for determining whether further investigation or corrective measures are necessary at each SWMU, AOC or other Facility site. The general procedures for implementing corrective measures are described in this Section (4).

4.2 INTERIM MEASURES

4.2.1 General

The Secretary will require interim measures, if the Secretary determines that such measures are necessary, to reduce or prevent migration of contaminants or human or environmental exposure to contaminants while long-term corrective action remedies are evaluated and implemented. Upon making such a determination, the Department will notify the Permittee.

4.2.2 Interim Measures Work Plan

Within 90 days after receiving notification from the Secretary that interim measures are required, the Permittee shall submit to the Secretary for approval an Interim Measures Work Plan that shall include an implementation schedule.

4.2.3 Approval of Interim Measures Work Plan

If the Department disapproves the Interim Measures Work Plan, the Secretary will notify the Permittee in writing of the Interim Measures Work Plan's deficiencies and specify a due date for submission of a revised Interim Measures Work Plan. Upon receipt of such notification of disapproval, the Permittee shall submit to the Secretary, within the specified timeframe, a revised Interim Measures Work Plan that corrects the deficiencies.

4.2.4 Interim Measures Implementation

The Permittee shall implement the interim measures in accordance with the approved Interim Measures Work Plan and implementation schedule.

4.2.5 Emergency Interim Measures

The Permittee may determine, during implementation of site investigation activities, that emergency interim measures are necessary to address an immediate threat of harm to human health or the environment. The Permittee shall notify the Secretary within three 3 days of discovery of the facts giving rise to the threat, and shall propose emergency interim measures to address the threat. If the Secretary approves the emergency interim measures in writing, the Permittee may implement the emergency interim measures without submitting an interim measures work plan.

4.2.6 Interim Measure Report

Within 90 days after completion of interim measures, the Permittee shall submit to the Secretary an Interim Measures Report summarizing the results of the interim measures. The report shall include copies of the results of all field screening, monitoring, sampling, analysis and other data generated as part of the interim measures implementation.

4.3 RISK ANALYSIS

4.3.1 General

The Permittee shall attain the cleanup goals outlined in Module IV of this Permit for all media at each site or unit for which the Secretary determines that corrective action is necessary to protect human health or the environment. The Permittee may propose to demonstrate to the Secretary that achievement of a cleanup goal at a particular site is technically infeasible. The Permittee shall have the burden of making such demonstration to the Secretary's satisfaction. If the Permittee proposes to demonstrate the technical infeasibility of achievement of a groundwater cleanup goal that is a WQCC standard, the applicable requirements of the WQCC Regulations, 6.2.4103.E and 4103.F NMAC, shall be followed. If the Secretary approves the technical infeasibility demonstration, the Permittee shall prepare a site-specific risk assessment for that site to identify alternate cleanup goals or, if the WQCC Regulations apply, alternate abatement standards. The risk assessment shall include both a human health risk assessment and an ecological risk assessment.

4.3.2 Risk Analysis Report

Within 90 days after receiving from the Secretary a written determination that a technical infeasibility demonstration has been approved, the Permittee shall submit to the Secretary for approval a Risk Analysis Report for that site. The Permittee shall follow the Risk Analysis Report format outlined in Appendix E.5 of this Permit.

4.3.2.a Conceptual Site Model

The risk analysis shall include information on the expected fate and transport of contaminants detected at the site or unit including a list of all sources of contamination at the site. Sources that are no longer considered to be releasing petroleum-related and hazardous constituents, but represent the point of origination for contaminants transported to other locations shall be included. The discussion of fate and transport shall address potential migration of each petroleum-related and hazardous constituent in each medium, potential breakdown products and their migration, and anticipated pathways of exposure for human and ecological receptors.

For human health risk assessments, the conceptual site model shall include residential land use as the future land use for all risk assessments. Site-specific future land use may be included, provided that written approval to consider a site-specific nonresidential future land use scenario has been obtained from the Secretary prior to inclusion in the risk assessment.

Conceptual site models presented for ecological risk assessments shall identify assessment endpoints and measurement receptors for the site. The discussion of the model shall explain how the measurement receptors for the site are protective of the wildlife receptors.

4.3.2.b Risk Screening Levels

The risk assessment shall include the actual screening values used for each contaminant for comparison to all human health and ecological risk screening levels. The Department's soil screening levels (SSLs) for residential soil shall be used to screen soil for human health. For those contaminants not appearing on the NMED's SSL table, the EPA Region 6 soil screening value adjusted to meet the NMED's target risk goal of 10^{-5} for total risk for carcinogens shall be used to screen the site for human health risks. Screening for ecological risk shall be conducted using the U.S. EPA ecological soil screening levels (ECO-SSLs), or derive a screening level using the methodology in the NMED's "Guidance for Assessing Ecological Risks Posed by Chemicals: Screening -Level Ecological Risk Assessment". If no valid toxicological studies exist for a particular receptor or contaminant, the contaminant/receptor combination shall be addressed using qualitative methods. If an approved site-specific risk scenario is used for the human health risk assessment, the Permittees shall include all toxicity information and exposure assessment equations used for the site-specific scenario as well as the sources for that information. Other regulatory levels applicable to screening the site, such as drinking water MCLs and WQCC standards, shall also be included in the risk analysis.

4.4 CORRECTIVE MEASURES STUDY

4.4.1 General

The Secretary will require corrective measures at a site if the Secretary determines, based on the Investigation Report and other information available to the Secretary, that there has been a release of petroleum-related constituents, hazardous waste or hazardous waste constituents into the environment at the site and that corrective action is necessary to protect human health or the environment. Upon making such a determination, the Secretary will notify the Permittee.

4.4.2 Corrective Measures Study Report

Within 180 days after receiving notification from the Secretary that a corrective measures study is required, the Permittee shall submit to the Secretary for approval a Corrective Measures Study Report. The Permittee shall follow the Corrective Measures Evaluation Report format outlined in Appendix E.6 of this Permit. The corrective measures study shall evaluate potential remedial alternatives and shall recommend a preferred remedy that will be protective of human health and the environment and attain the appropriate cleanup goals. The Corrective Measures Study Report shall, at a minimum, comply with Appendix E.6 of this Permit and include the following:

- a. A description of the location, status, and current use of the site.
- b. A description of the history of site operations and the history of releases of petroleum-related and hazardous contaminants.
- c. A description of site surface conditions.
- d. A description of site subsurface conditions.
- e. A description of on- and off-site contamination in all affected media.
- f. An identification and description of all sources of petroleum-related and hazardous contaminants.
- g. An identification and description of contaminant migration pathways.
- h. An identification and description of potential receptors.
- i. A description of cleanup standards or other regulatory criteria.
- j. An identification and description of a range of remedy alternatives.
- k. Remedial alternative pilot or bench scale testing results.
- l. A detailed evaluation and rating of each of the remedy alternatives, applying the criteria set forth in Appendix E.6.j and I.C.4.
- m. An identification of a proposed preferred remedy or remedies.
- n. Preliminary design criteria of the selected remedy or remedies.
- o. A proposed schedule for implementation of the preferred remedy.

4.4.3 Cleanup Standards

The Permittee shall select corrective measures that are capable of achieving the cleanup standards and goals outlined in Module IV of this Permit or, if the cleanup standards or goals cannot be achieved, approved risk-based cleanup goals established by a risk analysis.

4.4.4 Remedy Evaluation Criteria

4.4.4.a Threshold Criteria

The Permittee shall evaluate each of the remedy alternatives for the following threshold criteria. To be selected, the remedy alternative must:

- a. Be protective of human health and the environment.
- b. Attain applicable media cleanup standards.
- c. Control the source or sources of releases so as to reduce or eliminate, to the extent practicable, further releases of hazardous waste and hazardous constituents that may pose a threat to human health and the environment.
- d. Comply with applicable standards for management of wastes.

4.4.4.b Remedial Alternative Evaluation Criteria

The Permittees shall evaluate each of the remedy alternatives for the factors described in this Section (4.4.4.b). These factors shall be balanced in proposing a preferred alternative. Presumptive remedies may be used as an alternative to the corrective measures evaluation process upon approval by the Secretary. Public participation requirements shall apply to the implementation of presumptive remedies.

4.4.4.b.i Long-Term Reliability and Effectiveness

The remedy shall be evaluated for long-term reliability and effectiveness. This factor includes consideration of the magnitude of risks that will remain after implementation of the remedy; the extent of long-term monitoring or other management that will be required after implementation of the remedy; the uncertainties associated with leaving hazardous wastes or hazardous waste constituents in place; and the potential for failure of the remedy. A remedy that reduces risks with little long-term management, and that has proven effective under similar conditions, shall be preferred.

4.4.4.b.ii Reduction of Toxicity, Mobility, or Volume

The remedy shall be evaluated for its reduction in the toxicity, mobility, and volume of petroleum-related constituents, hazardous wastes and hazardous constituents. A remedy that uses treatment to more completely and permanently reduce the toxicity, mobility, and volume of petroleum-related constituents, hazardous wastes and hazardous constituents shall be preferred.

4.4.4.b.iii Short-Term Effectiveness

The remedy shall be evaluated for its short-term effectiveness. This factor includes consideration of the short-term reduction in existing risks that the remedy would achieve; the time needed to achieve that reduction; and the short-term risks that might be posed to the community, workers, and the

environment during implementation of the remedy. A remedy that quickly reduces short-term risks, without creating significant additional risks, shall be preferred.

4.4.4.b.iv Implementability

The remedy shall be evaluated for its implementability, or the difficulty of implementing the remedy. This factor includes consideration of installation and construction difficulties; operation and maintenance difficulties; difficulties with cleanup technology; permitting and approvals; and the availability of necessary equipment, services, expertise, and storage and disposal capacity. A remedy that can be implemented quickly and easily, and poses fewer and lesser difficulties, shall be preferred.

4.4.4.b.v Cost

The remedy shall be evaluated for its cost. This factor includes a consideration of both capital costs, and operation and maintenance costs. Capital costs shall include, without limitation, construction and installation costs; equipment costs; land development costs; and indirect costs including engineering costs, legal fees, permitting fees, startup and shakedown costs, and contingency allowances. Operation and maintenance costs shall include, without limitation, operating labor and materials costs; maintenance labor and materials costs; replacement costs; utilities; monitoring and reporting costs; administrative costs; indirect costs; and contingency allowances. All costs shall be calculated based on their net present value. A remedy that is less costly, but does not sacrifice protection of health and the environment, shall be preferred.

4.4.5 Approval of Corrective Measures Evaluation Report

If the Secretary disapproves the Corrective Measures Study Report, the Secretary will notify the Permittee in writing of the Corrective Measures Study's deficiencies and specify a due date for submission of a revised Corrective Measures Study Report. Upon receipt of such notification of disapproval, the Permittee shall submit to the Secretary, within the specified time, a revised Corrective Measures Study Report that corrects the deficiencies. If the Secretary approves the Corrective Measures Study Report, the Secretary will notify the Permittee in writing.

4.4.6 Statement of Basis

Upon approval of the Corrective Measures Study and remedy selection, the Secretary will select a remedy or remedies for the subject unit. The Secretary will issue a Statement of Basis for selection of the remedy, and will receive public comment on the remedy. The public comment period will extend for 60 days from the date of the public notice of the Statement of Basis. The Secretary will select a final remedy and issue a response to public comments within 90 days, or other appropriate time, after the end of the public comment period.

4.5 CORRECTIVE MEASURES IMPLEMENTATION

4.5.1 General

The Permittee shall implement the final remedy selected by the Secretary.

4.5.2 Corrective Measures Implementation Plan

Within 90 days after the Secretary's selection of a final remedy, or such other time as the Secretary determines, the Permittee shall submit to the Secretary for approval a Corrective Measures Implementation Plan outlining the design, construction, operation, maintenance, and performance monitoring for the selected remedy, and a schedule for its implementation. The Corrective Measures Implementation Plan shall, at a minimum, include the following elements:

- a. A description of the selected final remedy.
- b. A description of the cleanup goals and remediation system objectives.
- c. An identification and description of the qualifications of all persons, consultants, and contractors that will be implementing the remedy.
- d. Detailed engineering design drawings and systems specifications for all elements of the remedy.
- e. A construction work plan.
- f. An operation and maintenance plan.
- g. The results of any remedy pilot tests.
- h. A plan for monitoring the performance of the remedy, including sampling and laboratory analysis of all affected media.
- i. A waste management plan.
- j. A proposed schedule for submission to the Secretary of periodic progress reports.
- k. A proposed schedule for implementation of the remedy.

4.5.3 Health and Safety Plan

The Permittee shall conduct all activities in accordance with the Health and Safety Plan as described in the most recent versions of Navajo Refining Company's Work Permit System (Safe Work-Hazardous Assessment, Hot Work Plan, Confined Space Entry Plan, Excavation Permit and Emergency Plan) during all construction, operation, maintenance, and monitoring activities conducted during corrective measures implementation.

4.5.4 Progress Reports

The Permittee shall submit to the Secretary progress reports in accordance with the schedule approved in the Corrective Measures Implementation Plan. The progress reports shall, at a minimum, include the following information:

- a. A description of the remedy work completed during the reporting period.

- b. A summary of all problems, potential problems, or delays encountered during the reporting period.
- c. A description of all actions taken to eliminate or mitigate the problems, potential problems, or delays.
- d. A discussion of the remedy work projected for the next reporting period, including all sampling events.
- e. Copies of the results of all monitoring, including sampling and analysis, and other data generated during the reporting period.
- f. Copies of all waste disposal records generated during the reporting period.

4.5.5 Remedy Completion

4.5.5.a Remedy Completion Report

Within ninety (90) days after completion of remedy, the Permittee shall submit to the Secretary a Remedy Completion Report. The report shall, at a minimum, include the following items:

- a. A summary of the work completed.
- b. A statement, signed by a registered professional engineer, that the remedy has been completed in full satisfaction of the terms of this Permit.
- c. As-built drawings and specifications signed and stamped by a registered professional engineer.
- d. Copies of the results of all monitoring, including sampling and analysis, and other data generated during the remedy implementation, if not already submitted in a progress report.
- e. Copies of all waste disposal records, not already submitted in a progress report.
- f. A certification, signed by a responsible official of Navajo Refining Company, stating: "To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this report is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

4.5.5.b Certification of Completion

Upon receipt of the Remedy Completion Report, the Secretary will determine whether the remedy has been completed in full satisfaction of the terms of this Permit. The Secretary may conduct an inspection of the site or unit, or request additional information from the Permittee, to make this determination. If the Secretary determines that the remedy has not been satisfactorily completed, it will notify the Permittee in writing of the actions that are necessary to complete the remedy. The Permittee shall implement such actions in accordance with the notification. If the Secretary

determines that the remedy has been satisfactorily completed, it will issue to the Permittee a written Certification of Completion of the remedy for that site or unit.

4.6 CORRECTIVE ACTION FOR REGULATED UNITS

4.6.1 North Colony Landfarm (NCL)

4.6.1.a Corrective Action for Soil

- a. The Permittee shall comply with the sampling strategy for soils, consisting of a sampling program and, if necessary, further characterization, as described in this Permit Module and the Permit Appendices. The Permittee shall notify NMED if there is a statistically significant increase in concentrations of petroleum-related constituents or hazardous constituents in the soils located in the treatment zone (non-native soils present in the NCL at depths above the contact with native soils) relative to the concentrations detected during previous (1995) sampling results, in soils located beneath the treatment zone (native soils present at depths directly [less than one foot] beneath the treatment zone) [20.4.1.500 NMAC incorporating 40 CFR 264.278] or in groundwater beneath, or downgradient from, the treatment zone:
- b. If the Permittee demonstrates attainment of soil remediation standards for land treatment units in accordance with 20.4.1.500 NMAC incorporating 40 CFR 264.271 and demonstrates that soil and groundwater quality beneath and down gradient of the NCL meets the applicable requirements for soil and groundwater cleanup in accordance with 20.4.1.500 NMAC incorporating 40 CFR 264 Subpart F, NMED soil screening guidelines, NMED TPH cleanup guidance, OCD soil cleanup guidelines outlined in 19.15 NMAC, and WQCC groundwater cleanup standards outlined in 20.6.2.3103 NMAC then the Permittee may submit a request to the Secretary to shorten the post-closure care period in accordance with 20.4.1.500 NMAC incorporating 40 CFR 264.117(a)(2)(i). The Secretary may extend the post-closure care period applicable to the NCL the Secretary determines that soil or groundwater cleanup goals have not been attained or if an extended period is necessary to protect human health and the environment. [20.4.1.500 NMAC incorporating 40 CFR 264.117(a)(2)(ii)]

4.6.1.b Corrective Action for Groundwater

The Permittee shall comply with the monitoring program for groundwater specified in this Permit Module (4); and in accordance with the requirements of 20.4.1.500 NMAC incorporating 40 CFR Part 264, Subpart F and the WQCC standards included in 20.6.2 NMAC. The Permittee shall recover phase-separated hydrocarbons, where present, beneath the NCL and both up gradient and down gradient from the subject unit.

a. General Requirements

i. Groundwater Protection Standard

(a) Hazardous Constituents. The Permittee shall monitor at the locations, frequencies, and for the hazardous constituents specified in 20.6.2.3103 NMAC and the constituents listed in 20.4.1.500 NMAC Appendix IX that are included in Appendix B of this permit [the modified Skinner List

(Exhibit 3, EPA RCRA Delisting Program Guidance Manual for the Petitioner, March 23, 2000]. Groundwater sampling at and in the vicinity of the NCL will include chemical analyses for the modified Skinner List analytes including, but not limited to, the following petroleum-related and hazardous constituents:

Benzene

Ethylbenzene

Toluene

Total Xylenes

PAHs as total Naphthalene plus monomethylnaphthalenes

Bis(2-ethylhexyl)phthalate (DEHP)

Arsenic

Lead

Chromium [20.4.1.500 NMAC (incorporating 40 CFR 264.93)]

The Permittee also shall analyze groundwater samples at the NCL for DRO and for general chemistry parameters included in 20.6.2.3103 NMAC.

(b)Concentration Limits. The maximum concentrations of hazardous constituents in groundwater shall not exceed the lesser of WQCC standards or the EPA MCLs (incorporating 40 CFR Part 141) and include:

Benzene 5µg/L

Ethylbenzene 700µg/L

Toluene 750µg/L

Total Xylenes 620µg/L

PAHs 30µg/L

[as total Naphthalene plus monomethylnaphthalenes]

DEHP 6µg/L

Lead 15µg/L

Arsenic 50µg/L

Chromium

50µg/L

[20.4.1.500 NMAC incorporating 40 CFR 264.94]

The EPA Region VI Human Health Medium-Specific Screening Level for Tap Water shall be considered the concentration limit in groundwater for those constituents for which a MCL or WQCC standard has not been established.

(c) Point of Compliance. The concentration limits referenced in Permit Condition 4.6.1.b(b) shall apply at and down gradient from the intercept of the uppermost aquifer and monitoring wells NCL-32, NCL-33, NCL-34 and NCL-44. [20.4.1.500 NMAC incorporating 40 CFR 264.95]

(d) The Permittee shall continue to conduct compliance monitoring until the post-closure care period is complete pursuant to 20.4.1.900 NMAC incorporating 40 CFR 264.99(b) and 270.14 (c)(7). Compliance monitoring shall continue until the groundwater protection standard as defined in 4.6.1.b.a. has been achieved for a period of three years. [20.4.1.500 NMAC incorporating 40 CFR 264.100 (f)]

(e) If the Permittee or the Secretary determines that the Compliance Monitoring Program established by this Permit no longer satisfies the requirements of RCRA, the HWA, and pursuant regulations, then the Permittee shall submit an application for a Permit modification, within 90 days of making such determination, to make any appropriate changes to the program. [20.4.1.500 NMAC (incorporating 40 CFR 264.100(h))]

ii. Groundwater Monitoring

(a) The Permittee shall maintain a ground water monitoring program to demonstrate the effectiveness of the corrective action program for groundwater and that meets the requirements of 20.4.1.500 NMAC (incorporating 40 CFR 264.97).

(b) The Permittee shall maintain groundwater monitoring wells at the locations of the compliance points and at the locations of monitoring wells NCL-49, MW-18, MW-45, MW-53, MW-54A, MW-55, MW-56 and at all additional locations required by the Secretary. [20.4.1.500 and 900 NMAC incorporating 40 CFR 264.97 and 270.14(c)]

(c) The Permittee shall monitor the wells listed in 4.1.2.b.a.i(c) and 4.1.2.b.a.ii(b) above for the hazardous constituents on a semi-annual basis during the post-closure care period pursuant to 20.4.1.500 NMAC incorporating 40 CFR 264.93 and submit groundwater monitoring reports to the Secretary in the format described in Appendix E of this Permit. The Secretary may require groundwater monitoring at additional locations and intervals.

(d) The Permittee shall determine the groundwater flow rate and direction in the uppermost aquifer each time groundwater is sampled. [20.4.1.500 NMAC (incorporating 40 CFR 264.98)]

iii. Groundwater Surface Elevation

The Permittee shall determine the ground-water surface elevation each time groundwater is sampled at each well and at least on a semi-annual basis. [20.4.1.500 NMAC (incorporating 40 CFR 264.97(f))]

iv. Sampling and Analysis Procedures

The Permittee shall comply with the procedures specified in Appendices C and D of this Permit when obtaining and analyzing samples from the ground water monitoring wells. [20.4.1.500 NMAC incorporating 40 CFR 264.97(d) and (e)]

Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity [20.4.1.900 NMAC incorporating 40 CFR 270.30(j)(1)]. The method used to obtain a representative sample to be analyzed shall be the appropriate method from Appendix I of 40 CFR Part 261 or an equivalent method approved by the Secretary. Laboratory methods must be those specified in Test Methods for Evaluating Solid Waste: Physical/Chemical Methods SW-846, Standard Methods of Wastewater Analysis or an equivalent method approved by the Secretary.

v. Statistical Procedures

When evaluating the monitoring results to determine the effects of corrective action measures using statistical evaluation, the Permittee shall comply with the procedures specified in 20.4.1.500 NMAC [incorporating 40 CFR 264.97(h) and 264.97(i)(1), (5) and (6)], if statistical evaluation is determined to be appropriate by the Secretary.

vi. Record Keeping and Reporting

The Permittee shall enter all monitoring, testing and analytical data obtained in the operating record. The data must include all computations, calculated means, variances, and results of the statistical tests specified in Permit Condition 4.6.1.b.a.ii(g) above. [20.4.1.500 NMAC (incorporating 40 CFR 264.97)]

The Permittee shall submit a written report to the Secretary summarizing the results of the groundwater monitoring and sampling program [20.4.1.500 NMAC incorporating 40 CFR 264.77(c) and 264.100(g)] within 90 days after the completion of field activities for each monitoring event. The reports shall be submitted in the format described in Appendix E of this Permit.

vii. Well Replacement and Abandonment

The Permittee shall replace any groundwater monitoring well removed from service with a monitoring well located as close to the abandoned well as practicable. The Permittee shall submit the proposed location and construction specifications for the new well to the Secretary for prior approval.

The Permittee shall report the surveyed location and elevation of a new monitoring well when the well is installed.

The Permittee shall obtain approval from the Secretary to delete wells from the monitoring program. Wells deleted from the monitoring program shall be plugged and abandoned by the Permittee so as to ensure that the abandoned well will not serve to transport contaminants to the aquifer. The Permittee shall submit well plugging and abandonment specifications to the Secretary for approval prior to abandoning the well.

b. Corrective Action Program for Releases from the North Colony Landfarm

If the Permittee determines, pursuant to Permit Condition 3.2.3.a.d and 4.6.1.a, that there is a statistically significant increase of hazardous or regulated constituents in the soils below the treatment zone, the Permittee shall notify the Secretary of this finding in writing within seven calendar days, indicating which constituents have shown statistically significant increases. If the Permittee makes such a determination then the Permittee shall apply for a permit modification within 90 days to address corrective action to mitigate migration of hazardous or regulated constituents from the NCL. [20.4.1.500 NMAC incorporating 40 CFR 264.278 (f), (g) and (h)] The Permittee is not required to submit the permit modification required by Permit Condition 4.1. if he successfully demonstrates in writing to the Secretary, within 90 days, that a source other than the regulated unit caused the increase or that the increase resulted from an error in sampling, analysis or evaluation. If the Permittee intends to make such demonstration, the Permittee shall:

- (a) Notify the Secretary in writing within seven (7) calendar days of determining a statistically significant increase below the treatment zone that he intends to make a determination under this paragraph;
- (b) Within 90 days, submit a report to the Secretary demonstrating that a source other than the regulated units caused the increase or that the increase resulted from errors in sampling, analysis or evaluation;
- (c) Within 90 days, submit to the Secretary an application for a permit modification to make any appropriate changes to the treatment zone monitoring program at the facility;
- (d) Continue to monitor in accordance with the monitoring program established under this section. [20.4.1.500 NMAC incorporating 40 CFR 264.278(h)]; and
- (e) Within 90 days, submit to the Secretary a work plan for corrective action prepared in the format described in Appendix E of this permit, to investigate and remediate the alternate source of the increase in hazardous constituents beneath or down gradient from the regulated unit.

4.6.2 Tetra Ethyl Lead Impoundment (TEL)

4.6.2.a Corrective Action for Soil

The Permittee shall identify and characterize the source of petroleum-related or hazardous constituents detected in soils and groundwater beneath and in the vicinity of the TEL. The Permittee shall submit a work plan to the Secretary to characterize soils in areas surrounding and upgradient from the TEL in order to identify the source, magnitude and extent of petroleum-related and hazardous constituents in the vicinity of the unit. The work plan shall be prepared in accordance

with the format described in Appendix E of this Permit. The work plan submittal date shall be proposed as part of the schedule required under Section 4.7.5 of this Permit.

The Permittee shall notify NMED if there is a statistically significant increase in petroleum-related or hazardous constituents in the groundwater or soils beneath the TEL and/or upgradient or downgradient from the TEL that indicates a new, or newly discovered, release of contaminants. [20.4.1.500 NMAC incorporating 40 CFR 264 Subpart F].

If the Permittee demonstrates compliance for surface impoundments with waste residues or contaminated materials left in place after final closure in accordance with 20.4.1.500 NMAC (incorporating 40 CFR 264.228(b)) and demonstrates that soil and groundwater quality beneath, up gradient and down gradient of the TEL meets the requirements for soil and groundwater cleanup in accordance with 20.4.1.500 NMAC (incorporating 40 CFR 264 Subpart F), HWB soil cleanup guidelines, OCD soil cleanup guidelines included in 19.15 NMAC, and WQCC groundwater cleanup standards, incorporating 20.6.2.3103 NMAC, then the Permittee may submit a request to the Secretary to shorten the post-closure care period pursuant to 20.4.1.500 NMAC incorporating 40 CFR 264.117(a)(2)(i). The Secretary may extend the post-closure care period applicable to the TEL if the Secretary determines that soil and groundwater cleanup goals have not been attained or if an extended period is necessary to protect human health and the environment. [20.4.1.500 NMAC incorporating 40 CFR 264.117(a)(2)(ii)]

4.6.2.b Corrective Action for Groundwater

The Permittee shall comply with the monitoring program for groundwater specified in this Permit, 20.4.1.500 NMAC incorporating 40 CFR Part 264, Subpart F, and the WQCC standards included in 20.6.2.3103 NMAC. The Permittee shall recover phase-separated hydrocarbons, where present, beneath the unit and both up gradient and down gradient from the TEL.

a. General Requirements

i. Groundwater Protection Standard

(a) Hazardous Constituents. The Permittee shall monitor at the locations, frequencies, and for the hazardous constituents specified in 20.6.2.3103 NMAC and the constituents listed in 20.4.1.500 NMAC Appendix IX that are included in Appendix B of this permit [the modified Skinner List (Exhibit 3, EPA RCRA Delisting Program Guidance Manual for the Petitioner, March 23, 2000)]. Groundwater sampling at and in the vicinity of the TEL will include chemical analyses for the modified Skinner List analytes including, but not limited to, the constituents of concern listed in Section 4.6.1.b.a.i.(a) of this Permit, GRO, DRO and the general chemistry parameters required by 20.6.2.3103 NMAC.

(b) Concentration Limits. The maximum concentrations of hazardous constituents in the groundwater shall not exceed the lesser of WQCC standards or the EPA MCLs as listed in Section 4.6.1.b.a.i.(b) of this Permit. The EPA Region VI Human Health Medium-specific Screening Level for Tap Water shall be considered the concentration limit in groundwater for those constituents for which a MCL or WQCC standard has not been established.

(c) Point of Compliance. The concentration limits included in Permit Condition 4.6.1.b.a.i.(b) shall apply at and down gradient from the intercept of the uppermost aquifer and monitoring wells TEL-1, TEL-2, and TEL-3. [20.4.1.500 NMAC (incorporating 40 CFR 264.95)]

(d) The Permittee shall continue the compliance monitoring program until the post-closure care period is complete [20.4.1.900 NMAC (incorporating 40 CFR 264.99(b) and 270.14 (c)(7))]. Compliance monitoring shall continue until the groundwater protection standard as defined in 4.6.1.b.a.i.(b) has been achieved for a period of three years. [20.4.1.500 NMAC incorporating 40 CFR 264.100 (f)]

(e) If the Permittee or the Secretary determines that the compliance monitoring program established by this Permit no longer satisfies the requirements of RCRA, the HWA, and pursuant regulations, then the Permittee shall submit an application for a Permit modification, within 90 days of the Secretary's determination, to make any appropriate changes to the program. [20.4.1.500 NMAC incorporating 40 CFR 264.100(h)]

ii. Groundwater Monitoring

(a) The Permittee shall maintain a groundwater monitoring program to demonstrate the effectiveness of the Corrective Action Program for groundwater and that meets the requirements of 20.4.1.500 NMAC incorporating 40 CFR 264.97.

(b) The Permittee shall maintain groundwater monitoring wells at the locations of the compliance points and at the locations of monitoring wells TEL-4, MW-49 and at all additional locations required by the Secretary. [20.4.1.500 and 900 NMAC incorporating 40 CFR 264.97 and 270.14(c)]

(c) The Permittee shall monitor the wells listed in 4.6.2.b.a.i(c) and 4.6.2.b.a.ii(b) above for petroleum-related and hazardous constituents on a semi-annual basis during the post-closure care period [20.4.1.500 NMAC (incorporating 40 CFR 264.93)] and submit groundwater monitoring reports to the Secretary in the format described in Appendix E of this Permit. The Secretary may require groundwater monitoring at additional locations and intervals.

(d) The Permittee shall determine the groundwater flow rate and direction in the uppermost aquifer each time groundwater is sampled or at least semi-annually. [20.4.1.500 NMAC incorporating 40 CFR 264.98]

iii. Groundwater Surface Elevation

The Permittee shall determine the ground-water surface elevation at each well each time groundwater is sampled or, at a minimum, on a semi-annual basis. [20.4.1.500 NMAC incorporating 40 CFR 264.97(f)]

iv. Sampling and Analysis Procedures

The Permittee shall comply with the procedures specified in Appendices C and D of this Permit when obtaining and analyzing samples from the groundwater monitoring wells. [20.4.1.500 NMAC incorporating 40 CFR 264.97(d) and (e)]

Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity [20.4.1.900 NMAC incorporating 40 CFR 270.30(j)(1)]. The method used to obtain a representative sample to be analyzed shall be the appropriate method from Appendix I of 40 CFR Part 261 or an equivalent method approved by the Secretary. Laboratory methods must be those specified in Test Methods for Evaluating Solid Waste: Physical/Chemical Methods SW-846, Standard Methods of Wastewater Analysis or an equivalent method approved by the Secretary.

v. Statistical Procedures

When evaluating the monitoring results to determine the effects of corrective action measures that include statistical evaluation, the Permittee shall comply with the procedures specified at in 20.4.1.500 NMAC, incorporating 40 CFR 264.97(h) and 264.97(i)(1), (5) and (6), if statistical evaluation is determined to be appropriate by the Secretary.

vi. Record Keeping and Reporting

The Permittee shall enter all monitoring, testing and analytical data obtained in the operating record. The data must include all computations, calculated means, variances, and results of the statistical tests specified in Permit Condition 4.6.2.b.a.ii(g) above. [20.4.1.500 NMAC incorporating 40 CFR 264.97]

The Permittee shall submit a written report to the Secretary summarizing the results of the groundwater monitoring and sampling program [20. 4.1.500 NMAC (incorporating 40 CFR 264.77(c) and 264.100(g))] within 90 days after the completion of field activities for each monitoring event. The reports shall be submitted in the format described in Appendix E of this Permit.

vii. Well Replacement and Abandonment

The Permittee shall replace any groundwater monitoring well removed from service with a monitoring well located as close to the abandoned well as practicable. The Permittee shall submit the proposed location and construction specifications for the new well to the Secretary for prior approval.

The Permittee shall report the surveyed location and elevation of a new monitoring well when the well is installed.

The Permittee shall obtain approval from the Secretary to delete wells from the monitoring program. Wells deleted from the monitoring program shall be plugged and abandoned by the Permittee so as to ensure that the abandoned well will not serve to transport contaminants to the aquifer. The Permittee shall submit well plugging and abandonment specifications to the Secretary for approval prior to abandoning the well.

b. Corrective Action Program for Releases from the Tetra Ethyl Lead Impoundment

If the Permittee determines, pursuant to Permit Condition 4.6.2.a and 4.6.2.b that there is a statistically significant increase of petroleum-related or hazardous constituents in the soils or groundwater beneath or in the vicinity of the TEL, the Permittee shall notify the Secretary of this

finding in writing within seven calendar days, indicating which constituents have shown statistically significant increases. The Permittee shall apply for a permit modification, within 90 days of making the determination, to address corrective action to mitigate migration of petroleum-related or hazardous constituents from the TEL [20.4.1.500 NMAC incorporating 40 CFR 264.278 (f), (g) and (h)]. The Permittee need not submit the permit modification required by this Permit Condition if the Permittee successfully demonstrates in writing to the Secretary, within 90 days, that a source other than the regulated unit caused the increase or that the increase resulted from an error in sampling, analysis or evaluation. If the Permittee intends to make such a demonstration, the Permittee shall:

- (a) Notify the Secretary in writing within seven calendar days of determining a statistically significant increase below the unit that he intends to make a determination under this paragraph;
- (b) Within 90 days, submit a report to the Secretary demonstrating that a source other than the regulated units caused the increase or that the increase resulted from errors in sampling, analysis or evaluation;
- (c) Within 90 days, submit to the Secretary an application for a permit modification to make any appropriate changes to the monitoring program at the facility;
- (d) Continue to monitor in accordance with the monitoring program established under this section. [20.4.1.500 NMAC incorporating 40 CFR 264.278(h)]; and
- (e) Within 90 days, submit to the Secretary a work plan for corrective action, prepared in the format described in Appendix E of this permit, to investigate and remediate the alternate source of the increase in hazardous and/or regulated constituents beneath or downgradient from the regulated unit.

4.6.3 Evaporation Ponds

4.6.3.a Corrective Action for Soil

- a. The Permittee shall identify and characterize the source of petroleum-related or hazardous constituents detected in soils and groundwater beneath and in the vicinity of the Evaporation Ponds. The Permittee shall prepare a work plan for submittal to the Secretary to characterize soils and groundwater beneath and in areas surrounding the Evaporation Ponds and downgradient from the unit in order to identify the source, magnitude and extent of hazardous and/or other regulated constituents at and in the vicinity of the unit. The work plan shall be prepared in accordance with the format described in Appendix E of this Permit. The Permittee shall notify NMED if there is a statistically significant increase in petroleum-related or hazardous constituents in the soil or groundwater beneath the Evaporation Ponds and/or down gradient from the Evaporation Ponds that indicates a new release or newly discovered release of contaminants [20.4.1.500 NMAC incorporating 40 CFR 264 Subpart F]. The minimum requirements for characterization of soil and groundwater at and in the vicinity of the Evaporation Ponds are described in this Section.
- b. If the Permittee demonstrates compliance for surface impoundments with waste residues or contaminated materials left in place after final closure pursuant to 20.4.1.500 NMAC, incorporating 40 CFR 264.228(b), and demonstrates that soil and groundwater quality beneath and downgradient of the Evaporation Ponds meets the requirements for soil and groundwater cleanup in accordance

with 20.4.1.500 NMAC (incorporating 40 CFR 264 Subpart F), HWB soil cleanup guidelines, OCD soil cleanup guidelines included in 19.15 NMAC, and WQCC groundwater cleanup standards included in 20.6.2.3103 NMAC, then the Permittee may submit a request to the Secretary to shorten the post-closure care period in accordance with 20.4.1.500 NMAC incorporating 40 CFR 264.117(a)(2)(i). The Secretary may extend the post-closure care period applicable to the Evaporation Ponds if it is determined that soil and groundwater cleanup goals have not been attained or if an extended period is necessary to protect human health and the environment [20.4.1.500 NMAC incorporating 40 CFR 264.117(a)(2)(ii)]

4.6.3.b Corrective Action for Groundwater

The Permittee shall comply with the Detection and Compliance Monitoring Program for groundwater specified in this Permit Module and in accordance with the requirements of 20.4.1.500 NMAC, incorporating 40 CFR Part 264 Subpart F, and the WQCC standards included in 20.6.2.3103 NMAC. The Permittee shall recover phase-separated hydrocarbons, where present, beneath the unit and down gradient from the unit. The Permittee shall prepare a work plan for submittal to the Secretary to characterize soils and groundwater beneath and in areas surrounding the Evaporation Ponds and downgradient from the unit in order to identify the source, magnitude and extent of hazardous constituents at and in the vicinity of the unit. The work plan shall be prepared in accordance with the format described in Appendix E of this Permit.

a. General Requirements

i. Groundwater Protection Standard

(a) Hazardous Constituents. The Permittee shall monitor at the locations, frequencies, and for the hazardous constituents specified in 20.6.2.3103 NMAC and the constituents listed in 20.4.1.500 NMAC Appendix IX that are included in Appendix B of this permit [the modified Skinner List (Exhibit 3, EPA RCRA Delisting Program Guidance Manual for the Petitioner, March 23, 2000)]. Groundwater sampling at and in the vicinity of the Evaporation Ponds will include chemical analyses for the modified Skinner List analytes including, but not limited to, the constituents of concern listed in Section 4.6.1.b.a.i.(a) of this Permit, GRO, DRO and the general chemistry parameters required by 20.6.2.3103 NMAC.

(b) Concentration Limits. The maximum concentrations of hazardous constituents in the groundwater shall not exceed the lesser of WQCC standards or the EPA MCLs as listed in Section 4.6.1.b.a.i.(b) of this Permit. The EPA Region VI Human Health Medium-specific Screening Level for Tap Water shall be considered the concentration limit in groundwater for those constituents for which a MCL or WQCC standard has not been established.

(c) Point of Compliance. The concentration limit in Permit Condition 4.6.1.b.a.i.(b) shall apply at and downgradient from the intercept of the uppermost aquifer and monitoring wells MW-2A, MW-3, MW-4A, MW-5A, MW-6A, MW-7, OCD-7AR and OCD-8A. [20.4.1.500 NMAC incorporating 40 CFR 264.95] The Secretary shall modify the number and locations of the Point of Compliance monitoring wells after completion of site characterization and other corrective action activities at the Evaporation Ponds.

(d) The Permittee shall continue the compliance monitoring program until the post-closure care period is complete. [20.4.1.900 NMAC incorporating 40 CFR 264.99(b) and 270.14 (c)(7)] Compliance monitoring shall continue until the groundwater protection standard as defined in 4.6.1.b.a.i.(b) has been achieved for a period of three years. [20.4.1.500 NMAC incorporating 40 CFR 264.100 (f)]

(e) If the Permittee or the Secretary determines that the compliance monitoring program established by this Permit no longer satisfies the requirements of RCRA or the HWA, and pursuant regulations, then the Permittee shall submit an application for a Permit modification, within 90 days of making the determination, to make any appropriate changes to the program. [20.4.1.500 NMAC incorporating 40 CFR 264.100(h)]

ii. Groundwater Monitoring

(a) The Permittee shall maintain a groundwater monitoring program to demonstrate the effectiveness of the corrective action program for groundwater and that meets the requirements of 20.4.1.500 NMAC incorporating 40 CFR 264.97.

(b) The Permittee shall maintain groundwater monitoring wells at the locations of the compliance points and at the locations of monitoring wells OCD-1, OCD-2A, OCD-3, OCD-4, OCD-6, OCD-5, MW-10, MW-11A, MW-15, MW-18A, MW-19, MW-22A and at all additional locations required by the Secretary [20.4.1.500 and 900 NMAC incorporating 40 CFR 264.97 and 270.14(c)]. The Secretary shall modify the number and location of the additional monitoring wells after completion of site characterization and other corrective action activities at the Evaporation Ponds.

(c) The Permittee shall monitor the wells listed in 4.6.3.b.a.i(c) and 4.6.3.b.a.ii(b) above for the hazardous constituents on a semi-annual basis during the post-closure care period [20.4.1.500 NMAC incorporating 40 CFR 264.93] and submit groundwater monitoring reports to the Secretary in the format described in Appendix E of this Permit Module. The Secretary shall modify the monitoring frequency after completion of site characterization and corrective action at the Evaporation Ponds. The Secretary may require groundwater monitoring at additional locations and intervals.

(d) The Permittee shall determine the groundwater flow rate and direction in the uppermost aquifer each time groundwater is sampled or, at a minimum, semi-annually [20.4.1.500 NMAC incorporating 40 CFR 264.98].

iii. Groundwater Surface Elevation

The Permittee shall determine the ground-water surface elevation at each well each time groundwater is sampled or, at a minimum, on a semi-annual basis. [20.4.1.500 NMAC incorporating 40 CFR 264.97(f)]

iv. Sampling and Analysis Procedures

The Permittee shall comply with the procedures specified in Appendices C and D of this Permit when obtaining and analyzing samples from the ground water monitoring wells [20.4.1.500 NMAC incorporating 40 CFR 264.97(d) and (e)].

Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity [20.4.1.900 NMAC incorporating 40 CFR 270.30(j)(1)]. The method used to obtain a representative sample to be analyzed shall be the appropriate method from Appendix I of 40 CFR Part 261 or an equivalent method approved by the Secretary. Laboratory methods must be those specified in Test Methods for Evaluating Solid Waste: Physical/Chemical Methods SW-846, Standard Methods of Wastewater Analysis or an equivalent method approved by the Secretary.

v. Statistical Procedures

When evaluating the monitoring results to determine the effects of corrective action measures using statistical evaluation, the Permittee shall comply with the procedures specified at in 20.4.1.500 NMAC [incorporating 40 CFR 264.97(h) and 264.97(i)(1), (5) and (6)], if statistical evaluation is determined to be appropriate by the Secretary.

vi. Record Keeping and Reporting

The Permittee shall enter all monitoring, testing and analytical data obtained in the operating record. The data must include all computations, calculated means, variances, and results of the statistical tests specified in Permit Condition 4.6.3.b.a.ii(g) above. [20.4.1.500 NMAC incorporating 40 CFR 264.97]

The Permittee shall submit a written report to the Secretary summarizing the results of the groundwater monitoring and sampling program [20.4.1.500 NMAC incorporating 40 CFR 264.77(c) and 264.100(g)] within 90 days after the completion of field activities for each monitoring event. The reports shall be submitted in the format described in Appendix E of this Permit.

vii. Well Replacement and Abandonment

The Permittee shall replace any groundwater monitoring well removed from service with a monitoring well located as close to the abandoned well as practicable. The Permittee shall submit the proposed location and construction specifications for the new well to the Secretary for prior approval.

The Permittee shall report the surveyed location and elevation of a new monitoring well when the well is installed.

The Permittee shall obtain approval from the Secretary to delete wells from the monitoring program. Wells deleted from the monitoring program shall be plugged and abandoned by the Permittee so as to ensure that the abandoned well will not serve to transport contaminants to the aquifer. The Permittee shall submit well plugging and abandonment specifications to the Secretary for approval prior to abandoning the well.

b. Corrective Action Program for Releases from the Evaporation Ponds

The Evaporation Ponds may be closed with residual waste left in place or with a CAMU emplaced for the management or disposal of remediation waste. The Secretary shall impose specific monitoring requirements if a CAMU is constructed at the Evaporation Ponds location. If the Permittee determines, pursuant to Permit Conditions 4.6.3.a.a that there is a statistically significant increase of petroleum-related or hazardous constituents in the soils or groundwater beneath the Evaporation Ponds, the Permittee shall notify the Secretary of this finding in writing, within seven calendar days of making the determination, indicating which constituents have shown statistically significant increases. The Permittee shall apply for a permit modification, within 90 days of making the determination, to address corrective action to mitigate migration of petroleum-related or hazardous constituents from the Evaporation Ponds [20.4.1.500 NMAC incorporating 40 CFR 264 subpart G and 264.228]. The Permittee need not submit the permit modification required by this Permit Condition if he successfully demonstrates in writing to the Secretary, within 90 days, that a source other than the regulated unit caused the increase or that the increase resulted from an error in sampling, analysis or evaluation. If the Permittee intends to make such demonstration, the Permittee shall:

- (a) Notify the Secretary in writing within seven calendar days of determining a statistically significant increase below the unit that he intends to make a determination under this paragraph;
- (b) Within 90 days, submit a report to the Secretary demonstrating that a source other than the regulated units caused the increase or that the increase resulted from errors in sampling, analysis or evaluation;
- (c) Within 90 days, submit to the Secretary an application for a permit modification to make any appropriate changes to the monitoring program at the facility;
- (d) Continue to monitor in accordance with the monitoring program established under this section. [20.4.1.500 NMAC incorporating 40 CFR 264.278(h)]; and
- (e) Within 90 days, submit to the Secretary a work plan for corrective action, prepared in the format described in Appendix E of this permit, to investigate and remediate the alternate source of the increase in hazardous constituents beneath or downgradient from the regulated unit.

c. Specific Corrective Action Requirements for Assessment of the Evaporation Ponds

Site characterization is required prior to final closure at the Evaporation Ponds to evaluate for the presence and migration of petroleum-related or hazardous constituents. The Permittee shall prepare a work plan for submittal to the Secretary to characterize soils and groundwater beneath and in areas surrounding the Evaporation Ponds and downgradient from the unit in order to identify the source, magnitude and extent of hazardous and regulated constituents. The work plan shall be prepared in accordance with the format described in Appendix E of this Permit. The work plan shall include proposed investigation locations, sampling and analytical methods and schedules and shall be approved by the Secretary prior to implementation.

The following minimum corrective action requirements shall be conducted at the Evaporation Ponds to evaluate for the presence, nature and extent of hazardous and other regulated constituents in soil and groundwater:

(i) Soil Investigation

The Permittee shall conduct subsurface soil investigations within the boundaries of each pond. Soil borings shall be advanced to minimum depths of five feet below the water table or five feet below the maximum depth of contamination as detected by field screening whichever is deeper.

At a minimum, the Permittee shall advance 15 soil borings within the boundaries of former Pond 1, 32 borings within the boundaries of Pond 2, 12 borings within the boundaries of Pond 3, 25 borings within the boundaries of Pond 5, 8 borings within the boundaries of Pond 6 and 12 borings south of the southern berms of former Ponds 1 and 2. The soil boring locations shall generally be biased towards the pond influent outfalls and towards downgradient portions of each evaporation pond. The Permittee may propose an alternate number of soil borings at each pond location in the work plan described in Permit Condition 4.6.3.c. The Permittee must provide justification for modifying the requirements of this Permit Condition (4.6.3.c (i)). The soil boring locations and number of soil borings proposed for the Evaporation Ponds investigation shall be approved by the Secretary prior to the start of field activities.

At a minimum, the Permittee shall collect soil samples, for field screening and chemical analysis, 1) at 2-foot intervals, 2) from each boring between the ground surface and a depth of one foot BGS, 3) from the sludge or sediments directly overlying native soil, 4) from the native soil directly underlying the pond sludge or sediments, 5) from the soils located at the water table interface and 6) from the maximum depth of the boring.

Selected soil samples shall be submitted to an analytical laboratory for chemical analysis of one or more of the following: GRO, DRO, ORO, VOCs, SVOCs and RCRA metals. The method for selection of soil samples for laboratory analyses shall be proposed in the work plan required under this Permit Condition (4.6.3.c).

The Permittee shall prepare a report summarizing the results of the soil investigation in the format described in Appendix E of this Permit within 150 days of the completion of field activities at the Evaporation Ponds.

(ii) Groundwater Investigation

The Permittee shall collect groundwater samples from each soil boring, described in 4.6.3.b. above, at the completion of drilling. The Permittee also shall collect groundwater samples from all monitoring wells associated with current groundwater monitoring at the Evaporation Ponds and all existing wells associated with former site investigations conducted at and in the vicinity of the unit in conjunction with the drilling activities.

At a minimum, the groundwater samples obtained from the soil borings shall be submitted to an analytical laboratory for chemical analysis for VOCs, GRO, DRO and the general chemistry parameters required by the OCD. The Permittee may propose that an alternate number of water samples be collected from the soil borings at each pond location for chemical analysis of one or more of above-listed analyses in the work plan described in Permit Condition 4.6.3.c. The Permittee must provide justification for modifying the requirements of this Permit Condition (4.6.3.c (ii)). The number of groundwater samples obtained from the exploratory soil borings, and the specific groundwater sample analyses conducted for the Evaporation Ponds investigation must be approved by the Secretary prior to the start of field activities.

At a minimum, the groundwater samples obtained from the existing monitoring wells shall be submitted to an analytical laboratory for chemical analysis of one or more of the following: VOCs, GRO, DRO, RCRA metals, SVOCs and the general chemistry parameters required by 20.6.2.3103 NMAC.

The Permittee shall prepare a report summarizing the results of the groundwater investigation in the format described in Appendix E of this Permit within 150 days of the completion of field activities at the Evaporation Ponds.

The Permittee shall properly abandon the soil borings at the completion of collection of the required soil and groundwater samples. The results of the investigations will be used by the Secretary to evaluate the need for additional investigation, additional monitoring points, remedial action and/or adjustments to the groundwater monitoring locations, parameters and schedule.

4.7 CORRECTIVE ACTION FOR SWMUs

4.7.1 Applicability

The Conditions of this Part apply to:

- (a) The SWMUs and AOCs identified in Appendix A of this Permit.
- (b) Any additional SWMUs or AOCs discovered during the course of groundwater monitoring, field investigations, environmental audits, or other means. The terms "discover", "discovery", or "discovered" refer to the date on which the Permittee either: (1) observes evidence of a new SWMU or AOC, (2) observes evidence of a previously unidentified release of hazardous constituents to the environment, or (3) receives information which suggests the presence of a new release of petroleum-related constituents, hazardous waste or hazardous constituents to the environment.
- (c) Contamination that has migrated beyond the Facility boundary. The Permittee shall implement corrective action beyond the facility boundary where necessary to protect human health and the environment unless the Permittee demonstrates to the satisfaction of the Secretary that, despite the Permittee's best efforts, as determined by the Secretary, the Permittee was unable to obtain the necessary permission to undertake such actions. The Permittee is not relieved of responsibility to clean up a release that has migrated beyond the facility boundary where off-site access is denied. On-site measures to address such releases will be determined on a case-by-case basis. Assurances of financial responsibility for completion of such off-site corrective action will be required.

4.7.2 Notification and Assessment Requirements for Existing and Newly Identified SWMUs and AOCs

The Permittee shall notify the Secretary in writing within 15 calendar days of discovery of any suspected previously unidentified SWMU or AOC. The notification shall include, at a minimum, the location of the SWMU or AOC and all available information pertaining to the nature of the release (e.g., media affected, petroleum-related or hazardous constituents released, magnitude of the release, etc.).

The Permittee shall prepare and submit to the Secretary, within 90 days of notification, a SWMU Assessment Report (SAR) for each SWMU or AOC identified under Permit Section 4.7.1 and this section (4.7.2.). At a minimum, the SAR shall provide the following information:

- i. Location of the unit(s) on a topographic map of appropriate scale;
- ii. Designation of type and function of the unit(s);
- iii. General dimensions, capacities and structural description of the unit(s) (supply any available plans/drawings);
- iv. Dates that the unit(s) was operated;
- v. Specification of all wastes that have been managed and/or released at/in the unit(s) to the extent available, including any available data on petroleum-related or hazardous constituents in the wastes;
- vi. All available information pertaining to any release of hazardous waste or hazardous constituents from such unit(s), including groundwater, soil, air, and surface water data;

Based on the results of the SAR, the Secretary will determine the need for further investigations at the SWMUs or AOCs covered in the SAR. The Secretary will notify the Permittee in writing of the final determination of the status of the suspected SWMU or AOC. If the Secretary determines that further investigation is needed, the Permittee shall submit a work plan for such investigation prepared in the format described in this Permit. If the Secretary determines that further investigation of a SWMU or AOC is required, the Permit will be modified pursuant to 20.4.1.901 NMAC and 40 CFR 270 Subpart D, incorporated by 20.4.1.900 NMAC.

4.7.3 Reporting Planned Changes

The Permittee shall give written notice to the Secretary as soon as possible of any planned physical alterations or additions that may impact or affect known or suspected contamination at or from SWMUs or AOCs.

4.7.4 Notification Requirements for Newly Discovered Releases from SWMUs or AOCs

The Permittee shall notify the Secretary in writing of any newly discovered release(s) of hazardous waste or hazardous constituents from a SWMU or AOC discovered during the course of groundwater monitoring, field investigations, environmental audits, or other means, within 15 days of discovery.

If the Secretary determines that further investigation of a SWMU or AOC is needed, the Permittee shall submit a work plan for such investigation prepared in the format described in this Module (4).

4.7.5 SWMU and AOC Investigations

The Permittee shall conduct site investigations, at the SWMUs and AOCs listed in Appendix A of this Permit and at all newly identified SWMUs and AOCs, to evaluate for the presence, nature and extent of hazardous and regulated constituents [20.4.1.500 NMAC incorporating 40 CFR 264.101]. The Permittee shall prepare an investigation work plan for each SWMU and AOC included in Appendix A of this Permit and any other SWMU or AOC identified by the Secretary in accordance with the format outlined in Appendix E of this Permit. Each work plan shall include all investigation, sampling and monitoring activities proposed for the subject units.

Each investigation work plan shall be submitted to the Secretary for approval. If the Secretary disapproves of a work plan, the Secretary will notify the Permittee, in writing, of the work plan's deficiencies and specify a due date for submittal of a revised work plan. Upon approval by the Secretary, the work plans, and any additions or adjustments therein, shall be incorporated herein by reference and made an enforceable part of this Permit.

The Permittee shall submit a proposed schedule for submittal of the investigation work plans for conducting site characterization activities at each SWMU and AOC listed in Appendix A of this Permit, to the Secretary for approval, within 60 days of the effective date of this Permit. The schedule for submittal of the work plans shall not extend past a maximum of four years from the effective date of this Permit. The Secretary will either approve or disapprove the schedule and order of prioritization for submittal of the work plans for the SWMUs and AOCs listed in Appendix A. If the Secretary disapproves of the schedule or order of prioritization, the Secretary will notify the Permittee, in writing, of the schedule or prioritization deficiencies and specify a due date for submittal of a revised schedule. Upon approval by the Secretary, the schedule, and any additions or adjustments therein, shall be incorporated herein by reference and made an enforceable part of this Permit. The work plan for conducting site characterization activities at the Evaporation Ponds shall be submitted no later than 90 days after the effective date of this Permit.

4.7.6 GROUNDWATER MONITORING

The Permittee shall conduct Facility-wide groundwater monitoring in accordance with the requirements for corrective action for releases from solid waste management units and for post-closure care of regulated units [20.4.1.500 NMAC (incorporating 40 CFR Subparts F and G)] with the objective of determining whether the migration of contaminated groundwater is under control as defined in the EPA RCRA-info system CA 750 classification "Groundwater Releases Controlled"

determination. The objective for the determination is required for compliance with the Government Performance Results Act of 1993 (GPRA). The groundwater monitoring program shall be conducted in accordance with the requirements described in this Permit and shall be conducted in coordination with all existing on- and off-site groundwater monitoring programs.

4.7.6.a BACKGROUND INFORMATION

Within 120 days after the effective date of this Permit, the Permittee shall submit, to the Secretary, updated site plans displaying the locations of all existing on- and off-site monitoring wells, recovery wells, piezometers, water supply wells and other wells located at the refinery, downgradient and cross-gradient from the refinery, and at and in the vicinity of the Evaporation Ponds. All existing wells located between the refinery east to the Pecos River and for the area 1,200 feet south of U.S. Highway 82 between Freeman Avenue and the Pecos River shall be presented on the appropriate site plans. The site plans shall include pertinent geographic and geologic features such as drainages, utility corridors, roads, watercourses, property boundaries, buildings, recovery trenches, oil and gas wells and other relevant structures. All available drilling logs and well construction diagrams shall be included with the submittal.

4.7.6.b GROUNDWATER MONITORING

The Permittee shall conduct on-and off-site groundwater monitoring at the Facility. The Permittee shall submit a groundwater monitoring work plan in accordance with the format described in Appendix E of this Permit within 360 days after the effective date of this Permit. The groundwater monitoring plan shall provide a description of OCD groundwater monitoring requirements as well as including the groundwater monitoring requirements described in this Section and Sections 4.6 and 4.7 of this Permit. The Secretary may adjust the due date for the submittal of the groundwater monitoring work plan based on the requirements of the work plan schedule submittal described in Section 4.7.5 above.

The work plan shall include the specific groundwater monitoring requirements outlined in Sections 4.6 and 4.7.5 of this Permit Module and shall include semi-annual monitoring and sampling of the following existing on- and off-site wells:

- | | | | | | |
|-----|-------------|---------|--------------|--------------|-------|
| i. | MW-8(plant) | MW-16 | MW-23(plant) | MW-28 | |
| | MW-29 | MW-39 | MW-41 | MW-42 | MW-43 |
| | MW-46 | MW-48 | MW-50 | MW-52 | MW-AE |
| | MW-AH | KWB-2P | KWB-4 | KWB-5 | KWB-6 |
| | KWB-8 | KWB-10 | | | |
| ii. | KWB-1A | KWB-3A | KWB-7 | | |
| | KWB-9 | KWB-11A | KWB-12A | MW-18(plant) | |

MW-45	MW-25	MW-26	MW-27	
iii. RA-307	RA-313	RA-314	RA-1227	RA1331
RA-3156	RA-3353	RA-4196	RA-4798	

Iv. All additional wells installed to comply with the requirements of this Permit as required by the Secretary.

The wells shall be monitored and sampled in accordance with the methods described in Appendix C of this Permit. The groundwater samples shall be submitted to an analytical laboratory for chemical analysis of VOCs by EPA Method 8260 or other method approved by the Secretary. Samples obtained from the wells listed in Sections 4.2.6.b (i), (ii) and (iv) also shall be analyzed for RCRA metals (total metals), DRO, SVOCs (if DRO is detected) and major cations/anions on an annual basis.

NAVAJO REFINING COMPANY

ARTESIA REFINERY

POST-CLOSURE CARE PERMIT

ATTACHMENTS

APPENDIX A

NAVAJO REFINING COMPANY ARTESIA REFINERY POST-CLOSURE CARE PERMIT

SUMMARY OF SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN

I. SWMUs and AOCs requiring further action:

I.A. SWMUs requiring further action:

4. Three Mile Ditch and Evaporation Pond 1 (Evaporation Pond 1 was formerly designated as SWMU #5);
6. NCL Container Storage Area (requirements are included in the post-closure care requirements for the North Colony Landfarm regulated unit therefore further action is not required under 20.4.1.500 NMAC incorporating 40 CFR 264.101);
16. Old API Separator;
17. Clarified Slurry Oil Tanks;
18. North API Separator;
19. South API Separator;
20. North Bundle Cleaning Pad;
21. South Bundle Cleaning Pad;
22. Main API Separator;
23. South Alkylolation Unit;

I.A. AOCs requiring further action:

1. Diesel Tank Farm (Tanks 834 and 838);
2. Former Diesel Storage Tanks at North Plant Process Area;
3. Southeast Tank Farm Area (Tanks 11, 12, 107, 108, 109, 114, 115, 117, 401, 402, 411, 412, 415 and 450 and Tanks 106, 110, 116, 119, 431, 432, 433 and 438);
4. Southwest Tank Farm (Tanks 111, 112, 113, 124, 128, 129, 413, 417, 418, 419 and 434);
5. Crude Tank Farm (Tanks 400, 437 and 439);

A SPECIFIC CORRECTIVE ACTION REQUIREMENTS FOR THREE MILE DITCH
AND EVAPORATION POND 1 (SWMU #4)

The specific requirements for investigation of Pond 1 are included in Section 4.1.4 of this Permit. The Permittee shall identify and characterize the source of petroleum-related and hazardous constituents detected in soils and groundwater beneath and in the vicinity of the Three Mile Ditch. The Permittee shall submit to the Secretary for approval a work plan to characterize soils and groundwater beneath the Three Mile Ditch in order to identify the source, magnitude and extent of residual petroleum-related and hazardous constituents at and in the vicinity of the unit. The work plan shall be prepared in accordance with the format described in Appendix E of this Permit.

The following minimum corrective action requirements shall be conducted at the Three Mile Ditch to evaluate for the presence, nature and extent of petroleum-related and hazardous constituents in soil and groundwater at the unit:

(i) Soil Investigation

- (a) The Permittee shall conduct subsurface soil investigations within the boundaries of the Three Mile Ditch. Soil borings shall be advanced to minimum depths of five (5) feet below the water table or five (5) feet below the maximum depth of contamination as detected by field screening whichever is deeper.
- (b) At a minimum, the Permittee shall advance 30 soil borings at approximately 500-foot intervals along the Three Mile Ditch. The Permittee shall advance eight additional soil borings along Three Mile Ditch at locations east of Bolton Road in the vicinity of sampling points where contamination was detected during previous investigations. The soil borings shall be advanced through the ditch at each location. In addition, soil samples shall be collected from the sludge that formed the banks of the ditch at each boring location. The soil boring locations shall be approved by the Secretary prior to the start of field activities.
- (c) At a minimum, the Permittee shall collect soil samples from each boring from the sludge or sediment located at the base of the ditch directly above the contact with native soils, from the native soils located directly below the base of the ditch, from the soils located at the water table interface and from the maximum depth of each boring.
- (d) The soil samples shall be submitted to an analytical laboratory for chemical analysis of one or more of the following: GRO, DRO, ORO, VOCs, SVOCs and RCRA metals.

- (e) The Permittee shall submit to the Secretary for approval, an investigation report summarizing the results of the investigations in the format described in Appendix E of this Permit within 150 days of the completion of field activities at the Three Mile Ditch.

The Permittee may propose an alternate number of soil borings at the Three Mile Ditch location in the work plan submitted to fulfill the requirements in this Appendix (A). The Permittee must provide justification for modifying the requirements of this Appendix. The soil boring locations and number of soil borings proposed for the Three Mile Ditch investigation shall be approved by the Secretary prior to the start of field activities.

(i) Groundwater Investigation

- (a) The Permittee shall collect groundwater samples from each soil boring, described in B.5.a.(i).a above, at the completion of drilling. The Permittee also shall collect groundwater samples from all existing monitoring wells associated with the Three Mile Ditch in conjunction with the drilling activities. The monitoring wells include MW-1, MW-8, MW-9, MW-15, MW-16, MW-20, MW-21 and MW-25 through MW-29.
- (b) At a minimum, Permittee shall submit the groundwater samples obtained from the soil borings to an analytical laboratory for chemical analysis for VOCs, GRO and DRO.
- (c) At a minimum, the groundwater samples obtained from the existing monitoring wells shall be submitted to an analytical laboratory for chemical analysis of one or more of the following: VOCs, GRO, DRO, RCRA metals, SVOCs and major cations/anions.
- (d) The Permittee shall prepare a report summarizing the results of the investigations in the format described in Appendix E of this Permit within 150 days of the completion of field activities at the Three Mile Ditch.

The Permittee shall properly abandon the soil borings at the completion of collection of the required soil and groundwater samples. The results of the investigations will be used by the Secretary to evaluate the need for additional investigation, additional monitoring points, remedial action and/or groundwater monitoring at the Three Mile Ditch.

APPENDIX B

NAVAJO REFINING COMPANY ARTESIA REFINERY POST-CLOSURE CARE PERMIT
CONSTITUENTS OF CONCERN FOR WASTES FROM PETROLEUM PROCESSES

Reference: Page 29, Exhibit 3, EPA RCRA Delisting Program Guidance Manual for the
Petitioner, March 23, 2000

New Mexico Environment Department
September 2003

Navajo Refining Company
RCRA Permit No. NMD048918817

APPENDIX C

NAVAJO REFINING COMPANY ARTESIA REFINERY POST-CLOSURE CARE PERMIT

SAMPLING METHODS AND PROCEDURES

C SAMPLING METHODS AND PROCEDURES

The methods used to conduct investigation, remediation and monitoring activities shall be sufficient to fulfill the requirements of this Permit and provide defensible data for the evaluation of site conditions, the nature and extent of contamination and contaminant migration, and for remedy selection and implementation, where necessary. The methods presented in Appendix C below are minimum requirements for environmental investigation and sampling but are not intended to include all methods that may be necessary to fulfill the requirements of this Permit. The methods for conducting investigations, corrective actions and monitoring at the Facility must be determined based on the unique conditions and contaminants that exist at each location or unit.

.C.1 INVESTIGATION, SAMPLING AND ANALYSES METHODS

C.1.a INTRODUCTION AND PURPOSE

The Investigation, Sampling and Analyses Methods section of this Permit provides minimum requirements for field investigations, sample collection, handling and screening procedures, field and laboratory sample analysis, and quality assurance (QA) procedures for samples of the medium being investigated or tested at the Facility.

The purpose of this section of the Permit is to (1) provide minimum requirements for drilling and sample collection in exploratory borings and other excavations, (2) provide minimum requirements for sampling of the target media, (3) provide minimum requirements for monitoring of groundwater and vadose zone conditions, and (4) identify minimum required screening, analytical and QA procedures that shall be implemented during field sampling activities and laboratory analyses.

The QA procedures referenced in the previous paragraph include (1) the Facility investigation data quality objectives, (2) the requirements for quality assurance/quality control (QA/QC) to be followed during field investigations and by the chemical analytical laboratories, and (3) the methodology for the review and evaluation of the field and laboratory QA/QC results and documentation.

C.2 FIELD EXPLORATION ACTIVITIES

Exploratory borings shall be advanced at locations specified in the work plans referenced in Sections 4.1. and Appendix A of this Permit and at all other locations required by the Secretary. The depths and locations of all exploratory and monitoring well borings shall be specified in the unit-specific work plans submitted to the Secretary for approval prior to the start of the respective field activities.

C.2.a Subsurface Feature/Utility Geophysical Surveys

The Permittee shall conduct surveys, where appropriate, to locate underground utilities, pipelines structures, drums, debris and other buried features in the shallow subsurface prior to the start of field exploration activities. The methods used to conduct the surveys such as magnetometer, ground penetrating radar, resistivity or other methods shall be selected based on the unique characteristics of the site and the possible or suspected underground structures. The results of the surveys shall be included in the investigation reports submitted to the Secretary.

C.2.b Drilling and Soil Sampling

C.2.b.i Drilling

Exploratory and monitoring well borings shall be drilled using the most effective, proven and practicable method for recovery of undisturbed samples and potential contaminants. The Secretary must approve the drilling methods selected for advancement of each boring prior to the start of field activities. Based on the drilling conditions, the borings shall be advanced using one of the following methods:

- Hollow-stem auger
- Direct Push Technology (DPT)
- Air rotary

Hollow-stem auger or DPT drilling methods are preferred based on the local subsurface conditions and the anticipated investigation requirements at the time of Permit issuance.

All drilling equipment shall be in good working condition and capable of performing the assigned task. Drilling rigs and equipment shall be operated by properly trained, experienced and responsible crews. The Permittee and its contractors are responsible for ensuring that imported contaminants are not introduced into the unit under investigation due to malfunctioning equipment or poor housekeeping. The drilling equipment shall be decontaminated before drilling each boring.

Exploratory borings shall be advanced to unit- and location-specific depths specified or approved by the Secretary. The Permittee shall propose drilling depths in the site-specific work plans submitted for each unit. Generally, the borings shall be advanced to the following minimum depths:

1. Five feet below the deepest detected contamination,
2. Five feet below the base of shallow structures,
3. Five feet below the shallow water table,
4. Depths specified by the Secretary based on regional or unit specific data needs.

The Secretary shall be notified as early as is practicable if conditions arise or are encountered that do not allow the advancement of borings to the depths specified by the Secretary so that alternative actions may be discussed. Precautions shall be taken to prevent the migration of contaminants between geologic, hydrologic or other identifiable zones during drilling and well installation activities.

The drilling and sampling shall be accomplished under the direction of a qualified engineer or geologist who shall maintain a detailed log of the materials and conditions encountered in each boring. Sample information and visual observations of the cuttings and core samples shall be recorded on the boring log. Known site features and/or site survey grid markers shall be used as references to locate each boring prior to surveying the location as described in Section C.2.f below. The boring locations shall be measured to the nearest foot, and locations shall be recorded on a scaled site map upon completion of each investigation. Trenching and other exploratory excavation methods shall follow the applicable general procedures outlined in this section. The particular methods proposed for use by the Permittee for subsurface explorations and sampling shall be included in the unit-specific investigation work plan submitted to the Secretary. The Secretary will include any changes or additional requirements for conducting exploratory excavation and sampling activities at the subject unit in their response to the Permittee after review of the investigation work plan.

C.2.b.ii Soil Sampling

Relatively undisturbed discrete soil samples shall be obtained during the advancement of each boring for the purpose of logging, field screening and analytical testing. Generally, the samples shall be collected at the following intervals and depths:

1. Continuously, at 2.5-foot intervals, at 5-foot intervals or as approved by the Secretary,
2. At the depth immediately below the base of the unit structures and at the fill-native soil interface,
3. At the maximum depth of each boring,
4. At the shallow water table,
5. From soil types relatively more likely to sorb or retain contaminants than the surrounding lithologies,
6. At intervals suspected of being source or contaminated zones,
7. At other intervals approved or required by the Secretary.

The sampling interval for the borings may be modified, or samples may be obtained from a specific depth, based on field observations. A decontaminated split-barrel sampler lined with brass sleeves, a continuous coring device or other method approved by the Secretary shall be used to obtain samples during the drilling of each boring.

The split barrel sampler lined with brass sleeves or a coring device is the preferred sampling method for borehole soil, rock and sediment sampling. The following procedures should be followed if a split barrel sampler is used. Upon recovery of the sample, one or more brass sleeves

shall be removed from the split barrel sampler and the open ends of the sleeves shall be covered with Teflon tape or foil and sealed with plastic caps fastened to the sleeves with tape for shipment to the analytical laboratory. If brass sleeves are not used, a portion of the sample shall be placed in precleaned, laboratory-prepared sample containers for laboratory chemical analysis. The use of an Encore® Sampler is preferred by the HWB if sample collection in brass sleeves is not used during collection of soil samples for VOC analysis. The remaining portions of the sample shall be used for logging and field screening, as described in Sections C.2.c and C.2.d below, respectively.

Discrete samples shall be collected for field screening and laboratory analyses. Homogenization of discrete samples collected for analyses other than for VOC analyses shall be performed by the analytical laboratory, if necessary. The Permittee may submit site-specific, alternative methods for homogenization of samples in the field to the Secretary for approval.

Samples to be submitted for laboratory analyses shall be selected based on: (1) the results of the field screening or mobile laboratory analyses, (2) the position of the sample relative to groundwater, suspected releases, and/or site structures or features, (3) the sample location relative to former or altered site features or structures, (4) the stratigraphy encountered in the boring and (5) the specific objectives and requirements of the project. The proposed number of samples and analytical parameters shall be included as part of the unit-specific work plan submitted to the Secretary for approval prior to the start of field investigation activities at each unit. The work plans shall allow for flexibility in modifying the project-specific tasks based on information obtained during course of the investigation. Modifications to site-specific work plan tasks shall be approved by the Secretary prior to implementation.

C.2.b.iii Surface Sampling

Surface samples shall be collected using decontaminated, hand-held stainless steel coring device, shelby tube, thin-wall sampler or other method approved by the Secretary where surface or sediment sampling is conducted without the use of the drilling methods described in Section C.2.a above. The samples shall be transferred to precleaned laboratory prepared containers for submittal to the laboratory. Samples obtained for volatiles analysis shall be collected using Encore® samplers, shelby tubes, thin-wall sampler or other method approved by the Secretary. Except in the case of the use of Encore® samplers, the ends of the samplers shall be lined with Teflon tape or aluminum foil and sealed with plastic caps fastened to the sleeves with tape for shipment to the analytical laboratory.

The physical characteristics of the sediment (such as mineralogy, ASTM or AGI classification, moisture content, texture, color, presence of stains or odors, and/or field screening results), depth where each sample was obtained, method of sample collection and other observations shall be recorded in the field log.

C.2.b.iv. Drill Cuttings (Investigation Derived Waste)

Drill cuttings, excess sample material and purge/development/decontamination fluids [investigation derived waste (IDW)] shall be contained and characterized using methods based on the boring location, boring depth, drilling method and type of contaminants suspected or encountered. An IDW management plan shall be included with the unit-specific investigation work plan submitted to the Secretary for approval prior to the start of field investigations. The Secretary shall approve the method of containment for drill cuttings prior to the start of drilling activities. Borings not completed as groundwater or vapor monitoring wells shall be properly abandoned. Borings completed as monitoring wells shall be constructed in accordance with the requirements described in Section C.2.b.v below.

C.2.b.v. Monitoring Well Construction

C.2.b.v.a Well Construction Materials

Well construction materials shall be selected based on the goals and objectives of the proposed monitoring program and the geologic conditions at the site. The materials selected shall not contribute foreign constituents, or remove constituents of concern from the groundwater. The well construction materials shall be selected based on the tensile strength, compressive strength, and collapse strength of the materials, length of time the monitoring well will be in service, and the material's resistance to chemical and microbiological corrosion.

C.2.b.v.b Well Construction Techniques

The borehole shall be bored, drilled, or augured as close to vertical as possible, and checked with a plumb bob or level. Slanted boreholes shall not be acceptable unless specified in the design. The borehole shall be of sufficient diameter so that well construction can proceed without major difficulties. To assure an adequate size, a minimum 2-inch annular space is required between the casing and the borehole wall (or the hollow-stem auger wall). The 2-inch annular space around the casing will allow the filter pack, bentonite seal, and annular grout to be placed at an acceptable thickness. Also, the 2-inch annular space will allow up to a 1.5-inch outer diameter tremie pipe to be used for placing the filter pack, bentonite seal, and grout at the specified intervals.

It may be necessary to overdrill the borehole so that any soils that have not been removed (or that have fallen into the borehole during augering or drill stem retrieval) will fall to the bottom of the borehole below the depth where the filter pack and well screen are to be placed. Normally, 2 to 5 feet is sufficient for overdrilling shallow wells. The borehole also may be overdrilled to allow for an extra space for a well sump to be installed. If the borehole is overdrilled deeper than desired, it can be backfilled to the designated depth with bentonite pellets or the sand that will be used for the filter pack.

The well casings (riser assembly) shall be secured to the well screen by flush-jointed threads and

placed into the borehole and plumbed by the use of centralizers and/or plumb bob or level. No lubricating oils or grease shall be used on casing threads. Teflon tape may be used to wrap the threads to insure a tight fit and minimize leakage. No glue of any type shall be used to secure casing joints. Teflon "O" rings also may be used to insure a tight fit and minimize leakage; however, "O" rings made of other materials are not acceptable if the well is going to be sampled for organic compound analyses. Before the well screen and casings are placed at the bottom of the borehole, at least 6 inches of filter material shall be placed at the bottom to serve as a firm footing. The string of well screen and casing should then be placed into the borehole and plumbed. Centralizers can be used to plumb a well, but centralizers shall be placed so that the placement of the filter pack, overlying bentonite seal, and annular grout will not be hindered. Centralizers placed in the wrong locations can cause bridging during material placement. If centralizers are used, they shall be placed below the well screen sections and above the bentonite annular seals. After the string of well screen and casing is plumb, the filter material shall be placed around the well screen up to the designated depth. After the filter pack has been installed, the bentonite seal shall be placed directly on top of the filter pack up to the designated depth or a minimum of 2 feet above the filter pack, whichever is greater. After the bentonite seal has hydrated for the specified time, the annular grout shall be placed into the annular space around the casing (riser assembly) up to within 2 feet of the ground surface or below the frost line, whichever is greater. A surface pad and protective steel casing (or monument if the well is flush-mounted) shall be installed to protect the well casing.

C.2.b.v.c Well Screen and Filter Pack Design

Well screens and filter packs shall be designed to accurately sample the aquifer zone that the well is intended to sample, minimize the passage of formation materials (turbidity) into the well, and ensure sufficient structural integrity to prevent the collapse of the intake structure. The selection of the well screen length depends upon the objective of the well. Piezometers and wells where only a discrete flow path is monitored are generally completed with short screens (two feet or less). While monitoring wells are usually constructed with longer screens (usually 5 to 10 feet), they shall be kept to the minimum length appropriate for intercepting a contaminant plume. Wells designed to monitor light non-aqueous phase liquids (LNAPLs) shall be constructed so that the well screen extends across the zone of seasonal high and low water table fluctuation. The screen slot size shall be selected to retain from 90 to 100 percent of the filter pack material in artificially filter packed wells, and from 50 to 100 percent of the formation material in naturally packed wells. All well screens shall be factory slotted.

A filter pack shall be used when: 1) the natural formation is poorly sorted, 2) a long screen interval is required and/or the screen spans highly stratified geologic materials of widely varying grain sizes, 3) the natural formation is uniform fine sand, silt, or clay, 4) the natural formation is thin-bedded, 5) the natural formation is poorly cemented sandstone, 6) the natural formation is highly fractured or characterized by relatively large solution channels, 7) the natural formation is shale or coal that will act as a constant source of turbidity to groundwater samples, and 8) the diameter of the borehole is significantly greater than the diameter of the screen. The use of

natural formation material as filter pack is only recommended when the natural formation materials are relatively coarse-grained, permeable, and uniform in grain size.

Filter pack materials shall consist of clean, rounded to well-rounded, hard, insoluble particles of siliceous composition (industrial grade quartz sand or glass beads). The required grain-size distribution or particle sizes of the filter pack materials shall be selected based upon a sieve analysis of the aquifer materials and/or the formation to be monitored. To select the appropriate filter pack particle size, the results of a sieve analysis of the formation materials are plotted on a grain-size distribution graph, and a grain-size distribution curve is generated. The 70 percent retained grain size value should be multiplied by a factor between 4 and 6 (4 for fine, uniform formations, and 6 for coarse, non-uniform formations). A second grain-size distribution curve is then drawn on the graph for this new value, ensuring that the uniformity coefficient does not exceed 2.5. The filter pack that shall be used will fall within the area defined by these two curves. Once the filter pack size is determined, the screen slot size shall be selected to retain at least 90 percent of the filter pack material.

The filter pack shall be installed in a manner that prevents bridging and particle-size segregation. Filter packs placed below the water table shall be installed by the tremie pipe method. Filter pack materials shall not be poured into the annular space unless the well is shallow (e.g., less than 30 feet deep) and the filter pack material can be poured continuously into the well without stopping. At least two inches of filter pack material shall be installed between the well screen and the borehole wall, and one foot of material shall extend above the top of the well screen. A minimum of 6-inches of filter pack material shall also be placed under the bottom of the well screen to provide a firm footing and an unrestricted flow under the screened area.

C.2.b.v.d Annular Sealant

The annular space between the well casing and the borehole must be properly sealed to prevent vertical migration of contamination to the groundwater. The materials used for annular sealants shall be chemically inert with respect to the highest anticipated concentration of chemical constituents expected in the groundwater at the facility. In general, the permeability of the sealing material shall be one to two orders of magnitude lower than the least permeable parts of the formation in contact with the well.

During well construction, an annular seal shall be placed on top of the filter pack. This seal shall consist of a high solids (10 to 30%) bentonite material in the form of bentonite pellets, granular bentonite, or bentonite chips. The bentonite seal shall be placed in the annulus through a tremie pipe if the well is deep (greater than 30 feet), or by pouring directly down the annulus in shallow wells (less than 30 feet). If the bentonite materials are poured directly down the annulus, a tamping device shall be used to ensure that the seal is emplaced at the proper depth and the bentonite has not bridged higher in the well casing. The bentonite seal shall be placed above the filter pack for a minimum of two feet vertical thickness. The bentonite seal shall be allowed to completely hydrate in conformance with the manufacturer's specifications prior to installing the

overlying annular grout seal. The time required for the bentonite seal to completely hydrate will differ with the materials used and the specific conditions encountered.

A grout seal shall be installed on top of the filter pack annular seal. The grout seal may consist of either a high solids (30%) bentonite grout, a neat cement grout, or a cement/bentonite grout. All grouts shall be prepared in accordance with the manufacturer's specifications. High solids (30%) bentonite grouts shall have a minimum density of 10 pounds per gallon (as measured by a mud balance) to ensure proper setup. Cement grouts shall be mixed using 6.5 to 7 gallons of water per 94-pound bag of Type I Portland cement. Bentonite (5 to 10 percent) may be added to delay the setting time and reduce the shrinkage of the grout.

C.2.b.v.e Well Development

All monitoring wells shall be developed to create an effective filter pack around the well screen, correct damage to the formation caused by drilling, remove fine particles from the formation near the borehole, and assist in restoring the natural water quality of the aquifer in the vicinity of the well. A minimum of five well volumes shall be removed from newly installed shallow monitoring wells during development. A newly constructed monitoring well shall be developed until the column of water in the well is free of visible sediment, and the pH, temperature, turbidity, and specific conductivity have stabilized. If the well is pumped dry, the water level shall be allowed to sufficiently recover before the next development period is initiated. Common methods used for developing wells include pumping and over pumping, backwashing, surging (with a surge block), bailing, jetting and airlift pumping.

These development procedures can be used, either individually or in combination, to achieve the most effective well development. However, the most favorable well development methods include pumping, over pumping, bailing, surging, or a combination of these methods. Well development methods and equipment that alter the chemical composition of the groundwater shall not be used. Development methods that involve adding water or other fluids to the well or borehole, or that use air to accomplish well development shall not be used. If water is introduced to a borehole during well drilling and completion, then a greater volume of water shall be removed from the well during development. In addition, the volume of water withdrawn from a well during development shall be recorded.

C.2.b.v.f Surface Completion

Monitoring wells may be completed either as flush-mounted wells, or as aboveground completions. A surface seal shall be installed over the grout seal and extend vertically up the well annulus to the land surface. The lower end of the surface seal shall extend a minimum of one foot below the frost line to prevent damage from frost heaving. The composition of the surface seal shall be neat cement or concrete. In aboveground completions, a three-foot wide, four-inch thick concrete surface pad shall be installed around the well at the same time the protective casing is installed. The surface pad shall be sloped so that drainage will flow away from the protective casing and off the pad. In addition, a minimum of one inch of the finished pad shall be below the surface grade or ground elevation to prevent washing and undermining by

soil erosion.

A locking protective casing shall be installed around the well casing (riser) to prevent damage or unauthorized entry. The protective casing shall be anchored in the concrete surface pad below the frost line and extend several inches above the well riser stickup. A ¼-inch weep hole shall be drilled into the protective casing just above the top of the concrete surface pad to prevent water from accumulating and freezing inside the protective casing around the well riser. A cap shall be placed on the well riser to prevent tampering or the entry of foreign materials, and a lock shall be installed on the protective casing to provide security. If the wells are located in a high traffic area, a minimum of three bumper guards consisting of steel pipes 3 to 4-inches in diameter and a minimum of 5-foot length should be installed. The bumper guards should be installed to a minimum depth of 2 feet below the ground surface in a concrete footing and extend a minimum of 3 feet above ground surface. The pipes should be filled with concrete or sand to provide additional strength.

If flush-mounted completions are used, a traffic-grade surface monument or a protective structure such as a utility vault or meter box should be installed around the well casing. In addition, measures should be taken to prevent the accumulation of surface water in the protective structure and around the well intake. These measures should include outfitting the protective structure with a steel lid or manhole cover that has a rubber seal or gasket, and ensuring that the bond between the cement surface seal and the protective structure is watertight.

C.2.c Logging of Soil Samples

Samples obtained from all exploratory borings and excavations shall be visually inspected and the soil or rock type classified in general accordance with ASTM (American Society for Testing and Materials) D2487 [Unified Soil Classification System] and D2488 and/or AGI (American Geological Institute) Methods for soil and rock classification. Detailed logs of each boring shall be completed in the field by a qualified engineer or geologist. Additional information, such as the presence of water-bearing zones and any unusual or noticeable conditions encountered during drilling shall be recorded on the logs. Field boring, test pit logs and field well construction diagrams shall be converted to the format acceptable for use in final reports submitted to the Secretary.

C.2.d Soil Sample Field Screening

Samples obtained from the borings shall be screened in the field for evidence of the presence of contaminants. Field screening results shall be recorded on the exploratory boring and excavation logs. Field screening results are used as a general guideline to determine the nature and extent of possible contamination. In addition, screening results shall be used to aid in the selection of soil samples for laboratory analysis. The Secretary recognizes that field screening alone will not detect the possible presence or full nature and extent of all contaminants of potential concern (COPCs) that may be encountered at the site.

The primary screening methods to be used shall include (1) visual examination, (2) headspace vapor screening for volatile organic compounds, and/or (3) metals screening using X-ray fluorescence. Additional screening for site- or release-specific characteristics such as pH or for specific compounds using field test kits shall be conducted where appropriate.

Visual screening includes examination of soil samples for evidence of staining caused by petroleum-related compounds or other substances that may cause staining of natural soils such as elemental sulfur or cyanide compounds.

Headspace vapor screening targets volatile organic compounds and involves placing a soil sample in a plastic sample bag or a foil sealed container allowing space for ambient air. The container shall be sealed and then shaken gently to expose the soil to the air trapped in the container. The sealed container shall be allowed to rest for a minimum of 5 minutes while vapors equilibrate. Vapors present within the sample bag's headspace will then be measured by inserting the probe of the instrument in a small opening in the bag or through the foil. The maximum value and the ambient air temperature shall be recorded on the field boring or test pit log for each sample. The monitoring instruments shall be calibrated each day to the manufacturers standard for instrument operation. A photo-ionization detector (PID) equipped with a 10.6 or higher electron volt (eV) lamp, combustible gas indicator or other instrument approved by the Secretary shall be used for VOC field screening. The limitations, precision and calibration of the instrument to be used for VOC field screening shall be included in the site-specific investigation work plan prepared for each unit.

X-ray fluorescence (XRF) may be used to screen soil samples for the presence of metals or isotopes. XRF screening requires proper sample preparation and proper instrument calibration. Sample preparation and instrument calibration procedures shall be documented in the field logs. The methods and procedures for sample preparation and calibration shall be approved by the Secretary prior to the start of field activities. Field XRF screening results for selected metals may be used in lieu of laboratory analyses upon approval by the Secretary; however, the results shall, at a minimum, be confirmed by laboratory analyses at a frequency of 20 percent (1 sample per every five analyzed by XRF analysis).

Field screening results are site- and boring-specific and the results vary with instrument type, the media screened, weather conditions, moisture content, soil type, and type of contaminant, therefore, all conditions capable of influencing the results of field screening shall be recorded on the field logs. The conditions potentially influencing field screening results shall be submitted to the Secretary as part of the site-specific investigation, remediation and/or monitoring reports.

At a minimum, samples with the greatest apparent degree of contamination, based on field observations and field screening, shall be submitted for laboratory analysis. The location of the sample relative to groundwater, stratigraphic units and/or contacts and the proximity to significant site or subsurface features or structures also shall be used as a guideline for sample selection. In addition, samples with no or low apparent contamination, based on field screening, shall be

submitted for laboratory analysis if the intention is to confirm that the base (or other depth interval) of a boring or other sample location is not contaminated.

C.2.e Soil Sample Types

Soil samples shall be obtained at the frequencies outlined in the site-specific investigation work plans for each unit submitted by the Permittee for approval by the Secretary. The samples collected shall be representative of the media and site conditions being investigated or monitored. QA/QC samples shall be collected to monitor the validity of the soil sample collection procedures. Field duplicates will be collected at a rate of 10 percent. Equipment blanks shall be collected from all sampling apparatus at a frequency of 10 percent for chemical analysis. Equipment blanks shall be collected at a frequency of one-per-day if disposable sampling equipment is used. Field blanks shall be collected at a frequency of one per day for each media (with the exception of air samples) at each unit. Reagent blanks shall be used if chemical analytical procedures requiring reagents are employed in the field as part of the investigation or monitoring program. The resulting data will provide information on the variability associated with sample collection, handling and laboratory analysis operations. The blanks and duplicates shall be submitted for laboratory analyses associated with the project-specific contaminants, data quality concerns and media being sampled.

C.2.f Sample Point and Structure Location Surveying

The horizontal coordinates and elevation of each surface sampling location, the surface coordinates and elevations of each boring or test pit, the top of each monitoring well casing, the ground surface at each monitoring well location and the locations of all other pertinent structures shall be determined by a registered New Mexico professional land surveyor in accordance with the State Plane Coordinate System (NMSA 1978 47-1-49-56 (Repl. Pamp. 1993)). The surveys shall be conducted in accordance with Sections 500.1 through 500.12 of the Regulations and Rules of the Board of Registration for Professional Engineers and Surveyors Minimum Standards for Surveying in New Mexico. Horizontal positions shall be measured to the nearest 0.1-foot, and vertical elevations shall be measured to the nearest 0.01-foot. The Permittee shall prepare site map(s), certified by a registered New Mexico professional land surveyor, presenting all surveyed locations and elevations including relevant site features and structures for submittal with all associated reports to the Secretary.

C.2.g Vapor-phase Monitoring and Sampling

Vapor monitoring and sampling shall be conducted if considered necessary by the Secretary. The methods and frequency of vapor monitoring and sampling shall be outlined in the unit-specific work plans, prepared in accordance with the requirements described in Appendix E of this Permit, if required.

Vapor samples analyzed by the laboratory for percent moisture and VOCs shall be collected using SUMMA canisters or other sample collection method approved by the Secretary. The samples

shall be analyzed for VOC concentrations by EPA Method TO-14 or equivalent VOC analytical method.

Field vapor measurements and the date and time of each measurement shall be recorded on a vapor monitoring data sheet. The instruments used for field measurements shall be calibrated in accordance with the manufacturers specifications and as described in Section C.2.d and C.4 of this Module. The methods used to obtain vapor-phase field measurements and samples shall be approved by the Secretary prior to the start of air monitoring at each Facility unit where vapor-phase monitoring is conducted.

C.2.h Groundwater Monitoring

C.2.h.i Groundwater Levels

Groundwater levels shall be measured in all monitoring wells on a semi-annual basis. Groundwater levels also shall be obtained prior to purging in preparation for a sampling event. Measurement data and the date and time of each measurement shall be recorded on a site monitoring data sheet. The depth to ground water shall be measured to the nearest 0.01 foot. The depth to groundwater shall be recorded relative to the surveyed well casing rim or other surveyed datum. The method of water level measurement shall be approved by the Secretary. Groundwater levels shall be measured in all wells within 48 hours of the start of obtaining water level measurements.

C.2.i Groundwater Sampling

Groundwater samples shall initially be obtained from newly constructed monitoring wells between 10 and 30 days after the completion of well development. Groundwater monitoring and sampling shall be conducted on a semi-annual basis or other interval approved by the Secretary after the initial sampling event. All monitoring wells scheduled for sampling during a groundwater sampling event shall be sampled within 15 days of the start of the monitoring and sampling event. The Permittee shall sample all saturated zones screened to allow entry of groundwater into each monitoring well during each sampling event. All requests for variances from the groundwater sampling schedule shall be submitted to the Secretary, in writing, at least 30 days prior to the start of scheduled monitoring and sampling events. Groundwater samples shall be collected from all exploratory borings not intended to be completed as monitoring wells prior to abandonment of the borings, where practicable.

Water samples shall be analyzed for one or more of the following general chemistry parameters as required by the Secretary:

nitrate/nitrite
dissolved CO₂
fluoride
ferric/ferrous iron

sulfate
alkalinity
manganese
ammonia

chloride
carbonate/bicarbonate
calcium
potassium

phosphate
total kjeldahl nitrogen (TKN)
total dissolved solids (TDS)
additional analytes as required by the Secretary

sodium

methane
total organic carbon (TOC)
total suspended solids (TSS)

C.2.i.i Well Purging

All zones in each monitoring well shall be purged by removing groundwater prior to sampling in order to ensure that formation water is being sampled. Purge volumes shall be determined by monitoring, at a minimum, groundwater pH, specific conductance, temperature and dissolved oxygen concentrations during purging. Water samples may be obtained from the well after the measured parameters of the purge water have stabilized to within ten percent for three consecutive measurements. A minimum of one well volume shall be purged from each monitoring well prior to obtaining measurements for use in determining whether the groundwater parameters have stabilized. The groundwater quality parameters shall be measured using instruments approved by the Secretary. The volume of groundwater purged, the instruments used and the readings obtained at each interval shall be recorded on the field monitoring log. Well purging also shall be conducted in accordance with the NMED HWB Draft Position Paper "Use of Micropurging and Low-flow Sampling Techniques for Compliance Groundwater Monitoring" (October 2001). The Permittee may submit, to the Secretary for approval, a written request for a variance from the described methods of well purging for individual wells no later than 90 days prior to scheduled sampling activities. The Secretary will respond to the request, in writing, within 60 days of receipt of the variance request.

C.2.i.ii Groundwater Sample Collection

Groundwater samples shall be obtained from each well after a sufficient amount of water has been removed from the well casing to ensure that the sample is representative of formation water. Groundwater samples shall be obtained using methods approved by the Secretary within 24 hours of the completion of well purging. Sample collection methods shall be documented in the field monitoring reports. The samples shall be transferred to the appropriate, clean, laboratory-prepared containers provided by the analytical laboratory. Sample handling and chain-of-custody procedures are described in Sections C.2.j and C.6.b below. Decontamination procedures shall be established for reusable water sampling equipment as described in Section C.3.

All purged groundwater and decontamination water shall be temporarily stored at satellite accumulation areas or transfer stations in labeled 55-gallon drums or other containers approved by the Secretary until proper characterization and disposal can be arranged. The methods for disposal of purge/decontamination water shall be approved by the Secretary prior to removal from the temporary storage area. Disposable materials shall be handled as described in Section C.5 of this Permit.

Groundwater samples intended for metals analysis shall be submitted to the laboratory as total metals samples. Groundwater samples also may be obtained for dissolved metals analysis and shall be filtered using disposable in-line filters with a mesh size approved by the Secretary.

C.2.i.iii Groundwater Sample Types

Field duplicates, field blanks, equipment rinseate blanks, reagent blanks, if necessary, and trip blanks shall be obtained for quality assurance during ground water and surface water sampling activities. The samples shall be handled as described in Section C.2.j below.

Field duplicate surface water and groundwater samples shall be obtained at a frequency of ten percent. At a minimum, one duplicate sample per sampling event shall always be obtained.

Field blanks shall be obtained at a minimum frequency of one per day per site or unit. Field blanks shall be generated by filling sample containers in the field with deionized water and submitting the samples with the groundwater samples to the analytical laboratory for the appropriate analyses.

Equipment rinseate blanks shall be obtained for chemical analysis at the rate of ten percent or a minimum of one rinseate blank per sampling day. Equipment rinseate blanks shall be collected at a rate of one per sampling day if disposable sampling apparatus is used. Rinseate samples shall be generated by rinsing deionized water through unused or decontaminated sampling equipment. The rinseate sample then shall be placed in the appropriate sample container and submitted with the groundwater samples to the analytical laboratory for the appropriate analyses.

Reagent blanks shall be obtained at a frequency of twenty percent or a minimum of one per day per unit if chemical analyses requiring the use of chemical reagents is conducted in the field during water sampling activities.

Trip blanks shall accompany laboratory sample bottles and shipping and storage containers intended for VOC analyses. Trip blanks shall consist of a sample of analyte-free deionized water prepared by the laboratory and placed in an appropriate sample container. The trip blank shall be prepared by the analytical laboratory prior to the sampling event and shall be kept with the shipping containers and placed with other water samples obtained from the site each day. Trip blanks shall be analyzed at a frequency of one for each shipping container of samples.

C.2.j Sample Handling

At a minimum, the following procedures shall be used at all times when collecting samples during investigation, corrective action and monitoring activities.

1. Neoprene, nitrile or other protective gloves shall be worn when collecting samples. New disposable gloves shall be used to collect each sample.
2. All samples collected of each media for chemical analysis shall be transferred into clean sample containers supplied by the project analytical laboratory with the exception of soil or

sediment samples obtained in brass sleeves or in Encore® samplers. Upon recovery of the sample collected using split barrel samplers with brass sleeves, the brass sleeves shall be removed from the split barrel sampler and the open ends of the sleeves shall be lined with Teflon tape or foil and sealed with plastic caps. The caps shall be fastened to the sleeve with tape for storage and shipment to the analytical laboratory. The sample depth and the top of the sample shall be clearly marked. Sample container volumes and preservation methods shall be in accordance with EPA SW-846 and established industry practices for use by accredited analytical laboratories. Sufficient sample volume shall be obtained for the laboratory to complete the method-specific QC analyses on a laboratory-batch basis.

3. Sample labels and documentation shall be completed for each sample following procedures approved by the Secretary. Immediately after the samples are collected, they shall be stored in a cooler with ice or other appropriate storage method until they are delivered to the analytical laboratory. Standard chain-of-custody procedures, as described in Section C.6.b below, shall be followed for all samples collected. All samples shall be submitted to the laboratory soon enough to allow the laboratory to conduct the analyses within the method holding times. At a minimum, all samples shall be submitted to the laboratory within 48 hours after their collection.

Shipment procedures will include the following:

1. Individual sample containers shall be packed to prevent breakage and transported in a sealed cooler with ice or other suitable coolant or other EPA or industry-wide accepted method. The drainage hole at the bottom of the cooler shall be sealed and secured in case of sample container leakage. Temperature blanks shall be included with each shipping container.
2. Each cooler or other container shall be delivered directly to the analytical laboratory.
3. Glass bottles shall be separated in the shipping container by cushioning material to prevent breakage.
4. Plastic containers shall be protected from possible puncture during shipping using cushioning material.
5. The chain-of-custody form and sample request form shall be shipped inside the sealed storage container to be delivered to the laboratory.
6. Chain-of-custody seals shall be used to seal the sample shipping container in conformance with EPA protocol.
7. Signed and dated chain-of-custody seals shall be applied to each cooler prior to transport of samples from the site.

C.2.k In-situ Testing

In-situ permeability tests, remediation system pilot tests and other tests conducted to evaluate site and subsurface conditions shall be designed to accommodate specific site conditions and to achieve the test objectives. The testing methods shall be approved by the Secretary prior to implementation. The tests shall be conducted in order to appropriately represent site conditions and in accordance with USGS, ASTM or other methods generally accepted by the industry. Detailed logs of all relevant site conditions and measurements shall be maintained during the

testing events. A summary of the general test results, including unexpected or unusual test results and equipment failures or testing limitations shall be reported to the Secretary within 30 days of completion of the test. The summary shall be presented in a format acceptable to the Secretary and in general accordance with the report formats outlined in Appendix E of this Permit. A formal report summarizing the results of each test shall be submitted to the Secretary within 120 days of completion of each test.

C.3 DECONTAMINATION PROCEDURES

The objective of the decontamination procedures is to minimize the potential for cross-contamination. A designated decontamination area shall be established for decontamination of drilling equipment, reusable sampling equipment and well materials. The drilling rig shall be decontaminated prior to entering the site or unit. Drilling equipment or other exploration equipment that may come in contact with the borehole shall be decontaminated by steam cleaning, by hot-water pressure washing or by other method approved by the Secretary prior to advancing each new exploratory boring or excavation.

Sampling or measurement equipment, including but not limited to, stainless steel sampling tools, split-barrel or core samplers, well developing or purging equipment, groundwater quality measurement instruments and water level measurement instruments, shall be decontaminated in accordance with the following procedures or other methods approved by the Secretary before each sampling attempt or measurement.

1. Brush equipment with a wire or other suitable brush, if necessary or practicable, to remove large particulate matter.
2. Rinse with potable tap water.
3. Wash with nonphosphate detergent or other detergent approved by the Secretary (examples include LiquinoxTM, AlconoxTM or FantastikTM) followed by a tap water rinse.
4. Rinse with 0.1 M nitric acid (to remove trace metals, if necessary) followed by a tap water rinse.
5. Rinse with methanol (to remove organic compounds, if necessary) followed by a tap water rinse.
6. Rinse with potable tap water.
7. Double rinse with deionized water

All decontamination solutions shall be collected and stored temporarily as described in Section C.5 below. Decontamination procedures and the cleaning agents used shall be documented in the daily field log.

C.4 FIELD EQUIPMENT CALIBRATION PROCEDURES

Field equipment requiring calibration shall be calibrated to known standards, in accordance with the manufacturers' recommended schedules and procedures. At a minimum, calibration checks shall be conducted daily, or at other intervals approved by the Secretary, and the instruments shall

be recalibrated, if necessary. Calibration measurements shall be recorded in the daily field logs. If field equipment becomes inoperable, its use shall be discontinued until the necessary repairs are made. In the interim, a properly calibrated replacement instrument shall be used.

C.5 COLLECTION AND MANAGEMENT OF INVESTIGATION DERIVED WASTE

Investigation Derived Waste (IDW) includes general refuse, drill cuttings, excess sample material, water (decontamination, development and purge) and disposable equipment generated during the course of investigation, corrective action or monitoring activities. All IDW shall be properly characterized and disposed of in accordance with all federal, state and local rules and regulations for storage, labeling, handling, transport and disposal of waste. The Permittee shall include an IDW management and disposal plan as part of the unit-specific work plans submitted to the Secretary. *The IDW management and disposal plan must be submitted prior to disposal of any IDW produced during investigation, corrective action or monitoring activities.* The Permittee may submit a request to the Secretary to dispose of IDW on a case-by-case basis prior to submittal of the IDW management and disposal plan.

All water generated during sampling and decontamination activities shall be temporarily stored at satellite accumulation areas or transfer stations in labeled 55-gallon drums or other containers approved by the Secretary until proper characterization and disposal can be arranged. The IDW may be characterized for disposal based on the known and/or suspected contaminants potentially present in the waste. The methods for waste characterization and disposal of IDW shall be approved by the Secretary prior to removal from the temporary storage area. Purge/decontamination water generated during investigation and monitoring activities at the Facility may be disposed in the refinery wastewater collection system upstream of the refinery wastewater treatment system.

C.6 DOCUMENTATION OF FIELD ACTIVITIES

C.6.a General

Daily field activities, including observations and field procedures, shall be recorded on appropriate forms. The original field forms shall be maintained at the Facility. Copies of the completed forms shall be maintained in a bound and sequentially numbered field file for reference during field activities. Indelible ink shall be used to record all field activities. Photographic documentation of field activities shall be performed, as appropriate. The daily record of field activities shall include the following:

1. Site or unit designation.
2. Date.
3. Time of arrival and departure.
4. Field investigation team members including subcontractors and visitors.
5. Weather conditions.
6. Daily activities and times conducted.

7. Observations.
8. Record of samples collected with sample designations and locations specified.
9. Photographic log.
10. Field monitoring data, including health and safety monitoring.
11. Equipment used and calibration records, if appropriate.
12. List of additional data sheets and maps completed.
13. An inventory of the waste generated and the method of storage or disposal.
14. Signature of personnel completing the field record.

C.6.b Sample Custody

All samples collected for analysis shall be recorded in the field report or data sheets. Chain-of-custody forms shall be completed at the end of each sampling day, prior to the transfer of samples off site, and shall accompany the samples during shipment to the laboratory. A signed and dated custody seal shall be affixed to the lid of the shipping container. Upon receipt of the samples at the laboratory, the custody seals will be broken, the chain-of-custody form shall be signed as received by the laboratory and the conditions of the samples shall be recorded on the form. The original chain-of-custody form shall remain with the laboratory and copies shall be returned to the relinquishing party. The Permittee shall maintain copies of all chain-of-custody forms generated as part of sampling activities. Copies of the chain-of-custody records shall be included with all draft and final laboratory reports submitted to the Secretary for review.

New Mexico Environment Department
September 2003

Navajo Refining Company
RCRA Permit No. NMD048918817

APPENDIX D

NAVAJO REFINING COMPANY ARTESIA REFINERY POST-CLOSURE CARE PERMIT CHEMICAL ANALYTICAL PROCEDURES

D. CHEMICAL ANALYSES

The Permittee shall use the most recent standard EPA and industry-accepted analytical methods for chemical analyses for target analytes as the testing methods for each media sampled. Chemical analyses shall be performed in accordance with the most recent EPA standard analytical methodologies and extraction methods.

The Permittee shall submit a list of target analytes and analytical methods to the Secretary for approval as part of each site-specific investigation, corrective action and/or monitoring work plan. The detection limits for each method shall be less than applicable background, screening and regulatory cleanup levels. Analyses conducted with detection limits that are greater than applicable background, screening and regulatory cleanup levels shall be considered data quality exceptions and the reasons for the elevated detection limits shall be reported to the Secretary.

D.1 LABORATORY QA/QC REQUIREMENTS

The following requirements for laboratory QA/QC procedures shall be considered the minimum QA/QC standards for the laboratories employed by the Facility that provide analytical services for environmental investigation, corrective action and monitoring activities conducted at the Facility. The Permittee shall provide the names of the contract analytical laboratories and copies of the laboratory quality assurance manuals to the Secretary within 180 days of awarding a contract for analytical services to any contract laboratory.

D.1.a Quality Assurance Procedures

Contract analytical laboratories shall maintain internal quality assurance programs in accordance with EPA and industry-wide accepted practices and procedures. At a minimum, the laboratories shall use a combination of standards, blanks, surrogates, duplicates, matrix spike/matrix spike duplicate (MS/MSD), blank spike/blank spike duplicate (BS/BSD) and laboratory control samples to demonstrate analytical QA/QC. The laboratories shall establish control limits for individual chemicals or groups of chemicals based on the long-term performance of the test methods. In addition, the laboratories shall establish internal QA/QC that meets EPA's laboratory certification requirements. The specific procedures to be completed are identified in the following subsections.

D.1.b Equipment Calibration Procedures and Frequency

The laboratories' equipment calibration procedures, calibration frequency and calibration standards shall be in accordance with the EPA test methodology requirements and documented in laboratories' quality assurance and SOP manuals. All instruments and equipment used by the laboratory shall be operated, calibrated and maintained according to manufacturers' guidelines and recommendations. Operation, calibration and maintenance shall be performed by personnel who have been properly trained in these procedures. A routine schedule and record of instrument calibration and maintenance shall be kept on file at the laboratory.

D.1.c Laboratory QA/QC Samples

Analytical procedures shall be evaluated by analyzing reagent or method blanks, surrogates, matrix spike/matrix spike duplicates (MS/MSDs), blank spike/blank spike duplicates (BS/BSDs) and/or laboratory duplicates, as appropriate for each method. The laboratory QA/QC samples and frequency of analysis to be completed shall be documented in the cited EPA test methodologies. At a minimum, the laboratory shall analyze laboratory blanks, MS/MSDs, BS/BSDs and laboratory duplicates at a frequency of one in twenty for all batch runs requiring EPA test methods and a frequency of one in ten for non-EPA test methods. Laboratory batch QA/QC samples shall be project specific.

D.1.d Laboratory Deliverables

The analytical data package shall be prepared in accordance with EPA-established Level III analytical support protocol. The following shall be provided in the laboratory reports submitted either electronically or in hard (paper) copy for this project.

1. Transmittal letter, including information about the receipt of samples, the testing methodology performed, any deviations from the required procedures, any problems encountered in the analysis of the samples, any data quality exceptions, and any corrective actions taken by the laboratory relative to the quality of the data contained in the report.
2. Sample analytical results, including sampling date, date of sample extraction or preparation, date of sample analysis, dilution factors and test method identification; soil sample results in consistent units (milligrams per kilogram or micrograms per kilogram) in dry-weight basis, water sample results in consistent units (milligrams per liter or micrograms per liter), vapor sample results in consistent units (parts per million or ppmv) and detection limits for undetected analytes. Results shall be reported for all field samples, including field duplicates and blanks, submitted for analysis.
3. Method blank results, including reporting limits for undetected analytes.
4. Surrogate recovery results and corresponding control limits for samples and method blanks (organic analyses only).
5. MS/MSD and/or BS/BSD spike concentrations, percent recoveries, relative percent differences (RPDs) and corresponding control limits.
6. Laboratory duplicate results for inorganic analyses, including relative percent differences and corresponding control limits.
7. Sample chain-of-custody documentation.
8. Holding times and conditions.
9. Conformance with required analytical protocol(s).
10. Instrument calibration.
11. Blanks.
12. Detection/quantitation limits.
13. Recoveries of surrogates and/or matrix spikes (MS/MSDs).
14. Variability for duplicate analyses.
15. Completeness.

16. Data report formats.
17. The following data deliverables for organic compounds shall be requested of the laboratory:
 - A cover letter referencing the procedure used and discussing any analytical problems, deviations and modifications; including signature from authority representative certifying to the quality and authenticity of data as reported,
 - Report of sample collection, extraction and analysis dates, including sample holding conditions,
 - Tabulated results for samples in units as specified; including data qualification in conformance with EPA protocol, including definition of data descriptor codes,
 - Reconstructed ion chromatograms for gas chromatograph/ mass spectrometry (GC/MS) analyses for each sample and standard calibration,
 - Selected ion chromatograms and mass spectra of detected target analytes (GC/MS) for each sample and calibration with associated library/reference spectra,
 - Gas chromatograph/electron capture device (GC/ECD) and/or gas chromatograph/flame ionization detector (GC/FID) chromatograms for each sample and standard calibration,
 - Raw data quantification reports for each sample and calibrations, including areas and retention times for analytes, surrogates and internal standards,
 - A calibration data summary reporting calibration range used and a measure of linearity [include decafluorotriphenylphosphine (DFTPP) and p-bromofluorobenzene (BFB) spectra and compliance with tuning criteria for GC/MS],
 - Final extract volumes (and dilutions required), sample size, wet-to-dry weight ratios, and instrument practical detection/quantitation limit for each analyte,
 - Analyte concentrations with reporting units identified, including data qualification in conformance with the contract laboratory protocol statement of work (CLP SOW) (include definition of data descriptor codes),
 - Quantification of analytes in all blank analyses, as well as identification of method blank associated with each sample,
 - Recovery assessments and a replicate sample summary [includes all surrogate spike recovery data with spike levels/concentrations for each sample and all MS/MSD results (recoveries and spike amounts)],
 - Report of tentatively identified compounds with comparison of mass spectra to library/reference spectra.
18. The following data deliverables for inorganic compounds shall be requested of the laboratory:
 - A cover letter referencing the procedure used and discussing any analytical problems, deviations and modifications; including signature from authority representative certifying to the quality and authenticity of data as reported,
 - Report of sample collection, digestion and analysis dates, with sample holding conditions,
 - Tabulated results for samples in units as specified; including data qualification in conformance with the CLP SOW, including definition of data descriptor codes,
 - Results of all method QA/QC checks including inductively coupled plasma (ICP) Interference Check Sample and ICP serial dilution results,

- Tabulation of instrument and method practical detection/quantitation limits,
- Raw data quantification report for each sample,
- A calibration data summary reporting calibration range used and a measure of linearity, where appropriate,
- Final digestate volumes (and dilutions required), sample size, and wet-to-dry weight ratios,
- Quantification of analytes in all blank analyses, as well as identification of method blanks associated with each sample,
- Recovery assessments and a replicate sample summary (includes post-digestate spike analysis, all MS data [including spike concentrations] for each sample, if accomplished, all MS results [recoveries and spike amounts] and laboratory control sample analytical results).

The Permittee shall present summary tables of these data in the formats described in Appendix E of this Permit. The raw analytical data, including calibration curves, instrument calibration data, data calculation work sheets, and other laboratory support data for samples from this project, shall be compiled and kept on file at the Facility for reference. The Permittee shall make the data available to the Secretary upon request.

D.2 REVIEW OF FIELD AND LABORATORY QA/QC DATA

The sample data, field and laboratory QA/QC results shall be evaluated for acceptability with respect to the data quality objectives (DQOs). Each group of samples shall be compared with the DQOs and evaluated using data validation guidelines contained in the following EPA guidance documents: *Guidance Document for the Assessment of RCRA Environmental Data Quality*, *National Functional Guidelines for Organic Data Review*, and *Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses*.

The laboratory shall notify the Permittee's project manager of data quality exceptions within 24 hours in order to allow for sample re-analysis, if possible. The Permittee's project manager shall contact the HWB within 24 hours of receipt of laboratory notification of data quality exceptions in order to discuss the implications and determine whether the data will still be considered acceptable or if sample re-analysis or re-sampling is necessary. The Permittee's project manager shall summarize the results of the discussion with the HWB project leader regarding the data quality exceptions in a memorandum. The memorandum shall be submitted to the HWB by fax or electronic mail within three working days of the conclusion of the data quality discussion.

D.3 BLANKS, FIELD DUPLICATES, REPORTING LIMITS AND HOLDING TIMES

D.3.a Blanks

The analytical results of field blanks and field rinseate blanks shall be reviewed to evaluate the adequacy of the field handling and equipment decontamination procedures and the possibility of cross-contamination caused by decontamination of sampling equipment. The analytical results of

trip blanks shall be reviewed to evaluate the possibility for contamination resulting from the laboratory-prepared sample containers or the sample transport containers. The analytical results of laboratory blanks shall be reviewed to evaluate the possibility of contamination caused by the analytical procedures. If contaminants are detected in field or laboratory blanks, the sample data shall be qualified, as appropriate.

D.3.b Field Duplicates

Field duplicates shall consist of two samples either split from the same sample device or collected sequentially. Field duplicate samples shall be collected at a minimum frequency of ten percent of the total number of samples submitted for analysis. RPDs for field duplicates shall be calculated. A precision of not less than 80 percent for duplicates shall be considered acceptable for soil sampling conducted at the Facility. The analytical DQO for precision shall be used for water duplicates.

D.3.c Method Reporting Limits

Method reporting limits for sample analyses for each media shall be established at the lowest level practicable for the method and analyte concentrations and shall not exceed soil, groundwater or vapor emissions background levels, cleanup standards and screening levels. Detection limits that exceed established soil, groundwater or air emissions cleanup standards, screening levels or background levels and are reported as "not detected" shall be considered data quality exceptions and an explanation for the exceedance and its acceptability for use shall be provided.

D.3.d Holding Times

The sampling, extraction and analysis dates shall be reviewed to confirm that extraction and analyses were completed within the recommended holding times as specified by EPA protocol. Appropriate data qualifiers shall be noted if holding times are exceeded.

D.4 REPRESENTATIVENESS AND COMPARABILITY

D.4.a Representativeness

Representativeness is a qualitative parameter related to the degree to which the sample data represent the specific characteristics of concern. Procedures shall be implemented to assure representative samples, such as repeated measurements of the same parameter at the same location over several distinct sampling events. Any procedures or variations that may affect the collection or analysis of representative samples shall be noted and the data qualified, as appropriate.

D.4.a Comparability

Comparability is a qualitative parameter related to whether similar sample data can be compared. To assure comparability, analytical results shall be reported in appropriate units for comparison.

with other data (past studies, comparable sites, screening levels and cleanup standards), and standard collection and analytical procedures shall be implemented. Any procedure or variation that may affect comparability shall be noted, and the data shall be qualified, as appropriate.

D.5 LABORATORY REPORTING, DOCUMENTATION, DATA REDUCTION AND CORRECTIVE ACTION

Upon receipt of each laboratory data package, data shall be evaluated against the criteria outlined in the previous sections. Any deviation from the established criteria shall be noted, and the data will be qualified, as appropriate. A full review and discussion of analytical data QA/QC and all data qualifiers shall be submitted as appendices or attachments to reports prepared in accordance with Appendix E of this Permit. Data validation procedures for all samples shall include checking the following, when appropriate:

1. Holding times,
2. Detection limits,
3. Field equipment rinsewater blanks,
4. Field blanks,
5. Field Duplicates,
6. Trip blanks,
7. Reagent blanks,
8. Laboratory duplicates,
9. Laboratory blanks,
10. Laboratory matrix spikes,
11. Laboratory matrix spike duplicates,
12. Laboratory blank spikes,
13. Laboratory blank spike duplicates, and
14. Surrogate recoveries.

If significant quality assurance problems are encountered, corrective action shall be implemented as appropriate. All corrective action shall be defensible, and the corrected data shall be qualified.

New Mexico Environment Department
September 2003

Navajo Refining Company
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APPENDIX E

NAVAJO REFINING COMPANY ARTESIA REFINERY POST-CLOSURE CARE PERMIT REPORTING REQUIREMENTS

E REPORTING REQUIREMENTS

E.1 GENERAL

This Appendix provides the general reporting requirements and report formats for corrective action activities required under this Permit. This Appendix is not intended to provide reporting requirements for every potential corrective action conducted at the Facility; therefore, the formats for all types of reports are not presented below. The described formats include the general reporting requirements and formats for site-specific investigation work plans, investigation reports, routine monitoring reports, risk assessments and corrective measures evaluations. The reports shall generally be considered equal to RFI work plans, RFI reports, periodic monitoring reports, risk assessments and CMS reports, respectively for the purposes of RCRA compliance and NMED oversight fee assessments.

The reporting requirements listed in this section do not include all subsections that may be necessary to complete each type of report listed. Additional subsections may be needed to address additional site-specific issues or information collected during corrective action or monitoring activities not listed below. Individual reports may be tailored to unit-specific conditions or requirements; however, variations to the general report format and the formats for reports not listed in this section must be submitted in outline form to the Secretary for approval prior to submittal. The Secretary will approve or disapprove, in writing, the proposed report outline within 60 days of receipt of the outline. If the Secretary disapproves the report outline, the Secretary will notify the Permittee, in writing, of the outline's deficiencies and will specify a date for submittal of a revised report outline. All reports submitted by the Permittee shall follow the general approach and limitations for data presentation described in this section.

E.2 INVESTIGATION WORK PLAN

The format listed below fulfills the requirements of the Secretary for the preparation of a work plan for unit-specific or aggregate unit site investigation or corrective action activities at the Facility. This section provides a general outline for work plans. The minimum requirements for describing proposed activities within each subsection when preparing work plans for Facility site investigations are included. All research, locations, depths and methods of exploration, field procedures, analytical analyses, data collection methods and schedules shall be included in each work plan. In general, interpretation of data acquired during previous investigations shall be presented only in the Background sections of the work plans. At a minimum, detections of contaminants encountered during previous investigations shall be presented in the work plan in table format with an accompanying site plan showing sample locations. The other text sections of the work plans shall be reserved for presentation of anticipated site-specific activities and procedures relevant to the project. The general work plan outline is provided below.

E.2.a TITLE PAGE

The title page shall include the type of document, Facility name and SWMU, AOC and/or unit name(s) and the submittal date. A signature block providing spaces for the name, title and organization of the preparer and the responsible Facility representative shall be provided on the title page.

E.2.b EXECUTIVE SUMMARY

This section shall provide a brief summary of the purpose and scope of the investigation to be conducted at the subject site. The Facility name and SWMU, AOC and/or unit name(s) and location shall be included in the executive summary.

E.2.c TABLE OF CONTENTS

The table of contents shall list all text sections and subsections, tables, figures and appendices or attachments included in the work plan. The corresponding page numbers for the titles of each unit of the report shall be included in the table of contents.

E.2.d INTRODUCTION

This section shall include the Facility name, unit name and location and unit status (active operations, closed, corrective action, etc.). General information on the current site usage and status shall be included in this section. A brief description of the purpose of the investigation and the type of site investigation to be conducted shall be provided in this section.

E.2.e BACKGROUND

Relevant background information shall be provided in this section. This section shall briefly summarize historical site uses including the locations of current and former site structures and features (a labeled figure shall be included in the document showing the locations of current and former site structures and features). The locations of pertinent subsurface features such as pipelines, underground tanks, utility lines and other subsurface structures shall be included in the background summary and labeled on the site plan.

This section shall identify potential receptors, including groundwater, and include a brief summary of the type and characteristics of the waste or contaminants and the known and possible source(s), release history and extent of contamination. This section shall include brief summaries of the results of previous investigations including references to pertinent figures, data summary tables and text in previous reports. References to previous reports shall include page, table and figure numbers for referenced information. Summary data tables and site plans showing relevant investigation locations shall be included in the Tables and Figures sections of the document, respectively.

E.2.f SITE CONDITIONS

E.2.f.i Surface Conditions

This subsection shall provide a brief, detailed description of current site topography, features and structures including a description of drainages, vegetation, erosional features and current site uses. In addition, descriptions of features located in surrounding sites that may have an impact on the subject site regarding sediment transport, surface water runoff or contaminant fate and transport shall be included in this subsection.

E.2.f.ii Subsurface Conditions

A detailed description of the site conditions observed during previous subsurface investigations shall be included in this section including relevant soil horizon, stratigraphic, groundwater and other relevant information. A site plan showing the locations of all borings and excavations drilled or excavated during previous investigations shall be included in the Figures section of the work plan. A brief description of the anticipated stratigraphic units that may be encountered during the investigation may be included in this subsection if no previous investigations have been conducted at the site.

E.2.g SCOPE OF SERVICES

This section shall provide a list of all anticipated activities to be performed during the investigation including, but not limited to, background information research, health and safety requirements that may affect or limit the completion of tasks, drilling, test pit or other excavations, well construction, field data collection, survey data collection, chemical analytical testing, aquifer testing, remediation system pilot testing, investigation derived waste (IDW) storage and/or disposal and reporting.

E.2.h INVESTIGATION METHODS

This section shall provide a list of all anticipated locations and methods for conducting the activities to be performed during the investigation. This subsection shall include but is not limited to, research methods, health and safety practices that may affect the completion of tasks, drilling, test pit or other excavation methods, sampling intervals and methods, well construction methods, field data collection methods, geophysical and land survey methods, field screening methods, chemical analytical testing, materials testing, aquifer testing and pilot testing and other proposed investigation and testing methods. This information may also be summarized in table format, if appropriate.

E.2.i MONITORING AND SAMPLING PROGRAM

This section shall outline the anticipated monitoring and sampling program to be conducted after the initial investigation activities are completed, if applicable. This section shall provide a description of the anticipated groundwater, ambient air, subsurface vapor, remediation system, engineering controls and/or other monitoring and sampling programs to be implemented at the unit.

E.2.j SCHEDULE

This section shall provide the anticipated schedule for completion of field investigation, pilot testing and monitoring and sampling activities. In addition this section shall provide a schedule for submittal of reports and data to the Secretary including a schedule for submitting all status reports and preliminary data, if required.

E.2.k TABLES

The following summary tables may be included in the investigation work plans, if previous investigations have been conducted at the unit. Data presented in the tables shall include information on dates of data collection, analytical methods, detection limits and significant data quality exceptions. All data tables shall include only detected analytes and data quality exceptions that could potentially mask detections.

1. Summaries of regulatory criteria, background and/or applicable cleanup levels (may be included in the analytical data tables instead of as separate tables).
2. Summaries of historical field survey location data.
3. Summaries of historical field screening and field parameter measurements of soil, sediment, groundwater, surface water and/or air quality data.
4. Summaries of historical soil, sediment, groundwater and/or surface water laboratory analytical data. The tables shall include the analytical methods, detection limits and significant data quality exceptions that could influence interpretation of the data.
5. Summaries of historical groundwater elevation and depth to groundwater data. The table shall include the monitoring well depths and the screened intervals in each well.
6. Summaries of historical groundwater laboratory analytical data. The analytical data tables shall include the analytical methods, detection limits and significant data quality exceptions that could influence interpretation of the data.
7. Summary of historical air sample screening and chemical analytical data. The data tables shall include the screening instruments used, laboratory analytical methods, detection limits and significant data quality exceptions that could influence interpretation of the data.
8. Summary of historical pilot testing data, if applicable, including units of measurement and types of instruments used to obtain measurements.

E.2.1 FIGURES

The following figures shall be included with each investigation work plan for each unit including presentation of data where previous investigations have been conducted. All figures must include a scale and north arrow. An explanation shall be provided on each figure for all abbreviations, symbols, acronyms and qualifiers.

1. Vicinity map showing topography and the general location of the subject site relative to surrounding features or properties.
2. Unit site plan that presents pertinent site features and structures, underground utilities, well locations and remediation system location(s) and details. Off-site well locations and other relevant features shall be included on the site plan, if practical. Additional site plans may be required to present the locations of relevant off-site well locations, structures and features.
3. Figures showing historical and proposed soil boring or excavation locations and sampling locations.
4. Figures presenting historical soil sample field screening and laboratory analytical data, if applicable.
5. Figures presenting the locations of all existing and proposed borings and vapor monitoring well locations.
6. Figures showing all existing and proposed wells and piezometers and presenting historical groundwater elevation data and indicating groundwater flow direction(s).
7. Figure(s) presenting historical groundwater laboratory analytical data, if applicable. The chemical analytical data corresponding to each sampling location can be presented in tabular form on the figure or as an isoconcentration map.
8. Figures presenting historical and proposed surface water sample locations and field measurement data, if applicable.
9. Figure(s) presenting historical surface water laboratory analytical data, if applicable.
10. Figures showing historical and proposed air sampling locations and presenting historical air quality data, if applicable.
11. Figures presenting historical pilot testing locations and data, if applicable, including site plans and/or graphic data presentation.
12. Figures presenting geologic cross-sections based on outcrop and borehole data acquired during previous investigations, if applicable.

E.2.m APPENDICES

An IDW management plan shall be included as an appendix to the investigation work plan. Additional appendices may be necessary to present additional data or documentation not listed above.

E.3 INVESTIGATION REPORT

The format listed below fulfills the requirements acceptable to the Secretary for the reporting of site investigations at the Facility. This section provides a general outline for site investigation

reports and also lists the minimum requirements for reporting within each subsection when preparing site investigation reports for Facility units. All data, collected during each site investigation event in the reporting period, shall be included in the reports. In general, interpretation of data shall be presented only in the Background, Conclusions and Recommendations sections of the reports. The other text sections of the reports shall be reserved for presentation of facts and data without interpretation or qualifications. The general report outline is provided below.

E.3.a TITLE PAGE

The title page shall include the type of document, the Facility name and SWMU, AOC, and/or unit name(s) and the submittal date. A signature block providing spaces for the name, title and organization of the preparer and the responsible Facility representative shall be provided on the title page.

E.3.b EXECUTIVE SUMMARY

This section shall provide a brief summary of the purpose, scope and results of the investigation conducted at the subject site during the reporting period. The Facility name and SWMU, AOC and/or unit name(s) and location shall be included in the executive summary. In addition, this section shall include a brief summary of conclusions based on the investigation data collected and recommendations for future investigation, monitoring, remedial action or site closure.

E.3.c TABLE OF CONTENTS

The table of contents shall list all text sections and subsections, tables, figures and appendices or attachments included in the report. The corresponding page numbers for the titles of each unit of the report shall be included in the table of contents.

E.3.d INTRODUCTION

This section shall include the Facility name, unit name and location and unit status (active operations, closed, corrective action, etc.). General information on the site usage and status shall be included in this section. A brief description of the purpose of the investigation, the type of site investigation conducted and the type of results presented in the report also shall be provided in this section.

E.3.e BACKGROUND

Relevant background information shall be provided in this section. This section shall briefly summarize historical site uses including the locations of current and former site structures and features (a labeled figure shall be included in the document showing the locations of current and former site structures and features). The locations of subsurface features such as pipelines, underground tanks, utility lines and other subsurface structures shall be included in the

background summary and labeled on the site plan. In addition, this section shall include a brief summary of the possible sources, release history, known extent of contamination and the results of previous investigations including references to previous reports. The references to previous reports shall include page, table and figure numbers for referenced information. A site plan, showing relevant investigation locations, and summary data tables shall be included in the Figures and Tables sections of the document, respectively.

E.3.f SCOPE OF SERVICES

This section shall provide a summary listing of all activities actually performed during the investigation event including, but not limited to, background information research, implemented health and safety measures that affected or limited the completion of tasks, drilling, test pit or other excavation methods, well construction methods, field data collection, survey data collection, chemical analytical testing, aquifer testing, remediation system pilot testing, and IDW storage and/or disposal.

E.3.g FIELD INVESTIGATION RESULTS

This section shall provide a summary of the procedures used and the results of all field investigation activities conducted at the site including, but not limited to, the dates that investigation activities were conducted, the type and purpose of field investigation activities performed, field screening measurements, logging and sampling results, pilot test results, construction details and conditions observed. Field observations or conditions that altered the planned work or may have influenced the results of sampling, testing and logging shall be reported in this section. Tables summarizing all pertinent sampling, testing and screening results shall be prepared in a format approved by the Secretary. The tables shall be presented in the Tables section of the reports. At a minimum, the following subsections shall be included, where appropriate.

E.3.g.i Surface Conditions

This subsection shall provide a description of current site topography, features and structures including a description of drainages, vegetation, erosional features and current site uses. In addition, descriptions of features located in surrounding sites that may have an impact on the subject site regarding sediment transport, surface water runoff or contaminant transport shall be included in this subsection.

E.3.g.ii Exploratory Drilling or Excavation Investigations

This subsection shall describe the locations, methods and depths of subsurface explorations including the types of equipment used, the logging procedures and the soil or rock classification system used to describe the observed materials, exploration equipment decontamination procedures and conditions encountered that may have affected or limited the investigation.

A description of the site conditions observed during subsurface investigation activities shall be included in this section including soil horizon and stratigraphic information. Site plans showing the locations of all borings and excavations shall be included in the Figures section of the report. Boring, test pit and excavation logs for all exploratory borings and excavations shall be presented in an Appendix or Attachment to the report.

E.3.g.iii Subsurface Conditions

This subsection shall provide a description of known subsurface lithology and structures based on observations made during the current and previous subsurface investigations and including interpretation of geophysical logs and as-built drawings of man-made structures, if applicable. A description of the known locations of pipelines and utility lines and observed geologic structures shall also be included in this subsection. A site plan showing boring and/or excavation locations and the locations of site above- and below-ground structures shall be included in the Figures section of the report. In addition, cross sections shall be constructed, if appropriate, to provide additional visual presentation of site or regional subsurface conditions.

E.3.g.iv Monitoring Well Construction, Exploratory Boring or Excavation Abandonment

The methods and details of monitoring well construction and the methods used to abandon or backfill exploratory borings and excavations shall be described in this section. The description shall include the dates of well construction, boring abandonment or excavation backfilling. In addition, well construction diagrams shall be included in the Appendix or Attachment with the associated boring logs for monitoring well borings.

E.3.g.v Groundwater Conditions

This subsection shall describe groundwater conditions observed beneath the subject site and relate subsurface groundwater conditions to regional groundwater conditions. A description of the depths to water, aquifer thickness and groundwater flow directions shall be included in this section for each water bearing zone as appropriate to the investigation. Figures showing well locations and the appropriate site, surrounding area and regional groundwater elevations and flow directions for each hydrologic zone shall be included in the Figures section of the report.

E.3.g.vi Surface Water Conditions

This subsection shall describe surface water runoff, drainage, surface water sediment transport and contaminant transport in surface water as suspended load and/or as dissolved phase in surface water via natural and man-made drainages, if applicable. A description of contaminant fate and transport shall be included, if appropriate.

E.3.g.vii Surface Air and Subsurface Vapor Conditions

This subsection shall provide a description of air and vapor monitoring and sampling methods used during the site investigation, if conducted, and provide a description of observations made during the site investigation regarding subsurface flow pathways and the subsurface air flow regime.

E.3.g.viii Materials Testing Results

Materials testing results such as core permeability testing, grain size analysis or other materials testing results shall be reported in this subsection. Sample collection methods, locations and depths also shall be included. Corresponding summary tables shall be included in the Tables section of the report.

E.3.g.ix Pilot Testing Results

Pilot testing is typically conducted after initial subsurface investigations are completed and the need for additional investigation or remediation has been evaluated. Pilot testing, including aquifer testing and remediation system pilot testing shall be addressed through separate work plans and pilot test reports. The format for pilot test work plans and reports shall be approved by the Secretary prior to submittal.

E.3.h REGULATORY CRITERIA

This section shall provide information regarding applicable cleanup standards, screening levels and/or risk-based cleanup goals for each pertinent media at the subject unit. The appropriate cleanup levels for each unit within the subject site shall be included if site-specific levels have been established at separate facility locations. A table summarizing the applicable cleanup standards or inclusion of applicable cleanup standards in the data tables shall be included in the Tables section of the document. Risk-based evaluation procedures, if used to calculate cleanup levels, shall be presented in a separate document. If cleanup levels calculated in a risk evaluation are employed, the risk evaluation document shall be referenced including pertinent page numbers for referenced information.

E.3.i SITE CONTAMINATION

This section shall provide a description of sampling intervals and methods for detection of surface and subsurface contamination in soils, sediments, groundwater, surface water and vapor-phase contamination as appropriate to the scope of the investigation. Factual information only shall be included in this Section. Interpretation of the data shall be reserved for the Summary and Conclusions Section of the reports.

E.3.i.i Soil and Sediment Sampling

This subsection shall briefly describe the dates, locations and methods of sample collection, sampling intervals, methods for sample logging, screening and laboratory sample selection methods including the sample depths for samples submitted for laboratory analyses. A site plan showing the sample locations shall be included in the Figures section of the report.

E.3.i.ii Soil Sample Field Screening Results

This subsection shall describe the field screening methods used during the investigation and the field screening results. Field screening results also shall be presented in summary tables in the Tables section of the document. The limitations of field screening instrumentation and any conditions that influenced the results of field screening shall be discussed in this subsection.

E.3.i.iii Soil Sampling Chemical Analytical Results

This subsection shall briefly summarize the laboratory analyses conducted, the analytical methods and the analytical results and provide a comparison of the data to cleanup standards or established cleanup levels for the site. The laboratory results also shall be presented in summary tables in the Tables section of the document. Field conditions and sample collection methods that could potentially affect the analytical results shall be described in this section. If appropriate, soil analytical data shall be presented with sample locations on a site plan and included in the Figures section of the report.

E.3.i.iv Groundwater Sampling

This subsection shall briefly describe the dates, locations, depths and methods of sample collection and methods for sample logging, screening and laboratory sample selection methods. A map showing the locations of all site and surrounding area well locations shall be included in the Figures section of the report.

E.3.i.v Groundwater General Chemistry

This subsection shall describe the results of measurement of field purging parameters and field analytical measurements. Field parameter measurements and field analytical results also shall be presented in summary tables in the Tables section of the document. The limitations of field measurement instrumentation and any conditions that may have influenced the results of the field measurements shall be discussed in this subsection. If appropriate, relevant water chemistry concentrations shall be presented in data tables or as isoconcentration contours on a site plan included in the Figures section of the report.

E.3.i.vi Groundwater Chemical Analytical Results

This section shall summarize groundwater chemical analytical methods and analytical results, and provide a comparison of the data to the cleanup standards or established cleanup levels for the site. The rationale or purpose for altering or modifying the groundwater sampling program

outlined in the site investigation work plan also shall be provided in this section. Field conditions that may have affected the analytical results during sample collection shall be described in this section. Tables summarizing the groundwater laboratory, field and QA/QC chemical analytical data, applicable cleanup levels and modifications to the groundwater sampling program shall be provided in the Tables section of the report. If appropriate, relevant analytical data concentrations shall be presented in data tables or as isoconcentration contours on a site plan included in the Figures section of the report.

E.3.i.vii Air and/or Subsurface Vapor Sampling

This subsection shall briefly describe the dates, locations, depths and methods of sample collection and methods for sample logging and laboratory sample selection methods. A site plan showing the locations of all air sampling locations shall be provided in the Figures section of the report.

E.3.i.viii Air and/or Subsurface Vapor Field Screening Results

This subsection shall describe the field screening methods used for ambient air and/or subsurface vapors during the investigation and the field screening results. Field screening results also shall be presented in summary tables in the Tables section of the document. The locations of ambient air and/or subsurface vapor screening sample collection shall be presented on a site plan included in the Figures section of the report. The limitations of field screening instrumentation and any conditions that influenced the results of field screening shall be discussed in this subsection.

E.3.i.ix Air and/or Subsurface Vapor Laboratory Analytical Results

This section shall list air sampling laboratory analytical methods and analytical results and provide a comparison of the data to emissions standards or established cleanup or emissions levels for the site, if applicable. The rationale or purpose for altering or modifying the air monitoring or sampling program outlined in the site investigation work plan also shall be provided in this section. Field conditions that may have affected the analytical results during sample collection shall be described in this section. Tables summarizing the air sample laboratory, field and QA/QC chemical analytical data, applicable cleanup levels or emissions standards and modifications to the air sampling program shall be provided in the Tables section of the report. If appropriate, relevant concentrations shall be presented in data tables or as isoconcentration contours on a map included in the Figures section of the report.

E.3.j CONCLUSIONS

This section shall provide a brief summary of the investigation activities and a discussion and conclusions with regard to the results of the investigation conducted at the site. In addition, this section shall provide a comparison of the results to applicable cleanup levels and relevant historical investigation results and chemical analytical data. Potential receptors, including groundwater, shall be identified and discussed and the need for further investigation, corrective

measures and/or a risk analyses shall be included in this section. An explanation shall be provided with regard to data gaps. If appropriate, a risk analysis may be included as an Appendix in an investigation report; however, the risk analysis shall be presented in the Risk Analysis format included in Appendix E, Section E.5 of this Permit. References to the risk analysis shall be presented only in the Summary and Conclusions section of the Investigation Report.

E.3.k RECOMMENDATIONS

Recommendations and explanations regarding future investigation, monitoring, corrective measures, risk analyses or site closure shall be included in this section. A corresponding schedule for further action regarding the unit also shall be provided.

E.3.l TABLES

The following summary tables shall be included in each investigation report as appropriate. Data presented in the tables shall include the current data including information on dates of data collection, analytical methods, detection limits and significant data quality exceptions. All data tables shall include only detected analytes and data quality exceptions that could potentially mask detections.

1. Summaries of regulatory criteria, background and/or the applicable cleanup levels (this information may be included in the analytical data tables instead of as separate tables).
2. Summaries of field survey location data. Separate tables shall be prepared for well locations and individual media sampling locations except where the locations are the same for more than one media.
3. Summaries of field screening and field parameter measurements of soil, sediments, groundwater, surface water and/or air quality data.
4. Summaries of soil laboratory analytical data shall include the analytical methods, detection limits and significant data quality exceptions that could influence interpretation of the data.
5. Summaries of groundwater elevation and depth to groundwater data. The table shall include the monitoring well depths and the screened intervals in each well.
6. Summary of groundwater laboratory analytical data. The analytical data tables shall include the analytical methods, detection limits and significant data quality exceptions that could influence interpretation of the data.
7. Summary of surface water laboratory analytical data. The analytical data tables shall include the analytical methods, detection limits and significant data quality exceptions that could influence interpretation of the data.
8. Summary of air sample screening and chemical analytical data. The data tables shall include the screening instruments used, laboratory analytical methods, detection limits and significant data quality exceptions that could influence interpretation of the data.
9. Summary of pilot testing data, if applicable, including units of measurement and types of instruments used to obtain measurements.
10. Summary of materials testing data, if applicable.

E.3.m FIGURES

The following figures shall be included with each investigation report as appropriate. All figures must include a scale and north arrow. An explanation shall be provided on each figure for all abbreviations, symbols, acronyms and qualifiers.

1. Vicinity map showing topography and the general location of the subject site relative to surrounding features or properties.
2. Unit site plan that presents pertinent site features and structures, underground utilities, well locations and remediation system location(s) and details. Off-site well locations and other relevant features shall be included on the site plan if practical. Additional site plans may be required to present the locations of relevant off-site well locations, structures and features.
3. Figure(s) showing boring or excavation locations and sampling locations.
4. Figure(s) presenting soil sample field screening and laboratory analytical data.
5. Figure(s) displaying the locations of all newly installed and existing wells and borings.
6. Figure(s) presenting monitoring well and piezometer locations, groundwater elevation data and indicating groundwater flow direction(s).
7. Figure(s) presenting groundwater laboratory analytical data including past data, if applicable. The chemical analytical data corresponding to each sampling location may be presented in tabular form on the figure or as an isoconcentration map.
8. Figure(s) displaying surface water sample locations and field measurement data including past data, if applicable.
9. Figure(s) presenting surface water laboratory analytical data including past data, if applicable. The laboratory analytical data corresponding to each sampling location may be presented in tabular form on the figure.
10. Figure(s) showing air or subsurface vapor sampling locations and presenting air quality data. The field screening or laboratory analytical data corresponding to each sampling location may be presented in tabular form on the figure or as an isoconcentration map.
11. Figure(s) presenting geologic cross-sections based on outcrop and borehole data.
12. Figure(s) presenting pilot testing locations and data, where applicable, including site plans or graphic data presentation.

E.3.n APPENDICES

Investigation reports shall include the following appendices. Additional appendices may be necessary to present data or documentation not listed below.

E.3.n.i FIELD METHODS

Detailed descriptions of the methods used to acquire field measurements of each media that was surveyed or tested during the investigation shall be included in this section. Methods include, but are not limited to, exploratory drilling or excavation methods, the methods and types of instruments used to obtain field screening, field analytical or field parameter measurements, instrument calibration procedures, sampling methods for each media investigated,

decontamination procedures, sample handling procedures, geophysical methods, documentation procedures and field conditions that affected procedural or sample testing results. Methods of measuring and sampling during pilot testing shall be reported in this section, if applicable. Investigation derived waste storage and disposal methods also shall be presented as a subsection of this appendix. Copies of IDW disposal documentation shall be provided in a separate appendix.

E.3.n.ii BORING/TEST PIT LOGS AND WELL CONSTRUCTION DIAGRAMS

Boring logs, test pit or other excavation logs and well construction details shall be presented in this appendix. In addition, a key(s) to symbols and soil or rock classification system shall be included in this section.

E.3.n.iii CHEMICAL ANALYTICAL PROGRAM

Chemical analytical methods, a summary of data quality objectives and data quality review procedures shall be reported in this appendix. A summary of data quality exceptions and their effect on the acceptability of the field and laboratory analytical data with regard to the investigation and the site status shall be included in this appendix along with references to case narratives provided in the laboratory reports.

E.3.n.iv CHEMICAL ANALYTICAL REPORTS

This section shall include all laboratory chemical analytical data generated for the reporting period. The reports must include all chain-of-custody records and QA/QC results provided by the laboratory. The laboratory reports may be provided electronically in a format approved by the Secretary and shall be in the form of a final laboratory report. Laboratory report data tables may be submitted in Microsoft Excel format. Hard (paper) copies of the chain-of-custody forms shall be submitted with the reports regardless of whether the final laboratory report is submitted electronically or in hard copy.

E.3.n.v OTHER APPENDICES

Other appendices containing additional information shall be added as appropriate.

E.4 PERIODIC MONITORING REPORT

The format listed below fulfills the requirements acceptable to the Secretary for the reporting of periodic groundwater, vapor and/or remediation system monitoring at the Facility. This document provides a general outline for monitoring reports and also lists the minimum requirements for reporting within each subsection when preparing routine monitoring reports for specific units and for Facility-wide monitoring. All data, collected during each monitoring and sampling event in the reporting period, shall be included in the reports. In general, interpretation of data shall be presented only in the Background, Conclusions and Recommendations sections

of the reports. The other text sections of the reports shall be reserved for presentation of facts and data without interpretation or qualifications. The general report outline is provided below.

E.4.a TITLE PAGE

The title page shall include type of document, the Facility name and SWMU, AOC, site and/or unit name(s) (if the report is for unit specific monitoring) and the submittal date. A signature block providing spaces for the name, title and organization of the preparer and the responsible Facility representative shall be provided on the title page.

E.4.b EXECUTIVE SUMMARY

This section shall provide a brief summary of the purpose, scope and results of the monitoring conducted at the subject site during the reporting period. The Facility, SWMU, AOC and/or unit name(s) and location shall be included in the executive summary. In addition, the Executive Summary shall include a brief summary of conclusions based on the monitoring data collected.

E.4.c TABLE OF CONTENTS

The table of contents shall list all text sections and subsections, tables, figures and appendices or attachments included in the report. The corresponding page numbers for the titles of each unit of the report shall be included in the table of contents.

E.4.d INTRODUCTION

This section shall include the Facility name, unit name and location and unit status (active operations, closed, corrective action, etc.). General information on the site usage and status shall be included in this section. A brief description of the purpose of the monitoring, type of monitoring conducted and the type of results presented in the report also shall be provided in this section.

E.4.e SCOPE OF SERVICES

This section shall provide a summary of all activities actually performed during the monitoring event or reporting period including field data collection, chemical testing, remediation system monitoring, if applicable, and purge/decontamination water storage and/or disposal.

E.4.f REGULATORY CRITERIA

This section shall provide information regarding applicable cleanup standards, screening levels and/or risk-based cleanup goals for the subject facility. The appropriate cleanup levels for each unit within the subject facility shall be included if site-specific levels have been established at separate facility locations. A table summarizing the applicable cleanup standards or inclusion of applicable cleanup standards in the data tables may be substituted for this section. Risk-based

evaluation procedures, if used to calculate cleanup levels, must either be included as an attachment or referenced. The specific document and page numbers must be included for all referenced materials.

E.4.g MONITORING RESULTS

This section shall provide a summary of the results of monitoring conducted at the site including, but not limited to, the dates that monitoring was conducted, the measured depths to groundwater, direction(s) of groundwater flow, field air and/or water quality measurements, static pressures, field measurements and a comparison to previous monitoring results. Field observations or conditions that may influence the results of monitoring shall be reported in this section. Tables summarizing vapor monitoring parameters, groundwater elevation/depth to groundwater measurements and other field measurements may be substituted for this section. The tables shall include all information required in section E.4.k below.

E.4.h CHEMICAL ANALYTICAL DATA

This section shall summarize the dates of vapor and/or groundwater sampling, chemical analytical methods and analytical results, and provide a comparison of the data to previous results and the cleanup standards or established cleanup levels for the site. The rationale or purpose for altering or modifying the sampling program shall be provided in this section. A table summarizing the laboratory and QA/QC analytical data, applicable cleanup levels and modifications to the vapor and/or groundwater sampling program may be substituted for this section. The tables shall include all information required in section E.4.k below.

E.4.i REMEDIATION SYSTEM MONITORING

This section shall summarize remediation system capabilities, performance data, monitoring data, treatment system discharge sampling requirements and system influent and effluent sample chemical analytical results. The dates of operation, system failures and modifications made to the remediation system during the reporting period shall be included in this section. A summary table may be substituted for this section. The tables shall include all information required in section E.4.k below.

E.4.j SUMMARY

This section shall provide a discussion and conclusions with regard to the results of the monitoring conducted at the site. In addition, this section shall provide a comparison of the results to applicable cleanup levels and relevant historical monitoring and chemical analytical data. An explanation shall be provided with regard to data gaps. A discussion of remediation system performance, monitoring results, modifications, if applicable, and compliance with discharge requirements shall be provided in this section. Recommendations and explanations regarding future monitoring, remedial action or site closure also shall be included in this section.

E.4.k TABLES

The following summary tables shall be included in each monitoring report. Data presented in the tables shall include the current data plus data from the three previous monitoring events or, if data from less than three monitoring events is available, data acquired during previous subsurface investigations and vapor, groundwater and/or remediation system monitoring. The dates of data collection shall be included in the tables. Summary tables may be substituted for portions of the text. All data tables shall include only detected analytes and data quality exceptions that could potentially mask detections.

1. Summary of regulatory criteria (a Regulatory Criteria text section can be substituted for this table or the applicable cleanup levels can be included in the analytical data tables).
2. Summary of groundwater elevation and depth to groundwater data. The table shall include the monitoring well depths and the screened intervals in each well.
3. Summary of field measurements of surface water quality data, if applicable.
4. Summary of field measurements of field vapor monitoring data (must include historical vapor monitoring data as described above), if applicable.
5. Summary of field measurements of groundwater quality data (must include historical water quality data as described above).
6. Summary of vapor sample chemical analytical data, if applicable (must include historical vapor sample chemical analytical data as described above).
7. Summary of surface water chemical analytical data, if applicable (must include historical surface water chemical analytical data as described above).
8. Summary of groundwater chemical analytical data (must include historical groundwater chemical analytical data as described above).
9. Summary of remediation system monitoring data, if applicable (must include historical remediation system monitoring data as described above).

E.4.l FIGURES

All figures must include a scale and north arrow. An explanation shall be provided on each figure for all abbreviations, symbols, acronyms and qualifiers. The following figures shall be included with each monitoring report where applicable:

1. Vicinity map showing topography and the general location of the subject site relative to surrounding features or properties.
2. Facility site plan that presents pertinent site features and structures, well and piezometer locations and remediation system location(s) and features. Off-site well locations and pertinent features shall be included on the site plan if practical. Additional site plans may be required to present the locations of relevant off-site well locations, structures and features.
3. Figure presenting the locations of, piezometer, monitoring and other well locations, groundwater elevation data and indicating groundwater flow direction(s).

4. Figure(s) presenting groundwater chemical analytical data for the current monitoring event. The chemical analytical data corresponding to each sampling location may be presented in tabular form on the figure or as an isoconcentration map.
5. Figure(s) presenting surface water sampling locations and chemical analytical data for the current monitoring period.
6. Figure(s) presenting vapor sampling locations and chemical analytical data for the current monitoring event. The chemical analytical data corresponding to each sampling location may be presented in tabular form on the figure or as an isoconcentration map.
7. Figures presenting geologic cross-sections based on outcrop and borehole data, if applicable.

E.4.m APPENDICES

Monitoring reports shall include the appendices listed in this section (E.4.m) below. Additional appendices may be necessary to present data or documentation not listed below.

E.4.m.i FIELD METHODS

The methods used to acquire field measurements, groundwater elevations, vapor and water quality data, vapor and water samples, and remediation system data shall be included in this section. Methods include, but are not limited to, the methods and types of instruments used to measure depths to water, air or headspace parameters, and water quality parameters. In addition, decontamination, well purging and well sampling techniques and sample handling procedures shall be provided in this Appendix. Methods of measuring and sampling remediation systems shall be reported in this section, if applicable. Purge and decontamination water storage and disposal methods also shall be presented in this appendix. Copies of purge and decontamination water disposal documentation shall be provided in a separate appendix.

E.4.m.ii CHEMICAL ANALYTICAL PROGRAM

Chemical analytical methods, a summary of data quality objectives and data quality review procedures shall be reported in this Appendix. A summary of data quality exceptions and their effect on the acceptability of the chemical analytical data with regard to the monitoring event and the site status shall be included in this appendix along with references to case narratives provided in the laboratory reports.

E.4.m.iii CHEMICAL ANALYTICAL REPORTS

This appendix shall include all laboratory chemical analytical data generated for the reporting period. The data may be submitted electronically on a compact disc in Microsoft Excel format. The reports shall include all chain-of-custody records and QA/QC results provided by the laboratory. Hard (paper) copies of all chain-of-custody records shall be submitted as part of this appendix.

E.5 RISK ANALYSIS REPORT

The format listed below fulfills the requirements acceptable to the Secretary for the preparation of a risk assessment report for sites requiring corrective action at the Facility. This section provides a general outline for risk assessments and also lists the minimum requirements for describing risk assessment elements within each subsection when preparing these documents for Facility sites. In general, interpretation of data shall be presented only in the Background, Site Conceptual Model and Conclusions and Recommendations sections of the reports. The other text sections of the Risk Analysis document shall be reserved for presentation of sampling results from all investigations, conceptual and mathematical elements of the risk assessment, and presentations of toxicity information and screening values used in the risk assessment. Sections E.5.h and subsequent sections should be presented in separate sections for the human health and ecological risk assessments, but the general risk assessment outline applicable to both sections is provided below.

E.5.a TITLE PAGE

The title page shall include the type of document, Facility name and SWMU, AOC, site and/or unit name(s) and the submittal date. A signature block providing spaces for the name, title and organization of the preparer and the responsible Facility representative shall be provided on the title page.

E.5.b EXECUTIVE SUMMARY

This section shall provide a brief summary of the purpose and scope of the risk assessment for the subject site. The Executive Summary also shall briefly summarize the conclusions of the risk assessment. The Facility name and SWMU, AOC and/or unit name(s) and location shall be included in the executive summary.

E.5.c TABLE OF CONTENTS

The table of contents shall list all text sections and subsections, tables, figures and appendices or attachments included in the risk assessment. The corresponding page numbers for the titles of each unit of the report shall be included in the table of contents.

E.5.d INTRODUCTION

This section shall include the Facility name, unit name and location and unit status (active operations, closed, corrective action, etc.). General information on the current site usage and status shall be included in this section.

E.5.e BACKGROUND

Relevant background information shall be provided in this section. This section shall briefly

summarize historical site uses including the locations of current and former site structures and features. A labeled figure shall be included in the document showing the locations of current and former site structures and features.

E.5.e.i Site Description

This subsection shall provide a description of current site topography, features and structures including a description of drainages, erosional features, current site uses and other data relevant to assessing risk at the site. Depth to groundwater and direction of groundwater flow shall be included in this section. The presence and location of surface water bodies such as springs or wetlands shall be noted in this section. Photos of the site may be incorporated into this section if desired. Ecological features of the site should be described here, including type and amount of vegetative cover, observed and expected wildlife receptors, and level of disturbance of the site. A topographical map of the site and vicinity of the site showing habitat types, boundaries of each habitat, and any surface water features shall be included in the Figures section of the document.

E.5.e.ii Sampling Results

This section shall include a summary of the release history, known and possible sources of contamination, and the vertical and lateral extent of contamination present in each media. This section shall include summaries of sampling results of all investigations including site plans (included in the Figures section of the document) showing locations of detected contaminants. This section shall reference pertinent figures, data summary tables and references in previous reports. References to previous reports shall include page, table and figure numbers for referenced information. Summaries of sampling data for each constituent shall include the maximum value detected, the detection limit, the 95% UCL of the mean value detected (if applicable to the data set) and whether that 95% UCL of the mean was calculated based on a normal or lognormal distribution. Background values used for comparison to inorganic constituents at the site shall be presented in this subsection. The table of background values should appear in the Tables section of the document and include actual values used as well as the origin of the values (facility-wide, site-specific, UCL, UTL). This section shall also include a discussion of how "non-detect" sample results were handled in the averaging of data.

E.5.f SITE CONCEPTUAL MODEL

This section shall include information on the expected fate and transport of contaminants detected at the site and shall provide a list of all sources of contamination at the unit. Sources that are no longer considered to be ongoing but represent the point of origination for contaminants transported to other locations shall be included. The discussion of fate and transport shall address potential migration of each contaminant in each media, potential degradation products and their migration, and anticipated pathways of exposure for human or ecological receptors. Diagrammatic representations of the site conceptual model shall appear in the Figures section of the document.

For human health risk assessments, the conceptual site model shall include residential land use as the future land use for all risk assessments. In addition, site specific future land use may be included provided that written approval to consider a site-specific future land use has been obtained from NMED prior to inclusion of the anticipated land use in the risk assessment. If a site-specific future land use scenario appears in the risk assessment, all values for exposure parameters and the source of those values shall be included in table format and presented in the Tables section of the document.

Conceptual site models presented for ecological risk assessments shall identify assessment endpoints and measurement receptors for the site. The discussion of the model shall explain how the measurement receptors for the site are protective of the wildlife receptors identified in section E.5.e.h.i.

E.5.g RISK SCREENING LEVELS

This section shall present the actual screening values used for each contaminant for comparison to all human health and ecological risk screening levels. NMED soil screening levels for residential soil shall be used to screen soil for human health. For those contaminants not appearing on the NMED SSL table, the EPA Region 6 soil screening value adjusted to meet the NMED risk goal of 10^{-5} for total risk for carcinogens shall be used to screen the site for human health risks. If the NMED database does not contain a screening value for the receptor or contaminant of concern, the Facility shall use USEPA ECO-SSLs or derive a screening level using the methodology in the NMED *Guidance for Assessing Ecological Risks Posed by Chemicals: Screening -Level Ecological Risk Assessment*. If no valid toxicological studies exist for the receptor or contaminant of concern, the contaminant/receptor combination shall be addressed using qualitative methods. If an approved site-specific risk scenario is used for the human health risk assessment, this section shall include all toxicity information and exposure assessment equations used for the site-specific scenario as well as the sources for that information. Other regulatory levels applicable to screening the site, such as drinking water MCLs, shall also be included in this section.

E.5.h RISK ASSESSMENT RESULTS

All risk values, HQs, and HIs for human health under projected future residential scenario and site-specific scenario, if applicable, shall be presented in this section. For ecological receptors, the HQ for each contaminant for each receptor, as well as the HI for each receptor shall be presented in this section.

E.5.h.i Uncertainty Analysis

This section shall include discussion of both qualitative and quantitative uncertainty in the risk assessment and estimate the potential impact of the various uncertainties.

E.5.i CONCLUSIONS AND RECOMMENDATIONS

This section shall include the interpretation of the results of the risk assessment and any recommendations for future disposition of the site. This section may include additional information and considerations that the facility believes are relevant to the analysis of the site.

E.5.j TABLES

Data presented in the summary tables shall include information on detection limits and significant data quality exceptions. All data tables shall include only detected analytes and data quality exceptions that could potentially mask detections. The following summary tables shall be included in the risk assessment, as appropriate:

1. Background values used for comparison to inorganic constituents at the site. Table shall include actual values used as well as the origin of the values (facility-wide, site-specific, UCL, UTL, or max).
2. Summaries of sampling data shall include, for each constituent: the maximum value detected, the 95% UCL of the mean value detected (if applicable to the data set) and whether the 95% UCL of the mean was calculated based on a normal or lognormal distribution.
3. Table of all screening values used and the sources of those values.
4. For human health, all risk values, hazard quotients (HQs), and hazard indices (HIs) under projected future residential scenario.
5. For human health, all risk values, HQs, HIs under approved additional site-specific future land use scenario.
6. For ecological receptors, the HQ for each contaminant for each receptor, as well as the HI for each receptor.

E.5.k FIGURES

All figures must include a scale and north arrow. An explanation shall be provided on each figure for all abbreviations, symbols, acronyms and qualifiers. The following figures shall be included with the risk assessment for each unit, as appropriate:

1. Vicinity map showing topography and the general location of the subject site relative to surrounding features or properties.
2. For human health risk assessments, unit site plan that presents pertinent site features and structures, underground utilities, well locations and remediation system location(s) and details. Off-site well locations and other relevant features shall be included on the site plan if practical. Additional site plans may be required to present the locations of relevant off-site well locations, structures and features.
3. For ecological risk assessments, a topographical map of the site and vicinity of the site showing habitat types, boundaries of each habitat, and any surface water features.
4. Conceptual site model diagrams for both human health and ecological risk assessments

E.5.1 APPENDICES

Appendices may be included to present additional relevant information for the risk analysis such as the results of statistical analyses of data sets and comparisons of data, ecological checklists for the site, full sets of results of all sampling investigations at the site or other data as appropriate.

E.6 CORRECTIVE MEASURES EVALUATION

The format listed below fulfills the requirements acceptable to the Secretary for the preparation of a corrective measures evaluation for sites requiring corrective action. This section provides a general outline for corrective measures evaluations and also lists the minimum requirements for describing corrective measures evaluations within each subsection when preparing these documents for Facility sites. All investigation summaries, site condition descriptions, corrective action goals, corrective action options, remedial options selection criteria and schedules shall be included in the corrective measures evaluations. In general, interpretation of historical investigation data shall be presented only in the Background sections of the corrective measures evaluations; however, at a minimum, detections of contaminants encountered during previous site investigations shall be presented in the corrective measures evaluations in table format with an accompanying site plan showing sample locations. The other text sections of the corrective measures evaluations shall be reserved for presentation of corrective action-related information regarding anticipated or potential site-specific corrective action options and methods relevant to the project. The general corrective measures evaluation outline is provided below.

E.6.a TITLE PAGE

The title page shall include the type of document, Facility name and SWMU, AOC, site and/or unit name(s) and the submittal date. A signature block providing spaces for the name, title and organization of the preparer and the responsible Facility representative shall be provided on the title page.

E.6.b EXECUTIVE SUMMARY

This section shall provide a brief summary of the purpose and scope of the corrective measures evaluation to be conducted at the subject site. The Executive Summary also shall briefly summarize the conclusions of the evaluation. The Facility and SWMU, AOC and/or unit name(s) and location shall be included in the executive summary.

E.6.c TABLE OF CONTENTS

The table of contents shall list all text sections and subsections, tables, figures and appendices or attachments included in the corrective measures evaluation. The corresponding page numbers for the titles of each unit of the report shall be included in the table of contents.

E.6.d INTRODUCTION

This section shall include the Facility name, unit location and unit status (active operations, closed, corrective action, etc.). General information on the current site usage and status shall be included in this section. A brief description of the purpose of the corrective measures evaluation and the corrective action objectives for the project also shall be provided in this section.

E.6.e BACKGROUND

Pertinent background information shall be provided in this section. This section shall briefly summarize historical site including the locations of current and former site structures and features. A labeled figure shall be included in the document showing the locations of current and former site structures and features. The locations of subsurface features such as pipelines, underground tanks, utility lines and other subsurface structures shall be included in the background summary and labeled on the site plan.

This section shall include contaminant and/or waste characteristics and a brief summary of the release history, known and possible sources of contamination and the vertical and lateral extent of contamination present in each media. This section shall include brief summaries of results of previous investigations including references to pertinent figures, data summary tables and text in previous reports. References to previous reports shall include page, table and figure numbers for referenced information. Summary tables and site plans showing relevant investigation locations shall be referenced and included in the Tables and Figures sections of the document, respectively.

E.6.f SITE CONDITIONS

E.6.f.i Surface Conditions

This subsection shall provide a description of current and historic site topography, features and structures including a description of drainages, vegetation, erosional features and current site uses. This subsection also shall include a description of those features that could potentially influence corrective action option selection or implementation such as structures, wetlands or other features that may affect remedial activities. In addition, descriptions of features located in surrounding sites that may have an effect on the subject site regarding sediment transport, surface water runoff or contaminant transport shall be included in this subsection. A site plan displaying the locations of all pertinent surface features and structures shall be included in the Figures section of the corrective measures evaluation.

E.6.f.ii Subsurface Conditions

A description of the site conditions observed during previous subsurface investigations shall be included in this section including but not limited to, relevant soil horizon and stratigraphic information, groundwater conditions, fracture data and subsurface vapor information. A site

plan displaying the locations of all borings and excavations drilled or excavated during previous investigations shall be included in the Figures section of the corrective measures evaluation.

E.6.g POTENTIAL RECEPTORS

E.6.g.i Sources

This subsection shall provide a list of all sources of contamination at the subject site where corrective measures are to be considered or required. Sources that are no longer considered to be ongoing but represent the point of origination for contaminants transported to other locations shall be included in this subsection.

E.6.g.ii Pathways

This subsection shall provide a description of potential migration pathways that could result in either acute or chronic exposures to contaminants such as utility trenches, paleochannels, surface exposures, surface drainages, stratigraphic units, fractures, structures and other features. The migration pathways for each contaminant and each media shall be tied to the potential receptors for each pathway. A discussion of contaminant characteristics relating to fate and transport of regulated substances through each pathway also shall be included in this subsection.

E.6.g.iii Receptors

This subsection shall provide a listing and description of all anticipated potential receptors that could possibly be affected by the contamination present at the site. Potential receptors shall include human and ecological receptors, groundwater and also features such as pathways that could divert or accelerate the transport of contamination to human receptors, ecological receptors and/or groundwater.

E.6.h REGULATORY CRITERIA

This section shall provide information regarding applicable cleanup standards, risk-based screening levels and/or risk-based cleanup goals for each media at the subject site. The appropriate cleanup levels for each unit within the subject site shall be included if site-specific levels have been established at separate facility locations. A table summarizing the applicable cleanup standards or inclusion of applicable cleanup standards in the summary data tables providing the results of previous investigations shall be included in the Tables section of the document. Risk-based evaluation procedures, if used to calculate cleanup levels, shall be presented in a separate document. If cleanup levels, calculated in a risk evaluation are employed, the risk evaluation document shall be referenced including pertinent page numbers for referenced information.

E.6.i IDENTIFICATION OF CORRECTIVE MEASURES OPTIONS

This section shall identify and describe potential corrective measures for source control, pathway control and receptor control. Corrective action options shall include the range of available options including but not limited to, no action alternative, institutional controls, engineering controls, in situ and/or on-site remediation alternatives, complete removal and any other combination of alternatives that would potentially achieve cleanup goals.

E.6.j EVALUATION OF CORRECTIVE MEASURES OPTIONS

This section shall provide an evaluation of the corrective measures options identified in Section E.6.i above. The evaluation shall be based on the applicability, technical feasibility, effectiveness, implementability, impacts to human health and the environment, and cost of each option. A table summarizing the corrective measures alternatives and the criteria listed below shall be included in the Tables section of this document. The general basis for evaluation of corrective measures options is defined below.

E.6.j.i Applicability

Applicability addresses the overall suitability for the corrective action option for containment or remediation of the contaminant(s) in the subject media(s) with regard to protection of human health and the environment.

E.6.j.ii Technical Feasibility

Technical Feasibility describes the reliability/uncertainty in designing, constructing and operating a specific remedial alternative. The description shall include an evaluation of historical application of the remedial alternative including performance, reliability and minimization of hazards.

E.6.j.iii Effectiveness

Effectiveness assesses the ability of the corrective measure to mitigate the measured or potential impact of contamination in a media under the current and projected site conditions. The assessment also shall include the anticipated duration for the technology to attain regulatory compliance. In general, all corrective measures described in Section E.6.i above will have the ability to mitigate the impacts of contamination at the site or unit but not all remedial options will be equally effective at achieving the desired cleanup goals to the degree and within the same time frame as other options.

E.6.j.iv Implementability

Implementability characterizes the degree of difficulty involved during the installation,

construction and operation of the corrective measure. Operation and maintenance of the alternative shall be addressed in this subsection.

E.6.j.v Human Health and Ecological Protectiveness

This category evaluates the short-term (remedy installation-related) and long-term (remedy operation-related) hazards to human health and the environment of implementing the corrective measure. The assessment shall include whether the technology will create a hazard or increase existing hazards and the possible methods of hazard reduction.

E.6.j.vi Cost

This subsection shall discuss the anticipated cost of implementing the corrective measure. The costs shall be divided into (1) capital costs involved with construction, installation, pilot testing, evaluation, permitting and reporting of the effectiveness of the alternative and (2) continuing costs associated with operating, maintaining, monitoring, testing and reporting on the use and effectiveness of the technology.

E.6.k SELECTION OF CORRECTIVE MEASURES

The Permittee shall provide a justification in this section for the recommendation of the preferred corrective measure(s) at the site or unit. The recommendation shall be based upon the ability of the remedial alternative to: (1) achieve cleanup objectives in a timely manner, (2) protect human and ecological receptors, (3) control or eliminate the source(s) of contamination, (4) control migration of released contaminants and (5) manage remediation waste in accordance with State and Federal regulations. The justification shall include the supporting rationale for the remedy selection based on the factors listed in Section E.6.j and a discussion of short- and long-term objectives for the site or unit. The benefits and possible hazards of each preferred potential corrective measure alternative shall be included in this section.

E.6.l DESIGN CRITERIA TO MEET CLEANUP OBJECTIVES

The Permittee shall present descriptions of the preliminary design for the recommended corrective measures alternatives in this section. The description shall include appropriate preliminary plans and specifications to effectively illustrate the technology and the anticipated implementation of the remedial option at the subject area. The preliminary design shall discuss the design life of the alternative and provide engineering calculations for proposed remediation systems.

E.6.m SCHEDULE

This section shall provide a proposed schedule for completion of remedy-related activities such as bench tests, pilot testing, construction, installation, remedial excavation, cap construction, installation of monitoring points and other remedial actions. The anticipated duration of

corrective action operations and the schedule for conducting monitoring and sampling activities also shall be presented. In addition this section shall provide a schedule for submittal of reports and data to the Secretary including a schedule for submitting all status reports and preliminary data.

E.6.n TABLES

Data presented in the summary tables shall include information on dates of sample collection, analytical methods, detection limits and significant data quality exceptions. All data tables shall include only detected analytes and data quality exceptions that could potentially mask detections. The following summary tables shall be included in the corrective measures evaluations, as appropriate:

1. Summaries of regulatory criteria, background and/or the applicable cleanup standards.
2. Summaries of historical field survey location data.
3. Summaries of historical field screening and field parameter measurements for individual media.
4. Summaries of historical soil, sediment, groundwater and/or surface water laboratory analytical data. The summary tables shall include the analytical methods, detection limits and significant data quality exceptions that could influence interpretation of the data.
5. Summaries of historical groundwater elevation and depth to groundwater data. The table shall include the monitoring well depths and the screened intervals in each well.
6. Summary of historical air sample screening and chemical analytical data. The data tables shall include the screening instruments used, laboratory analytical methods, detection limits and significant data quality exceptions that would influence interpretation of the data.
7. Summary of historical pilot testing data, if applicable, including units of measurement and types of instruments used to obtain measurements.
8. Summary of the corrective measures alternatives and evaluation criteria.
9. Schedule for installation, construction, implementation and reporting of selected corrective measures.

E.6.o FIGURES

All figures must include a scale and north arrow. An explanation shall be provided on each figure for all abbreviations, symbols, acronyms and qualifiers. The following figures shall be included with each corrective measures evaluation for each unit, as appropriate:

1. Vicinity map showing topography and the general location of the subject site relative to surrounding features or properties.
2. Unit site plan that presents pertinent site features and structures, underground utilities, well locations and remediation system location(s) and details. Off-site well locations and other relevant features shall be included on the site plan if practical. Additional site plans may be required to present the locations of relevant off-site well locations, structures and features.
3. Figures showing historical soil boring or excavation locations and sampling locations.

