NM - 38

GENERAL CORRESPONDENCE

YEAR(S):

1993-1988

B C & D OPERATING, INCORPORATED
P.O. Box 5926
Hobbs, New Mexico 88241

PERMIT APPLICATION FOR A CENTRALIZED LAND FARM FACILITY

McKINLEY COUNTY, NEW MEXICO

SECTION 1, TOWNSHIP 17N, RANGE 9 WEST
HOSPAH FIELD

SEPTEMBER 7, 1993

INDEX

BC & D OPERATING, INC.

September 8, 1993

Mr. Roger Anderson, Bureau Chief
New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 87501

RE: APPLICATION FOR CENTRALIZED LANDFARM PERMIT, MCKINLEY COUNTY, NEW MEXICO - HOSPAH FIELD

Dear Mr. Anderson:

Enclosed herewith, is the completed permit application, pursuant to OCD Rule 711, for a centralized landfarm facility at the Hospah Field in McKinley County, New Mexico.

We would like to take this time to thank you and your staff for the consideration you have afforded our organization. If you have any questions or desire further information, please contact us at any time.

Best regards,

B C & D OPERATING, INC.

Donnie Hill
President

DH/sn

P.O. BOX 5926 HOBBS, NM 88241 TELEPHONE NO.: (505) 392-2041

State of New Mexico
Energy, Minerals and Natural Resources Department
OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, NM 87501

APPLICATION FOR SURFACE WASTE DISPOSAL FACILITY

(Refer to OCD Guidelines for assistance in completing the application)

☐ Commercial ☒ Centralized

I. Type: ☐ Produced Water ☐ Drilling Muds ☐ Other _____
☒ Solids/Landfarm ☐ Treating Fluids

II. OPERATOR: B C & D Operating, Inc.

ADDRESS: P.O. Box 5926

CONTACT PERSON: Hobbs, NM PHONE: (505) 392-2041

III. LOCATION: SE /4 NE /4 Section 1 Township 17N Range 9W
Submit large scale topographic map showing exact location.
McKinley County, New Mexico

IV. IS THIS AN EXPANSION OF AN EXISTING FACILITY? ☐ Yes ☒ No

V. Attach the name and address of the landowner of the disposal facility site and landowners of record within one-half mile o the site.

VI. Attach discription of the facility with a diagram indicating location of fences, pits, dikes, and tanks on the facility.

VII. Attach detailed engineering designs with diagrams prepared in accordance with Division guidelines for the construction/installation of the following: pits or ponds, leak-detection systems, aerations sytems, enhanced evaporation (spray) systems, waste treating systems, security systems, and landfarm facilities.

VIII. Attach a contingency plan for reporting and clean-up of spills or releases.

IX. Attach a routine inspection and maintenance plan to ensure permit compliance.

X. Attach a closure plan.

XI. Attach geological/hydrological evidence demonstrating that disposal of oil field wastes will not adversely impact fresh water. Depth to and quality of ground water must be included.

XII. Attach proof that the notice requirements of OCD Rule 711 have been met (Commercial facilities only).

XIII. Attach a contingency plan in the event of a release of H_2S.

XIV. Attach such other information as necessary to demonstrate compliance with any other OCD rules, regulations and/or orders.

XV. CERTIFICATION

I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

Name: Donnie Hill Title: President

Signature: Donnie Hill Date: 8/30/93

DISTRIBUTION: Original and one copy to Santa Fe with one copy to appropriate Division District Office.

and the expansion will also be fenced to keep cattle or wild animals away from the contaminated and stabilized oily soil.

Definition: "Release" or "Spill" includes such things as spilling, leaking, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing into the environment and includes abandonment of barrels. A spill generally does not include a release made pursuant to a discharge permit.

To eliminate the possibility of leaching of the hydrocarbons into the soil, any ponding of water will be controlled with vacuum trucks to capture any excess rainwater on the location. It should be noted that the facility will be watered on a regular basis to enhance the ability of the naturally occurring microorganisms in the soil or the addition of other naturally occurring microorganisms to convert the hydrocarbons by degredation. It is our intent that if the naturally occurring bioremediation process proves too time consuming, we can dramatically increase the completeness of cleaning and the speed of bioremediation by utilizing MICRO-BLAZE products to enhance the bioremediation and eliminate any leaching of the hydrocarbons. Material Safety Data Sheets have been attached for your convenience on the MICRO-BLAZE products.

Bioremediation is a process that uses microorganisms to transform harmful substances into non-toxic compounds. Bioremediation utilizes ecological management by naturally occurring microorganisms to degrade target organic pollutants for the purpose of restoring environments.

Microbial degradation of hydrocarbons can occur in the presence of air (aerobic) or without air (anaerobic). Aerobic degradation is usually faster and more complete. The biocatalyst component of the MICRO-BLAZE liquid make oxygen readily available to the microbes when they are added to the liquid.

A water-oil-microbe interface is required so the enzymes secreted by the microbes will be able to break down the hydrocarbons in close association with the cell wall. As degradation progresses, certain compounds are absorbed by the microbe. The intermediate by-products of degradation, in order, are alkanes, then alcohols, then aldehydes, followed by organic acids. Fatty acids are rapidly used or degraded in nature.

If oxygen and water are added to an alkane inside the microbe in the presence of enzymes, the product is an alcohol. If oxygen is added to any alcohol, then an aldehyde is the product. This is rapidly changed to any organic acid. The fatty acids can be readily used in the Beta Oxidation Cycle to build ADP and ATP - the primary sources of energy in the living.

Spill Containment

Liquid material will not be stored or processed at this facility. If a spill should occur, containment techniques will vary depending upon the magnitude of the spill and whether it is on to land or into water. The most probable cause for a spill at the facility would be due to a heavy downpour in the immediate area. Within the facility, areas will be maintained as an area to obtain clean fill material for use in the event of dike or berm failure due to excessive rainfall and cleanup associated therewith. Any liquid release as a result of flooding and subsequent dike failure, would be mixed with the clean fill dirt and returned to the landfarm proper for remediation. Testing of the area receiving the runoff would occur and any contamination as a result thereof will be removed until detectable limits are below OCD regulations and guidelines. The Environmental, Health & Safety Manager will be consulted for guidance.

Spills On to Land or Water

Small spills on to land may be picked up by sorbent pads or other sorbent material. These materials are stored at the B C & D central warehouse for emergencies. A shovel may be utilized to remove oily dirt or other impacted materials. Spills which escape secondary containment (berms around the facility) may require onsite construction to provide emergency containment. Due to the topography of the site, the only posssible direction in which a spill could occur would be to the west or southwest toward the Sandoval Arroyo.

Construction of containment may include the digging of sumps, trenches, levees or dams. Equipment required to build these structures which would include backhoes, front-end loader and tractors are available at the Hospah Field owned by B C & D Operating, Inc. The company has the equipment and trained personnel to respond to a spill or release of the nature listed.

Small spills into water may be picked up by sorbent pads or other sorbent material. These materials are also stored at the central warehouse along with booms to contain the hydrocarbons.

FEDERAL REPORTING REQUIREMENTS

Notice to EPA and U.S. Coast Guard

The Clean Water Act requires any person in charge of a vessel or of an onshore or offshore facility to notify the National Response Center as soon as he or she has knowledge of any discharge of oil into water in harmful quantities. The Comprehensive Environmental Response Compensation and Liability Act (CERCLA), authorizes the Environmental Protection Agency to provide emergency response for hazardous substances released into the environment. Under CERCLA, owners or operators of facilities are required to immediately notify the National Response Center in the event of releases of hazardous substances in reportable quantities.

To: National Response Center

(800) 424-8802 (24 hours)
(202) 267-2675 (24 hours)

When to Report:

(1) Release of oil into water in harmful quantities, or

(2) Release of hazardous substances in reportable quantities.

Timing and Contents of Notice:

Immediate by telephone, radio telecommunication or other rapid communication. The spill report should include:

(1) time of spill,
(2) identity of material spilled,
(3) approximate quantity spilled,
(4) location and source of the spill,
(5) course and circumstances of the spill,
(6) existing or potential hazards,
(7) personal injuries or casualties,
(8) corrective action being taken,
(9) name and telephone number of individual who discovered and/or reported the spill, and
(10) other unique or unusual circumstances.

Observation:

Immediate notice to the EPA or U.S. Coast Guard of an oil spill on to land which does not threaten waterways is not necessary.

Notice to Bureau of Land Management (BLM)

Operators of onshore federal leases and Indian leases are required to report all major spills, discharges and other undesirable events.

To: BLM District Oil Spill Coordinator or Field Inspector

BLM District	Jurisdiction	Coordinator Number
Albuquerque, New Mexico	Northern Counties of New Mexico	Field Inspector (505) 761-8700

When to Report:

Onshore releases of oil, saltwater and liquid pollutants from federal and Indian leases:

(1) within 24 hours if more than 100 barrels which are not contained within the facility firewall, and

(2) within 24 hours of any quantity which occurs in a sensitive area such as parks, recreation site, wildlife refuges, lakes, reservoirs, streams and urban or suburban areas.

Timing and Contents of Notice:

Verbal reports must be made within the time period indicated above and include information on the cause, location and volume of the spill and the action taken.

NEW MEXICO

Notice to New Mexico Environment Department

To: Environmental Improvement Division - Ground Water Bureau

(505) 827-9329 (24 hours)

When to Report:

Release from any facility of a quantity of oil or hazardous substance which may injure or be detrimental to the public welfare, human health, animal or plant life or property.

Timing and Contents of Notice:

As soon as possible but in no event more than 24 hours thereafter. Verbal notice shall include:

(1) the name, address and telephone number of the person or persons in charge of the facility, as well as the owner and/or operator of the facility.
(2) the name and address of the facility,
(3) the date, time, location and duration of the discharge,
(4) the source and cause of the discharge,
(5) a description of the discharge, including its chemical composition,
(6) the estimated volume of the discharge,
(7) any action taken to mitigate immediate damage of the discharge.

<u>Notice to New Mexico Energy, Minerals and Natural Resources Department</u>

To: Oil Conservation Division

(505) 827-5800 (8 am to 5 pm)
and District Office:

<u>District</u>	<u>Name</u>	<u>Phone</u>
III	Denny G. Foust	(505) 344-6178

When to Report:

Release of:

(1) one barrel or more of oil into water course,
(2) 25 barrels or more of oil on to land,
(3) 25 barrels or more of saltwater into water course,
(4) 100 barrels or more of saltwater on to land, or
(5) any quantity of oil or saltwater which endangers life or property.

Timing and Contents of Notice:

Immediate verbal notice should include:

(1) location of incident by quarter-quarter, section, township and range.
(2) location by distance and direction from the nearest town or prominent landmark so that the exact site of the incident can be readily located on the ground,
(3) nature and quantity of the loss,
(4) general conditions in the area to include precipitation, temperature and soil conditions,
(5) measures that have been taken and that are being taken to remedy the situation.

A copy of the Oil Conservation Division (OCD) Form - Notification of Fire, Breaks, Spills, Leaks, and Blowouts - In Accordance with Rule 116 has been attached as (Attachment #1) for written notification.

IX. Attach a routine inspection and maintenance plan to ensure permit compliance.

INSPECTION AND MAINTENANCE PLAN

The inspection and maintenance plan shall begin and follow through with sampling and testing of the facility as set forth below.

1. Initial background sample will be taken from the center of the proposed landfarm facility area at two (2) feet below ground surface level and tested for the following analyses in accordance with approved EPA procedures:

   (a) Total Petroleum Hydrocarbons (TPH)
   (b) Major cation/anions for soil,
   (c) Volatile aromatic organics (BTEX),
   (d) Heavy metals.

2. A continuing random sampling program will be implemented to test the soil at two (2) to three (3) feet below ground level to detect leaching of contaminants in the three (3) foot treatment zone.

1st Year - Annualized after receiving contaminated soils. Tests will be conducted on the following schedule on each cell from the time of receiving contaminated soil at each cell.

1st Quarter	Semi-Annual	3rd Quarter	Annually
TPH & BTEX (on-site)	TPH & BTEX Major cation/anion Heavy metals (contract lab)	TPH & BTEX (on-site)	TPH & BTEX Major cation/anion Heavy metals (contract lab)

2nd Year and Each Subsequent Year Thereafter - Annualized after initial receivership of contaminated soils to each cell. Tests are for each cell.

1st Quarter	2nd Quarter	3rd Quarter	Annually
TPH & BTEX (on-site)	TPH & BTEX (on-site)	TPH & BTEX (on-site)	TPH & BTEX Major cation/ anion Heavy metals (contract lab)

Note: Boreholes for obtaining the random soil samples in each cell will be filled with an impermeable material such as cement.

Test results will be submitted to the Santa Fe OCD office within ten days after each soil test is performed in accordance with the schedule established above for each cell.

The berms and fences will be inspected on a weekly basis to insure the integrity for which each was built. The berms will be further inspected after each heavy rain or extreme wind storm to determine the extent of any associated erosion.

As stated earlier, under section VIII, the cells will be watered on a regular basis to optimize bioremediation. The watering will also control dust from the facility. It should be noted, that with the addition of the MICRO-BLAZE bioremediation product listed under section VIII, odor from the facility will be controlled.

All tank bottoms or miscellaneous hydrocarbons received at the facility will be accompanied by a Form C-117-A. The completed forms for any contamination received at the facility will be submitted to the Santa Fe OCD office on a regular quarterly basis along with analysis from the facility.

X. Attach a closure plan.

When the facility is to be closed, at the end of the excavation of the material out of the Sandoval Arroyo, no new material will be accepted. (Please refer to Drawing #2 on description.) Existing soils will be remediated until they meet OCD standards in place at the time of closure and verified by independent laboratory testing. The area will then be dressed off and seeded with natural grasses and allowed to return to its natural state.

XI. Geological and Hydrological evidence demonstrating that the disposal of oilfield waste will not adversely impact fresh water.

Information was extracted from "Hydrogeology and Water Resources of San Juan Basin, New Mexico", Hydrologic Report 6, New Mexico Bureau of Mines & Mineral Resources by W. J. Stone, F. P. Lyford, P.F. Frenzel, N.H. Mizell, and E.T. Padgett.

The Hospah Field is in the Crownpoint area of McKinley County, New Mexico. The elevation of the area is 6,978 feet above sea level. The average annual precipitation is 10.48 inches recorded over a 47 year period.

According to a map by the Soil Conservation Service (U.S. Bureau of Reclamation, 1976), most of the San Juan Basin would be classified as grassland with yuccas and cacti. The makeup of soil in the area of Crownpoint/Hospah would be a sandy loam containing silt and clay.

The San Juan Basin is a Laramide (Late Cretaceous--Early Tertiary) depression lying at the eastern edge of Colorado Plateau. Hospah lies to the East of the Continental Divide, the geologic local aquifer unit would be the Menefee Formation. The Menefee Formation is the middle unit of the classical tripartite Mesaverde Group which crops out in a vast area on the Chaco slope which Hospah lies.

The Menefee consists of interbedded claystone, carbonaceous siltstone and shale, coal, and sandstone. The sandstone is a fine-grained, immature to submature, lithic arkose. The thickness of the Menefee Formation ranges from 400 to 1,000 feet. The Menefee conformably or disconformably overlies the Point Lookout Sandstone.

Hydrologic Properties--Transmissivity of the Menefee as calculated in aquifer tests depends largely on the total thickness of the sandstone bodies that are penetrated; most wells do not penetrate the full thickness. Values are generally less than 50 feet^2/d.

Water Quality and Use--The specific conducatane of water from the Menefee is generally between 1,000 mhos to 1,500 mhos in most localities. Fluoride concentrations exceed recommended limits for drinking water in many areas south and west of the Chaco River. The Menefee Formation, because of its widespread distribution at the surface and the aggregate thickness of its sandstone members, is a common source of water for stock and domestic uses. Most wells produce less than 10 gpm. The average depth of domestic wells in the Hospah area are the 75-125 feet range.

As stated earlier, the facility will be a low maintenance operation. Over-designed berms, dikes, and fencing will prevent any escape of hydrocarbon contamination to the arroyos, the origin of the hydrocarbon contaminated soil.

XII. Proof of Notice

Not Applicable

XIII. Attach a contingency plan in the event of a release of H_2S.

No Hydrogen Sulfide (H_2S) problems are expected. However, the site will be monitored for H_2S periodically. Sufficient quantities of oxidizers (donors) will be available to the site for quick application in the unlikely event H_2S is identified as being present.

XIV. Attach such other information as necessary to demonstrate compliance with any other OCD rules, regulations and/or orders.

The landfarm will consist of approximately 429,000 square feet or 9.85 acres. It will be developed in four cells containing approximately 101,263 square feet in Cell #1 as indicated by attached drawing and 101,263 square feet in Cell #2. Cell #3 has approximately 101,263 square feet and Cell #4 has approximately 101,263 square feet. Each cell, as outlined in the attached drawing will be bermed individually and have capacity to retain the 100 year storm. The berms will be constructed with new material to prevent overall

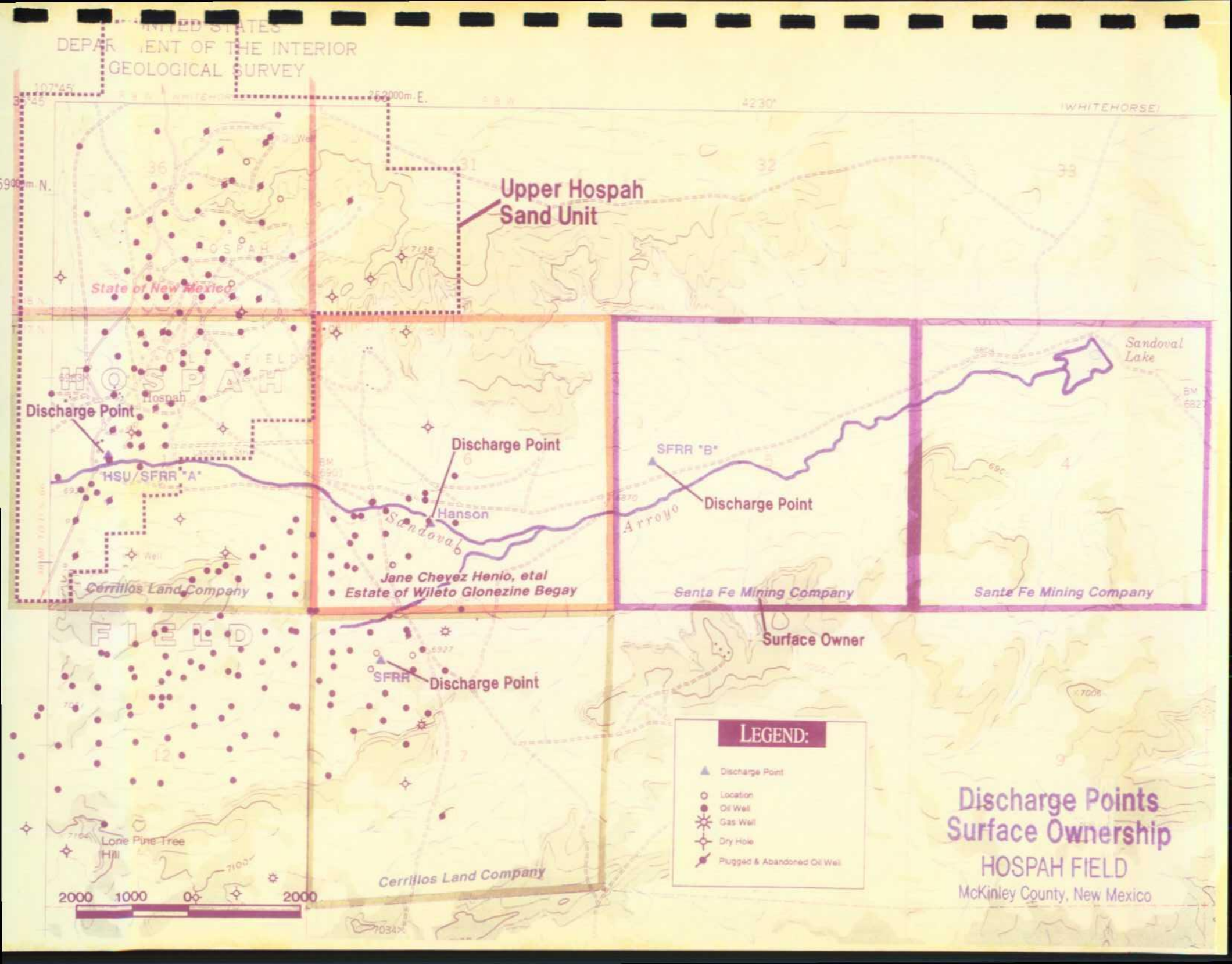
contamination of the project. Cells #2 and #3 will receive the first contaminated material, followed by Cell #4 then Cell #1. Lifts will be spread to approximately one (1) foot of lift.

We have further proposed to close Cells #2, #3, and #4 when these cells have reached the levels required by the OCD for remediation on a one shot basis, that will be determined by the Santa Fe OCD office. We further propose to utilize Cell #1, the closest to the gate as a centralized landfarm for future contamination problems associated with oil and gas production from around the lease. It is understood that the limits required for Cell #1 will probably be lower than the remaining Cells since it will remain in service.

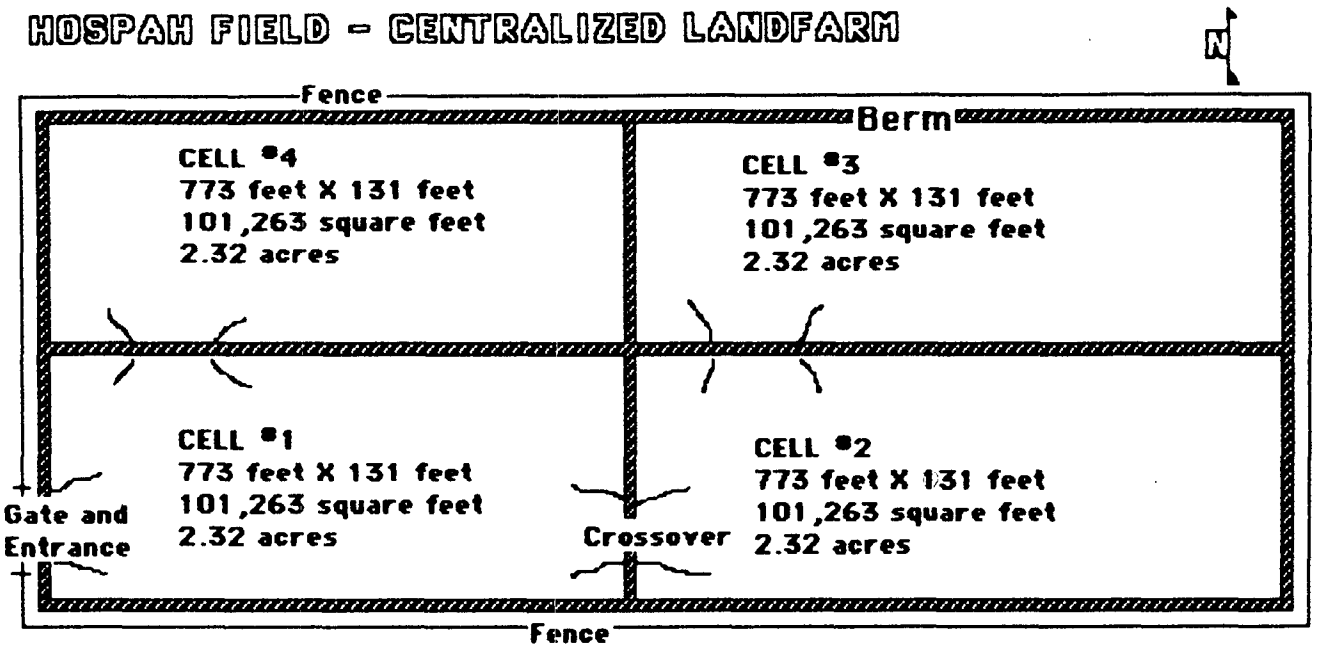
The landfarm will be adequately signed. It will be fenced to protect wildlife and livestock and to prevent unauthorized access. The one gate will be locked during non-business hours.

Air Quality, although not currently addressed in the permit application is a concern. B C & D Operating, Inc. has proposed the addition of moisture and MICRO-BLAZE; the MICRO-BLAZE further suppresses any associated vapors. The addition of moisture will be calculated using Soil Conservation Service Data to characterize soil types.

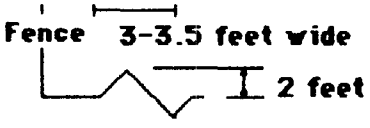
Moisture assists in the reduction of particulate discharge from natural wind action. Tilling practices also recommended by the Soil Conservation Service will be employed, in an effort to reduce to the most possible degree, blowing dust and dirt that could contain contaminants.


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Upper Hospah Sand Unit
State of New Mexico
HOSPAH FIELD
Hospah
Discharge Point
HSU / SFRR "A"
Discharge Point
Hanson
Sandoval Arroyo
SFRR "B"
Discharge Point
Sandoval Lake
Cerrillos Land Company
Jane Cheyez Henio, etal
Estate of Wileto Glonezine Begay
Santa Fe Mining Company
Sante Fe Mining Company
Surface Owner
SFRR
Discharge Point
Lone Pine Tree Hill
Cerrillos Land Company
2000 1000 0 2000
LEGEND:
Discharge Point
Location
Oil Well
Gas Well
Dry Hole
Plugged & Abandoned Oil Well
Discharge Points
Surface Ownership
HOSPAH FIELD
McKinley County, New Mexico

HOSPAH FIELD - CENTRALIZED LANDFARM



Dimensions of the fenced area: 1560 feet X 275 feet



BERM - CROSS SECTION

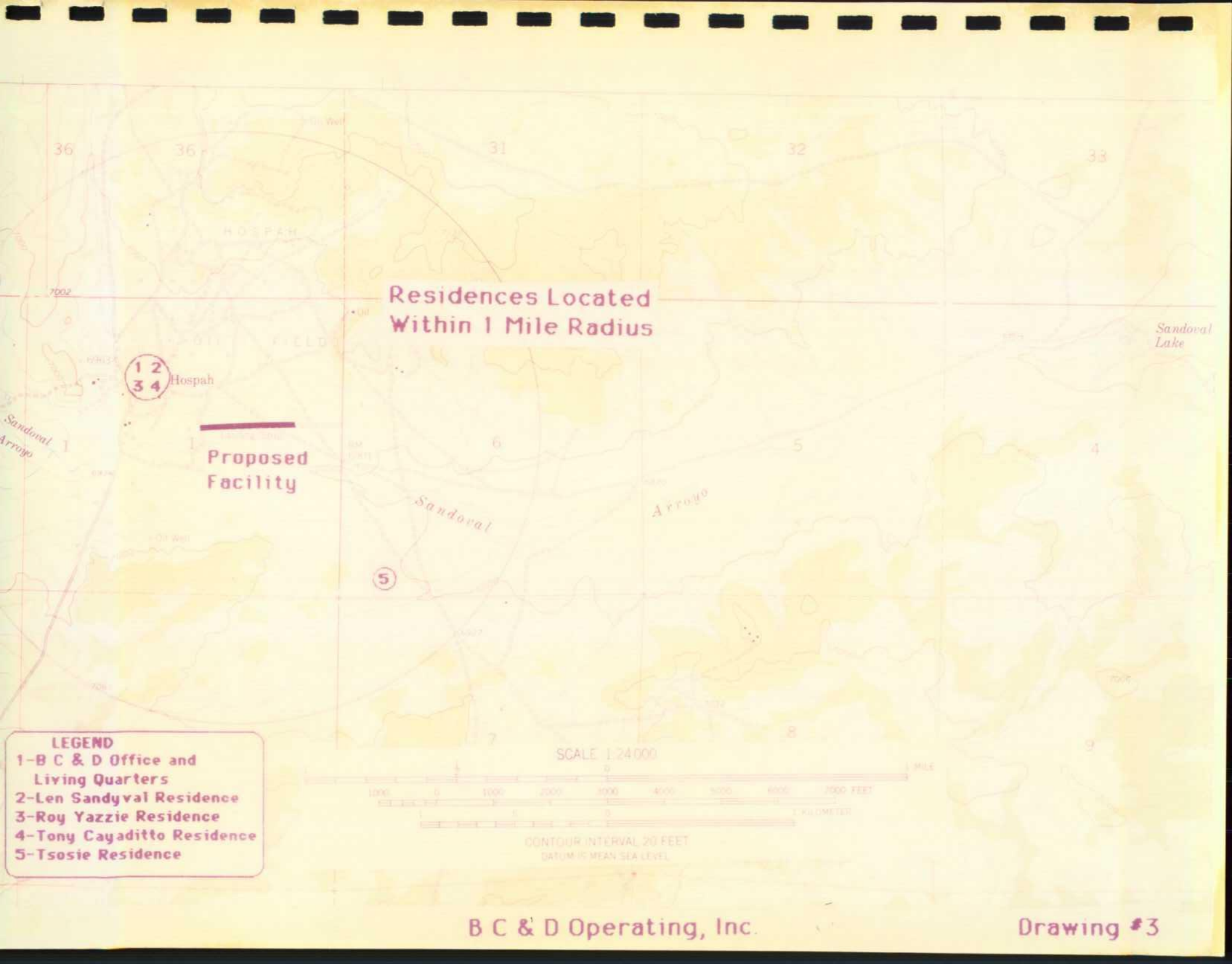
Scale: Not to Scale

DESCRIPTION OF FACILITY

The proposed facility was originally an abandoned dirt airstrip. The fence around the facility has been moved to the North to set the dimensions of the proposed facility to 1560 feet by 275 feet. The facility will consist of four (4) Cells with the dimensions of 773 feet by 131 feet, approximately 2.32 acres each to receive for remediation, non-hazardous contaminated soil as a result of oil and gas production, exploration, or processing activity from the Hospah Field which is now being operated by B C & D Operating, Inc.

The facility is a "one-shot" operation for the remediation of the soils which have been contaminated in the arroyos and operations located around the lease property. Once the soils on the facility have been remediated and ready for closure, Cells #2, #3, & #4 will be closed and reseeded and returned back to nature, with the approval of the OCD. Cell #1 will be maintained should a temporary permit be required in case of exempted non-hazardous oilfield waste by RCRA Subtitle C problems should arise.

Drawing #2



B C & D Operating, Inc.

Drawing #3

B C & D Operating, Inc.

Aerial Photograph

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

July 23, 1993

CERTIFIED MAIL
RETURN RECEIPT NO. P-667-242-359

Mr. Donnie Hill
BC & D Operating, Inc.
P.O. Box 5926
Hobbs, New Mexico 88241

RE: SOIL REMEDIATION
BC & D OPERATING, INC. HOSPAH FIELD
MCKINLEY COUNTY, NEW MEXICO

Dear Mr. Hill:

The New Mexico Oil Conservation Division (OCD) has reviewed the July 16, 1993 BC & D Operating, Inc. request to excavate and stockpile contaminated soil from the arroyo and two settling ponds adjacent to BC & D Operating's tank batteries in the Hospah Field.

The above referenced request **is hereby approved with the following conditions:**

1. BC & D Operating will document the final contaminant levels upon completion of excavation as per OCD's February 1993 "UNLINED SURFACE IMPOUNDMENT CLOSURE GUIDELINES" which are enclosed for you reference.

2. A completion report containing the results of all final contaminant level sampling, locations of sampling points, volumes excavated, maps showing the locations of the areas excavated and the stockpile areas and any other pertinent information related to this project will be submitted to OCD by October 1, 1993.

3. BC & D Operating will notify OCD at least 72 hours in advance of all activities such that OCD may have the opportunity to witness the work elements and/or spilt samples.

Please be advised that OCD approval does not limit BC & D Operating to the work plan proposed should BC & D Operating's actions fail to adequately remediate contaminants related to their operations. In addition, OCD approval does not relieve BC & D Operating of responsibility for compliance with any other federal, state or local laws and/or regulations.

If you have any questions, please contact me at (505) 827-5885.

Sincerely,

William C. Olson
Hydrogeologist
Environmental Bureau

Enclosure

xc: OCD Aztec Office

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY *(As Used on Label and List)*: MICRO-BLAZE OUT

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufacturer's Name: VERDE ENVIRONMENTAL, INC.	Emergency Telephone Number: 1-800-626-6598
Address *(Number, Street, City, State, and ZIP Code)*: 7309 Schneider	Telephone Number for Information: 713-691-6468
Houston, Texas 77093	Date Prepared: 10-22-92
	Signature of Preparer *(optional)*

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	Cas No	Other Limits Recommended	% *(optional)*
Nonionic detergent	N/A	9016-45-9		10-15
1,2-benzisothiazolin-3-1	N/A	2634-33-5		lt 1
sodium hydroxide	2mg/m3	1310-73-2		lt 1
dipropylene glycol	N/A	25265-71-8		lt 1
fragrance	N/A	N/A		1-2
chelating agent	N/A	64-02-8		1-2
viable bacterial cultures . .	N/A	N/A		gt 85%
(largely water)	N/A	7732-18-5		

Ingredients not precisely identified are proprietary or nonhazardous.

Section III — Physical/Chemical Characteristics

Boiling Point	100 c	Specific Gravity (H_2O = 1)	Approx. 1.0
Vapor Pressure (mm Hg.)	Equiv. Water	Melting Point	N/A
Vapor Density (AIR = 1)	Equiv. Water	Evaporation Rate (Butyl Acetate = 1)	N/A

Solubility in Water: 99%

Appearance and Odor: off-white opaque liquid, perfumed

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	LEL	UEL
non-flammable	N/A		

Extinguishing Media: non-flammable

Special Fire Fighting Procedures: None

Unusual Fire and Explosion Hazards: none known

Section V — Reactivity Data

Stability			Conditions to Avoid
	Unstable		
	Stable	X	under normal conditions

Incompatibility (*Materials to Avoid*)
strong acids or alkali compounds may inactivate biological cultures.

Hazardous Decomposition or Byproducts
none

Hazardous Polymerization			Conditions to Avoid
	May Occur		strong acids or alkali compounds may inactivate
	Will Not Occur	X	biological cultures.

Section VI — Health Hazard Data

Route(s) of Entry: Inhalation? none Skin? none Ingestion? none, if in small amounts

Health Hazards (*Acute and Chronic*)
eye contact: may cause eye irritation. organisms used are non-pathogenic but may cause infection when in contact with open wounds. These organisms are susceptible to many commonly-used antibiotics.

Carcinogenicity: NTP? IARC Monographs? OSHA Regulated?
trace amounts

**Skin: slight redness on hands and forearms if individual has a history of dermal allergic reaction. symptoms can develop after repeated or prolonged contact with skin.

Signs and Symptoms of Exposure

Medical Conditions
Generally Aggravated by Exposure none

***first aid: ingestion: drink water or milk to dilute. induce vomiting only if advised by physician or poison control cent

Emergency and First Aid Procedures skin: remove contaminated clothing and footwear. wash skin with soap & water. wash clothing before reuse.

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material Is Released or Spilled
where possible, flush down drain to waste treatment sewer; otherwise, on small spills, use absorbents and sweep up. May also mop up.

Waste Disposal Method
disposal of this product or its residues must be in accordance with all local, state and federal requirements.

Precautions to Be Taken in Handling and Storing
prevent skin and eye contact. wash hands thoroughly with soap and water after use. avoid eye contact.

Other Precautions
to maintain shelf life, avoid temperatures over 110 F for long periods and keep from freezing.

Section VIII — Control Measures

Respiratory Protection (*Specify Type*) none required for recommended use. avoid creating aerosols in poorly ventilated areas.

Ventilation		
	Local Exhaust	Special
	Mechanical (*General*)	Other normal room ventilation

Protective Gloves	Eye Protection
none required	

Other Protective Clothing or Equipment

Work/Hygienic Practices
minimize exposure in accordance with good hygiene practice

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY *(As Used on Label and List)*	*Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.*
MICRO-BLAZE II	

Section I

Manufacturer's Name	Emergency Telephone Number
VERDE ENVIRONMENTAL, INC.	713-691-6468 / 800-626-6598
Address *(Number, Street, City, State, and ZIP Code)*	Telephone Number for Information
7309 SCHNEIDER	713-691-6468
HOUSTON, TEXAS 77093	Date Prepared 10-22-92
	Signature of Preparer *(optional)*

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	Cas No	Other Limits Recommended	% *(optional)*
Amonia Nitrogen	35ppm 27/m/m^3	7664-41-7	1t	1%
Phosphorus	0.1 mg/m^3	7723-14-0	1t	.1%
Sodium Hydroxide	2 mg/m^3	1310-73-2	1t	1%
Potassium	N/A	N/A		
Nitrogen	N/A	N/A		
1, 2-Benzisothaizolin-3-1	N/A	2634-33-5	1t	1%
Dipropylene Glycol	N/A	25265-71-8	1t	1%
Fragrance	N/A	N/A		
Nonionic Detergent	N/A	9016-45-9		
Chelating Agent	N/A	64-02-8		
Bacterial Cultures	N/A	7732-18-5		

Ingredients not precisely identified are proprietary or nonhazardous.

Section III — Physical/Chemical Characteristics

Boiling Point	100 C	Specific Gravity (H_2O = 1)	Approx. 1.0
Vapor Pressure (mm Hg.)	Equiv. Water	Melting Point	N/A
Vapor Density (AIR = 1)	Equiv. Water	Evaporation Rate (Butyl Acetate = 1)	N/A

Solubility in Water
99%

Appearance and Odor
Off-white opaque liquid perfumed

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	LEL	UEL
N/A	Non-flammable		

Extinguishing Media
Non-flammable

Special Fire Fighting Procedures
None

Unusual Fire and Explosion Hazards
None Known

Section V — Reactivity Data

Stability			Conditions to Avoid
	Unstable		
	Stable	X	under normal conditions

Incompatibility (*Materials to Avoid*)
strong acids or alkali compounds may inactivate biological cultures.

Hazardous Decomposition or Byproducts
none

Hazardous Polymerization			Conditions to Avoid
	May Occur		strong acids or alkali compounds may inactivate
	Will Not Occur	X	biological cultures.

Section VI — Health Hazard Data

Route(s) of Entry: Inhalation? none Skin? none Ingestion? none, if in small amounts

Health Hazards (*Acute and Chronic*)
eye contact: may cause eye irritation. organisms used are non-pathogenic but may cause infection when in contact with open wounds. These organisms are susceptible to many commonly-used antibiotics.

Carcinogenicity: NTP? IARC Monographs? OSHA Regulated?
trace amounts

Signs and Symptoms of Exposure
**Skin: slight redness on hands and forearms if individual has a history of dermal allergic reaction. symptoms can develop after repeated or prolonged contact with skin.

Medical Conditions
Generally Aggravated by Exposure none

***first aid: ingestion: drink water or milk to dilute. induce vomiting only if advised by physician or poison control cent

Emergency and First Aid Procedures skin: remove contaminated clothing and footwear. wash skin with soap & water. wash clothing before reuse.

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material Is Released or Spilled
where possible, flush down drain to waste treatment sewer; otherwise, on small spills, use absorbents and sweep up. May also mop up.

Waste Disposal Method
disposal of this product or its residues must be in accordance with all local, state and federal requirements.

Precautions to Be Taken in Handling and Storing
prevent skin and eye contact. wash hands thoroughly with soap and water after use. avoid eye contact.

Other Precautions
to maintain shelf life, avoid temperatures over 110 F for long periods and keep from freezing.

Section VIII — Control Measures

Respiratory Protection (*Specify Type*) none required for recommended use. avoid creating aerosols in poorly ventilated areas.

Ventilation		
	Local Exhaust	Special
	Mechanical (*General*)	Other normal room ventilation

Protective Gloves	Eye Protection
none required	

Other Protective Clothing or Equipment

Work/Hygienic Practices
minimize exposure in accordance with good hygiene practice

American Exploration Company

November 20, 1992

Oil Conservation Division
Energy, Minerals & Natural Resources Dept.
1000 Rio Brazos Blvd.
Aztec, New Mexico 87410

Attention: Mr. Denny G. Foust, Environmental Geologist

Re: Hospah Field, McKinley County

Dear Mr. Foust:

In response to your September 24, 1992 letter, American Exploration Company submits the attached Plan of Operations for your review and comment. In addition, American requests an Oil Conservation Division (OCD) permit under Rule 711 (modified) for the use of the landing strip area as a remediation site for hydrocarbon stained soils. This site will be operated as described in Section III.C. of the Operations Plan.

American Exploration has applied to the EPA Region VI for a NPDES Permit under each the Stripper and Agricultural and Wildlife Water Use Subcategory. If awarded, we will have federal authority to discharge produced water into the Sandoval Arroyo within certain effluent limits to be specified in the Permit. American Exploration recognizes the requirement to also satisfy state discharge quality standards and will provide appropriate monitoring data to the OCD for volatile organics (BETX) or other constituents of concern.

American Exploration requests OCD approval to use the existing unlined skimming pits for final oil/water separation prior to discharge, should the aforementioned NPDES Permit be obtained. In either case (with or without a discharge permit), American will close these pits or install impervious liners prior to December 31, 1995 in accordance with OCD Rules. Continued use of these skimming pits will be performed in accordance with the attached Plan, Section II.C.

Any questions concerning this Plan of Operations or requests should be directed to me at (713) 756-6499.

Sincerely,

AMERICAN EXPLORATION COMPANY

Lloyd H. Hetrick
Manager - Environmental, Health & Safety

LHH:mm
Attachment

cc: Bill Priebe
Bob McBride

SCOPE

PLAN OF OPERATIONS

for the

HOSPAH FIELD

This Plan of Operations is provided to the Oil Conservation Division of the New Mexico Energy, Minerals and Natural Resources Department and is intended to comply with Rule 711, as amended. This Plan covers all American Exploration Company oil production activities in the Hospah Field, McKinley County, New Mexico.

TABLE OF CONTENTS

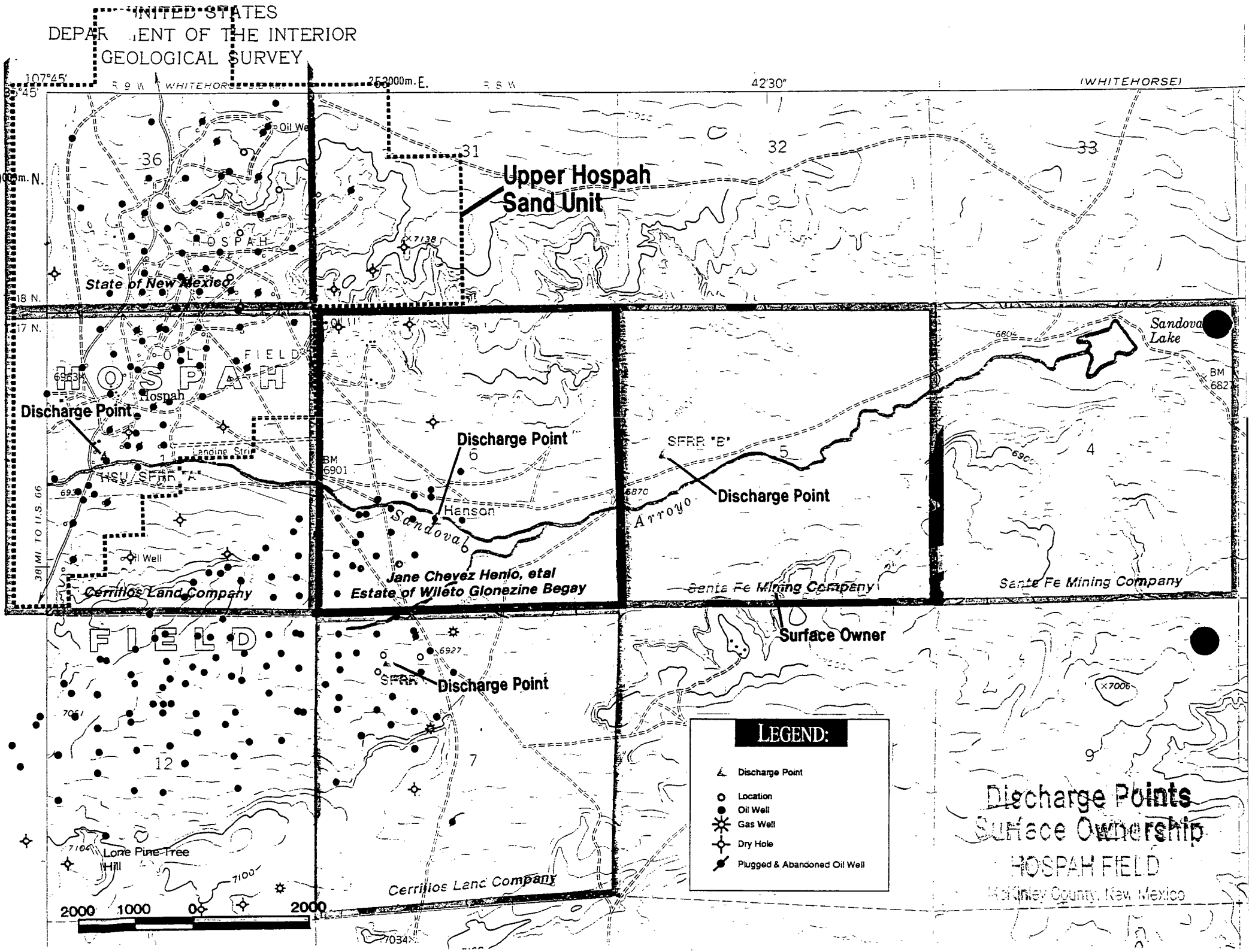
PLAN OF OPERATIONS
for the
HOSPAH FIELD

I. PERSONNEL, FACILITIES & OWNERSHIP

A. Responsible Personnel for American Exploration Company

NAME	TITLE	TELEPHONE
Bill Priebe	Operations Manager	(915) 687-0587
Durwood Jones	Production Foreman	(915) 687-0587
Roy Yazzie	Production Supervisor	(505) 822-3816
Lloyd Hetrick	Environmental Manager	(713) 756-6499

B. Map Identifying: Surface Owners, Facilities and Topography (see attached)


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Upper Hospah Sand Unit
HOSPAH OIL FIELD
Discharge Point
Discharge Point
Discharge Point
Discharge Point
Surface Owner
State of New Mexico
Cerrillos Land Company
Jane Chevez Henio, etal
Estate of Wiléto Glonezine Begay
Santa Fe Mining Company
Santa Fe Mining Company
Cerrillos Land Company
Sandoval Lake
Arroyo
Hanson
Hospah
Landing Strip
Oil Well
Lone Pine Tree Hill
38 MI. TO U.S. 66
LEGEND:
Discharge Point
Location
Oil Well
Gas Well
Dry Hole
Plugged & Abandoned Oil Well
Discharge Points
Surface Ownership
HOSPAH FIELD
McKinley County, New Mexico
2000 1000 0 2000

II. DESCRIPTION OF OPERATIONS

A. History of Hospah Field

The Hospah oilfield was discovered by Tesoro Petroleum Corporation in approximately 1927 with major development activities occurring during 1941 through 1945 and 1979 through 1980. Oil production is from the upper and lower Hospah Sands at about 1500'. A limited amount of natural gas has been produced from the Dakota formation around 2200'. A freshwater aquifer underlies the entire area in the Morrison Sand, at about 2600'.

About 170 wells were drilled by Tesoro as either producers or injectors with some subsequent conversion work from producers to injectors in an attempt to improve oil recovery. Water has been re-injected into the Hospah Sands to the extent that injection facilities can handle the volume. Excess volumes of produced water were discharged into the Sandoval Arroyo in varying quantity, where it was used for livestock watering purposes or as the source of water to Lake Sandoval, which is a wetland area managed by the U. S. Fish & Wildlife Service.

Four production facilities are in the Hospah Field where oil and water are separated, then sent to sales and disposal respectively. Other facilities at Hospah include several warehouse/workshop buildings, a drum storage and handling dock, an aircraft landing strip, a freshwater well (Morrison completion) and distribution system, various living facilities and a network of county and lease roads.

Tesoro sold all Hospah operations to American Exploration Company during August, 1988.

B. Current Operations

Approximately 62 wells are now producing oil, utilizing electric driven rod pumping units. Current production is around 380 BOPD and 15,000 BWPD which is significantly below the field potential of about 480 BOPD and 33,000 BWPD. The reason for this reduction is due to a company decision to not discharge produced water until the NPDES permit issue is resolved. At present, all produced water is being injected, with no outfall to benefit the wildlife in Lake Sandoval or to livestock on the Ball Ranch.

C. Skimming Pit Maintenance

Skimming pits are utilized at Hospah as final process steps for oil/water separation. Once discharges under NPDES permits are allowed, these skimming pits will be regularly maintained to assure compliance with discharge requirements. This maintenance will include periodic skimming, biological or chemical treatments, or some combination thereof.

D. Community Interdependence

The community of Hospah and the oilfield of Hospah are one in the same. The community formed around the oilfield and practically all commerce of Hospah results from the oil operations. All American Exploration field personnel, both company and contract employees, are of Navajo descent.

III. WASTE MANAGEMENT PRACTICES

A. Waste Minimization Plan

As Company Policy, the minimization of wastes generated is an operating requirement. Treatment chemicals and other products should be fully utilized without leaving leftover amounts for disposal. Inventories of such items should be managed so that product integrity is protected, thus avoiding contamination or spillage. Alternate product utilization is also encouraged, whereby less toxic chemicals are used if their performance is acceptable, thus reducing employee exposure potential and waste disposal toxicity.

Reuse/recycling opportunities for products such as lube oil, lead-acid batteries and scrap metals are also part of American Exploration's Waste Minimization Plan and employed in the Hospah Field.

B. Produced Water Disposal

Produced water comprises over 99% of the total wastes generated at Hospah. Minimizing this waste product has not been accomplished since it is directly related to the oil volumes produced. Historically, about 60% of the produced water has been re-injected for enhanced oil recovery, the remaining 40% has been discharged for beneficial use.

The quality of Hospah discharged water is within the limits allowed under typical NPDES permits for stripper and agricultural subcategories. The water quality is also acceptable to the local ranchers and their livestock, as proven by up to 50 years (estimated) of beneficial use.

C. Oily Solids Remediation

Oily solids collected from process equipment, occasional line leaks and wellhead leaks are remediated in the Hospah Field at one central location. This site serves both as a landing strip for occasional air traffic and as a remediation site for oily material. Once delivered to the site, oily solids are mixed with clean soil then spread-out in a thin layer along the airstrip for non-enhanced bioremediation to naturally degrade the hydrocarbons.

Stormwater runoff is managed at this site by utilizing the topography of the air strip and a levee system which keeps rainwater from escaping. The entire area is fenced to keep cattle away from the oily soil.

IV. MONITORING ENVIRONMENTAL IMPACTS

A. Subsurface Injection of Produced Water

All subsurface injection is into the upper and lower Hospah Sands through Class II UIC wells. All injection wells are monitored for tubing/casing pressures and volumes injected. Upon indications of a loss of well integrity, injection activities will cease until the situation is properly diagnosed and repaired. Mechanical integrity tests are performed on these Class II wells prior to initial injection and at a minimum every 5 years thereafter.

B. Surface Discharges of Produced Water

Requests for NPDES coverage to discharge produced water have been made by Tesoro and American, but to date, have not been acted-upon by the USEPA Region VI. Until such coverage is obtained, American will refrain from discharging into the Sandoval Arroyo. In addition to federal standards, state water quality requirements will also be observed. If granted permit coverage, American will abide by all effluent monitoring and reporting requirements as specified.

C. Air Emissions

Hydrocarbon vapors from tank vents and skimming ponds (if in use) will be monitored for H_2S concentrations on a monthly basis using a hand held sensing device. The results of this monitoring will be recorded on a form as attached and retained onsite for OCD inspection.

H_2S MONITORING RECORDS FOR 1992

HOSPAH FIELD

MONTH	PERSON'S INITIALS	Maximum H_2S (ppm) Concentration Observed			
		HSU/SFRR "A" FACILITY	HANSON FACILITY	SFRR FACILITY	SFRR "B" FACILITY
January					
February					
March					
April					
May					
June					
July					
August					
September					
October					
November					
December					

Original - Field File
cc: Midland Office

V. SPILL REPORTING PROCEDURES

A. See Attached Spill Response Guide

AMERICAN EXPLORATION COMPANY

SPILL RESPONSE GUIDE

By Roderick L. Oxford

and Lloyd H. Hetrick

October, 1991

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Environmental, Health & Safety Policy

American Exploration Company recognizes its responsibility to protect and maintain the quality of the environment and provide a safe work place for our employees. It is our policy to conduct our business in compliance with all applicable environmental, health and safety laws and regulations and adopt our own standards where laws or regulations do not adequately protect the environment or the health and safety of our employees.

Our Chief Operating Officer shall have the responsibility for implementation of practices and procedures necessary to carry out our policy. Our corporate staff shall have the responsibility for recommendation of policy, interpretation and communication of laws and regulations and establishment of uniform procedures. Our policy shall be applicable to all companies we control.

Our environmental, health and safety policy commits us to:

- Cooperate with local, state and federal agencies charged with enforcement of applicable laws and regulations and assist in the development of new laws and regulations through public comment and participation in industry associations,
- Design, operate and maintain our facilities in compliance with environmental, health and safety laws and regulations,
- Establish and maintain procedures for handling incidents and emergencies affecting the environment or the health and safety of our employees,
- Conserve natural resources through recycling and minimize generation of waste and contamination of the air, land and water,
- Adopt procedures to ensure review and assessment of environmental liabilities on any proposed acquisitions or divestitures,
- Implement self training and monitoring programs and commit the personnel and financial resources necessary to ensure compliance with our policy, and
- Promote environmental, health and safety concerns among our employees and encourage employees to identify and promptly communicate matters of concern to our management or corporate staff.

Every employee is expected to carry out the spirit as well as the intent of our policy. The active participation of all employees will allow us to successfully adhere to our policy.

Mark Andrews
Chairman

Peter Forbes
President

Issued August 12, 1991

1.2 Purpose

This document is designed to provide guidance for a coordinated response to spills of oil and/or hazardous substances and outline procedures for reporting these incidents to federal, state and local authorities. Adherence to these procedures will help ensure that the Company meets its commitment to establish and maintain procedures for handling incidents and emergencies affecting the environment and the health and safety of its employees and all other affected persons. Section 1.4, Definitions, must be carefully reviewed for a full understanding of the intent and application of the Spill Response Guide.

1.3 Scope

The Spill Response Guide is effective for all areas within the United States of America operated by the Company. The focus and concern of the guide is to immediately contain any discharge or spill of oil and/or hazardous substances without endangering the health or safety of our employees and provide timely verbal notice where required to federal, state and local agencies. Written notice and follow-up spill reporting requirements are the responsibility of the Company's Environmental Health & Safety Manager and are not addressed herein.

The user of this manual should be aware that there are additional reporting requirements not included herein for transportation related incidents involving spills on public roads and railroads, leaks from underground tanks, wastewater excursions, excess air emissions and releases of radioactive materials. In the event that Company personnel become aware of any of these incidents, immediate notice should be made to the employee's supervisor and the Company's Environmental Health & Safety Manager.

1.4 Definitions

"Harmful Quantities" any discharge of oil is in harmful quantities and must be reported if it violates applicable water quality standards, or causes a film or sheen upon or discoloration of the surface of the water or adjoining shorelines or causes a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

"Hazardous Substance" is statutorily defined by reference to definitions of wastes, substances and pollutants contained in the Clean Water Act, the Comprehensive Environmental Response, Compensation and Liability Act, and the Resources Conservation and Recovery Act.

"Navigable Waters" includes, but is not limited to lakes, rivers, streams (including intermittent streams), mudflats, sandflats and wetlands. Wetlands can include playa, lakes, swamps, marshes, bogs, sloughs, prairie potholes, wet meadows and natural ponds.

"Oil" means oil of any kind or in any form including, but not limited to, petroleum, fuel oil sludge, oil refuse, and oil mixed with wastes other than dredged spoil.

"Release" or "Spill" includes such things as spilling, leaking, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing into the environment and includes abandonment of barrels. A spill generally does not include a release made pursuant to a discharge permit.

"Reportable Quantity" a hazardous substance spill must be reported if the amount of the substance discharge in any 24 hour period is equal to or in excess of the "reportable quantity" established for that substance by the EPA. For mixtures, reportable quantities are based on individual constituents. Reportable quantities for hazardous substances common to the oil and gas exploration and production industry are shown in Section 7.0.

2.0 SPILL PREVENTION AND CONTAINMENT

2.1 Spill Prevention

The Clean Water Act requires owners of petroleum facilities to develop and implement Spill Prevention Control and Countermeasure (SPCC Plans). SPCC Plans are site specific and must contain information regarding prevention and containment equipment, training procedures and oil spill contingency plans. SPCC Plans are required of most all petroleum facilities excepting those which have only nominal oil storage capacity and those facilities which, because of their location, could not reasonably be expected to discharge oil into water. There are no immediate reporting requirements under SPCC Plans.

Preferred oil spill prevention and planning activities of field personnel include:

(1) A thorough working knowledge of the contents of SPCC Plans should be maintained.

(2) If prior spills have taken place at the facility, corrective action should be taken to prevent their recurrence.

(3) Predictions of the direction, rate of flow and total quantity of oil which could be discharged from the facility as the result of equipment failure should be made.

(4) Appropriate containment and/or diversionary structures or equipment should be maintained to prevent the spilled substance from escaping the facility.

(5) Tanks should not be used for storage unless their design and construction are compatible with the material stored and the conditions of storage.

(6) Bulk storage tank installations should be constructed so that a secondary containment is provided for the entire contents of the largest single tank plus sufficient freeboard to allow for precipitation.

(7) Diked areas should be sufficiently impervious to contain spilled substances.

(8) Oil leaks, which result in a loss of oil from tank seams, gaskets, rivets and bolts should be promptly corrected.

(9) Site security should be adequate to prevent spills occurring as a result of acts of vandalism.

(10) Above ground tanks, valves and associated piping should be visually examined by a competent person for condition and need for maintenance on a regular basis.

(11) Accumulated oil on rainwater should be picked up and returned to storage or disposed of in accordance with approved methods.

Spills of hazardous substances in reportable quantities can be minimized by maintaining not more than 60 to 90 days supply of chemicals on hand at any time and storing chemicals not in use away from ignitable sources and within areas of secondary containment.

Vendors of all chemicals should be required to provide labels on all drums and to reuse or dispose of empty drums. Disposal methods for hazardous substances and empty drums not returned to suppliers should be approved of in advance by the Environmental, Health & Safety Manager.

2.2 Spill Containment

Once a spill has occurred, the site specific SPCC Plan should be followed. Initial consideration should be given to personal health and safety concerns discussed in Section 3.0. Containment techniques will vary depending upon the magnitude of the spill and whether it is onto land or into water. Once contained, the spilled substance should be picked up with a pump or vacuum truck as quickly as possible. Cleanup of the site and disposal of the oily materials should be based on site specific conditions and applicable regulations. The Environmental, Health & Safety Manager should be consulted for guidance.

2.2.1 Spills onto Land

Small spills onto land may be picked up by sorbent pads or other sorbent material. A shovel may be utilized to remove oily dirt or other impacted materials. Larger spills within secondary containment that cannot be picked up by sorbent materials require the use of pumps or vacuum trucks. Spills which escape secondary containment may require onsite construction to provide emergency containment. Depending on site topography, such construction may include the digging of sumps, trenches, levees, or dams. Equipment required to build these structures includes shovels, bulldozers, backhoes, front-end loaders and tractors. This equipment and oil spill response trained personnel should be selected in advance and capable of arriving onsite within a reasonable response time.

2.2.2 Spills onto Water

Small spills onto water may be picked up by sorbent pads or other sorbent material. A net or hook may be utilized to retrieve oily materials. Larger spills onto water that cannot be picked up by sorbent materials should be contained by an appropriate boom. Containment booms are available in various sizes and designs which include both sorbent and barrier type applications. Sorbent booms tend to be used in low volume spills with low energy environmental conditions. Barrier booms tend to be used in most other applications and should be selected according to existing environmental conditions. Equipment required for boom deployment might include a small boat, rope,

anchors and winches. Practice drills for boom deployment are usually quite beneficial and tend to improve oil spill response time. The proper boom usually quite beneficial and tend to improve oil spill response time. The proper boom selection, deployment technique, and source of trained oil spill response personnel should be predetermined in the SPCC Plan. Equipment & personnel should be capable of arriving onsite within a reasonable response time.

3.0 HEALTH AND SAFETY ISSUES

3.1 Prespill Concerns

Operations personnel directly involved in spill response should:

(1) Familiarize themselves with the provisions of site specific SPCC Plans written for the facility.

(2) Determine the availability of emergency medical treatment, first aid, protective clothing and emergency equipment.

(3) Identify evacuation routes, local hospitals, police and fire departments and other emergency response organizations.

(4) Note emergency phone numbers of identified emergency response organizations on Appendix C to the Spill Response Guide.

(5) Participate in Company training sessions and practice drills related to emergency response and health and safety issues.

(6) Study the Spill Response Guide to determine personnel roles and responsibilities and lines of authority and communication.

(7) Maintain the Spill Response Guide in Company vehicles used by operational employees and in field offices.

3.2 Initial Response to Spill

Identification of the spilled substance is one of the most important aspects of the initial response. The person discovering the spill should attempt to make this determination. The spilled substance should only be approached with extreme caution and adequate personal protection. The following measures should be followed:

(1) Minimize direct contact with the spilled substance.

(2) Avoid inhalation of gases, fumes and vapors by staying upwind of the spilled material.

(3) Warn and advise bystanders to stay away from the scene of the spill.

(4) Attempt to determine and remove all ignitable sources without endangering personal well being.

(5) Containment efforts should be made only when it is determined that health and safety concerns have been adequately satisfied.

4.0 SPILL RESPONSIBILITIES AND REPORTING

4.1 Operational Responsibilities

4.1.1 Pumpers' Responsibilities

In most instances, the person discovering a spill of oil or a hazardous substance will be the Company or Contact Pumper who is familiar with the facility. The procedures listed below should be followed:

(1) Evaluate the situation immediately with consideration to health and safety issues discussed in Section 3.0 to determine whether it is safe to attempt to contain the spill.

(2) Follow the procedures outlined in Section 2.0 and in the site specific in response to the spill SPCC Plan.

(3) Notify the Foreman of the substance and quantity spilled, name and location of facility where spill occurred, time the incident occurred, action being taken and any other necessary information.

(4) Refer to Appendix A for phone numbers and notify the appropriate Superintendent, or in his absence the Production Manager, if the Foreman is not immediately available.

(5) Notify any affected persons if individuals reside near the facility and the spilled substance escapes or threatens to escape from within secondary containment.

(6) Standby for further instructions on containment efforts until the Foreman arrives.

4.1.2 Foreman's Responsibilities

It is the responsibility of the Foreman receiving notice of a spill to:

(1) Confirm that the site is safe for personnel and that proper personal protective equipment is available.

(2) Confirm that the source of the spill has been arrested or that sufficient personnel and equipment are underway to stop it.

(3) Assume responsibility for onsite response efforts from the Pumper.

(4) Determine by reference to Sections 5.0 and 6.0 whether the spill is reportable.

(5) Notify the Superintendent and all required federal, state and local authorities of all reportable spills.

(6) Refer to Appendix A for phone numbers and notify the Production Manager, or in his absence the Environmental, Health & Safety Manager, if the Superintendent is not immediately available.

(7) Notify appropriate persons such as Park Rangers and Refuge Managers of all reportable spills in environmentally sensitive areas.

(8) Obtain any additional required information on the spill and fill out the Company's spill reporting form and distribute copies of the report to the well file maintained in the Superintendent's regional office and to the Environmental, Health & Safety Manager in Houston, Texas.

4.1.3 Superintendents' Responsibilities

It is the responsibility of the Superintendent receiving notice of a spill to:

(1) Confirm the satisfactory completion of all of the Foreman's responsibilities and perform any responsibilities not completed.

(2) Notify the Production Manager of all reportable spills.

4.1.4 Production Manager's Responsibilities

It is the responsibility of the Production Manager receiving notice of a spill to:

(1) Confirm the satisfactory completion of all of the Superintendents' responsibilities and perform any responsibilities not completed.

(2) Mobilize and direct a Spill Response Team if the spill has not or cannot be stopped or endangers the environment or individuals.

(3) Notify the Senior Vice President of Operations of all spills which require mobilization of Spill Response Team.

4.1.5 Environmental, Health, & Safety Manager's Responsibilities

It is the responsibility of the Environmental, Health & Safety Manager receiving notice of a spill to:

(1) Confirm the satisfactory completion of all of the Production Manager's responsibilities and perform any responsibilities not completed.

(2) Coordinate the efforts of the Spill Response Team.

(3) Perform all additional notifications to federal, state and local agencies and follow-up reporting and provide requested information to management.

(4) Notify the Company's environmental corporate staff of all spills which require the mobilization of a Spill Response Team.

4.1.6 Senior Vice President Operations' Responsibilities

It is the responsibility of the Senior Vice President of Operations, upon receiving notice of a spill requiring the mobilization of a Spill Response Team to:

(1) Confirm the satisfactory completion of all of the Production Manager's and Environmental, Health & Safety Manager's responsibilities and perform or delegate performance of any responsibilities not completed.

(2) Notify the President of the Company of any significant spills requiring the mobilization of a Spill Response Team and assist in handling any press releases deemed necessary.

4.2 Organization of Operations

Senior Vice President Operations
S. W. Haines

Managers:

Production Manager Eastern Division
D. A. Veltri

Production Manager Western Division
B. M. Priebe

Environmental Health & Safety Manager
L. H. Hetrick

Production Superintendents:

Eastern Division

R. L. Fox	-	South Texas
M. D. Stewart	-	Gulf Coast
G. W. Allen	-	Mid-Continent

Western Division

J. C. Matthews	-	Permian Basin
D. W. Hill	-	New Mexico

Foremen:

Eastern Division

South Texas
C. W. Hons
D. L. Odom
K. Huey
T. Zavitch

Gulf Coast
D. M. Franks
J. L. Thompson
C. Harrell
D. Demoss
F. C. Pardue

Mid-Continent
R. Sanders
N. E. Scheihing
L. E. Robinson

Western Division

New Mexico
L. K. Bonham
R. H. Durbin
R. G. Thomas

Permian Basin
J. A. Sturgeon
R. L. Cramer
A. A. Lynch
A. P. Castro
A. D. Jones

Rocky Mountain
R. Ross

5.0 FEDERAL REPORTING REQUIREMENTS

5.1 Notice to EPA and U. S. Coast Guard

The Clean Water Act requires any person in charge of a vessel or of an onshore or offshore facility to notify the National Response Center as soon as he or she has knowledge of any discharge of oil into water in harmful quantities. The Comprehensive Environmental Response Compensation and Liability Act (CERCLA), authorizes the Environmental Protection Agency to provide emergency response for hazardous substances released into the environment. Under CERCLA, owners or operators of facilities are required to immediately notify the National Response Center in the event of releases of hazardous substances in reportable quantities.

To: National Response Center

(800) 424-8802 (24 hour)
(202) 267-2675 (24 hour)

When to Report:

(1) **Release of oil into water in harmful quantities**, or

(2) **Release of hazardous substance in reportable quantities**

Timing and Contents of Notice:

Immediate by telephone, radio telecommunication or other rapid communication. The spill report should include:

(1) time of spill,
(2) identity of material spilled,
(3) approximate quantity spilled,
(4) location and source of the spill,
(5) course and circumstances of the spill,
(6) existing or potential hazards,
(7) personal injuries or casualties,
(8) corrective action being taken,
(9) name and telephone number of individual who discovered and/or reported the spill, and
(10) other unique or unusual circumstances.

Observation:

Immediate notice to the EPA or U. S. Coast Guard of an oil spill onto land which does not threaten waterways is not necessary.

5.2 Notice to Minerals Management Service (MMS)

Operators of Outer Continental Shelf oil and gas leases are required to report all major spills, discharges and other undesirable events.

To: MMS District Supervisor and Subdistrict Supervisor where applicable

MMS District/ Subdistrict	Supervisor	Numbers
New Orleans	Don Howard	
	Office	(504) 736-2504
	Home	(504) 764-2168
Houma	John Borne	
	Office	(504) 868-4033
	Home	(504) 876-9142
Lafayette	Elmo Hubble	
	Office	(318) 264-6632
	Home	(318) 981-4965
Lake Jackson	Edmond Smith	
	Office	(409) 299-1041
	Home	(409) 849-4142
Lake Charles	Don Lueck	
	Office	(318) 437-7216
	Home	(318) 478-8475
Corpus Christi	John Sheive	
	Office	(512) 888-3241
	Home	(512) 643-8064

Note: Lake Charles and Corpus are Subdistricts of Lake Jackson.

When to Report:

Outer Continental Shelf releases of oil and liquid pollutants:

(1) within 12 hours if spills are 1 barrel or less, and
(2) immediately if spills are more than 1 barrel.

Timing and Content of Notice:

Verbal reports must be made within the time period indicated above and include information on the cause, location and volume of the spill and the action taken.

5.3 Notice to Bureau of Land Management (BLM)

Operators of onshore federal leases and Indian leases are required to report all major spills, discharges and other undersirable events.

To: BLM District Oil Spill Coordinator or Field Inspector

BLM District	Jurisdiction	Coordinator Number
Jackson, Mississippi	States of Ms, Ala, La, Ark	U. J. Parikh (601) 977-5400
Albuquerque, New Mexico	Northern Counties of New Mexico	Field Inspector (505) 761-8700
Las Cruces, New Mexico	Southern Counties of New Mexico	Field Inspector (505) 525-8228

BLM District	Jurisdiction	Coordinator Numbr
Roswell, New Mexico	Southeastern Counties of New Mexico	Ask for Field Inspector (505) 622-9042
Tulsa, Oklahoma	States of Okla, Ks, Tx	Keith Taylor Moore, OK (405) 794-9624
Casper, Wyoming	Central Counties of Wyoming	T. R. Beaven Cheyenne, WY (307) 775-6196
Worland, Wyoming	Northern Counties of Wyoming	Mike Rutledge (307) 347-9871
Rawlins, Wyoming	Southeastern Counties of Wyoming	John Menghini (307) 324-7171
Rock Springs, Wyoming	Southwestern Counties of Wyoming	Chris Butler (307) 382-5350
Miles City, Montana	Eastern Counties of Montana and all of S. Dakota	David Breisch (406) 232-4331
Lewiston, Montana	Central Counties of Montana	Owen Billingsley (406) 538-7461
Butte, Montana	Western Counties of Montana	Mike Brown (406) 494-5059
Dickinson, N. Dakota	State of N. Dakota	Russ Pigorf (701) 225-9148
Canon City, Colorado	Southeastern Counties of Colorado	Ernie Gillingham (719) 275-0631

When to Report:

Onshore releases of oil, saltwater and liquid pollutants from federal and Indian leases:

(1) within 24 hours if more than 100 barrels which are not contained within the facility firewall, and

(2) within 24 hours of any quantity which occurs in a sensitive area such as parks, recreation sites, wildlife refuges, lakes, reservoirs, streams and urban or suburban areas.

Timing and Contents of Notice:

Verbal reports must be made within the time period indicated above and include information on the cause, location and volume of the spill and the action taken.

5.4 Notice Under Sara Title III

The Emergency Planning and Community Right-to-Know Act of 1986 (also known as Sara Title III) establishes requirements for federal, state and local governments and industry regarding emergency planning and community right to know reporting on hazardous substances. Sara Title III has four major sections: emergency planning, emergency release notification, community right-to-know reporting requirements and toxic chemical release inventory. This section addresses only the emergency release notification requirements. Although Sara Title III is a federal statute, it mandates reporting by industry to state and local agencies. These reporting requirements are addressed separately on a state-by-state basis within Section 6.0.

To: The State Emergency Response Commission and the Local Emergency Planning Committee, or if not available, local emergency response personnel (local fire department). Refer to individual states for applicable phone numbers.

When to Report:

Any facility at which a hazardous chemical is produced, used or stored and at which there is a **release** of a **reportable quantity** of any extremely hazardous or **hazardous substance** which results in exposure to persons outside the boundaries of the facility.

Timing and Contents of Notice:

Immediate notification should include:

(1) the chemical name,
(2) an indication of whether the substance is extremely hazardous,
(3) an estimate of the quantity released into the environment,
(4) the time and duration of the release,
(5) whether the release occurred into air, water and/or land,
(6) any known or anticipated acute or chronic health risks associated with the emergency, and where necessary, advice regarding medical attention for exposed individuals,
(7) proper precautions such as evacuation, and
(8) name and telephone number of contact person.

Observation:

Reporting requirements under the Emergency Planning and Community Right-to-Know Act do not apply to any release which results in exposure to persons solely within the boundaries of the facility.

6.10 NEW MEXICO

6.10.1 Notice to New Mexico Health and Environment Department

To: Environmental Improvement Division
Ground Water Bureau

(505) 827-9329 (24 hour)

When to Report:

Release from any facility of a quantity of **oil** or **hazardous substance** which may injure or be detrimental to the public welfare, human health, animal or plant life or property.

Timing and Contents of Notice:

As soon as possible but in no event more than 24 hours thereafter. Verbal notice shall include:

(1) the name, address and telephone number of the person or persons in charge of the facility, as well as the owner and/or operator of the facility,
(2) the name and address of the facility,
(3) the date, time, location and duration of the discharge,
(4) the source and cause of the discharge,
(5) a description of the discharge, including its chemical composition,
(6) the estimated volume of the discharge,
(7) any action taken to mitigate immediate damage of the discharge.

6.10.2 Notice to New Mexico Energy, Minerals and Natural Resources Department

To: Oil Conservation Division

(505) 827-5800 (8 to 5:00)

and District Office:

District	Name	Phone
I	Jerry Sexton	(505) 393-6161
II	Mike Williams	(505) 748-1283
III	Frank Chavez	(505) 344-6178
IV	Dave Voyer	(505) 827-5800

Refer to Section 6.10.4 for listing of District Offices by County.

When to Report:

Release of:

(1) one barrel or more of oil into water course,
(2) 25 barrels or more of oil on to land,
(3) 25 barrels or more of saltwater into water course,

(4) 100 barrels or more of saltwater on to land, or
(5) any quantity of oil or saltwater which endangers life or property.

Timing and Contents of Notice:

Immediate verbal notice should include:

(1) location of incident by quarter-quarter, section, township and range,
(2) location by distance and direction from the nearest town or prominent landmark so that the exact site of the incident can be readily located on the ground,
(3) nature and quantity of the loss,
(4) general conditions in the area to include precipitation, temperature and soil conditions,
(5) measures that have been taken and that are being taken to remedy the situation.

6.10.3 Notice to New Mexico Emergency Response Commission

To: Department of Public Safety

(505) 827-9223

and

Local Emergency Planning Committee (obtain number from State Agency listed above)

When to Report:

Any facility at which a hazardous chemical is produced, used or stored and at which there is a **release** of a **reportable quantity** of any extremely hazardous or **hazardous substance** which results in exposure to persons outside the boundaries of the facility.

Timing and Contents of Notice:

Immediate notification should include:

(1) the chemical name,
(2) an indication of whether the substance is extremely hazardous,
(3) an estimate of the quantity released into the environment,
(4) the time and duration of the release,
(5) whether the release occurred into air, water and/or land,
(6) any known or anticipated acute or chronic health risks associated with the emergency, and where necessary, advice regarding medical attention for exposed individuals,
(7) proper precautions such as evacuation, and
(8) name and telephone number of contact person.

6.10.4 **Oil Conservation Division of New Mexico**
Energy Minerals and Natural Resources Department

District Offices by County

District 1	District 2
Chaves (Eastern)	Chaves
Curry	Debaca
Led	Dona Ana
Roosevelt	Eddy
	Grant
	Hidalgo
	Lincoln
	Luna
	Otero
	Sierra

District 3	District 4
McKinley Sandoval	Bernalillo
Rio Arriba	Catron
San Juan	Colfax
	Guadalupe
	Harding
	Mora
	Quay
	San Miguel
	Santa Fe
	Socorro
	Taos
	Torrance
	Union
	Valencia

7.0 HAZARDOUS CHEMICALS USED IN THE OILFIELD

The lists shown in Section 7.1 and 7.2 are typical oilfield chemicals grouped by operational category, which have a reportable quantity (RQ) listed in hazardous or extremely hazardous substance tables, 40 CFR Part 302.4 or 355 Appendix A. Section 7.3 indicates the reportable quantity of certain hazardous substances commonly used in miscellaneous operations.

7.1 Drilling, Completion, Workover, and Stimulation Activities

Hazardous Chemical	Physical & Health Hazards	RQ (Lbs)
Acids		
Hydrochloric	Reactive, Acute	5,000
Hydrofluoric	Reactive, Acute	100
Sulphuric	Reactive, Acute	1,000
Fluid Additives		
Potassium Hydroxide	Reactive, Acute	1,000
Sodium Hydroxide	Reactive, Acute	1,000
Sodium Phosphate	Reactive, Acute	5,000
Zinc Bromide	Reactive, Acute	1,000
Zinc Chloride	Reactive, Acute	1,000
Zinc Sulfate	Reactive, Acute	1,000

7.2 Production Activities

Hazardous Chemical	Physical & Health Hazards	RQ (Lbs)
Biocides		
Acrolein	Reactive, Acute	1
Formaldehyde	Reactive, Acute	100
Inhibitors		
Ammonium Bisulfite	Reactive, Acute	5,000
Sodium Chromate	Reactive, Acute	10
Zinc Carbonate	Reactive, Acute	1,000
Lead Phosphate	Reactive, Acute	1
Phosphorus Sulfide	Reactive, Acute	100
Surfactants		
Isobutyl Alcohol	Reactive, Acute	5,000
Sodium Phosphate	Reactive, Acute	5,000
Solvents		
Benzene	Ignitability, Acute	10
Toluene	Ignitability, Acute	1,000
Xylene	Ignitability, Acute	1,000
Carbon Disulfide	Ignitability, Acute	100
Carbon Tetrachloride	Ignitability, Acute	10
Trichloroethylene	Ignitability, Acute	100
Hydrates		
Methanol	Ignitability, Acute	5,000
Dehydration		
Ethylene Glycol	Reactive, Acute	1,000

7.3 Miscellaneous Activities

Painting		
Methyl Ethyl Ketone	Ignitability, Acute	5,000
Fuels		
Diesel	Ignitability, Acute	100
Gasoline	Ignitability, Acute	100
Kerosene	Ignitability, Acute	100

APPENDIX A

EMPLOYEE TELEPHONE NUMBERS

Sr. V P Operations

S. W. Haines
Office: (713) 756-6389
Home: (713) 461-6220

Managers

L. H. Hetrick
Office: (713) 756-6499
Home: (713) 856-8339
Mobil: (713) 553-6347

B. M. Priebe
Office: (915) 687-0587
Home: (915) 694-9706
Mobil:
Midland: (915) 561-3575
Odessa: (915) 335-4065
Notrees: (915) 561-3175
Big Spring: (915) 264-3017
St. Lawrence: (915) 397-2572-9575
King Mtn: (915) 652-3264-9575
Monohans: (915) 943-4323-9575
Ft. Stockton: (915) 336-7666-9575
Orla: (915) 561-5900-9575
Lamesa: (806) 497-6322-07243105
Seminole: (915) 758-9816-07243105
Post: (806) 495-3526-07243105
Snyder: (915) 573-1171-07243105
Sweetwater: (915) 235-4801-07243105
Double Mtn: (817) 989-3506-07243105
Abilene: (915) 673-2031-07243105
Albany: (915) 762-3291-07243105
Breckenridge: (817) 559-7577-07243105
Eastland: (817) 629-3386-07243105
Graham: (817) 549-7930-07243105
Ft. Worth: (817) 877-3052-07243105
Brownwood: (915) 643-1267-07243105
Robert Lee: (915) 658-6394-07243105
Sterling Cty: (915) 378-2122-07243105
San Angelo: (915) 949-0885-07243105
Big Lake: (915) 884-3733-07243105
Mertzon: (915) 835-2228-07243105
Eldorado: (915) 853-2527-07243105
Ozona: (915) 392-5562-07243105
Sonora: (915) 387-2574-07243105
Fredricksburg: (915) 997-4610-07243105
Hobbs: (505) 393-5813-07243105

D. A. Veltri
Office: (713) 756-6394
Home: (713) 863-9029

Superintendents:

G. W. Allen
Office: (405) 752-9036
Home: (405) 751-5929
Mobil: (405) 620-0702

R. L. Fox
Office: (512) 786-3558
(512) 786-3559
Home: (512) 786-4179

R. L. Fox

Mobil:

Alice:	(512) 664-3675-13177
Bay City:	(409) 245-1422-10239
Beeville:	(512) 362-0800-20192
Carrizo:	(512) 876-2466-15091
Corpus:	(512) 387-0533-02139
Cottula:	(512) 879-3037-19192
George West:	(512) 449-1899-09076
Laredo:	(512) 724-9720-13163
Mirando:	(512) 586-4696-13165
Refugio:	(512) 526-5344-12110
San Antonio:	(512) 692-0983-16189
Victoria:	(512) 572-9824-04245

D. W. Hill

Office:	(505) 394-2508
	(505) 394-3112
Home:	(505) 392-3190

Mobil:

Hobbs:	(505) 393-4202-10233
Notrees:	(505) 393-9942-02220
Albuquerque:	(505) 247-8400-19197

J. C. Matthews

Office:	(915) 387-3821
Home:	(915) 387-2455
Mobil:	(915) 387-6710

M. D. Stewart

Office:	(713) 756-6334
Home:	(713) 493-4808
Mobil:	(713) 553-6348

Foremen:

L. K. Bonham

Office:	(915) 524-4062
Home:	(915) 524-6167

Mobil:

Andrews:	(915) 523-6327-02110
Notrees:	(915) 561-5291-02111
Lamesa:	(806) 872-2479-14144
Post:	(806) 495-3877-01178
Lubbock:	(806) 748-1047-03178
Seminole:	(915) 758-9223-02111

A. P. Castro

Office:	(915) 387-3821
Home:	(915) 387-2246
Mobil:	(915) 387-6740

R. L. Cramer

Office:	(915) 387-3821
Home:	(915) 387-5428
Mobil:	(915) 387-6720

D. Demoss

Office/Home:	(316) 384-5620
Mobil:	(316) 373-2275

R. H. Durbin

Office:	(505) 822-3816
Home:	(505) 327-3155

D. M. Franks

Office:	(501) 921-4411
Home:	(501) 921-5872
Pager:	(501) 235-2160

C. Harrell
Office: (601) 735-9979
Home: (205) 866-2257
Mobil: (205) 454-3098
Pager: (205) 660-3846
(800) 999-6710-97185

C. W. Hons
Office: (512) 274-3366 or 274-3326
Home: (512) 780-3282
Mobil: (512) 877-6851

K. Huey
Office: (512) 394-6401 Freer
(512) 527-2201 Hebbronville
Home: (512) 394-6653 or 394-7554
Mobil: (512) 394-6421

A. D. Jones
Office: (915) 387-3821
Home: (915) 387-5931
Mobil: (915) 387-6583-1027

A. A. Lynch
Office: (915) 387-3821
Home: (915) 387-2086
Mobil: (915) 387-6730

D. L. Odom
Office: (512) 374-3325
Home: (512) 876-9806
Mobil:
Carrizo: (512) 876-2466-19143
Cottula: (512) 879-3037-15156

F. C. Pardue
Office: (405) 752-9036
Home: (405) 969-2258
Mobil: (405) 630-8577
Pampa: (806) 669-1188-29321701
Perryton: (806) 435-4635-29321701

L. E. Robinson
Office: (405) 438-2237
Home: (405) 438-2435
Mobil:
Fairview: (405) 227-2557-2016
Enid: (405) 234-0775-2016

R. Ross
Office: (701) 828-3230
Home: (701) 828-3315
Pager: (701) 774-4487
Mobil:
Willister: (701) 774-7043
Sydney: (406) 718-3819-1097
Dickinson: (701) 225-4878-1035
Bowman: (701) 523-3841-1210
Centinnel
Butte: (701) 872-3701-1158
Kildeer: (701) 227-4299
Gillette: (307) 686-4871-037611
Baker: (406) 778-6121

R. Sanders
Office: (405) 872-7057 Noble
(405) 332-6460 Francis
Home: (405) 751-1144
Mobil: (405) 630-8716

N. E. Scheihing

Office:	(405) 853-4801
Home:	(405) 282-1636
Mobil:	
Crescent:	(405) 969-6040-2021
Pampa:	(806) 665-1605-2021
Perryton:	(806) 435-4634-24291701

J. A. Sturgeon

Office:	(915) 387-3821
Home:	(915) 658-3155
Mobil:	(915) 652-3264-7901

R. G. Thomas

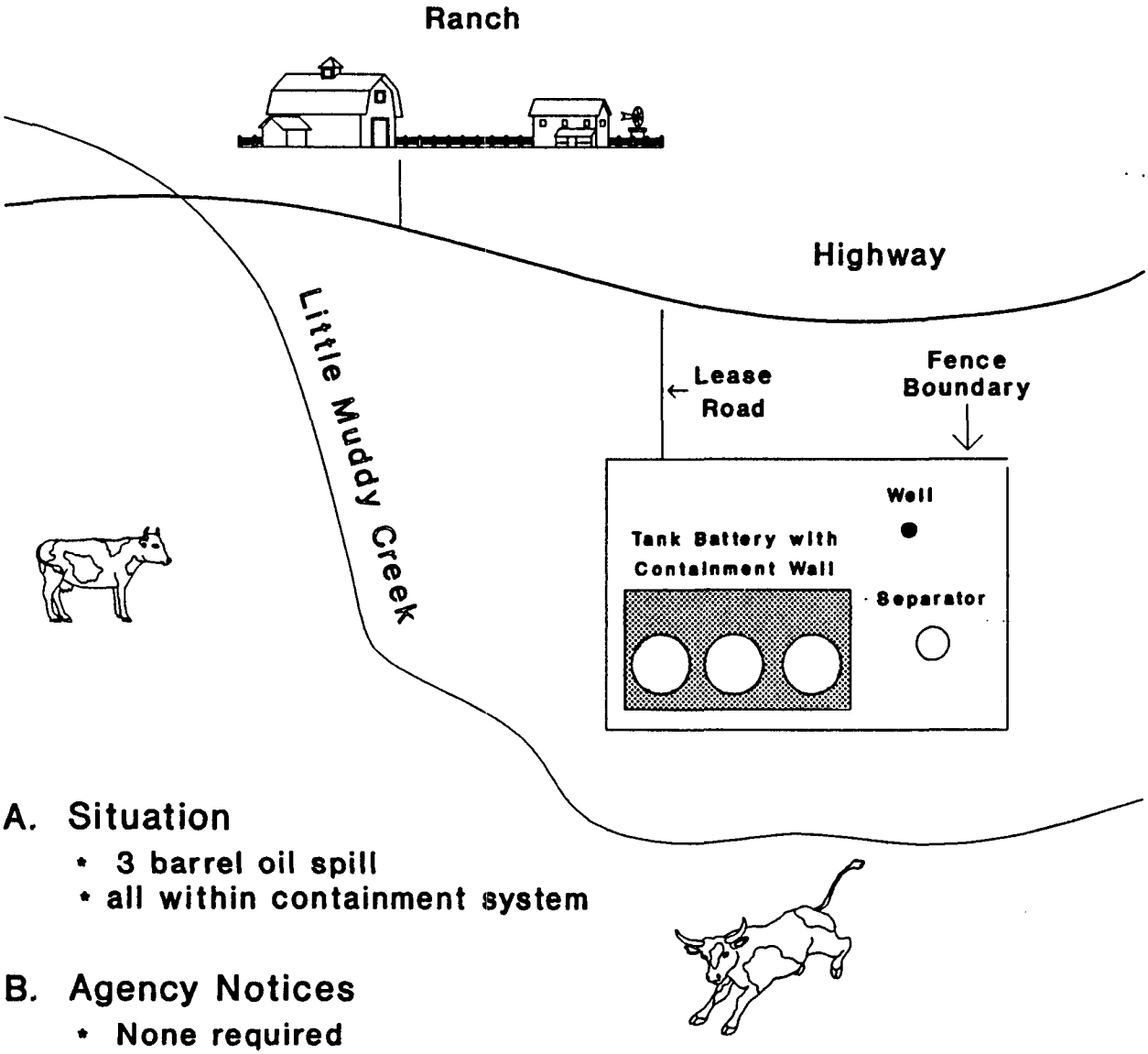
Office:	(505) 394-2508
	(505) 394-3112
Home:	(505) 394-2454
Mobil:	
Hobbs:	(505) 393-4202-10233
Notrees:	(505) 393-9942-02114
Maljamar:	(505) 393-8370-14241
Bell Lake:	(505) 393-7771-05241

T. Zavitch

Office:	(512) 786-3558
	(512) 786-3559
Home:	(512) 274-3635
Mobil:	
Alice:	(512) 664-3675-17127
Bay City:	(409) 245-1422-10170
Beeville:	(512) 362-0800-20170
Carrizo:	(512) 876-2466-19191
Corpus:	(512) 387-0533-14127
Cottula:	(512) 879-3017-15086
Encino:	(512) 568-3653-01236
George West:	(512) 449-1899-09127
Kingsville:	(512) 595-4225-07127
Laredo:	(512) 724-9720-09247
Mirando:	(512) 586-4696-17127
Refugio:	(512) 526-5344-16127
San Antonio:	(512) 692-7822-07235
Uvalde:	(512) 279-1155-18191
Victoria:	(512) 572-9824-12238

OIL SPILL REPORTING EXAMPLE NO. 1

Location:
Longhorn County, Texas



A. Situation

- 3 barrel oil spill
- all within containment system

B. Agency Notices

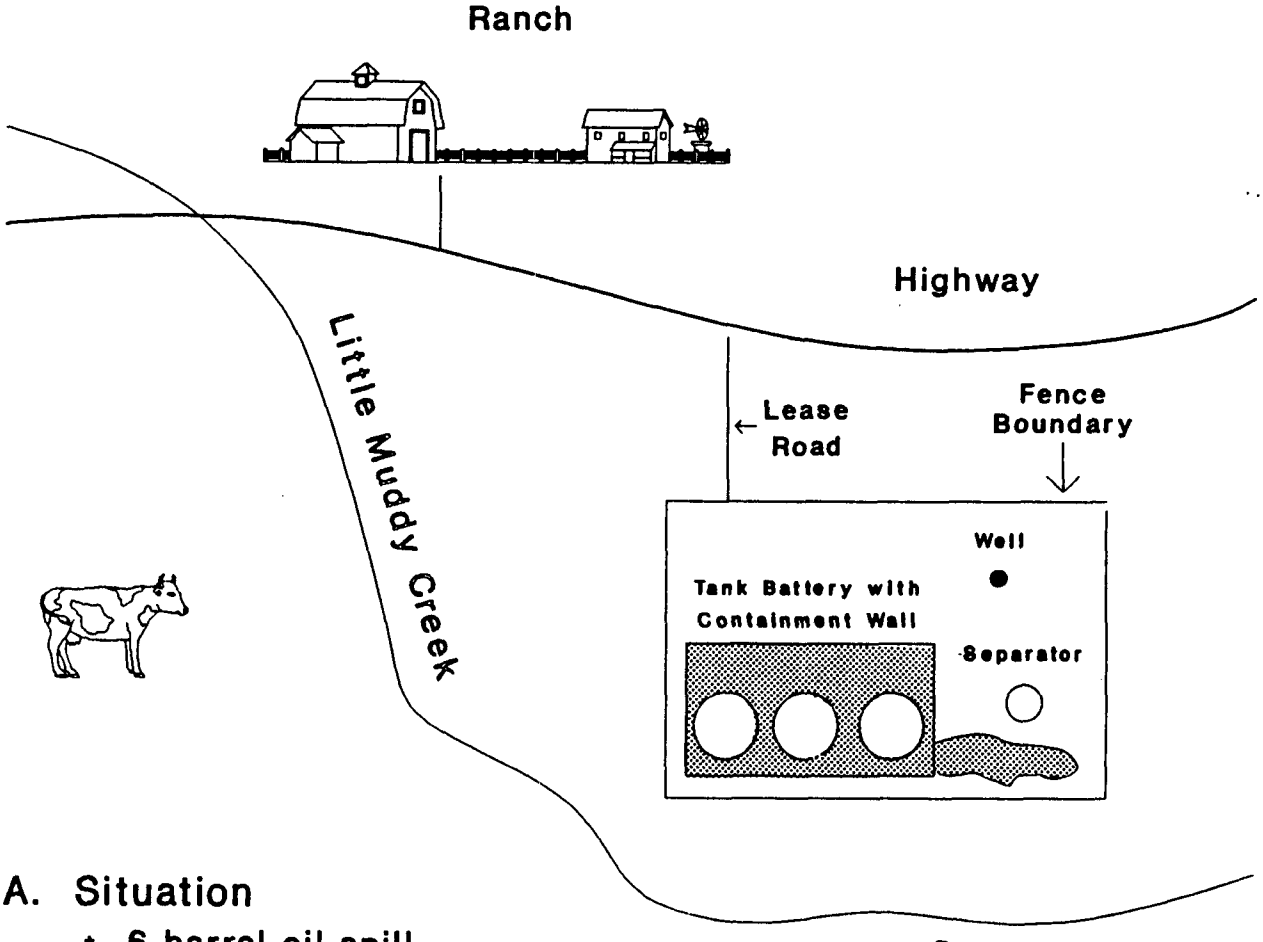
- None required

C. Internal Notices

- Pumper to notify Foreman

OIL SPILL REPORTING EXAMPLE NO. 2

Location:
Longhorn County, Texas



A. Situation

- 6 barrel oil spill
- half of spill outside levee system

B. Agency Notices

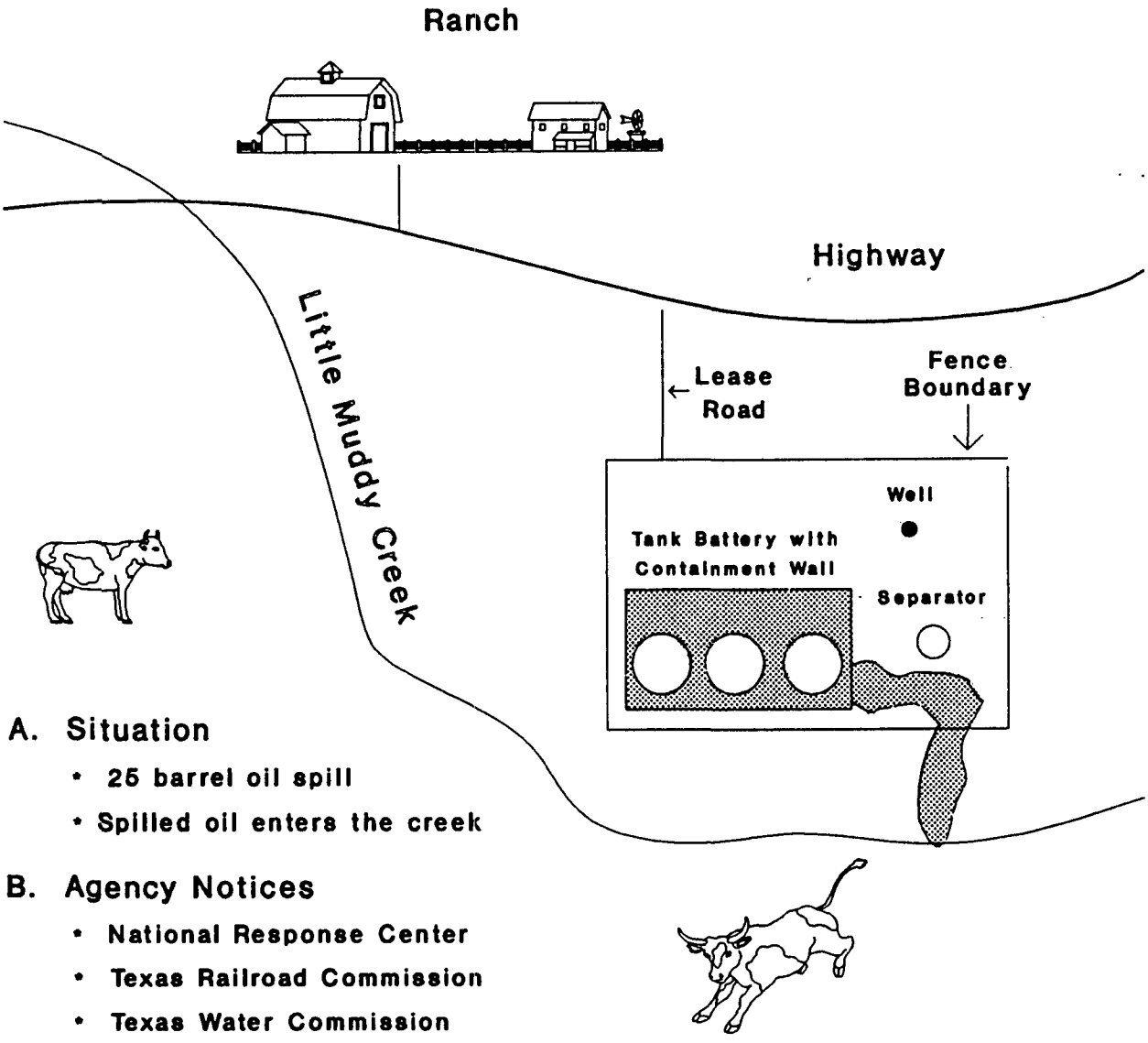
- Texas Railroad Commission

C. Internal Notices

- Pumper to notify Foreman
- Foreman to notify Superintendent
- Superintendent to notify Production Manager

OIL SPILL REPORTING EXAMPLE NO. 3

Location:
Longhorn County, Texas



A. Situation

- 25 barrel oil spill
- Spilled oil enters the creek

B. Agency Notices

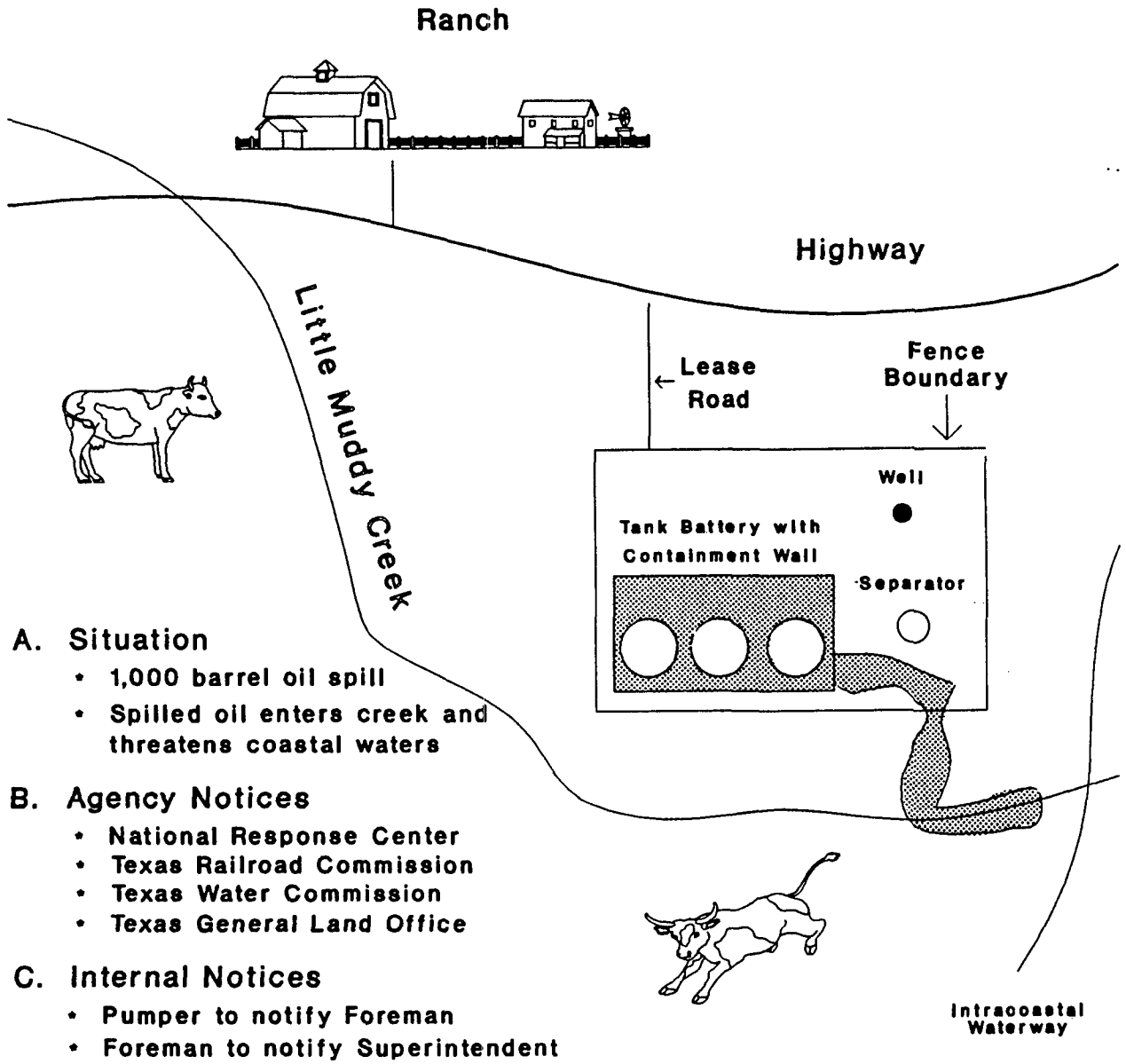
- National Response Center
- Texas Railroad Commission
- Texas Water Commission

C. Internal Notices

- Pumper to notify Foreman
- Foreman to notify Superintendent
- Superintendent to notify Production Manager
- Production Manager to notify Environmental, Health & Safety Manager for Spill Response Team Activation

OIL SPILL REPORTING EXAMPLE NO. 4

Location:
Longhorn County, Texas



A. Situation

- 1,000 barrel oil spill
- Spilled oil enters creek and threatens coastal waters

B. Agency Notices

- National Response Center
- Texas Railroad Commission
- Texas Water Commission
- Texas General Land Office

C. Internal Notices

- Pumper to notify Foreman
- Foreman to notify Superintendent
- Superintendent to notify Production Manager
- Production Manager to notify Environmental, Health & Safety Manager for Spill Response Team Activation and to notify Senior Vice President of Operations
- Senior Vice President of Operations to notify Company President

LOCAL EMERGENCY PHONE NUMBERS

Local Fire Department

_____

_____

_____

Local Police or Sheriff's Office

_____

_____

_____

Local Ambulance Service

_____

_____

_____

State Department of Public Safety

_____

_____

_____

Equipment & Services

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

VI. MIGRATORY BIRD PROTECTION

A. Netting of Pits and Tanks

All open top tanks or pits over 16' in diameter that may collect oil on the surface will be netted to protect various species of migratory birds.

VII. CLOSURE OF FACILITIES

A. Skimming Pits

All existing unlined skimming pits will be retro-fit with an impervious liner or closed by the end of 1995. Closure procedures will abide by OCD guidance. Any new skimming pits will be constructed with an impervious liner to protect shallow groundwater in accordance with OCD rules.

B. Well P&A's

All wells, once determined to be of no future use, will be plugged and abandoned in accordance with OCD rules.

C. Production Facilities

Upon P&A of the wells, the production facilities will require proper cleanout, take-down and disposal (or reuse) of the equipment. Oily soils will be remediated in-place and managed so that any rainwater runoff will be uncontaminated.

VIII. CERTIFICATION STATEMENT

STATE OF TEXAS)
ss
COUNTY OF HARRIS)

BEFORE ME, *the undersigned authority, duly commissioned and qualified within and* for the County aforesaid, personally came and appeared Lloyd H. Hetrick, Manager of Environmental, Health and Safety for American Exploration Company, known to me to be the person whose name is subscribed to the above instrument who, being by me duly sworn on oath, states:

I certify that I am an authorized representative of American Exploration Company; that this Plan of Operations for the Hospah Field being submitted is true, accurate, and complete to the best of my knowledge.

11-20-92
Date

Lloyd H. Hetrick
Manager, Environmental, Health & Safety
American Exploration Company

SWORN TO AND SUBSCRIBED before me on this the 20 day of November, 1992.

MELINDA MAYSE
NOTARY PUBLIC STATE OF TEXAS
June 16, 1995

Melinda Mayse
Notary Public in and for
Harris County, Texas

My Commission Expires:
June 16 1995

APPENDIX A

AUGUST, 1992 STATUS BY WELL

HOSPAH FIELD

WELL NAME	STATUS
Hanson #01	SI
Hanson #02	SI
Hanson #03	Producer
Hanson #04	Producer
Hanson #06	SI
Hanson #07	Producer
Hanson #08	Producer
Hanson #09	Producer
Hanson #10	SI
Hanson #11	SI
Hanson #12	Producer
Hanson #13	Producer
Hanson #14	SI
Hanson #15	Producer
Hanson #16	SI
Hanson #17	Producer
Hanson #18	SI
Hanson #19	Injector
Hanson #20	SI
Hanson #21	SI
Hanson #23	SI
Hanson #24	SI
Hanson #25	SI
Hanson #26	Producer
Hanson #27	SI
Hanson #28	Injector
Hanson #29	Producer
Hanson #30	Producer
Hanson #31	SI
Hanson #33	SI
Hanson #34	Injector
Hanson #35	Producer
Hanson #36	Producer
Hanson #37	SI
Hanson #38	SI
Hanson #39	Producer
Hanson #40	SI
Hanson #41	Producer
Hanson #42	Producer
Hanson #43	Injector
Hanson #44	Injector
Hospah Sand Unit #001Y	Producer
Hospah Sand Unit #002	Producer
Hospah Sand Unit #003	SI
Hospah Sand Unit #004Y	Producer
Hospah Sand Unit #005	Producer
Hospah Sand Unit #006	Producer
Hospah Sand Unit #007	Producer
Hospah Sand Unit #009	SI
Hospah Sand Unit #010	Producer
Hospah Sand Unit #011Y	Producer
Hospah Sand Unit #012	SI
Hospah Sand Unit #013	Producer
Hospah Sand Unit #015	SI
Hospah Sand Unit #016	SI
Hospah Sand Unit #017	SI
Hospah Sand Unit #019	Producer
Hospah Sand Unit #020	Producer
Hospah Sand Unit #021	Producer
Hospah Sand Unit #022	Producer
Hospah Sand Unit #023	SI
Hospah Sand Unit #024	SI
Hospah Sand Unit #025	Producer
Hospah Sand Unit #027	SI
Hospah Sand Unit #028	Producer
Hospah Sand Unit #029	SI
Hospah Sand Unit #032	SI
Hospah Sand Unit #034	Producer
Hospah Sand Unit #035	SI
Hospah Sand Unit #036	Producer
Hospah Sand Unit #037	SI
Hospah Sand Unit #038	SI
Hospah Sand Unit #039	SI
Hospah Sand Unit #048Y	Producer

APPENDIX A

AUGUST, 1992 STATUS BY WELL

HOSPAH FIELD

WELL NAME	STATUS	WELL NAME	STATUS
Hanson #01	SI	Hanson #41	Producer
Hanson #02	SI	Hanson #42	Producer
Hanson #03	Producer	Hanson #43	Injector
Hanson #04	Producer	Hanson #44	Injector
Hanson #06	SI	Hospah Sand Unit #001Y	Producer
Hanson #07	Producer	Hospah Sand Unit #002	Producer
Hanson #08	Producer	Hospah Sand Unit #003	SI
Hanson #09	Producer	Hospah Sand Unit #004Y	Producer
Hanson #10	SI	Hospah Sand Unit #005	Producer
Hanson #11	SI	Hospah Sand Unit #006	Producer
Hanson #12	Producer	Hospah Sand Unit #007	Producer
Hanson #13	Producer	Hospah Sand Unit #009	SI
Hanson #14	SI	Hospah Sand Unit #010	Producer
Hanson #15	Producer	Hospah Sand Unit #011Y	Producer
Hanson #16	SI	Hospah Sand Unit #012	SI
Hanson #17	Producer	Hospah Sand Unit #013	Producer
Hanson #18	SI	Hospah Sand Unit #015	SI
Hanson #19	Injector	Hospah Sand Unit #016	SI
Hanson #20	SI	Hospah Sand Unit #017	SI
Hanson #21	SI	Hospah Sand Unit #019	Producer
Hanson #23	SI	Hospah Sand Unit #020	Producer
Hanson #24	SI	Hospah Sand Unit #021	Producer
Hanson #25	SI	Hospah Sand Unit #022	Producer
Hanson #26	Producer	Hospah Sand Unit #023	SI
Hanson #27	SI	Hospah Sand Unit #024	SI
Hanson #28	Injector	Hospah Sand Unit #025	Producer
Hanson #29	Producer	Hospah Sand Unit #027	SI
Hanson #30	Producer	Hospah Sand Unit #028	Producer
Hanson #31	SI	Hospah Sand Unit #029	SI
Hanson #33	SI	Hospah Sand Unit #032	SI
Hanson #34	Injector	Hospah Sand Unit #034	Producer
Hanson #35	Producer	Hospah Sand Unit #035	SI
Hanson #36	Producer	Hospah Sand Unit #036	Producer
Hanson #37	SI	Hospah Sand Unit #037	SI
Hanson #38	SI	Hospah Sand Unit #038	SI
Hanson #39	Producer	Hospah Sand Unit #039	SI
Hanson #40	SI	Hospah Sand Unit #048Y	Producer

APPENDIX A

August 1992 Status by Well
Page 2

WELL NAME	STATUS
Hospah Sand Unit #049	SI
Hospah Sand Unit #050	Producer
Hospah Sand Unit #051	SI
Hospah Sand Unit #052	Producer
Hospah Sand Unit #053	Producer
Hospah Sand Unit #054	SI
Hospah Sand Unit #056	Producer
Hospah Sand Unit #058	Injector
Hospah Sand Unit #059	SI
Hospah Sand Unit #060	SI
Hospah Sand Unit #061	Injector
Hospah Sand Unit #062	SI
Hospah Sand Unit #063	SI
Hospah Sand Unit #064	SI
Hospah Sand Unit #065	SI
Hospah Sand Unit #066	SI
Hospah Sand Unit #067	SI
Hospah Sand Unit #068	SI
Hospah Sand Unit #069	SI
Hospah Sand Unit #070	Injector
Hospah Sand Unit #071	SI
Hospah Sand Unit #084	Injector
Hospah Sand Unit #085	Producer
Hospah Sand Unit #087	Injector
Hospah Sand Unit #088	Producer
Hospah Sand Unit #089	Producer
Hospah Sand Unit #090	Injector
Hospah Sand Unit #091	Injector
Hospah Sand Unit #092	Injector
Hospah Sand Unit #093	Injector
Hospah Sand Unit #094	Injector
Hospah Sand Unit #095	SI
Hospah Sand Unit #096	SI
Hospah Sand Unit #097	SI
Hospah Sand Unit #098	Producer
Hospah Sand Unit #100	SI
Hospah Sand Unit #101	SI
Hospah Sand Unit #102	Producer
Hospah Sand Unit #104	Injector
Hospah Sand Unit #105	SI
Santa Fe Railroad #03	Producer
Santa Fe Railroad #04	Producer
Santa Fe Railroad #07	Producer
Santa Fe Railroad #08	Producer
Santa Fe Railroad #09	SI
Santa Fe Railroad #10	SI
Santa Fe Railroad #12	Producer
Santa Fe Railroad #13	SI
Santa Fe Railroad #14	Producer
Santa Fe Railroad #15	Producer
Santa Fe Railroad #16	SI
Santa Fe Railroad #17	SI
Santa Fe Railroad #18	SI
Santa Fe Railroad #19	Producer
Santa Fe Railroad #20	Producer
Santa Fe Railroad #21	SI
Santa Fe Railroad #23	SI
Santa Fe Railroad #24	SI
Santa Fe Railroad #25	SI
Santa Fe Railroad #33	SI
Santa Fe Railroad #39	SI
Santa Fe Railroad #40	SI
Santa Fe Railroad #41	Producer
Santa Fe Railroad #42	Producer
Santa Fe Railroad #43	Producer
Santa Fe Railroad #44	Producer
Santa Fe Railroad #45	Producer
Santa Fe Railroad #47	Producer
Santa Fe Railroad #48	Producer
Santa Fe Railroad #49	Producer
Santa Fe Railroad #50	Producer
Santa Fe Railroad #51	Injector
Santa Fe Railroad A #72	SI
Santa Fe Railroad A #73	SI
Santa Fe Railroad A #74	SI
Santa Fe Railroad A #75	Producer
Santa Fe Railroad A #76	Producer
Santa Fe Railroad A #77	Producer

APPENDIX A

August 1992 Status by Well
Page 3

WELL NAME	STATUS
Santa Fe Railroad A #79	Producer
Santa Fe Railroad A #80	SI
Santa Fe Railroad A #81	Producer
Santa Fe Railroad A #82	Producer
Santa Fe Railroad A #84	Injector
Santa Fe Railroad A #88	Producer
Santa Fe Railroad A #89	Producer
Santa Fe Railroad A #90	Producer
Santa Fe Railroad A #91	Producer
Santa Fe Railroad A #93	Producer
Santa Fe Railroad A #94	Producer
Santa Fe Railroad A #95	Producer
Santa Fe Railroad A #96	Producer
Santa Fe Railroad A #97	Injector
Santa Fe Railroad B #32	SI
Santa Fe Railroad B #33	SI
Santa Fe Railroad B #34	SI
Santa Fe Railroad B #35	SI
Santa Fe Railroad B #36	SI
Santa Fe Railroad B #37	SI

August 1992 Total Producers	76
August 1992 Total Injectors	19
August 1992 Total Shut-in	77
Total Wells	172

OIL CONSERVATION DIVISION
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STATE OF NEW MEXICO
ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
AZTEC DISTRICT OFFICE

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

1000 RIO BRAZOS ROAD
AZTEC, NEW MEXICO 87410
(505) 334-6178

Certified Mail Receipt No. P 988 786 240

December 10, 1992

American Exploration Company
Attn. Lloyd H. Hetrick
Manager, Environment, Health and Safety
1331 Lamar, Suite 900
Houston, Texas 77010-3088

RE: Hospah Field, Mckinley County, New Mexico

Dear Mr. Hetrick:

The New Mexico Oil Conservation Division (OCD) has reviewed American Exploration's Plan of Operations submitted on November 24, 1992. Several items have not been addressed specifically. If American Exploration wishes to continue soil remediation at the landing strip in Hospah Field, an application for a non-commercial centralized remediation facility permit needs to be submitted to the OCD-Environmental Bureau in Santa Fe under OCD Rule 711 (modified). For information regarding Rule 711 contact Roger Anderson, 505-827-5812. In addition, any production batteries which continue to use produced water pits and/or surface discharges must be permitted as non-commercial centralized disposal facilities under OCD Rule 711 (modified). For a single operator all production batteries in a pool may be covered by one permit. Quality control measures for any discharges of produced waters to a drainage system should be defined in the application. Discharges of produced water to a drainage system must meet state water quality standards. American Exploration should submit applications for the desired permits under OCD Rule 711 immediately if American Exploration plans to continue produced water discharges under a NPDES permit or an EPA exemption. American Exploration also needs to submit a schedule and method for remediating produced hydrocarbon contamination along the upper portion of the Sandoval Arroyo drainage.

American Exploration has submitted a spill response guide. The OCD expects spill response to begin with the pumper and foreman as outlined by American Exploration. Oil Conservation Division rules and policy are for prompt and prudent attention to spills to prevent contamination. When spills are contained, "prompt" is deemed to be in daylight hours with all necessary equipment and personnel to complete the clean up. When spills are not contained, all necessary equipment and personnel shall be utilized in a safe and efficient manner to contain a

spill at any hour. Safety of personnel on the job and the public sector are always of primary concern. Contract equipment and personnel may be necessary to contain and /or clean up a spill in a prudent manner. The OCD expects verbal notification of reportable spills from the Foreman and/or Superintendent as outlined in OCD Rule 116.

Yours truly,

Denny G. Foust

Denny G. Foust
Environmental Geologist

XC: OCD-Environmental Bureau
Operator File
Environmental File
DGF File

SUMMARY OF NMOCD ANALYTICAL RESULTS FOR OIL-FIELD WASTES COLLECTED IN HOSPAH, N.M.

(All samples collected by NMOCD on 8/5/92 and analyzed by Inter-Mountain Laboratories of Farmington, N.M.)

Location	Benzene (ppb) (water)	Toluene (ppb) (water)	Ethylbenzene (ppb) (water)	m-, p-Xylene (ppb) (water)	o-Xylene (ppb) (water)	Total BTEX (ppb) (water)	Tot. Petroleum Hydrocarbons* (ppb) (sludges)
SF RR Lease discharge**	ND	76.4	ND	ND	ND	76.4	15,700,000
Arroyo below final skim	ND	3.6	ND	2.5	ND	6.1	651,000
Hanson TB discharge	ND	13.2	ND	ND	ND	13.2	---
Sand Unit TB discharge	14.8	63.7	11.1	32.3	9.2	131.1	---
Sandoval Lake	ND	ND	ND	ND	ND	ND	ND (<250000)
NMWQCC standard***	10	750	750	620 (total)	---	---	---
Pit clean-up guidelines#	10000	---	---	---	---	50000	100000

TB = tank battery

*Sludge samples only; all other samples are produced water or lake water.

**Discharge is from skimming/settling pond at tank battery.

***New Mexico Water Quality Control Commission Regulations, standards for ground water (sec. 3-103); August 18, 1991 revision

#N.M. Oil Conservation Division pit closure guidelines, October 1991; these guidelines generally apply only to contaminated soils

Roger

OIL CONSERVATION DIVISION
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92 OCT 15 PM 9 15

American Exploration Company

October 9, 1992

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OCT1 3 1992
OIL CON. DIV.
DIST. 3

Via Federal Express

Mr. Myron O. Knudson, P.E.
United States Environmental Protection Agency
Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

RE: Order for Information
Docket No. VI-92-1742

Gentlemen:

We are responding to the subject order by providing you with the attached Response to Order for Information and Request for NPDES Permit. If we can be of further information or assist you in any way, please call either Lloyd Hetrick at (713)756-6499 or me at (713)756-6386. Thank you.

Yours truly,

Roderick Oxford
Vice President

RO/rg
l-637ro

Enclosure

cc: Mr. Denny G. Foust
New Mexico Oil Conservation Division
Mr. Steve Baumgarm
New Mexico Environmental Improvement Department

1331 Lamar Street, Suite 900, Houston, Texas 77010-3088, Telephone: (713) 756-6000
885 Third Avenue, Suite 1200, New York, New York 10022-4802, Telephone: (212) 644-6900

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 6

IN THE MATTER OF:	*	
	*	
AMERICAN EXPLORATION COMPANY	*	DOCKET NO. VI-92-1742
PROCEEDINGS UNDER SECTION	*	
308(a)(4)(A), CLEAN WATER ACT	*	RESPONSE TO ORDER FOR
	*	INFORMATION AND REQUEST
IN RE FACILITY NO. NM 000061	*	FOR NPDES PERMIT

NOW COMES American Exploration Company ("AEC"), through undersigned counsel, to respond to the Order for Information in the captioned matter, and to request permits to continue discharges of produced water at the Hospah Field. In response to said Order, AEC would show as follows:

I.

The Order notes in Paragraph III that EPA has issued Onshore General Permit No. NMG320000, which permit prohibits the discharge of produced waters to waters of the United States. As will be shown below, discharges from the Hospah Field are not covered by that general permit, because that permit covers "facilities in the Onshore Subcategory of the Oil and Gas Extraction Point Source Category" 56 Fed. Reg. 7698 (February 25, 1991). AEC will show that the Hospah Field is not covered by the Onshore Subcategory. Rather, it is covered either by (1) the

Stripper Subcategory; or (2) the Agricultural and Wildlife Water Use Subcategory.

STRIPPER SUBCATEGORY

II.

The Hospah Field should be classified in the "Stripper" Subcategory. The Stripper Subcategory includes:

> "Onshore facilities which produce 10 barrels per well per calendar day or less of crude oil and which are operating at the maximum feasible rate of production and in accordance with recognized conservation practices."

40 C.F.R. § 435.60.

III.

EPA has clarified "that it is the average production per producing oil well on (sic) a field which is relevant in classifying a source in this [Stripper] subcategory." 44 Fed. Reg. 22073 (April 13, 1979). See also 56 Fed. Reg. 7701 (February 25, 1991). During February 1991 and August 1992, the average production per producing well in the Hospah Field was 6.1 and 5.9 barrels per day respectively. Thus, the Hospah Field is a facility which produces "ten barrels per well per calendar day or

less of crude oil," and it therefore meets the requirements of the Stripper Category definition.

IV.

Further, during periods of water discharge, the wells in the Hospah Field are operated at the maximum feasible rate of production and in accordance with recognized conservation practices. Thus, the Hospah Field satisfies the requirements set forth in 40 C.F.R. § 435.60 for classification in the Stripper Subcategory. Please refer to Attachment No. 1 for a summary of Hospah Field production for the months of February, 1991 (the month of publication of General Permit No. NMG320000) and August, 1992.

AGRICULTURAL AND WILDLIFE WATER USE SUBCATEGORY

V.

Should Region 6 conclude that the Hospah Field does not qualify for the Stripper Subcategory, it should classify the Hospah Field in the Agricultural and Wildlife Water Use Subcategory. The Agricultural and Wildlife Water Use Subcategory is defined to include

> "those onshore facilities located in the continental United States and west of the 98th Meridian for which the produced water

has a use in agricultural or wildlife propagation when discharged into navigable waters."

40 C.F.R. § 435.50.

The term "use in agricultural or wildlife propagation" means that the produced water "is of good enough quality to be used for wildlife or livestock watering or other agricultural uses and that the produced water is actually put to such use during periods of discharge." 40 C.F.R. § 435.51(c).

VI.

Discharges from the Hospah Field meet all of these requirements. First, the facility is located west of the 98th Meridian. Second, the produced water plainly "has a use in agricultural or wildlife propagation." The water is of good enough quality to be used for wildlife or livestock watering or other agricultural uses. Further, the water is actually used for livestock watering during periods of discharge. (See Attachment No. 2) (Statement from rancher Orville Moore stating that the produced waters are used for livestock watering purposes).

VII.

Responses to Requests Nos. 1-5 are included in the following paragraphs:

1. Information Request:

Number of wells located in the oil field. Distinguish between stripper wells and those wells which have the capability of producing more than ten (10) barrels per day. Also include the following information: average daily production of each well and maximum production potential;

Response:

During August 1992, the Hospah Field wells were classified as follows:

Producing	78
Injection	20
Shut-in Wells	73
Total Wells	171

EPA Region 6 has clarified that the average production per well at a field serves as the basis for categorization in the Stripper Subcategory. 56 Fed. Reg. 7701 (February 25, 1991). In accordance with that clarification, AEC regards all the producing wells as stripper wells. Please refer to Attachment No. 1 for a summary of Hospah Field production for the months of February 1991 (the month of publication of Final NPDES General Permit NMG320000) and August 1992.

2. Information Request:

Locations where discharges are occurring, and a schematic of the oil field which identifies these locations;

Response:

Please refer to Attachment No. 3 for map depicting Hospah Field and discharges into Sandoval Arroyo.

3. Information Request:

The date on which all discharges began and the frequency of such discharges;

Response:

AEC assumed operations of the Hospah field in August 1988. Discharges began prior to AEC's operations and continued on nearly a daily basis until AEC ceased discharging on September 17, 1992. There is no current discharge of produced waters at the Hospah Field.

4. Information request:

The quantity of the discharges; and,

Response:

AEC's best estimate of the daily quantity of water discharged for August 1992 is 16,000 to 18,000 barrels per day. This estimate is based on the difference between field approximations of total water produced and reinjected.

5. Information Request:

Identification of any wells or discharge points located on Navajo Nation lands.

Response:

To the best of AEC's knowledge, no wells or discharge points are located on Navajo Nation lands. Please refer to Attachment No. 3 for a map depicting surface ownership of the Hospah Field area.

PERMIT REQUEST

VIII.

AEC has previously applied for an NPDES permit for this discharge, and was assigned Permit Application No. NM0029874 by EPA letter dated November 1, 1988. AEC hereby requests that the agency issue Best Professional Judgment NPDES permits for some or all of the Hospah Field discharges based on limitations for the Stripper Subcategory. In the alternative, and should the Agency

conclude that the Hospah Field does not qualify for the Stripper Subcategory, AEC respectfully requests that EPA issue NPDES permits based on the Agricultural and Wildlife Water Use Subcategory guidelines.

Respectfully submitted,

Roderick Oxford
Vice President
American Exploration Company
1331 Lamar, Suite 900
Houston, TX 77010-3088
Telephone: (713) 756-6006

188212JBSP

Attachment No. 1

Response to Order for Information
EPA Docket No. VI-92-1742

HOSPAH FIELD
McKinley County, New Mexico

Monthly Production
(BBls)

Well Name	February 1991	August 1992
Hospah SD Unt #001Y	142	172
Hospah SD Unt #002	208	195
Hospah SD Unt #004Y	198	238
Hospah SD Unt #005	212	172
Hospah SD Unt #006	217	211
Hospah SD Unt #007	247	298
Hospah SD Unt #009	60	0
Hospah SD Unt #010	89	135
Hospah SD Unt #011Y	137	114
Hospah SD Unt #013	193	94
Hospah SD Unt #016	47	0
Hospah SD Unt #019	102	58
Hospah SD Unt #020	129	135
Hospah SD Unt #021	105	198
Hospah SD Unt #022	153	152
Hospah SD Unt #025	102	92
Hospah SD Unt #028	114	198
Hospah SD Unt #034	141	166
Hospah SD Unt #036	95	103
Hospah SD Unt #048Y	75	74
Hospah SD Unt #050	64	40
Hospah SD Unt #051	49	0
Hospah SD Unt #052	64	37
Hospah SD Unt #053	127	126
Hospah SD Unt #056	297	240
Hospah SD Unt #059	60	0
Hospah SD Unt #85	63	74
Hospah SD Unt #88	139	136
Hospah SD Unt #89	0	66
Hospah SD Unt #95	38	0
Hospah SD Unt #96	27	0
Hospah SD Unt #98	95	106
Hospah SD Unt #102	68	146

Well Name	February 1991	August 1992
Santa Fe RR -A- #91	209	243
Santa Fe RR -A- #94	390	308
Santa Fe RR -A- #89	196	169
Santa Fe RR -A- #75	73	81
Santa Fe RR -A- #90	261	190
Santa Fe RR -A- #96	176	62
Santa Fe RR -A- #93	158	160
Santa Fe RR -A- #82	461	332
Santa Fe RR -A- #88	385	326
Santa Fe RR -A- #80	69	0
Santa Fe RR -A- #73	61	0
Santa Fe RR -A- #95	280	346
Santa Fe RR -A- #79	224	264
Santa Fe RR -A- #81	158	130
Santa Fe RR -A- #72	23	0
Santa Fe RR -A- #77	484	492
Santa Fe RR -A- #76	444	497
Santa Fe RR -B- #34	28	0
Hanson #03	263	268
Hanson #04	120	103
Hanson #06	48	0
Hanson #07	168	173
Hanson #08	100	79
Hanson #09	155	160
Hanson #10	100	0
Hanson #11	65	0
Hanson #12	193	201
Hanson #13	248	287
Hanson #21	44	0
Hanson #29	285	282
Hanson #30	106	116
Hanson #31	29	0
Hanson #35	166	176
Hanson #36	283	285
Hanson #39	219	182
Hanson #41	393	431
Hanson #42	172	84
Hanson #15	146	154
Hanson #17	261	271
Hanson #26	55	62

Well Name	February 1991	August 1992
Santa Fe RR #03	204	110
Santa Fe RR #04	66	54
Santa Fe RR #07	77	89
Santa Fe RR #08	206	259
Santa Fe RR #12	236	137
Santa Fe RR #14	151	292
Santa Fe RR #15	63	51
Santa Fe RR #17	0	7
Santa Fe RR #20	39	107
Santa Fe RR #39	179	0
Santa Fe RR #41	326	158
Santa Fe RR #42	192	116
Santa Fe RR #43	302	209
Santa Fe RR #45	185	185
Santa Fe RR #47	352	367
Santa Fe RR #48	212	134
Santa Fe RR #49	403	447
Santa Fe RR #50	389	397
Santa Fe RR #19	388	301
Santa Fe RR #21	38	0
Santa Fe RR #44	229	122
Santa Fe RR #16	14	10
Total Monthly Production	15,807	14,242
Average Daily Production	565	459
Producing Well Count	93	78
Average Production Per Producing Well Per day	6.1	5.9

Attachment No. 2

AFFIDAVIT OF ORVILLE MOORE

STATE OF NEW MEXICO

COUNTY OF MCKINLEY

The undersigned, ORVILLE MOORE, being first duly sworn on his oath deposes and says:

1. My name is ORVILLE MOORE. I am over eighteen (18) years of age, of sound mind, capable of making this affidavit, and personally acquainted with the facts stated in it.

2. I am presently engaged in ranching activities covering all or part of Sections 4 and 5 of Township 17 North Range 8 West, McKinley County, New Mexico. I have been so engaged for over 28 years.

3. During the period indicated above, the livestock I maintain have consumed the produced water discharged from the Hospah Oil Field into the Sandoval Arroyo. I have found the discharge to be of good enough quality for livestock watering and am dependent on the discharged to water my livestock.

Orville Moore
ORVILLE MOORE

STATE OF NEW MEXICO

COUNTY OF MCKINLEY

BEFORE ME, the undersigned authority, on this day personally appeared ORVILLE MOORE, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and consideration therein expressed.

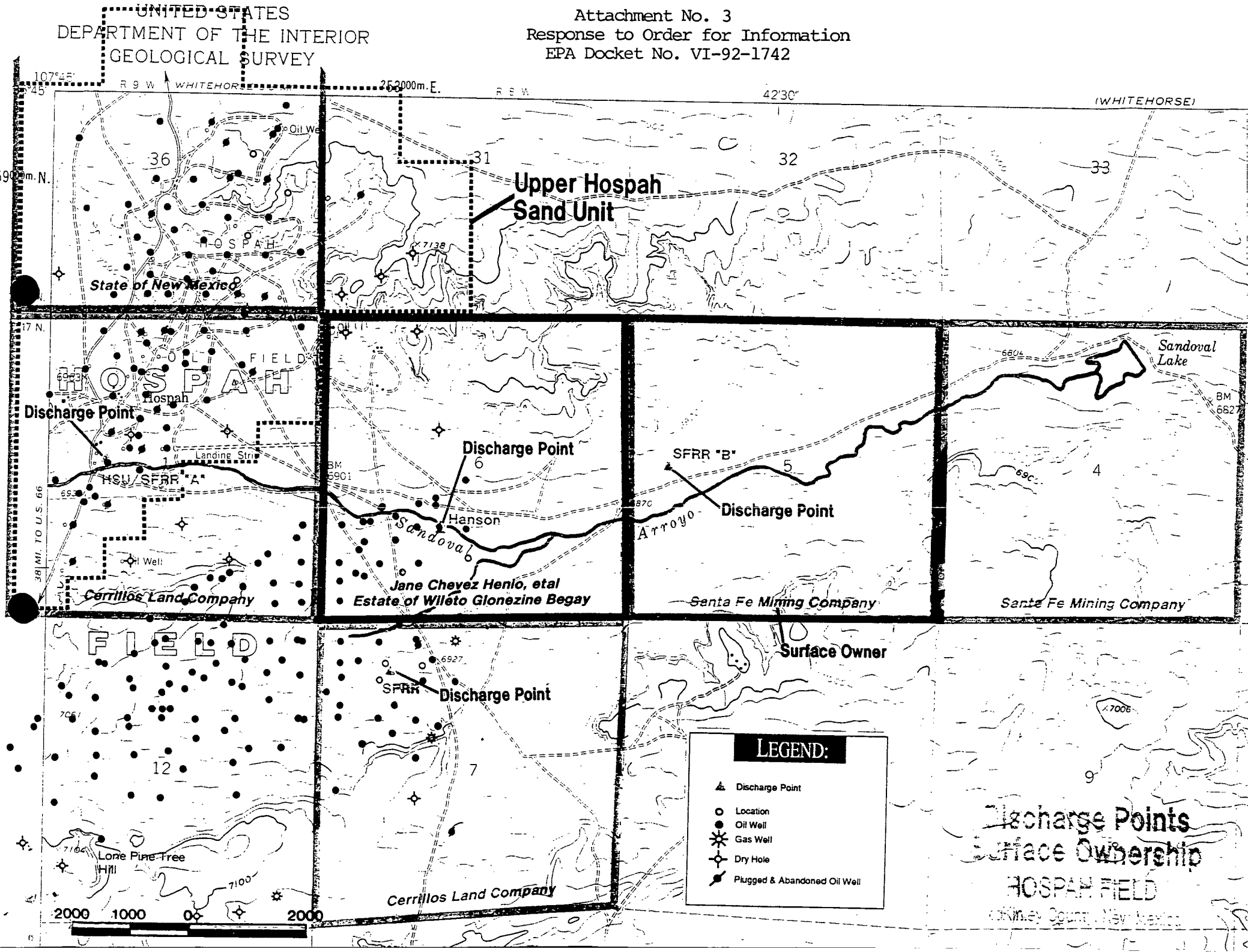
GIVEN UNDER MY HAND AND SEAL OF OFFICE this _____ day of _____, 19___.

Witnessed this 6th day of October 1992.

Lloyd Hetrick

_____
Notary Public of New Mexico

Attachment No. 3
Response to Order for Information
EPA Docket No. VI-92-1742



STATE OF NEW MEXICO
ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
AZTEC DISTRICT OFFICE

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

1000 RIO BRAZOS ROAD
AZTEC, NEW MEXICO 87410
(505) 334-6178

CERTIFIED MAIL RECEIPT #P 988 786 237

September 24, 1992

American Exploration Company
Lloyd H. Hetrick
Manager, Environment, Health and Safety
1331 Lamar, Suite 900
Houston, Texas 77010-3088

RE: Hospah Field, Mckinley County, New Mexico

Dear Mr. Hetrick:

Meeting with Bill Priebe, Durwood Johnson and yourself of American Exploration at Hospah Field September 10, 1992 will help ensure good lines of communication for any problems which may arise. American Exploration has addressed the problems outlined in my letter to Mr. Priebe dated August 3, 1992. A subsequent oil spill at Hospah Sand Unit Well #2, F-1-17N-09W and Hospah Sand Unit Well #52, G-1-17N-09W still needs stained soil removed to the remediation area. Oil must be removed from the unlined produced water pits on a regular basis to control BTEX in the produced water discharged to Sandoval Arroyo. The Oil Conservation Division requires recoverable hydrocarbons be removed from pits to prevent waste. American Exploration must continue to stress to its field personnel that day to day housekeeping is the way to avoid many environmental problems at an aging stripper field such as the Hospah. Hydrogen sulfide readings taken at water tank openings showed a maximum of 50 ppm well below OCD action levels of 100 ppm.

Several items which were addressed briefly during our tour of the field need to be permitted. The landing strip which is being used to remediate hydrocarbon stained soils needs a centralized facility permit from the Oil Conservation Division under Rule 711 (modified). As mentioned in my previous letter, American Exploration may wish to eliminate the discharge of produced waters to Sandoval Arroyo. In the past, attempts to eliminate this discharge have resulted in protests by fee surface owners and individual Navajos who utilize the water for stock watering. American Exploration has subsequently applied for a NPDES permit. Even with a stripper exemption from EPA, the produced water discharges must conform to state regulations. The original discharge permit was made on the condition American Exploration meet the New Mexico Water Quality Commission standards for BTEX. Continuing discharges must remain

in compliance with these BTEX standards. Any battery which continues to utilize produced water pits must be permitted as a centralized disposal facility under Rule 711 (modified). Any proposed permits should note Order R-7940-B of the Oil Conservation Division which will eliminate the discharge of produced water into unlined pits within three years at the Hospah Field. Sludge samples taken from produced water discharge points indicate hydrocarbon contamination at actionable levels within the drainage system. The sludge must be removed from the drainage system and remediated. The Oil Conservation Division requires American Exploration submit a plan and schedule for Hospah Field to come into compliance with state regulations by November 24,1992.

American Exploration will establish a monthly monitoring system for hydrogen sulfide, keeping records for future reference. American Exploration will establish a regular periodic oil skimming procedure for produced water pits which remain in service. Regular skimming should minimize discharge problems and waste issues. Discharges of produced water to any drainage system will be sampled monthly for general water chemistry.

Yours truly,

Denny G. Foust

Denny G. Foust
Environmental Geologist

XC: OCD-Environmental Bureau
Operator File
Environmental File
DGF File
Don Ellsworth-BLM Farmington w/analysis

SOUTHWEST RESEARCH AND INFORMATION CENTER
P.O. Box 4524 Albuquerque, NM 87106 505-262-1862

September 22, 1992

Mr. Don Elsworth
U.S. Bureau of Land Management
1235 La Plata Highway
Farmington, NM 87401

Dear Mr. Elsworth:

Rob Bornstein of the U.S. EPA office in Window Rock asked that I send you a copy of SRIC's July 29, 1992, letter titled "Field Reconnaissance of Produced Water Discharges at Hospah Oil Field, McKinley County, New Mexico." This letter, a copy of which is enclosed, was sent to Ms. Sadie Hoskie, director of the Navajo Nation's Environmental Protection Administration; William J. LeMay, director of the New Mexico Oil Conservation Division; Kathleen Sisneros, director of the Water and Waste Management Division of the New Mexico Environment Department; and Leonard Tsosie, president of the Whitehorse Lake Chapter of the Navajo Nation. Copies have also been sent to officials with EPA Region IX in San Francisco and Region VI in Dallas.

Also enclosed are State Laboratory Division analytical results for surface-water samples we collected on July 14. The results showed that the fluids, which were being discharged from a produced water skimming pond at an American Exploration Company (AEC) tank battery, had total aromatic VOCs exceeding 111 ppb and total VOCs exceeding 184 ppb, excluding a 237.4-ppb concentration reported for acetone. As reported in our July 29 letter, we observed oily sludges in the bottom sediments of the receiving stream and oily stains on the stream banks.

NMOCD staff in Aztec may have collected and had analyzed samples of sediments from the receiving streams. You might call Aztec district manager Frank Chavez to ascertain the analytical results for those samples.

Mr. Bornstein told me yesterday that AEC had ceased discharges to tributaries of Sandoval Arroyo in the Hospah area as a result of inquiries made by EPA Region IX and Region VI. I would appreciate being informed of any additional regulatory actions that BLM may take in the area.

Please feel free to call me if you have questions.

Sincerely,

Chris Shuey, Director
Community Water Quality Program

Enclosures.

xc: Roger Anderson, NMOCD Environmental Bureau
Amos Johnson, Navajo Nation EPA
Ray Morgan, SRIC
Jim Piatt, NMED Surface Water Quality Bureau
Lena and Roger Tsosie, Hospah

orig → ...

Glenn

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TEXAS 75202-2733

cc → Roger Anderson OCD

SEP 11 1992

REPLY TO: 6W-ET

CERTIFIED MAIL: RETURN RECEIPT REQUESTED (P 399 612 758)

Mr. Bill Priebe
Production Manager
American Exploration Company
P.O. Box 10509
Midland, Texas 79702

Re: Order for Information Docket No. VI-92-1742
Facility No. NMU000061

Dear Mr. Priebe:

Pursuant to Section 308 of the Clean Water Act (CWA), 33 U.S.C. 1251 et seq., the Environmental Protection Agency (EPA) has the authority to obtain information pertinent to carrying out its responsibilities under the CWA. Accordingly, the enclosed Order for Information is hereby served on you and American Exploration Company.

Compliance with the provisions of this Order is expected within the maximum time periods established by each part of the Order. Your cooperation and prompt attention will be appreciated. In response hereto, please reference Docket No. VI-92-1742 and your NPDES permit number and send correspondence to the attention of Ms. Cecilia Kernodle (6W-ET). Failure to submit the information required by the Order could result in the issuance of an EPA administrative penalty order or referral to the United States Department of Justice for judicial action with monetary fines.

This office is prepared to help you in any way it can. If you have any questions, please contact Ms. Cecilia Kernodle, EPA, Dallas, Texas at (214) 655-6470.

Sincerely yours,

/s/ Myron O. Knudson

Myron O. Knudson, P.E.
Director
Water Management Division (6W)

Enclosure

cc: Mr. Jim Piatt, Acting Chief
Surface Water Bureau
New Mexico Environmental Improvement
Division

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 6

IN THE MATTER OF AMERICAN EXPLORATION COMPANY PROCEEDINGS UNDER SECTION 308(a)(4)(A), CLEAN WATER ACT, [33 U.S.C. § 1318(a)(4)(A)] In Re: Facility No. NMU000061	§ § § § § § §	DOCKET NO. VI-92-1742 ORDER FOR INFORMATION

The following FINDINGS are made and Order issued pursuant to the authority vested in the Administrator of the Environmental Protection Agency (EPA) by the above referenced statute (hereinafter the Act) and duly delegated to the Regional Administrator, Region 6, and duly redelegated to the undersigned Director, Water Management Division, Region 6.

I.

American Exploration Company (hereinafter referred to as the "Company") is doing business in the State of New Mexico, the mailing address for which is P.O. Box 10509, Midland, Texas 79702.

II.

Section 308(a) of the Act, 33 U.S.C. § 1318(a) provides that:

> Whenever required to carry out the objective of this Act, including but not limited to ... determining whether any person is in violation of any ... limitation, prohibition ... or standard of performance ... the Administrator shall require the owner or operator of any point source to ... provide such other information as he may reasonably require ....

III.

FINDINGS OF FACT

EPA Region 6 has received information that American Exploration is discharging produced waters into the Sandoval Arroyo from settling ponds located at their Hospah oil facility.

EPA issued the Onshore General Permit, NPDES Permit No. NMG320000 on February 25, 1991, which prohibits the discharge of produced waters to waters of the United States.

ORDER

Based on the foregoing FINDINGS OF FACT and pursuant to the authority vested in the Administrator under Section 308(a)(4)(A) of the Act, 33 U.S.C. § 1318 (a)(4)(A), and duly delegated to the Regional Administrator, Region 6, and duly redelegated to the undersigned Director, Water Management Division, Region 6, it is ordered:

That the Company, within thirty (30) days of the effective date of this Order, submit the following information concerning any discharges to the Sandoval Arroyo:

1. Number of wells located in the oil field. Distinguish between stripper wells and those wells which have the capability of producing more than ten (10) barrels per day. Also include the following information: average daily production of each well and maximum production potential;

2. Locations where discharges are occurring, and a schematic of the oil field which identifies these locations;

3. The date on which all discharges began and the frequency of such discharges;

4. The quanity of the discharges; and,

5. Identification of any wells or discharge points located on Navajo Nation lands.

This information should be addressed to the Water Management Division, Enforcement Branch (6W-E), EPA, 1445 Ross Avenue, Dallas, Texas 75202-2733. It will be considered in any further evaluation of the nature and extent of the Company's noncompliance with the Clean Water Act. Section 309 of the Act, as amended by the Water Quality Act of 1987, provides civil and criminal penalties for failure to submit information required under Section 308 and criminal penalties for knowingly making a false statement under Section 308.

The effective date of this Order shall be the date it is received by the Company.

DATED: This _____ day of SEP 11 1992, 1992.

Myron O. Knudson, P.E.
Director
Water Management Division (6W)

THE NAVAJO NATION

P.O. BOX 308 • WINDOW ROCK, ARIZONA 86515 • (602) 871-4941

PETERSON ZAH
PRESIDENT

MARSHALL PLUMMER
VICE PRESIDENT

September 10, 1992
President
American Exploration Company
P.O. Box 10509
Midland, TX 79702

RE: Discharge of Produced Water and Oil at the Hospah Oil Field.

Dear Sir:

The Navajo Nation Environmental Protection Administration ("Navajo EPA") conducted a site inspection on August 28, 1992 at your Hospah Oil Field located within Section 6 and Section 7 of Township 17N, Range 8 West and Section 11 of Township 17N, Range 9 West of the Hospah USGS Quadrangle, McKinley County, New Mexico (the "Site").

The inspection revealed that American Exploration is discharging from unlined ponds untreated grayish produced water into an unnamed tributary which discharges in the Sandoval Arroyo. This unnamed tributary and the Sandoval Arroyo flow through lands occupied by Navajo Nation citizens.

The discharge of this untreated water is resulting in the contamination of sediment and potentially ground water within the Whitehorse Lake Chapter Area of the Navajo Nation. Sediment along the unnamed tributary and arroyo are black with oil stains and an oily sheen was apparent during the site inspection.

Wildlife and range cattle have been documented to drink and utilize water within the arroyo. The consumption of this water containing oil related toxins can be hazardous to local wildlife and ecosystem.

The Navajo Nation is concerned that this discharged water is adversely impacting the local environment within the Whitehorse Lake Chapter Area. The Navajo EPA is requesting that American Exploration Company immediately cease discharging untreated produced water. In addition, American Exploration Company should immediately begin assessing and remediating all areas of soil and groundwater contaminated by this insensitive practice.

The Navajo Nation is consulting with the Bureau of Land Management (BLM), United States Environmental Protection Agency (EPA) and the State of New Mexico to ensure that this environmental hazard is effectively addressed. If you have any questions or concerns, please contact Diana Malono of my staff at 602-871-7325.

Sincerely,

NAVAJO ENVIRONMENTAL PROTECTION ADMINISTRATION

Sadie Hoskie, Director

cc: Donald Elsworth, BLM
Alexis Strauss, EPA Region IX
Donald C. White, EPA Region IX
Terry Brubaker, EPA Region IX
Linda Wandres, EPA Region IX ORC
James Graham, EPA Region VI

RECEIVED
SEP 22 1992
OIL CON. DIV.
DIST. 3

SOUTHWEST RESEARCH AND INFORMATION CENTER
P.O. Box 4524 Albuquerque, NM 87106 505-262-1862

August 20, 1992

Mr. Roger Anderson
Mr. Bill Olson
Environmental Bureau
N.M. Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 87504-2088

Gentlemen:

Enclosed please find copies of (1) the State Laboratory Division (SLD) analytical report on VOC concentrations in produced waters discharged in the Hospah Oil Field and (2) the NORM Committee's second draft issues paper.

Regarding the Hospah discharge quality, the SLD report shows concentrations of acetone, n-butylbenzene, naphthalene, n-propylbenzene, toluene, and xylenes above detection limits but below applicable WQCC numerical standards, and trace concentrations of ethylbenzene and 1,3,5-trimethylbenzene. The lab report also cites 30 compounds "eluting from toluene through naphthalene at 10-30 ppb..."

Unless acetone is used in the oil-water separation process at the discharge point, I assume that its presence in the sample is from laboratory cross-contamination because the vials we used to collect the samples were provided by NMED directly from the supplier's box and were void of any visible liquids.

I've enclosed a double-sided copy of the NORM paper because the versions that were passed out at the August 11 Committee meeting may have been missing one or more pages.

Please call if you have questions.

Sincerely,

Chris Shuey, Director
Community Water Quality Program

Enclosures.

STATE OF NEW MEXICO

ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
AZTEC DISTRICT OFFICE

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

1000 RIO BRAZOS ROAD
AZTEC, NEW MEXICO 87410
(505) 334-6178

Certified Mail Receipt #P-843-754-791

'92 AUG 5 AM 8 50

OIL CONSERVATION DIVISION
RECEIVED

August 3, 1992

American Exploration
Attn. Bill Priebe
P. O. Box 10509
Midland, TX

RE: Violations of Oil Conservation Division (OCD) Regulations at Hospah Field

Dear Mr. Priebe:

A trip to Hospah Field July 30, 1992, to inspect a reported oil spill has revealed several problems with American Exploration's operation. The oil spill at the Hansen Tank Battery, K-6-17N-08W, has been largely remediated to my satisfaction outside the fire walls. Standing oil is still located within the firewalls. Oil and surface contamination is to be removed and landfarmed to OCD standards. The flow line repair pit south of the battery is to be cleaned out with the material landfarmed and clean fill placed around the line. Both the upper and lower produced water pits are covered with significant amounts of oil which violates OCD Rule 3A and 3B Prohibiting Waste. With the staggered pit design used at Hospah no oil should appear on the second or lower produced water pit which discharges into the arroyo for livestock consumption. These pits must be monitored and skimmed on a regular basis to prevent free oil from being discharged. Bird netting damaged by weather conditions is to be repaired and prepared to withstand adverse weather conditions typical of the area. Santa Fe Railroad Tank Battery, D-7-17N-08W, needs some clean up around the tanks, the upper produced water pit has approximately two inches of oil and the lower pit is starting to show oil on the surface. Also the oil contaminated dirt that is piled near the production pits needs to be remediated. Some residual oil downstream from the production pit outlet should be removed and remediated. Santa Fe Railroad B Tank Battery, K-5-17N-08W, has oil on the upper production pit which is not netted as per OCD Rule 8B. American Exploration has been granted an exception to the rule with the condition oil will be kept off this pit. Oil stained material around the skimming tank is to be removed and remediated. Santa Fe Railroad A and Hospah Sand Unit Batteries need a general clean up around the installation, oil stained material should be landfarmed. The battery should be fenced to keep out livestock and the firewall needs to be rejuvenated. There is approximately two inches of oil on the upper production pit and significant oil on the lower pit. Some residual oil at the produced water outlet needs to be removed and remediated. The netted production pits on this lease are not to have more than a light covering of oil before they are to be skimmed, any oil reaching the second or lower pit should be removed immediately to

prevent oil from discharging into the arroyo. Due to problems with discharges from produced water pits and complaints OCD will be taking water samples.

American Exploration has thirty days from the date of this letter to bring the lease into compliance or be subject to fines of up to $1,000 dollars per day per violation.

In the past operators trying to eliminate the discharge of produced water from the Hospah Field have met with objections from local interests utilizing the produced water. American Exploration may wish to consider eliminating discharge of produced water due to difficulties obtaining a NPDES and new environmental rules. OCD has proposed new rules which would eliminate usage of unlined production pits in the Hospah Field within three years

Yours truly,

Denny G. Foust
Deputy Oil And Gas Inspector

XC: Operator File
OCD Environmental Bureau
DGF File

SOUTHWEST RESEARCH AND INFORMATION CENTER
P.O. Box 4524 Albuquerque, NM 87106 505-262-1862

July 29, 1992

Ms. Sadie Hoskie, Director
Environmental Protection Administration
Navajo Nation Division of Natural Resources
P.O. Box 308
Window Rock, AZ 86515

Mr. William J. LeMay, Director
New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 87504-2088

Ms. Kathleen Sisneros, Director
Water and Waste Management Division
New Mexico Environment Department
P.O. Box 26110
Santa Fe, NM 87502

Mr. Leonard Tsosie, President
Whitehorse Lake Chapter, Navajo Nation
General Delivery -- Whitehorse Lake Chapter House
Whitehorse Lake, NM 87373

SUBJECT: **FIELD RECONNAISSANCE OF PRODUCED WATER DISCHARGES AT HOSPAH OIL FIELD, McKINLEY COUNTY, NEW MEXICO**

Dear Ms. Hoskie, Mr. LeMay, Ms. Sisneros, and Mr. Tsosie:

This letter and the attached documentation, including photographs, serve as a report of the results of a field reconnaissance study conducted by Southwest Research and Information Center (SRIC) staff in the Hospah Oil Field in eastern McKinley County on July 14 and July 27, 1992. (See Attachment I for general location.) The field work carried out by SRIC staff members Raymond Morgan and Chris Shuey on July 14 was conducted in conjunction with a series of water fairs sponsored by the New Mexico Environment Department (NMED) and Navajo Nation Environmental Protection Administration (NNEPA). Mr. Morgan revisited the area on July 27 to verify some of the observations we made on July 14.

This letter also gives SRIC's recommendations for regulatory actions that may be needed to address the range of surface water, ground water and air quality impacts that have resulted or may have resulted from oil production operations in the area.

SUMMARY OF FINDINGS

Based on our observations and sampling data, SRIC believes that waters of the state are being adversely affected by discharges of produced water from oil-field production facilities in the Hospah area. We also believe that the health of people who live in the Hospah area is potentially, if not actually, affected by exposure to routine emissions of hydrogen sulfide gas from those same oil-field facilities. We communicated our observations and these findings to staff members of NNEPA and NMED's Surface Water Quality Bureau on July 15 and to staff members of the New Mexico Oil Conservation Division's Environmental Bureau (NMOCD/EB) on July 22. Photos documenting our observations were shown to NMOCD/EB staff on July 22.

DESCRIPTION OF THE STUDY AREA

The community of Hospah is located approximately 47 miles north of Grants and about 5.5 miles south of the community of Whitehorse Lake along Navajo Route 9 in eastern McKinley County. (See Attachment I.) It is located in the so-called checkerboard area, which consists of federal public lands, state public lands, and private lands interspersed with lands allotted to Navajo families.

The community itself consists of a number of buildings used as headquarters and lodging for employees of the American Exploration Company (AEC), which operates most of the oil wells and tank batteries in the area. A church and the homes of several Navajo families are located within three miles of the center of the community. Cattle and sheep graze throughout the area, which is characterized by bedrock outcrops on the north and south and topographic lows that coincide with the drainage pattern of Sandoval Arroyo, which flows to the east. (See Attachment II.)

OIL PRODUCTION ACTIVITIES IN THE HOSPAH OIL FIELD

Oil was first produced in the Hospah Oil Field in 1926. (Christiansen 1989) As of May 1988, the field was characterized by 97 producing oil wells operating on five different leases that cover parts of five sections in Township 18 North, Range 9 West and in T17N, R9W and T17N, R8W. (Boyer 1988) AEC, which took over operations in the Hospah Oil Field from Tesoro Petroleum Corporation in 1988, operates three large and one small oil-water storage and separation tank batteries, the locations of which are shown in Attachment II. Their names and location numbers are summarized on the following page:

Tank Battery	Location(s)
Hospah Sand Unit (HSU) and Santa Fe Railroad "A" (SFR-A)	T18N,R9W,36; T18N,R8W,31; T17N,R9W,1
Hanson Federal (HF)	T17N,R8W,6
Santa Fe Railroad (SFR)	T17N,R8W,7
Santa Fe Railroad "B" (SFR-B)	T17N,R8W,5

Unlined skimming/settling ponds for produced water are associated with each of the four tank batteries. The typical designs of the two-cell ponds are shown in Photos 1 and 2, which are enclosed as part of Attachment III. The cells shown in these photos are contiguous; that is, fluids discharged from the pond in Photo 1 enter the pond shown in Photo 2 prior to discharge to an unnamed arroyo as shown in Photo 3.

Oil-water mixtures are pumped to the tank batteries, apparently by underground gathering lines; we observed no separation equipment, storage tanks or disposal pits at the sites of individual producing wells. An unknown volume of produced water is used for enhanced oil recovery. (Boyer 1988) Anywhere from 58 to 175 gallons per minute (0.08 to 0.25 million gallons per day) of produced water are discharged to Sandoval Arroyo or its tributaries from the skimming/settling ponds at the four tank batteries. (Boyer 1988) Many of the producing wells are stripper wells, according to NMOCD/EB staff members. (We did not inspect NMOCD production records to determine how many wells produce from the Hospah pool, nor how many of those wells are stripper wells.)

Our reconnaissance was confined to an area located south and southeast of the community in section 1 of T17N, R9W and in sections 5, 6, 7 and 8 of T17N, R8W. All four tank batteries shown in Attachment II are within the areas we visited.

FIELD OBSERVATIONS MADE ON JULY 14

During our initial visit to the Hospah area on July 14, we observed and photographed the following:

- Grayish produced water exhibiting an oil sheen being discharged from skimming/settling ponds at the SFR tank battery in section 7 of T17N, R8W to an unnamed tributary of Sandoval Arroyo; (See Attachment II for

location and Photos 1 through 4 in Attachment III.)

- Black, oily stains on the banks and in the bottom sediments of the receiving watercourse and for at least several hundred meters downstream of its confluence with Sandoval Arroyo; (See Attachment II for locations and Photos 5 through 12 in Attachment III.)

- Grayish flow in Sandoval Arroyo approximately 0.4 miles downstream from an outfall at skimming/settling ponds associated with the HSU/SFR-A tank battery in section 1 of T17N, R9W.

Discharges to Sandoval Arroyo and its tributaries were observed from the skimming/settling ponds at the SFR and HSU/SFR-A tank batteries on this date. No discharges were observed from the ponds associated with the Hanson Federal and SFR-B tank batteries. (See Attachment II for locations.)

The black material that we observed on the banks and in the bottom sediments (see Photos 6, 7, 9, 11 and 12) was oily to the touch. The extent and degree of staining diminished with distance from the outfall point at the SFR tank battery. However, we observed black staining and black bottom sediments in Sandoval Arroyo near the section 5 fence line and again in Sandoval Arroyo about 1 mile upstream from Sandoval Lake in the northeastern corner of section 4. (See Attachment II.) We also observed grayish sediments on the banks of Sandoval Lake, which is a wetland that contains marsh plants and is located behind a constructed earthen dam. The produced water discharges from the upstream tank batteries are the only significant sources of water to the lake; runoff from rain and snowmelt is limited in this arid, pinon-juniper landscape.

We observed oil sheens on the surface of fluids in the unnamed tributary to Sandoval Arroyo at points where the velocity of the flow slowed significantly. We observed no oil sheen on the surface of water in the southern portion of Sandoval Lake within a dozen meters of the earthern dam.

SAMPLING CONDUCTED ON JULY 14

On July 14, we collected two samples of fluids from the unnamed arroyo at a point a few meters downstream from a culvert under Sand Spring Road just inside the fence line in section 6. We also collected one sample of water from a hose at the residence of Lena and Roger Tsosie in the southwestern corner of section 6. (See Attachment II.)

SURFACE WATER SAMPLES. From fluids in the unnamed arroyo, we collected one sample in a 1-gallon plastic cubitainer, leaving approximately one inch of headspace in the container. The spout of the container was sealed with a piece of aluminum foil secured by a rubber band. We collected a second set of samples in two 40-milliliter (ml) glass vials equipped with septums inside the caps. (These vials were provided by NMED.) We submerged each vial in the fluids of the watercourse and made sure that neither vial contained air bubbles after they were sealed. Even though all three sample containers were new, we rinsed each with fluids from the watercourse before sealing the containers. All three sample containers were placed on ice in a standard 48-quart Coleman cooler. Each sample was separately identified by the standard identification method used by NMED and NMOCD (i.e., two-digit year, two-digit month, two-digit day, and four-digit time). An NMED "Water Well Field Test" form was used to record the sampling location and identification number for the 1-gallon sample. (See Attachment IV.)

DOMESTIC WATER SAMPLE. We collected a 1-gallon sample of water from a hose at the Tsosie residence. We allowed the water to run for five minutes prior to collecting the sample in a plastic cubitainer. The sample was identified by the standard method and a water fair form was completed. It is enclosed as Attachment V.

The hose at the Tsosie residence is connected to a value box located about 50 meters from the home. The value box is connected to an underground pipeline that contains water from a domestic well at the AEC headquarters in Hospah. Mrs. Tsosie said the family uses the water from the community well for livestock watering, gardening, and most domestic uses except drinking. She said the family uses the water for drinking only during periods of the year when travel is limited by weather and road conditions; otherwise, she said, the family hauls its drinking water from Crownpoint, about 40 miles (by road) from Hospah. Mrs. Tsosie said she does not drink water from the community water system because it develops a colorful sheen after sitting in a barrel inside her home. (The barrel was empty on the day of our visit.)

ANALYTICAL RESULTS -- SURFACE WATER SAMPLES. Surface waters collected in the 1-gallon cubitainer were analyzed on July 15 at the Manuelito (N.M.) Chapter Water Fair sponsored by NNEPA and NMED. Water fair analytical results are shown in Attachment IV and are summarized on the following page:

Parameter	Result	Regulatory Standard
Conductivity	2650 µmhos/cm	1000 µmhos/cm*
Iron	0 mg/l	1.0 mg/l**
Nitrate	1.8 mg/l	10 mg/l***
Organic Vapor	>100 ppm	<10 ppm rec'd****
pH	8.5	6-9 units***
Sulfate	>250 mg/l	250 mg/l***

* NMED recommended limit.
** N.M. Water Quality Control Commission Regulation 3-103.B. for ground water.
*** USEPA primary and secondary drinking water standards, 40 CFR Part 141.
**** NMOCD recommended limit.

A flame ionization detector (FID) was used by NMED personnel to test for organic vapors in the headspace of the sample container. A concentration meter attached to the FID was observed by SRIC staff to go off the scale immediately after the instrument's probe was inserted into the container through the aluminum foil seal. At the time the concentration was measured, the meter was set as a maximum detection limit of 100 ppm. A strong hydrocarbon and sulfide odor emanated from the container after it was opened.

The two 40-ml vial samples were kept in an ice bath until transported to the state Scientific Laboratory Division (SLD) by SRIC staff on July 17. Based on advice from staff members of the NMED Ground Water Bureau, we requested that the samples be analyzed for aromatic and halogenated VOCs (volatile organic compounds) according to USEPA methods 601 and 602. A copy of the SLD analytical chemistry request form is enclosed as Attachment VI. Analytical results are pending and will be reported to all agencies as soon as they are available.

The discharge from the SFR tank battery was sampled by NMOCD in 1988. According to the SLD analytical results form, which is enclosed as Attachment VII, NMOCD/EB staff members observed "some color, HC [hydrocarbon] odor" in the fluids in the arroyo about 0.5 miles downstream from the tank battery outfall. As shown in Attachment VII, halogenated VOCs were not detected in the fluids, but 55 light-end hydrocarbon compounds were detected in the 1-to-5 ppm range. Laboratory conductivity, pH and iron values of the 1988 sample were similar to the values reported in the 1992 water fair analyses for the fluids discharged from the SFR tank battery. It is important to note that both samples showed nondetectable

concentrations of iron in the produced water.

ANALYTICAL RESULTS -- TSOSIE DOMESTIC WATER. Water fair analytical results for the sample of water from the hose at the Tsosie residence are shown in Attachment V. No organic vapors were detected in the sample. The inorganic results are similar to those reported by NMOCD for a sample collected from the AEC community water well on August 4, 1989. (NMOCD 1989) The two sets of results are summarized below:

Parameter	August 1989 Result	July 1992 Result
Conductivity	1000 µmhos/cm	966 µmhos/cm (lab)
Iron	0.08 mg/l	0. mg/l
Nitrate	0.4 mg/l	0. mg/l
Organic Vapors	ND	---
Aromatic and Halogenated VOCs	---	ND
pH	8.5 units	8.4 units (lab)
Sulfate	>250 mg/l	268 mg/l
Total Diss. Solids	---	658 mg/l

ND not detected
--- not analyzed

FIELD OBSERVATIONS MADE ON JULY 27

Mr. Morgan of the SRIC staff revisited the Hospah area on July 27 for the purpose of confirming the names and locations of the tank batteries listed above and for remeasuring distances between those batteries and the Tsosie residence. While in the field, Mr. Morgan observed produced water discharges from the SFR tank battery and from the HSU/SFR-A tank battery. The fluids discharged from the SFR tank battery ponds were black, not grayish as noted during our visit on July 14. Mr. Morgan described the fluids as oily to the touch.

PRESENCE OF HYDROGEN SULFIDE GAS

On July 14, we noted strong sulfide odors emanating from the produced water outfall at the SFR tank battery and in the unnamed arroyo at the culvert under Sand Spring Road. These same odors were evident near Lena Tsosie's home, which is situated in a low-lying area approximately 325 meters north of the SFR tank battery. (See Attachment II.) Mrs. Tsosie reported that "sewer-like" smells were pervasive around her home during calm weather

conditions and especially during the early morning hours just before dawn. She said the smells are strong enough to disturb the family's sleep and occasionally to make family members feel nauseous. Mrs. Tsosie's statements were recorded in our field notes, which are enclosed as Attachment VIII.

Sulfide odors were present throughout the area upon Mr. Morgan's inspection on July 27. He reported that the smells were noticeable near the tank batteries and in the unnamed arroyo near our sampling point at the culvert under Sand Spring Road.

DISCUSSION OF OBSERVATIONS AND RESULTS AND RECOMMENDATIONS FOR REGULATORY ACTION

PRODUCED WATER DISCHARGES. AEC applied to the U.S. Environmental Protection Agency (Region VI) for a National Pollutant Discharge Elimination System (NPDES) permit in October 1988. (Quiroga 1988) The information available to SRIC does not indicate whether EPA ever acted upon the application. NMED and NMOCD officials told us that to their knowledge AEC does not have an NPDES permit for discharges of produced water to Sandoval Arroyo and its tributaries.

Discharges of produced water to "waters of the United States" were prohibited under a zero-discharge general permit issued by EPA Region VI on February 25, 1991. (USEPA 1991; 56 *Federal Register* 7696-7708) Certainly, the Sandoval Arroyo surface-water system is a "water of the United States" for purpose of regulation under the federal Clean Water Act's NPDES program. However, there are at least two significant exceptions to the zero-discharge permit.

The first exception allows discharges of produced water to waters of the U.S. in cases where the discharged fluids have "a use in agriculture or wildlife propagation . . ." (See 40 CFR Part 435.50.) Produced waters may be discharged, subject to conditions of an NPDES permit, if the quality of the waters "is good enough for wildlife or livestock watering or other agricultural uses . . ." (See 40 CFR Part 435.51(c).) The discharges in the Hospah area are used for livestock purposes; they may also be used for wildlife purposes to the extent that wildlife use Sandoval Lake.

The second exception allows discharges of produced water from stripper oil wells, which are defined as wells that produce 10 barrels of crude oil per day or less. (See 40 CFR Part 435.60.) Whether an NPDES permit is required for stripper-well discharges to waters of the U.S. is unclear.

The extent to which the Clean Water Act's NPDES program or the New Mexico Water Quality Control Commission's (NMWQCC) standards for interstream streams apply to the produced water discharges in the Hospah area should be clarified. Effluent discharges to waters of the United States, unless otherwise exempted from NPDES requirements, are illegal without an NPDES permit and subject to private causes of action under the Clean Water Act. (See 33 U.S.C. section 1365.) Appropriate steps should be taken by the appropriate regulatory agencies to eliminate or mitigate the apparent adverse effects of AEC's discharges to the Sandoval Arroyo system.

TANK BATTERIES AND UNLINED PONDS. The four tank batteries operated by AEC in the Hospah area are centralized facilities and can be regulated under NMOCD Rule 711. NMOCD/EB officials said that to their knowledge neither AEC nor its predecessor had applied for Rule 711 permits for the tank batteries in the Hospah area. The officials said they will conduct an inspection of the area and determine if such permits are needed.

All of the skimming/settling ponds at the four tank batteries are unlined. We observed no evidence of ground-water monitoring at any of the ponds. While the two water wells that are known to exist in the immediate area of the tank batteries (the AEC community well and Navajo Nation windmill 15T-564) tap deep aquifers that may be protected from near-surface contamination, any shallow alluvial ground water that meets the State Engineer's definition of fresh water must be protected under the New Mexico Oil and Gas Act. (See section 70-2-12.B(15) N.M.S.A. 1978.) As such, SRIC believes that NMOCD must require ground-water monitoring to determine if alluvial ground water is present and whether it is fresh water protectable under the Oil and Gas Act. If it is, NMOCD must require measures to protect that ground water from contamination by leakage of produced water from ponds at the AEC tank batteries.

AEC'S COMMUNITY WATER WELL. The extent to which AEC's community water well should be regulated as a public water supply under the federal Safe Drinking Water Act should be determined by the appropriate regulatory agency. SRIC could not determine how many people drink continuously from the AEC community water system, but it was clear from our investigation that a community system exists by virtue of the fact that a pipeline delivers water from the AEC well to several points within the area.

HYDROGEN SULFIDE EMISSIONS. Based on the statements of Mrs.

Tsosie and observations made by SRIC staff members on two different occasions, hydrogen sulfide emissions are routine in the Hospah area and, occasionally during calm weather conditions, cause discomfort among members of the Tsosie family. Since H_2S is heavier than air, it clings to the surface and can travel substantial distances from its source or sources. The Tsosie residence is located in a low-lying area within one-half mile of three tank batteries, at least one of which is situated at a higher elevation than that of the Tsosie residence.

NMED, which has regulatory responsibities for air quality protection, and NMOCD, which has statutory responsibilities to protect public health, should require H_2S monitoring in the area and determine, based on the results of that monitoring, if AEC should be required to take steps to prevent or abate hydrogen sulfide releases from its wells and production facilities.

CONCLUDING REMARKS

The results of SRIC's study of discharges in the Hospah Oil Field are similar to those reported by NMOCD staff members in years past. Attention to the observed environmental and potential public health problems in the area has been low due to the remoteness of the Hospah Oil Field and, quite possibly, to the limited number of staff that state and tribal agencies can devote to field reconnaissance. SRIC's participation in the joint NNEPA-NMED water fairs during the week of July 13 was intended to assist the two agencies in identifying actual or potential water quality concerns in the Navajo Nation's Eastern Agency. This we accomplished as this report and its accompanying documentation demonstrate. Coordinated regulatory action by state, tribal and federal agencies is needed to confirm these findings and to remedy any environmental violations that may exist.

SRIC stands ready to continue to assist state and tribal agencies in environmental surveillance efforts. Please feel free to call us if you have questions about this report or need additional information.

Sincerely,

Chris Shuey, Director
Community Water Quality Program
w: 505-262-1862

Raymond Morgan
SRIC Navajo Community Liaison
h: 505-862-7202

xc (without photographs):

Roger Anderson, Chief, NMOCD Environmental Bureau
Frank Chavez, District Manager, NMOCD Aztec District
Amos Johnson, NNEPA Public Water Supply Program
Myron Knudson, USEPA Region VI, Water Management Division
Jim Piatt, NMED Surface Water Quality Bureau
Lena and Roger Tsosie, Hospah residents

REFERENCES

Boyer 1988. Boyer, David (NMOCD/EB). Letter to Kathleen Sisneros (NMEID/SWQB), re: Surface Water Discharge, Tesoro Petroleum Corporation, Hospah, N.M.; May 16, 1988.

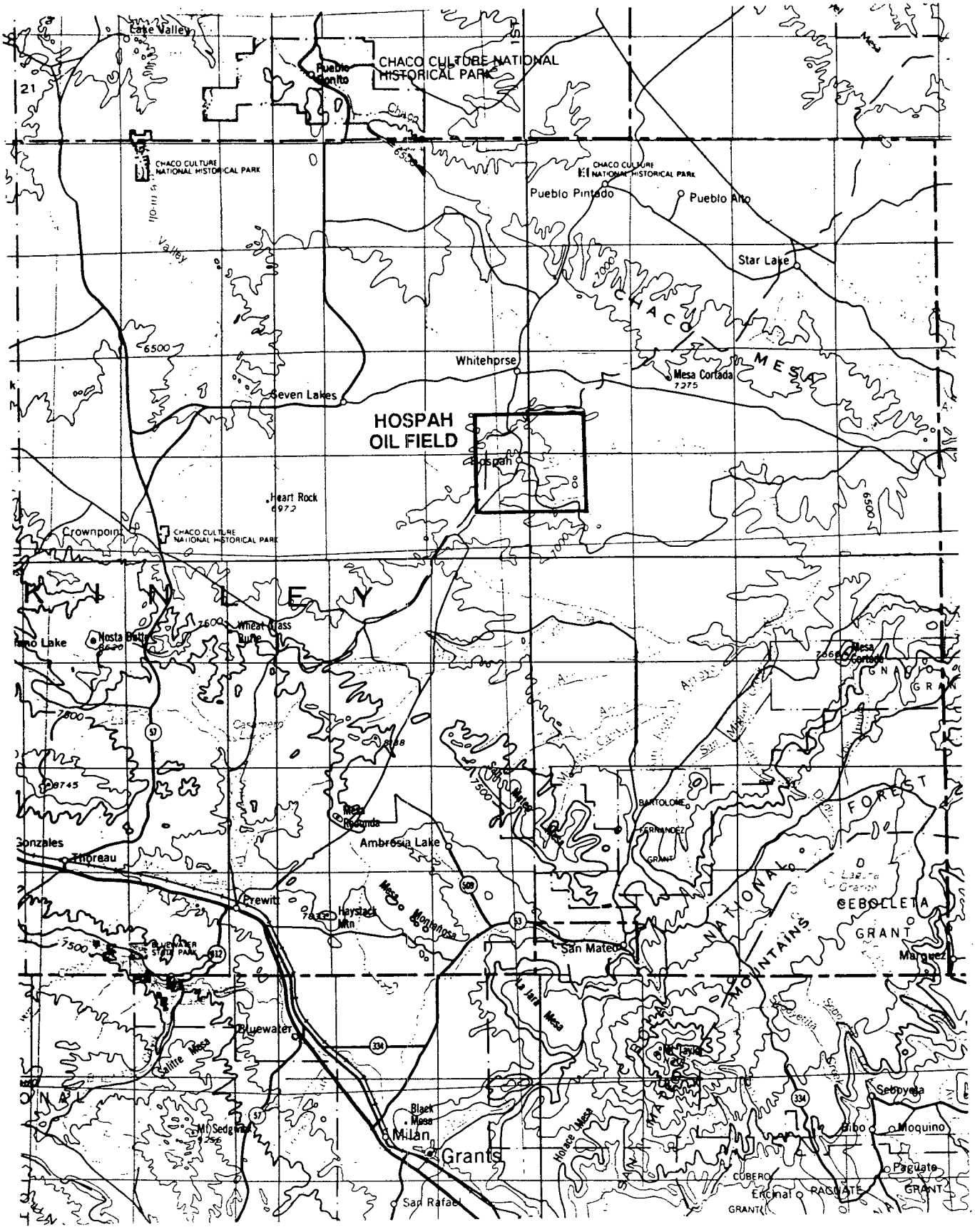
Christainsen 1989. Christiansen, Paige. *The story of oil in New Mexico.* Scenic Trips to the Geologic Past No. 14. New Mexico Bureau of Mines and Mineral Resources, New Mexico Institute of Mining and Technology (Socorro), 1989; page 56.

NMOCD 1989. New Mexico Oil Conservation Division. Scientific Laboratory Division Analytical Reports No. OR-89-1222 and No. WC-2814; received October 3, 1989, and October 25, 1989, respectively.

Quiroga 1988. Quiroga, Roy (American Exploration Company). Letter to Myron Kaudson [sic] (U.S. Environmental Protection Agency, Dallas), re: NPDES Surface Water Discharge Permit, Hospah Field, McKinley County, New Mexico; October 13, 1988.

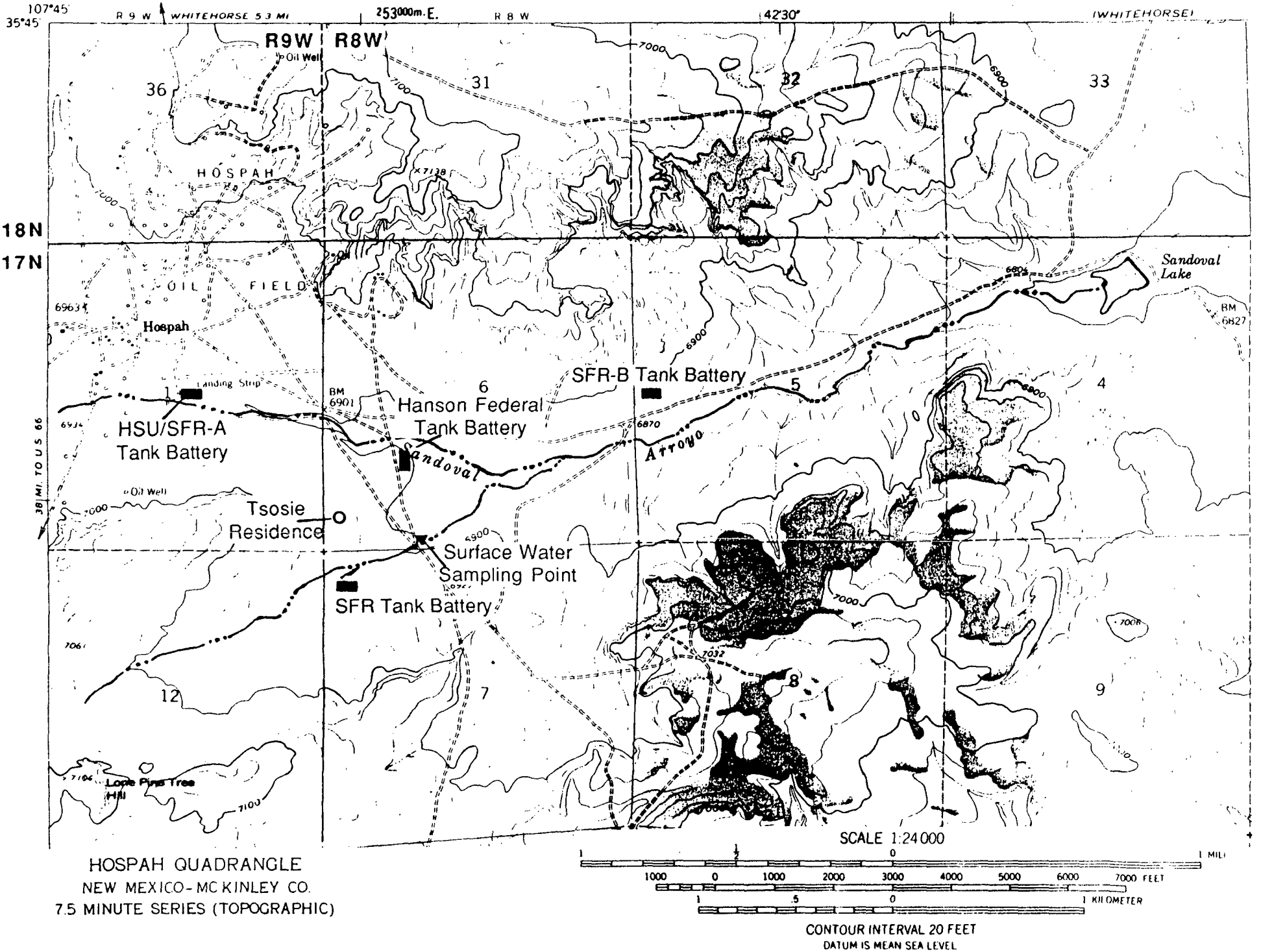
USEPA 1991U.S. Environmental Protection Agency. Final NPDES General Permits for the Oil and Gas Extraction Point Source Category -- States of Louisiana (LAG320000), New Mexico (NMG320000), Oklahoma (OKG320000), and Texas (TXG320000). 56 *Federal Register* 7696-7708, February 25, 1991.

ATTACHMENT I



Map modified from U.S. Geological Survey *State of New Mexico* 1:500,000 scale map, revised 1985.

ATTACHMENT II



HOSPAH QUADRANGLE
NEW MEXICO-MC KINLEY CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

ATTACHMENT III

IDENTIFICATION OF HOSPAH-AREA PHOTOS*

Photo No.	Description
1	Primary skimming/settling pond for produced water discharges from American Exploration Company Santa Fe Railroad (SRF) tank battery in NW1/4 of NW1/4 of Section 7, T17N, R8W, McKinley County, New Mexico; the closest residence is approximately 325 meters north of this point and approximately 10 to 15 meters lower in elevation.
2	Secondary skimming/settling pond that receives produced water from the primary pond in Photo 1; neither ponds have liners; both have netting for protection of migratory birds; strong hydrogen sulfide odor noted around tank battery.
3	Produced water outfall from secondary skimming/ settling pond.
4	Oily stains observed on dirt and vegetation at discharge point from secondary pond.
5	Produced water discharged to unnamed arroyo, which is a tributary to Sandoval Arroyo; confluence of two streams is approximately 1,300 meters from this point; arroyo trends in a northeasterly direction.
6	Black stains on banks of unnamed arroyo approximately 150 meters downstream from discharge point shown in Photo 5; these stains were oily to the touch; discharge pipe and SFR tank battery is visible in background.
7	Closeup of black, oily stains on banks and bottom sediments of unnamed arroyo at same location as in Photo 6.
8	Fluid in unnamed arroyo flows through a culvert under a dirt road locally called Sand Spring Road; this point is at a fence line which marks the boundary between section 7 to the south and section 6 to the north; cattle were observing drinking the fluid in the arroyo shortly before this photo was taken; black stains on banks and bottom sediments were oily to the touch.
9	Black, oily stains on banks, vegetation and bottom sediments at culvert approximately 160 meters downstream from SFR tank battery; strong hydrogen sulfide odor present at this location; one 1-gallon sample and two 40-milliliter samples of fluids in arroyo collected at this location; subsequent water fair analyses of the fluids showed conductivity of 2650 micromhos/centimeter, pH of 8.5, nitrate concentration of 1.8 milligrams

per liter (mg/l), sulfate concentration greater than 250 mg/l, and organic vapor level of greater than 100 parts per million, based on a flame ionization detector meter reading.

10 Same point in unnamed arroyo looking downstream from culvert under Sand Spring Road.

11 Closeup of black, oily stains on banks and bottom sediments approximately 10 meters downstream from culvert under Sand Spring Road; vegetation kills were apparent in stream and along its banks; oily sediments observed to at least 15 centimeters in stream bottom.

12 Black stains on banks and black, oily bottom sediments observed in Sandoval Arroyo approximately 300 meters downstream from confluence with unnamed arroyo shown in Photos 1 through 11; this point is approximately 100 meters from a fence that marks the eastern boundary of section 6 and the western boundary of section 5 at an elevation of approximately 6,860 feet; black and gray staining in Sandoval Arroyo observed again about 0.5 miles downstream from this point.

* All photos taken by Southwest Research and Information Center staff on July 14, 1992.

cls/sric/7-24-92

ATTACHMENT IV

Environmental Improvement Division
Ground Water Bureau
Runnels Building
Santa Fe, New Mexico 87503
Ph: 827-2917

WATER WELL FIELD TEST
EXAMEN DE LA NORIA

3865

PRESS HARD-A PLANA CON FUERSA

FIELD SAMPLE ID # 920714 1315

HOW TO TAKE A WATER SAMPLE

1. Turn on the tap and let the cold water run for at least five minutes.
2. Collect at least one quart of water in a washed, well rinsed, covered container such as a plastic milk jug or canning jar.
3. Old samples can give inaccurate results. Collect the sample as close to the time of testing as possible and write down the date and time you took the sample.

COMO TOMAR MUESTRAS DE NORIA

1. Abra la llave y deje que corra el agua fría cinco minutos a lo menos.
2. Recoja cuando menos un cuarto de agua en un envase lavado, bien enjuagado y tapado; puede ser un envase de plástico de leche o un frasco de envasar con tapa también.
3. Los resultados obtenidos de muestras que ya tengan tiempo, o viejas, pueden ser incorrectos.

WELL INFORMATION (1-18 to be completed by well owner or user.)

INFORMACION SOBRE LA NORIA (Debe de ser dada por el dueño (a) de la noria la persona que lo usa.)

1. Sampling date - Fecha de la muestra: 7-14-92
2. Sample Test Location: Nearest unnamed arroyo tributary to Sandoval Arroyo; surface water
3. Name - Nombre: American Exploration Co. — Phone No. - Teléfono:
4. Mailing address - Dirección (para correspondencia): Hospah Oilfield, McKinley County, NM
5. City, State, Zip code - Ciudad, Estado, Zona postal: Star Rt. 2, Cuba, NM 87013
6. Location of well (if different from mailing address) - Local de la noria (si es diferente a la anterior): Surface water ~200m downstream from produced water discharge pipe at American Exploration Co. tank battery
7. Well owner (if different from name above) - Dueño (a) de la noria (si es diferente al nombre dado anteriormente).
8. How many people use this well as a source of drinking water? - ¿Cuántas personas usan este noria de agua como recurso de agua potable? No human use observed; livestock use observed
9. How long have they been using it? - ¿Cuánto tiempo tienen usándolo?
10. Concrete pad around the well? - ¿Plancha de concreto? ☐ YES - SI ☐ NO N/a
11. Distance from well to nearest septic system leachfield. - Distancia entre la noria del campo de lixivio del sistema séptico mas cercano. N/a

11. Well driller's name and address - Nombre y dirección de la persona que perforó la noria: N/a
12. Suspected problems. - Problemas que se sospechan: Oily sheen on surface of water; black oily staining, scum on banks of arroyo; heavy black oily sludge in sediments on bottom of arroyo
13. Casing material - Cubierta. N/a ☐ Steel - Acero ☐ PVC
14. Depth of well - Profundidad de la noria. N/a
15. Depth to water - Profundidad del agua N/a
16. Method of well construction. - Método del construcción: ☐ Drilled - Perforada ☐ Dug - Excavada ☐ Driven - Cavada ☐ Other - Please describe - Otro - Por favor describa N/a
17. Age of well (years) - Edad (años) N/a
18. Are you using a water treatment unit? - ¿Esta Ud. usando un aparato especial para el purificarar el agua? ☒ Yes - Si ☐ No

Check type: - Marque que tipo es:
- ☐ Distillation - Destilación
- ☐ Reverse osmosis - Osmosis inversa
- ☐ Chlorination - Tratamiento de cloro
- ☐ Carbon filter - Filtro de carbón
- ☐ Oxidation & removal - Oxidación & removimiento
- ☐ Water softener - Ablandador o suavizador de agua
- ☒ Other - otro/Please describe - Por favor describa: sedimentation and skimming in 2 pits prior to surface discharge

LABORATORY RESULTS - RESULTADOS del LABORATORIO

pH: 8.5	Temperature (degrees Centigrade)
Conductivity (micromhos/cm) 1300 at 25° C † : 2650	
Organic vapor: ☐ Not detected ☒ Detected	
Flame ionization (parts per million): 7100 ppm	
Photo ionization (parts per million)	
Nitrate as N (mg/l) 10 mg/l* : 1.8	Manganese (mg/l) 0.05 mg/l †
Sulfate (mg/l) 250 mg/l † : >250	Sulfide (mg/l) 0.05 mg/l †
Iron (mg/l) 0.3 mg/l † : 0	
Analyst - Analizador	Date - Fecha

*Health standard †Aesthetic standard

COMMENTS - COMENTARIOS

AVISO

Los exámenes para tomar muestras de agua hechos por la oficina *Environmental Improvement Division* de Nuevo México (EID), son sólamente para analizar los productos químicos y caracteristicas anotadas en esta forma, llamada en inglés, *Water Well Field Test*. Estos exámenes no deben considerarse un sustituto de un análisis completo de laboratorio, ni tampoco incluyen ningún análsis biológico (por ejemplo de bacteria, etc.). Además, si la manera en que fué tomada la muestra no fué la recomendada por EID, los resultados del examen de la muestra quizá den a conocer un componente o una característica que en realidad no se encuentra presente en su agua o quizá no den a conocer un componente o carateristica que sí esté presente. Si tiene usted alguna pregunta, por favor pregúntele a un representante de EID.

NOTICE

The water sample tests performed by the New Mexico Environmental Improvement Division (EID) are only for those chemicals or characteristics listed on the Water Well Field Test form. The tests are not a substitute for a complete laboratory analysis, nor do they include any biological (i.e., bacterial, etc.) analyses. In addition, the test results may show a compound or characteristic not actually present in your water, or may fail to show a compound or characteristic which is actually present, if the manner in which your water sample was taken and/or preserved is significantly different from the manner recommended by the EID. If you have any questions, please ask an EID representative

This water testing program was made possible by special appropriations from the New Mexico Legislature. - Este programa para tomar muestras y analizar el agua se logró por la Legislatura de Nuevo México.

Please read the back of this form. - Por favor lea al reverso de esta forma.

ATTACHMENT V

Environmental Improvement Division
Ground Water Bureau
Runnels Building
Santa Fe, New Mexico 87503
Ph: 827-2917

WATER WELL FIELD TEST

EXAMEN DE LA NORIA

3864

PRESS HARD-A PLANA CON FUERSA

SAMPLE FIELD # NO. 9207141159

HOW TO TAKE A WATER SAMPLE

1. Turn on the tap and let the cold water run for at least five minutes.
2. Collect at least one quart of water in a washed, well rinsed, covered container such as a plastic milk jug or canning jar.
3. Old samples can give inaccurate results. Collect the sample as close to the time of testing as possible and write down the date and time you took the sample.

COMO TOMAR MUESTRAS DE NORIA

1. Abra la llave y deje que corra el agua fría cinco minutos a lo menos.
2. Recoja cuando menos un cuarto de agua en un envase lavado, bien enjuagado y tapado; puede ser un envase de plástico de leche o un frasco de envasar con tapa también.
3. Los resultados obtenidos de muestras que ya tengan tiempo, o viejas, pueden ser incorrectos.

WELL INFORMATION (1-18 to be completed by well owner or user.)

INFORMACION SOBRE LA NORIA (Debe de ser dada por el dueño (a) de la noria la persona que lo usa.) 17.8.6.4312 Manuelito

1. Sampling date - Fecha de la muestra: 7-14-92
   Field Test Location: Hose at Tsosie residence from central community well
2. Name - Nombre: ROGER & LENA TSOSIE
   Alternate location: (NONE)
3. Mailing address - Dirección (para correspondencia): HCR #79 BOX 100, Whitehorse Lake Chapter
4. City, State, Zip code - Ciudad, Estado, Zona postal: Cuba, NM 87013
5. Location of well (if different from mailing address) - Local de la noria (si es diferente a la anterior): McKinley County; Hospah community 17.8.6.4312 (Home-site lease descr.)
6. Well owner (if different from name above) - Dueño (a) de la noria (si es diferente al nombre dado anteriormente): American Exploration Co.
7. How many people use this well as a source of drinking water? - ¿Cuántas personas usan este noria de agua como recurso de agua potable? at least 6 in Tsosie family; others at AEC HQ's
8. How long have they been using it? - ¿Cuánto tiempo tienen usándolo? at least 15 yrs.
9. Concrete pad around the well? - ¿Plancha de concreto? ☐ YES - SI ☐ NO unk.
10. Distance from well to nearest septic system leachfield. - Distancia entre la noria del campo de lixuvio del sistema séptico mas cercano. outhouse only; no septic tank system

11. Well driller's name and address - Nombre y dirección de la persona que perforó el pozo: American Exploration Co. Star Rte. #2 Cuba, NM 87013 — Connie Fort Regional Supt. 344-2508
12. Suspected problems - Problemas que se sospechan: ☐ None - Ninguno Describe: - Describa: clear, no odors when sample collected from hose at home; homeowner reports oily film on surface of water after it has sat in a water barrel inside the home*
13. Casing material - Cubierta: unk. ☐ Steel - Acero ☐ PVC
14. Depth of well - Profundidad de la nora: unk.
15. Depth to water - Profundidad del agua: unk.
16. Method of well construction. - Método del construcción: ☒ Drilled - Perforada ☐ Dug - Excavada ☐ Driven - Cavada ☐ Other - Please describe. - Otro - Por favor describa:
17. Age of well (years) - Edad (años): unk.
18. Are you using a water treatment unit? - ¿Está Ud. usando un aparato especial para el purificarar el agua? ☐ Yes - Si ☒ No

Check type: - Marque que tipo es:
☐ Distillation - Destilación
☐ Reverse osmosis - Osmosis inversa
☐ Chlorination - Tratamiento de cloro
☐ Carbon filter - Filtro de carbón
☐ Oxidation & removal - Oxidación y removimiento
☐ Water softener - Ablandador o suavizador de agua
☐ Other - otro/Please describe - Por favor describa:

*Family uses this water for drinking purposes only in an emergency; uses water for cooking, bathing, cleaning, livestock

LABORATORY RESULTS - RESULTADOS del LABORATORIO

pH: 8.5	Temperature (degrees Centigrade):
Conductivity (micromhos/cm) 1300 @ 25° C †: 1000	
Organic vapor: ☒ Not detected ☐ Detected	
Flame ionization (parts per million):	
Photo ionization (parts per million):	
Nitrate as N (mg/l) 10 mg/l*: 0.4	Manganese (mg/l) 0.05 mg/l †:
Sulfate (mg/l) 250 mg/l †: >250	Sulfide (mg/l) 0.05 mg/l †:
Iron (mg/l) 0.3 mg/l †: .08	
Analyst - Analizador:	Date - Fecha:

*Health standard †Aesthetic standard

AVISO

Los exámenes para tomar muestras de agua hechos por la oficina *Environmental Improvement Division* de Nuevo México (EID), son sólamente para analizar los productos químicos y características anotadas en esta forma, llamada en inglés, *Water Well Field Test*. Estos exámenes no deben considerarse un sustituto de un análisis completo de laboratorio, ni tampoco incluyen ningún análisis biológico (por ejemplo de bacteria, etc.). Además, si la manera en que fué tomada la muestra no fué la recomendada por EID, los resultados del examen de la muestra quizá den a conocer un componente o una característica que en realidad no se encuentra presente en su agua o quizá no den a conocer un componente o carateristica que sí esté presente. Si tiene usted alguna pregunta, por favor pregúntele a un representante de EID.

COMMENTS - COMENTARIOS

NOTICE

The water sample tests performed by the New Mexico Environmental Improvement Division (EID) are only for those chemicals or characteristics listed on the Water Well Field Test form. The tests are not a substitute for a complete laboratory analysis, nor do they include any biological (i.e., bacterial, etc.) analyses. In addition, the test results may show a compound or characteristic not actually present in your water, or may fail to show a compound or characteristic which is actually present, if the manner in which your water sample was taken and/or preserved is significantly different from the manner recommended by the EID. If you have any questions, please ask an EID representative.

This water testing program was made possible by special appropriations from the New Mexico Legislature. - Este programa para tomar muestras y analizar el agua se logró por la Legislatura de Nuevo México.

Please read the back of this form. - Por favor lea al reverso de esta forma.

ATTACHMENT VI

ORGANIC CHEMISTRY ANALYTICAL REQUEST FORM

SCIENTIFIC LABORATORY DIVISION
700 CAMINO DE SALUD N.E., ALBUQUERQUE, NM 87106
Organic Chemistry Section - Telephone: (505) 841-2570

1 SLD No.:

Date Received:

2 User Code #: 55321 | 3 Request ID No.: | Request ID No. 025137-C | Priority Code #: 3 (If "1" or "2" call EID-SLD Coordinator)

5 Facility Name: American Exploration Co., Santa Fe Rr Lease Tank Battery | 6 County: McKinley | 7 City: Hospah, NM | 8 State: NM

9 Sample Location: 17N08E06.3433

10 Collected By: Chris SHUEY (First / Last) On: 92/07/14 (Date: YY/MM/DD) At: 1321 hrs. (Time: 24 hr. clock 3:00 pm = 1500 hrs.)

11 Codes: Submitter / WSS # / Organization

12 Latitude (DDMMSS) / Longitude (DDDMMSS) / 2 Digit ID (if needed)

13 Report To: Name: Martha Rosenquist | 14 Phone #: 505-473-3473

Address: N.M. Environment Dept / Ground Water Bureau
1911 Fifth St., Suite 205

City, State Zip: Santa Fe, NM 87501

15 Sampling Information:
Sample Purpose: [ ] Compliance [ ] Check [x] Monitoring [ ] Special
[x] Grab [ ] Composite _____ (Composite Time Period) [ ] Flow Proportioned [ ] Equal Aliquot [ ] Sample Split w/Permittee [ ] Chain of Custody

16 Field Data: pH: 8.5, Conductivity: 2650 umhos @ _____ °C, Temperature: _____ °C, Chlorine Residual: _____ mg/l, Flow: _____

17 Sample Source:
[x] Stream [ ] Well; Depth: _____
[ ] Lake [ ] Spring
[ ] Drain [ ] Distribution
[ ] Pool [ ] Point-of-Entry
[ ] WWTP [ ] Other: _____

18 Field Notes/Sample #: 920714321; sample is from unnamed arroyo that is tributary to Sandoval Arroyo; fluid is oil field produced water discharged to unnamed arroyo from skimming pond at tank battery; sample collected ~150 m downstream of discharge point.

19 Sample Type: [x] Water, [ ] Soil, [ ] Food, [ ] Wastewater, [ ] Other _____
This form accompanies a single sample consisting of:
2 - septum vial(s) (volume = 40 ml)
_____ - glass jugs (volume = _____)
_____ - _____ (volume = _____)

20 Preservation:
[ ] - NP No Preservation; Sample stored at room temperature
[x] - P-Ice Sample stored in an ice bath (Not Frozen)
[ ] - P-TS Sample Preserved with Sodium Thiosulfate to remove chlorine residual
[ ] - P-HCl Sample Preserved with Hydrochloric Acid (2 drops/40 ml)
[ ] - Other _____

21 Analyses Requested: Please check the appropriate box(es) below to indicate the type of analytical screen(s) required. Whenever possible, list specific compounds suspected or required.

Volatile Screens:

[ ] - (753) Aliphatic Headspace (1-5 Carbons)
[x] - (754) Aromatic & Halogenated Purgeables (EPA 601 & 602)
[ ] - (765) Mass Spectrometer Purgeables (EPA 624)
[ ] - (766) SDWA Total Trihalomethanes (EPA 501.1)
[ ] - (774) SDWA VOC's I [8 Regulated +] (EPA 502.2)
[ ] - (775) SDWA VOC's II [EDB & DBCP] (EPA 504)

Other Specific Compounds or Classes:

[ ] - ( ) _____
[ ] - ( ) _____
[ ] - ( ) _____

Semivolatile Screens:

[ ] - (763) Acid Extractables
[ ] - (751) Aliphatic Hydrocarbons
[ ] - (755) Base/Neutral Extractables (EPA 625)
[ ] - (756) Base/Neutral/Acid Extractables (EPA 8270)
[ ] - (758) Herbicides, Chlorophenoxy Acid
[ ] - (759) Herbicides, Triazines
[ ] - (760) Organochlorine Pesticides
[ ] - (761) Organophosphate Pesticides
[ ] - (767) Polychlorinated Biphenyls (PCB's)
[ ] - (764) Polynuclear Aromatic Hydrocarbons
[ ] - (762) SDWA Pesticides & Herbicides

Remarks: Water fair results on 7/15/92: OVA reading > 100 ppm; NO_3 1.8 mg/l; Fe 0.0 mg/l; SO_4 > 250 mg/l

SLD 8912-OR Form New 12/89 This Form Will NOT Be Returned With Your Results. Please RETAIN A COPY!

ATTACHMENT VII

SCIENTIFIC LABORATORY DIVISION

700 Camino de Salud NE
Albuquerque, NM 87106 841-2570

STATE OF NEW MEXICO ENVIRONMENT

REF- 88-0501-C

David Boyer
N.M. Oil Conservation Division
P. O. Box 2088
Santa Fe, N.M. 87504-2088

S.L.D. No. OR- 501-A&B
DATE REC. 4/21/88
PRIORITY 3
PHONE(S): 327-5812
USER CODE: 3 2 2 3 5
SUBMITTER: David Boyer
CODE: 2 6 0
SAMPLE COLLECTION CODE: (YYMMDDHHMMIII) 8 8 0 4 1 9 1 1 0 5 D G B
SAMPLE TYPE: WATER ☒, SOIL ☐, FOOD ☐, OTHER: _____ CODE: _____
COUNTY: McKinley ; CITY: Nospah CODE: _____
LOCATION CODE: (Township-Range-Section-Tracts) 1 7 N+0 8 W+0 6+4 2 1 4 (10N06E24342)

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
- ☒ (754) Aromatic & Halogenated Purgeables
- ☐ (765) Mass Spectrometer Purgeables
- ☐ (766) Trihalomethanes

Other Specific Compounds or Classes

- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
- ☐ (760) Organochlorine Pesticides
- ☐ (755) Base/Neutral Extractables
- ☐ (758) Herbicides, Chlorophenoxy acid
- ☐ (759) Herbicides, Triazines
- ☐ (760) Organochlorine Pesticides
- ☐ (761) Organophosphate Pesticides
- ☐ (767) Polychlorinated Biphenyls (PCB's)
- ☐ (764) Polynuclear Aromatic Hydrocarbons
- ☐ (762) SDWA Pesticides & Herbicides

Remarks: _____

FIELD DATA:

pH= 9.5 ; Conductivity= ~~2280~~ umho/cm at 17 °C; Chlorine Residual= _____ mg/l

Dissolved Oxygen= _____ mg/l; Alkalinity= _____ mg/l; Flow Rate 125 gpm

Depth to water _____ ft.; Depth of well _____ ft.; Perforation Interval _____ - _____ ft.; Casing: _____

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Tesoro - Final oil-water separator outfall to arroyo. Some color, HC odor

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities.(signature collector): A Boyer Method of Shipment to the Lab: State Car

This form accompanies 1 Septum Vials, 1 Glass Jugs, and/or ____ _____

Samples were preserved as follows:

- ☐ NP: No Preservation; Sample stored at room temperature.
- ☒ P-Ice Sample stored in an ice bath (Not Frozen).
- ☐ P-$Na_2S_2O_3$ Sample Preserved with Sodium Thiosulfate to remove chlorine residual.

CHAIN OF CUSTODY

I certify that this sample was transferred from _____ to _____

at (location) _____ on ____/____/____ - ____:____ and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ Seals Intact: Yes ☐ No ☐

Signatures _____ _____

For OCD Use: Date Owner Notified 6/2/88 Phone or (Letter?) _____ Initials RJB

ANALYSES PERFORMED

LAB. NO.: OR- 501

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Purgeables (1-3 Carbons)
- ☒ (754) Aromatic & Halogenated Purgeables
- ☐ (765) Mass Spectrometer Purgeables
- ☐ (766) Trihalomethanes

Other Specific Compounds or Classes

- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
- ☐ (760) Organochlorine Pesticides
- ☐ (755) Base/Neutral Extractables
- ☐ (758) Herbicides, Chlorophenoxy acid
- ☐ (759) Herbicides, Triazines
- ☐ (760) Organochlorine Pesticides
- ☐ (761) Organophosphate Pesticides
- ☐ (767) Polychlorinated Biphenyls (PCB's)
- ☐ (764) Polynuclear Aromatic Hydrocarbons
- ☐ (762) SDWA Pesticides & Herbicides

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
aromatic purgeables	see remarks		
halogenated purgeables	N.D.		
* DETECTION LIMIT *	.5 ppb	+ DETECTION LIMIT +	

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS: fifty five compounds ranging from early eluting thru the C3 substituted benzene region detected by the photoionization detector. Not yet identified. Concentrations range from 1 - 5 ppb.

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Intact: Yes ☐ No ☑ Seal(s) broken by: not sealed date: _____

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 5/3/88 Analyst's signature: Mary C. Eden

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: R Meyerhoen

New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859 WNN

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED: 6/7/85 LAB NO.: WC-1347 USER CODE: ☐ 59300 ☐ 59600 ☒ OTHER: 82235

Collection DATE: 05/04/19 Collection TIME: 1105 Collected by — Person/Agency: Bayly/Bailey/OCD

SITE INFORMATION ▶

Sample location: Tesoro Oil - Final Outfall

Collection site description: Hospah

SEND FINAL REPORT TO ▶

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO Box 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

Station/well code: T17N, R8W, S.4 24 Owner:

SAMPLING CONDITIONS

☐ Bailed ☒ Dipped ☐ Pump ☐ Tap	Water level: —	Discharge: 175 gpm	Sample type: Grab
pH (00400): 9.5	Conductivity (Uncorrected): 2280 µmho	Water Temp. (00010): 17 °C	Conductivity at 25°C (00094): µmho

Field comments: Discharge from Final Oil-Water Separator Barrage

SAMPLE FIELD TREATMENT — *Check proper boxes*

No. of samples submitted: 1

☒ NF: Whole sample (Non-filtered) ☐ F: Filtered in field with 0.45 µmembrane filter ☐ A: 2 ml H_2SO_4/L added

☒ NA: No acid added ☐ Other-*specify:* ☐ A: 5ml conc. HNO_3 added ☐ A: 4ml fuming HNO_3 added

ANALYTICAL RESULTS from SAMPLES

NA		Units	Date analyzed
☒ Conductivity (Corrected) 25°C (00095)	2732	µmho	6/3
☐ Total non-filterable residue (suspended) (00530)		mg/l	
☒ Other: Lab pH	8.68		6/3
☐ Other:			
☐ Other:			

A-H_2SO_4			
☐ Nitrate-N +, Nitrate-N total (00630)		mg/l	
☐ Ammonia-N total (00610)		mg/l	
☐ Total Kjeldahl-N ( )		mg/l	
☐ Chemical oxygen demand (00340)		mg/l	
☐ Total organic carbon ( )		mg/l	
☐ Other:			
☐ Other:			

From NF, NA Sample:			Date Analyzed
☒ Calcium	10.0	mg/l	5/19
☒ Potassium	3	mg/l	5/10
☒ Magnesium	3.7	mg/l	5/19
☒ Sodium	641	mg/l	5/10
☒ Bicarbonate	704	mg/l	6/3
☒ Chloride	146	mg/l	5/25
☒ Sulfate	542	mg/l	"
☒ Total Solids	1818	mg/l	5/20
☐			
☐			
☒ Cation/Anion Balance			

Analyst | Date Reported: 6/7/85 | Reviewed by

Laboratory remarks: 124

FOR OCD USE -- Date Owner Notified: 6/27/85 Phone or (Letter)? Initals: RE

CATIONS				ANIONS			
ANALYTE	MEQ.	PPM	DET. LIMIT	ANALYTE	MEQ.	PPM	DET. LIMIT
Ca	0.50	10.00	<3.0	HC03	11.54	704.00	<1.0
Mg	0.30	3.70	<0.3	SO4	11.29	542.00	<10.0
Na	27.88	641.00	<10.0	CL	4.12	146.00	<5.0
K	0.08	3.00	<0.3				
Mn	0.00	0.00		NO3	0.00	0.00	< 0.
Fe	0.00	0.00		C03	0.00	0.00	< 1.
				NH3	0.00	0.00	< 0.
				PO4	0.00	0.00	< 0.
SUMS	28.76	657.70			26.95	1392.00	

Total Dissolved Solids= 1818
Ion Balance = 106.73%

WC No. = ~~8801347~~
Date out/By 5/2

New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106

HEAVY METAL ANALYSIS FORM

Telephone: (505)841-2553

Date Received: 4/21/88 | Lab No. ICP-137 | User Code: ☒ 82235 ☐ Other:

COLLECTION DATE & TIME: yy 88 mm 04 dd 19 hh 11 mm 05

COLLECTION SITE DESCRIPTION: Tesoro Oil - Hospah
Final Outfall

COLLECTED BY:

OWNER:

TO:

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg., PO Box 2088
SANTA FE, NM 87504-2088

ATTN: DAVID Boyer
TELEPHONE: 827-5812

SITE LOCATION:
County: McKinley

Township, Range, Section, Tract: (10N06E24342)
17N+08W+06+4214

STATION/ WELL CODE:

LATITUDE, LONGITUDE:

SAMPLING CONDITIONS:

☐ Bailed ☒ Dipped	☐ Pump ☐ Tap	Water Level:	Discharge: ~175 gpm	Sample Type: GRAB

pH(00400)	Conductivity (Uncorr.)	Water Temp. (00010)	Conductivity at 25°C (00094)
9.5	2280 µmho	17 °C	µmho

FIELD COMMENTS:

SAMPLE FIELD TREATMENT — Check proper boxes:		LAB ANALYSIS REQUESTED:
☒ WPN: Water Preserved w/HNO_3 Non-Filtered	WPF: Water Preserved w/HNO_3 Filtered	☒ ICAP Scan — Mark box next to metal if AA is required.

ANALYTICAL RESULTS (MG/L)

ELEMENT	ICAP VALUE	AA VALUE	ELEMENT	ICAP VALUE	AA VALUE
Aluminum	0.2		Silicon	5.1	
Barium	<0.1		Silver	<0.1	☐
Beryllium	<0.1		Strontium	0.3	
Boron	0.2		Tin	<0.1	
Cadmium	<0.1	☐	Vanadium	<0.1	
Calcium	6.9		Zinc	0.1	
Chromium	<0.1	☐	Arsenic		☒ <0.005
Cobalt	<0.05		Selenium		☒ <0.005
Copper	<0.1		Mercury		☒ <0.0005
Iron	0.3				☐
Lead	<0.1	☐			☐
Magnesium	2.1				☐
Manganese	0.06				☐
Molybdenum	<0.1				☐
Nickel	<0.1				☐

LAB COMMENTS: 016657

For OCD Use:
Date Owner Notified: 6/27/88
Phone or Letter?
Initials: DGB

ICAP Analyst: JB
Date Analyzed: 5/11/88

Reviewer: Jim Ashley
Date Reviewed: 5/12/88

ATTACHMENT VIII

(Field notes of C. Shuey, SRIC, 7/14/92)

Sample # 9207141159

Water from hose at Tsosie residence S/E Hospah community. Allowed water to run for 5 minutes to clear line from value box ~ 130 meters away. Collected unfiltered, unpreserved sample in 1-gal. cubitainer. Water was clear; slight whitish film on top. No smells, no unusual tastes.

Talked to Leon Tsosie who said an oily sheen often develops on top of water when it's left standing in a barrel inside the house. For that reason, the family doesn't usually use that water for ~~dom~~ drinking — only in an emergency. They get drinking water from Crownpoint (hauled). Family uses water from the hose for livestock, bathing, cooking, cleaning.

This water source was sampled & tested by OCD in Aug. '89 following

a Complaint to Nav. EPA by Roger Tsosie. (See ~~H~~Hospah oil + gas file.) OCD analyses showed no VOCs, TPH. Tesose has

OCD determined water was from Durbin domestic water at Hospah community ~ 1.2 miles NW of Tsosie residence. Area is characterized by numerous producing oil wells ~~&~~ + tank batteries operated by American Exploration Co. Mrs. Tsosie confirmed that the water from her hose comes from a main well at Hospah.

Location as best as we can determine is

~~17N 8W. 7. 44~~ 17. 8. 6. ~~[illegible]~~ 3412

C. Shuey, R. Morgan 9/14/92

Mrs. Tsosie says her family is 6 people. She thinks another Navajo family nearby may be on the same water system, but isn't sure. A mission at the community is on the system. The Durbin residence is also on system.

Mrs. Tsosie said Bob Durbin is no longer the foreman for the oil company. Another man from Texas is; she doesn't know his name.

Mrs. Tsosie says the family becomes nauseated at the ~~smell~~ "sewer-like" smell when the air is calm. [H_2S?] She wonders if the smell is from sewer discharges at Hospah or oil wastewater or both.

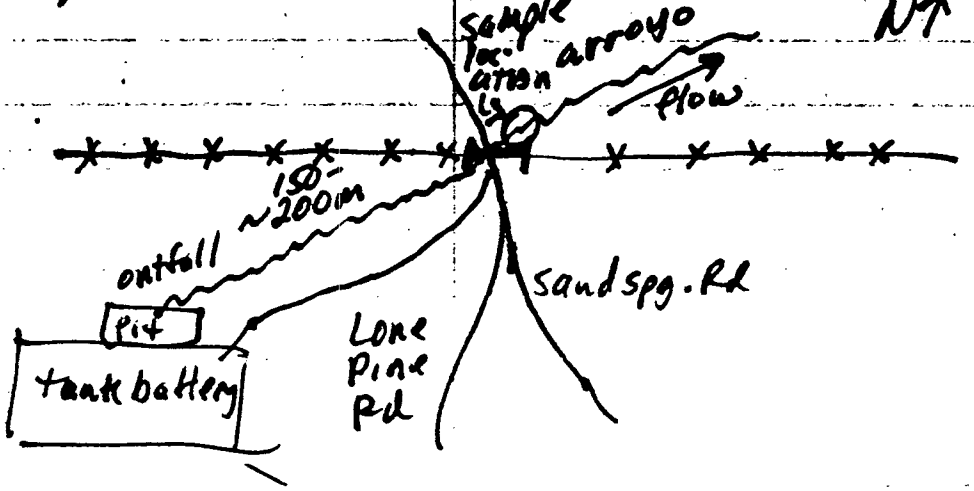
Strong H_2S smells were evident to us when we were at the Tsosie residence, and later again when taking samples of surface water at the culvert under Sand Spring Road & downstream from one of the tank batteries. Tsosie residence is situated in topographic low & surrounded on south & west by producing wells & 2 tank batteries, both of which are higher in elevation.

9207141315

Collected 1-gal. sample of water from flowing stream, downstream from oil & gas tank battery, for water fair analyses.

9207141321 photos taken!

Collected 2 40-ml samples of water in same arroyo for VOC/hab analyses. Submerged vials for good samples; no air bubbles present. Sediments oily to touch. Water was murky w/ discernible oily sheen and oily/sulfury smell. Banks of arroyo were black w/ HC staining. Bottom sediments turned water black when churned up.



8/4/89

Roger Tsosie
8108041259
820@25°C, pH=7

Sample from Hose at house. Water from pipeline from Durbin fresh water well. Water runs for approx 10 minutes to clear line from valve box. No odor, good taste. Sample for VOC, +/-

Visited w/ Bob Durbin
Production foreman

Has introduced new chemical to separate oil and water at Santa Fe RR lease. Will add to other lease. Also planning H_2S alleviation by use of Na hypochlorite.

Reminded him of "oily duck" rule and that it took effect Sept 1.

Visited outfall - very little oil, some at very east end of pond. No oil downstream but strong H_2S and FeS (black) on rocks.

Lab Report Sent to:

Sammy Charlie
ENV. Health Office
US Indian Health Service
Box 304, Crownpoint 87313

Bob Durbin, AEP
Derrith Moore, Navajo EPA
Arlan, Wener, BLM Farm

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

* P.O. Box 308
Window Rock, AZ
86515

☒ Telephone ☐ Personal | Time 9AM | Date 7/17/89

Originating Party	Other Parties
Derrith Moore Navajo EPA* (602) 729-5281	Dave Boyer OCD

Subject: Discharges at Hospah, Reported Water Well Contamination

Discussion: Ms Moore reported that Crownpoint IHS have received a complaint from a Richard Tsosie that his well water has an oily texture, is discolored and smells. Well is next to tank batteries at Am. Exploration Co. at Hospah Well was drilled by previous Operator (Tesoro) for water. House is served by well via a hose on surface. On discharge issue, she said had seen oil downstream from ponds but not at all locations.

Conclusions or Agreements: I told her OCD will sample week of August 1; will notify in advance. Called Mike Saladen (EID - Surface Waters) about NPDES permit. He has not heard from Dallas; but I will inquire and call Moore.

Distribution: AEC file

Signed: A J Boyer

STATE OF NEW MEXICO
ENVIRONMENT

MEMORANDUM

DATE: 10-18-88

TO: Dave Boyer, OCD

FROM: Mike Saladen - SWQB/SWS

SUBJECT: American Exploration Company.

FYI. If you have any questions please call me at 827-2798

American Exploration Company

October 13, 1988

U.S. Environmental Protection Agency
Allied Bank Tower
Fulton Place
1445 Ross Avenue
Dallas, Texas 75202

Attn: Myron Kaudson

Re: NPDES Surface Water Discharge Permit
Hospah Field
McKinley Co., New Mexico

Dear Mr. Kaudson:

Enclosed please find American Exploration Company's NPDES Permit Application for a Surface Water Discharge Permit at American Exploration's Hospah Field. This Permit Application is being submitted for your approval to dispose of water discharged from American Exploration's oil field operations.

Attached to this application is Exhibit A being a plat showing the area and its discharge point with noted geodetic and State Plain Coordinates for proper location, specifically the discharge point is:

LAT:	35	43' 44.50"	X:	533,550
LONG:	107	43' 15.50"	Y:	1,720,720

American Exploration's request for permit is for the disposal of produced water discharged from the South Hospah Field and several tank batteries that collect in an unlined impoundment for final skimming prior to discharge to the Sandoval Arroyo, ultimately collected in Sandoval Lake and used for irrigation purposes by the local farmers.

Also enclosed are copies of water quality analysis taken by the Energy, Mineral and Natural Resources Department as submitted to American Exploration Company by Mr. David G. Boyer, Hydrogeologist for the New Mexico Oil Conservation Division.

2100 RepublicBank Center, 700 Louisiana, Houston, Texas 77002-2725, Telephone: (713) 237-0800
885 Third Avenue, Suite 2500, New York, New York 10022-4802, Telephone: (212) 644-6900

Your earliest consideration and approval of the NPDES Permit Application for the surface water discharge at American Exploration's Hospah Field will be greatly appreciated. Please address any questions and further information requests to the undersigned.

Very truly yours,

AMERICAN EXPLORATION COMPANY

Roy Quiroga

Roy Quiroga
Production Administrator

RQ/bla
Enclosures

Please print or type in the unshaded areas only
(fill-in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved. OMB No. 2040-0086 Approval expires 7-31-88

FORM 1 GENERAL

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER

S														T/A
F														
1	2	-										13	14	15

LABEL ITEMS

- I. EPA I.D. NUMBER
- III. FACILITY NAME
- V. FACILITY MAILING ADDRESS
- VI. FACILITY LOCATION

PLEASE PLACE LABEL IN THIS SPACE

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold-faced terms.

SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED	SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED
A. Is this facility a **publicly owned treatment works** which results in a **discharge** to **waters of the U.S.**? (FORM 2A)		X		B. Does or will this facility *(either existing or proposed)* include a **concentrated animal feeding operation** or **aquatic animal production facility** which results in a **discharge** to **waters of the U.S.**? (FORM 2B)		X	
	16	17	18		19	20	21
C. Is this a facility which currently results in **discharges** to **waters of the U.S.** other than those described in A or B above? (FORM 2C)	X			D. Is this a proposed facility *(other than those described in A or B above)* which will result in a **discharge** to **waters of the U.S.**? (FORM 2D)		X	
	22	23	24		25	26	27
E. Does or will this facility treat, store, or dispose of **hazardous wastes**? (FORM 3)				F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
	28	29	30		31	32	33
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)	X			H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
	34	35	36		37	38	39
I. Is this facility a proposed **stationary source** which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5)		X		J. Is this facility a proposed **stationary source** which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5)		X	
	40	41	42		43	44	45

III. NAME OF FACILITY

1 | SKIP | South Hospah Water Discharge

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*	B. PHONE *(area code & no.)*
2 Quiroga, Roy-Production Admin.	713 237 0800

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX

3 700 Louisiana

B. CITY OR TOWN	C. STATE	D. ZIP CODE
4 Houston	TX	77002

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER

5 LAT: 35° 43' 44", LONG: 107° 43' 15"

B. COUNTY NAME

McKinley

C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE *(if known)*
6 Hospah	NM		031

CONTINUE ON REVERSE

VII. SIC CODES (4-digit, in order of priority)

A. FIRST	B. SECOND
7 (specify)	7 (specify)
C. THIRD	**D. FOURTH**
7 (specify)	7 (specify)

VIII. OPERATOR INFORMATION

A. NAME

8 American Exploration Company

B. Is the name listed in Item VIII-A also the owner? ☒ YES ☐ NO (66)

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.)

F = FEDERAL; M = PUBLIC (other than federal or state); S = STATE; O = OTHER (specify); P = PRIVATE

0 (specify) Partnership

D. PHONE (area code & no.)

A 713 237 0800

E. STREET OR P.O. BOX

700 Louisiana

F. CITY OR TOWN

B Houston

G. STATE TX

H. ZIP CODE 77002

IX. INDIAN LAND

Is the facility located on Indian lands? ☐ YES ☒ NO (52)

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water)	D. PSD (Air Emissions from Proposed Sources)
9 N None	9 P None
B. UIC (Underground Injection of Fluids)	**E. OTHER** (specify)
9 U None	9 None (specify)
C. RCRA (Hazardous Wastes)	**E. OTHER** (specify)
9 R	9 (specify)

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property bounderies. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS (provide a brief description)

Disposal of produced water discharged from the South Hospah Field from several tank batteries that collect in an unlined impoundment for final skimming prior to discharge to the Sandoval Arroyo, ultimately collected in Sandoval Lake and used for irrigation purposes. Lake located at approximately LAT: 35°42' 40", LONG: 107°40' 04"

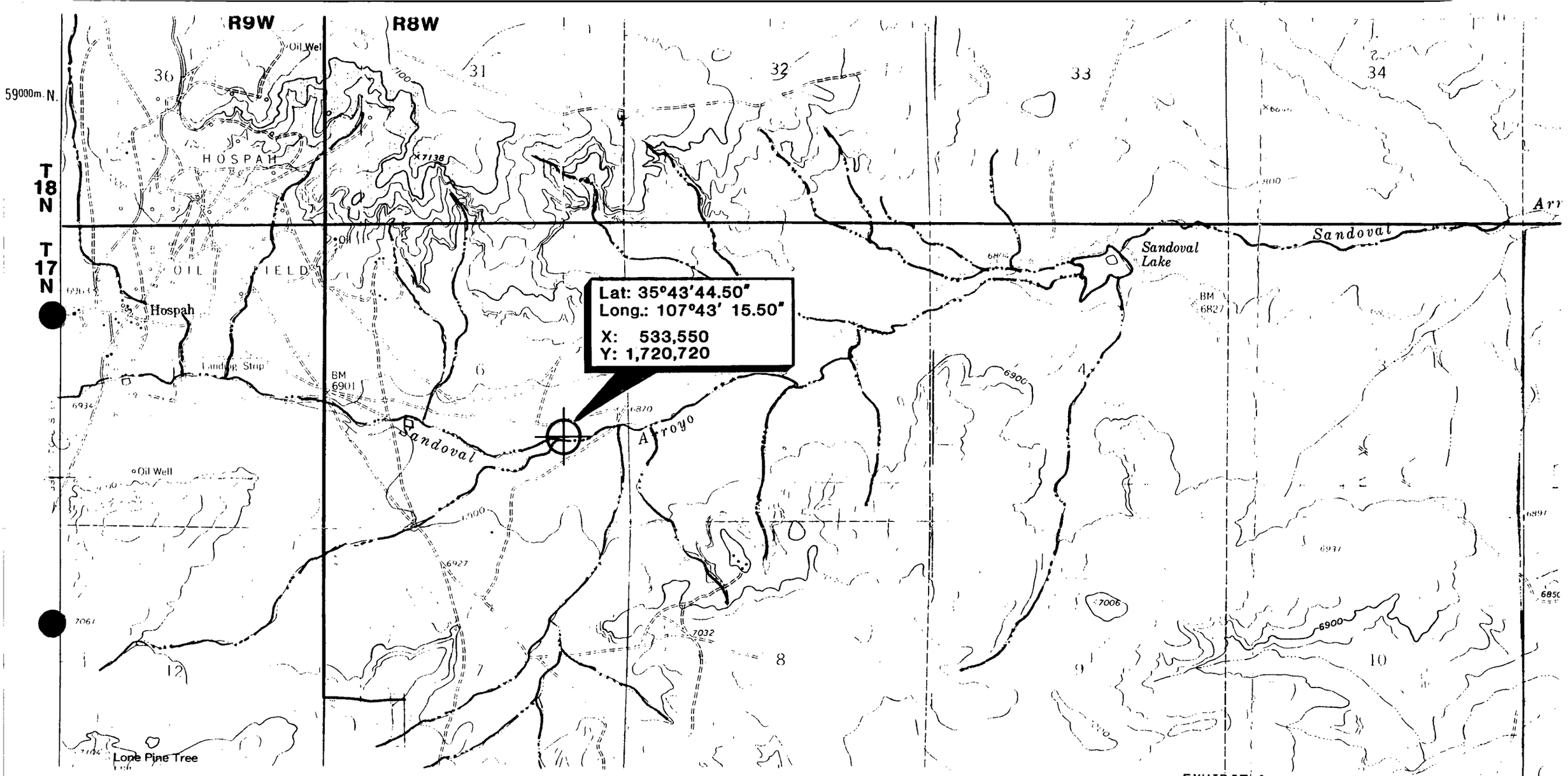
XIII. CERTIFICATION (see instructions)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
S.W. Haines - Sr. V.P. - Production	S W Haines	10-7-88

COMMENTS FOR OFFICIAL USE ONLY

C



HOSPAH, N. MEX.
N3537.5-W10737 5/7.5

1961

2000 1000 0 2000
SCALE IN FEET

Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1958. Field checked 1961

Polyconic projection. 1927 North American datum
10,000-foot grid based on New Mexico coordinate system, west zone

13½°
TRUE NORTH
MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION, 1961

NEW MEXICO
QUADRANGLE LOCATION

EXHIBIT A

American Exploration Company

HOSPAH AREA
McKinley Co., New Mexico
SURFACE WATER DISCHARGE

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

June 28, 1988

Mr. Robert H. Durbin
Area Production Foreman
TESORO PETROLEUM CORPORATION
Star Route 2
Cuba, New Mexico 87013

Dear Mr. Durbin:

Enclosed please find two copies of all water quality analyses taken by this office on April 21. The last of these was received in our office June 27. If you have any questions, please contact me at 827-5812.

Sincerely,

David G. Boyer, Hydrogeologist
Environmental Bureau Chief

DGB:sl

Enclosures

cc: Mike Saladen - NMEID (W/enclosures)

TESORO

June 15, 1988

Mr. Mike Saladen
Surface Water Section
Environmental Improvement Division
Post Office Box 968
Santa Fe, New Mexico 87504-0968

RE: NPDES Permit Application

Dear Mr. Saladen:

I did receive the applications from the Dallas Office but I am waiting on the water analysis from samples taken by Dave Boyer before completing the application permits.

Yours Truly,

Robert H. Durbin,
Area Production Foreman

cc: David Boyer
Ed Mainka, Tesoro Petroleum Corp.

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

Post Office Box 968
Santa Fe, New Mexico 87504-0968

ENVIRONMENTAL IMPROVEMENT DIVISION

Michael J. Burkhart
Director

GARREY CARRUTHERS
Governor

LARRY GORDON
Secretary

CARLA L. MUTH
Deputy Secretary

May 24, 1988

Mr. Bob Hiller (6W-ET)
U. S. Environmental Protection Agency
Allied Bank Tower, 12th Floor
1445 Ross Avenue
Dallas, Texas 75202-2733

RE: Unpermitted Discharge, Tesoro Petroleum Corporation, Hospah, New Mexico

Dear Mr. Hiller:

It has come to the attention of the New Mexico Environmental Improvement Division's Surface Water Quality Bureau that the Tesoro Petroleum Corporation has been discharging to a surface water without a NPDES permit. The Discharger may be contacted at the address and phone numbers below:

Mr. Bob Durbin
Area Production Foreman
Tesoro Petroleum Corporation
Star Route #2
Cuba, New Mexico 87013
Phone: (505) 325-0519 (Mobile)
(505) 325-0425 (Hogan)

I spoke with Mr. Durbin on May 19, 1988 and he indicated that the corporation has been discharging effluent for 20 years. He also stated that the company received permission to discharge from the Bureau of Reclamation (BOR). I explained to Mr. Durbin that EPA in Dallas, Texas, not BOR, handles surface water discharges and that discharging without an NPDES permit may be a violation of the Clean Water Act. I have already sent an NPDES permit application to Mr. Durbin. I have enclosed pertinent information on the Tesoro discharge for your review.

If you have any questions please call me at 827-2798.

Sincerely:

Mike Saladen

Mike Saladen
WRS II
Surface Water Section

Enclosures

xc: NMEID Farmington Field, Dave Tomco
NMEID District I Office
OCD, Dave Boyer

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

Post Office Box 968
Santa Fe, New Mexico 87504-0968

ENVIRONMENTAL IMPROVEMENT DIVISION

Michael J. Burkhart
Director

GARREY CARRUTHERS
Governor

LARRY GORDON
Secretary

CARLA L. MUTH
Deputy Secretary

May 23, 1988

Mr. Bob Durbin
Area Production Foreman
Tesoro Petroleum Corporation
Star Route #2
Cuba, NM 87013

RE: NPDES Permit Application

Dear Mr. Durbin:

Enclosed please find a NPDES permit application (application Form 1-General Information and application Form 2C-Wastewater Discharge Information) as you requested. Please fill out the application and send the original to the USEPA, with a copy to EID at the following addresses:

Water Management Division
Enforcement Branch
U.S. Environmental Protection
Agency, Region VI
First Interstate Bank Tower
1445 Ross Avenue
Dallas,TX 75202-2733

Program Manager
Surface Water Section
Surface water Quality Bureau
New Mexico Environmental
Improvement Division
P.O. Box 968
Santa Fe, NM 87504-0968

If you have any questions, do not hesitate to call me at 827-2798.

Sincerely,

Mike Saladen
Water Resource Specialist II
Surface Water Section

MS:lo

Enclosures

xc: NMEID Farmington Field Office, Dave Tomko
NMEID District I Office, Tito Madrid
USEPA, Bob Hiller (6W-ET)
Dave Boyer, Oil Conservation Division

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

May 16, 1988

Ms. Kathleen M. Sisneros, Chief
Surface Water Quality Bureau
New Mexico Environmental
Improvement Division
P. O. Box 968
Santa Fe, New Mexico 87504-0968

RE: Surface Water Discharge, Tesoro Petroleum Corporation, Hospah, NM

Dear Ms. Sisneros:

On April 19, 1988, my staff and I inspected Tesoro Petroleum's operations at Hospah, New Mexico. The purpose of the visit was to observe their treatment and disposal of produced water and sample the various effluents and a nearby water windmill. This letter is to notify you of a surface water discharge at the site so that you can initiate whatever action is necessary for Federal NPDES compliance by Tesoro.

At the site we observed treated discharges from several tank batteries that collected in an unlined impoundment (Photos 1 and 2) for final skimming prior to discharge to Sandoval Arroyo (Photo 3 and attached maps). Tesoro provided analyses (attached) of the several individual and the final discharges. Lease names, locations and number of wells are as follows:

Hospah Sand Unit (HSU) Lease is in T18N, R9W, Section 36; and in portions of T17N, R9W, Section 1 and T18N, R8W, Section 31; 31 wells.

Hanson Lease (Federal) is in T17N, T8W, Section 6; 25 wells.

Santa Fe Railroad (SFR) Lease is in portion of T17N, R8W, Section 7; 21 wells.

Santa Fe Railroad (SFR) "A" Lease is in portion of T17N, R9W, Section 1; 17 wells.

Santa Fe Railroad (SFR) "B" Lease is in T17N, R8W, Section 5; 3 wells.

The three component discharges entering the skimmer pond are HSU and SFR "A" Leases, Hanson Lease, and SFR Lease. The final discharge volume to the arroyo can range between 58 to 175 gpm (0.08 to 0.25 mgd) depending on production and well injection for enhanced oil recovery. Final discharge

electrical conductivity measured on April 19 was 2280 umhos @ 17°C with a pH=9.5. Samples were taken for general water chemistry, total heavy metals, and dissolved volatile organic hydrocarbons.

Another lease, the SFR "B" (Photo 4), discharges a small volume to the surface that was not observed to reach the arroyo (Photo 5). However, the electrical conductivity of the effluent was much higher than the other lease discharges (4480 umhos @ 16.5°C with a pH=7.5). Samples also were taken at this lease for general chemistry, heavy metals, and organics.

A nearby BIA stock well was also sampled (E.C. 1440 umhos @ 11°C, pH=8.5), as was domestic water used at the Tesoro office and Durbin home. No heavy metal analyses will be performed on these samples.

Water that does reach the arroyo travels downstream and is impounded in an earthen stock tank called Sandoval Lake. The area is a marshy area overgrown with cattails and containing wildfowl. The only permanent water source for the lake is the Tesoro discharge. A sample taken from the lake discharge had an electrical conductivity of 2400 umhos @ 14.5°C with a pH of 8.5 to 9. The sample is being analyzed for the same constituents as the effluent samples. Sandoval Arroyo continues downstream and joins Arroyo Chico which empties into the Rio Puerco below the village of Cabezon.

Several ranchers who graze cattle adjacent to the arroyo on the Ball Ranch below Sandoval Lake were present at Tesoro and expressed concern that their source of stock water would be eliminated if OCD required onsite disposal. I indicated that the salt quality of the water was comparable to what I knew about the quality of water in tributaries to the Rio Puerco. (For example, for the 1986 water year the USGS measured conductivities ranging between 2500 and 4630 umhos/cm in Arroyo Chico at its junction with the Rio Puerco.) I assured them that if the water was not impacting any water that was fresher (less TDS) and did not contain excessive hydrocarbons, the OCD would allow the discharge to continue. I notified Tesoro that the discharge was required to have a Federal NPDES permit since it was considered to be to a water of the U.S., and that I would notify EID so that EPA permitting could commence.

I would appreciate your assistance in providing Tesoro with application forms and guidance on permit procedures. Please address your correspondence to:

Mr. Bob Durbin
Area Production Foreman
Tesoro Petroleum Corporation
Star Route #2
Cuba, New Mexico 87013
Phone: 325-0519 (Mobile)
325-0425 (Hogan)

My only concerns with this discharge are that the levels of dissolved hydrocarbons are not excessive, and that the poorer quality Santa Fe Railroad "B" Lease water not reach the arroyo, now or in the future. It will be several more weeks before analyses are received from the NM Scientific Laboratory Division and I will provide you with copies.

If this agency can be of any assistance or provide additional information, please let me know.

Sincerely,

David G. Boyer, Hydrogeologist
Environmental Bureau Chief

DGB:sl

Enclosures - Map, Photos, Lab Analyses

cc: OCD-Aztec
Bob Durbin, Tesoro
Arlan Hiner, BLM-Farmington
Orville Moore, Ball Ranch

P. O. Box 959
Farmington, New Mexico 87401

Dec. 22, 1975

Tesoro Petroleum Corporation
Suite 2000 First of Denver Plaza Bldg.
633 Seventeenth St.
Denver, Colo. 80202

Gentlemen:

Your letter of December 15, 1975 requesting approval to continue the disposal of produced water from lease NM 052931, in sec. 6, T. 17 N., R. 8 W., for the beneficial use on the Ball Ranch as outlined in your request, is satisfactory with this office.

Sincerely yours,

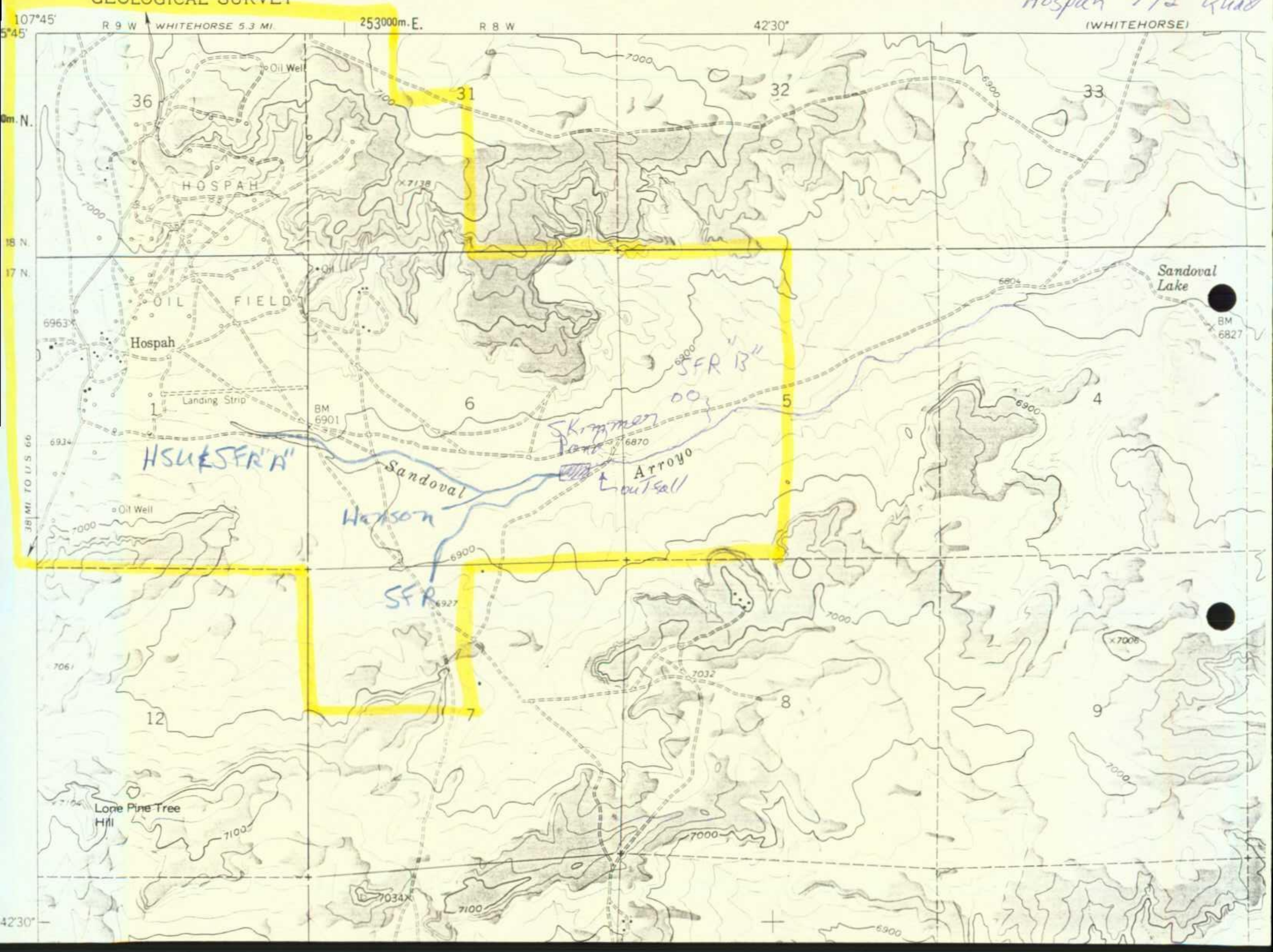
P. T. McGrath
District Engineer

Note: This letter from USGS Conservation Division which has since been merged with the Bureau of Land Management.

D. J. Boyd
5/13/88

DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Hospah 7½' Quad



DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Hospah 7½' Quad