G U I D E L I N E S F O R P E R M I T A P P L I C A T I O N,
D E S I G N, A N D C O N S T R U C T I O N
O F W A S T E S T O R A G E / D I S P O S A L P I T S

(Revised 8/88)

NEW MEXICO OIL CONSERVATION DIVISION
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO

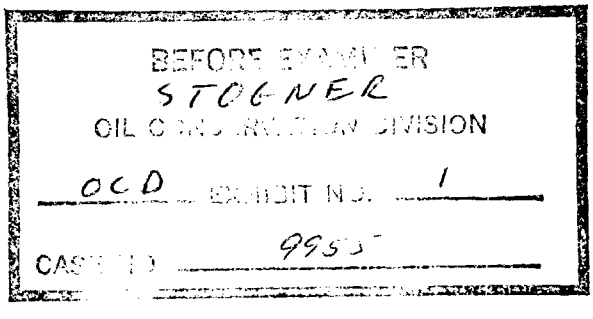


TABLE OF CONTENTS

PREFACE

The following specifications shall be used as a guide to the preparation of a permit application for waste storage/disposal ponds to be used to contain those wastes regulated by the Oil Conservation Division. (Individual districts may have additional restrictions or requirements.) All plans and specifications shall be submitted to and approved by the Oil Conservation Division prior to construction. Designs may deviate from the following specifications if it can be shown that the design integrity is such that the construction of that pit will not affect any present or future sources of protectable ground water. Please note that this guide does not take precedence over any specifications outlined in the Oil Conservation Commission's Order No. R-3221-C for centralized waste storage/disposal ponds. It does take precedence for commercial surface waste disposal facilities. These specifications do not apply to well-site produced water or reserve pits.

If any levee to be constructed is more than ten feet (10') in height from ground level, or if a pit volume is more than 10 acre-feet, the State Engineer Office must also review and issue a permit for construction of the pit.

GUIDELINES FOR APPLICATION FOR
WASTE STORAGE/DISPOSAL PIT PERMITS

I. GENERAL INFORMATION
Include the following with your application:

A. Name of Owner or Legally Responsible Party
Include address and telephone number.

B. Name of Local Representative or Contact Person (if different from above)
Include address and telephone number.

C. Location of Disposal Pit
Give a legal description of the location (i.e., 1/4 1/4 Section, Township, Range, and County). Use state coordinates or latitude/longitude on unsurveyed land. Submit a large scale topographic map, site plan, or detailed aerial photograph for use in conjunction with the written material. It should depict highways or roads giving access to the facility site, locations of all pits, skimmer ponds, and above and below grade tanks as well as the other site information required in Sections II through V below.

D. Type of Operation

Indicate the major purpose(s) of the facility (e.g., produced water evaporation pit) and briefly describe the processes occurring at the facility.

E. Copies

Provide three (3) copies of the application to the Santa Fe office. OCD will make copies available for District offices and public review, as requested.

F. Affirmation

Include the following affirmation and signature with the application:

"I hereby certify that I am familiar with the information contained in and submitted with this application and that such information is true, accurate, and complete to the best of my knowledge and belief."

_____ _____
(Signature) (Date)

_____ _____
(Printed Name of Person Signing) (Title)

II. GENERAL DESCRIPTION

A. Proposed Operations

1. Storage/Disposal Facilities Description:

Describe proposed on-site facilities to be used for effluent storage/disposal of process/produced water, drilling mud, sludges, waste oils, etc., including surface impoundments, disposal pits, below grade tanks, etc. Locate the various storage/disposal areas on the facility site plan or topographic map. If materials or effluents other than produced water are proposed to be discharged at the site, describe in detail and provide expected volumes.

2. Technical Information:

Provide technical data on the design elements of each disposal method:

a. Surface impoundments - Type and volume of effluents stored, area, volume, depth, slope of pond sides, sub-grade description, liner type and thickness, compatibility of liner and effluents, installation methods, leak detection methods, freeboard, runoff/runon protection.

b. Drying beds or other pits - Types and volumes of waste, area, capacity, liner, clean-out interval and method, and ultimate disposal location.

c. Other on-site disposal (e.g., land application, etc.) - Describe.

3. Ancillary equipment

Provide details on aerators, sprayers, or other equipment, including number, capacity, etc.

B. Spill/Leak Prevention and Procedures

1. Describe procedures addressing containment and cleanup in case of leaks from any evaporation pit, skimmer pond, or below grade tank. Include information as to whether areas are bermed and drained to sumps, proposed schedule for OCD notification of leaks, etc.

2. Describe methods used to detect leaks and ensure integrity of above and below grade tanks, pond, and pit liners. Discuss frequency of inspection and procedures to be undertaken if leaks are detected.

C. Closure Plan

Provide a facility closure plan detailing plans as necessary for removal of all fluids and/or wastes, back-filling, grading and mounding of pits, removal of contaminated soil, and, if necessary, aquifer restoration.

III. SITE CHARACTERISTICS
(See also Section IV)

A. Hydrologic Features

1. Provide the name, description, and location of any bodies of water, streams (indicate perennial or intermittent), or other watercourses (arroyos, canals, drains, etc.); and ground water discharge sites (water wells, seeps, springs, marshes, swamps) within one (1) mile of the outside perimeter of the facility. For water wells, specify use of water (e.g., public supply, domestic, stock, etc.)

2. Provide the total dissolved solids (TDS) concentration (in mg/l) of the ground water most likely to be affected by any discharge. Include the source of the information and how it was determined.

3. Provide the flow direction of the ground water most likely to be affected by any leaks. Include the source of the information and how it was determined.

4. It is suggested that you provide a recent water quality analysis of the ground water, if available, including the name of the analyzing laboratory, sample location, and date the sample was taken. This suggestion is made so that background information is available in case of leaks or charges of neighboring groundwater contamination.

B. Geologic Description of Pit Site

Provide the following information and attach or reference source information, as available, (e.g., driller's logs):

1. Soil type(s) (sand, clay, loam, caliche);

2. Name and depth to water of most shallow aquifer(s);

3. Composition of aquifer material (e.g., alluvium, sandstone, basalt, etc.); and

4. Depth to rock at base of alluvium.

C. Flood Protection

Provide information on:

1. The flooding potential at the pit site with respect to major precipitation and/or runoff events; and

2. Flood protection measures (berms, drainage channels, etc.), if applicable, for at least a 100-year flood.

3. Notification of OCD in case of flooding or washout.

IV. ADDITIONAL INFORMATION

Provide any additional information necessary to demonstrate that approval of the facility application will not result in contamination of fresh water (as described by OCD Rules) at any place of withdrawal of water for present or reasonably foreseeable future use. Depending on the methods of lining and location of any pit, detailed technical information on site hydrologic and geologic conditions may be required to be submitted for pit application evaluation. This could include but not be limited to:

1. Stratigraphic information including formation and member names, thickness, lithologies, lateral extent, etc.

2. Generalized maps and cross sections;

3. Potentiometric maps for aquifers potentially affected;

4. Porosity, hydraulic conductivity, storativity, and other hydrologic parameters of the aquifer;

5. Specific information on the water quality of the receiving aquifer; and

6. Information on expected alteration of contaminants due to sorption, precipitation or chemical reaction in the unsaturated zone, and expected reactions and/or dilution in the aquifer.

V. GENERAL CONSTRUCTION REQUIREMENTS

A. Location

1. Disposal pits shall not be located in any watercourse, lakebed, sink-hole, or other depression. Pits adjacent to any such watercourse or depression shall be located safely above the high-water level of such watercourse or depression.

B. Design and Construction

1. Evaporation pits shall be designed and constructed to provide the minimum evaporative surface area needed for the maximum yearly volume of liquid to be discharged to the pit. This design parameter shall be based upon local climatological data. Such data and calculations used for the pit design shall be submitted with any proposed plans and specifications. Special care should be taken when calculating the pit volume to account for the decrease in the evaporation rate during the winter months.

2. The design freeboard allowance shall take wave action into account to prevent overtopping due to wave action. A determination of the wave type (breaking or nonbreaking) shall be made to determine the forces acting upon the levee. Such calculations shall be submitted with the details for pit construction.

3. The pit is to be constructed so that the inside grade of the levee is no steeper than 2:1. Levees shall have an outside grade no steeper than 3:1 (see Figure 1).

4. The top of the levees shall be level and shall be at least eighteen inches (18 ") wide.

5. An aeration system may be required to be constructed to prevent anerobic conditions from forming in a pit. This requirement will be determined on an individual pit basis based on design specifications submitted.

C. Synthetically Lined Evaporation Pits

1. Materials

a. Synthetic materials used for lining evaporation pits shall be impermeable and may be rigid, semi-rigid, or flexible.

b. If rigid or semi-rigid materials are used, leak proof expansion joints shall be provided, or the material shall be of sufficient thickness and strength to withstand (without cracking) expansion, contraction, and settling movements in the underlying earth.

c. If flexible membrane materials are used, they shall be of at least 30 mil thickness and shall have good resistance to tears or punctures.

d. All materials used for lining evaporation pits shall be resistant to hydrocarbons, salts, and acidic and alkaline solutions. The liners shall also be resistant to fungus and rot. The primary liner shall be resistant to ultraviolet light or provision made to protect the material from the sun, as specified in Section 4 (f).

e. Synthetically lined pits shall incorporate a double liner system with a leak detection system installed between the primary (top) and secondary (bottom) liner.

2. Leak Detection System

a. A leak detection system of an approved design shall be installed between the primary and secondary liner. The appropriate OCD district office should be notified at least 24 hours in advance of the scheduled installation of the primary liner to afford the opportunity for a Division representative to inspect the leak detection system.

b. Leak detection systems may consist of, but are not necessarily limited to, approved fail-safe electric detection systems or drainage and sump systems.

c. If an electric grid detection system is used, provision must be made for adequately testing all components to ensure the system remains functional.

d. If the drainage and sump system is to be used, a network of slotted or perforated drainage pipes shall be installed between the primary and secondary liners. The network shall be of sufficient density so that no point in the pit bed is more than twenty feet (20') from such drainage pipe or lateral thereof. The material placed between the pipes and laterals shall be sufficiently permeable to allow transport of the fluids to the drainage pipe. The slope for all drainage lines and laterals shall be at least six inches (6") per fifty feet (50'). The slope of the pit bed shall also conform to these values to assure fluid flow towards the leak detection system. The drainage pipe shall convey any fluids to a corrosion-proof sump located outside the perimeter of the pond (see Figure 2).

3. Preparation of Pit Bed for Installation of Liners

a. The bed of the pit and inside grade of the levee shall be smooth and compacted, free of holes, rocks, stumps, clods, or any other debris which may rupture the liner. In extremely rocky areas, it will probably be necessary to cover the pit bed with a compacted layer of sand or other suitable material.

b. A trench shall be excavated on the top of the levee the entire perimeter of the pit for the purpose of anchoring flexible liners. This trench shall be located a minimum of nine inches (9") from the slope break and shall be a minimum of twelve inches (12") deep. (See Figure 3)

4. Installation of Flexible Membrane Liners

a. Prior to installation of the secondary liner, the appropriate OCD district office should be notified at least 24 hours in advance of the scheduled installation to afford the opportunity for a Division representative to inspect the pit bed and levee walls.

b. The pit liner shall be installed and joints sealed according to manufacturer's specifications and with approval of the Division representative.

c. The liner shall rest smoothly on the pit bed and the inner face of the levees, and shall be of sufficient size to extend down to the bottom of the anchor trench and come back out a minimum of two inches (2") from the trench on the side furthest from the pond. (See Figure

3) In locations where temperature variations are significant, wrinkles or folds shall be placed at each corner of the pit to allow for the contraction and expansion of the membrane due to temperature variations. The membrane manufacturer should be consulted on this matter.

d. Certain conditions require the venting of gas that may accumulate beneath a liner. If organic matter exists in the soils under the liner, or if natural gas is present in the region, gas production is likely. When a fluctuating water table is present immediately below the pond bottom, pockets of air may also accumulate below the liner. The net result of gas or air accumulation below the liner may be the "floating" of the liner to the pond surface. Two possible vent designs are illustrated in Figure 4. The need to vent this accumulated gas can be accomplished by providing a uniform layer of sand (which less than 5% will pass the 200 sieve) or a geotextile beneath the liners. To achieve the best results from either of these media, the slope from the lowest point of the pond to the toe of the dike must be at least 2%. The venting medium is carried across the entire bottom and up the side slopes. Vents should be located approximately one foot (1') down from the crown of the dike. (See Figure 3)

e. An anchor of used pipe or other similar material shall be placed over the liner in the anchor trench and the trench back-filled. The anchor trench shall extend the entire perimeter of the pond.

f. If the lining material used for the primary liner is not sun-resistant, at least one inch (1") of sand or other suitable material shall be spread uniformly to cover the liner over the floor of the pit. Gravel or other wave-resistant material with sufficient angle of repose to remain in place shall be used to cover the sloping inner wall of the levee. A geotextile liner shall be placed beneath any gravel layer to provide protection for the membrane liner. Any gravel or sand layers used to protect the membrane liner from the sun shall extend to the anchor trench.

g. Any sand or gravel layers placed on top of a membrane liner shall be done in such a manner that the risk of tearing the liner is minimized.

h. At any point of discharge into the pond, no fluid force shall be directed toward the liner.

D. Clay Lined Pits

1. Materials

Clay liners will be constructed of compacted clay soils or a mixture of bentonite and soil such that a maximum permeability of 1 x 10^{-7} cm/s is achieved. The application rate for bentonite to soil should be based on laboratory tests. In the absence of laboratory data, a minimum of 6 lb. of bentonite must be thoroughly mixed with each cubic foot of soil prior to compaction.

2. Design and Construction

In addition to requirements of Part V(B) above, the following requirements shall also be observed for clay-lined pits:

a. All vegetation, trash, stones, and other objects large enough to interfere with compaction will be removed from the pit site prior to compaction.

b. Compacted clay liners shall be a minimum of three feet (3') thick uniformly throughout the bottom and sides of the pit, with an extra two feet (2') of clay liner at the toes of sidewall slopes and under aerators, if used.

c. Clay materials shall be compacted by a sheep's foot roller in lifts not exceeding nine inches (9") in loose thickness to a minimum of 95% of the standard proctor density (ASTM D-698), with soil at optimum moisture content.

d. Fluid used to compact lifts of clay lining material will be similar to fluids to be placed in ponds, without hydrocarbons.

e. At any point of discharge into the pond, no fluid force shall be directed to the clay liner. Splash pads to prevent erosion under aerators or on levees may include rip-rap or concrete aprons, synthetic materials, discharge tubes with upward facing outlets, or various weirs.

3. Unless otherwise approved by the OCD, ground water monitoring will be required to detect releases from clay lined facilities.

E. Skimmer Ponds/Tanks

1. Required Use

A skimmer pond or tank shall be used to separate any oil from the water prior to allowing the water to discharge into the evaporation pond, except for the following cases:

a. It can be shown that the water being discharged into the pond contains no oil or grease.

b. The discharge into the pond is from an oil or natural gas processing facility where the discharge has already passed through a skimmer basin, skimmer tank, decanter, or API Separator.

2. Design Criteria

Skimmer ponds shall be designed to allow for oil/water separation only; oil shall be removed in a timely manner and stored in tanks. Per OCD Rule 310, oil shall not be stored or retained in earthen reservoirs or in open receptacles.

a. If a skimmer pond is to be used, the pond shall conform to the same design criteria as the evaporation pond.

b. If a skimmer tank is to be used, the materials of construction and/or design shall provide for corrosion resistance.

c. If a skimmer pond is to be used, siphons or other suitable means shall be employed to draw water from the oil/water interface for transfer to the evaporation pond. The siphon shall be located as far as possible from the inlet to the skimmer pond.

d. The skimmer pond/tank shall at all times be kept free of appreciable oil buildup to prevent oil flow into the evaporation pond.

e. Figures 5 - a & b illustrate general design criteria for skimmer ponds and tanks, respectively. All skimmer ponds shall be lined unless specifically exempted.

F. Fences and Signs

1. Unless otherwise permitted by the OCD, a fence shall be constructed and maintained in good condition around the facility perimeter. Adequate space will be provided between the fence and levees for passage of maintenance vehicles. The fences shall be constructed so as to prevent livestock from entering the facility area. Fences shall not be constructed on levees.

2. A sign not less than 12" x 24" with lettering of not less than two inches (2") shall be posted in a conspicuous place on the fence surrounding the facility. The sign shall be maintained in legible condition and shall identify the operator of the disposal system, the location of the facility by quarter-quarter section, township, and range; and emergency telephone numbers.

G. Maintenance

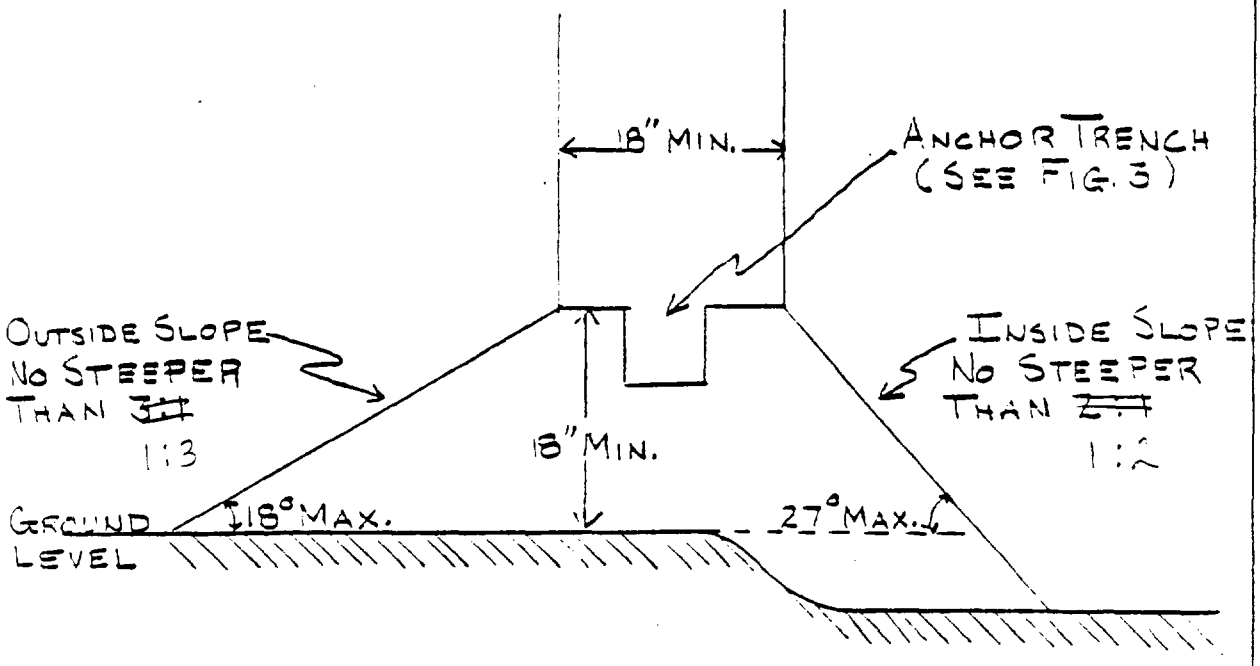
1. Leak detection sumps shall be inspected for fluids at least weekly; monitor wells, if required, shall be checked monthly and sampled if fluids are present. Analyses will be furnished to the OCD.

2. Outside walls of all levees shall be maintained in such a manner to prevent erosion. Inspections of the outside walls of the levees shall be made after any rainfall of consequence.

H. Contingency Plan

1. A contingency plan in the event of a leak or a release of H_2S shall be submitted for approval along with the details for pit construction. The contingency plan will outline a procedure for monitoring the leak detection systems on a regular schedule, analyzing any fluids found, notifying the OCD, removal of fluids, repairs to the pit, and cleanup of contaminated water, or aeration and treating pit fluids for H_2S generation, H_2S monitoring and notification of appropriate authorities.

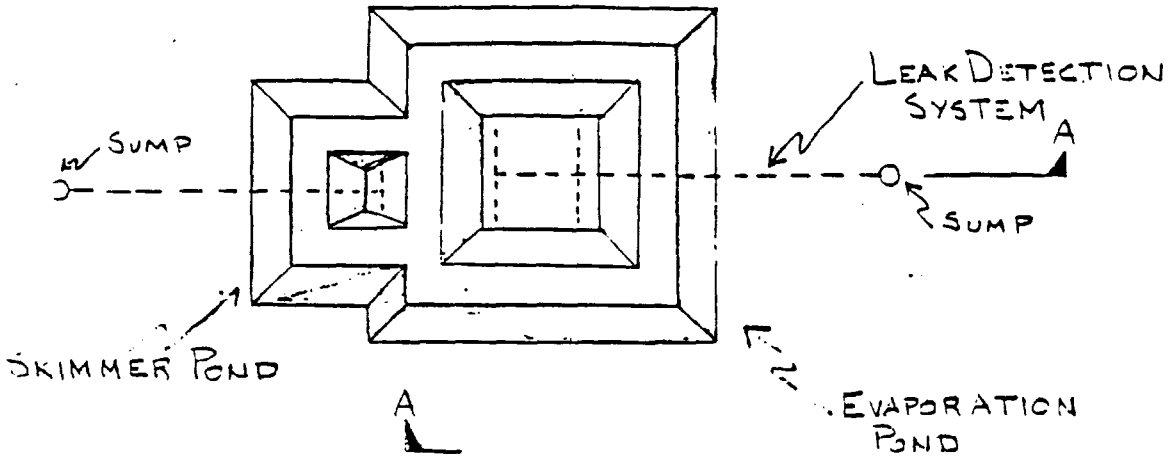
FIGURE 1- PIT CONSTRUCTION



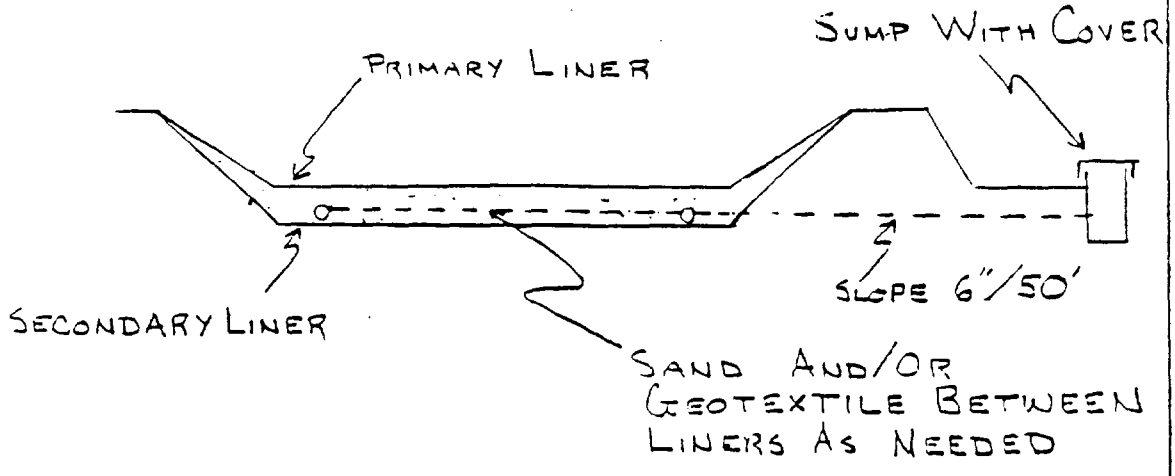
NOTE: LEVEE TO BE CONSTRUCTED IN A MANNER SUCH THAT DESIGN COMPACTION AND DIMENSIONS PROVIDE FOR A MINIMUM SAFETY FACTOR OF TWO FOR FORCES ACTING AGAINST THE LEVEE.

FIGURE 2 - LEAK DETECTION SYSTEM

PLAN



SECTION A-A



NOTE: SKIMMER POND TO HAVE SEPARATE LEAK DETECTION SYSTEM AND SUMP.

FIGURE 3 - ANCHOR TRENCH

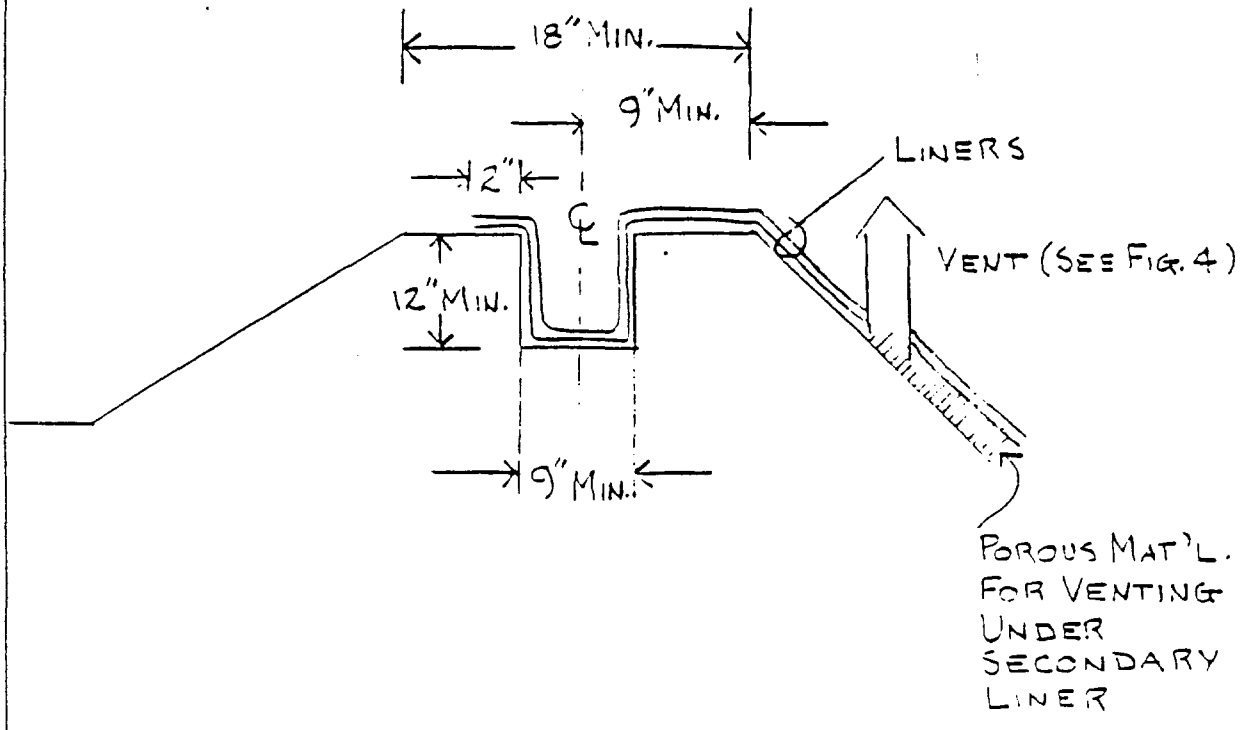
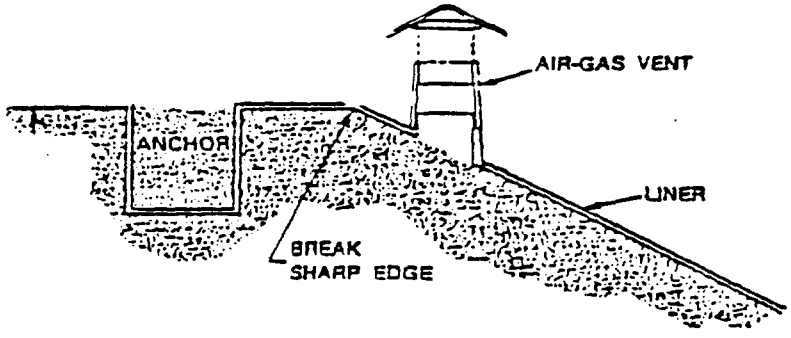


FIGURE 4 - TWO EXAMPLES OF VENT DESIGNS

SOURCE: EPA REPORT #SW-870, "LINING OF WASTE IMPOUNDMENT FACILITIES", PG. 260



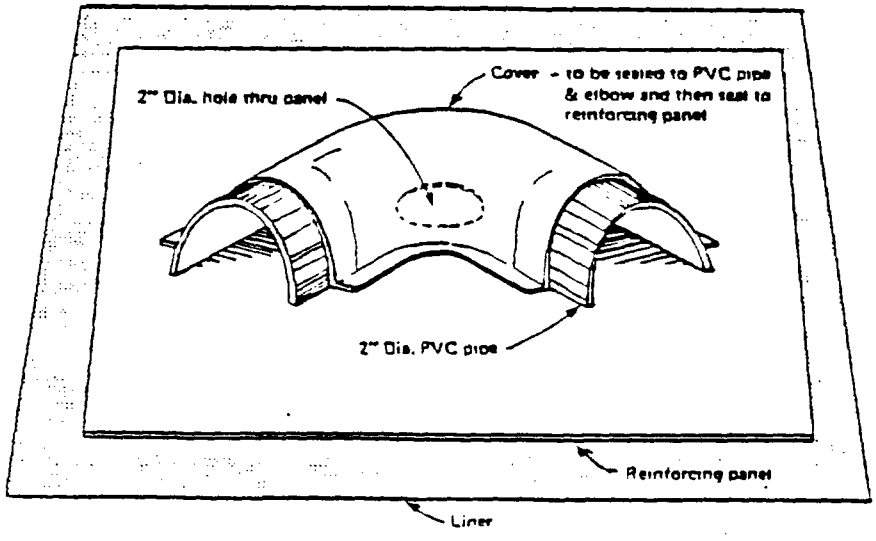
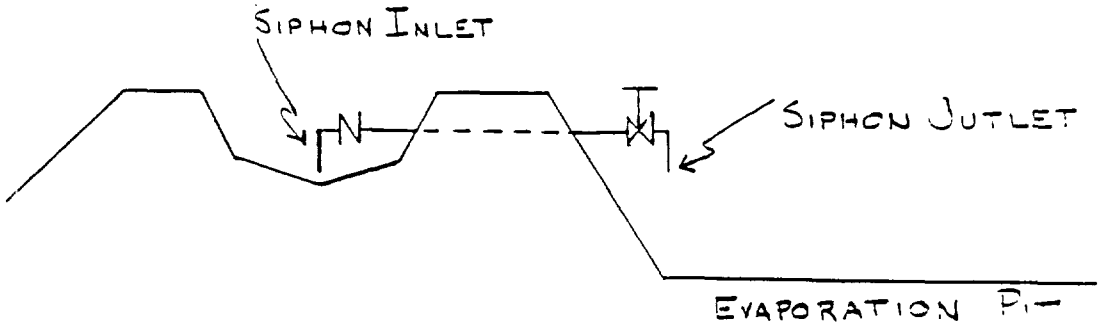
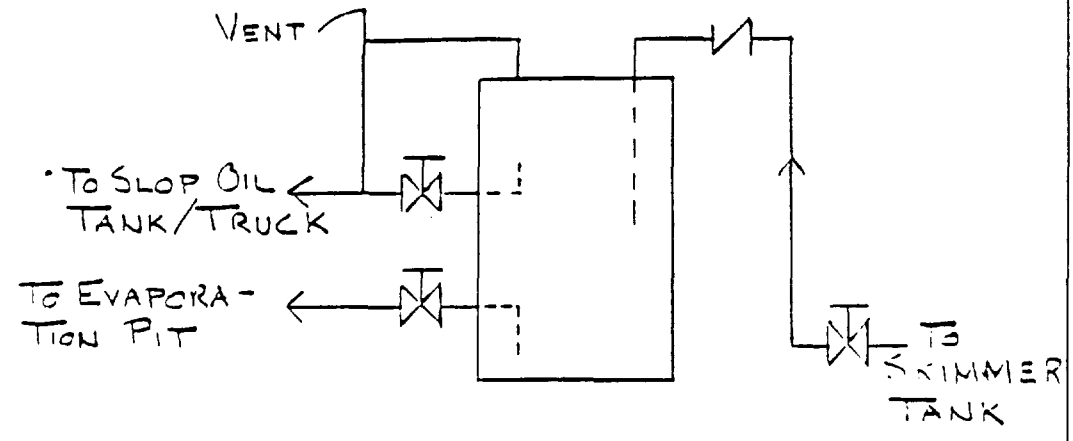


FIGURE 5: SKIMMER POND/TANK

(A.) SKIMMER POND



(B.) SKIMMER TANK



NOTE: BEFORE BEGINNING DISCHARGES TO SKIMMER POND/TANK, FILL WITH FRESH WATER TO SIPHON INLET.

AFFIDAVIT C PUBLICATION

No. 23906

STATE OF NEW MEXICO,
County of San Juan:

Betty Shipp being duly

sworn, says: That he is the National Ad Manager of

THE FARMINGTON DAILY TIMES, a daily newspaper of general circulation published in English at Farmington, said county and state, and that the

hereto attached Legal Notice

was published in a regular and entire issue of the said FARMINGTON DAILY TIMES, a daily newspaper duly qualified for the purpose within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico for One consecutive (days) (weeks) on the same day as follows:

First Publication Wednesday, July 26, 1989

Second Publication

Third Publication

Fourth Publication

and that payment therefor in the amount of $23.07

has been made.

Betty Shipp

Subscribed and sworn to before me this 26th day

of July, 1989.

NOTARY PUBLIC, SAN JUAN COUNTY, NEW MEXICO

My Commission expires: June 23, 1992

Copy of Publication

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

Notice is hereby given that pursuant to New Mexico Oil Conservation Division Regulations, the following permit to construct and operate a commercial evaporation facility has been submitted for approval to the Director of the Oil Conservation Division, State Land Office Building, P.O. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone (505) 827-5800:

Sunco Trucking Company, Robert C. Frank, agent, P.O. Box 308, Farmington, New Mexico 87499, has submitted for approval an application to construct and operate a commercial evaporation pond located in the SW/4 NW/4, Section 2, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico. Produced water associated with the completion and production operations of oil and gas wells will be disposed of in a synthetically double lined wastewater evaporation pond equipped with leak detection. The permit application addresses the construction, operations, spill/leak prevention and monitoring procedures to be utilized at the facility. The ground water most likely to be affected by any accidental discharges is at a depth in excess of 80 feet with a total dissolved solids content estimated at 2000 mg/l.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. Prior to ruling on any proposed permit or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him.

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 17th day of July, 1989. To be published on or before July 28, 1989.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
WILLIAM J. LEMAY, Director
SEAL

Legal No. 23906 published in the Farmington Daily Times, Farmington, New Mexico on Wednesday, July 26, 1989.

BEFORE EXAMINER
STOGNER
OIL CONSERVATION DIVISION

O & P EXHIBIT NO. 2

CASE NO. _____

RECEIVED

JUL 31 1989

OIL CONSERVATION DIV.
SANTA FE

STATE OF NEW MEXICO }
County of Bernalillo } ss

THOMAS J. SMITHSON

..... being duly sworn declares and says that he is ...NAT'L ADV. MGR... of the **Albuquerque Journal**, and that this newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Session Laws of 1937, and that payment therefore has been made or assessed as court costs; that the notice, a copy of which is hereto attached, was published in said paper in the regular daily edition,

for ..... 1 ..... times, the first publication being on the ....27..... day of ..... July ..... ,198..9....., and the subsequent consecutive publications on ..... ,198.....

..... Thomas J. Smithson .....

Sworn and subscribed to before me, a Notary Public in and for the County of Bernalillo and State of New Mexico, this ..27... day of ..... July ..... ,198..9.

OFFICIAL SEAL
Signature: Angela M. Archibeque
ANGELA M. ARCHIBEQUE
NOTARY PUBLIC NEW MEXICO
Filed with Secretary of State
Expires 6/30/92

PRICE ..... 9.17.38 .....

Statement to come at end of month.

ACCOUNT NUMBER ..... 480932 .....

EDJ-15 (R-2/86)

NOTICE OF PUBLICATION
STATE OF NEW MEXICO
ENERGY, MINERALS AND
NATURAL RESOURCES DEPT.
OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to New Mexico Oil Conservation Division Regulations, the following permit to construct and operate a commercial evaporation facility has been submitted for approval to the Director of the Oil Conservation Division, State Land Office Building, P.O. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone: (505) 827-5800:

Sunco Trucking Company, Robert C. Frank, agent, P.O. Box 308, Farmington, New Mexico 87499, has submitted for approval an application to construct and operate a commercial evaporation pond located in the SW/4 NW/4, Section 2, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico. Produced water associated with the completion and production operations of oil and gas wells will be disposed of in a synthetically double lined wastewater evaporation pond equipped with leak detection. The permit application addresses the construction, operations, spill/leak prevention and monitoring procedures to be utilized at the facility. The ground water most likely to be affected by any accidental discharges is at a depth in excess of 80 feet with a total dissolved solids content estimated at 2000 mg/l.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. Prior to ruling on any proposed permit or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him.

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 17th day of July, 1989. To be published on or before July 28, 1989.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
s/WILLIAM J. LEMAY, Director

Journal, July 27, 1989

BEFORE EXAMINER
OIL CONSERVATION DIVISION
OCD EXHIBIT NO. 3

STATE OF NEW MEXICO

STATE ENGINEER OFFICE

SANTA FE

S. E. REYNOLDS
STATE ENGINEER

BATAAN MEMORIAL BUILDING
STATE CAPITOL
SANTA FE, NEW MEXICO 87503

November 7, 1989

File No. 4380

Robert C. Frank
Sunco Trucking Water Disposal
P.O. Box 443
Farmington, NM 87499

Dear Mr. Frank:

Enclosed is your copy of the above-numbered Application for Permit to Construct a Dam which has been approved.

Please note that proof of completion of works shall be due in this office on or before November 15, 1990.

BEFORE EXAMINER
OIL CONSERVATION DIVISION
OCD EXHIBIT NO. 4
CASE NO.

Sincerely,

S.E. Reynolds
State Engineer

by: Paul Saavedra
Paul Saavedra
Assistant Chief
Water Rights Division

PS:egr

Enclosure

cc: Dave Boyer, OCD

copy to McHorman 11/15/89 RA

IMPORTANT - READ INSTRUCTIONS ON BACK BEFORE FILLING OUT THIS FORM

APPLICATION FOR PERMIT TO CONSTRUCT A DAM

File No. 4380 Date of receipt August 24, 1989

1. Name of applicant Sunco Trucking Water Disposal
   Address 708 S. Tucker Avenue PO Box 443
   City and State Farmington, NM Zip code 87499

2. Dam hazard classification (SCS criteria) Class A

3. Dam is to be located on: (a) Name of stream or watercourse N/A Ponds are out of any water course. They are located 1 3/4 miles SE of the Animas River.
   (b) Which is a tributary of N/A

4. Location of the intake structure of the principal spillway conduit from detention storage: San Juan County. (a) NW ¼ ¼ ¼ of Section 2, Township 29N, Range 12W, N.M.P.M. or (b) within ____ feet of X = ____ feet, Y = ____ feet, N.M.C.S., ____ zone, within ____ Grant.

5. Drainage area characteristics: (a) drainage area N/A acres: (b) 100 year, 6 hour precipitation N/A inches; (c) probable maximum precipitation (PMP), 6 hour storm N/A inches; (d) volume of run-off from the 100-year, 6 hour storm N/A acre-feet. (e) volume of run-off from the PMP, 6 hour storm N/A acre-feet.

6. Properties of detention dam: (a) maximum height above foundation at downstream toe 16 feet; (b) length of crest 1200' ea. pond feet; (c) width of crest 12' ea. pond feet; (d) maximum width at base 150' feet; (e) slope of upstream face 3:1; (f) slope of downstream face 3:1; (g) elevation at crest of dam 5881',5875',5863' feet; (h) elevation of emergency spillway crest N/A feet; (i) elevation of flow line of the intake structure of the principal spillway conduit N/A feet; (j) characteristics of emergency spillway, (1) location N/A (2) width N/A feet, (3) maximum capacity N/A cubic feet per second, (4) freeboard above maximum high water line 1.5' feet, (5) cross-sectional area at maximum flow N/A square feet; (k) characteristics of principal spillway conduit, (1) size, type and numer of gates N/A (2) dimension N/A feet, (3) length N/A feet, (4) slope N/A, (5) Manning coefficient N/A, (6) maximum discharge capacity N/A cubic feet per second, time to empty the detention reservoir N/A hours, (96 hours maximum unless prior approval has been obtained); (l) construction material, etc. N/A

(m) approximate volume of material in dam 38,000 yds^3/pond; 114,000 yds^{3}total cubic yards, (n) type of construction Nayive materials; loamy silt/sand and clay. Synthetically double lined.

7.

Height Above Flow Line of Intake Structure	Area of Water Surface, Acres	Storage Capacity, Acre Feet	Remarks and Critical Points
0			Flow line of intake structure
	2.1	22	
	6.3 total	66 total	

8. Additional data or explanations ~~The ponds will receive only produced water and are located away from~~ any established water courses.

9. Estimated costs: Detention dam and appurtenances . . . $ $82500.00
   Other constructed works . . . . . $ 12000.00
   Total cost $94500.00 $ $94500.00

10. Estimated date to begin construction 10/15/89
    Estimated date to complete construction 11/15/89

11. Dam will be constructed under supervision of Western Technologies, Inc.

12. Signature of Applicant George E. Coleman

6913

ACTION OF STATE ENGINEER

This application to construct a dam is approved provided it is not exercised to the detriment of any others having prior, valid and existing rights to the use of waters of this stream system

and is not detrimental to the public welfare or contrary to the conservation of water within the state and subject to the attached conditions of approval.

Witness my hand and seal this 7 day of November, A.D., 19 89

S.E. Reynolds, State Engineer

By: Paul Saavedra

Paul Saavedra
Assistant Chief
Water Rights Division

Instructions

This form shall be filed in triplicate and accompanied by maps, plans, specifications, etc.

Section 1 - Fill in all blanks

Section 2 - Class (a). — Dams located in rural or agricultural areas where failure may damage farm buildings, agricultural land, or township and country roads.

Class (b).— Dams located in predominantly rural or agricultural areas were failure may damage isolated homes, main highways or minor railroads or cause interruption of use or service of relatively important public utilities.

Class (c). — Dams located where failure may cause loss of life, serious damage to homes, industrial and commercial buildings, important public utilities, main highways, or railroads.

Section 3 - Fill in all blanks

Section 4 - Fill in either part a or b

Sections 5, 6, 7 - Fill in all blanks

Section 8 - Fill in if necessary

Section 9, 10 - Fill in all blanks

Section 11 - Construction must be under supervision of registered engineer, consulting engineer firm or government agency.

Section 12 - Signature

FILING FEE - $10.00

CONDITIONS OF APPROVAL

Applicant: Sunco Trucking Company
File No.: 4380

1. The qualifications of a professional engineer registered in New Mexico who will supervise construction must be approved by the State Engineer prior to undertaking construction.

2. Construction shall be in accordance with approved plans and specifications. Any modification of the approved plans specifications or design changes must be approved in writing by the State Engineer prior to undertaking such modifications.

3. Upon completion of the construction, the professional engineer supervising construction shall submit to the State Engineer:

   a. a completion report which shall include description of problems encountered and their solution; summary of materials test data and construction photographs;

   b. as-built drawings;

   c. a certificate that the dam as constructed is safe for the intended use.

4. Proof of completion of works shall be due in this office on or before November 15, 1990.

Date of Approval: November 7, 1989.

S.E. Reynolds
State Engineer

by: Paul Saavedra
Paul Saavedra
Assistant Chief
Water Rights Division

AFFIDAVIT C PUBLICATION

No. 23906

STATE OF NEW MEXICO,
County of San Juan:

Betty Shipp being duly sworn, says: That he is the National Ad Manager of THE FARMINGTON DAILY TIMES, a daily newspaper of general circulation published in English at Farmington, said county and state, and that the hereto attached Legal Notice

was published in a regular and entire issue of the said FARMINGTON DAILY TIMES, a daily newspaper duly qualified for the purpose within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico for One consecutive (days) (weeks) on the same day as follows:

First Publication Wednesday, July 26, 1989

Second Publication

Third Publication

Fourth Publication

and that payment therefor in the amount of $23.07 has been made.

Betty Shipp

Subscribed and sworn to before me this 26th day of July, 1989.

NOTARY PUBLIC, SAN JUAN COUNTY, NEW MEXICO

My Commission expires: June 23, 1992

BEFORE EXAMINER
OIL CONSERVATION DIVISION
OCD EXHIBIT NO. 2
CASE NO.

Copy of Publication

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

Notice is hereby given that pursuant to New Mexico Oil Conservation Division Regulations, the following permit to construct and operate a commercial evaporation facility has been submitted for approval to the Director of the Oil Conservation Division, State Land Office Building, P.O. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone (505) 827-5800:

Sunco Trucking Company, Robert C. Frank, agent, P.O. Box 308, Farmington, New Mexico 87499, has submitted for approval an application to construct and operate a commercial evaporation pond located in the SW/4 NW/4, Section 2, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico. Produced water associated with the completion and production operations of oil and gas wells will be disposed of in a synthetically double lined wastewater evaporation pond equipped with leak detection. The permit application addresses the construction, operations, spill/leak prevention and monitoring procedures to be utilized at the facility. The ground water most likely to be affected by any accidental discharges is at a depth in excess of 80 feet with a total dissolved solids content estimated at 2000 mg/l.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. Prior to ruling on any proposed permit or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him.

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 17th day of July, 1989. To be published on or before July 28, 1989.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
WILLIAM J. LEMAY, Director
SEAL

Legal No. 23906 published in the Farmington Daily Times, Farmington, New Mexico on Wednesday, July 26, 1989.

NOTICE OF PUBLICATION
STATE OF NEW MEXICO
ENERGY, MINERALS AND
NATURAL RESOURCES DEPT.
OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to New Mexico Oil Conservation Division Regulations, the following permit to construct and operate a commercial evaporation facility has been submitted for approval to the Director of the Oil Conservation Division, State Land Office Building, P.O. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone: (505) 827-5800:

Sunco Trucking Company, Robert C. Frank, agent, P.O. Box 308, Farmington, New Mexico 87499, has submitted for approval an application to construct and operate a commercial evaporation pond located in the SW/4 NW/4, Section 2, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico. Produced water associated with the completion and production operations of oil and gas wells will be disposed of in a synthetically double lined wastewater evaporation pond equipped with leak detection. The permit application addresses the construction, operations, spill/leak prevention and monitoring procedures to be utilized at the facility. The ground water most likely to be affected by any accidental discharges is at a depth in excess of 80 feet with a total dissolved solids content estimated at 2000 mg/l.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. Prior to ruling on any proposed permit or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him.

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 17th day of July, 1989. To be published on or before July 28, 1989.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
s/WILLIAM J. LEMAY, Director

Journal, July 27, 1989

RECEIVED

JUL 31 1989

OIL CONSERVATION DIV.
SANTA FE

STATE OF NEW MEXICO }
County of Bernalillo } ss

THOMAS J. SMITHSON

..... being duly sworn declares and says that he is ... NAT'L ADV. MGR ... of the **Albuquerque Journal,** and that this newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Session Laws of 1937, and that payment therefore has been made or assessed as court costs; that the notice, a copy of which is hereto attached, was published in said paper in the regular daily edition,

for ..... 1 ..... times, the first publication being on the ....27..... day of ..... July ..... ,198..9....., and the subsequent consecutive publications on ..... ,198.....

..... Thomas J. Smithson .....

OFFICIAL SEAL
Signature: Angela M. Archibeque
ANGELA M. ARCHIBEQUE
NOTARY PUBLIC NEW MEXICO
Filed with Secretary of State
Expires 6/30/92

Sworn and subscribed to before me, a Notary Public in and for the County of Bernalillo and State of New Mexico, this ..27... day of ..... July ..... ,198..9.

PRICE ..... 9.17.38 .....

Statement to come at end of month.

ACCOUNT NUMBER ..... C80932 .....

EDJ-15 (R-2/86)

OCD 3

NOTICE OF PUBLICATION
STATE OF NEW MEXICO
ENERGY, MINERALS AND
NATURAL RESOURCES DEPT.
OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to New Mexico Oil Conservation Division Regulations, the following permit to construct and operate a commercial evaporation facility, has been submitted for approval to the Director of the Oil Conservation Division, State Land Office Building, P.O. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone (505) 827-5800:

Sunco Trucking Company, Robert C. Frank, agent, P.O. Box 308, Farmington, New Mexico 87499, has submitted for approval an application to construct and operate a commercial evaporation pond located in the SW/4 NW/4, Section 2, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico. Produced water associated with the completion and production operations of oil and gas wells will be disposed of in a synthetically double lined wastewater evaporation pond equipped with leak detection. The permit application addresses the construction, operations, spill/leak prevention and monitoring procedures to be utilized at the facility. The ground water most likely to be affected by any accidental discharges is at a depth in excess of 80 feet with a total dissolved solids content estimated at 2000 mg/l.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. Prior to ruling on any proposed permit or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him.

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 17th day of July, 1989. To be published on or before July 28, 1989.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
s/WILLIAM J. LEMAY, Director

Journal, July 27, 1989

RECEIVED

JUL 31 1989

OIL CONSERVATION DIV.
SANTA FE

STATE OF NEW MEXICO }
County of Bernalillo } ss

THOMAS J. SMITHSON

..... being duly sworn declares and says that he is ...NAT'L ADV. MGR... of the **Albuquerque Journal,** and that this newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Session Laws of 1937, and that payment therefore has been made or assessed as court costs; that the notice, a copy of which is hereto attached, was published in said paper in the regular daily edition,

for ..... 1 ..... times, the first publication being on the ....27..... day of ..... July ..... ,198..9....., and the subsequent consecutive publications on ..... ,198.....

..... Thomas J. Smithson .....

OFFICIAL SEAL
Signature: ANGELA M. ARCHIBEQUE
ARY PUBLIC NEW MEXICO
ed with Secretary of State
Expires 6/30/92

Sworn and subscribed to before me, a Notary Public in and for the County of Bernalillo and State of New Mexico, this ..27... day of ..... July ..... ,198..9.

PRICE ..... 17.38 .....

Statement to come at end of month.

ACCOUNT NUMBER ..... C80932 .....

EDJ-15 (R-2/86)

NOTICE OF PUBLICATION
STATE OF NEW MEXICO
ENERGY, MINERALS AND
NATURAL RESOURCES DEPT.
OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to New Mexico Oil Conservation Division Regulations, the following permit to construct and operate a commercial evaporation facility, has been submitted for approval to the Director of the Oil Conservation Division, State Land Office Building, P.O. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone (505) 827-5800:

Sunco Trucking Company, Robert C. Frank, agent, P.O. Box 308, Farmington, New Mexico 87499, has submitted for approval an application to construct and operate a commercial evaporation pond located in the SW/4 NW/4, Section 2, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico. Produced water associated with the completion and production operations of oil and gas wells will be disposed of in a synthetically double lined wastewater evaporation pond equipped with leak detection. The permit application addresses the construction, operations, spill/leak prevention and monitoring procedures to be utilized at the facility. The ground water most likely to be affected by any accidental discharges is at a depth in excess of 80 feet with a total dissolved solids content estimated at 2000 mg/l.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. Prior to ruling on any proposed permit or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him.

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 17th day of July, 1989. To be published on or before July 28, 1989.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
s/WILLIAM J. LEMAY, Director

Journal, July 27, 1989

RECEIVED

JUL 31 1989

OIL CONSERVATION DIV.
SANTA FE

STATE OF NEW MEXICO }
County of Bernalillo } ss

THOMAS J. SMITHSON

..... being duly sworn declares and says that he is ...NAT'L ADV. MGR... of the **Albuquerque Journal,** and that this newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Session Laws of 1937, and that payment therefore has been made or assessed as court costs; that the notice, a copy of which is hereto attached, was published in said paper in the regular daily edition,

for ..... 1 ..... times, the first publication being on the ....27..... day of ..... July ..... ,198..9....., and the subsequent consecutive publications on ..... ,198.....

..... Thomas J. Smithson .....

OFFICIAL SEAL
Signature: Angela M. Archibeque
ANGELA M. ARCHIBEQUE
NOTARY PUBLIC NEW MEXICO
Filed with Secretary of State
Expires 6/30/92

Sworn and subscribed to before me, a Notary Public in and for the County of Bernalillo and State of New Mexico, this ..27.. day of ..... July ..... ,198..9.

PRICE $ 17.38

Statement to come at end of month.

ACCOUNT NUMBER ..C80932.....

EDJ-15 (R-2/86)

AFFIDAVIT C PUBLICATION

No. 23906

STATE OF NEW MEXICO,
County of San Juan:

Betty Shipp being duly

sworn, says: That he is the National Ad Manager of

THE FARMINGTON DAILY TIMES, a daily newspaper of general circulation published in English at Farmington, said county and state, and that the hereto attached Legal Notice

was published in a regular and entire issue of the said FARMINGTON DAILY TIMES, a daily newspaper duly qualified for the purpose within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico for One consecutive (days) (weeks) on the same day as follows:

First Publication Wednesday, July 26, 1989

Second Publication

Third Publication

Fourth Publication

and that payment therefor in the amount of $23.07 has been made.

Betty Shipp

Subscribed and sworn to before me this 26th day of July, 1989.

NOTARY PUBLIC, SAN JUAN COUNTY, NEW MEXICO

My Commission expires: June 23, 1992

Copy of Publication

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

Notice is hereby given that pursuant to New Mexico Oil Conservation Division Regulations, the following permit to construct and operate a commercial evaporation facility has been submitted for approval to the Director of the Oil Conservation Division, State Land Office Building, P.O. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone (505) 827-5800:

Sunco Trucking Company, Robert C. Frank, agent, P.O. Box 308, Farmington, New Mexico 87499, has submitted for approval an application to construct and operate a commercial evaporation pond located in the SW/4 NW/4, Section 2, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico. Produced water associated with the completion and production operations of oil and gas wells will be disposed of in a synthetically double lined wastewater evaporation pond equipped with leak detection. The permit application addresses the construction, operations, spill/leak prevention and monitoring procedures to be utilized at the facility. The ground water most likely to be affected by any accidental discharges is at a depth in excess of 80 feet with a total dissolved solids content estimated at 2000 mg/l.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. Prior to ruling on any proposed permit or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him.

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 17th day of July, 1989. To be published on or before July 28, 1989.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
WILLIAM J. LEMAY, Director
SEAL

Legal No. 23906 published in the Farmington Daily Times, Farmington, New Mexico on Wednesday, July 26, 1989.

AFFIDAVIT C PUBLICATION

No. 23906

STATE OF NEW MEXICO,
County of San Juan:

Betty Shipp being duly sworn, says: That he is the National Ad Manager of THE FARMINGTON DAILY TIMES, a daily newspaper of general circulation published in English at Farmington, said county and state, and that the hereto attached Legal Notice

was published in a regular and entire issue of the said FARMINGTON DAILY TIMES, a daily newspaper duly qualified for the purpose within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico for One consecutive (days) (weeks) on the same day as follows:

First Publication Wednesday, July 26, 1989

Second Publication

Third Publication

Fourth Publication

and that payment therefor in the amount of $23.07 has been made.

Betty Shipp

Subscribed and sworn to before me this 26th day of July, 1989.

NOTARY PUBLIC, SAN JUAN COUNTY, NEW MEXICO

My Commission expires: June 23, 1992

Copy of Publication

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

Notice is hereby given that pursuant to New Mexico Oil Conservation Division Regulations, the following permit to construct and operate a commercial evaporation facility has been submitted for approval to the Director of the Oil Conservation Division, State Land Office Building, P.O. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone (505) 827-5800:

Sunco Trucking Company, Robert C. Frank, agent, P.O. Box 308, Farmington, New Mexico 87499, has submitted for approval an application to construct and operate a commercial evaporation pond located in the SW/4 NW/4, Section 2, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico. Produced water associated with the completion and production operations of oil and gas wells will be disposed of in a synthetically double lined wastewater evaporation pond equipped with leak detection. The permit application addresses the construction, operations, spill/leak prevention and monitoring procedures to be utilized at the facility. The ground water most likely to be affected by any accidental discharges is at a depth in excess of 80 feet with a total dissolved solids content estimated at 2000 mg/l.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. Prior to ruling on any proposed permit or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him.

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 17th day of July, 1989. To be published on or before July 28, 1989.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
WILLIAM J. LEMAY, Director
SEAL

Legal No. 23906 published in the Farmington Daily Times, Farmington, New Mexico on Wednesday, July 26, 1989.

STATE OF NEW MEXICO

STATE ENGINEER OFFICE

SANTA FE

S. E. REYNOLDS
STATE ENGINEER

BATAAN MEMORIAL BUILDING
STATE CAPITOL
SANTA FE, NEW MEXICO 87503

November 7, 1989

File No. 4380

Robert C. Frank
Sunco Trucking Water Disposal
P.O. Box 443
Farmington, NM 87499

Dear Mr. Frank:

Enclosed is your copy of the above-numbered Application for Permit to Construct a Dam which has been approved.

Please note that proof of completion of works shall be due in this office on or before November 15, 1990.

Sincerely,

S.E. Reynolds
State Engineer

by: Paul Saavedra
Paul Saavedra
Assistant Chief
Water Rights Division

OCD 4

PS:egr

Enclosure

cc: Dave Boyer, OCD

Copy to Mr Homan 11/15/89 JA

IMPORTANT - READ INSTRUCTIONS ON BACK BEFORE FILLING OUT THIS FORM

APPLICATION FOR PERMIT TO CONSTRUCT A DAM

File No. 4380 Date of receipt August 24, 1989

1. Name of applicant Sunco Trucking Water Disposal
Address 708 S. Tucker Avenue PO Box 443
City and State Farmington, NM Zip code 87499

2. Dam hazard classification (SCS criteria) Class A

3. Dam is to be located on: (a) Name of stream or watercourse N/A Ponds are out of any water course. They are located 1 3/4 miles SE of the Animas River.
(b) Which is a tributary of N/A

4. Location of the intake structure of the principal spillway conduit from detention storage: San Juan County. (a) NW ¼ ¼ ¼ of Section 2 Township 29N, Range 12W, N.M.P.M. or (b) within feet of X = feet, Y = feet, N.M.C.S., zone, within Grant.

5. Drainage area characteristics: (a) drainage area N/A acres: (b) 100 year, 6 hour precipitation N/A inches; (c) probable maximum precipitation (PMP), 6 hour storm N/A inches; (d) volume of run-off from the 100-year, 6 hour storm N/A acre-feet. (e) volume of run-off from the PMP, 6 hour storm N/A acre-feet.

6. Properties of detention dam: (a) maximum height above foundation at downstream toe 16 feet; (b) length of crest 1200' ea. pond feet; (c) width of crest 12' ea. pond feet; (d) maximum width at base 150' feet; (e) slope of upstream face 3:1; (f) slope of downstream face 3:1; (g) elevation at crest of dam 5881', 5875', 5863' feet; (h) elevation of emergency spillway crest N/A feet; (i) elevation of flow line of the intake structure of the principal spillway conduit N/A feet; (j) characteristics of emergency spillway, (1) location N/A
(2) width N/A feet, (3) maximum capacity N/A cubic feet per second, (4) freeboard above maximum high water line 1.5' feet, (5) cross-sectional area at maximum flow N/A square feet; (k) characteristics of principal spillway conduit, (1) size, type and numer of gates N/A
(2) dimension N/A feet, (3) length N/A feet, (4) slope N/A, (5) Manning coefficient N/A, (6) maximum discharge capacity N/A cubic feet per second, time to empty the detention reservoir N/A hours, (96 hours maximum unless prior approval has been obtained); (l) construction material, etc. N/A

(m) approximate volume of material in dam 38,000 yds^3/pond; 114,000 yds^3 total cubic yards, (n) type of construction Nayive materials; loamy silt/sand and clay. Synthetically double lined.

7.

Height Above Flow Line of Intake Structure	Area of Water Surface, Acres	Storage Capacity, Acre Feet	Remarks and Critical Points
0			Flow line of intake structure
	2.1	22	
	6.3 total	66 total	

8. Additional data or explanations ~~The ponds will receive only produced water and are located away from~~ any established water courses.

9. Estimated costs: Detention dam and appurtenances . . . $ $82500.00
Other constructed works . . . . . $ 12000.00
Total cost $94500.00 $ $94500.00

10. Estimated date to begin construction 10/15/89
Estimated date to complete construction 11/15/89

11. Dam will be constructed under supervision of Western Technologies, Inc.

12. Signature of Applicant George E. Coldren

6913

ACTION OF STATE ENGINEER

This application to construct a dam is approved provided it is not exercised to the detriment of any others having prior, valid and existing rights to the use of waters of this stream system

and is not detrimental to the public welfare or contrary to the conservation of water within the state and subject to the attached conditions of approval.

Witness my hand and seal this 7 day of November, A.D., 19 89

S.E. Reynolds, State Engineer

By: Paul Saavedra

Paul Saavedra
Assistant Chief
Water Rights Division

Instructions

This form shall be filed in triplicate and accompanied by maps, plans, specifications, etc.

Section 1 - Fill in all blanks

Section 2 - Class (a). — Dams located in rural or agricultural areas where failure may damage farm buildings, agricultural land, or township and country roads.

Class (b).— Dams located in predominantly rural or agricultural areas were failure may damage isolated homes, main highways or minor railroads or cause interruption of use or service of relatively important public utilities.

Class (c). — Dams located where failure may cause loss of life, serious damage to homes, industrial and commercial buildings, important public utilities, main highways, or railroads.

Section 3 - Fill in all blanks

Section 4 - Fill in either part a or b

Sections 5, 6, 7 - Fill in all blanks

Section 8 - Fill in if necessary

Section 9, 10 - Fill in all blanks

Section 11 - Construction must be under supervision of registered engineer, consulting engineer firm or government agency.

Section 12 - Signature

FILING FEE - $10.00

CONDITIONS OF APPROVAL

Applicant: Sunco Trucking Company
File No.: 4380

1. The qualifications of a professional engineer registered in New Mexico who will supervise construction must be approved by the State Engineer prior to undertaking construction.

2. Construction shall be in accordance with approved plans and specifications. Any modification of the approved plans specifications or design changes must be approved in writing by the State Engineer prior to undertaking such modifications.

3. Upon completion of the construction, the professional engineer supervising construction shall submit to the State Engineer:

   a. a completion report which shall include description of problems encountered and their solution; summary of materials test data and construction photographs;

   b. as-built drawings;

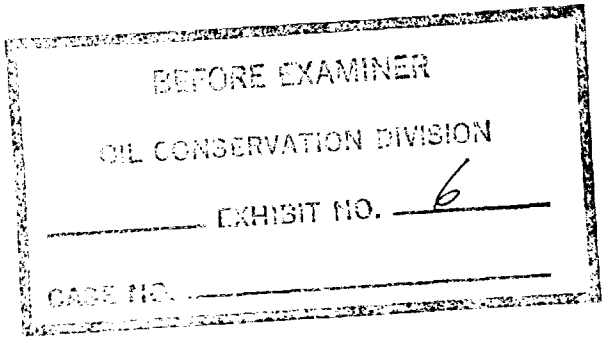
   c. a certificate that the dam as constructed is safe for the intended use.

4. Proof of completion of works shall be due in this office on or before November 15, 1990.

Date of Approval: November 7, 1989.

S.E. Reynolds
State Engineer

by: Paul Saavedra
Paul Saavedra
Assistant Chief
Water Rights Division



Geotechnical Services For:

Water Disposal Ponds

Farmington, N.M.

Project No. 3129J023

WESTERN TECHNOLOGIES INC.
The Quality People

ARIZONA

Phoenix
3737 East Broadway Road
P.O. Box 21387
Phoenix, Arizona 85036
(602) 437-3737

Mesa
952 East Baseline Road, No. 104
Mesa, Arizona 85204
(602) 926-2113

Sun City
17200 North Dysart Road, No. 13
P.O. Box 2431
Sun City, Arizona 85372
(602) 975-2154

Flagstaff
2400 East Huntington Drive
Flagstaff, Arizona 86001
(602) 774-8708

Lakeside
Route 1, Box 1030
Lakeside, Arizona 85929
(602) 368-5568

Tucson
3480 South Dodge Boulevard
Tucson, Arizona 85713
(602) 748-2262

Sierra Vista
1827 South Paseo San Luis
Sierra Vista, Arizona 85635
(602) 458-0364

Laughlin / Bullhead City
1610 Riverview Drive, No. 5
Bullhead City, Arizona 86442
(602) 758-8378

NEW MEXICO

Albuquerque
8305 Washington Place, N.E.
Albuquerque, New Mexico 87113
(505) 823-4488

Farmington
400 South Lorena Avenue
Farmington, New Mexico 87401
(505) 327-4966

NEVADA

Las Vegas
3611 West Tompkins Avenue
Las Vegas, Nevada 89103
(702) 798-8050

Submitted to:

Sunco Trucking Disposal
708 South Tucker Avenue
Farmington, New Mexico 87401

Attention: Mr. George Coleman

May 9, 1989
Invoice No. 31290047

WESTERN TECHNOLOGIES INC.

400 South Lorena Avenue
Farmington, New Mexico 87401
(505) 327-4966

Sunco Trucking Disposal
708 South Tucker Avenue
Farmington, New Mexico 87401

June 19, 1989

Attention: Mr. George Coleman

Regarding: Water Disposal Ponds
Farmington, New Mexico

Job No. 3129J023
Inv. No. 31290047
Addendum No. 1

After our phone conversation with Mr. Bob Frank, it has come to our attention that the section and township are not correct for the above referenced project.

The water disposal ponds are located in Section 2 and Township 29 North.

This letter should be made part of the original report, dated May 9, 1989.

If you have any questions concerning this Addendum, please contact us.

Sincerely,
WESTERN TECHNOLOGIES INC.

Lawrence E. Cynova

Lawrence E. Cynova, P. E.

/cb

WESTERN TECHNOLOGIES INC.

400 South Lorena Avenue
Farmington, New Mexico 87401
(505) 327-4966

Sunco Trucking Disposal
708 South Tucker Avenue
Farmington, New Mexico 87401

May 9, 1989

Attn: Mr. George Coleman

Re: Water Disposal Ponds
Farmington, New Mexico

Job No. 3129J023
Inv. No. 31290047

Our geotechnical engineering report for the Water Disposal Ponds is attached. The work was performed in accordance with our proposal of March 7, 1989.

Soils at the site generally consisted of silty or clayey sands and sandy clays which are considered good materials for use in construction of the proposed dikes. The sands and clays can be used for construction of the water storage pond embankments provided a liner is used.

We are prepared to review your plans and specifications for consistency with the recommendations, and to provide the construction observation and testing recommended.

Sincerely,

WESTERN TECHNOLOGIES, INC.
Geotechnical Engineering Services

Lawrence E. Cynova, P. E.

5-9-89

Reviewed by: George A. Madrid, P. E.

/cb

Copies to: Addressee (3)

TABLE OF CONTENTS

Geotechnical Engineering Evaluation
Water Disposal Ponds
Farmington, New Mexico

INTRODUCTION

This report contains the results of our geotechnical engineering evaluation for the proposed Water Disposal Ponds to be located on Crouch Mesa approximately 5 miles east of Farmington, New Mexico. The ponds are to be located in Section ~~35~~ 2 Range 12 West, Township 30 North. The purpose of these services is to provide results of field and laboratory testing, to evaluate the use of site soils for construction of the dikes, and to provide engineering recommendations for construction of the dikes.

PROPOSED CONSTRUCTION

The three proposed water disposal ponds will be lined with a synthetic liner and constructed using compacted earth embankments. Each pond will have plan dimensions of 300 by 300 feet. The ponds will be constructed in a line with 110 feet of common dike between each pond, see site plan. The ponds will have a total surface area of approximately 6.2 acres and a storage capacity of approximately 65 acre feet of water. The maximum depth of water in the ponds will be 13 feet. The bottom elevation in each of the ponds will generally follow the contour of the existing slope.

SITE CONDITIONS

At the time of our exploration, the site was undeveloped property except for a powerline located on the west side of the site and a gasline on the east side. The site contained a sparse to moderate growth of grass and weeds. Site drainage was to the north and northwest on a gradual and uniform slope. A gas well is located on the north side of the site. A dirt road bounds the east side of the site.

SCOPE OF SERVICES

Nine borings were drilled to depths of 10 to 26 feet at the locations shown on the site plan. During exploration, subsoils were visually examined and sampled at selected intervals.

The following tests were performed on selected soil samples:

- Water content
- Maximum density
- Compression
- Expansion
- Shear strength
- Gradation
- Plasticity Index
- Permeability

Test results were used in the development of foundation and earthwork recommendations.

Western Technologies Inc. performed the services described in this report to develop engineering information for the purposes

defined in the "Introduction." We did not intend to uncover nor identify any contaminated subsurface materials that may contain hazardous or flammable substances. Identification of such substances requires specialized exploration techniques and analyses which were beyond the scope of this investigation.

INTERPRETATION OF SUBSURFACE CONDITIONS

Exploration: As presented on Logs of Borings, surface soils to depths of 2 feet in test borings 1, 8 and 9 were found to be sandy clay of firm consistency and low to medium plasticity. Surface soils to depths of 1 foot in test borings 2 through 7 were found to be silty sand of loose density and nil to low plasticity. The near surface soils in test borings 2 through 7 consisted of sandy clay or sandy silt of firm consistency and low to medium plasticity. The materials in test borings 1, 3 through 9 from depths of 2 to 26 feet consist of clayey or silty sand of loose to medium density. The materials in test borings 5, 8 and 9 from 5 to 15 feet consisted of sandy clay. The materials underlying the near surface soils in test borings 1, 2, 4 and 5 and extending to the full depth of exploration consisted of sandstone. The materials below 15 feet in test borings 7 and 8 consisted of cobbles, gravels and silty sand. A groundwater table was not encountered in any boring at the time of exploration.

Geology: The proposed water disposal ponds are to be located on unconsolidated surficial sand and clay materials derived from the local topography. Underlying some of the alluvial sands and clays, on the lower end of the site, is a layer of gravel and

cobbles derived from the San Juan Highlands and deposited fluvially by the Animas River. This river cobble layer was deposited on top of the Nacimiento Formation of Paleocene Age.

ANALYSIS PROCEDURES

General: We understand that the proposed water disposal ponds will store water throughout the year. The ponds will be filled with water from oil and gas production. The water will be evaporated by spraying the water into the air. The north dike, which has deep fill and is typical of all three ponds, and the common dike between the south and middle ponds were chosen for analysis.

Material Properties: The on-site sandy and clayey materials exhibit properties of nil to moderate cohesion and moderate to moderately high angles of internal friction under both compacted and undisturbed conditions. The near surface materials consisted of silty sand, sandy silts, sandy clays and cobbles with properties similar to the surface soils. These materials are underlain by sandstone or probably shale at a moderate depth. The sandstone and shale materials are much stronger in their undisturbed state than the embankment fill which will be built. Based upon our observations, the results of laboratory testing, and our experience with similar materials, the following material properties were used for analysis of the embankment soils:

Undisturbed Clayey Sand

Dry unit weight - 107 pcf

Angle of internal friction - 23.5^{o}

Cohesion - 500 pcf

Compacted Clayey Sand
Dry unit weight - 106 pcf
Angle of internal friction - 25°
Cohesion - 100 psf

Assumed conservative foundation material properties are as follows:

Undisturbed Sand
Dry unit weight - 114 pcf
Angle of internal friction - 28°
Cohesion - 0 psf

Sandstone
Dry unit weight - 140 pcf
Angle of internal friction - 32°
Cohesion - 5000 psf

Slope Stability Analysis: The static stability of anticipated embankment slopes were analyzed using strength parameters obtained from laboratory and field testing. A computer program (SB-SLOPE Program developed by Digital Research Inc.) using simplified Bishop's analysis was performed for both the upstream and downstream slopes for the anticipated embankment configurations.

The following table presents the results of the analysis:

COMMON DIKE

Condition	Slope	Factor of Safety
Steady state seepage	Downstream	
Static	3:1	2.4
Rapid drawdown	Upstream	
Static	3:1	1.8

NORTH DIKE

Condition	Slope	Factor of Safety
Steady state seepage	Downstream	
Static	3:1	2.4
Rapid drawdown	Upstream	
Static	3:1	1.9

A minimum factor of safety of 1.5 is recommended under the steady state condition and rapid drawdown in the design of dams, by the New Mexico State Engineer's Office.

After reviewing the Deformation Analyses - Embankment Dams section of the Procedure on Design Criteria and Safety of Dams, for seismic considerations, we believe that seismic analysis is not necessary. This is due to the fact that the embankments and foundations are not subject to liquification. The dikes will be densely compacted, the slopes will be 3 horizontal to 1 vertical and the static factor of safety is greater than 1.5.

Seepage Analysis: The pond will be lined with a synthetic liner. Based on the test results shown on the attached soil properties sheet, the proposed clayey sand dikes would experience

a moderate amount of seepage if an underwater leak in the liner occurred. Piping is the movement of material by seepage forces in the foundation and embankments. Piping is not expected to occur due to the clayey sand anticipated to be used in construction of the dikes and use of synthetic liner. Even if a rip occurred in a seam of the synthetic liner the low to moderate permeability of the clayey sand soil would result in a tendency for the water to percolate slowly outward and downward allowing time for the detection and repair of the leak.

DISCUSSION AND RECOMMENDATIONS

General: Based on the results of this investigation, we anticipate that the existing sand and clay soils could be used for construction of embankments. It is anticipated that the south side of each pond will be cut and the north side will be fill. The ponds may be satisfactorily supported upon prepared subgrade. If subsoil conditions other than those identified during the field explorations are encountered during construction or should design plans change, this firm should be contacted for supplemental review and recommendations.

The following general conclusions and recommendations are presented:

1. Surface soils in native undeveloped areas are loose to depths of approximately one foot. Therefore, these zones are not deemed suitable for support of earth embankments. However, removal and replacement of native soils in embankment foundation areas can provide adequate support characteristics of these zones.

2. Native soils below levels of surface soil disturbance are generally of moderate densities and will afford support for anticipated embankments.

3. Excavation of the design pond base should be possible with conventional earthmoving equipment except where sandstone is located, then heavy equipment or blasting may be required.

Embankment: Homogeneous embankments for construction of the storage pond were analyzed. Homogeneous embankments are constructed using the same soil type throughout the embankment. The soil borings indicate that the materials for a zoned embankment are not sufficiently available on the site. Therefore, it is recommended that a homogeneous type embankment with a liner be used in construction.

The proposed homogeneous embankment may be constructed with the on-site soils identified during exploration, including the sandy soils, provided site preparation and earthwork is accomplished as recommended hereinafter. The upstream embankment should be constructed no steeper than 3 to 1 (horizontal to vertical). The downstream embankment should be constructed no steeper than 3 to 1 (horizontal to vertical).

Synthetic Liner: Several types of synthetic liner systems, which include Hypalon, reinforced PVC or other plastic membranes placed on a prepared subgrade, may be used. Plastic liners may vary from 10 to 120 mils in thickness with varying chemical compositions. If construction or maintenance traffic is anticipated within the liner area, a soil blanket may be used

above and below the membrane for protection. In addition, a protective soil cover on the membrane may be required due to high winds experienced during storms or spring weather or should the pond be empty. Prior to placement of the liner, the subgrade should be prepared as recommended in "Site Preparation and Earthwork." The protective soil cover placed above the membrane, requirements for a subdrain system and the maximum slope on which the liner is placed should meet the requirements of the liner manufacturer. The embankment should contain upstream toe drains with outlets through the embankment so that leaks in the liner may be detected.

Materials: An investigation of borrow materials in the pond area was performed and the on-site materials will be suitable for use. The soils used should be free of vegetation or other deleterious material.

Site Preparation and Earthwork: The following procedure is recommended for site preparation and earthwork for the embankment portions of the disposal pond.

1. Strip all loose surface soils, vegetation, roots and debris from the pond and embankment area to a horizontal distance of 5 feet beyond the perimeter of the new construction. Removal should extend 1 foot below the existing grade or 1 foot below the bottom of the embankment, whichever is deeper. This soil could be used for revegetating if it is needed.

2. Clean and widen depressions, swales, etc., to form level working areas to accommodate compaction equipment and fill placement.

3. No material should be placed which is frozen or where the in-place material is frozen.

4. Proof-roll the exposed subgrade in the embankment and pond areas to densify materials which may have been loosened during the stripping and excavation process.

   Proof-rolling may be accomplished by a minimum of 2 passes of a loaded scraper or equivalent. All soft areas should be removed and replaced with compacted fill.

5. Place and compact all embankment fill in horizontal lifts to the finished grade levels. Lift thicknesses should be compatible with compaction equipment used to achieve the required uniform densities. The maximum size of rock used for fill should be 6 inches.

6. All subgrade preparation, fill placement and compaction should be accomplished under observation and testing to assess compliance with project specifications. All fill material should be at least 95% of the maximum dry density as determined by ASTM: D-698 methods and at a moisture content of optimum to 4% above optimum.

Drainage: Positive drainage should be provided around the proposed lagoon during construction and maintained throughout the life of the proposed development.

Borrow excavation, basin excavation, surface stripping, subgrade preparation, and embankment fill placement should be accomplished under the observation and testing directed by a soils engineer to assess compliance with recommendations.

CLOSURE

Our conclusions and recommendations are predicated on observation and testing of the earthwork and foundation preparations directed by a geotechnical engineer. It would be logical for Western Technologies Inc. to provide these services since we are most qualified to determine consistency of field conditions with those data used in our analyses.

Deviations from our recommendations by the plans, written specifications, or field applications shall relieve us of responsibility unless our written concurrence with such deviations has been obtained.

DEFINITION OF TERMINOLOGY

ALLOWABLE SOIL BEARING CAPACITY ALLOWABLE FOUNDATION PRESSURE	The recommended maximum contact stress developed at the interface of the foundation element and the supporting material.
BACKFILL	A specified material placed and compacted in a confined area.
BASE COURSE	A layer of specified material placed on a subgrade or subbase.
BASE COURSE GRADE	Top of base course.
BENCH	A horizontal surface in a sloped deposit.
CAISSON	A concrete foundation element cast in a circular excavation which may have an enlarged base. Sometimes referred to as a cast-in-place pier.
CONCRETE SLABS-ON-GRADE	A concrete surface layer cast directly upon a base, subbase or subgrade.
CRUSHED ROCK BASE COURSE	A base course composed of crushed rock of a specified gradation.
DIFFERENTIAL SETTLEMENT	Unequal settlement between or within foundation elements of a structure.
ENGINEERED FILL	Specified material placed and compacted to specified density and/or moisture conditions under observation of a representative of a soil engineer.
EXISTING FILL	Materials deposited through the action of man prior to exploration of the site.
EXISTING GRADE	The ground surface at the time of field exploration.
EXPANSIVE POTENTIAL	The potential of a soil to expand (increase in volume) due to the absorption of moisture.
FILL	Materials deposited by the action of man.
FINISHED GRADE	The final grade created as a part of the project.
GRAVEL BASE COURSE	A base course composed of naturally occurring gravel with a specified gradation.
HEAVE	Upward movement.
NATIVE GRADE	The naturally occurring ground surface.
NATIVE SOIL	Naturally occurring on-site soil.
ROCK	A natural aggregate of mineral grains connected by strong and permanent cohesive forces. Usually requires drilling, wedging, blasting or other methods of extraordinary force for excavation.
SAND AND GRAVEL BASE	A base course of sand and gravel of a specified gradation.
SAND BASE COURSE	A base course composed primarily of sand of a specified gradation.
SCARIFY	To mechanically loosen soil or break down existing soil structure.
SETTLEMENT	Downward movement.
SOIL	Any unconsolidated material composed of discrete solid particles, derived from the physical and/or chemical disintegration of vegetable or mineral matter, which can be separated by gentle mechanical means such as agitation in water.
STRIP	To remove from present location.
SUBBASE	A layer of specified material placed to form a layer between the subgrade and base course.
SUBBASE GRADE	Top of subbase.
SUBGRADE	Prepared native soil surface.

METHOD OF SOIL CLASSIFICATION
(ASTM D 2487)

COARSE-GRAINED SOILS

LESS THAN 50% FINES*

GROUP SYMBOLS	DESCRIPTION	MAJOR DIVISIONS
GW	WELL-GRADED GRAVELS OR GRAVEL-SAND MIXTURES, LESS THAN 5% FINES	GRAVELS More than half of coarse fraction is larger than No. 4 sieve size
GP	POORLY-GRADED GRAVELS OR GRAVEL-SAND MIXTURES, LESS THAN 5% FINES	
GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES, MORE THAN 12% FINES	
GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES, MORE THAN 12% FINES	
SW	WELL-GRADED SANDS OR GRAVELLY SANDS, LESS THAN 5% FINES	SANDS More than half of coarse fraction is smaller than No. 4 sieve size
SP	POORLY-GRADED SANDS OR GRAVELLY SANDS, LESS THAN 5% FINES	
SM	SILTY SANDS, SAND-SILT MIXTURES, MORE THAN 12% FINES	
SC	CLAYEY SANDS, SAND-CLAY MIXTURES, MORE THAN 12% FINES	

NOTE:
Coarse-grained soils receive dual symbols if they contain 5 to 12% fines (e.g. SW-SM, GP-GC, etc.)

FINE-GRAINED SOILS

MORE THAN 50% FINES*

GROUP SYMBOLS	DESCRIPTION	MAJOR DIVISIONS
ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS	SILTS AND CLAYS L quid limit less than 50
CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS	
OL	ORGANIC SILTS OR ORGANIC SILTY-CLAYS OF LOW PLASTICITY	
MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS	SILTS AND CLAYS Liquid limit more than 50
CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	
OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY	
PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS	HIGHLY ORGANIC SOILS

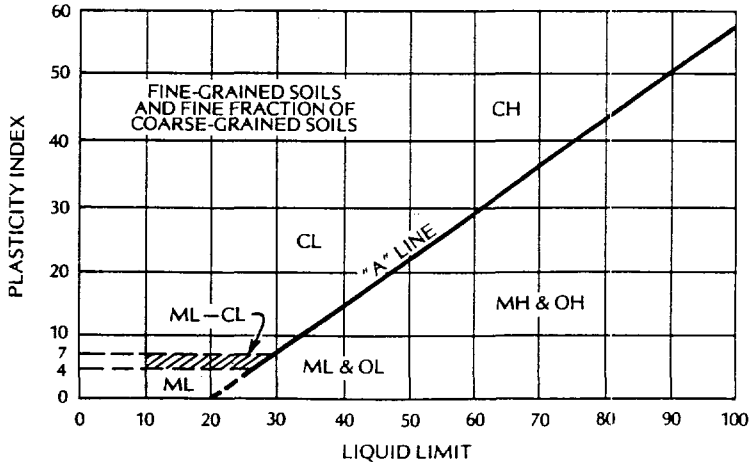
NOTE:
Fine-grained soils receive dual symbols if their limits plot in the hatched zone on the Plasticity Chart (ML-CL)

SOIL SIZES

COMPONENT	SIZE RANGE
BOULDERS	ABOVE 12 in.
COBBLES	3 in. to 12 in.
GRAVEL	No. 4 to 3 in.
Coarse	¾ in. to 3 in.
Fine	No. 4 to ¾ in.
SAND	No. 200 to No 4
Coarse	No. 10 to No. 4
Medium	No. 40 to No. 10
Fine	No. 200 to No. 40
*FINES (Silt or Clay)	BELOW No. 200

NOTE:
Only sizes smaller than three inches are used to classify soils.

PLASTICITY CHART



Type of Material: Clayey Silt

Job No. 3129J023

Source of Material: Pond Areas

Test Procedure: ASTM

Tested/Calc. By: K. Tuttle/WT Date: 04/03/89

Reviewed By: L. Cynova/WT Date: 04/10/89

Hole No.	Location	Depth	Classification		LL	PI	Sieve Analysis - Accum % Passing													
			AASHTO	Unified			200	100	40	16	10	4	¼	⅛	¼	1	1½	2	3	Lab No./I.D.
6		0 - 12		ML-CL	25	7	53	72	86	98	99	99	99	100						

TABULATION OF TEST RESULTS

Job No. 3129J023

Boring No.	Depth, ft.	Soil Class.	Particle Size Distribution, %				Atterberg Limits			Moisture - Density Rel.			Specific Gravity	Permeability		'R' Value		Permeability k cm/sec
			Cobbles 3" to 12"	Gravel 3" to #4	Sand #4 to 200	Fines - 200	PL	LL	PI	Dry Density pcf	Optimum Moisture %	Meth.		Dry Density pcf	K Ft./Yr.	Corrected 'R'	Expansion Pressure psf	
6	0 - 12	ML-CL												106.1	1.6(9)			1.5×10^{-6}

Boring No.	Depth, ft.	Remarks
	0 - 12	Maximum Density 111.7 pcf @ Optimum Moisture 14.1%

LEGEND

Moisture Density Relationship
1. Tested D-1556/AASHTO T-217
2. Tested ASTMD-2922/D-3017
3. Tested ASTMD-2922/AASHTO T-217
4. Rock correction applied to maximum dry density. AASHTO T-224
5. Other_____

Specific Gravity
6. Minus # 4
7. Plus # 4

Classification/Particle Size
8. Visual
9. Laboratory Tested

SOIL PROPERTIES

SOIL PROPERTIES

Job No. 3129J023

Boring No.	Depth, ft	Soil Class.	Soil Property		Compression/Consolidation			Expansion			Shear Strength			Water Soluble Matter, %		Remarks
			Initial Dry Density pcf	Initial Water Content, %	Surcharge KSF	Total Comp. %	Void Ratio	Surcharge KSF	Expansion %	Max. Swell Pressure KSF	Test Method	C KSF	ø Deg.	Salts	Sulfates	
3	2 - 3	SC	107	11.0				--	+0.0	1.7(3)	DS	0.5	23.5			
3	7 - 8.5	SP	114(1)	10.0							DS	0	28			
3	10 - 11	SP	110	4.0	0.4	-0.7										
					1.7	-1.1										
					3.4	-1.6										
					3.4(3)	-3.1										
5	2 - 2.9	SC	115	9.0	0.4	-0.4										
					1.7	-1.4										
					3.4	-1.7										
					3.4(3)	-0.5										
6	0 - 12	ML-CL	106(1)	14.1							DS	0.1	25			

Boring No.	Depth, ft	Comments

Note: Initial Dry Density and Initial Water Content are in-situ values unless otherwise noted.

LEGEND

Shear Strength Test Method
- DS Direct Shear
- DS Direct Shear (saturated)
- UC Unconfined Compression
- UU Unconsolidated Undrained
- CU Consolidated Undrained w/pore press.
- CU Consolidated Undrained
- CD Consolidated Drained

REMARKS

1. Compacted density (approx. 95% of ASTM D698 max. density at moisture content slightly below optimum).
2. Compacted density (approx. 95% of ASTM D1557 max. density at moisture content slightly below optimum).
3. Submerged to approximate saturation.
4.

LOG OF BORING NO. 1

Project Water Disposal Ponds — Job No. 3129J023

Elevation 5877 — Datum Sea Level - Project Contour Drawing

Type/Size Boring 7" Auger — Rig Type CME-55

Groundwater Conditions No groundwater encountered on 03/21/89 — Date 03/21/89

Depth, feet	Blows/Foot C	Blows/Foot N/R	Sample Type	Dry Density pcf	Water Content, %	Unified Classification	Description
			G		PL	CL	SANDY CLAY; brown, firm.
5			G		DAMP	SM	SILTY SAND; tan, fine grained sand. Trace of clay and gravel. Loose to medium dense.
			G		DAMP		SANDSTONE; tan, fine grained sand. Low plasticity.
10					SLT. DAMP		SANDSTONE; tan to white, fine to medium grained sand. Hard.
							Stopped at 10 feet.
15							
20							
25							
30							

LOG OF BORING NO. 2

Project Water Disposal Ponds Job No. 3129J023

Elevation 5874 Datum Sea Level - Project Contour Drawing

Type/Size Boring 7" Auger Rig Type CME-55

Groundwater Conditions No groundwater encountered on 03/21/89 Date 03/21/89

Depth, feet	Blows/Foot C	Blows/Foot N/R	Sample Type	Dry Density pcf	Water Content, %	Unified Classification	Description
					MOIST	SM	SILTY SAND; red to brown, fine grained sand.
			G		PL	CL	SANDY CLAY; red to brown, firm.
			G		PL	CL	SANDY CLAY; tan to white, firm to stiff.
5			G		DAMP		SANDSTONE; tan to white, fine grained sand. Low plasticity.
10			G		SLT. DAMP		SANDSTONE; tan to white, hard. Fine to medium grained sand.
15							Stopped at 10 feet.
20							
25							
30							

LOG OF BORING NO. 3 - N.W. Corner Pond #1

Project Water Disposal Ponds Job No. 3129JC23

Elevation 5867 Datum Sea Level - Project Contour Drawing

Type/Size Boring 7" Auger Rig Type CME-55

Groundwater Conditions No groundwater encountered on 03/21/89 Date 03/21/89

Depth, feet	Blows/Foot C	Blows/Foot N/R	Sample Type	Dry Density pcf	Water Content, %	Unified Classification	Description
						SM	SILTY SAND; brown, loose, some organics.
					PL-LL	CL	SANDY CLAY; brown, firm.
		45	R	107	11.0		
		50/10"	R	116	10.6	SC	CLAYEY SAND; tan, medium dense. Light to moderate cementation, some soluble salts. Some silt.
5		81	S		SLT. DAMP		
		22	S		SLT. DAMP	SP	SAND; tan, fine to coarse grained sand. Some silty lenses and trace of gravel.
10		50/11"	R	110	4.0		
15		24	S				
20		27	S				
25		33	S				
30							Stopped at 26.5 feet.

LOG OF BORING NO. 4 - N.E. Corner Pond #1

Project Water Disposal Ponds Job No. 3129J023

Elevation 5873 Datum Sea Level - Project Contour Drawing

Type/Size Boring 7" Auger Rig Type CME-55

Groundwater Conditions No groundwater encountered on 03/21/89 Date 03/21/89

Depth, feet	Blows/Foot C	Blows/Foot N/R	Sample Type	Dry Density pcf	Water Content, %	Unified Classification	Description
						SM	SILTY SAND; brown, loose.
					PL-LL	CL	SANDY CLAY; brown, firm.
					DAMP	SC	CLAYEY SAND; tan to white, fine to coarse grained sand.
5					SLT. DAMP	SP	SAND; tan, fine to coarse grained sand. Trace of gravel.
10		50/3.5"	S		SLT. DAMP		SANDSTONE; tan, yellow to white, fine to coarse grained sand. Light to moderate cementation.
15							Auger refusal at 12 feet.
20							
25							
30							

LOG OF BORING NO. 5

Project Water Disposal Ponds Job No. 3129J023

Elevation 5870 Datum Sea Level - Project Contour Drawing

Type/Size Boring 7" Auger Rig Type CME-55

Groundwater Conditions No groundwater encountered on 03/21/89 Date 03/21/89

Depth, feet	Blows/Foot C	Blows/Foot N/R	Sample Type	Dry Density pcf	Water Content, %	Unified Classification	Description
					DAMP	SM	SILTY SAND; brown, loose, some organics.
		36	R	115	15.1	CL	SANDY CLAY; brown, firm.
5		50/11"	R	115	9.0	SC	CLAYEY SAND; tan to white, some soluble salts. Medium dense. Some clay. Light to moderate cementation.
		38	S				
			G				
10		66	S		SL	CL	SANDY CLAY; tan to white, stiff. Sand and gravel from 7 to 7.5 feet.
		50/4.5"	S		SLT. DAMP		SANDSTONE; tan, fine to medium grained sand.
15							Auger refusal at 13 feet.
20							
25							
30							

LOG OF BORING NO. 6

Project Water Disposal Ponds Job No. 3129J023

Elevation 5860 Datum Sea Level - Project Contour Drawing

Type/Size Boring 7" Auger Rig Type CME-55

Groundwater Conditions No groundwater encountered on 03/21/89 Date 03/21/89

Depth, feet	Blows/Foot C	Blows/Foot N/R	Sample Type	Dry Density pcf	Water Content, %	Unified Classification	Description
					DAMP	SM	SILTY SAND; brown, loose. Some organics.
			G		PL	CL	SANDY CLAY; brown, firm.
			G		SLT. DAMP	ML	SANDY SILT; tan, fine grained sand. Some clay. Medium dense.
5					SLT. DAMP	SM	SILTY SAND; tan to white.
10			G		SLT. DAMP	SM	SILTY SAND; tan, fine to medium grained sand. Trace of gravel. Interlayered sandy silt.
15							
20							
							Stopped at 20 feet.
25							
30							

LOG OF BORING NO. 7

Project Water Disposal Ponds Job No. 3129J023

Elevation 5864 Datum Sea Level - Project Contour Drawing

Type/Size Boring 7" Auger Rig Type CME-55

Groundwater Conditions No groundwater encountered on 03/21/89 Date 03/21/89

Depth, feet	Blows/Foot C	Blows/Foot N/R	Sample Type	Dry Density pcf	Water Content, %	Unified Classification	Description
					DAMP	SM	SILTY SAND; red to brown, loose. Some organics.
			G		PL	CL	SANDY CLAY; red to brown, firm.
			G		SL	ML	SANDY SILT; tan, fine grained sand. Some silty sand layers. Scattered thin clay layers.
5			G		SLT. DAMP	SM	SILTY SAND; tan to white, fine to medium grained sand. Trace of gravel. Some layers of sandy silt scattered throughout.
10							
15							
20							
							Stopped at 20 feet.
25							
30							

LOG OF BORING NO. 8

Project Water Disposal Ponds Job No. 3129J023

Elevation 5854 Datum Sea Level - Project Contour Drawing

Type/Size Boring 7" Auger Rig Type CME-55

Groundwater Conditions No groundwater encountered on 03/21/89 Date 03/21/89

Depth, feet	Blows/Foot C	Blows/Foot N/R	Sample Type	Dry Density pcf	Water Content, %	Unified Classification	Description
					PL	CL	SANDY CLAY; red to brown, firm.
		55	S				
					DAMP	SC	CLAYEY SAND; red to brown, fine grained sand. Medium dense.
5		50/8"	R	113	8.3	SM	SILTY SAND; tan to white, some clay. Soluble salts. Some gravel. Light to moderate cementation. Fine to medium grained sand. Fine to coarse grained sand below 8 feet.
					SLT. DAMP		
		41	R	109	2.6		
		50/11.5"	R	107	3.2		
10							
		30	S		SL-PL	CL	SANDY CLAY; tan to gray, stiff.
15							
		50/6"	R	NR	SLT. DAMP	GP	COBBLES; gray to white, some sand. Dense.
20							Auger refusal at 17 feet.
25							
30							

LOG OF BORING NO. 9

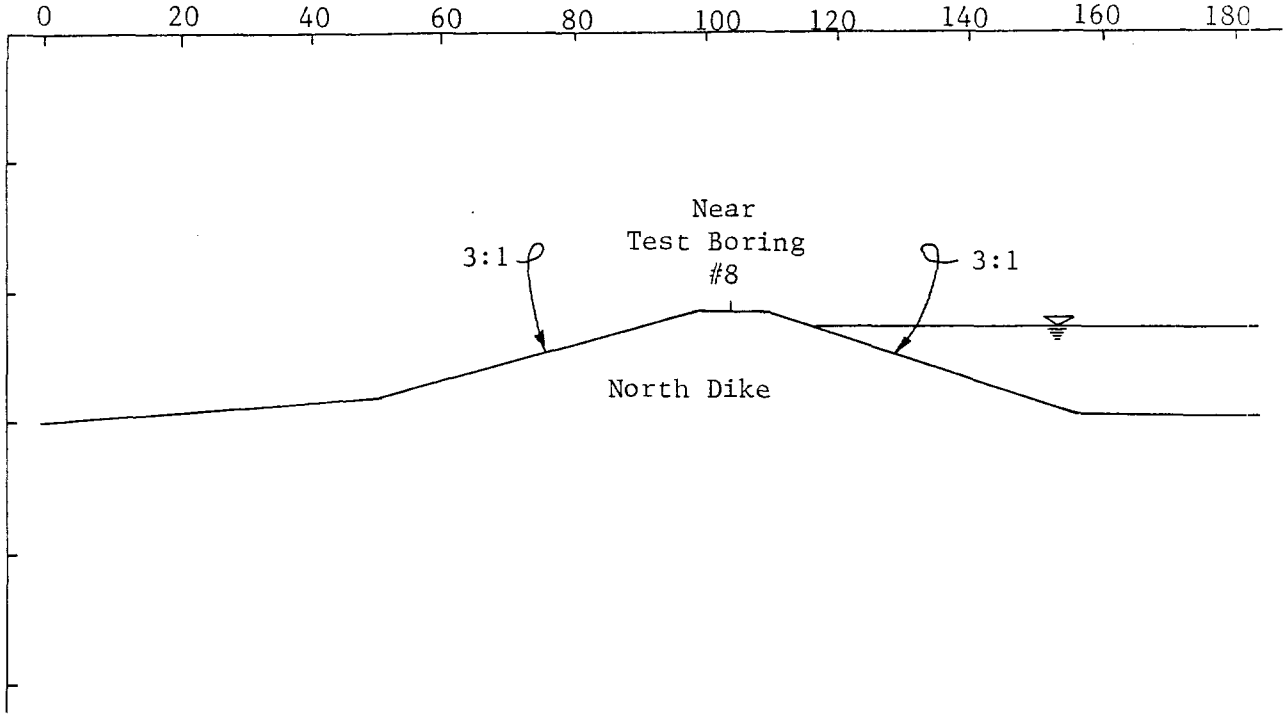
Project Water Disposal Ponds Job No. 3129J023

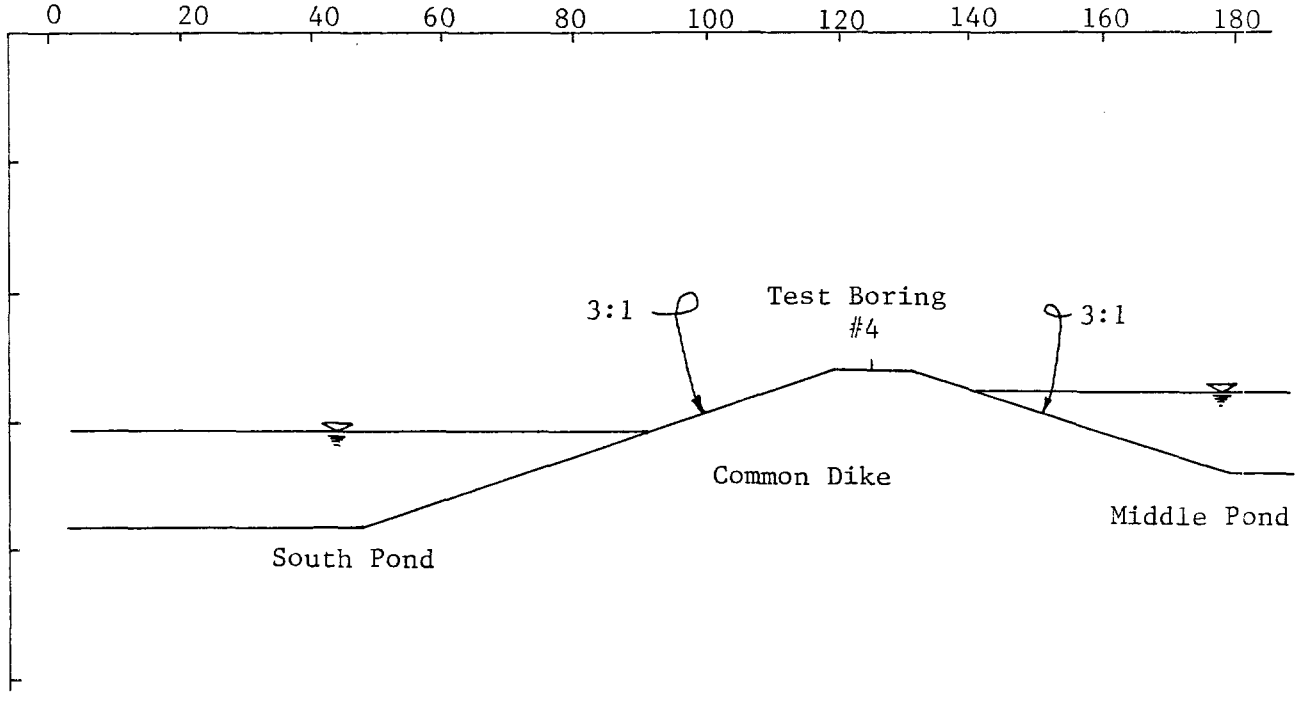
Elevation 5853 Datum Sea Level - Project Contour Drawing

Type/Size Boring 7" Auger Rig Type CME-55

Groundwater Conditions No groundwater encountered on 03/21/89 Date 03/21/89

Depth, feet	Blows/Foot C	Blows/Foot N/R	Sample Type	Dry Density pcf	Water Content, %	Unified Classification	Description
					PL	CL	SANDY CLAY; brown, firm.
					SLT. DAMP	SC	CLAYEY SAND; red to brown.
5					SLT. DAMP	SM	SILTY SAND; tan to white.
					SLT. DAMP	SC	CLAYEY SAND; tan.
10					SLT. DAMP	SM	SILTY SAND; tan, fine to medium grained sand. Trace of gravel. Medium dense.
15					SL-PL	CL	SANDY CLAY; tan, fine grained sand. Stiff.
					SLT. DAMP	GP	COBBLES; gray to white, with some sand and gravel.
20							Auger refusal at 18 feet.
25							
30							





PROPOSED CROSS SECTION

Backslopes are shown as horizontal to vertical

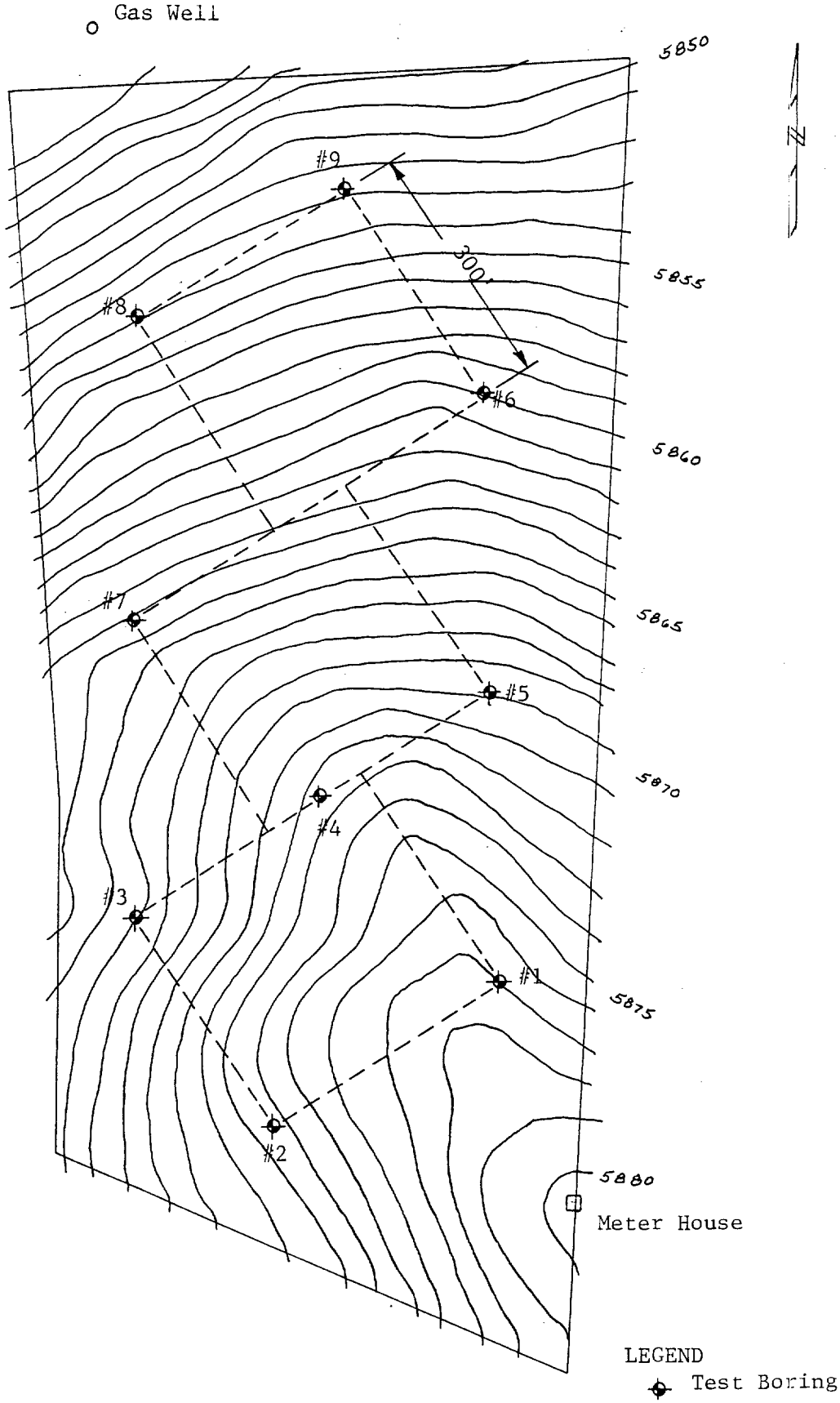
WATER DISPOSAL POND

Prepared By L. E. C. Date 05/05/89

Checked By Date

Job No. 3129J023

Client Sunco Trucking Disposal



WASTE WATER DISPOSAL PONDS

SB-SLOPE

Simplified Bishop Slope Stability Analysis

PROJECT: PONDS-CROUCH MESA

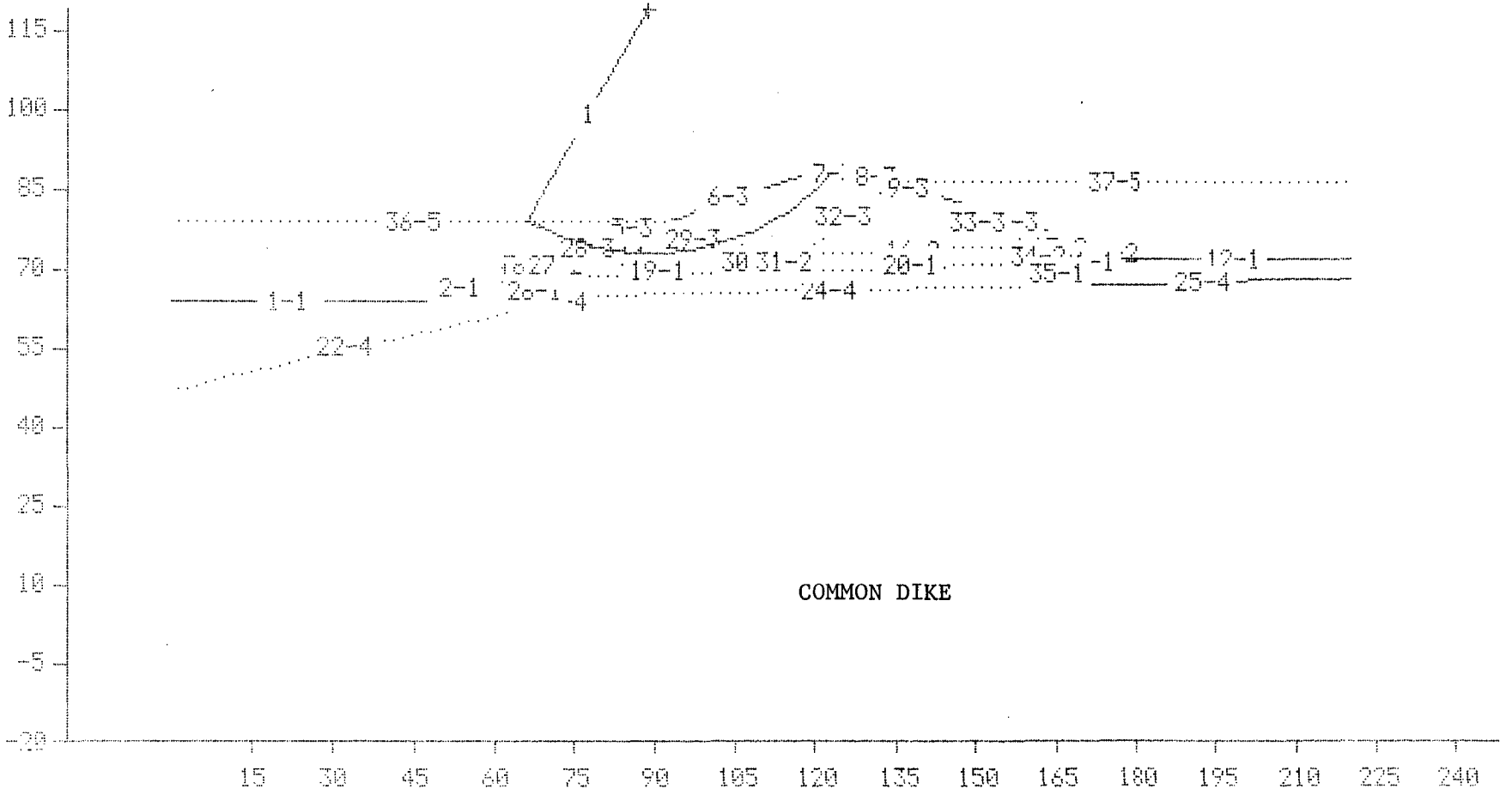
LOCATION: FARMINGTON, NEW MEXICO

FILE: SUNCO3

COMPLETE SLOPE CROSS SECTION

CIRCLE	X	Y	RADIUS	FS
1	89.0	119.0	46.0	2.37

SOIL*	DENSITY	COHESION	PHI
1	114.0	0.0	28.0
2	107.0	500.0	23.5
3	106.0	100.0	25.0
4	140.0	5000.0	32.0
5	62.4	0.0	0.0



* Number after hyphen('-') is Soil Type

Western Technologies Inc. - Phoenix, AZ

SB-SLOPE

Simplified Bishop Slope Stability Analysis

PROJECT: PONDS-CROUCH MESA

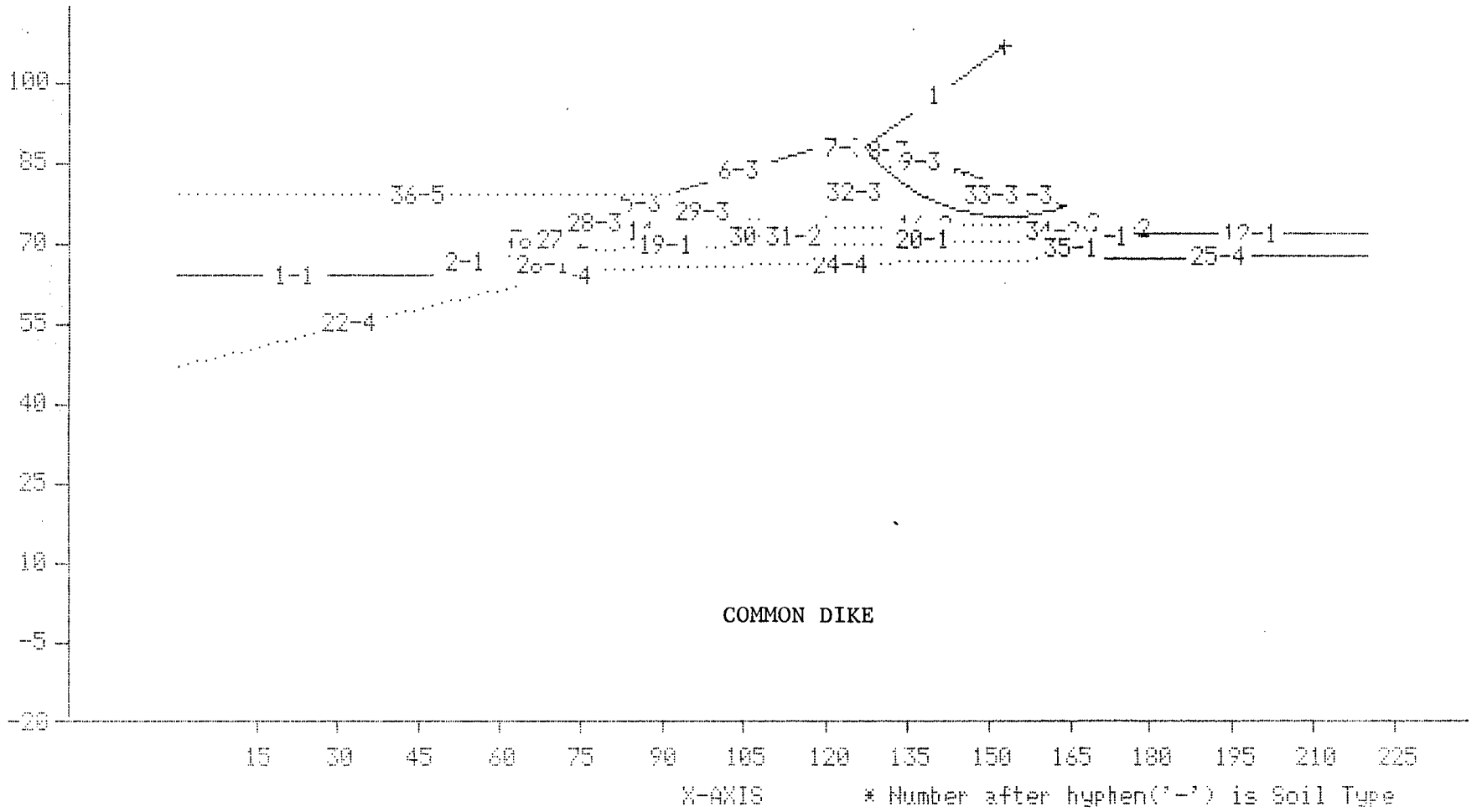
LOCATION: FARMINGTON, NEW MEXICO

FILE: SUNCO3

COMPLETE SLOPE CROSS SECTION

CIRCLE	X	Y	RADIUS	FS
1	153.0	107.0	32.0	1.77

SOIL*	DENSITY	COHESION	PHI
1	114.0	0.0	28.0
2	107.0	500.0	23.5
3	106.0	100.0	25.0
4	140.0	5000.0	32.0
5	62.4	0.0	0.0



* Number after hyphen('-') is Soil Type

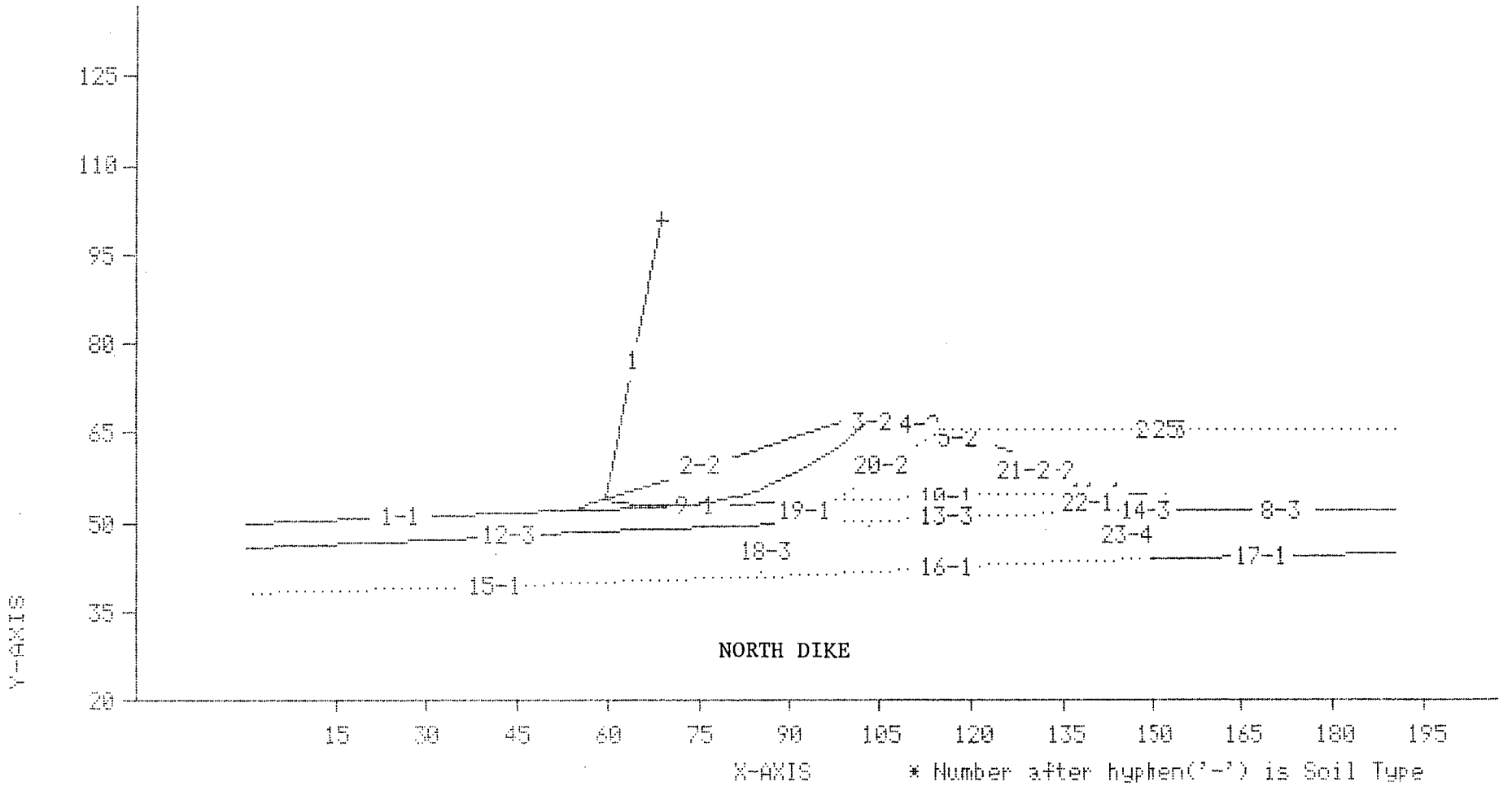
SB-SLOPE

Simplified Bishop Slope Stability Analysis

PROJECT: POND-CROUCH MESA
LOCATION: FARMINGTON, NEW MEXICO
FILE: SUNCOD1
COMPLETE SLOPE CROSS SECTION

CIRCLE	X	Y	RADIUS	FS
1	69.0	101.0	48.0	2.41

SOIL*	DENSITY	COHESION	PHI
1	107.0	500.0	23.5
2	106.0	100.0	25.0
3	114.0	0.0	28.0
4	114.0	500.0	24.0
5	62.4	0.0	0.0



* Number after hyphen('-') is Soil Type

Western Technologies Inc. - Phoenix, AZ

SB-SLOPE

Simplified Bishop Slope Stability Analysis

PROJECT: POND-CROUCH MESA

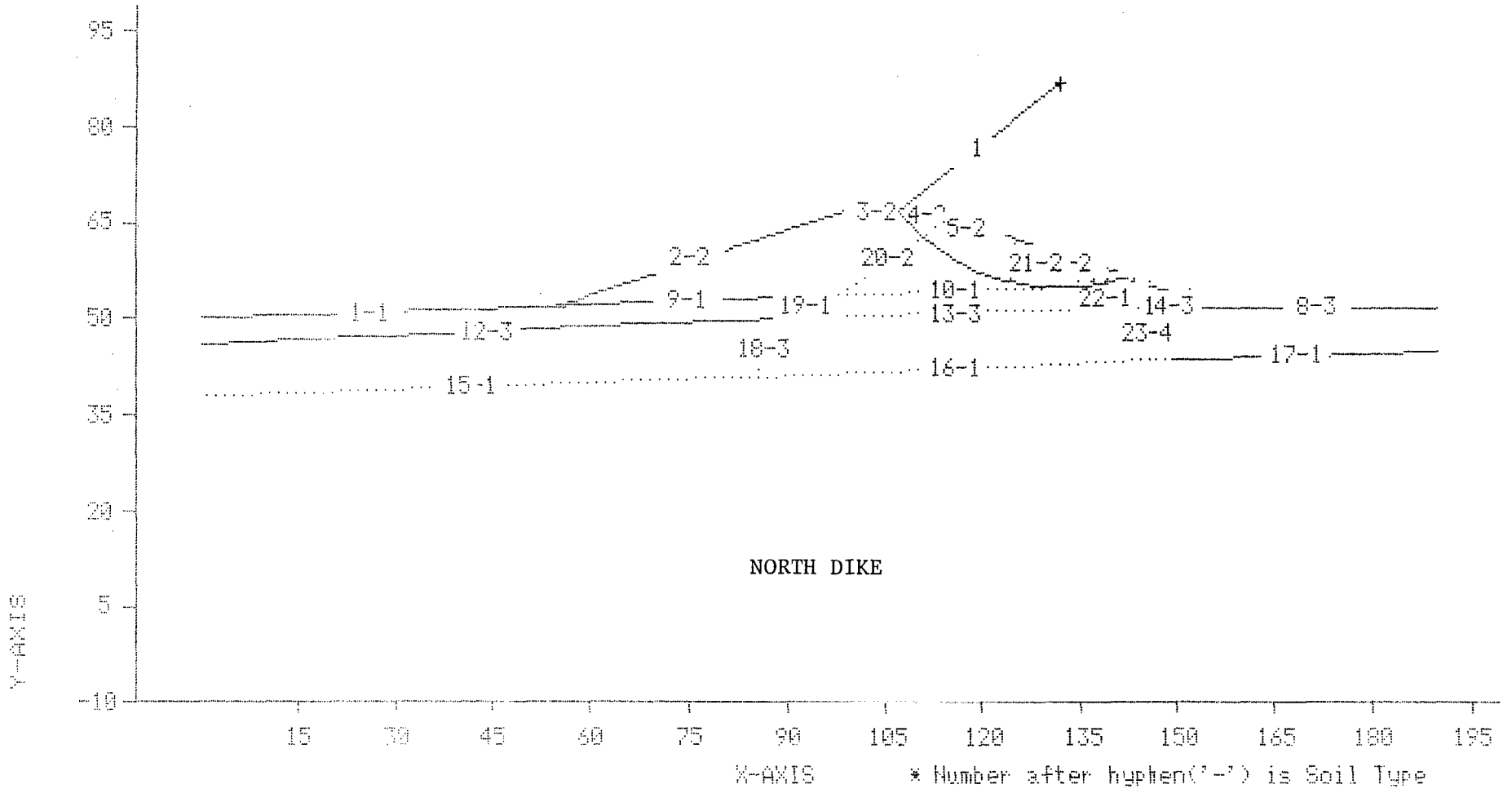
LOCATION: FARMINGTON, NEW MEXICO

FILE: SUNCOO

COMPLETE SLOPE CROSS SECTION

CIRCLE	X	Y	RADIUS	FS
1	132.0	87.0	32.0	1.86

SOIL*	DENSITY	COHESION	PHI
1	107.0	500.0	23.5
2	106.0	100.0	25.0
3	114.0	0.0	28.0
4	114.0	500.0	24.0



NORTH DIKE

* Number after hyphen('-') is Soil Type

SUNCO TRUCKING COMPANY
WATER AND OILFIELD HEAVY HAULING P.O. BOX 443, FARMINGTON, NM 87499 (505) 327-0416

June 13, 1989

Lawerence H. Woodard and Arloa R. Woodard, Trustees
P. O. Box 12356, Station F
Albuquerque, New Mexico 87105

New Mexico Oil and Gas Conservation Division requires anyone permitting an application for the design and construction of a waste storage/disposal pit to notify all property owners within a one half mile radius of proposed construction site.

Sunco Trucking Company is notifying said property owners that the design and construction of a waste storage/disposal pit is being applied for in (SW¼NW¼), Section 2, Township 29 North, Range 12 West.

If you have any questions, please contact the New Mexico Oil & Gas Conservation Division.

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.
1. ☐ Show to whom delivered, date, and addressee's address. (Extra charge) 2. ☐ Restricted Delivery (Extra charge)

3. Article Addressed to:
DEWEY K. FOUTZ
P. O. BOX 1356
PAGOSA SPRINGS, COLORADO 81147

4. Article Number
P 718 636 977

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Address
X D K Foutz

6. Signature — Agent
X

7. Date of Delivery
6/19/89

8. Addressee's Address (ONLY if requested and fee paid)

PS Form 3811, Mar. 1988 * U.S.G.P.O. 1988-212-865 DOMESTIC RETURN RECEI

SENDER: Complete items 1 and 2 when additional services are desired, and complete item 3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaste for fees and check box(es) for additional service(s) requested.
1. ☐ Show to whom delivered, date, and addressee's address. (Extra charge) ☐ Restricted Delivery (Extra charge)

3. Article Addressed to:
MORNINGSTAR CORPORATION
P. O. DRAWER 9
FARMINGTON, NEW MEXICO 87499

4. Article Number
P 718 636 973

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Address
X

6. Signature — Agent
X Sandra McMahon

7. Date of Delivery

8. Addressee's Address (ONLY if requested and fee paid)

JUN 1988 FARMI GT

PS Form 3811, Mar. 1988 * U.S.G.P.O. 1988-212-865 DOMESTIC RETURN RECEI

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.
1. ☐ Show to whom delivered, date, and addressee's address. (Extra charge) 2. ☐ Restricted Delivery (Extra charge)

3. Article Addressed to:
BLM LAND
1235 LA PLATA HIGHWAY
FARMINGTON, NEW MEXICO 87401

4. Article Number
P 718 636 974

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Address
X L. Crow

6. Signature — Agent
X

7. Date of Delivery
6/16/89

8. Addressee's Address (ONLY if requested and fee paid)

PS Form 3811, Mar. 1988 * U.S.G.P.O. 1988-212-865 DOMESTIC RETURN RECEIPT

3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent th
card from being returned to you. The return receipt fee will provide you the name of the person deliver
to and the date of delivery. For additional fees the following services are available. Consult postmas
for fees and check box(es) for additional service(s) requested.
1. ☐ Show to whom delivered, date, and addressee's address. *(Extra charge)* 2. ☐ Restricted Delivery *(Extra charge)*

3. Article Addressed to:	4. Article Number
JOHN S. SCOTT 5301 MARCY PLACE FARMINGTON, NEW MEXICO 87401	P 718 636 979
	Type of Service: ☐ Registered ☐ Insured ☒ Certified ☐ COD ☐ Express Mail ☐ Return Receipt for Merchandise
	Always obtain signature of addressee or agent and DATE DELIVERED.
5. Signature — Address X John Scott	8. Addressee's Address *(ONLY if requested and fee paid)*
6. Signature — Agent X	
7. Date of Delivery 6-15-89	

PS Form 3811, Mar. 1988 ★ U.S.G.P.O. 1988-212-865 DOMESTIC RETURN RECE

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.
1. ☐ Show to whom delivered, date, and addressee's address. (Extra charge) 2. ☐ Restricted Delivery (Extra charge)

3. Article Addressed to:
LAWERENCE WOODARD AND ARLOA WOODARD
P. O. BOX 12356, STATION F
ALBUQUERQUE, NEW MEXICO 87105

4. Article Number
P 718 636 972

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Address
X Patricia Thurston

6. Signature — Agent
X

7. Date of Delivery
JUN 14 1989

8. Addressee's Address (ONLY if requested and fee paid)

PS Form 3811, Mar. 1988 ★ U.S.G.P.O. 1988-212-865 DOMESTIC RETURN RECEI

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.
1. ☐ Show to whom delivered, date, and addressee's address. (Extra charge) 2. ☐ Restricted Delivery (Extra charge)

3. Article Addressed to:
MARIDES FOUTZ WYNN & VALARIE FOUTZ HATCH
5108 SCHMITT ROAD
FARMINGTON, NEW MEXICO 87401

4. Article Number
P 718 636 978

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Address
X Valerie K Johnson

6. Signature — Agent
X WW

7. Date of Delivery
6/14/89

8. Addressee's Address (ONLY if requested and fee paid)

PS Form 3811, Mar. 1988 ★ U.S.G.P.O. 1988-212-865 DOMESTIC RETURN RECEIP

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.
1. ☐ Show to whom delivered, date, and addressee's address. (Extra charge) 2. ☐ Restricted Delivery (Extra charge)

3. Article Addressed to:
H.W. HORNER AND DORIS J. HORNER
4111 SKYLINE DRIVE
FARMINGTON, NEW MEXICO 87401

4. Article Number
P 718 636 975

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Address
X Doris J Horner

6. Signature — Agent
X

7. Date of Delivery
6-16-89

8. Addressee's Address (ONLY if requested and fee paid)

PS Form 3811, Mar. 1988 ★ U.S.G.P.O. 1988-212-865 DOMESTIC RETURN RECEI

SAN JUAN COUNTY ABSTRACT & TITLE COMPANY

THE FOLLOWING TRACTS WITHIN APPROXIMATELY ONE-HALF (½) MILE OF THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER (SW¼NW¼) OF SECTION TWO (2), IN TOWNSHIP TWENTY-NINE (29) NORTH OF RANGE TWELVE (12) WEST, N.M.P.M., SAN JUAN COUNTY NEW MEXICO

TRACT 1: GEORGE E. COLEMAN and BARBARA M. COLEMAN Drawer 3337 Farmington, New Mexico 87499	The SW¼NW¼ of Section 2, in Township 29 North of Range 12 West, N.M.P.M. (Copy of deed attached) Book 1099 Page 4
TRACT 2: GEORGE E. COLEMAN and BARBARA M. COLEMAN Drawer 3337 Farmington, New Mexico 87499	The N½NW¼ of Section 2, in Township 29 North of Range 12 West, N.M.P.M. (Copy of deed attached) Book 1099 Page 4
TRACT 3: LAWRENCE H. WOODARD and ARLOA R. WOODARD, Trustees P.O. Box 12356, Station F Albuquerque, New Mexico 87105	The S½NE¼ and the NW¼NE¼ of Section 2, in Township 29 North of Range 12 West, N.M.P.M. (Copy of deed attached) Book 1012 Page 302
TRACT 4: MORNINGSTAR CORPORATION P.O. Drawer 9 Farmington, New Mexico 87499	The SE¼ of Section 2, in Township 29 North of Range 12 West, N.M.P.M. (Copy of deed attached) Book 939 Page 410 Book 1088 Page 153
TRACT 5: NO PATENT OF RECORD BLM LAND 1235 La Plata Hiway Farmington 87401	The SW¼ of Section 2, in Township 29 North of Range 12 West, N.M.P.M.
TRACT 6: H. W. HORNER and DORIS J. HORNER 4111 Skyline Drive Farmington, New Mexico 87401	The approximate East 865 feet of the E½E½ of Section 3, in Township 29 North of Range 12 West, N.M.P.M. (Copy of deed attached) Book 904 Page 351
TRACT 7: DEWEY K. FOUTZ P.O. Box 1356 Pagosa Springs, Colorado 81147	The approximate West 877.89 feet of the East 1742.89 feet of the E½E½ of Section 3, in Township 29 North of Range 12 West, N.M.P.M. (Copy of deed attached) Book 1090 Page 218
TRACT 8: MARIDES FOUTZ WYNN and VALARIE FOUTZ HATCH 5108 Schmitt Road Farmington, New Mexico 87401	The W½E½ of Section 3, in Township 29 North of Range 12 West, except that as described in Tract 7 above. (Copy of deed attached) Book 879 Page 247

-SEE CONTINUATION-

TRACT 9:
JOHN S. SCOTT
5301 Marcy Place
Farmington, New Mexico 87401

The E½SE¼ of Section 34, in Township 30 North of Range 12 West, N.M.P.M.
(Copy of deed attached) Book 914 Page 540

TO June 1, 1989, 4:30 P.M.

SAN JUAN COUNTY ABSTRACT & TITLE COMPANY

By _____
President

OFT/gw
Enclosures