

District I
1625 N French Dr , Hobbs, NM 88240
District II
811 S First St , Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S St Francis Dr , Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources
Department
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-144
Revised August 1, 2011

For temporary pits, closed-loop systems, and below-grade tanks, submit to the appropriate NMOCD District Office
For permanent pits and exceptions submit to the Santa Fe Environmental Bureau office and provide a copy to the appropriate NMOCD District Office

Pit, Closed-Loop System, Below-Grade Tank, or
Proposed Alternative Method Permit or Closure Plan Application

DENIED

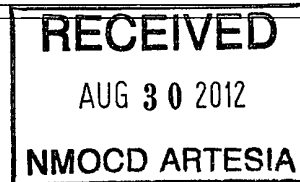
- Type of action ☒ Permit of a pit, closed-loop system, below-grade tank, or proposed alternative method
☐ Closure of a pit, closed-loop system, below-grade tank, or proposed alternative method
☒ Modification to an existing permit
☐ Closure plan only submitted for an existing permitted or non-permitted pit, closed-loop system, below-grade tank, or proposed alternative method

Instructions: Please submit one application (Form C-144) per individual pit, closed-loop system, below-grade tank or alternative request

Please be advised that approval of this request does not relieve the operator of liability should operations result in pollution of surface water, ground water or the environment Nor does approval relieve the operator of its responsibility to comply with any other applicable governmental authority's rules, regulations or ordinances

1	
Operator	Caza Operating LLC
OGRID #	249099
Address 200 North Loraine, Suite 1550, Midland, Texas 79701	
Facility or well name Forehand Ranch 27 State Com 1H	
API Number	30-015-39844
OCD Permit Number	
U/L or Qtr/Qtr	B
Section	27
Township	T23S
Range	R27E
County	Eddy
Center of Proposed Design Latitude	32 16 57 04
Longitude	-104 10 32 30
NAD.	<input type="checkbox"/> 1927 <input checked="" type="checkbox"/> 1983
Surface Owner	<input type="checkbox"/> Federal <input checked="" type="checkbox"/> State <input type="checkbox"/> Private <input type="checkbox"/> Tribal Trust or Indian Allotment

2	
<input checked="" type="checkbox"/> Pit: Subsection F or G of 19.15.17 11 NMAC	
Temporary <input checked="" type="checkbox"/> Drilling <input type="checkbox"/> Workover	
<input type="checkbox"/> Permanent <input type="checkbox"/> Emergency <input type="checkbox"/> Cavitation <input type="checkbox"/> P&A	
<input checked="" type="checkbox"/> Lined <input type="checkbox"/> Unlined Liner type Thickness 20 mil <input type="checkbox"/> LLDPE <input checked="" type="checkbox"/> HDPE <input type="checkbox"/> PVC <input type="checkbox"/> Other	
<input checked="" type="checkbox"/> String-Reinforced	
Liner Seams	<input checked="" type="checkbox"/> Welded <input type="checkbox"/> Factory <input type="checkbox"/> Other
Volume	See Plate 1 bbl
Dimensions L	x W x D



3	
<input type="checkbox"/> Closed-loop System: Subsection H of 19 15.17 11 NMAC	
Type of Operation <input type="checkbox"/> P&A <input type="checkbox"/> Drilling a new well <input type="checkbox"/> Workover or Drilling (Applies to activities which require prior approval of a permit or notice of intent)	
<input type="checkbox"/> Drying Pad <input type="checkbox"/> Above Ground Steel Tanks <input type="checkbox"/> Haul-off Bins <input type="checkbox"/> Other	
<input type="checkbox"/> Lined <input type="checkbox"/> Unlined Liner type Thickness mil <input type="checkbox"/> LLDPE <input type="checkbox"/> HDPE <input type="checkbox"/> PVC <input type="checkbox"/> Other	
Liner Seams	<input checked="" type="checkbox"/> Welded <input checked="" type="checkbox"/> Factory <input type="checkbox"/> Other

4	
<input type="checkbox"/> Below-grade tank: Subsection I of 19.15.17 11 NMAC	
Volume	bbl
Type of fluid	
Tank Construction material	
<input type="checkbox"/> Secondary containment with leak detection <input type="checkbox"/> Visible sidewalls, liner, 6-inch lift and automatic overflow shut-off	
<input type="checkbox"/> Visible sidewalls and liner <input type="checkbox"/> Visible sidewalls only <input type="checkbox"/> Other	
Liner type	Thickness mil <input type="checkbox"/> HDPE <input type="checkbox"/> PVC <input type="checkbox"/> Other

5	
<input type="checkbox"/> Alternative Method:	
Submittal of an exception request is required Exceptions must be submitted to the Santa Fe Environmental Bureau office for consideration of approval	

6.

Fencing: Subsection D of 19 15 17 11 NMAC (*Applies to permanent pits, temporary pits, and below-grade tanks*)

- ☐ Chain link, six feet in height, two strands of barbed wire at top (*Required if located within 1000 feet of a permanent residence, school, hospital, institution or church*)
- ☒ Four foot height, four strands of barbed wire evenly spaced between one and four feet
- ☐ Alternate Please specify _____

7

Netting: Subsection E of 19 15 17 11 NMAC (*Applies to permanent pits and permanent open top tanks*)

- ☐ Screen ☐ Netting ☒ Other _____ Not Applicable
- ☐ Monthly inspections (If netting or screening is not physically feasible)

8

Signs: Subsection C of 19 15 17 11 NMAC

- ☐ 12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers
- ☒ Signed in compliance with 19 15 16 8 NMAC

9

Administrative Approvals and Exceptions:

Justifications and/or demonstrations of equivalency are required Please refer to 19.15 17 NMAC for guidance

Please check a box if one or more of the following is requested, if not leave blank:

- ☐ Administrative approval(s) Requests must be submitted to the appropriate division district or the Santa Fe Environmental Bureau office for consideration of approval
- ☐ Exception(s). Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval

10

Siting Criteria (regarding permitting): 19 15 17 10 NMAC

Instructions: The applicant must demonstrate compliance for each siting criteria below in the application. Recommendations of acceptable source material are provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate district office or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of approval. Applicant must attach justification for request. Please refer to 19.15.17.10 NMAC for guidance. Siting criteria does not apply to drying pads or above-grade tanks associated with a closed-loop system.

- | | |
|--|---|
| Ground water is less than 50 feet below the bottom of the temporary pit, permanent pit, or below-grade tank | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| - NM Office of the State Engineer - iWATERS database search, USGS, Data obtained from nearby wells SEE FIGURE 2a & b | |
| Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark) | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| - Topographic map, Visual inspection (certification) of the proposed site SEE FIGURE 3 | |
| Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application (<i>Applies to temporary, emergency, or cavitation pits and below-grade tanks</i>) | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| - Visual inspection (certification) of the proposed site, Aerial photo, Satellite image SEE FIGURE 3 | <input type="checkbox"/> NA |
| Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application (<i>Applies to permanent pits</i>) | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| - Visual inspection (certification) of the proposed site, Aerial photo, Satellite image | <input checked="" type="checkbox"/> NA |
| Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| - NM Office of the State Engineer - iWATERS database search, Visual inspection (certification) of the proposed site SEE FIGURE 2b | |
| Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended SEE FIGURE 4 | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| - Written confirmation or verification from the municipality, Written approval obtained from the municipality | |
| Within 500 feet of a wetland | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| - US Fish and Wildlife Wetland Identification map, Topographic map, Visual inspection (certification) of the proposed site | |
| - SEE FIGURE 5 | |
| Within the area overlying a subsurface mine | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| - Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division SEE FIGURE 6 | |
| Within an unstable area. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| - Engineering measures incorporated into the design, NM Bureau of Geology & Mineral Resources, USGS, NM Geological Society, Topographic map SEE FIGURE 7 | |
| Within a 100-year floodplain | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| - FEMA map SEE FIGURE 8 | |

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Temporary Pits, Emergency Pits, and Below-grade Tanks Permit Application Attachment Checklist: Subsection B of 19 15 17 9 NMAC**Instructions:** Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.

- ☐ Hydrogeologic Report (Below-grade Tanks) - based upon the requirements of Paragraph (4) of Subsection B of 19 15 17 9 NMAC
- ☒ Hydrogeologic Data (Temporary and Emergency Pits) - based upon the requirements of Paragraph (2) of Subsection B of 19.15 17 9 NMAC
- ☒ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19 15 17 10 NMAC
- ☒ Design Plan - based upon the appropriate requirements of 19 15 17 11 NMAC
- ☒ Operating and Maintenance Plan - based upon the appropriate requirements of 19 15 17 12 NMAC
- ☒ Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19 15 17.9 NMAC and 19 15 17 13 NMAC
- ☐ Previously Approved Design (attach copy of design) API Number _____ or Permit Number _____

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Closed-loop Systems Permit Application Attachment Checklist: Subsection B of 19 15 17 9 NMAC**Instructions:** Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.

- ☐ Geologic and Hydrogeologic Data (only for on-site closure) - based upon the requirements of Paragraph (3) of Subsection B of 19 15 17 9
- ☐ Siting Criteria Compliance Demonstrations (only for on-site closure) - based upon the appropriate requirements of 19.15 17.10 NMAC
- ☐ Design Plan - based upon the appropriate requirements of 19 15 17 11 NMAC
- ☐ Operating and Maintenance Plan - based upon the appropriate requirements of 19 15.17 12 NMAC
- ☐ Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19 15 17.9 NMAC and 19 15 17 13 NMAC
- ☐ Previously Approved Design (attach copy of design) API Number _____
- ☐ Previously Approved Operating and Maintenance Plan API Number. _____ (Applies only to closed-loop system that use above ground steel tanks or haul-off bins and propose to implement waste removal for closure)

13

Permanent Pits Permit Application Checklist: Subsection B of 19 15 17 9 NMAC**Instructions:** Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.

- ☐ Hydrogeologic Report - based upon the requirements of Paragraph (1) of Subsection B of 19 15 17 9 NMAC
- ☐ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19 15 17 10 NMAC
- ☐ Climatological Factors Assessment
- ☐ Certified Engineering Design Plans - based upon the appropriate requirements of 19 15 17 11 NMAC
- ☐ Dike Protection and Structural Integrity Design - based upon the appropriate requirements of 19 15 17 11 NMAC
- ☐ Leak Detection Design - based upon the appropriate requirements of 19 15 17 11 NMAC
- ☐ Liner Specifications and Compatibility Assessment - based upon the appropriate requirements of 19.15 17 11 NMAC
- ☐ Quality Control/Quality Assurance Construction and Installation Plan
- ☐ Operating and Maintenance Plan - based upon the appropriate requirements of 19 15 17 12 NMAC
- ☐ Freeboard and Overtopping Prevention Plan - based upon the appropriate requirements of 19 15 17.11 NMAC
- ☐ Nuisance or Hazardous Odors, including H₂S, Prevention Plan
- ☐ Emergency Response Plan
- ☐ Oil Field Waste Stream Characterization
- ☐ Monitoring and Inspection Plan
- ☐ Erosion Control Plan
- ☐ Closure Plan - based upon the appropriate requirements of Subsection C of 19 15 17 9 NMAC and 19 15 17 13 NMAC

14

Proposed Closure: 19 15 17 13 NMAC**Instructions:** Please complete the applicable boxes, Boxes 14 through 18, in regards to the proposed closure plan.

- Type. ☒ Drilling ☐ Workover ☐ Emergency ☐ Cavitation ☐ P&A ☐ Permanent Pit ☐ Below-grade Tank ☐ Closed-loop System
- ☐ Alternative
- Proposed Closure Method ☐ Waste Excavation and Removal
- ☐ Waste Removal (Closed-loop systems only)
- ☒ On-site Closure Method (Only for temporary pits and closed-loop systems)
- ☒ In-place Burial ☐ On-site Trench Burial
- ☐ Alternative Closure Method (Exceptions must be submitted to the Santa Fe Environmental Bureau for consideration)

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Waste Excavation and Removal Closure Plan Checklist: (19 15.17.13 NMAC) **Instructions:** Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.

- ☐ Protocols and Procedures - based upon the appropriate requirements of 19 15 17 13 NMAC
- ☐ Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19 15 17 13 NMAC
- ☐ Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings)
- ☐ Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19 15 17.13 NMAC
- ☐ Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19 15.17 13 NMAC
- ☐ Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19 15.17.13 NMAC

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Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only: (19 15 17 13 D NMAC)

Instructions: Please identify the facility or facilities for the disposal of liquids, drilling fluids and drill cuttings. Use attachment if more than two facilities are required.

Disposal Facility Name _____ Disposal Facility Permit Number _____
 Disposal Facility Name _____ Disposal Facility Permit Number _____

Will any of the proposed closed-loop system operations and associated activities occur on or in areas that *will not* be used for future service and operations?

☐ Yes (If yes, please provide the information below) ☐ No

Required for impacted areas which will not be used for future service and operations

- ☐ Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19 15 17 13 NMAC
☐ Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19 15.17 13 NMAC
☐ Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19 15 17 13 NMAC

17.

Siting Criteria (regarding on-site closure methods only): 19 15 17 10 NMAC

Instructions: Each siting criteria requires a demonstration of compliance in the closure plan. Recommendations of acceptable source material are provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate district office or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of approval. Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17.10 NMAC for guidance.

- | | |
|--|--|
| Ground water is less than 50 feet below the bottom of the buried waste
- NM Office of the State Engineer - iWATERS database search, USGS, Data obtained from nearby wells | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<input type="checkbox"/> NA |
| Ground water is between 50 and 100 feet below the bottom of the buried waste
- NM Office of the State Engineer - iWATERS database search; USGS, Data obtained from nearby wells | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<input type="checkbox"/> NA |
| Ground water is more than 100 feet below the bottom of the buried waste
- NM Office of the State Engineer - iWATERS database search, USGS, Data obtained from nearby wells | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> NA |
| Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)
- Topographic map, Visual inspection (certification) of the proposed site | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application
- Visual inspection (certification) of the proposed site, Aerial photo, Satellite image | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application
- NM Office of the State Engineer - iWATERS database; Visual inspection (certification) of the proposed site | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended
- Written confirmation or verification from the municipality, Written approval obtained from the municipality | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Within 500 feet of a wetland
- US Fish and Wildlife Wetland Identification map, Topographic map, Visual inspection (certification) of the proposed site | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Within the area overlying a subsurface mine
- Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Within an unstable area
- Engineering measures incorporated into the design, NM Bureau of Geology & Mineral Resources, USGS; NM Geological Society, Topographic map | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Within a 100-year floodplain
- FEMA map | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |

18

On-Site Closure Plan Checklist: (19 15 17 13 NMAC) **Instructions:** Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.

- ☒ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19 15 17 10 NMAC
☒ Proof of Surface Owner Notice - based upon the appropriate requirements of Subsection F of 19 15 17 13 NMAC
☐ Construction/Design Plan of Burial Trench (if applicable) based upon the appropriate requirements of 19.15 17 11 NMAC
☐ Construction/Design Plan of Temporary Pit (for in-place burial of a drying pad) - based upon the appropriate requirements of 19 15 17 11 NMAC
☒ Protocols and Procedures - based upon the appropriate requirements of 19.15.17 13 NMAC
☒ Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19 15 17 13 NMAC
☒ Waste Material Sampling Plan - based upon the appropriate requirements of Subsection F of 19 15 17 13 NMAC
☒ Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings or in case on-site closure standards cannot be achieved)
☒ Soil Cover Design - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC
☒ Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19 15 17 13 NMAC
☒ Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19 15 17.13 NMAC

19

Operator Application Certification:

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

Name (Print) Richard Wright/Red Wright Title Production Superintendent Site Supervisor _____

Signature: *Richard L. Wright* Date 8/13/13

e-mail address wright@cazapeta.com and j.c.wright@conservation Telephone 432-682-7424 x1006 (Hicks 505/266-5004)

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OCD Approval: ☐ Permit Application (including closure plan) ☐ Closure Plan (only) ☐ OCD Conditions (see attachment)

OCD Representative Signature: **DENIED** Approval Date: _____

Title: _____ OCD Permit Number: _____

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Closure Report (required within 60 days of closure completion): Subsection K of 19.15.17.13 NMAC

Instructions: Operators are required to obtain an approved closure plan prior to implementing any closure activities and submitting the closure report. The closure report is required to be submitted to the division within 60 days of the completion of the closure activities. Please do not complete this section of the form until an approved closure plan has been obtained and the closure activities have been completed.

☐ Closure Completion Date: _____

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Closure Method:

☐ Waste Excavation and Removal ☐ On-Site Closure Method ☐ Alternative Closure Method ☐ Waste Removal (Closed-loop systems only)
☐ If different from approved plan, please explain _____

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Closure Report Regarding Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only:

Instructions: Please identify the facility or facilities for where the liquids, drilling fluids and drill cuttings were disposed. Use attachment if more than two facilities were utilized.

Disposal Facility Name _____ Disposal Facility Permit Number: _____

Disposal Facility Name _____ Disposal Facility Permit Number _____

Were the closed-loop system operations and associated activities performed on or in areas that will *not* be used for future service and operations?

☐ Yes (If yes, please demonstrate compliance to the items below) ☐ No

Required for impacted areas which will not be used for future service and operations.

- ☐ Site Reclamation (Photo Documentation)
☐ Soil Backfilling and Cover Installation
☐ Re-vegetation Application Rates and Seeding Technique

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Closure Report Attachment Checklist: *Instructions: Each of the following items must be attached to the closure report. Please indicate, by a check mark in the box, that the documents are attached.*

- ☐ Proof of Closure Notice (surface owner and division)
☐ Proof of Deed Notice (required for on-site closure)
☐ Plot Plan (for on-site closures and temporary pits)
☐ Confirmation Sampling Analytical Results (if applicable)
☐ Waste Material Sampling Analytical Results (required for on-site closure)
☐ Disposal Facility Name and Permit Number
☐ Soil Backfilling and Cover Installation
☐ Re-vegetation Application Rates and Seeding Technique
☐ Site Reclamation (Photo Documentation)

On-site Closure Location: Latitude _____ Longitude _____ NAD: ☐ 1927 ☐ 1983

25

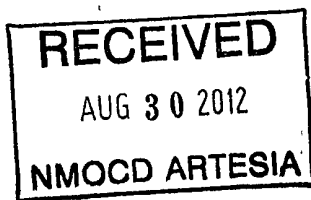
Operator Closure Certification:

I hereby certify that the information and attachments submitted with this closure report is true, accurate and complete to the best of my knowledge and belief. I also certify that the closure complies with all applicable closure requirements and conditions specified in the approved closure plan.

Name (Print): _____ Title _____

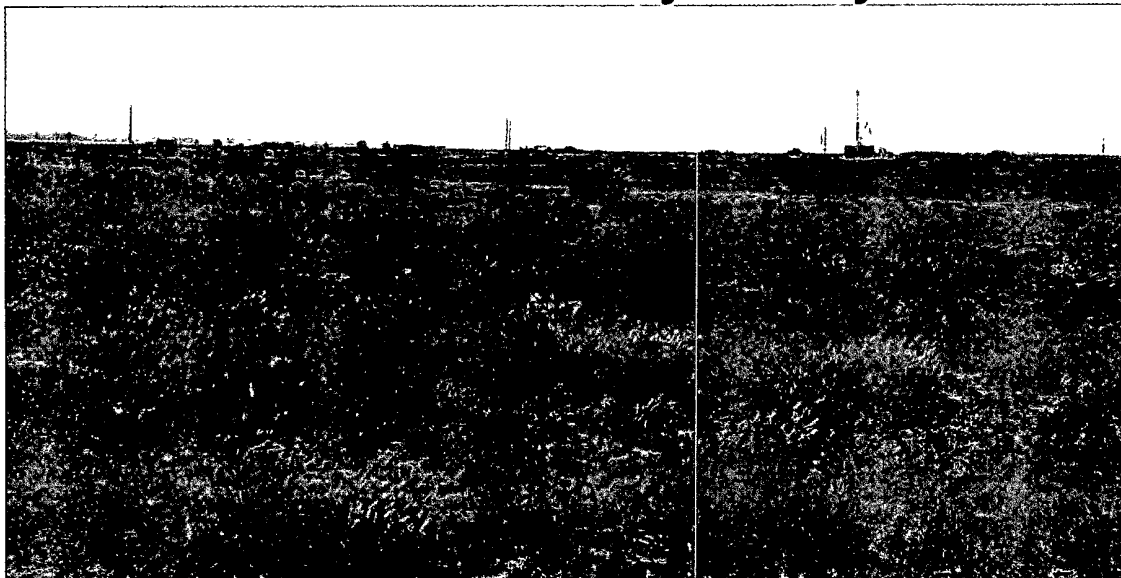
Signature _____ Date _____

e-mail address _____ Telephone _____



August 2012

**C-144 Permit Package for
Forehand Ranch 27 State Com 1H
Temporary Pit
Section 27 T23S R27E Eddy County NM**



**Prepared for
Caza Operating, LLC
Midland, Texas**

**Prepared by
R.T. Hicks Consultants, Ltd.
Albuquerque, New Mexico**

R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266-0745

August 29, 2012

Mr. Mike Bratcher
NMOCD District 2
811 South First Street
Artesia, New Mexico 88210
Via E-mail

RE: Forehand Ranch 27 State Com 1H

Dear Mike:

In the attached re-submission, you will find the following revisions to the previously-submitted C-144 application:

1. A set of generic plans derived directly from the NMOCD-approved Marbob 5H drilling pit.
2. Revised Plates 1a and 1b showing the slope of the bottom of the drilling cell of the temporary pit

The C-144 form, the site-specific information, figures and survey are the same as the original submission. Also attached is the "tracked changes" version of the Marbob 5H application to show how the revised generic plans "track" with Marbob 5H application.

The rationale for this re-submission is the 8/24/12 e-mail of Gabrielle Gerholt (attached) that suggests the previously-approved Marbob 5H C-144 application is a better model than the generic plans submitted for the Mudcat 2H application, which were the same plans used for the Forehand Ranch 27 State Com 1H application. Although the generic plans in the original Forehand Ranch 27 State Com 1H application had been previously approved by NMOCD, we understand that making things better is always a good idea.

If your review identifies some additional changes that would make our generic plans better, please share them with us so we can make any required minor modifications and move this permit to approval as quickly as possible.

Sincerely,
R.T. Hicks Consultants



Randall Hicks

Copy: Richard Wright, Caza Operating, LLC
Scott Dawson, NM State Land Office
Jim Amos, BLM Carlsbad

C-144 and Site Specific Information for Temporary Pit

R.T. Hicks Consultants, Ltd.

901 Rio Grande Blvd. NW, Suite F-142
Albuquerque, NM 87104

Site Specific Information

Figure 1 shows the location of the proposed temporary pit location on a USGS topographic map.

The Design and Construction Plan is included with this submission. Plates 1a, 1b and 1c present a schematic layout of the temporary pit. The double horseshoe reserve cell will be about 20-feet distant from the fluids cell of the temporary pit to allow for piping to the Flare Pit (dry). The exact location and geometry of the temporary pit will be finalized after communication with the selected drilling rig.

Hydrogeologic Report Demonstrating Compliance With Depth to Water Criteria

Figures 2a and 2b and the discussion presented below demonstrates that groundwater (fresh water as defined by NMOCD Rules) at the location is greater than 100 feet beneath the temporary pit.

Figure 2a is an area geologic map that shows:

1. The location of the temporary pit as a red rectangle.
2. Water wells in the OSE database as blue circles with a corresponding permit number. OSE wells are often miss-located in the WATERS database as older wells are plotted in the center of the quarter, quarter, quarter, of the Section Township and Range.

We found no USGS well gauging data for this area. A field measurement of a well near to the proposed temporary pit was relatively consistent with the groundwater depth data in the OSE WATERS database. Therefore, we did not include water level data from the 1952 Ground-Water Report 3 (Geology and Ground-Water Resources of Eddy County, New Mexico).

Figure 2b is a 1:24,000 scale map of the area near the temporary pit that uses the same dataset as Figure 2a.

Geology and Hydrogeology

The proposed temporary pit is located on Quaternary Pediment and Alluvial Deposits (QP on Figure 2a). Topographically, the site is on a gentle eastward sloping surface that is characterized by several shallow, closed depressions (see Figure 1). Underlying the Pediment deposits are probably Quaternary Alluvium (light tan color in Figure 2a). Beneath the alluvium are the Permian Rustler and/or Castile Formations, both of which crop out to the south and southeast of the proposed temporary pit (Figure 2a).

Appendix A presents a description of the water-bearing strata of a municipal supply well (C-3488 on Figure 2b) located about 2500 feet northeast of the temporary pit. These data suggest that the Rustler probably lies about 200 feet below land surface. Figure 2b also shows a water well midway between C-3488 and the nearest well to the temporary pit, C-3219. This well, represented on Figure 2b by the symbol “ww” is another operating municipal water supply well.

Water Table Elevation

Hicks Consultants were able to measure the depth to water in well C-3219, as this well appears to be an exploration boring and is open (See photograph below). The depth to water from top of

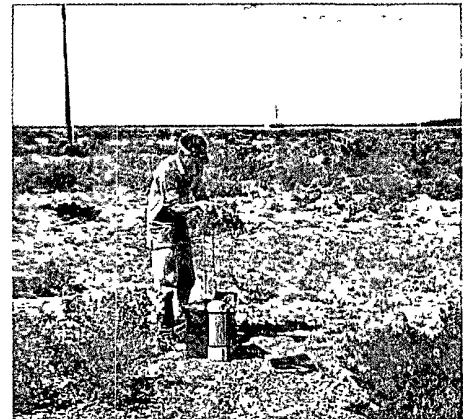
Site-Specific Information Forehand Ranch 27 State Com 1H Caza Operating, LLC.

casing is 147.1 feet. This measurement is 50-feet lower than what is recorded in the WATERS database for this well but is consistent with the depth to water data for most other nearby wells. The table below displays the data from the WATERS database for Sections 21-23 and 26-29

POD Number	q64	q16	q4	Sec	Tws	Rng	Depth Well	Depth Water
C 00231 AS	4	1	1	23	23S	27E	230	100
C 00498	4	1	1	23	23S	27E	210	120
C 00498 CLW194833	4	1	1	23	23S	27E	165	80
C 00518 POD2	2	4	4	22	23S	27E	203	98
C 02999	2	1	2	23	23S	27E		160
C 03390 POD1	1	4	2	23	23S	27E	200	180
C 03488 POD1	4	3	1	23	23S	27E	217	122
C 02377			2	29	23S	27E	232	170
C 02453	4	4	2	29	23S	27E	210	175
C 02567	2	1	2	26	23S	27E	187	89

We believe it is possible but not probable that the water table at well C-3219 dropped since the 2006 date recorded in the WATERS database. More likely, drilling mud used for well construction caused an erroneous high measurement.

The photograph shows David Hamilton of Hicks Consultants measuring the water level in well C-3219 northeast of the site.. The cable tool spud rig at the Forehand Ranch 27 State Com 1H is in the background



We conclude that the depth to water at the temporary pit location is greater than 147 feet and the distance between the bottom of the temporary pit and groundwater is about 140 feet.

Additional Siting Criteria Compliance Demonstration

The information identified in Item 10, "Siting Criteria" of the C-144 is presented below. The descriptions below are associated with the maps presented in Figures 2-7, attached.

Figure 3 and the site visit demonstrates that the location is not within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).

Site-Specific Information Forehand Ranch 27 State Com 1H
Caza Operating, LLC.

- Data from the USDA's National Hydraulic Dataset shows a dry stream drainage (shown as a light blue line) approximately 9000 feet northwest of the temporary pit and irrigation ponds located about the same distance northeast and southeast.
- The circular feature in Figure 3 that lies about 300 feet southwest of the location is not a playa lake or water course. It is a slight closed depression that must collect some precipitation during large events.
- No watercourses, as defined by NMOCD Rules, or water bodies exist within 300-feet of location.

Figure 3 and the site visit demonstrate that the location is not within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. No nearby structures exist within 300 feet of location.

- Figure 3 shows pasture, fallow fields and some residences on all sides of the location
- Our site visit identified no permanent structures within 300 feet of the site

Figures 2 and 3 demonstrate that the location is not within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application.

- Figure 3 shows the locations of all surface water; including springs
- No springs were identified within the mapping area during our site visit
- The municipal supply well identified as "ww" between wells C-3219 and C-3488 in Figure 2b is more than 5,000 feet from the temporary pit.

Figure 4 demonstrates that the location is not within incorporated municipal boundaries or defined municipal fresh water well fields covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended.

- The closest municipality is Loving, NM approximately 4 miles to the east
- The closest public well field is located approximately 9 miles to the west

Figure 5 demonstrates the location is not within 500 feet of wetlands.

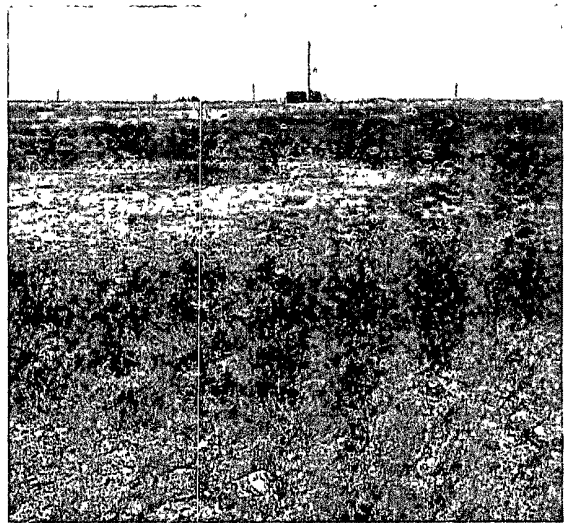
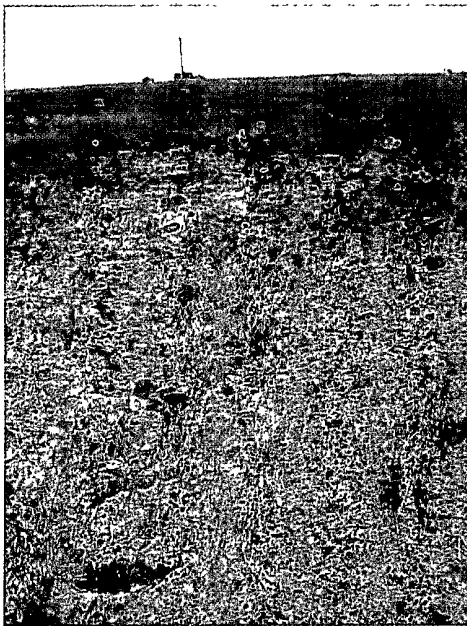
Figure 6 and our general reconnaissance of the area demonstrates that the nearest mines are gravel pits

Figure 7 shows the location of the temporary pit with respect Karst areas identified in the most recent Caves and Karst Map published by the BLM

- According to our interpretation of a recent conversation with Mr. James Goodbar of BLM, the Cave Karst Map is
 - i. Based upon decades of field inspections and geologic reasoning
 - ii. A work-in-progress and is continually updated as new data are reviewed
 - iii. Accurate on a regional scale but site visits by trained professionals are often necessary to determine the existence/potential of karst features within small areas (e.g. a drilling pad)
- The legend for Figure 7 is explained below (personal communication with Mr. Goodbar)

Site-Specific Information Forehand Ranch 27 State Com 1H
Caza Operating, LLC.

- i. Critical Karst Areas: Areas that contain a high density of significant caves and karst features and/or provide important karst groundwater recharge for domestic drinking water supplies and springs.
 - ii. High Karst Areas: Areas of known karst geology that contain high density of significant caves and karst features.
 - iii. Medium Potential Karst Areas: Areas of known karst geology that contain dispersed caves and karst features.
 - iv. Low Potential Karst Areas: Areas of questionable karst geology and few if any known caves or karst features.
- The site is located within a “Medium Potential Karst Area” the slight closed depression located about 300 feet southwest of the location in Figure 3 exhibits some solution voids. The photograph below left is a view to the east from within the shallow depression showing a void in the lower left corner of the photograph. The photograph on the right is a shot to the east-northeast from the shallow depression showing vegetation at void locations.



- Outside of the shallow depression, we observed no evidence of voids or unstable ground.
- Nevertheless, because of the presence of solution features nearby combined with a postulated water table aquifer in this area, Caza will cause the contractor to compact the earth material that forms the foundation for the pit liners to an expected proctor density of greater than 90% by:
 - i. adding water as appropriate,
 - ii. compacting the earth by walking a crawler-type tractor down the sides and bottom of the pit, and
 - iii. repeating this process with a second 6-inch lift of earth material if necessary.
- A trained geologist will witness the excavation of the temporary pit and collect additional information pertaining to Karst for possible submission to NMOCD

Site-Specific Information Forehand Ranch 27 State Com 1H
Caza Operating, LLC.

- Although karst features (large voids) create preferential pathways for downward saturated flow (e.g. free liquids flowing into a void from a pit/pipeline rupture), large voids represent a barrier to unsaturated flow (e.g. very slow seepage from dried cuttings/mud). This phenomenon is the reason that capillary barriers are used to prevent seepage into restored uranium tailings piles, landfills and like features (see <http://www.epa.gov/superfund/accomp/news/pdfs/evapo.pdf> and http://www.beg.utexas.edu/staffinfo/pdf/scanlon_vadosezj.pdf). As the large voids in a gravel layer beneath a fine-grained layer significantly minimize seepage, solution cavities and tubes create the same effect.
- We believe that the karst features in this area are restricted to shallow depressions and are not present outside of these closed depressions. The photograph below provides a representative view of the surface north of the location; the greener grass in the center of the photograph is an abandoned road that collects slightly more water than the surrounding terrain.

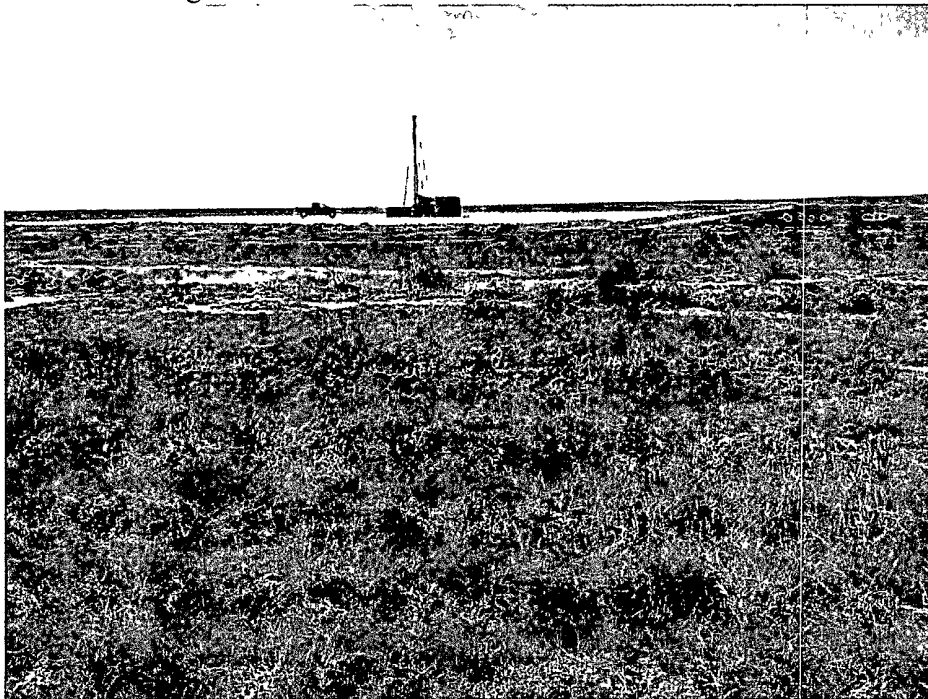


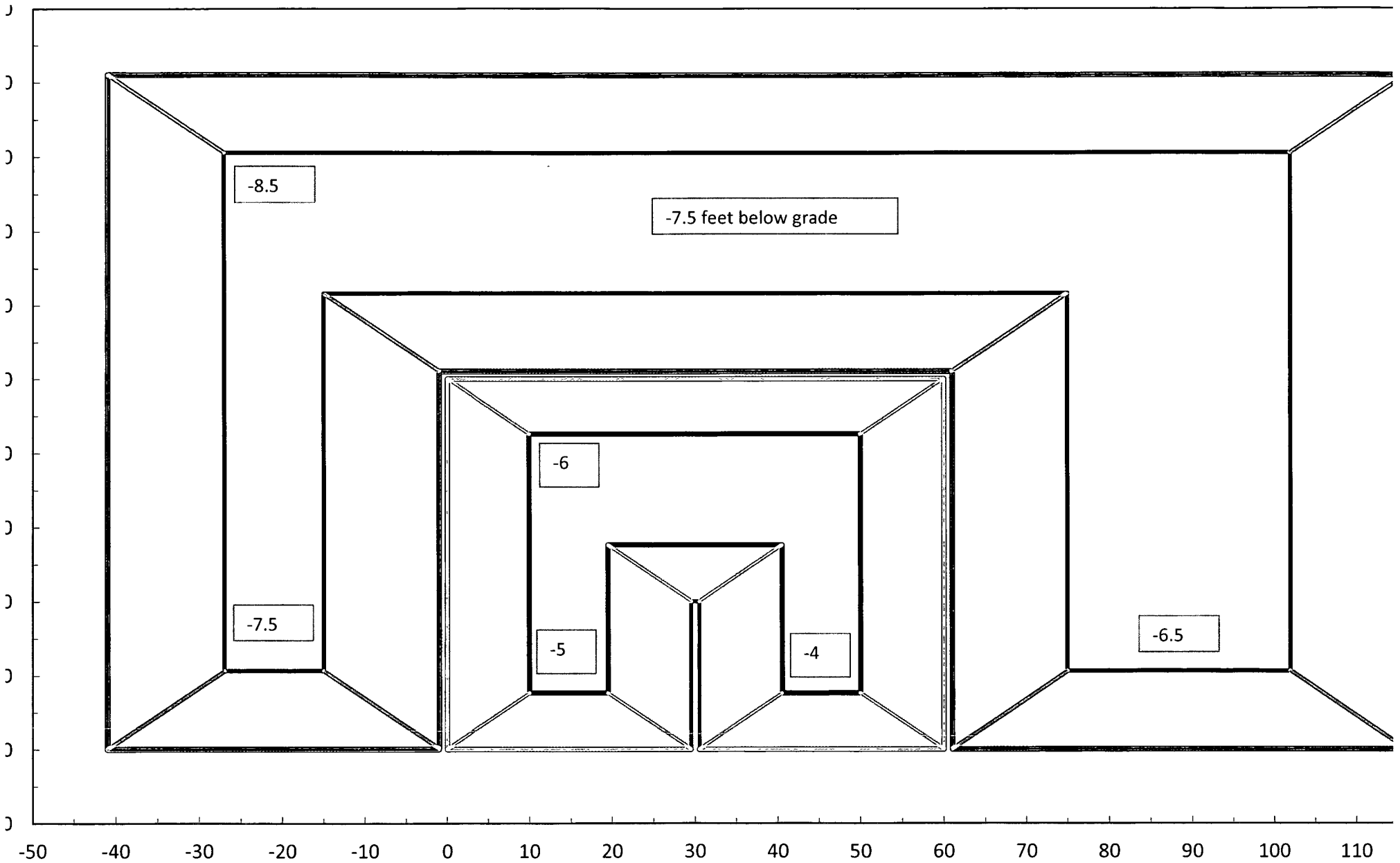
Figure 8 demonstrates that the location is not within a 100-year floodplain.

- The location is within Zone X of FEMA Flood Zone Designation. Zone X is defined as an area of minimal flood hazard and above the 500-year (0.2% annual chance) flood level.

Site Specific Information Plates

R.T. Hicks Consultants, Ltd.

901 Rio Grande Blvd. NW, Suite F-142
Albuquerque, NM 87104



R.T. Hicks Consultants
 901 Rio Grande Blvd. NW
 Suite F-142
 Albuquerque, N. M. 87104

Cut Brine (Outer) and Brine (Inner) Reserve Cells

Plate 1a

Caza Operating - Forehand Ranch 27 State Com 1H

Aug-12

Width refers to Discharge-Suction dimensions
Length refers to up-down dimensions

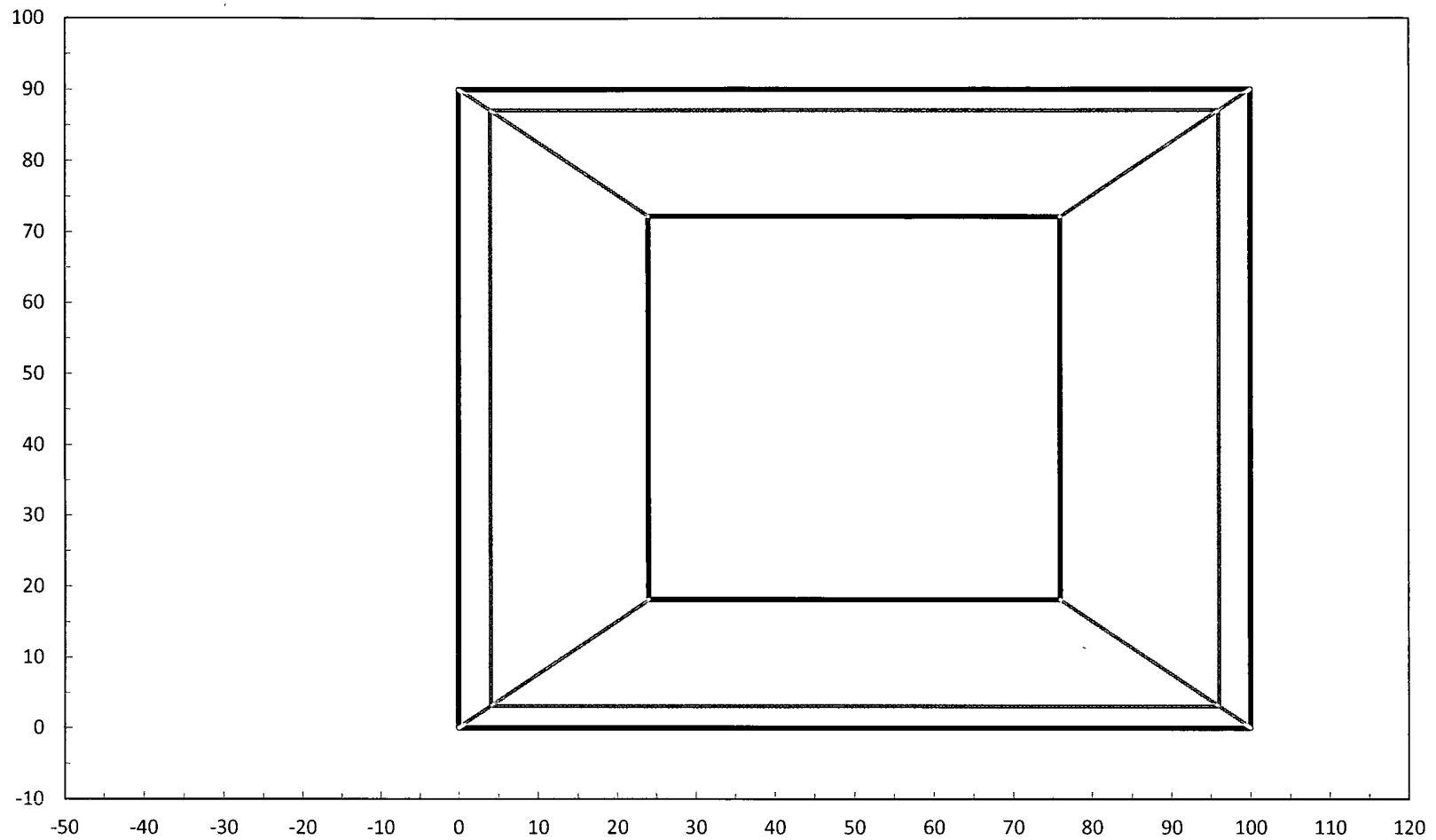
Overall Pit Dimensions	Total Width of both Cells	157.0	[feet]
	Total Length of both Cells	91.0	
	Rise over Run for all slopes	2.0	[-]

Inner Horseshoe Pit Dimensions	Width of Inner Horseshoe Cell	60.0	[feet]
	Length of Inner Horseshoe Cell	50.0	
	Depth of Inner Horseshoe Cell	5.0	
	Inner Horseshoe Cell Floor "length"	11.0	[feet]
	Inner Horseshoe Pit Floor "width" (Discharge to Suction)	11.0	
	Width of Inner Horseshoe Divider on the ground surface	1.0	[feet]
	Length of Inner Horseshoe Divider on the ground surface	20.0	
	Distance from suction side corner of Inner Horseshoe Cell to Inner Divider Axis	30.0	

Divider Dimensions	Width of Divider between Inner and Outer Horseshoe Cells	1.0	[feet]
---------------------------	--	-----	--------

Outer Horseshoe Pit Dimensions	Length of Outer Horseshoe Cell (Discharge Side)	91.0	[feet]
	Width of Outer Horseshoe Cell (Discharge Side)	55.0	
	Depth of Outer Horseshoe Cell (Discharge Side)	6.5	
	Length of Outer Horseshoe Pit (Suction Side)	91.0	[feet]
	Width of Outer Horseshoe Cell (Suction Side)	40.0	
	Depth of Outer Horseshoe Cell (Suction Side)	7.5	
	Length of Outer Horseshoe Cell	40.0	[feet]
	Width of Outer Horseshoe Cell	157.0	
	Depth of Outer Horseshoe Cell (Suction Side)	8.5	
	"Average Width" of Outer Horseshoe Cell Floor (Discharge to Suction dimension)	12.0	[feet]
	"Average Width" of Outer Horseshoe Cell Floor	19.0	

Total Capacity	Outer Horseshoe	9825 0	bbls
	Inner Horseshoe	1718 7	
	Fluids Cell	12000 0	
		23543 7	



Fluids Cell capacity with 2-feet of freeboard = 9,026 bbls

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 901 Rio Grande Blvd. NW
 Suite F-142
 Albuquerque, N. M. 87104

Fluids Cell of Temporary Pit

Plate 1c

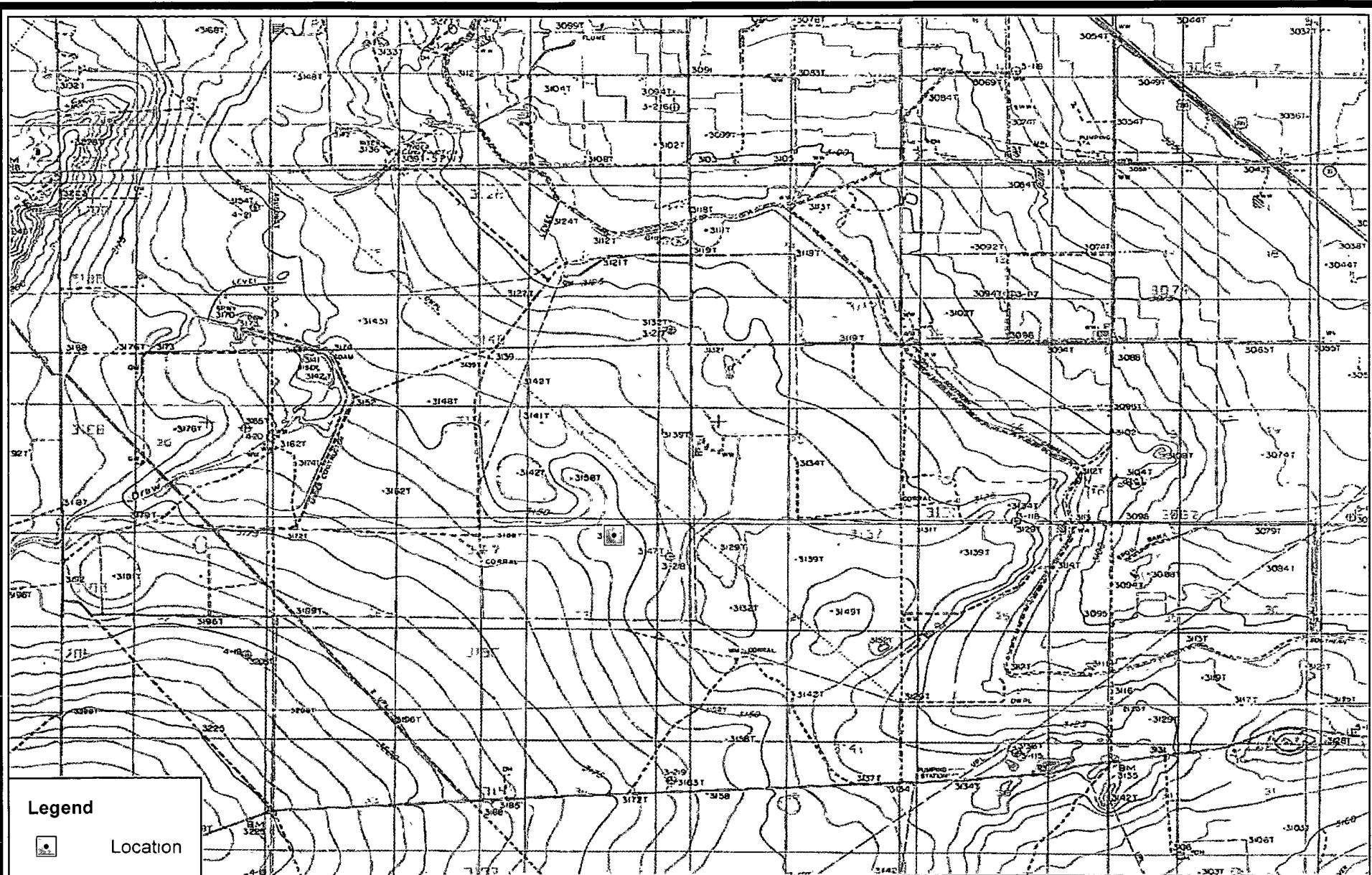
Caza Operating - Forehand Ranch 27 State Com 1H

Aug-12

Site Specific Information Figures

R.T. Hicks Consultants, Ltd.

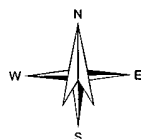
901 Rio Grande Blvd. NW, Suite F-142
Albuquerque, NM 87104



Legend



Location



0 5,000 Feet

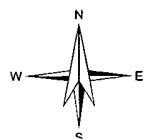
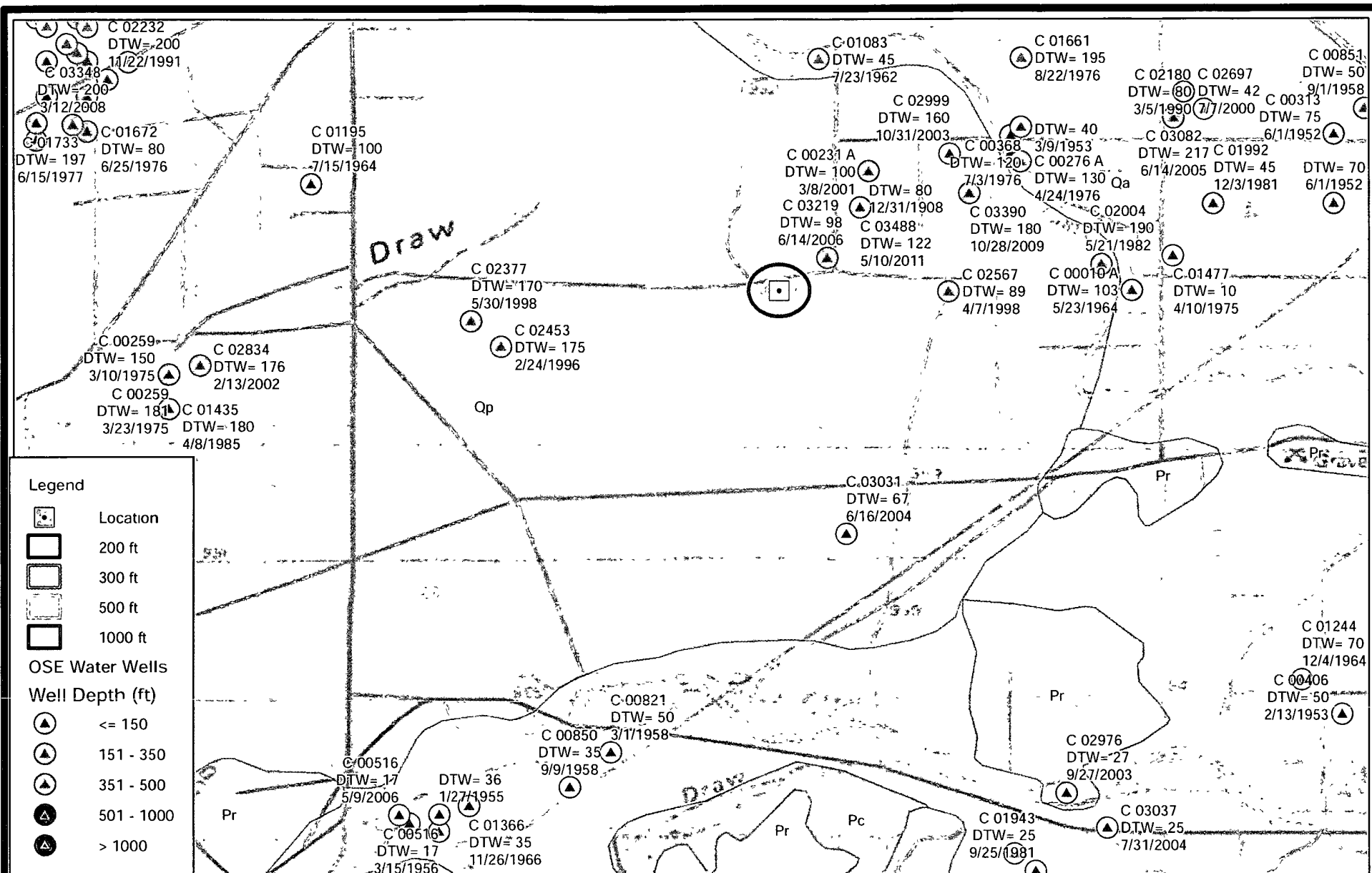
R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266 5004

Location of Temporary Pit

Caza Operating - Forehand Ranch 27 State Com 1H

Figure 1

August 2012



0 1
Miles

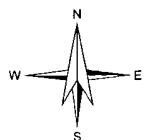
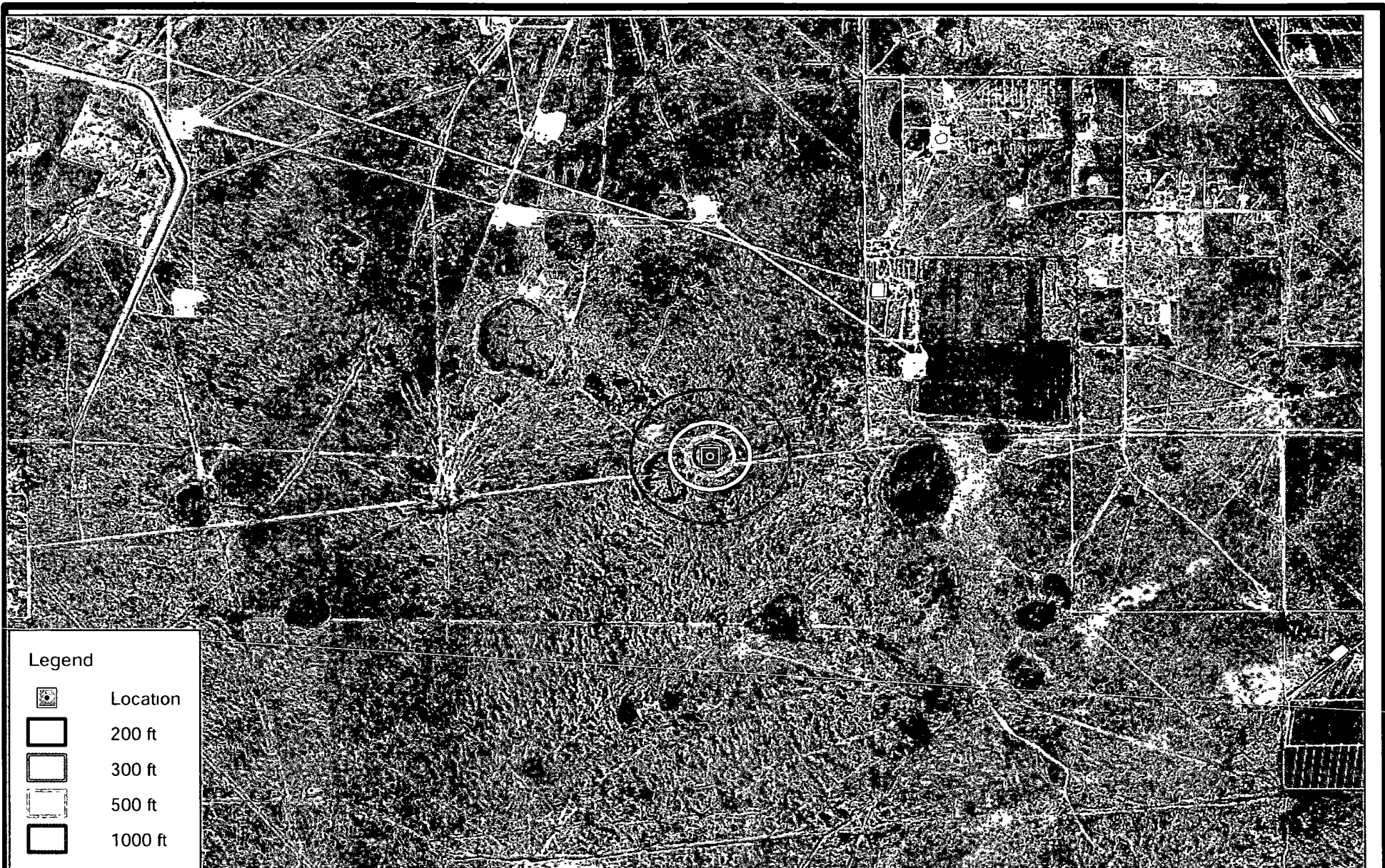
R.T. Hicks Consultants, Ltd
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Albuquerque, NM 87104
Ph. 505 266 5004

Geology and Water Data

Caza Operating - Forehand Ranch 27 State Com 1H

Figure 2a

August 2012



0 1,000
Feet

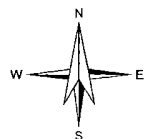
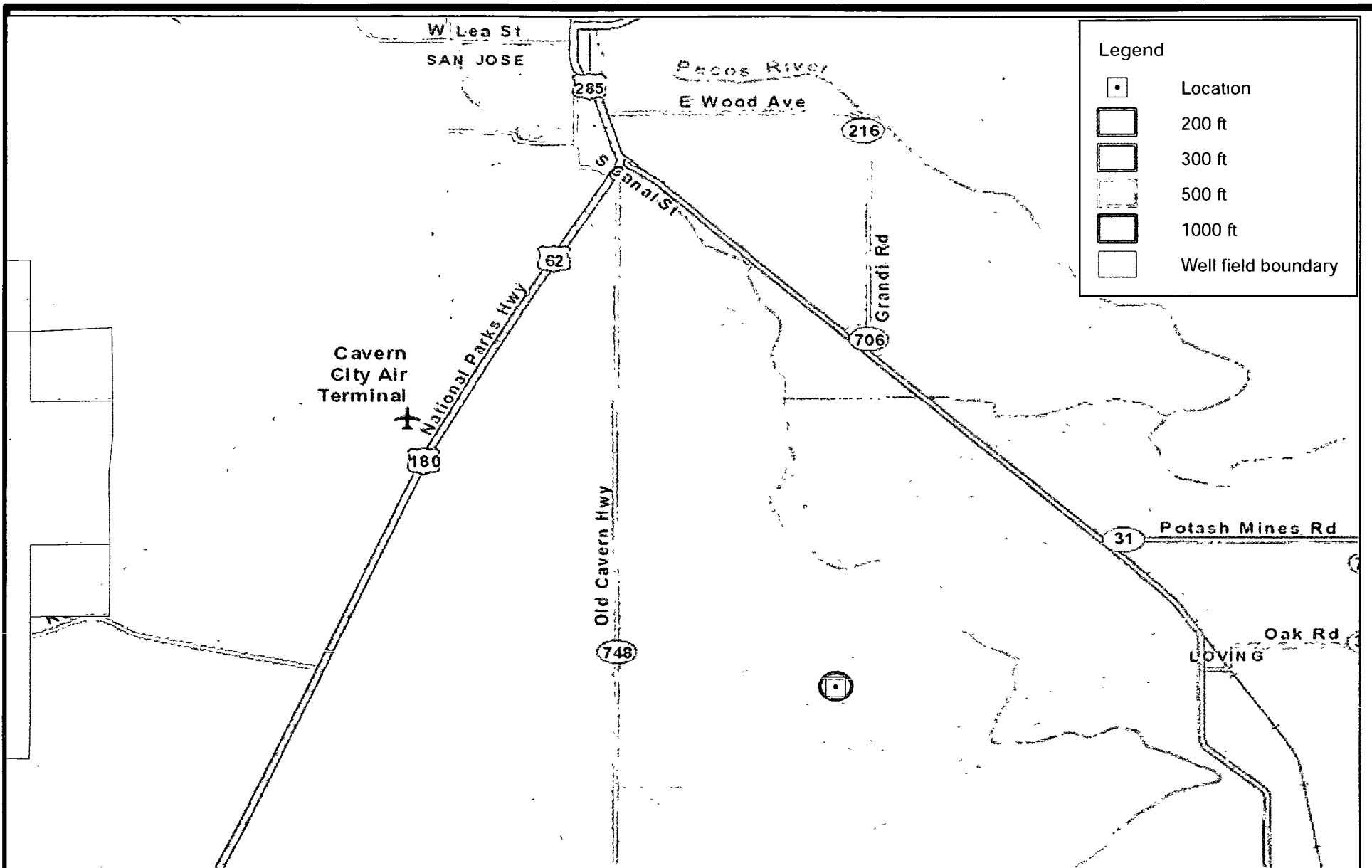
R.T. Hicks Consultants, Ltd
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Albuquerque, NM 87104
Ph: 505 266 5004

Surface Water and Aerial Photography

Caza Operating - Forehand Ranch 27 State Com 1H

Figure 3

August 2012



0 1
Miles

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Albuquerque, NM 87104
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Municipalities and Well Fields

Caza Operating - Forehand Ranch 27 State Com 1H

Figure 4

August 2012

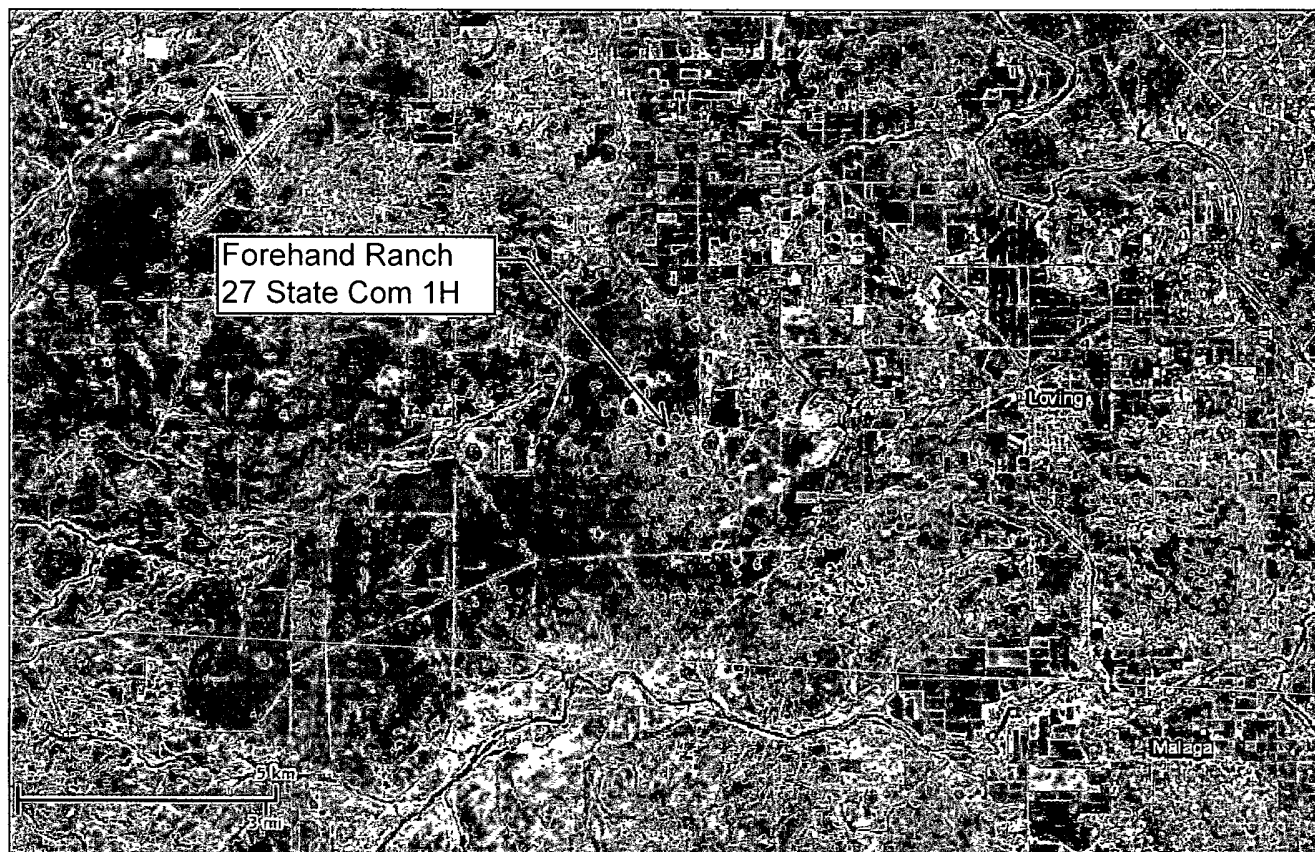


U.S. Fish and Wildlife Service

National Wetlands Inventory

Figure 5a

Aug 7, 2012



Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

Riparian

- Herbaceous
- Forested/Shrub

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

User Remarks:

Wetlands Near Forehand Ranch 27 State Com 1H

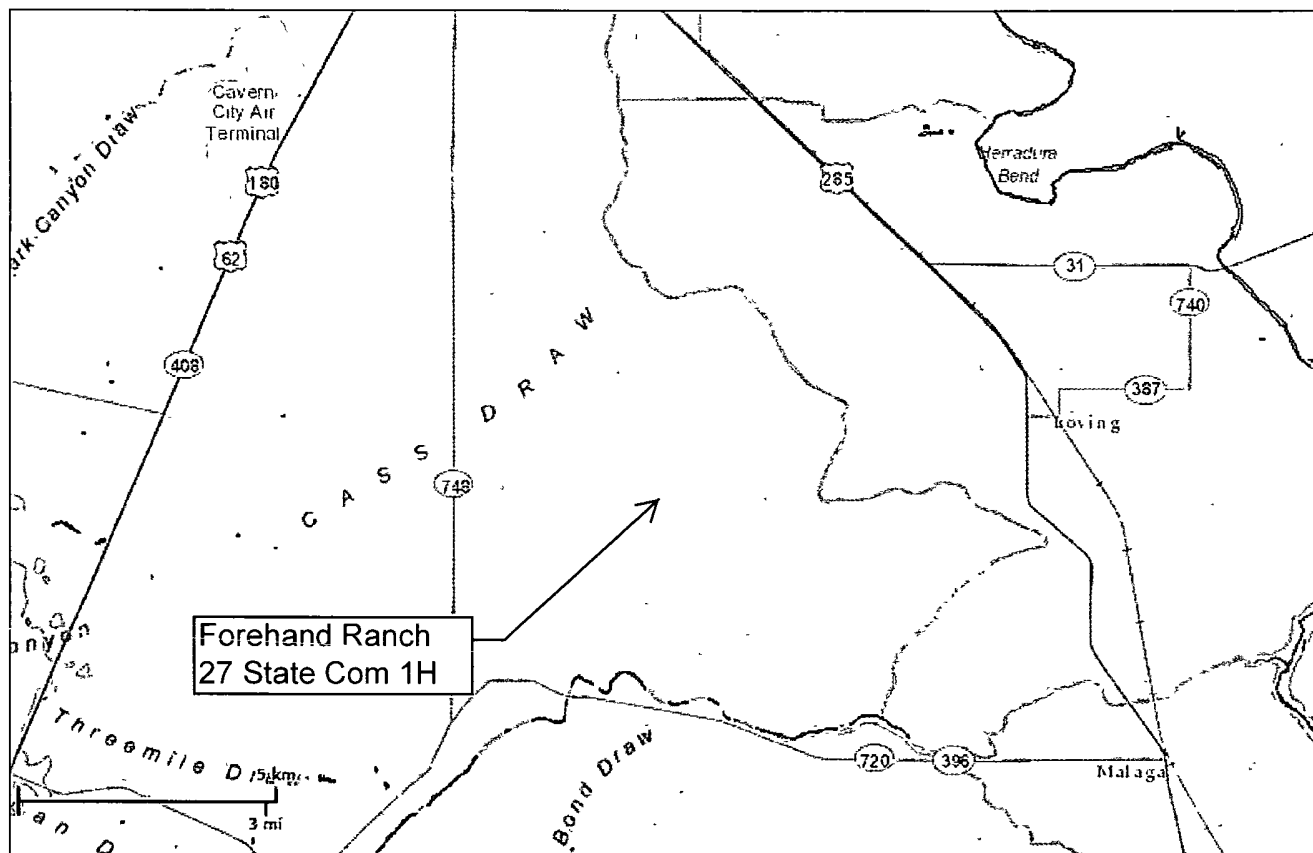


U.S. Fish and Wildlife Service

National Wetlands Inventory

Figure 5b

Aug 7, 2012



Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

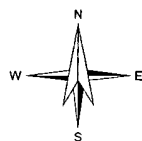
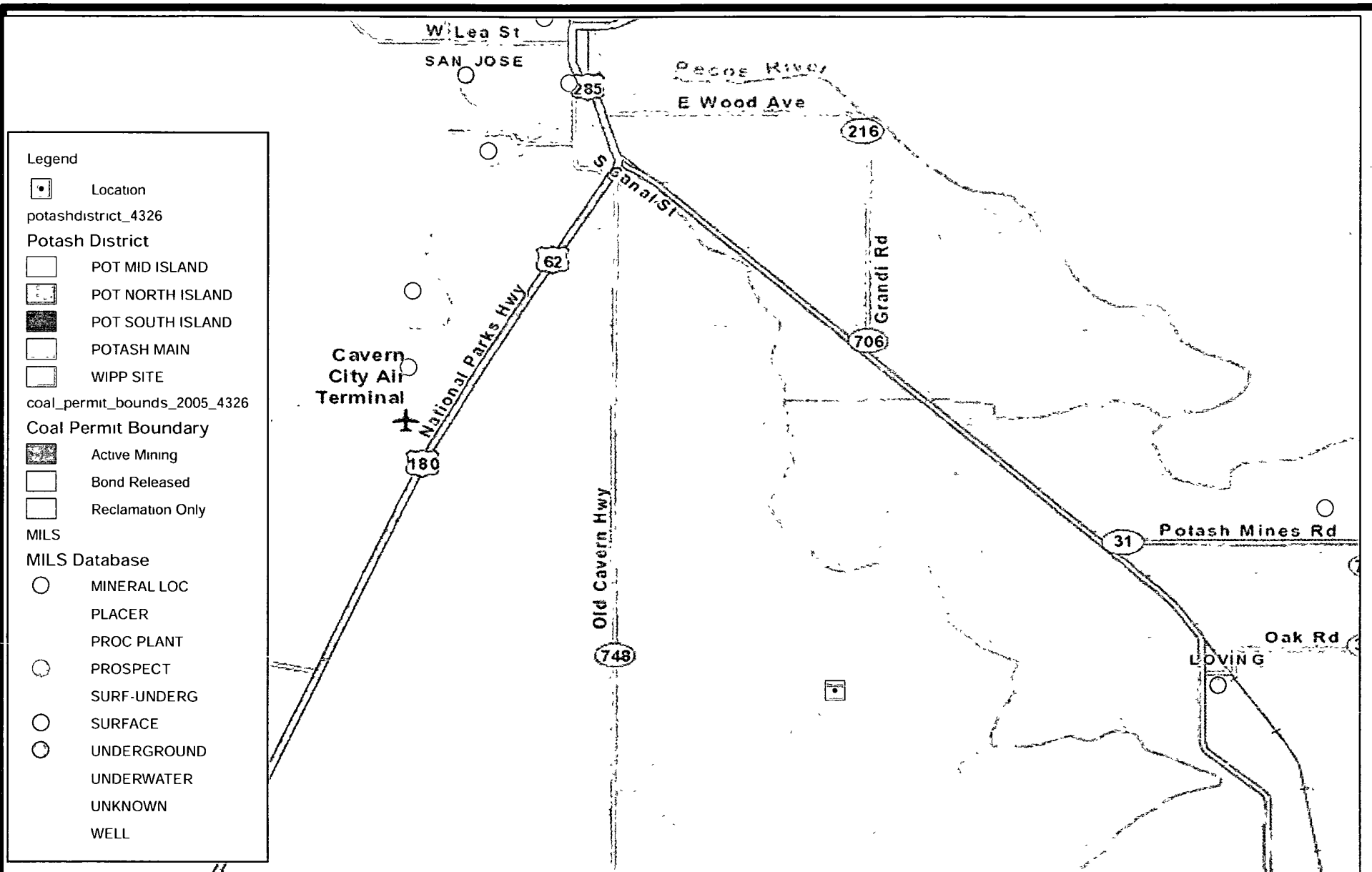
Riparian

- Herbaceous
- Forested/Shrub

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

User Remarks:

Wetlands Near Forehand Ranch 27 State Com 1H



0 1
Miles

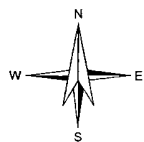
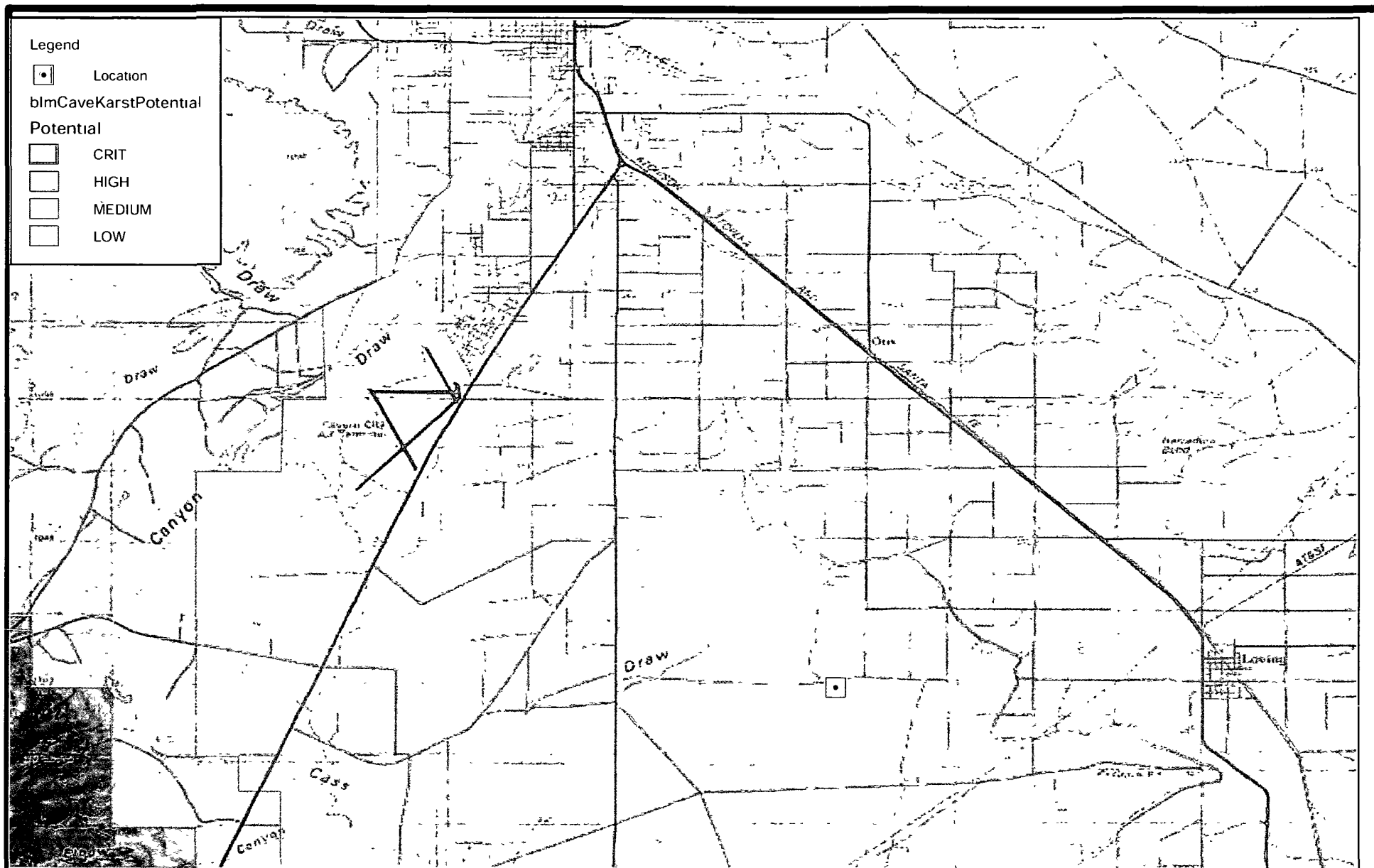
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Nearest Mines

Caza Operating - Forehand Ranch 27 State Com 1H

Figure 6

August 2012



0 1
Miles

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Ph. 505 266 5004

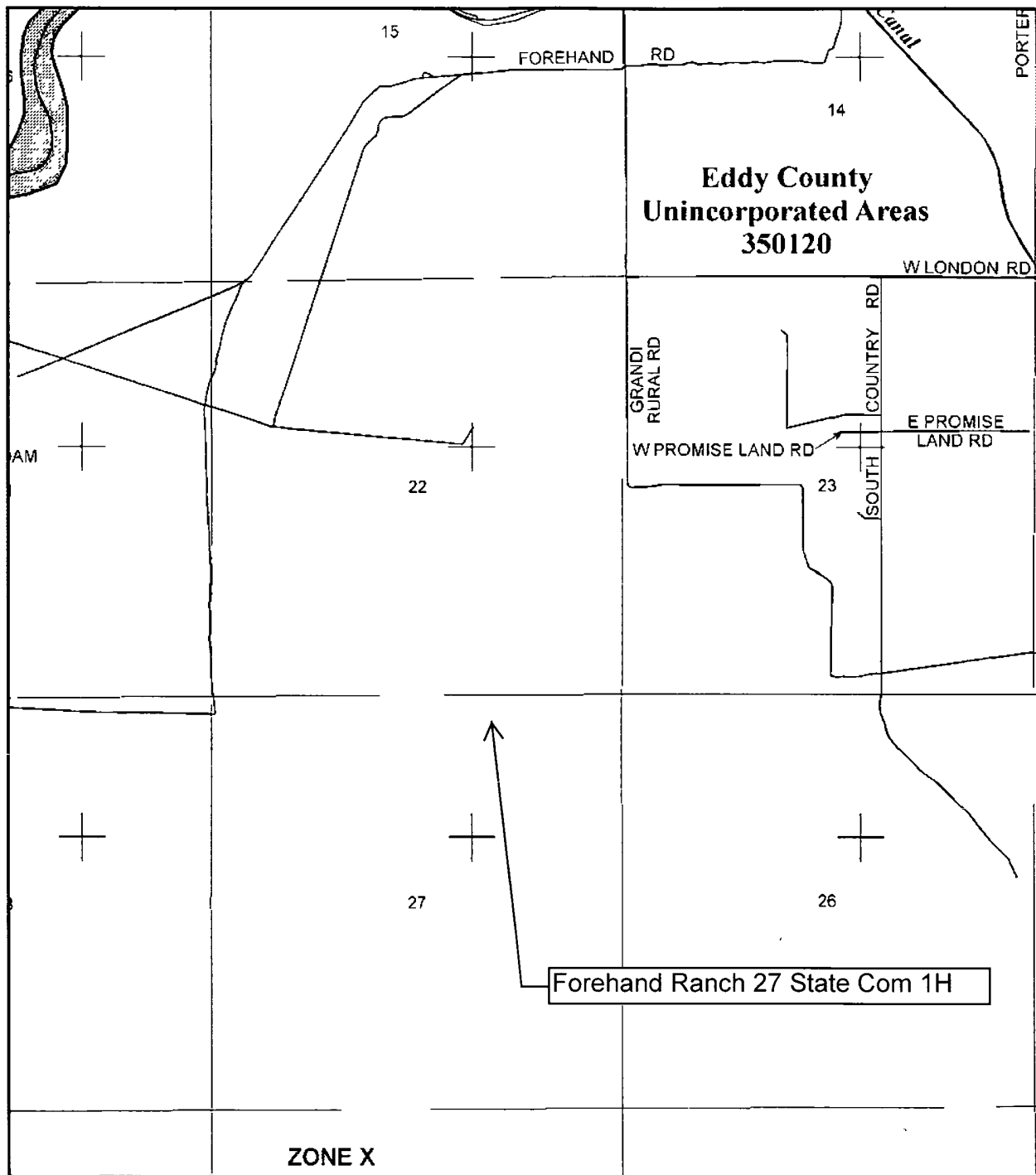
BLM Cave Karst Potential Map

Figure 7

Caza Operating - Forehand Ranch 27 State Com 1H

August 2012

Figure 8



ance Program at 1-800-638-6620.



MAP SCALE 1" = 2000'

0 0 1,000 2,000 3,000 4,000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1325D

FIRM

**FLOOD INSURANCE RATE MAP
EDDY COUNTY,
NEW MEXICO
AND INCORPORATED AREAS**

PANEL 1325 OF 2000

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS

COMMUNITY	NUMBER	PANEL	SUFFIX
CARLSBAD CITY OF	350017	1325	0
EDDY COUNTY UNINCORPORATED AREAS	350120	1325	0

Notes to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used on insurance applications for the subject community.



**MAP NUMBER
35015C1325D
EFFECTIVE DATE
JUNE 4, 2010**

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Appendix A

Survey Information

R.T. Hicks Consultants, Ltd.

901 Rio Grande Blvd. NW, Suite F-142
Albuquerque, NM 87104

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
Phone (505) 393-6161 Fax: (505) 393-0720

DISTRICT II
1301 W. Grand Avenue, Artesia, NM 88210
Phone (505) 746-1263 Fax: (505) 746-9720

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone (505) 334-6176 Fax: (505) 334-6170

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102
Revised August 1, 2011

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

RECEIVED
MAR 20 2012
NMOCD ARTESIA

Submit one copy to appropriate
District Office

WELL LOCATION AND ACREAGE DEDICATION PLAT

AMENDED REPORT

API Number 30-015-39844	Pool Code 24660	Pool Name FOREHAND RANCH; B.S.
Property Code 39026	Property Name FOREHAND RANCH "27" STATE COM	Well Number 1H
OGRID No. 249099	Operator Name CAZA OPERATING, LLC.	Elevation 3158'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	27	23 S	27 E		252	NORTH	1900	EAST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
O	27	23 S	27 E		330	SOUTH	1900	EAST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
160			

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

<p>SURFACE LOCATION Lat - N 32°16'57.04" Long - W 104°10'32.30" NMSPCE- N 466546.109 E 590070.832 (NAD-83)</p> <p>PRODUCING AREA →</p> <p>PROJECT AREA →</p> <p>PROPOSED BOTTOM HOLE LOCATION Lat - N 32°16'09.45" Long - W 104°10'30.73" NMSPCE- N 461737.505 E 590212.581 (NAD-83)</p>	<p>252</p> <p>1900'</p> <p>POE</p> <p>1900' FEL & 500' FNL</p> <p>4810.7'</p> <p>330'</p> <p>1900'</p> <p>NM-112915</p>	<p>OPERATOR CERTIFICATION</p> <p>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p>Signature: <i>Joe T. Janica</i> Date: 02/21/12</p> <p>Printed Name: Joe T. Janica</p> <p>Email Address: joejanica@valornet.com</p> <p>SURVEYOR CERTIFICATION</p> <p>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision and that the same is true and correct to the best of my belief</p> <p>JANUARY 11, 2011</p> <p>Date Surveyed</p> <p>Signature & Seal of Professional Surveyor: <i>[Signature]</i></p> <p>W.O. No. 25998</p> <p>Certificate No. Gary L. Jones 7977</p> <p>BASIN SURVEYS- 25998</p>
--	---	---

EXHIBIT "A"

Generic Plans for Temporary Pits

R.T. Hicks Consultants, Ltd.

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Albuquerque, NM 87104

Temporary Pit Design Plan

Plates 1a, 1b and 1c show the layout of the temporary pit proposed for this project. The temporary pit consists of two cells:

1. One cell for drilling fluid circulation and
2. A fluids cell for storage of
 - a. water for drilling/ stimulation and
 - b. stimulation flow-back prior to re-use or disposal

Field conditions and the drilling rig layout will determine the final configuration of the pits.

In addition to the commitments listed below, the operator will install a system that can drain water entrained in the drilling waste of the drilling pit. As described in the closure plan, this system of filtered perforated pipe and drainage mats cover much of the bottom of the drilling cell of the pit – the cut brine cell and the inner cell. The system drains to a small depression (1-foot deep by about 10 feet wide) in the bottom of the drilling circulation cell (upper right corner of each cell on Plate 1). Standpipes rise from the depression and house a solar-powered pump. The drainage system for the cut brine cell removes water to the brine cell via the solar pumps. The drainage system in the brine cell can remove water to an above-ground tank or the fluids cell of the pit (via solar pumps) for temporary storage before re-use or disposal. The drainage system in the brine cell may also be used to introduce water below the residual cuttings/mud, causing the introduced fluid to move upwards through the cuttings/mud and enhance the solids rinsing process. Introduced water to the brine cell (which will become cut brine or saturated brine after movement through the cuttings) can be removed from the pit for re-use via a vacuum truck or recovered from the drainage system at the bottom.

The temporary storage of fluids, fluid reuse or fluid disposal will be conducted in a manner approved by division rules that prevents the contamination of fresh water and protects public health and the environment. This drainage and rinsing system allows the operator to:

- Recover clear water for possible re-use,
- Reduce the concentration of constituents of concern in the drilling waste by removing some water entrained in the drilling waste.

Precipitation and the possible addition of relatively fresh water (see closure plan) will rinse the solid drilling waste, causing additional reduction in the constituents of concern as the water is recovered for re-use or disposal.

For any temporary storage of fluids derived from the drilling pit in above-ground tanks:

1. Construction, operation and maintenance of the temporary storage tank(s) will adhere to all applicable NMOCD Rules including but not limited to:
 - a. Safety stipulations
 - b. Protection from hydrogen sulfide mandates
 - c. Signage and identification requirements
 - d. Secondary containment requirements for temporary tanks
 - e. Applicable netting requirements

C-144 Supplemental Documentation for Drilling Pit

2. Any cleaning of the temporary tank will adhere to NMOCD Rules relating to tank cleaning.
3. Transportation of water or drilling fluids derived from the drilling pit will adhere to all applicable NMOCD Rules relating to transportation.
4. Storage of water or drilling fluids in temporary above-ground tanks will also adhere to all applicable Federal mandates.

During final closure of the pit, the tanks and secondary containment system will be removed from the location and the area beneath the tank inspected for any leakage. If any leakage is suspected, the operator will sample the soil beneath the tanks and report any release pursuant to NMOCD Rules.

Finally, we intend to place any temporary tank used in conjunction with the pit drainage system on a 20-mil liner with a berm around it that would allow any inadvertently released fluids to drains into the pit.

Construction/Design Plan of Temporary Pit

1. The operator or qualified contractor will design and construct the pit to contain liquids and solids and prevent contamination of fresh water and protect public health and the environment.
2. Prior to constructing the pit the operator or qualified contractor will strip and stockpile the topsoil for use as the final cover or fill at the time of closure.
3. The operator will post an upright sign in compliance with 19.15.16.8 NMAC. The operator will post the sign in a manner and location such that a person can easily read the legend. The sign will provide the following information: the operator's name; the location of the site by quarter-quarter or unit letter, section, township and range; and emergency telephone numbers.
4. The operator will fence the pit in a manner that prevents unauthorized access and will maintain the fences in good repair. The operator will fence the pit to exclude livestock with a four foot fence that has at least four strands of barbed wire evenly spaced in the interval between one foot and four feet above ground level. The pit will be completely fenced at all times excluding drilling and workover operations. During drilling or workover operations, the operator is not required to fence the edge of the pit adjacent to the drilling or workover rig.
5. The operator will design and construct the temporary pit to prevent unauthorized releases and ensure the confinement of liquids.
6. The temporary pit will have a properly constructed foundation and interior slopes consisting of a firm, unyielding base, smooth and free of rocks, debris, sharp edges or irregularities to prevent the liner's rupture or tear.
7. The slopes of the pit will be no steeper than two horizontal feet to one vertical foot (2H:1V). Unless an alternate slope, protective to fresh water, public health and the environment, is proposed and approved by the appropriate division district office.
8. As an addition engineering control to address any concerns relating to the presence of karst and associated instability, during construction of the pit the contractor will compact the earth material that forms the foundation for the pit liner. An expected proctor density of greater than 90% will be achieved by

C-144 Supplemental Documentation for Drilling Pit

- a. adding water to the earth material as appropriate,
 - b. compacting the earth by walking a crawler-type tractor down the sides and bottom of the pit
 - c. repeating this process with a second 6-inch lift of earth material if necessary
9. The operator will design and construct the temporary pit with a geomembrane liner. The geomembrane liner will consist of 20-mil string reinforced LLDPE or equivalent liner material that the appropriate division district office approves. The geomembrane liner will be composed of an impervious, synthetic material that is resistant to petroleum hydrocarbons, salts and acidic and alkaline solutions. The liner material will be resistant to ultraviolet light. Liner compatibility will comply with EPA SW-846 method 9090A.
10. The operator will minimize liner seams and orient them up and down, not across a slope. The operator will use factory welded seams. Prior to any field seaming, the operator will overlap liners four to six inches and orient seams parallel to the line of maximum slope, *i.e.*, oriented along, not across, the slope. The operator will minimize the number of welded field seams in corners and irregularly shaped areas. Field seams will be welded by qualified personnel.
11. Construction will avoid excessive stress-strain on the liner.
12. Geotextile will be placed under the liner where needed to reduce localized stress-strain or protuberances that may otherwise compromise the liner's integrity.
13. The operator and/or qualified contractor retained by the operator will anchor the edges of all liners in the bottom of a compacted earth-filled trench. The anchor trench will be at least 18 inches deep.
14. The operator and/or qualified contractor retained by the operator will ensure that the liner is protected from any fluid force or mechanical damage at any point of discharge into or suction from the lined temporary pit.
15. The operator and/or qualified contractor retained by the operator will design and construct the temporary pit to prevent run-on of surface water. As necessary, a berm or ditch will surround the temporary pit to prevent run-on of surface water.
16. The volume of the temporary pit (fluids cell plus drilling cell), including freeboard, does not exceed 10 acre-feet (77,583 bbls).

Operating and Maintenance Plan

The operator will operate and maintain the pit to contain liquids and solids and maintain the integrity of the liner, liner system or any secondary containment system, prevent contamination of fresh water and protect public health and the environment as described below.

1. If feasible, the operator will recycle, reuse or reclaim of all drilling fluids and recovered water in a manner approved by division rules that prevents the contamination of fresh water and protects public health and the environment. Specifically, drilling fluids and reclaimed water will be transferred to other drilling operations for use (see closure plan).
2. If re-use is not possible, fluids will be sent to disposal at division-approved facility.
3. Reuse or disposal of fluids from the pit will be conducted in a manner approved by division rules that prevents the contamination of fresh water and protects public health and the environment.
4. The operator will not discharge into or store any hazardous waste in the pit.
5. If any pit liner's integrity is compromised, or if any penetration of the liner occurs above the liquid's surface, then the operator will notify the appropriate division district office within 48 hours (phone or email) of the discovery and repair the damage or replace the liner.
6. If the pit develops a leak or if any penetration of the pit liner occurs below the liquid's surface, then the operator will remove all liquid above the damage or leak line within 48 hours, notify the appropriate district office within 48 hours (phone or email) of the discovery and repair the damage or replace the pit liner.
7. The injection or withdrawal of liquids from the pit will be accomplished through a header, diverter or other hardware that prevents damage to the liner by erosion, fluid jets or impact from installation and removal of hoses or pipes.
8. The operator will install diversion ditches and berms around the pit as necessary to prevent the collection of surface water run-on.
9. The operator will immediately remove any visible layer of oil from the surface of the temporary pit and maintain on site an oil absorbent boom to contain and remove oil from the pit's surface.
10. Only fluids used or generated during the drilling or workover process will be discharged into the temporary pit. The discharge of workover fluids to the drilling pit as a rinse to the drilling waste solids is discussed in the closure plan (below).
11. The operator will maintain the temporary pit free of miscellaneous solid waste or debris.
12. Although hydrocarbon-based drilling mud is not anticipated for use, the operator will use a tank made of steel to contain hydrocarbon-based drilling fluids if need be.
13. Immediately after cessation of drilling, the operator will remove any visible or measurable layer of oil from the surface of a drilling pit, in the manner described above.
14. The operator will maintain at least two feet of freeboard for the temporary pit.
15. The operator will inspect the temporary pit containing drilling fluids at least daily while the drilling rig is on-site to ensure compliance with this plan.
16. After drilling operations, the operator will inspect the temporary drilling pit weekly so long as liquids remain in the temporary pit.
17. The operator will maintain a log of such inspections and make the log available for the appropriate district office's review upon request.

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18. The operator will file a copy of the log with the appropriate division district office when the operator closes the temporary pit.
19. The operator will remove all free liquids from the temporary pit within 30 days from the date that the operator releases the drilling rig – unless granted an extension of time by the District Office. The operator will note the date of the drilling rig's release on form C-105 or C-103 upon well completion.

Closure Plan- General Conditions

Protocols and Procedures

The operator will use the following procedures and protocols to implement the closure:

- The operator will notify the surface owner by certified mail, return receipt requested, prior to closure, that the operator plans to close the temporary pit.
- The operator of the temporary pit will notify the applicable division district office verbally or by email at least 72 hours, but not more than one week, prior to any closure operation. The notice will include the operator's name and the location to be closed by unit letter, section, township and range, well's name, number, the API number.
- The operator of the temporary pit will remove all liquids from the temporary pit prior to closure and either:
 - Dispose of the liquids in a division-approved facility, or
 - Recycle, reuse or reclaim the liquids for use in drilling another well.
- Fluids on and entrained in the drilling waste will be removed from the pit for re-use or disposal.
- The operator may request extensions of time for the pit to hold free liquids as extensions may be necessary to allow the addition of water to the outer horse shoe of the pit to cause rinsing of solid waste and removal of constituents of concern via the pit drainage system to the inner shoe then to an above-ground tank (or truck) or to the fluids cell of the temporary pit. Sources of water for rinsing the solid drilling waste in the outer horse shoe include:
 - Residual fresh water in the workover cell not used for hydraulic fracturing (removed from the workover cell prior to the introduction of flow-back)
 - Flow-back of water pumped down hole during hydraulic fracturing that is less than 50% of the estimated TDS of pit pore water based on field conductance or specific gravity measurements¹.
- Fluids pumped from the outer horse shoe drainage system are transferred to the inner shoe drainage system causing relatively low salinity water to move up through the cuttings, dissolving the rock salt cuttings.
- When the inner shoe contains at least 130 barrels of clear water (one water truck load), the brine or cut brine can be removed for re-use in drilling operations or sent to disposal.
- The operator shall remove all free liquids from the temporary pit within 30 days from the date that the operator released the drilling rig. The operator shall note the date of the drilling rig's release on form C-105 or C-103 upon well completion. The operator will request an extension of up to three months from the appropriate division district office if necessary to allow for rinsing of drilling waste solids and the recovery of water for re-use.
- After removal of all standing water, cuttings rinsing ceases and drilling cell drainage begins as:

¹ If water pumped from the pit drainage system prior to stimulation is 9.5 pounds/gallon and distilled water is 8.3 pounds per gallon, discharge to the outer shoe ceases when measurements of flow back are 8.9 pounds/gallon or less

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- Water from the outer horse shoe drainage system discharges to the surface of the inner shoe
 - solar pumping from the inner shoe drainage system transfers water to an above-grade tank or the fluids cell of the temporary pit
- Fluids drained from the cell are temporarily stored in the above-ground tank or fluids cell and are removed for re-use or disposal. Both temporary storage of fluids from the pit and reuse or disposal will be conducted in a manner approved by division rules that prevents the contamination of fresh water and protects public health and the environment.
- The operator will close the temporary pit within six months of the date that the operator releases the drilling rig. An extension not to exceed three months may be requested of the applicable district office.
- The operator will close the pit by an earlier date that the division requires because of imminent danger to fresh water, public health or the environment.
- Within 60 days of closure completion, the operator will submit a closure report on form C-144, with necessary attachments to document all closure activities including sampling results; information required by 19.15.17 NMAC; a plot plan; and details on back-filling, capping and covering, where applicable.
- In the closure report, the operator will certify that all information in the report and attachments is correct and that the operator has complied with all applicable closure requirements and conditions specified in the approved closure plan.
- The operator will provide a plat of the pit location on form C-105 with the closure report within 60 days of closing the temporary pit.

Additional Protocols and Procedures for On-Site Closure

- The operator has provided the surface owner notice of the operator's proposal of an on-site closure (see transmittal letter for proof of notice to the landowner) as required in 19.15.17.13.F(1)(b).
- Upon receipt of NMOCD approval for on-site closure (in-place burial), the operator will notify the surface owner by certified mail, return receipt requested, that the operator plans to close the pit and where the operator has approval for on-site closure. Evidence of mailing of the notice will demonstrate compliance with this requirement.
- The operator will place a steel marker at the center of an on-site burial (unless the surface owner requires an alternative marker that is acceptable to the appropriate division district office). The steel marker will be not less than four inches in diameter and will be cemented in a three-foot deep hole at a minimum. The steel marker will extend at least four feet above mean ground level and at least three feet below ground level. The operator name, lease name and well number and location, including unit letter, section, township and range, and that the marker designates an on-site burial location will be welded, stamped or otherwise permanently engraved into the metal of the steel marker.
- The operator will report the exact location of the on-site burial on form C-105 filed with the division.
- If the surface is owned by the State of New Mexico or Federal government, no deed exists, the land is held in trust. Therefore, the operator cannot file a deed notice identifying the exact location of the on-site burial with the county clerk in the county.

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The exact location of the on-site burial will be transmitted to the surface owner by copy of the form C-105 discussed above.

- If the surface is not in the public domain, the operator will file a deed notice identifying the exact location of the on-site burial with the county clerk in the county. The exact location of the on-site burial will be transmitted to the surface owner by copy of the form C-105 discussed above.
- In-place closure is the preferred closure alternative for the temporary pit. If waste sampling results suggest that standards for in-place closure are not met for the entire drilling cell (inner horse shoe and outer horse shoe), the operator will implement excavation and removal as described in later sections of this plan.

Site Reclamation Plan

After the operator has closed the pit, the operator will reclaim the pit location and all areas associated with the pit, including associated access roads to a safe and stable condition that blends with the surrounding undisturbed area. The operator will substantially restore the impacted surface area to the condition that existed prior to oil and gas operations by placement of the soil cover as provided in Subsection H of 19.15.17.13 NMAC, re-contour the location and associated areas to a contour that approximates the original contour and blends with the surrounding topography and re-vegetate according to Subsection I of 19.15.17.13 NMAC.

Soil Cover Design Plan

If the operator removes the pit contents or remediates any contaminated soil to the division's satisfaction the soil cover will consist of the background thickness of topsoil or one foot of suitable material to establish vegetation at the site, whichever is greater.

The soil cover for the in-place burial will consist of a minimum of four feet of compacted, non-waste containing, earthen material. The soil cover will include either the background thickness of topsoil or one foot of suitable material to establish vegetation at the site, whichever is greater.

The operator will construct the soil cover to the site's existing grade and prevent ponding of water and erosion of the cover material.

Re-vegetation Plan

1. The first growing season after the operator closes the pit, including access roads; the operator will seed or plant the disturbed areas.
2. The operator will accomplish seeding by drilling on the contour whenever practical.
3. The operator will obtain vegetative cover that equals 70% of the native perennial vegetative cover (un-impacted by overgrazing, fire or other intrusion damaging to native vegetation).
4. In the absence of specific guidance from the surface owner, the operator will follow BLM mandates for the seed mixture not including noxious weeds, and maintain that cover through two successive growing seasons. The operator will notify NMOCD of the specific mixture prior to seeding.

5. During the two growing seasons that prove viability, there will be no artificial irrigation of the vegetation.
6. The operator will repeat seeding or planting until it successfully achieves the required vegetative cover.
7. If conditions are not favorable for the establishment of vegetation, such as periods of drought, the operator may request that the division allow the operator to delay seeding or planting until soil moisture conditions become favorable or may require the operator to use additional cultural techniques such as mulching, fertilizing, irrigating, fencing or other practices.
8. The operator will notify the division when it has seeded or planted and when it successfully achieves re-vegetation.

In-place Closure Plan

In the event that sampling of the drilling waste suggests that the inner and outer horseshoe of the drilling cell meet the criteria for in-place closure, the operator will proceed with in-place closure for one or both cells (inner and outer horse shoe).

Siting Criteria Compliance Demonstration for In-Place Burial

The Siting Criteria Compliance Demonstration for the temporary pit show that the requirements of 19.15.17.10 NMAC are met for in-place closure.

Waste Material Sampling Plan for In-place Burial

The operator will collect at a minimum, a five point, composite sample of the contents of the temporary pit after treatment or stabilization.

The purpose of the sampling after the waste material is stabilized is to demonstrate that:

- Benzene, as determined by EPA SW 846 method 8021B or 8260B, does not exceed the concentration limit for in-place burial;
- Total BTEX, as determined by EPA SW-846 method 8021B or 8260B, does not exceed the concentration limit for in-place burial;
- The GRO and DRO combined fraction, as determined by EPA SW-846 method 8015M, does not exceed the concentration limit for in-place burial ;
- TPH, as determined by EPA method 418.1 does not exceed the concentration limit for in-place burial;
- Chloride, as determined by EPA method 300.1, does not exceed the concentration limit for in-place burial or the background concentration, whichever is greater.
- The Stabilized waste passes the paint filter liquids test (EPA SW-846, method 9095)

Protocols and Procedures for In-Place Burial

In addition to the General Conditions Protocols and Procedures and the Additional Protocols and Procedures for On-site Closure listed above, the operator will execute the following steps for in-place closure of the pit.

- A. The operator will measure the distance between the top of the drilling waste and existing grade to determine if stabilized drilling waste (see stabilization methods, below) will be at least 4-feet below existing grade to allow installation of the soil

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- cover (see soil cover design, above).
- B. The operator will stabilize or solidify the contents of the pit to a bearing capacity sufficient to support the temporary pit's final cover. However, the operator will not mix the pit contents with soil or other material at a mixing ratio of greater than 3:1, (3 parts soil or other material to 1 part drilling waste).
 - C. Specifically, the drilling waste will be stabilized in the cell by adding no more than 3 parts clean fill derived from the excavation of the pit to 1 part drilling waste.
 - D. After stabilization such that the waste material will support the soil cover, the mixture will be re-sampled (as necessary) pursuant to NMOCD Rules (see above).
 - E. If sample results show that stabilized waste in
the inner and outer horse shoe of the cell satisfy the regulatory standards for in-place burial, the operator will measure the distance between the stabilized waste and existing grade and, if necessary, transfer stabilized waste from one shoe to the other to allow for placement of the soil cover (see design criteria, above).
 - F. Cover the geomembrane lined, filled, temporary pit with compacted, non-waste containing, earthen material; construct a division-prescribed soil cover; recontour and re-vegetate the site as described in this plan. Specifically, a 4- foot thick soil cover consistent with NMOCD Rules will be placed over the stabilized waste.
 - G. If necessary to meet the other mandates of NMOCD Rules (e.g placement of a 4- foot soil cover to existing grade) and this closure plan, the stabilized drilling waste in the inner horse shoe will be excavated and placed in the outer horse shoe. The operator will implement confirmation sampling consistent with excavation and removal (see below) if this option is exercised on the inner horse shoe. This process would be conducted according to applicable regulations as described below, not allowing waste stabilization to exceed a 3:1 mixing ratio (3 parts soil or other material to 1 part drilling waste), testing stabilized waste to demonstrate compliance with in-place burial standards as required, sampling to confirm no release has occurred beneath the inner horse shoe.
 - H. Any excess liner above the stabilized waste will be removed for re-use or disposal.

Excavation and Removal Closure Plan

IF THE CRITERIA FOR ON-SITE CLOSURE (IN-PLACE BURIAL) FOR SOME OR ALL OF THE TEMPORARY PIT ARE NOT MET, THE OPERATOR WILL ADHERE TO NMOCD RULES AND IMPLEMENT THE FOLLOWING ACTIONS FOR ONLY THE MATERIALS THAT DO NOT MEET CRITERIA FOR IN PLACE CLOSURE:

Protocols and Procedures for Excavation and Removal

The operator will close the temporary pit by excavating the drilling waste that does not meet the criteria for in-place closure (e.g. solids in the inner shoe) and any synthetic pit liners that cannot be re-used and transferring those materials to one of the division- approved facilities listed below:

Controlled Recovery, Inc.
Lea Land, LLC

NM-01-0006
NM-01-0035

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If the sampling program described below demonstrates that a release has not occurred or that any release does not exceed the concentrations specified in Subparagraph (b.ii) of Paragraph (1) of Subsection B of 19.15.17.13 NMAC, then the operator will:

1. Backfill the temporary pit excavation with compacted, non-waste containing, earthen material;
2. Construct a division-prescribed soil cover to existing grade as described in the Soil Cover Plan (above);
3. Re-contour and re-vegetate the site as described in the Revegetation Plan (above).

Confirmation Sampling Plan for Excavation and Removal

The operator will test the soils beneath the temporary pit after excavation to determine whether a release has occurred. To determine if a release has occurred, the operator and/or qualified contractor will collect, at a minimum:

- A five point, composite sample and;
- Individual grab samples from any area that is wet, discolored or showing other evidence of a release

The purpose of this sampling is to demonstrate that:

- Benzene, as determined by EPA SW-846 method 8021B or 8260B does not exceed concentration limits of the Rule;
- Total BTEX, as determined by EPA SW-846 method 8021B or 8260B does not exceed concentration limits of the Rule;
- The GRO and DRO combined fraction, as determined by EPA SW-846 method 8015M, does not exceed concentration limits of the Rule;
- The TPH, as determined by EPA method 418.1 does not exceed 2,500 mg/kg; and
- Chloride, as determined by EPA method 300.1, does not exceed concentration limits of the Rule or the background concentration, whichever is greater.

Reporting

The operator shall notify the division of its results on form C-141. If the operator or the division determines that a release has occurred, then the operator will comply with 19.15.29 NMAC and 19.15.30 NMAC, as appropriate.