District I
1625 N French Dr , Hobbs, NM 88240
District II
1301 W Grand Avenue, 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
July 21, 2008

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

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: Read & Stevens, Inc. OGRID #: 18917

Address: PO Box 1518, Roswell, NM 88202-1518

Facility or well name: Marbob State #5H Workover Pit

API Number: 30-015-38455 OCD Permit Number: ~~126578~~

U/L or Qtr/Qtr A Section 19 Township 19S Range 29E County: Eddy

Center of Proposed Design: Latitude 32.652347'N Longitude 104.106164'W NAD: ☒1927 ☐ 1983

Surface Owner: ☐ Federal ☒ State ☐ Private ☐ Tribal Trust or Indian Allotment

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2.
☒ **Pit:** Subsection F or G of 19.15 17.11 NMAC
Temporary: ☐ Drilling ☒ Workover
☐ Permanent ☐ Emergency ☐ Cavitation ☐ P&A
☒ Lined ☐ Unlined Liner type: Thickness 20 mil ☒ LLDPE ☐ HDPE ☐ PVC ☐ Other
☒ String-Reinforced
Liner Seams: ☒ Welded ☒ Factory ☐ Other Volume: 22,476 bbl Dimensions: L 210' x W 90' x D 14'

3.
☐ **Closed-loop System:** Subsection H of 19.15.17.11 NMAC
Type of Operation: ☐ P&A ☐ Drilling a new well ☐ Workover or Drilling (Applies to activities which require prior approval of a permit or notice of intent)
☐ Drying Pad ☐ Above Ground Steel Tanks ☐ Haul-off Bins ☐ Other
☐ Lined ☐ Unlined Liner type: Thickness mil ☐ LLDPE ☐ HDPE ☐ PVC ☐ Other
Liner Seams: ☐ Welded ☐ Factory ☐ Other

4.
☐ **Below-grade tank:** Subsection I of 19.15.17.11 NMAC
Volume: bbl Type of fluid:
Tank Construction material:
☐ Secondary containment with leak detection ☐ Visible sidewalls, liner, 6-inch lift and automatic overflow shut-off
☐ Visible sidewalls and liner ☐ Visible sidewalls only ☐ Other
Liner type: Thickness mil ☐ HDPE ☐ PVC ☐ Other

5.
☐ **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 ~~19.15.3.103 NMAC~~ 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. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells **SEE FIGURE**	☐ Yes ☒ No
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 **SEE FIGURE**	☐ Yes ☒ No
Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. *(Applies to temporary, emergency, or cavitation pits and below-grade tanks)* - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image **SEE FIGURE**	☐ Yes ☒ No ☐ NA
Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. *(Applies to permanent pits)* - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image **SEE FIGURE**	☐ Yes ☐ No ☒ 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. - NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site **SEE FIGURE**	☐ Yes ☒ 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. **SEE FIGURE** - Written confirmation or verification from the municipality; Written approval obtained from the municipality	☐ Yes ☒ No
Within 500 feet of a wetland. - US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site **SEE FIGURE**	☐ Yes ☒ No ☐ Yes ☒ No
Within the area overlying a subsurface mine. - Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division **SEE FIGURE**	☐ Yes ☒ No
Within an unstable area. - Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; Topographic map **SEE FIGURE and TEXT on page 3-4 of Supplemental Documentation**	☐ Yes ☒ No
Within a 100-year floodplain. - FEMA map **SEE FIGURE**	

11.
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: _____

12.
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 H_2S, 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)

15.
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

16.

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 indentify 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	☐ Yes ☒ No ☐ 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	☐ Yes ☒ No ☐ 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	☒ Yes ☐ No ☐ 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	☐ Yes ☒ 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	☐ Yes ☒ 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	☐ Yes ☒ 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	☐ Yes ☒ No
Within 500 feet of a wetland. - US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site	☐ Yes ☒ No
Within the area overlying a subsurface mine. - Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division	☐ Yes ☒ No
Within an unstable area. - Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; Topographic map	☐ Yes ☒ No
Within a 100-year floodplain. - FEMA map	☐ Yes ☒ 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): Randall Hicks Title: Agent

Signature: Randall Hicks Date: 6-6-2011

e-mail address r@rthicksconsult.com Telephone: 505-266-5004

20.
OCD Approval: ☒ Permit Application (including closure plan) ☐ Closure Plan (only) ☐ OCD Conditions (see attachment)

OCD Representative Signature: Signed By Mike Bratcher **Approval Date:** 9/6/2011

Title: Env. Spec. **OCD Permit Number:**

21
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:**

22.
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.

23
Closure Report Regarding Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only:

Instructions: Please indentify 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

24.
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.

LIMITED POWER OF ATTORNEY

State (situs of land): New Mexico

County (situs of land): Chaves, Eddy and Lea Counties

Principal: Read & Stevens, Inc.

Principal's Address: 400 N. Pennsylvania Ave, Suite 1000, Roswell, NM 88201

Agent/Attorney in Fact: Randall Hicks (owner of R T Hicks Consulting)

Agent/Attorney in Fact's Address: 901 Rio Grande NW F-142, Albuquerque, NM 87104

Date Executed: 06/08/2010

Effective Date: 05/08/2010

Principal, identified above, makes, constitutes and appoints Agent, identified above, Principal's true and lawful Agent and Attorney in Fact for Principal and in Principal's name, place and stead, for the sole purposes of transacting any business dealings with the New Mexico Oil Conservation Division (NMOCD) Form C-144 on behalf of Principal.

Principal gives and grants Agent full and complete power and authority to do and perform all acts and things required or necessary to be done in transacting Principal's dealing with the NMOCD, Form C-144, as fully to all intents and purposes as if Principal might or could do if personally present and acting on Principal's own behalf.

Principal ratifies and affirms all that the Agent may lawfully do or cause to be done by virtue of this Limited Power of Attorney.

Principal

David Luna

CORPORATE ACKNOWLEDGEMENT

STATE OF NEW MEXICO

COUNTY OF

The foregoing instrument was acknowledged before me this 8th day of June, 2010 by David Luna, of Read & Stevens, Inc a New Mexico corporation on behalf of said corporation.

My Commission Expires:
11-4-13

Mary L. Page
Notary Public

R. T. HICKS CONSULTANTS, LTD.

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

June 20, 2011

Mr. Mike Bratcher
NMOCD District 2
1301 West Grande
Artesia, New Mexico 88210
Via E-mail

RE: Marbob State 5H, API 30-015-38455
Read and Stevens, Inc.

Dear Mike:

For the above-referenced temporary workover pit, attached are:

1. A C-144 Form
2. The revised supplemental information to support the C-144

The following documents were previously submitted:

- A Power of Attorney form naming Randy Hicks as the agent for Read and Stevens
- The original C-102 and a copy of that form showing the proposed location of the temporary pit

On June 2, we sent a separate submission for the drilling pit. This submission concerns the adjacent workover pit, which we will use to capture flow-back water from the hydraulic fracturing process.

You had a few questions regarding the depth to ground water at the site. In the attached submission we say:

> **Ground water is GREATER than 100 feet below the bottom of the temporary pit and on-site closure method**
> The PRRC database of OSE wells presents few data points in the area of interest and due to the topography of the area, depth to water data is of little value.
>
> As ground water data for this area is limited, we have elected to provide a map noting the site area on Figure 1 from the *Collection of Hydrologic Data – Eastside Roswell Range EIS Area – New Mexico* (Geohydrology Associates, Inc., 1978). On Figure 1, the solid black circles are wells from which the authors of the report collected depth to water data. Within 4 miles of Section 19 are nine measurements, which create a high degree of confidence regarding the water table elevation beneath Section 19. Figure 1 shows that the elevation of the water table is no higher than 3,210 feet above sea level (asl) in the southeast corner of the section and no higher than 3,240 feet asl in the northeast corner.

> According to the attached C-103, the ground elevation of the Marbob State 5H well is 3362 feet asl. With a water elevation below the well of about 3,235, the distance between the bottom of a 14-foot pit and ground water is 113 feet.

While, the accuracy of this calculation involves interpolation, the data permit a conclusion that the distance between any water table aquifer and the bottom of the temporary pit (and any on-site closure) is more than 100 feet.

Sincerely,
R.T. Hicks Consultants

David J. Hamilton

David Hamilton

Copy: Read and Stevens

C-144 Supplemental Documentation

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

THE OPERATOR, READ AND STEVENS, INC., WILL ADHERE TO THE APPROPRIATE MANDATES OF NMOCD RULES INCLUDING:

- Using appropriate engineering principles and practices
- Following applicable liner manufacturers' requirements.

This plan includes:

- A Temporary Pit Design Plan,
- Operating and maintenance procedures,
- A closure plan, and
- Hydrogeologic data that provides sufficient information and detail on the site's topography, soils, geology, surface hydrology and ground water hydrology to enable the appropriate division district office to evaluate the actual and potential effects on soils, surface water and ground water and compliance with the siting criteria of 19.15.17.10 NMAC.

The closure plan describes the proposed closure method and the proposed procedures and protocols to implement and complete an in-place closure. If this method does not satisfy the in-place closure standards specified in Subsection F of 19.15.17.13 NMAC, then the waste material will be removed to an NMOCD –approved facility as part of the waste excavation and removal closure method

Because the operator plans to use a temporary pit, the operator is submitting the enclosed application, form C-144, and all required attachments as well as the proposed pit location on form C-102 (attached).

Hydrogeologic Data

The information identified in item 10, "Siting Criteria" of the C-144 is attached. These are:

1. Figure 1 – Ground water elevation data from the *Collection of Hydrologic Data – Eastside Roswell Range EIS Area – New Mexico* (Geohydrology Associates, Inc., 1978)
2. Figure 2- USGS topographic map of the area. These maps show locations of any significant watercourse and the locations of windmills and other wells that may not be registered with the OSE.
3. Figure 3 – 2008 aerial photograph showing the presence of structures, which in this area are oil wells and tank batteries
4. Figure 4 - is a map that also shows the location of the nearest incorporated municipal boundaries
5. Figure 5 – shows that no wetlands are identified in the area directly surrounding the site
6. Figure 6 – shows the location of the nearest identified mine
7. Figure 7 – shows the area in relation to identified unstable areas
8. Figure 8 - geologic map of the area

9. Figure 9 - FEMA map shows the site is located in Zone X, unshaded, indicating the area is determined "to be outside of the 500-year flood and protected by levee from 100-year flood"
10. Figure 10 – layout and dimensions of temporary pits

Siting Criteria Compliance Demonstration

As designated in the C-144 the location of the pit and on-site closure meet the criteria of NMOCD Rules. We believe the data presented in Figures 1-9 demonstrate that:

Ground water is GREATER than 100 feet below the bottom of the temporary pit and on-site closure method
The PRRC database of OSE wells presents few data points in the area of interest and due to the topography of the area, depth to water data is of little value.

As ground water data for this area is limited, we have elected to provide a map noting the site area on Figure 1 from the *Collection of Hydrologic Data – Eastside Roswell Range EIS Area – New Mexico* (Geohydrology Associates, Inc., 1978). On Figure 1, the solid black circles are wells from which the authors of the report collected depth to water data. Within 4 miles of Section 19 are nine measurements, which create a high degree of confidence regarding the water table elevation beneath Section 19. Figure 1 shows that the elevation of the water table is no higher than 3,210 feet above sea level (asl) in the southeast corner of the section and no higher than 3,240 feet asl in the northeast corner.

According to the attached C-103, the ground elevation of the Marbob State 5H well is 3362 feet asl. With a water elevation below the well of about 3,235, the distance between the bottom of a 14-foot pit and ground water is 113 feet.

The pit, excavated material and on-site closure is NOT within 300 feet of a continuously flowing watercourse, or within 200 feet of any other significant watercourse or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).
Figures 2-3 and Appendix A confirm this statement.

The pit, excavated material and on-site closure is NOT within 300 feet of a permanent residence, school, hospital, institution, or church in existence at the time of initial application.
Figures 2-3 and Appendix A confirm this statement. The 2008 aerial photograph shows only tank batteries and oil well locations in this area as does the photographic documentation in Appendix A.

The pit, excavated material and on-site closure is NOT within 500 feet of a private, domestic fresh water well or spring used by less than five households for domestic or stock watering purposes, it is NOT within 1,000 feet of any other fresh water

well or spring.
Figures 1-3 and Appendix A support this statement.

The pit, excavated material and on-site closure is NOT 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.
Figure 4 confirms this statement.

The pit, excavated material and on-site closure is NOT within 500 feet of a wetland.
Figure 5 and Appendix A confirm this statement.

The pit, excavated material and on-site closure is NOT within an area overlying a subsurface mine.
Figure 6 confirms this statement. All mines shown on Figure 6 are surface mines and are typically caliche pits.

The pit, excavated material and on-site closure is NOT within an unstable area.
Figure 7 shows that site lies within a Karst area indicated by the lavender color on the map. According to the PRRC legend, this indicates an area with "fissures, tubes, and caves over 1,000 ft long; 50 ft to over 250 ft vertical extent; in gently dipping to flat-lying beds of gypsum. Although site-specific evidence does not suggest the area of the proposed pit is located within an unstable area, the design and construction section of this submittal provides for additional engineering controls.

Our site visit, our examination of the geology and topography of the area (see Figures 2 and 8), and experience of Read and Stevens in drilling Marbob State 4 suggest that karst is present in the general area of the site. The evidence of karst in the area includes:

1. When drilling Marbob State 4, Read and Stevens lost circulation at a depth of 195 feet (Marbob State 4 lies in Section 19).
2. The topographic map (Figure 2) shows closed contour intervals (i.e. closed depressions) in the northwest quarter of Section 19, south half of Section 20 and the northeast quarter of Section 20.
3. The Karst Map (Figure 7) indicates the site is located in an area with fissures and tubes, as noted above.
4. The geologic map (Figure 8) shows that the Rustler Formation (Pr) crops out about 2 miles east of Section 19.

From these data we conclude that a solution cavity in the Rustler Formation, which can create karst features (see wipp.energy.gov/library/Karst_Chaturvedi_062309.pdf), caused the lost circulation observed in Marbob State 4. The closed depressions observed on the topographic map could be caused by solution and collapse in the Rustler; but are perhaps more likely to be the result of salt flow in the underlying

Salado Formation. However, Hall and Goble (see redrockgeological.com/pdf/2006_mescalero_sands.pdf) state that the origin of the numerous small closed basins in the area is "uncertain".

While the absence of karst features (and mass wasting features, recent fault scarps, etc.) is a very good indication that an area is "stable", the mapping of karst features on the PRRC-generated Figure 7 does not necessarily imply that that the ground near a temporary pit is "unstable". Moreover, in our investigation of the area, which included walking along the eastern portion of Section 19 and visiting several other locations (e.g. the closed depression in the northeast corner of Section 20) we found no evidence of recent collapse or instability. Finally, the loss of circulation at Marbob State 4 did not create any surface collapse due to the flow of fluid from the boring into the strata. Given the large amount of drilling in the area, the lack of reported collapse, the observations of a professional geologist while walking the area where the temporary pit is proposed, we conclude with a high degree of scientific certainty that while karst features are present in the subsurface, the probability that "instability" precludes the use of a temporary pit in Section 19 is very low. Nevertheless, we propose additional construction methods to minimize any effects of karst.

The pit, excavated material and on-site closure is NOT within a 100-year floodplain.
The FEMA map presented in Figure 9 and our site visit confirm this statement. The FEMA map shows the site is located in Zone X, unshaded, indicating the area is determined "to be outside of the 500-year flood and protected by levee from 100-year flood"

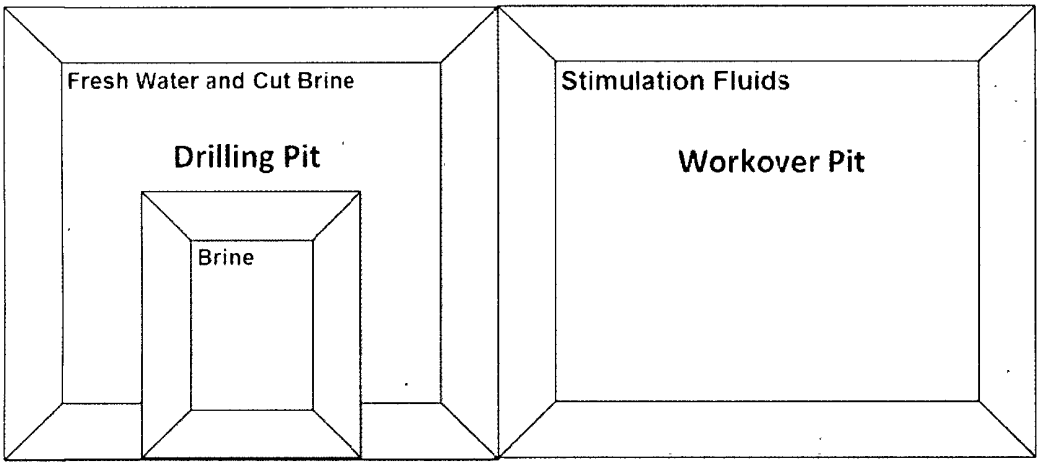
Temporary Pit Design Plan

The figure below shows the layout of the temporary pits proposed for this project. See Figure 10 for dimensions. The workover pit, which is the subject of this C-144, will hold fresh water prior to hydraulic fracturing operations and flow-back water from the well stimulation process.

The figure also shows an adjacent drilling pit consisting of two cells:

1. One cell for fresh water drilling of surface casing then for use with a cut brine fluid below the salt section (the outer horse shoe) and
2. One for brine drilling of the salt section (the inner shoe)

The drilling pit is the subject of a separate C-144.



General Layout of Temporary Pits Showing Drilling Pit and Workover Pit and fluid types contained in each cell.

Field conditions will determine the final configuration of the pits.

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

Precipitation plus the possible addition of fresh water to the pit will rinse any solid workover waste, causing additional reduction in the constituents of concern as the water is recovered for re-use or disposal.

The storage of workover flow-back fluids is not anticipated, Transportation of water or workover fluids derived from the workover pit will adhere to all applicable NMOCD Rules relating to transportation.

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).
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
    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 a slope, 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 workover pit, including freeboard, does not exceed 10 acre-feet (Figure 10).

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 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 all well stimulation fluids in a manner approved by division rules that prevents the contamination of fresh water and protects public health and the environment. Specifically, residual fresh water in the workover pit and flow-back water will be transferred to the Marbob State 5H drilling pit as part of the drilling pit closure process (see closure plan and closure plan for the adjacent drilling pit, which is included in a separate C-144 application). Additionally, flow-back water will be transferred to other drilling or stimulation operations for use.
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 Artesia 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 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. Immediately after cessation of workover (e.g. hydraulic fracturing), the operator will remove any visible or measurable layer of oil from the surface of the workover pit, in the manner described above.
13. The operator will maintain at least two feet of freeboard for the temporary pit.
14. The operator will inspect the temporary pit containing well stimulation fluids at least daily while well stimulation operations are underway to ensure compliance with this plan.
15. After well stimulation operations are completed, the operator will inspect the temporary workover pit weekly so long as liquids remain in the temporary pit.
16. The operator will maintain a log of such inspections and make the log available for the Artesia district office's review upon request.
17. The operator will file a copy of the log with the appropriate division district office when the operator closes the temporary pit.
18. The operator will remove all free liquids from the temporary pit within 30 days from the date that the operator completes well stimulation operations and releases the workover rig – unless granted an extension of time by the District Office. The operator will note the ending date of well stimulation operations and the release of the workover rig on form C-105 or C-103 upon well stimulation 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 landowner, prior to closure, that the operator plans to close the temporary pit by certified mail, return receipt requested.
- The operator of the temporary pit will notify the Artesia 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 workover 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 or stimulating another well or
    - Transfer the workover fluids to the adjacent drilling pit to rinse the drilling waste solids as part of the drilling pit closure plan, which is the described in a separate C-144 application.
- The operator shall remove all free liquids from the workover pit within 30 days from the date that the operator released the workover rig. The operator shall

note the date of the workover rig's release on form C-103 upon completion of well stimulation activities.

- The operator may request an extension of up to three months from the appropriate division district office if necessary to allow for use of these fluids in the rinsing of drilling waste solids in the adjacent drilling pit or to re-use the workover fluids in nearby drilling or stimulation activities.
- The operator will close the workover pit within six months of the date that the operator releases the workover rig. An extension not to exceed three months may be requested of the Artesia 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 Appendix C for proof of notice to the landowner, New Mexico Land State Office.) 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 (SLO) by certified mail, return receipt requested, that the operator plans to close the pit and the location 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. 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.
- Because the surface is owned by the State of New Mexico and administered by the State Land Office, 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. The exact location of the on-site

burial will be transmitted to the State Land Office by copy of the form C-105 discussed above.

- In-place closure is the preferred closure alternative for the workover pit. However, if the waste solids volume is minimal in the pit, the operator may elect to remove the solids to a NMOCD-approved landfill as part of the waste excavation and removal closure method.
- If the well stimulation activities result in significant waste materials being present in the pit and waste sampling results suggest that standards for in-place closure are not met for the temporary pit, the operator will excavate and remove the waste materials to a NMOCD-approved landfill as part of the waste excavation and removal closure method.

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, recontour 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 State Land Office, the operator will follow BLM mandates for the seed mixture (Appendix B) not including noxious weeds, and maintain that cover through two successive growing seasons.
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 the well stimulation activities result in solid material in the pit and sampling of the materials meet the criteria for in-place closure, the operator will proceed with in-place closure.

Siting Criteria Compliance Demonstration for In-Place Burial

The Siting Criteria Compliance Demonstration for the temporary pit (see above section titled Siting Criteria Compliance Demonstration beginning on page 2) shows that the requirements of 19.15.17.10 NMAC are met for in-place closure.

Waste Material Sampling Plan for In-place Burial

Because the ground water is more than 100 feet below the bottom of the buried waste (see above), 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 0.2 mg/kg;
- Total BTEX, as determined by EPA SW-846 method 8021B or 8260B, does not exceed 50 mg/kg;
- The GRO and DRO combined fraction, as determined by EPA SW-846 method 8015M, does not exceed 500 mg/kg;
- TPH, as determined by EPA method 418.1 does not exceed 2,500 mg/kg;
- Chloride, as determined by EPA method 300.1, does not exceed 1,000 mg/kg or the background concentration, whichever is greater.

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 well stimulation waste and existing grade to determine if stabilized waste (see stabilization methods, below) will be at least 4-feet below existing grade to allow installation of the soil 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 workover waste).
C. Specifically, any waste will be stabilized in the pit by adding no more than 3 parts clean fill derived from the excavation of the pit to 1 part waste.
D. After stabilization such that the waste material will support the soil cover, the mixture will be sampled pursuant to NMOCD Rules (see above).
E. 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.
F. 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 THE TEMPORARY PIT ARE NOT MET, THE OPERATOR WILL ADHERE TO NMOCD RULES AND IMPLEMENT THE FOLLOWING ACTIONS FOR THE MATERIALS THAT DO NOT MEET CRITERIA FOR ON-SITE CLOSURE:

Protocols and Procedures for Excavation and Removal

The operator will close the temporary pit by excavating all contents 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.	NM-01-0006
Lea Land, LLC	NM-01-0035

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. Recontour 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:

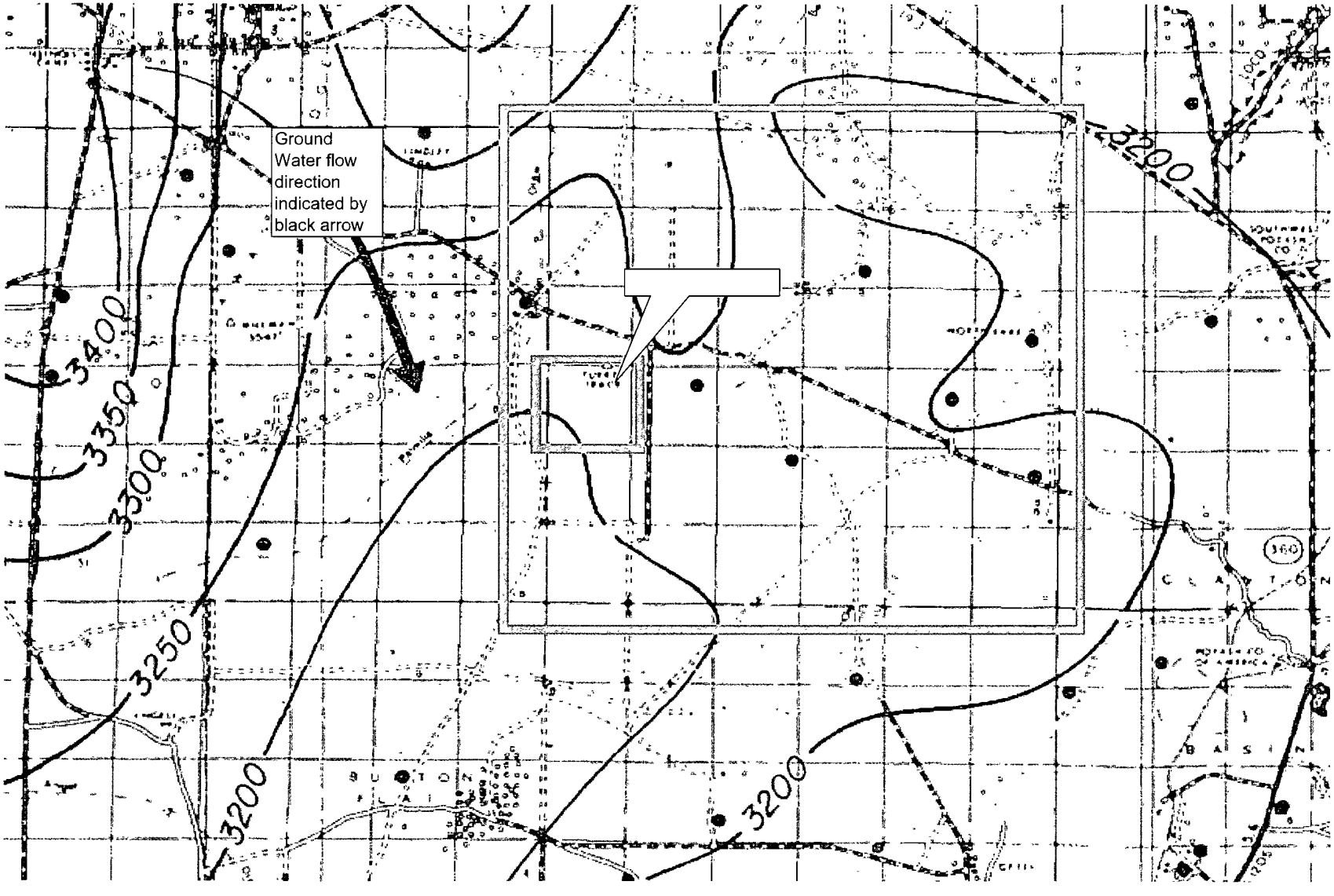
- Benzene, as determined by EPA SW-846 method 8021B or 8260B does not exceed 0.2 mg/kg;
- Total BTEX, as determined by EPA SW-846 method 8021B or 8260B does not exceed 50 mg/kg;
- The GRO and DRO combined fraction, as determined by EPA SW-846 method 8015M, does not exceed 500 mg/kg;
- The TPH, as determined by EPA method 418.1 does not exceed 2,500 mg/kg; and
- Chloride, as determined by EPA method 300.1, does not exceed 1,000 mg/kg or the background concentration, whichever is greater.

Reporting

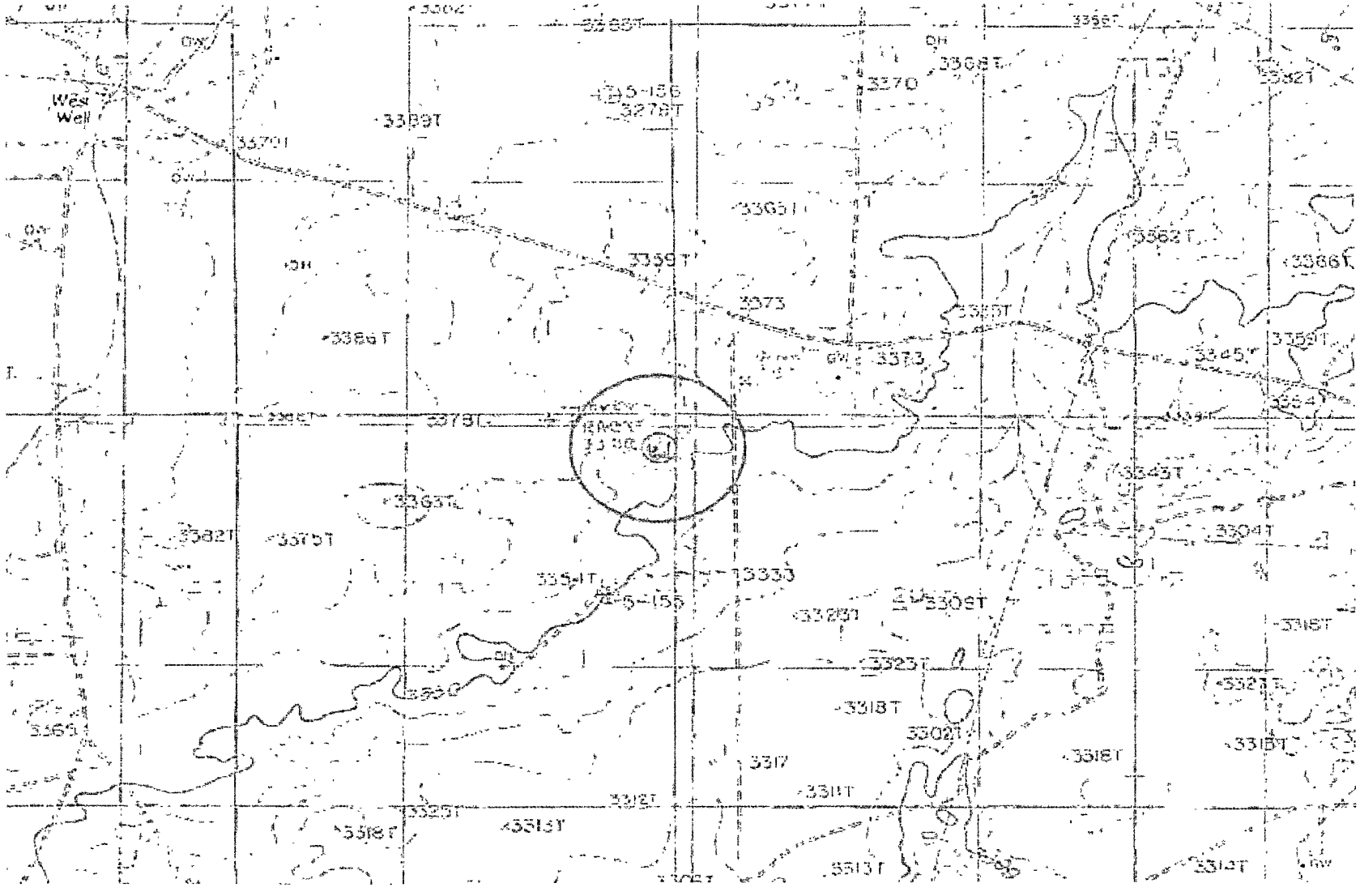
The operator shall notify the division of its results on form C-141. If the operator or the division determines that a release has occurred, then the operator will comply with 19.15.29 NMAC and 19.15.30 NMAC, as appropriate.

Figures

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



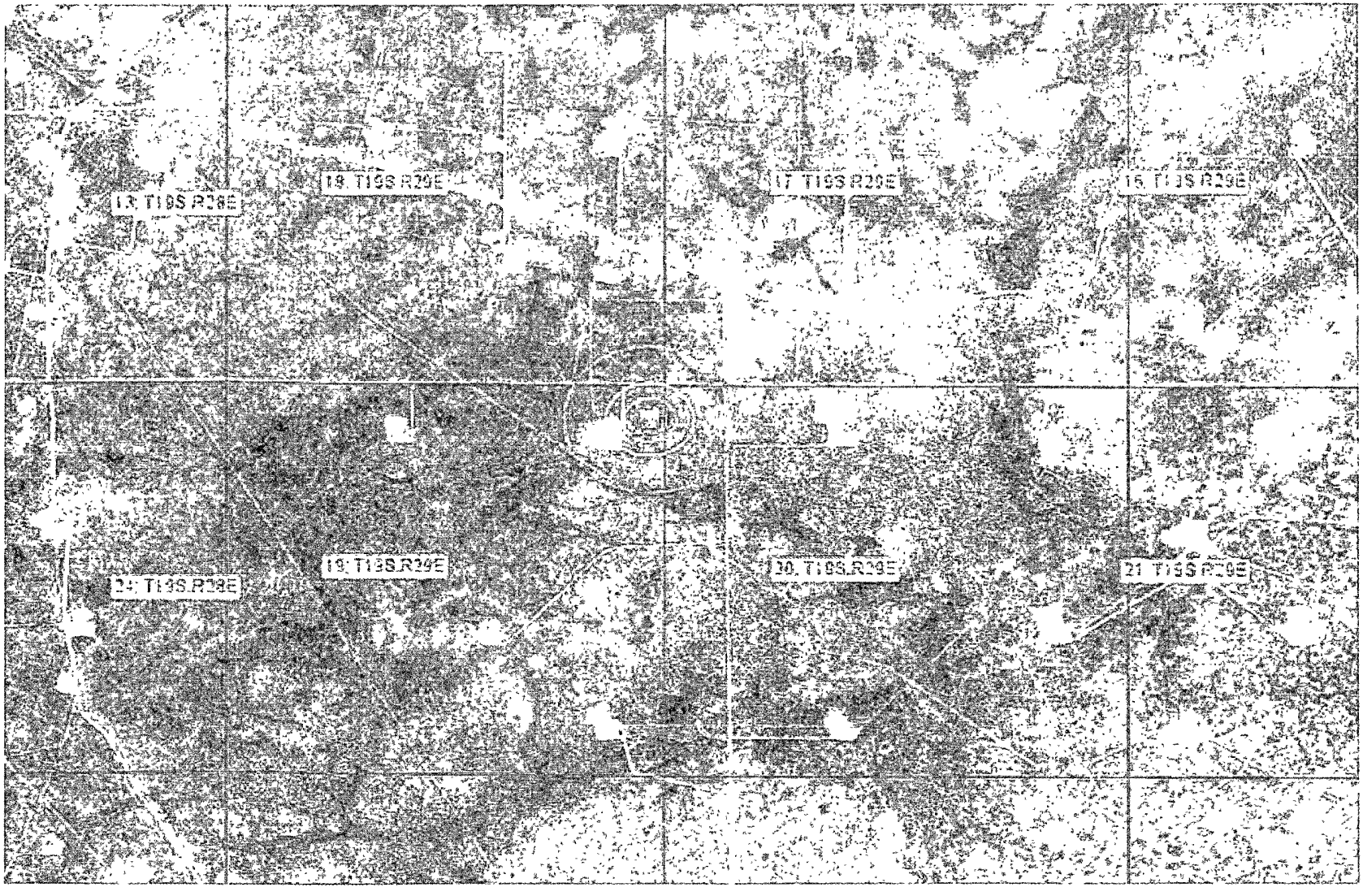
R.T. Hicks Consultants, Ltd.	Elevation of Water Table - Section 19 T19S R29E	Figure 1
	Read and Stevens - Marbob State 5H	March 2011



0 1000 2000ft

N W E S

Petroleum Recovery Research Center	Topographic Map	Figure: 2
	Read & Stevens, Inc. - Marbob State 5H	Mar 08, 2011

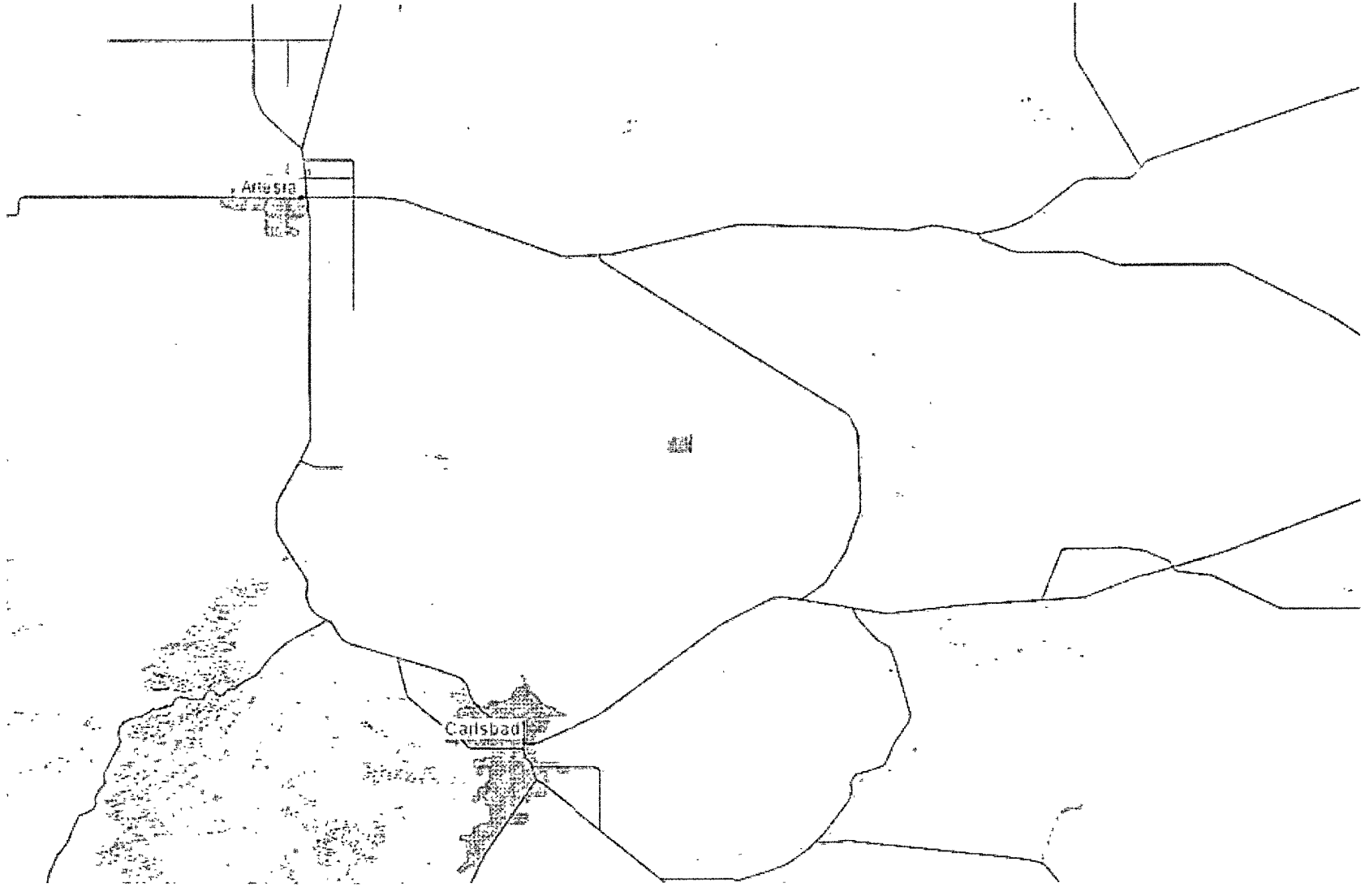


Distance (ft): 200 300 500 1000

0 1000 2000ft

N W E S

Petroleum Recovery Research Center	2008 Aerial Photograph	Figure: 3
	Read & Stevens, Inc. - Marbob State 5H	Mar 08, 2011



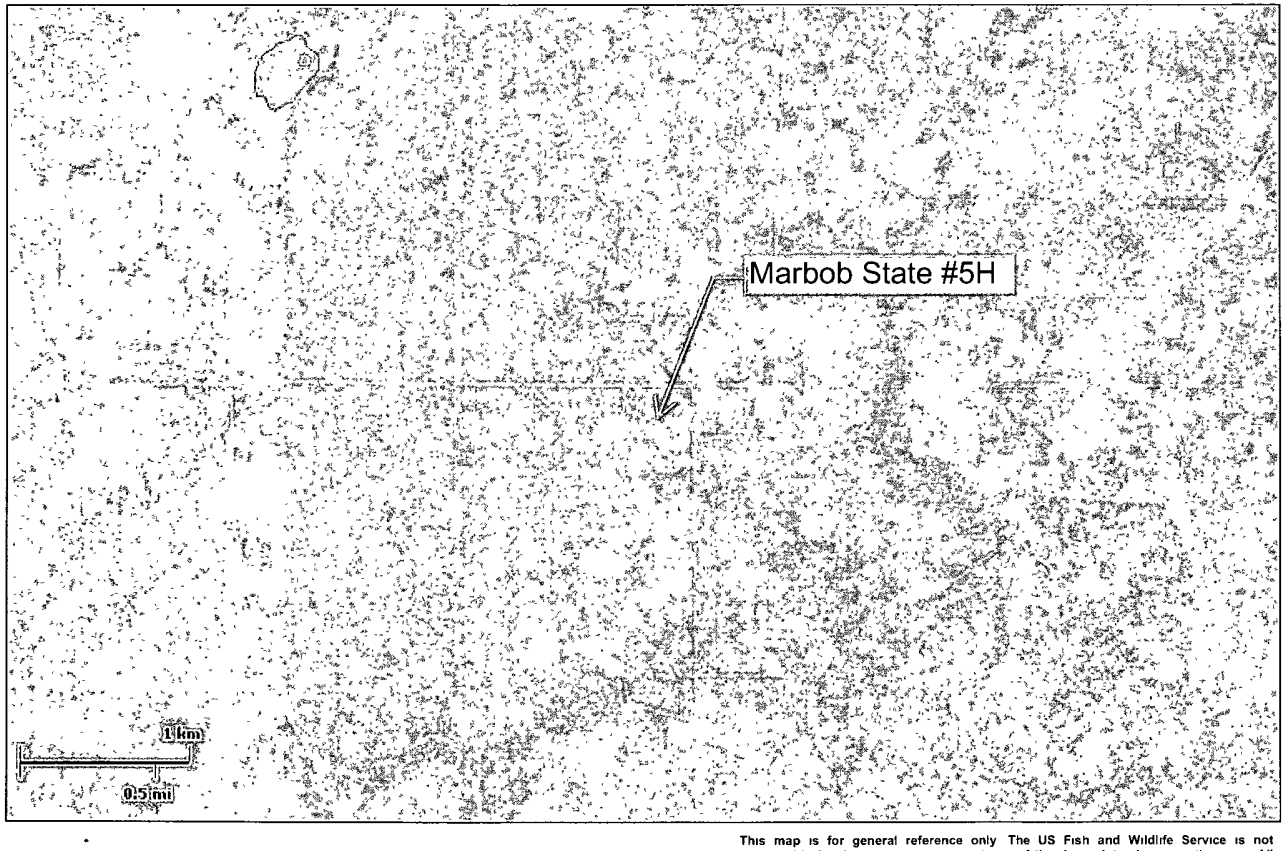
Petroleum Recovery Research Center	Nearest Municipal Boundaries	Figure: 4
	Read & Stevens, Inc. - Marbob State 5H	Mar 08, 2011

U.S. Fish and Wildlife Service

National Wetlands Inventory

Figure 5 - Wetlands Map

Mar 16, 2011



Wetlands

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

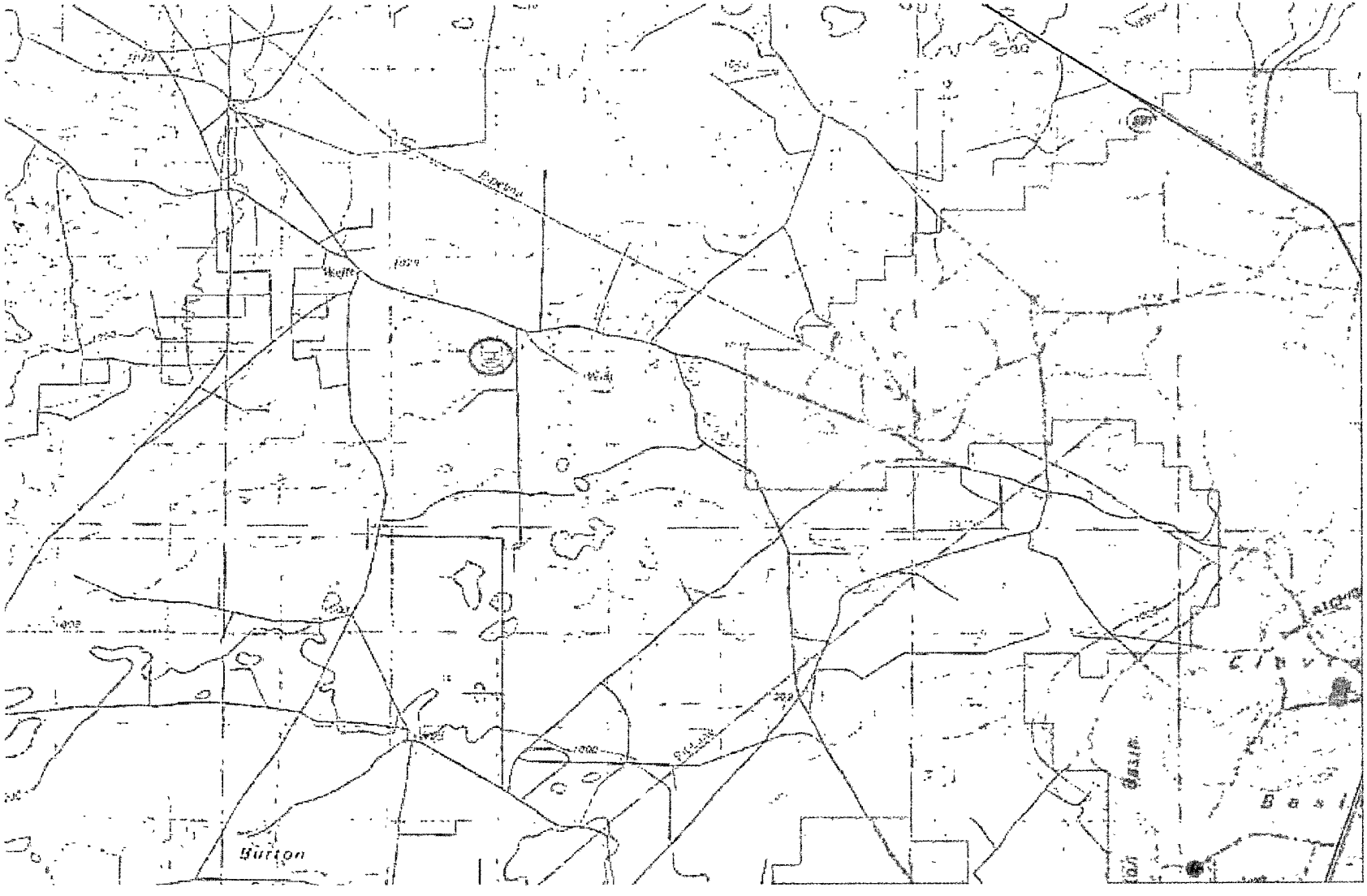
Status

- Digital
- Scan
- Non-Digital
- No Data

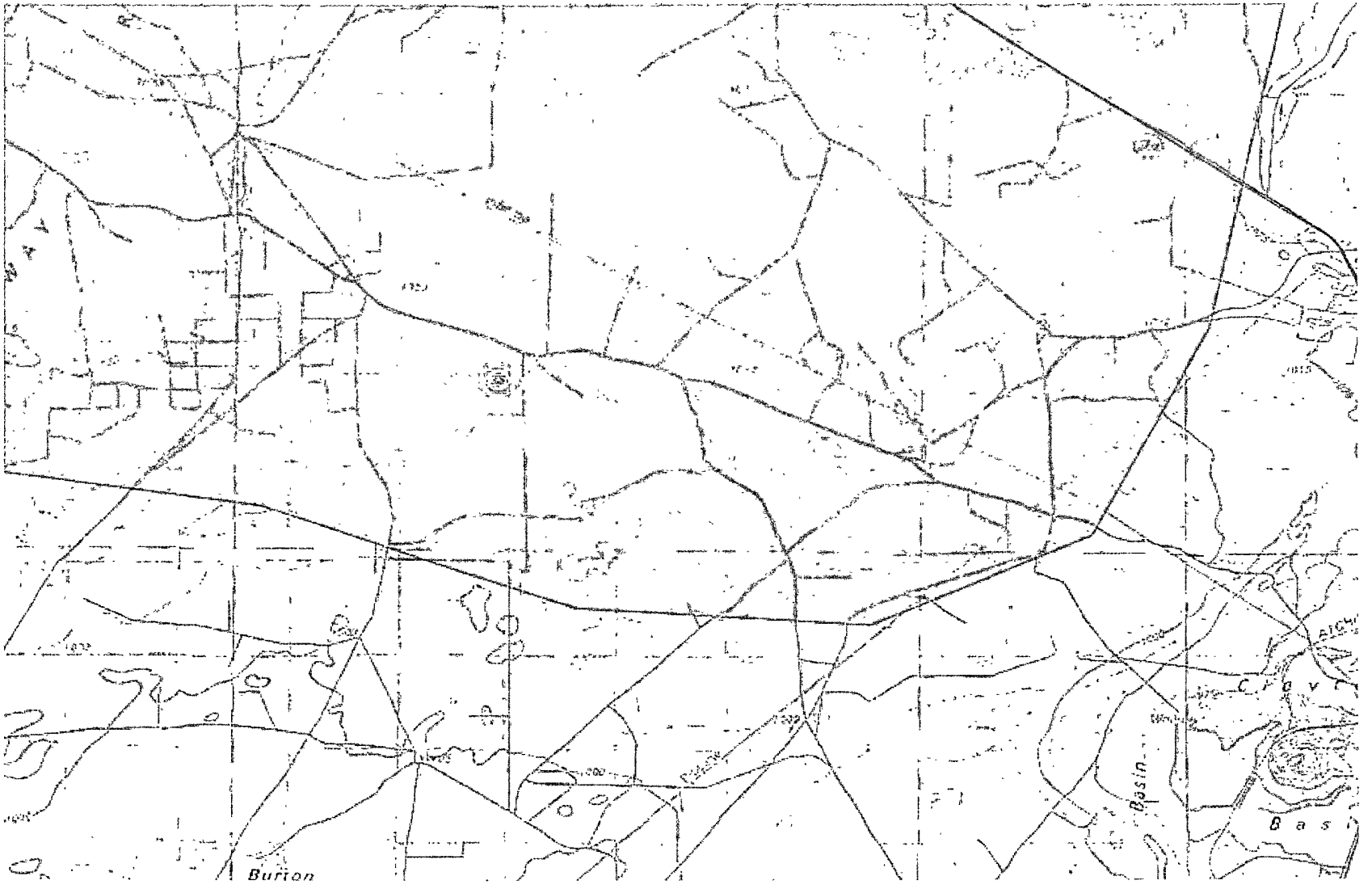
This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

User Remarks:

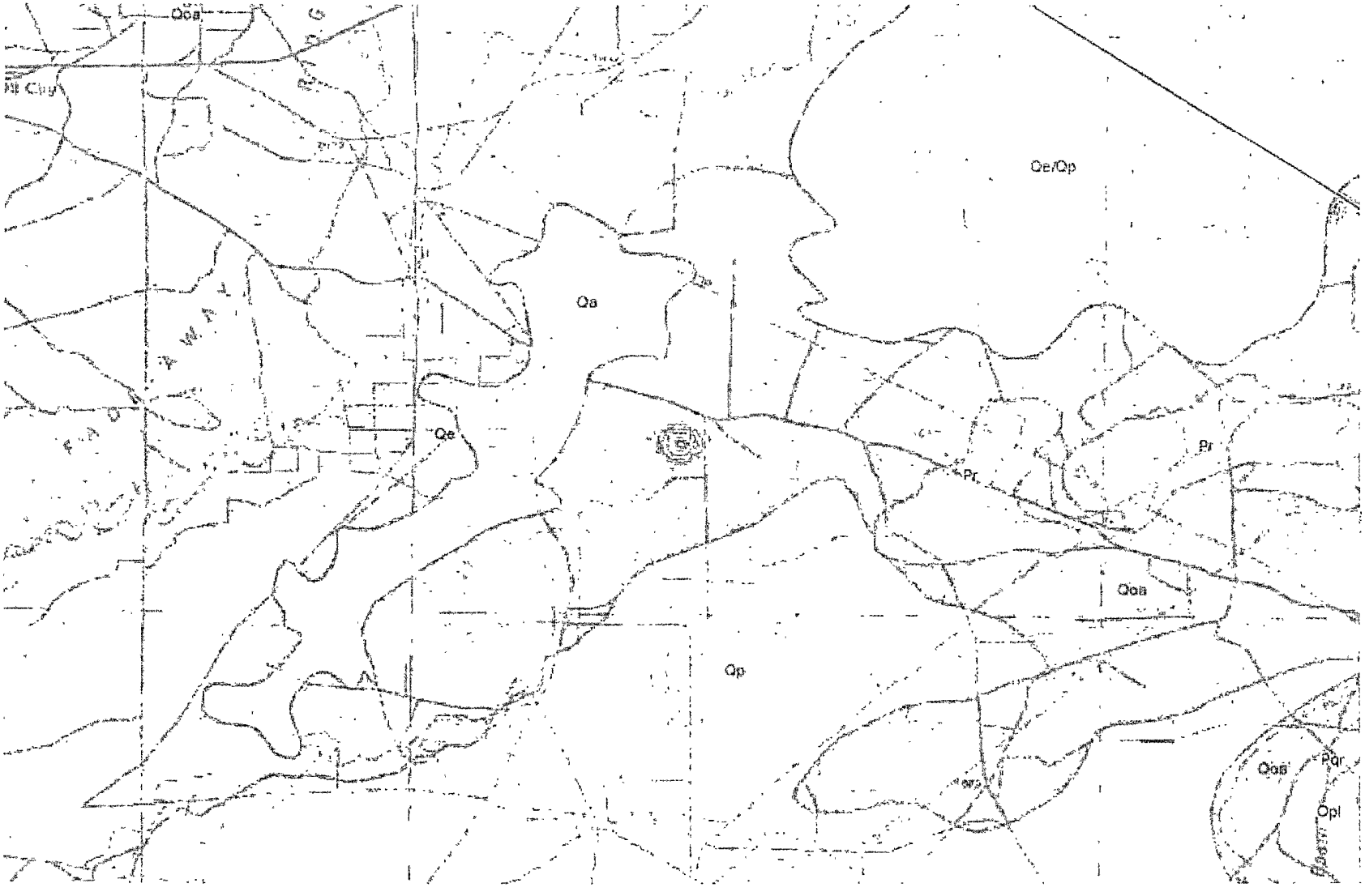
Read & Stevens, MARBOB STATE #5H



Petroleum Recovery Research Center	Nearest Mines	Figure: 6
	Read & Stevens, Inc. -Marbob State 5H	Apr 26, 2011



Petroleum Recovery Research Center	Karst Map	Figure: 7
	Read & Stevens, Inc. -Marbob State 5H	Apr 26, 2011



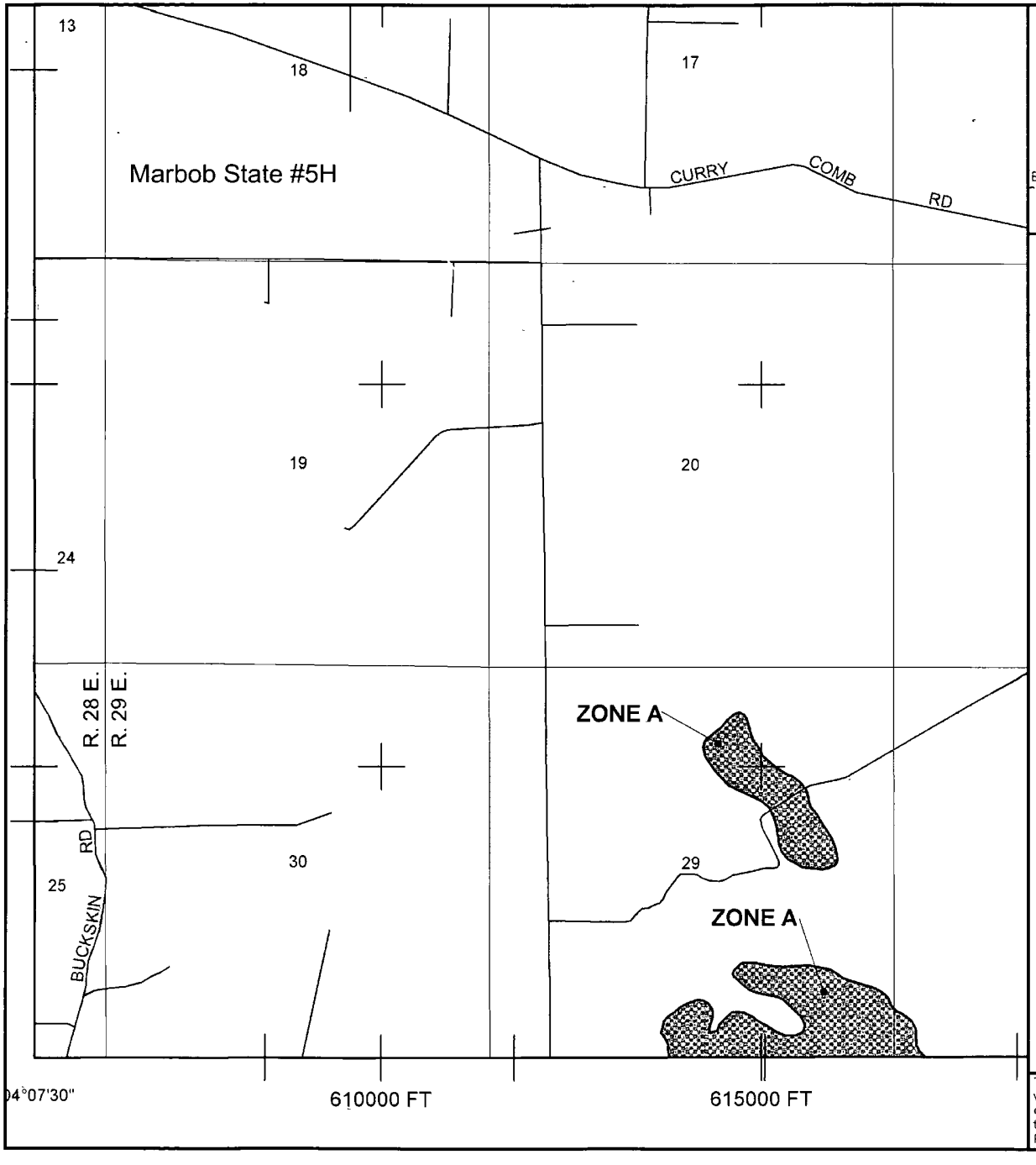
Distance (ft): 200 300 500 1000

0 1 2mi

N W E S

Petroleum Recovery Research Center	Surface Geology	Figure: 8
	Read & Stevens, Inc. -Marbob State 5H	Apr 26, 2011

Figure 9 - FEMA Map, Marbob State #5H



MAP SCALE 1" = 2000'

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

MET

NATIONAL FLOOD INSURANCE PROGRAM NFIP

PANEL 0625D

FIRM

FLOOD INSURANCE RATE MAP

EDDY COUNTY, NEW MEXICO

AND INCORPORATED AREAS

PANEL 625 OF 2000

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS

COMMUNITY	NUMBER	PANEL	SUFFIX
EDDY COUNTY, UNINCORPORATED AREAS	350120	0625	D

Notice 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.

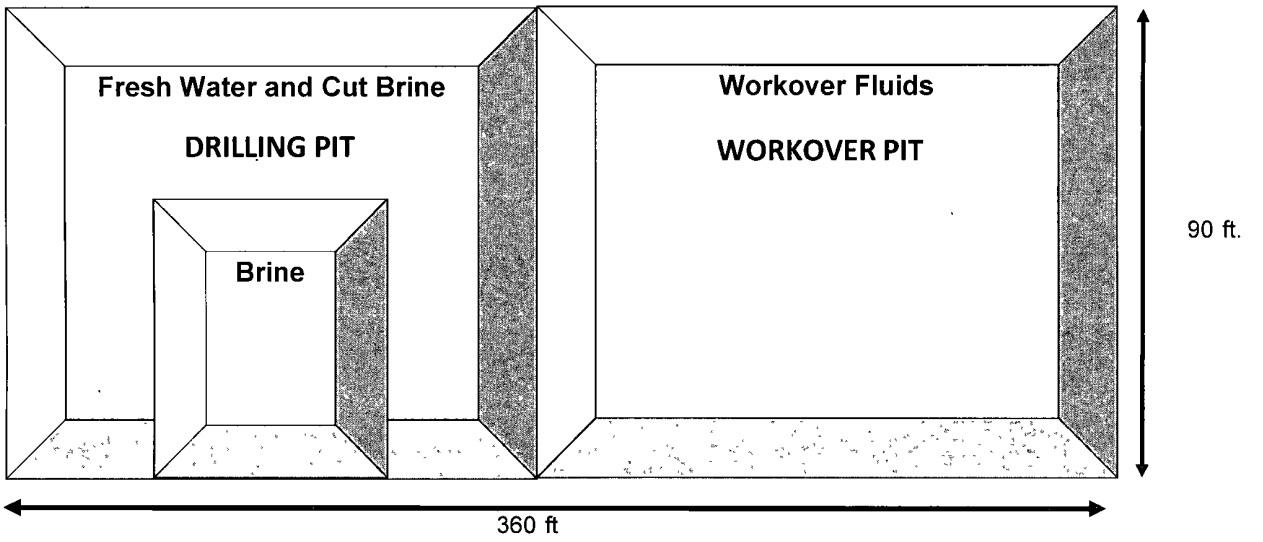
MAP NUMBER
35015C0625D

EFFECTIVE DATE
JUNE 4, 2010

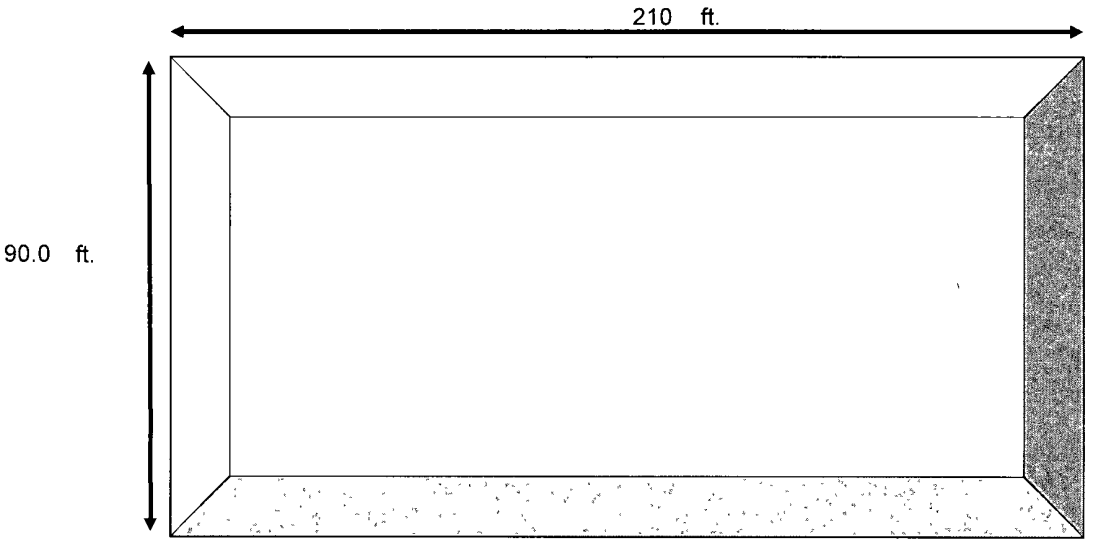
Federal Emergency Management Agency

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

Layout of Temporary Pit Showing Drilling and Workover Pits



Dimensions and layout of workover pit to hold stimulation fluids (right side of pit above



210	feet wide	943,982 gal capacity with 2-ft freeboarc
90	feet long	22,476 bbl capacity
14	feet deep	2.90 acre-feet
2H:1V	H.V side slopes	

Depth below grade of workover pit:	-9.5 feet
Height of pit walls above grade for workover pit	4.5 feet

R.T. Hicks Consultants, Ltd.	Layout of Temporary Pits and Selected Design Specifications for Workover Pit	Figure 10
	Read and Stevens, Inc. - Marbob State 5H	Apr-11

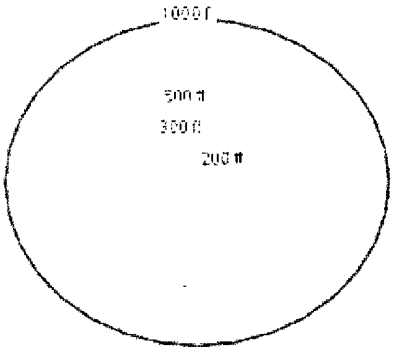
Legend

Petroleum Recovery Research Center
Pit Rule Web Mapping Portal
http://pitrule.source3.com

November 1, 2010

Site Marker

Distance Radii



Land Ownership

- Not Classified
- BLM, Bureau of Land Managment
- BOR, Bureau of Reclamation
- DOA, Department of Agriculture
- DOD, Department of Defense
- DOE, Department of Energy
- FS, U.S. Forest Service
- FWS, US Fish and Wildlife Service
- I, Indian/Tribal
- NPS, National Park Service
- Private
- State of New Mexico
- SGF, NM State Game and Fish
- SP, NM State Park
- VCNP, Valles Caldera National Preserve

100 – year Floodplain (partial coverage)

- 100-year Floodplain

Mines and Minerals

Potash Boundaries

- POT MID ISLAND
- POT NORTH ISLAND
- POT SOUTH ISLAND
- POTASH MAIN
- WIPP SITE

Coal Boundaries

- Active Mining
- Bond Released
- Reclamation Only

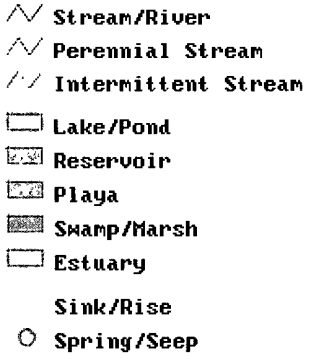
MILS = Mineral Industry Location System

- MINERAL LOC
- PLACER
- PROC PLANT
- PROSPECT
- SURF-UNDERG
- SURFACE
- UNDERGROUND
- UNDERWATER
- UNKNOWN
- WELL

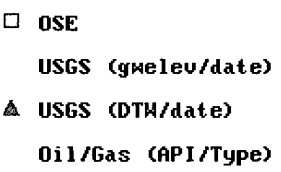
Political Boundaries

- Township Range Section
- State boundary
- Urban Areas (2000 Census)
- Cities
- Interstate
- US Highway
- State Highway
- Local Road

Surface Water



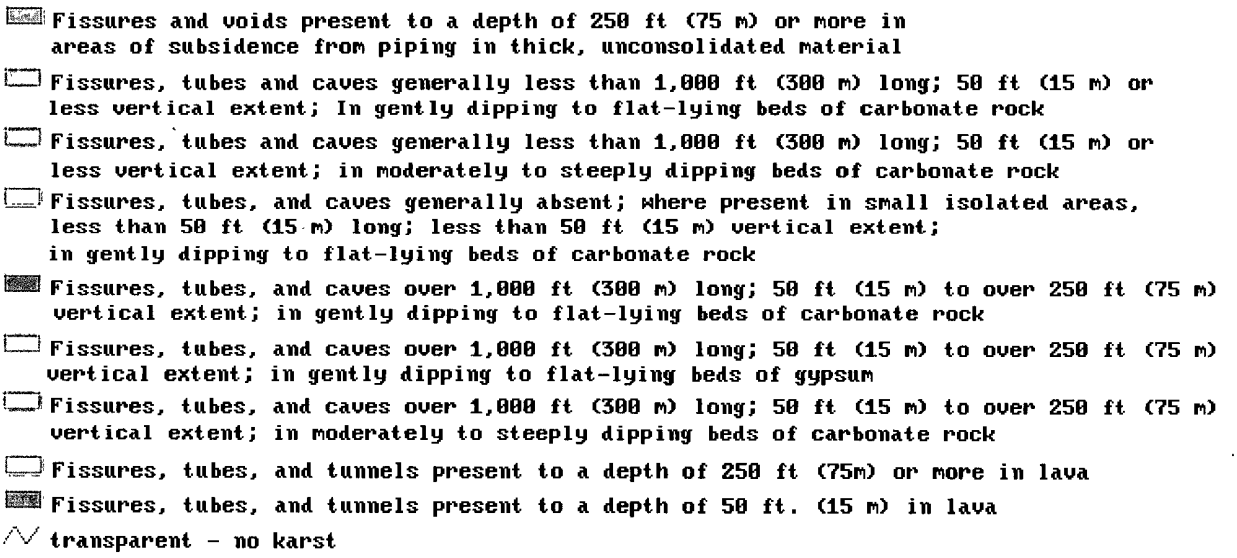
Statewide Wells



NOTES

API = American Petroleum Institue well number
DTW = depth to water in feet below ground surface
gwelev = ground water elevation in feet relative to mean sea level
OSE = NM Office of the State Engineer
USGS = US Geological Survey

Karst – use for unstable areas



Wetlands

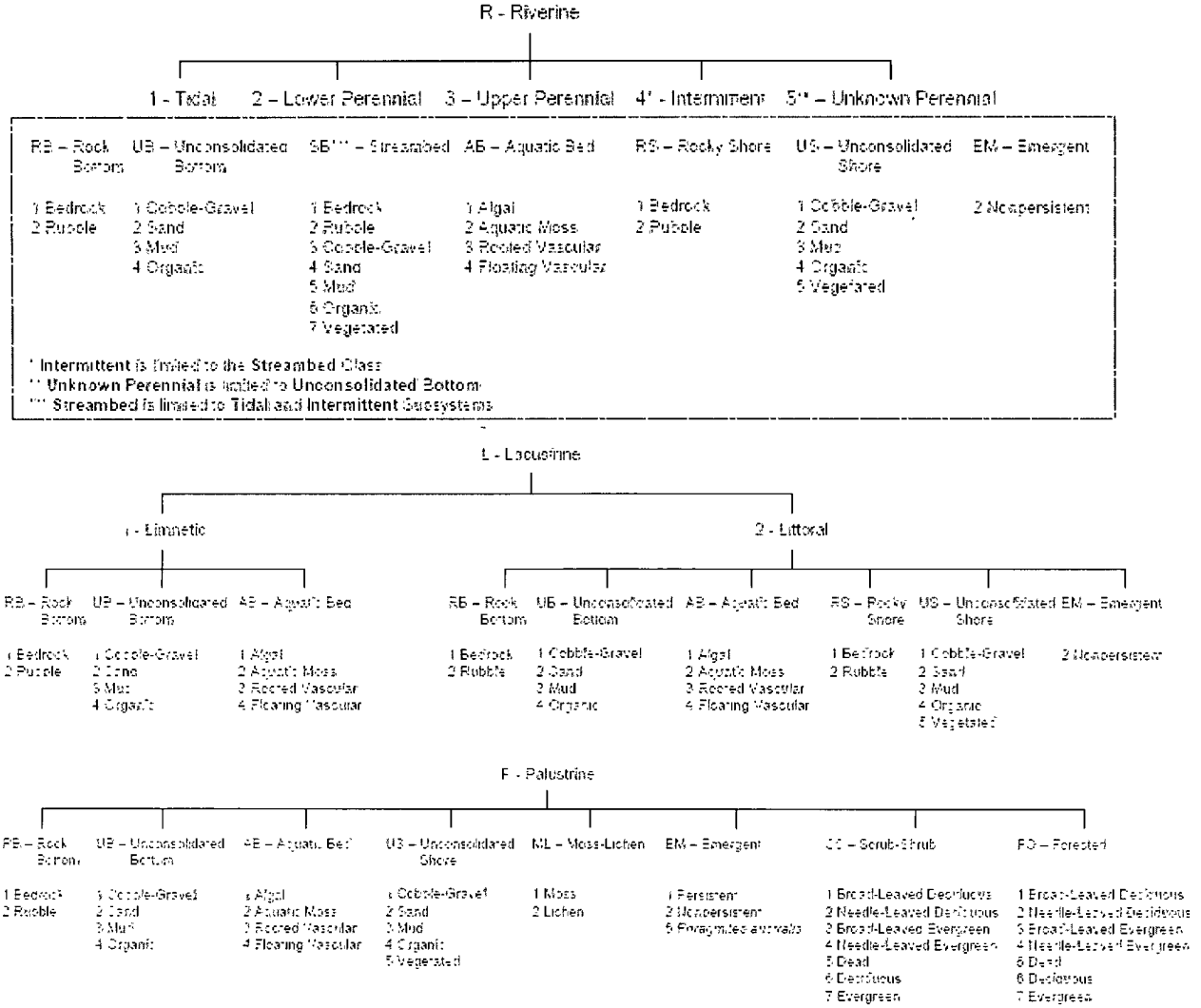
Available Coverage

- Digital
- Non Digital/Scan
- Scan
- No Data/Scan

Digitized Data

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine
- Other

Non Digital/Scan



LEGEND for PRRCs PitRule Web Mapping Portal (http://pitrule.source3.com)

NM GEOLOGY

- not specified
- D, Paleozoic-Percha Shale
- J, Jurassic Rocks, undivided
- Je, Jurassic-Entrada Sandstone
- Jm, Jurassic-Morrison Formation
- Jmsu, Jurassic-Morrison Formation and upper San Rafael Group
- Jsr, Jurassic-San Rafael Group
- Jz, Jurassic-Zuni Sandstone
- Jze, Jurassic-Zuni and Entrada Sandstone; undivided
- K, Cretaceous rocks, undivided
- Ka, <Null>
- Kbm, Cretaceous-Mancos Formation and Beartooth Quartzite
- Kc, Cretaceous-Carlile Shale
- Kcc, Cretaceous-Crevasse Canyon Formation; coal-bearing and sandstone units
- Kch, Cretaceous-Cliff House Sandstone
- Kd, Cretaceous-Dakota Sandstone
- Kdg, Cretaceous-Dakota Group
- Kdm, Cretaceous-Intertongued Dakota-Mancos sequence
- Kdr, Cretacous-Dakota Sandstone and Rio Salado Tongue of the Mancos Shale
- Kg, Cretaceous-Gallup Sandstone
- Kgc, Cretaceous-Dakota Sandstone and Rio Salado Tongue of the Mancos Shale; undivided
- Kgg, Cretaceous-Graneros Shale and Greenhorn Formation
- Kgh, Cretaceous-Greenhorn Formation
- Kgr, Cretaceous-Graneros Shale
- Ki, Uppermost Cretaceous intrusive rocks
- Kkf, Cretaceous-Kirtland and Fruitland Formations
- Kl, Lower Cretaceous, undivided
- Kls, Cretaceous-Lewis Shale
- Klv, Cretaceous-La Ventana Tongue of the Cliff House Sandstone
- Km, Cretaceous-Manco Shale
- Kma, Cretaceous-Moreno Hill Formation and Atarque Sandstone
- Kmc, Cretaceous-McRae Formation
- Kmf, Menefee Formation; mudstone, shale, and sandstone
- Kmg, Cretaceous-Gallup Sandstone and underlying D-Cross Tongue of the Mancos Shale
- Kml, Cretaceous-Mancos Shale, Lower Part
- Kmm, Cretaceous-Mulatto Tongue of Mancos Shale
- Kmr, Cretaceous-Rio Salado Tongue of the Mancos Shale
- Kms, Cretaceous-Satan Tongue of Mancos Shale
- Kmu, Cretaceous-Mancos Shale, Upper Part
- Kmv, Cretaceous-Mesaverde Group

continued on next page

NM Geology - continued

- Kmv, Cretaceous-Mesaverde Group
- Knf, Cretaceous-Fort Hays Limestone Member of Niobrara Formation
- Kpc, Cretaceous-Pictured Cliffs Sandstone
- Kpg, Cretaceous-Pescao Tongue of the Manco Shale and Gallup Sandstone
- Kph, Cretaceous-Hosta Tongue of Point Lookout Sandstone
- Kpl, Point Lookout Sandstone
- Kpn, Cretaceous-Pierre Shale and Niobrara Formation
- Kth, Cretaceous-Tres Hermanos Formation
- Ku, Upper Cretaceous; undivided
- Kvt, Cretaceous-Vermejo Formation and Trinidad Sandstone
- M(c), Mississippian through Cambrian
- M, Paleozoic-Mississippian rocks, undivided
- MD, Paleozoic-Mississippian and Devonian rocks; undivided
- O(c), Ordovician and Cambrian
- O(c)p, Ordovivian-Cambrian plutonic rocks
- P(p), Permian and Pennsylvanian; undivided
- P(p)lc, Permian-Lead Camp Formation
- P(p)m, Permian-Maderia Formation
- P(p)me, Permian-Maderia Formation; exotic blocks
- P(p)ps, Permian-Panther Seep Formation
- P(p)s, Permian-Sandia Formation
- P(p)sc, Permian-Sangre de Cristo Formation
- P, Paleozoic-Permian Rocks, undivided
- Pa, Paleozoic-Abo Formation; red beds
- Pal, Paleozoic-Lower part of Abo Formation
- Pat, Permian-Artesia Group; shelf facies forming south-southeast trending outcrop
- Pau, Paleozoic-Upper Part of Abo Formation
- Pay, Paleozoic-Abo and Yeso Formations
- Pb, Paleozoic-Bursum Formation; shale, arkose, and limestone
- Pbc, <Null>
- Pc, Paleozoic-Castile Formation; anhydrite sequence
- Pcc, Paleozoic-Cherry Canyon Formation; sandstone, limestone, shale
- Pco, Paleozoic-Cutoff Shale
- Pcp, <Null>
- Pct, Paleozoic-Cutler Formation
- Pg, Paleozoic-Glorieta Sandstone; high-silica quartz sandstone
- Pgq, Paleozoic-Grayburg and Queen Formations; sandstones, gypsum, anhydrite, dolomite, and red mustone
- Ph, Paleozoic-Hueco Formation
- Playa, Playa Deposits
- Pqm, Paleozoic-Quartermaster Formation; red sandstone and siltstone; Upper Permian
- Pqr, Paleozoic-Quartermaster and Rustler Formations; Upper Permian

continued on next page

NM Geology - continued

- Pqr, Paleozoic-Quartermaster and Rustler Formations; Upper Permian
- Pr, Paleozoic-Ruster Formation; siltstone, gypsum, sandstone, and dolomite; Upper Permian
- Psa, Paleozoic-San Andres Formation; limestone and dolomite with minor shale
- Psg, Paleozoic-San Andres Limestone and Glorieta Sandstone
- Psl, Paleozoic-Salado Formation; evaporite sequence; Upper Permian
- Psr, Paleozoic-Seven Rivers Formation; gypsum, anhydrite, salt, dolomite, and siltstone
- Pty, Paleozoic-Yates and Tansill Formations; sandstones, siltstones, limestone, dolomite, and anhydrite
- Pvp, Paleozoic-Victoria Peak Limestone
- Py, Paleozoic-Yeso Formation; sandstones, siltstones, anhydrite, gypsum, halite, and dolomite
- Pys, Paleozoic-Yeso, Glorieta and San Andres Formations, undivided
- Pz, Paleozoic rocks, undivided
- QTb, Basaltic and andesitic volacanics interbedded with Pleistocene and Pliocene sedimentary units.
- QTg, Gila Group
- QTp, Older piedmont alluvial deposits and shallow basin fill
- QTs, Upper Santa Fe Group
- QTsf, Upper Santa Fe Group, undivided
- QTt, Quaternary-Travertine
- Qa, Quaternary Alluvium
- Qa/QTs,
- Qa/QTsf,
- Qb, Quaternary-Basalt and andesite flows and local vent deposits
- Qbo, Quaternary-Basalt or basaltic andesite; middle and lower Pleistocene
- Qbt, Quaternary-Bandalier Tuff; Jemez Mountains area only
- Qd, Quaternary-Glacial deposits; till and outwash; upper and middle Pleistocene
- Qe, Quaternary-Eolian Deposits
- Qe/QTs,
- Qe/QTsf,
- Qe/Qa, <Null>
- Qe/Qp, Quaternary-Eolian Piedmont Deposits
- Qe/Qpl,
- Qe/Tnb,
- Qeg, Quaternary-Gypsiferous eolian deposts
- Ql, Quaternary-Landslide deposits and colluvium
- Ql/QTs, <Null>
- Qoa, Quaternary-Older Alluvial Deposits
- Qoa/To, Quaternary-Older Alluvial Deposits/Ogalalla
- Qp, Quaternary-Piedmont Alluvial Deposits
- Qp/QTs,
- Qp/QTsf,
- Qp/Tsf,
- Qpl, Quaternary-Lacustrine and Playa Deposits

continued on next page

NM Geology - continued

- [ ] Qr, Quaternary-Silicic volacanic rocks
- [ ] Qv, Quaternary-Basaltic volcanoes; tuff rings, cinders, and proximal lavas
- [ ] Qvr, Quaternary-Valles Rhyolite; Jemez Mountains area only
- [ ] SO(c), Silurian through Cambrian
- [ ] SO, Paleozoic-Silurian and Ordovican rocks, undivided
- [ ] T(r), Triassic Rocks, undivided; continental red beds
- [ ] T(r)b, Triassic-Bull Canyon
- [ ] T(r)c, Triassic-Chinle Group
- [x] T(r)cu, Triassic-Upper Chinle Group
- [ ] T(r)g, Triassic-Garita Creek Formation
- [ ] T(r)m, Triassic-Moenkopi Formation
- [ ] T(r)r, Triassic-Redonda Formation
- [ ] T(r)rp, Triassic-Rock Point Formation; Chinle Group
- [ ] T(r)s, Triassic-Santa Rosa Formation
- [ ] T(r)t, Triassic-Trujillo Formation
- [ ] TKa, Animas Formation
- [ ] TKav, Andestic Volcanics
- [ ] TKi, Paleogene and Upper Cretaceous intrusive rocks
- [ ] TKpr, Poison Canyon and Raton Formations; undivided
- [ ] TKr, Raton Formation
- [ ] Tc, Tertiary-Chuska Sandstone
- [ ] Tfl, Tertiary-Fence Lake Formation
- [ ] Thb, Hinsdale Basalt
- [ ] Ti, Tertiary intrusive rocks; undifferentiated
- [ ] Tif, Middle Tertiary felsic shallow-intrusive rocks
- [ ] Tla, Lower Tertiary, andesite and basaltic andesite flows, and associated volcanic units
- [ ] Tli, Tertiary-intrusive rocks and intermediate to felsic dikes and plugs
- [ ] Tlp, Tertiary-Los Pinos Formation of Lower Santa Fe Group
- [ ] Tlrf, Tertiary-Lower Oligocene silicic (or felsic) flows, domes, and associated pyroclastic rocks and intrusions
- [ ] Tlrp, Tertiary-Lower Oligocene silicic pyroclatic rocks
- [ ] Tlv, Tertiary-Lower Oligocene and Eocene volcanic rocks, undifferentiated
- [ ] Tmb, Basalt and andesite flows; Miocene
- [ ] Tn, Nacimiento Formation
- [ ] Tnb, Basalt and andesite flows; Neogene
- [ ] Tnr, Tertiary-Silicic to intermediate volcanic rocks
- [ ] Tnv, Tertirary-Neogene volcanic rocks
- [ ] To, Tertiary-Ogallala Formation
- [ ] Toa, Tertiary-Ojo Alamo Formation
- [ ] Tos, Tertiary-sedimentary and volcaniclastic rocks
- [ ] Tpb, Basalt and andesite flows; Pliocene

continued on next page

NM Geology - continued

- Tpc, Tertiary-Poison Canyon Formation
- Tps, Tertiary-Paleogene sedimentary units
- Tsf, Tertiary-Lower and Middle Santa Fe Group
- Tsj, Tertiary-San Jose Formation
- Tual, Tertiary-Upper Oligocene andesites and basaltic andesites
- Tuau, Tertiary-Lower Miocene and uppermost Oligocene basaltic andesites
- Tui, Tertiary-Miocene to Oligocene silicic to intermediate intrusive rocks; dikes, stocks, plugs, and diatremes
- Tuim, Upper and Middle Tertiary mafic intrusive rocks
- Turf, Tertiary-Upper Oligocene silicic (or felsic) flows and masses and associated pyroclasitc rocks
- Turp, Tertiary-Upper Oligocene rhyolitic pyroclastic rocks
- Tus, Upper Tertiary sedimentary units
- Tuv, Tertiary-Volcanic and some volcaniclastic rocks; undifferentiated
- Tv, Middle Tertiary volcanic rocks; undifferentiated
- Water
- X, Precambrian-Lower Proterozoic rocks; undivided
- Xm, Precambrian-Lower Proterozoic metasedimentary rocks
- Xmo, Precambrian- Lower Proterozoic metamorhic rocks; dominantley mafic
- Xms, Precambrian-Lower Proterozoic metasedimentary rocks
- Xmu, Precambrian-Lower Proterozoic metamorphic rocks, undivided
- Xp, Precambrian-Lower Proterozoic plutonic rocks
- YXp, Precambrian-Middle and Lower Proterozoic plutonic rocks, undivided
- Yp, Precambrian-Middle Proterozoic plutonic rocks
- Ys, Precambrian-Middle Proterozoic sedimentary rocks
- ds, Quaternary-Disturbed Ground

end of geology legend

PRRC PitRule Web Mapping Portal Spatial Data Sources
(http://pitrule.source3.com)

LAYER	SOURCE			METADATA
	Agency	Provider	Available	
BASE MAPS				
USGS Topo	*USGS*	*TerraServer-US*	http //terraserver-usa com/about aspx?n=AboutTerraServiceOverview	*http //terraserver-usa com/ogccapabilities ashx*
2005 Aerial (RGIS)	Bohannan-Huston, Inc	RGIS	http //rgis.unm.edu/loader_div cfm?theme=Digital%20Orthophotography&subtheme=2005%20Color%20(RGB)&groupname=New%20Mexico%20(1m)	http //rgisedac unm edu/cgi-bin/metaviewer py?file=05_36104b36&collection=doqq05_ecw
USGS 1996-98 Aerial	USGS	TerraServer-US	http //terraserver-usa com/about aspx?n=AboutTerraServiceOverview	http //terraserver-usa com/ogccapabilities ashx
USGS Shaded Relief	USGS	TerraServer-US	http //terraserver-usa com/about.aspx?n=AboutTerraServiceOverview	http //terraserver-usa com/ogccapabilities ashx
Geology				
NM Geology	USGS	RGIS	http //rgis unm edu/loader_div cfm?theme=Geology&subtheme=General&groupname=New%20Mexico	http //rgisedac unm edu/metadata/geology/nmmapdd83 shp xml
Karst				
Karst - use for unstable areas	USGS	USGS	http //pubs usgs.gov/of/2004/1352/	http //216 93 164 45/data/shapefiles/karst/kmetadata htm
Land Ownership				
Land Ownership	BLM	RGIS	http //rgis unm edu/loader_div cfm?theme=Land%20Ownership&subtheme=General&groupname=New%20Mexico	http //rgisedac unm edu/metadata/landown/nm_own shp xml
100-year Floodplain				
100-year Floodplain (partial coverage)	FEMA	RGIS	http //rgis unm.edu/loader_div cfm?new=false&theme=Water%20Resources&subtheme=Flood%20Hazard&groupname=Flood%20Hazard%20Boundary&quicknav=page&searchletter=a&maxrows=1000&start=1&extent=&searchstring=	http //rgisedac.unm.edu/metadata/water/floodhazard/shp/s_fld_haz_ln.shp.xml
Mines and Minerals				
Potash Boundaries	NM State Land Office	NM State Land Office	http //landstatus nmstatelands org/GISDataDownLoad.aspx	http //wheeler.nmstatelands org/metadata/los_potashdistrict_metadata htm
Coal Boundaries	NM Mining & Minerals Division and the DOI Office of Surface Mining, Reclamation & Enforcement	RGIS	http //rgis unm edu/loader_div cfm?theme=Geology&subtheme=General&groupname=New%20Mexico	http //rgisedac unm edu/metadata/geology/coal_permit_bounds_2005shp xml
MILS (NM Mineral Industry Location System)	Bureau of Mines, Intermountain Field Operations Center	RGIS	http //rgis unm edu/loader_div.cfm?theme=Geology&subtheme=General&groupname=New%20Mexico	http //rgisedac.unm.edu/metadata/geology/geo0002.shp xml
Political Boundaries				
Township Range Section (PLSS)	BLM	RGIS	http //rgis.unm edu/loader_div cfm?theme=PLSS%20(Township%2C%20Range%2C%20Section)&subtheme=General&groupname=New%20Mexico	http //rgisedac unm.edu/metadata/plss/townships.shp.xml
State Boundary	US Census Bureau	HostGIS		
Urban Areas	US Census Bureau	RGIS	http //rgis unm edu/loader_div cfm?theme=Census%20Data&subtheme=2008%20TIGER&groupname=New%20Mexico	http //rgisedac unm edu/metadata/census_2008tiger/tl_2008_nm_uac00 shp xml
Cities	US Census Bureau	HostGIS		
Interstates, Highways, Local Roads	RGIS	RGIS	http //rgis.unm edu/loader_div cfm?theme=Transportation&subtheme=Roads&groupname=General	http //rgisedac.unm.edu/metadata/transport/gpsrdsdd.shp xml
Surface Water				
All Layers	USGS, EPA, USDA	RGIS	http //rgis.unm.edu/loader_div cfm?theme=Water%20Resources&subtheme=National%20Hydrography%20Data%20Set&groupname=Subregions%20-%202006%20-%20Geodatabase	http //rgisedac.unm edu/metadata/water/nhd/sub_regions_06/nm1102 xml
Statewide Wells				
OSE wells	OSE	OSE - 2003 well data	http //www ose state nm us/water_info_data html	
USGS gauging station with ground water elevation (gwelev)	USGS	USGS	http //waterdata.usgs.gov/nm/nwis/gw	Compiled by Source3 Computing, LLC
USGS gauging station with depth to water (DTW)	USGS	USGS	http //waterdata usgs gov/nm/nwis/gw	Compiled by Source3 Computing, LLC
Oil/Gas	NMOCD	PTTC	http //octain nmt edu	

PRRC PitRule Web Mapping Portal Spatial Data Sources
(http://pitrule.source3.com)

DISCLAIMER

The Petroleum Recovery Research Center and subcontractors (PRRC) provides these geographic data "as is" and makes no guarantee or warranty concerning the accuracy of information contained in the geographic data. PRRC further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose The burden for determining fitness for use lies entirely with the user. Although these data have been processed successfully on computers of PRRC, no warranty, expressed or implied, is made by PRRC regarding the use of these data on any other system, nor does the fact of distribution constitute or imply any such warranty In no event shall PRRC have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits arising out of use of or reliance on the geographic data or arising out of the delivery, installation, operation, or support by PRRC.

C-102 Form

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
District II
1301 W. Grand Ave , Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St Francis Dr , Santa Fe, NM 87505

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

Form C-102
Permit 126578

WELL LOCATION AND ACREAGE DEDICATION PLAT

1. API Number	2. Pool Code	3 Pool Name	
30-015-38455	55510	SCANLON DRAW;BONE SPRING	
4 Property Code	5. Property Name		6 Well No.
9547	MARBOB STATE		005H
7. OGRID No.	8. Operator Name		9. Elevation
18917	READ & STEVENS INC		3362

10. Surface Location

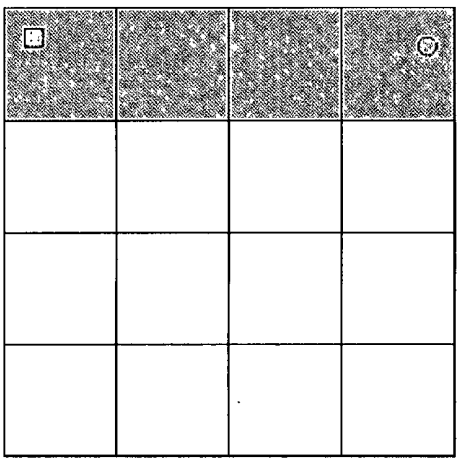
UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	E/W Line	County
A	19	19S	29E		430	N	330	E	EDDY

11. Bottom Hole Location If Different From Surface

UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	E/W Line	County
1	19	19S	29E		330	N	330	W	EDDY

12 Dedicated Acres	13. Joint or Infill	14 Consolidation Code	15. Order No.
152.67			

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



OPERATOR CERTIFICATION

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(s) 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

E-Signed By: David Luna
Title: Operations Mgr.
Date: 2/9/2011

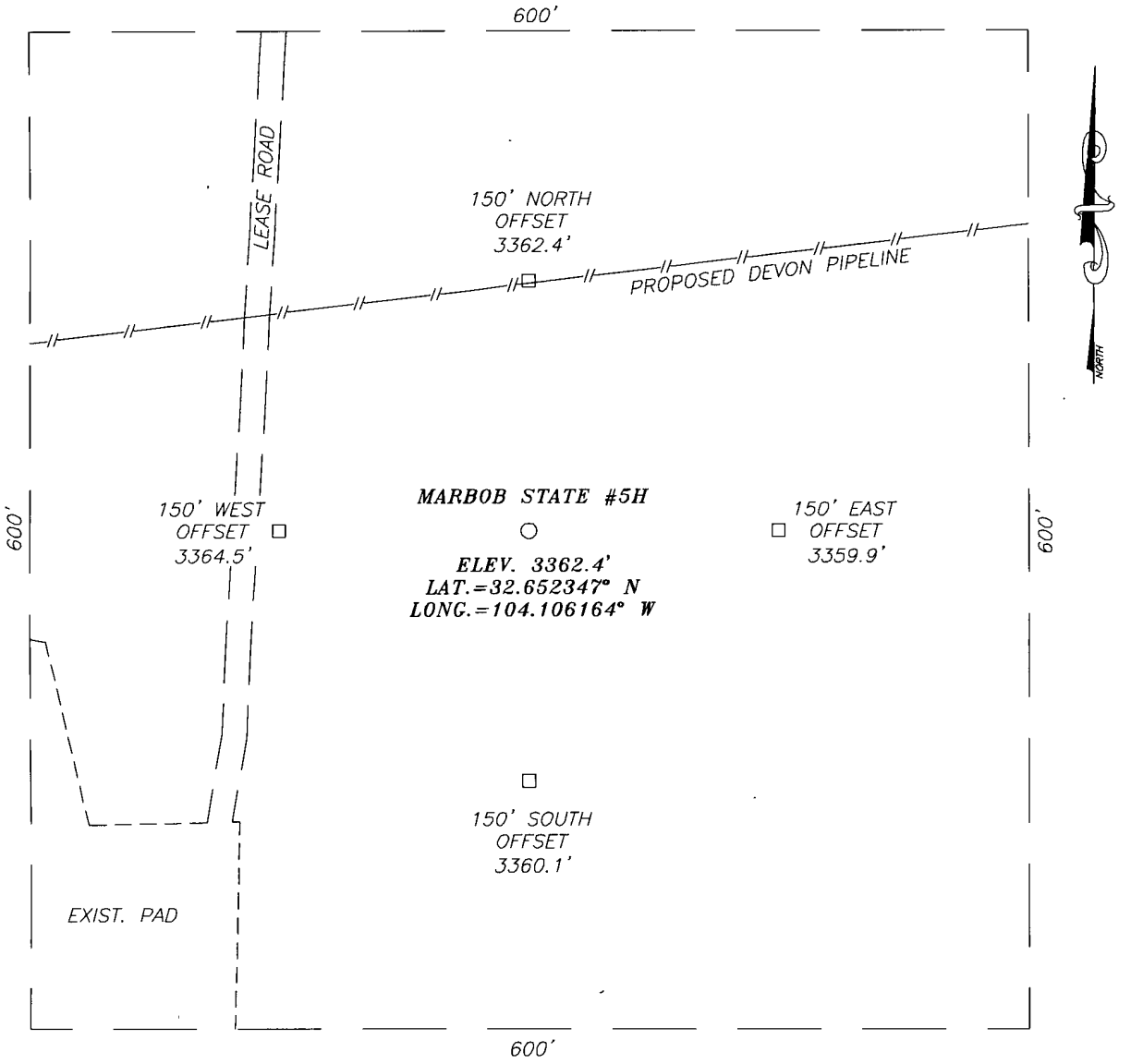
SURVEYOR CERTIFICATION

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.

Surveyed By: Ronald Eidson
Date of Survey: 2/4/2011
Certificate Number: 3239

SECTION 19, TOWNSHIP 19 SOUTH, RANGE 29 EAST, N.M.P.M.,

EDDY COUNTY, NEW MEXICO



DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF U.S. HWY. HWY. #62 AND STATE ROAD #360, GO NORTH ON #360 APPROX. 5.7 MILES TO THE INTERSECTION OF ST. RD. #360 AND CO. RD. #235 (CURRY COMB) CONTINUE 9 50 MILES NORTHWEST ON CO RD. #235 TO A LEASE ROAD TURN LEFT AND GO SOUTH APPROX. 0.40 MILES. TURN RIGHT AND GO WEST APPROX. 0.2 MILES. TURN LEFT AND GO SOUTH APPROX 400 FEET. THIS LOCATION IS APPROX. 160 FEET EAST OF LEASE ROAD.

100 0 100 200 Feet

Scale:1"=100'

PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N DAL PASO
HOBBS, N.M. 88240
(575) 393-3117

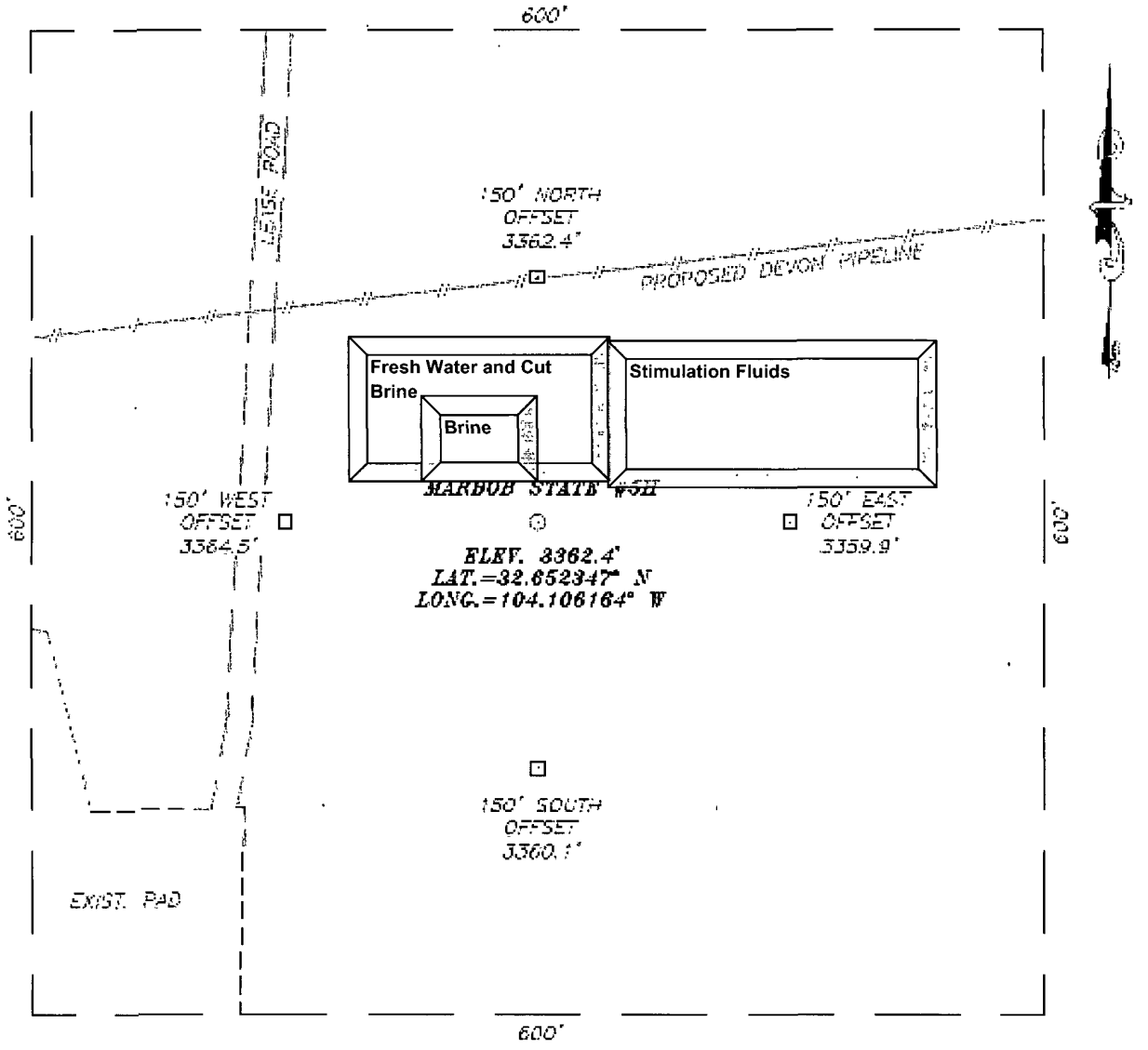
READ & STEVENS, INC.

MARBOB STATE #5H WELL
LOCATED 430 FEET FROM THE NORTH LINE
AND 330 FEET FROM THE EAST LINE OF SECTION 19,
TOWNSHIP 19 SOUTH, RANGE 29 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.

Survey Date: 2/4/11	Sheet 1 of 1 Sheets		
W.O. Number: 11.11.0345	Dr By: LA	Rev 1:N/A	
Date: 2/12/11		11110345	Scale:1"=100'

SECTION 19, TOWNSHIP 19 SOUTH, RANGE 29 EAST, N.M.P.M.,

EDDY COUNTY, NEW MEXICO



DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF U.S. HWY. HWY. #62 AND STATE ROAD #360, GO NORTH ON #360 APPROX. 5.7 MILES TO THE INTERSECTION OF ST. RD. #360 AND CO. RD. #235 (CURRY COMB) CONTINUE 9.50 MILES NORTHWEST ON CO. RD. #235 TO A LEASE ROAD. TURN LEFT AND GO SOUTH APPROX. 0.40 MILES. TURN RIGHT AND GO WEST APPROX. 0.2 MILES. TURN LEFT AND GO SOUTH APPROX. 400 FEET. THIS LOCATION IS APPROX. 160 FEET EAST OF LEASE ROAD.

100 0 100 200 Feet

Scale: 1"=100'

PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(575) 393-3117

READ & STEVENS, INC.

MARBOB STATE #5H WELL
LOCATED 430 FEET FROM THE NORTH LINE
AND 330 FEET FROM THE EAST LINE OF SECTION 19,
TOWNSHIP 19 SOUTH, RANGE 29 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.

Survey Date: 2/4/11	Sheet 1 of 1 Sheets		
W.O. Number: 11.11.0345	Dr By: LA	Rev 1: N/A	
Date: 2/12/11		1111.0345	Scale: 1"=100'

Appendix A

Photodocumentation of site

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

Appendix A – Documentation of Site Visit

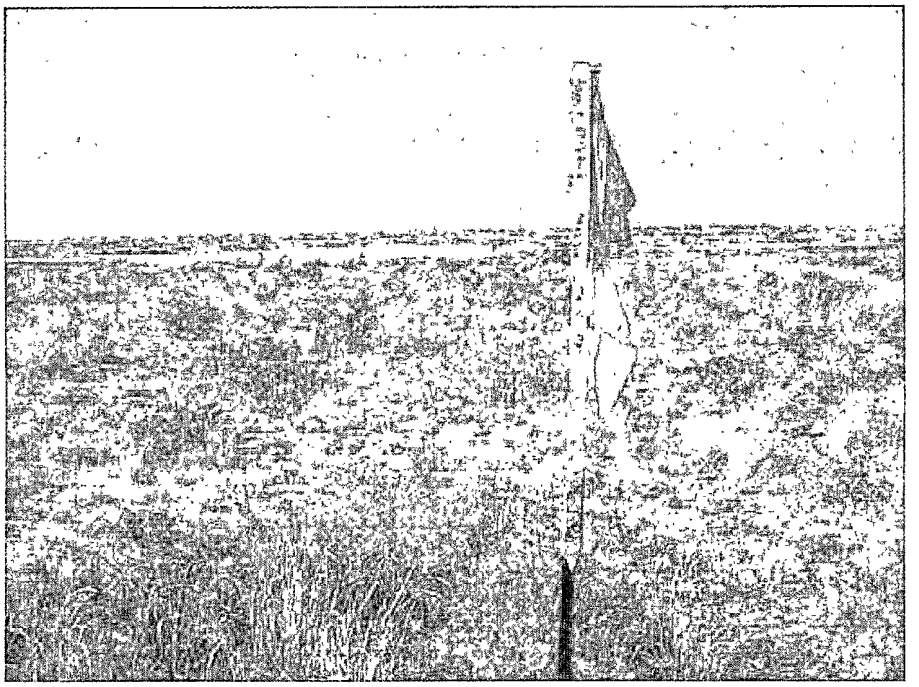


Figure 1: Photograph toward the west showing location flag

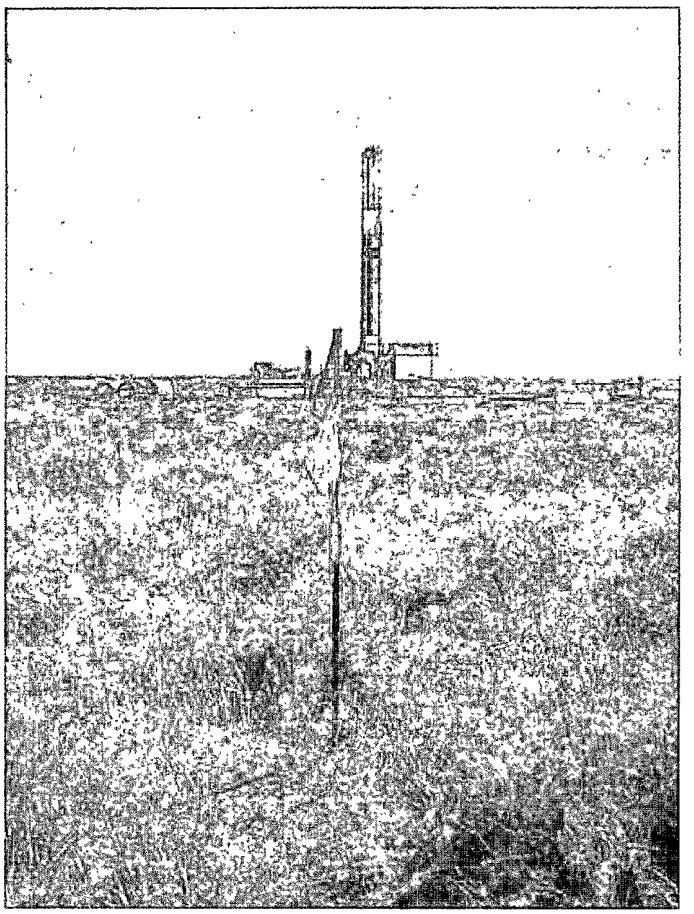


Figure 2: View north northeast showing nature of vegetation and land use

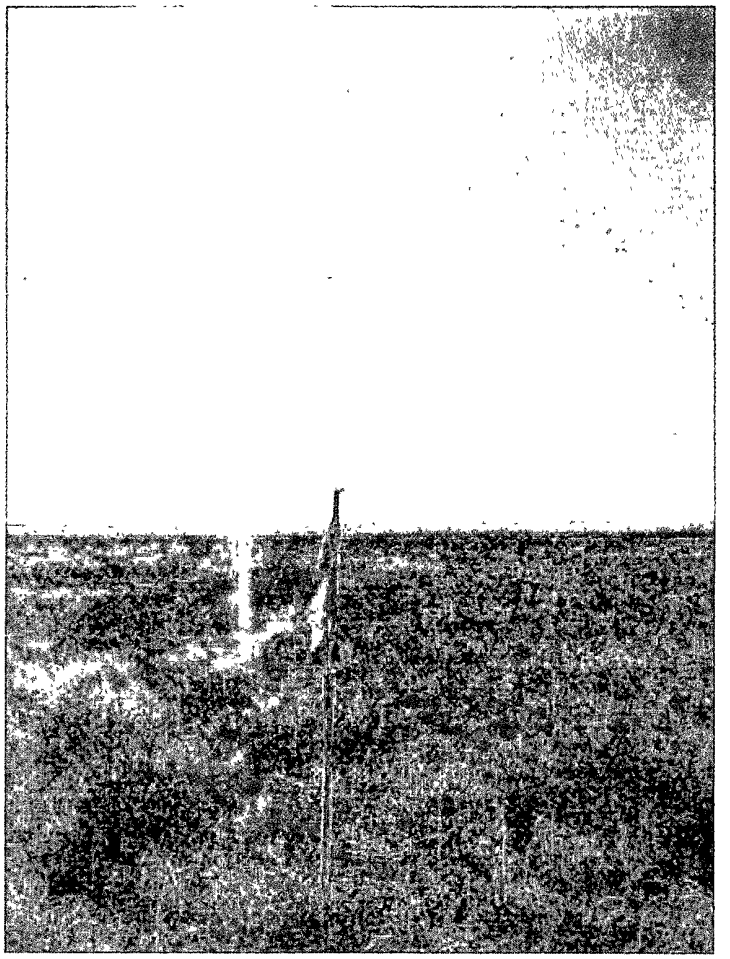


Figure 3: View southeast showing vegetation and land use

Appendix B

Proposed Seed Mixture (Based on BLM Mandates for similar areas)

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

For Sandy Sites (Seed Mixture #2)

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law (s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

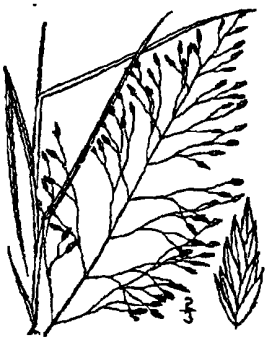
Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The see mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

Species	lb/acre
Sand dropseed (Sporobolus cryptandrus)	1.0
Sand love grass (Eragrostis trichodes)	1.0
Plains bristlegrass (Setaria macrostachya)	2.0

*Pounds of pure live seed:
Pounds of seed x percent purity x percent germination = pounds pure live seed

Sand dropseed



Sand lovegrass

Plains bristlegrass

BLM SEEDING REQUIREMENTS IN THE ROSWELL DISTRICT

Seed Mixture 3 (Shallow Sites)

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)/acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed shall be tested and the viability testing of seed shall be done in accordance with State law(s) and within nine months prior to purchase. Commercial seed shall be either certified or registered seed. The seed mixture container shall be tagged in accordance with State law(s) and available for inspection by the Authorized Officer.

Seed shall be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture shall be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop to the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed shall be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre noted below are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the Authorized Officer. Evaluation of growth will not be made before completion of the first growing season after seeding.

Species to be planted in pounds of pure live seed per acre:

Sideoats grama (Bouteloua curtipendula)	7.0
Lehmann's lovegrass (Eragrostis lehmanniana) or Boer lovegrass (E. chloromelas)	1.0

Pounds of pure live seed: Pounds of seed X percent purity X percent germination = pounds pure live seed

Seed Mixture 4
For Gypsum Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

Species	lb/acre
Alkali Sacaton (Sporobolus airoides)	1.0
DWS□ Four-wing saltbush (Atriplex canescens)	5.0

□DWS: DeWinged Seed

*Pounds of pure live seed:
Pounds of seed x percent purity x percent germination = pounds pure live seed

Appendix C

Notice to Landowner

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

R. T. HICKS CONSULTANTS, LTD.

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

June 13, 2011

New Mexico State Land Office
PO Box 1148
Santa Fe, NM 87504-1148

RE: Read and Stevens, Inc. Marbob State 5H API 30-015-38455
N 32.652347, W -104.106164
NMOCD Form C-144

Mr. Jeff Albers,

This letter is to inform you of Read and Steven's proposal of an on-site closure method for any well stimulation waste generated by well stimulation activities at the above referenced site. Attached is the C-144 form. The supplemental documentation that describes the proposed closure method in full will follow shortly.

The proposed method is based upon the appropriate requirements of 19.15.17.13 NMAC, and will be in-place closure unless standards cannot be met.

If the standards for in-place closure are not met; the operator will as part of the closure procedures, excavate and remove the well stimulation waste. All applicable NMOCD mandates will be followed. About one week prior to on-site closure, you will receive a second notice by certified letter (return receipt request). If you have questions concerning the attached information, you may contact me at the above address and phone number or via email at r@rthicksconsult.com.

Sincerely,
R.T. Hicks Consultants

Principal

Copy: David Luna, Read & Stevens
Mike Bratcher, NMOCD Artesia District Office