**December 2014**

# C-144 Permit Package for Persimmon BSS State Com 4H Section 24 T21S R33E, Lea Co, NM

*View showing both wells: Persimmon 4H and Nervosa 1H*

## Prepared for
## Yates Petroleum Corporation
## Artesia, NM

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

# R. T. HICKS CONSULTANTS, LTD.

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


December 8, 2014

Dr. Tomáš Oberding
NMOCD District 1
1625 French Drive
Hobbs, NM 88240
Via E-Mail

RE: Yates Petroleum Corporation, Persimmon BSS State Com 4H Drilling Pit

Dear Dr. Oberding:

On behalf of Yates Petroleum Corporation, R.T. Hicks Consultants, Ltd. is pleased to submit the C-144 application package for the above-referenced project. Please note the following:

1. The Design/Construction Plan, O&M Plan and Closure Plan are verbatim from previously-approved temporary pit permits (P1-6570 and others)
2. We ask for District approval of a variance of alternative pit side slopes of 1.5H:1V for the suction sides of the inner and outer horseshoes of the pit. The discharge sides of the inner and outer shoe and the "far side" of the outer shoe will be built with 2H:1V slopes.
3. This letter and application is copied to the State Land Office to notify the surface landowner of the operator's intent to use on-site burial.
4. I certify that Hicks Consultants performed a visual inspection of the site.
5. The discussion of the geohydrology and depth to water for the general area has been updated to reflect changes in surveyed elevations of the locations and our findings relating to the logging of the rathole at Juice 4H.

If you have any questions or concerns regarding this application, please contact Dale Littlejohn or me. Dale is the primary author of the siting criteria demonstration. As always, we appreciate your work ethic and attention to detail.

Sincerely,
R.T. Hicks Consultants

Randall Hicks
Principal

Copy: Yates Petroleum Corporation
State Land Office

# C-144 and
# Site Specific Information for
# Temporary Pit

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

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

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

Form C-144
Revised June 6, 2013

**For temporary pits, below-grade tanks, and multi-well fluid management pits**, submit to the appropriate NMOCD District Office.
**For permanent pits** submit to the Santa Fe Environmental Bureau office and provide a copy to the appropriate NMOCD District Office.

# Pit, Below-Grade Tank, or Proposed Alternative Method Permit or Closure Plan Application

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

***Instructions: Please submit one application (Form C-144) per individual pit, 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: Yates Petroleum Corporation OGRID #: 25575

Address: 105 S. 4th Street, Artesia, NM 88210

Facility or well name: Persimmon BSS State Com 4H

API Number: 30-025-41801 OCD Permit Number:

U/L or Qtr/Qtr H Section 24 Township 21S Range 33E County: Lea

Center of Proposed Design: Latitude 32 27' 53.40" Longitude - 103 31' 11.69" NAD: ☐1927 ☒ 1983 Staked Location

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

**2.**

☒ **Pit:** Subsection F, G or J of 19.15.17.11 NMAC

Temporary: ☒ Drilling ☐ Workover

☐ Permanent ☐ Emergency ☐ Cavitation ☐ P&A ☐ Multi-Well Fluid Management Low Chloride Drilling Fluid ☐ yes ☒ no

☒ Lined ☐ Unlined Liner type: Thickness 20 mil ☒ LLDPE ☐ HDPE ☐ PVC ☐ Other

☒ String-Reinforced

Liner Seams: ☒ Welded ☐ Factory ☐ Other Volume 45,262 bbl Dimensions: L 220 x W 185 x D 10ft

**3.**

☐ **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

**4.**

☐ **Alternative Method:**

Submittal of an exception request is required. Exceptions must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

**5.**

**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

6.

**Netting:** Subsection E of 19.15.17.11 NMAC *(Applies to permanent pits and permanent open top tanks)*

☐ Screen ☐ Netting ☐ Other_____

☐ Monthly inspections (If netting or screening is not physically feasible)

7.

**Signs:** Subsection C of 19.15.17.11 NMAC

☐ 12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers

☒ Signed in compliance with 19.15.16.8 NMAC

8.

**Variances 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:***

☒ Variance(s): Requests must be submitted to the appropriate division district for consideration of approval.

☐ Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

9.

**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.*** **Siting criteria does not apply to drying pads or above-grade tanks.**

| | |
|---|---|
| **General siting** | |
| **Ground water is less than 25 feet below the bottom of a low chloride temporary pit or below-grade tank.**<br>- ☐ NM Office of the State Engineer - iWATERS database search; ☐ USGS; ☐ Data obtained from nearby wells | ☐ Yes ☐ No ☒ NA |
| **Ground water is less than 50 feet below the bottom of a Temporary pit, permanent pit, or Multi-Well Fluid Management pit .**<br>NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells **See Figures 1 & 2** | ☐ Yes ☒ No ☐ NA |
| 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. **(Does not apply to below grade tanks)** **See Figure 5**<br>- Written confirmation or verification from the municipality; Written approval obtained from the municipality | ☐ Yes ☒ No |
| Within the area overlying a subsurface mine. **(Does not apply to below grade tanks)** **See Figure 7**<br>- Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division | ☐ Yes ☒ No |
| Within an unstable area. **(Does not apply to below grade tanks)** **See Figure 8**<br>- 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. **(Does not apply to below grade tanks)** **See Figure 9**<br>- FEMA map | ☐ Yes ☒ No |
| **Below Grade Tanks** | |
| Within 100 feet of a continuously flowing watercourse, significant watercourse, lake bed, sinkhole, wetland or playa lake (measured from the ordinary high-water mark).<br>- Topographic map; Visual inspection (certification) of the proposed site | ☐ Yes ☐ No |
| Within 200 horizontal feet of a spring or a fresh water well used for public or livestock consumption;.<br>- NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site | ☐ Yes ☐ No |
| **Temporary Pit using Low Chloride Drilling Fluid** (maximum chloride content 15,000 mg/liter)<br>Within 100 feet of a continuously flowing watercourse, or any other significant watercourse or within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). (Applies to low chloride temporary pits.)<br>- Topographic map; Visual inspection (certification) of the proposed site | ☐ Yes ☐ No |
| Within 300 feet from a occupied permanent residence, school, hospital, institution, or church in existence at the time of initial application.<br>- Visual inspection (certification) of the proposed site; Aerial photo; Satellite image | ☐ Yes ☐ No |
| Within 200 horizontal feet of a spring or a private, domestic fresh water well used by less than five households for domestic or stock watering purposes, or 300feet of any other fresh water well or spring, in existence at the time of the initial application.<br>NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site | ☐ Yes ☐ No |

| | |
|---|---|
| Within 100 feet of a wetland.<br>- US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site | ☐ Yes ☐ No |
| **Temporary Pit Non-low chloride drilling fluid** | |
| Within 300 feet of a continuously flowing watercourse, or any other significant watercourse, or within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). **See Figure 3**<br>- 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.<br>- Visual inspection (certification) of the proposed site; Aerial photo; Satellite image. **See Figure 4** | ☐ Yes ☒ No |
| Within 500 horizontal feet of a spring or a private, domestic fresh water well used by less than five households for domestic or stock watering purposes, or 1000 feet of any other fresh water well or spring, in the existence at the time of the initial application;<br>- NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site<br>**See Figures 1 & 2** | ☐ Yes ☒ No |
| Within 300 feet of a wetland. **See Figure 6**<br>- US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site | ☐ Yes ☒ No |
| **Permanent Pit or Multi-Well Fluid Management Pit** | |
| 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).<br>- Topographic map; Visual inspection (certification) of the proposed site | ☐ Yes ☐ No |
| Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.<br>- Visual inspection (certification) of the proposed site; Aerial photo; Satellite image | ☐ Yes ☐ No |
| Within 500 horizontal feet of a spring or a fresh water well used for domestic or stock watering purposes, in existence at the time of initial application.<br>- NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site | ☐ Yes ☐ No |
| Within 500 feet of a wetland.<br>- US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site | ☐ Yes ☐ No |

**10.**

**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: _____

**11.**

**Multi-Well Fluid Management Pit 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.***

☐ 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
☐ A List of wells with approved application for permit to drill associated with the pit.
☐ 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
☐ Hydrogeologic Data - based upon the requirements of Paragraph (4) of Subsection B of 19.15.17.9 NMAC
☐ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC

☐ Previously Approved Design (attach copy of design) API Number: _____ or Permit Number: _____

12.

**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

13.

**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 ☐ Multi-well Fluid Management Pit ☐ 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

14.

**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 C 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 H of 19.15.17.13 NMAC
- ☐ Site Reclamation Plan - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC

15.

**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 require justifications and/or demonstrations of equivalency. Please refer to 19.15.17.10 NMAC for guidance.***

| | |
|---|---|
| Ground water is less than 25 feet below the bottom of the buried waste.<br>- NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells | ☐ Yes ☒ No<br>☐ NA |
| Ground water is between 25-50 feet below the bottom of the buried waste<br>- NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells | ☐ Yes ☒ No<br>☐ NA |
| Ground water is more than 100 feet below the bottom of the buried waste.<br>- NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells | ☒ Yes ☐ No<br>☐ NA |
| Within 100 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse, lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).<br>- 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.<br>- Visual inspection (certification) of the proposed site; Aerial photo; Satellite image | ☐ Yes ☒ No |
| Within 300 horizontal feet of a private, domestic fresh water well or spring used for domestic or stock watering purposes, in existence at the time of initial application.<br>- NM Office of the State Engineer - iWATERS database; Visual inspection (certification) of the proposed site | ☐ Yes ☒ No |
| Written confirmation or verification from the municipality; Written approval obtained from the municipality | ☐ Yes ☒ No |
| Within 300 feet of a wetland.<br>US Fish and Wildlife Wetland Identification map; Topographic map; 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.<br>- Written confirmation or verification from the municipality; Written approval obtained from the municipality | ☐ Yes ☒ No |
| Within the area overlying a subsurface mine.<br>- Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division | ☐ Yes ☒ No |
| Within an unstable area.<br>- 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.<br>- FEMA map | ☐ Yes ☒ No |

16.

**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 E of 19.15.17.13 NMAC
- ☐ Construction/Design Plan of Burial Trench (if applicable) based upon the appropriate requirements of Subsection K 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 19.15.17.13 NMAC
- ☒ Waste Material Sampling Plan - based upon the appropriate requirements 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 H of 19.15.17.13 NMAC
- ☒ Site Reclamation Plan - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC

17.

**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): Travis Hahn Title: Land Regulatory Agent

Signature:  Date: December 8, 2014

e-mail address: thahn@yatespetroleum.com Telephone: 575 748 4120

18.

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

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

**Title:** _____ **OCD Permit Number:** _____

19.

**Closure Report (required within 60 days of closure completion):** 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:** _____

20.

**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.

21.

**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 for private land only)
- ☐ 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

22.

**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: _____

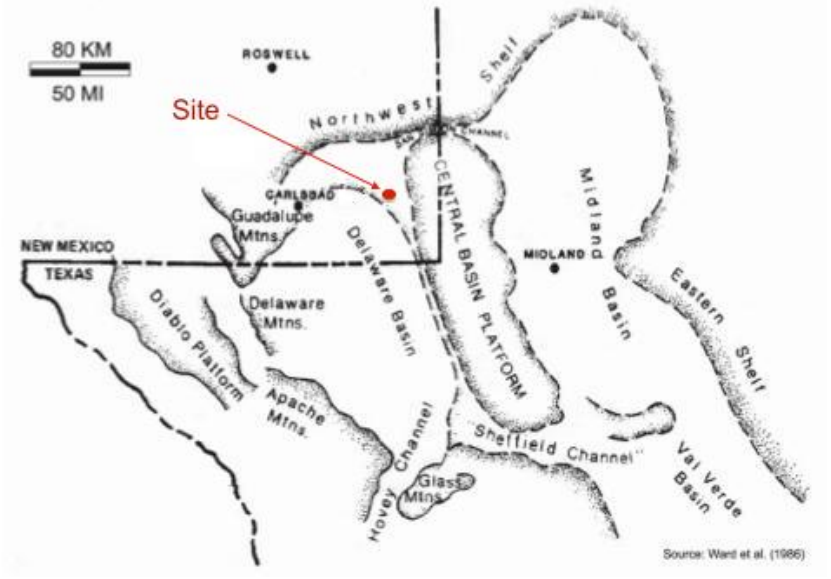
e-mail address:_____ Telephone: _____

## Geologic Setting of the Regional Fresh-Water Bearing Formations

The proposed temporary pit site is located near the southern edge of the Grama Ridge Area. It is a topographically elevated erosional remnant of the High Plains that separates the San Simon Swale to the south from the Laguna Valley to the north; all of which are part of the eastern edge of the Pecos Valley Physiographic Province (see adjacent map insert).


The surface elevation for most of the Grama Ridge Area ranges from 3,700 to 3,800 feet above sea level (ASL), with the highest elevation at Hat Mesa (3,900 feet ASL) located approximately six miles to the west of the proposed temporary pit site. The San Simon Sink is in the southeast end of the San Simon Swale. It is located twelve miles to the south-southeast of the site and represents the lowest surface elevation in the region at 3,273 feet ASL. To the north of the Grama Ridge Area the topography slopes gently into the Laguna Valley, toward three large playa lakes, the lowest if which is Laguna Plata at 3,440 feet AST. Regionally, surface drainage is to the south toward the San Simon Swale.

Groundwater in the Grama Ridge Area is found only in Mesozoic and Cenozoic Era rocks that were deposited since approximately 235 million years ago. The oldest of these are the Mesozoic Era, Triassic Period, Dockum Group, Chinle and Santa Rosa Formation. They consist of conglomerates, cross-bedded sandstones, claystones, and siltstones that were deposited in a continental fluvial environment over the evaporites of the late Permian Ochoan Series, which had filled the Delaware Basin by that time.



Any Jurassic or Cretaceous age rocks that were deposited above the Triassic have subsequently been removed by erosion leaving an irregular surface on the Triassic Chinle Formation. The Tertiary age Ogallala Formation and Quaternary age eolian and piedmont deposits represent the Cenozoic Era rocks in the area. The Ogallala Formation consists of terrestrial sediments (sand with some clay, silt and gravel) that were deposited on the Triassic age rocks. Generally, the Ogallala is capped by a caliche layer, observed in many outcrops along Grama Ridge, being resistant to the erosion that shaped the San Simon Swale.

The Ogallala aquifer is the primary groundwater source where it is present on the Eunice Plains approximately 12 to 25 miles to the east and on the High Plains to the north. Across most of the Laguna Valley, Grama Ridge Area, and San Simon Swale the Triassic Chinle or Santa Rosa aquifers provide the only regionally extensive source of fresh groundwater. Within five miles of the proposed temporary pit site several water wells are present that produce water from the Cenozoic (Ogallala, Alluvium, or Bolsom aquifers). These wells are generally located to the north and east of the site and are believed to be associated with shallow, isolated areas where the geometry of the underlying Triassic beds have created a local containment for precipitation in the immediate area.

## Distance to Groundwater

**Figure 1, Figure 2A, Figure 2B, and the discussion presented below demonstrates that groundwater (fresh water as defined by NMOCD Rules) at the location is, at least greater than 50 feet, and most likely greater than 100 feet beneath the temporary pit.**

Figure 1 is an area geologic base map that depicts regional topography (metric contour units) and includes the water wells located nearest to the temporary pit site for which information is available, regardless of how comprehensive or useful. It also shows:

1. The location of the temporary pit site as a purple hexagon.
2. Water wells from the USGS database as color-coded triangles that indicated the producing aquifer (see Legend).
3. Water wells from the New Mexico Office of the State Engineer (OSE) database as a small blue triangle inside a colored circle that indicates the well depth (see Legend). Please note, OSE wells are often miss-located in the WATERS database as older wells are plotted in the center of the quarter, quarter, quarter, of the Section Township and Range. Topographic maps and/or aerial photographs verified all of the OSE well locations included on this map.
4. Water wells, which are not documented in the public databases but were identified by field inspection or other published reports are shown as a dot inside a color-coded (depth) square.
5. Depth to water and gauging dates from the most recent and reliable measurement for each well is provided adjacent to the well symbol. It should be noted that in most cases the depth to water provided by the OSE database are from drillers log notes estimated at the time of completion, rather than actual field measurements.

Figure 2A is a regional topographic base map (metric contour units) that depicts the potentiometric surface contours of the shallow-most aquifer surrounding the site. The potentiometric contours are labeled in feet ASL. The water wells plotted include only the USGS

database and published report water wells from Figure 1 for which a reliable depth to water measurement has been recorded. Figure 2A also shows:

1. The location of the temporary pit site as a purple hexagon.
2. Groundwater elevations and gauging dates from the most recent available static water level measurement for each well, regardless of which formation (or formations) are being produced.

Figure 2B contains the same well data as Figure 2A but instead of a topographic map, the potentiometric map from Ground-Water Report 6 (GWR-6) *Geology and Ground-Water Conditions in Southern Lea County, New Mexico* by Alexander Nicholson and Alfred Clebsch (1961) was used as a base map.

## Site Geology

The Yates Petroleum Corporation Persimmon BSS State Com 4H temporary pit is located on an outcrop of Tertiary Age Ogallala Formation as described above (To on Figure 1). To the south of the site, the Ogallala Formation is covered by Quaternary Age eolian and piedmont deposits (Qe/Qp on Figure 1). These fine-grained sands and clays, along with the Quaternary lacustrine/playa deposits (Qp and Qpl on Figure 1), are present as a thin covering of the underlying rocks. Based on information from GWR-6 and the elevation of the site (3760 feet ASL), the Triassic age red shale and clays are present approximately 150 feet below the temporary pit location.

## Water Table Elevation

Thirteen water wells were identified in the area surrounding the temporary pit site (see Figure 1). A summary of the available water well data, with respect to groundwater elevation, is provided on the table below. In addition to data from the USGS, published, and field verified well information, which is generally considered reliable, the table also includes wells listed on the OSE Waters database. As stated earlier, the groundwater elevations provided for these OSE wells are likely based on driller log notes rather than measurements made under static conditions.

| | Well Location | | | | | | Well Source Information | | | | | | | Groundwater Elevation Data | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Well Numbers (see Map) | Township (south) | Range (east) | Section | Quarter Section OSE protocol (64, | 16, | 4) | NM-OSE Database | USGS Database | Open File Rpt. 95 | GW Report No. 6 | USGS Topo Sheet | Aerial Photograph | Field Verification | Surface Elevation (published) | Surface Elevation (Topo Sheet) | Well Total Depth (published) | Depth to Water (published) | Groundwater Elev. (published) | Groundwater Elev. (using topo elev.) | Gauging Date |
| USGS-888 | 21 | 33 | 2 | 1 | 2 | 4 | | ✓ | ✓ | | ✓ | -- | -- | 3,768 | 3,768 | 102 | 87.5 | 3,681 | 3,681 | 2/22/96 |
| USGS-882 | 21 | 33 | 11 | 1 | 1 | 1 | | ✓ | ✓ | | ✓ | -- | -- | 3,820 | 3,812 | 195 | 142.4 | 3,678 | 3,670 | 2/22/96 |
| CP 00578 | 21 | 33 | 11 | 4 | 4 | 3 | ✓ | | ✓ | | | ✓ | -- | | 3,795 | 165 | 150 | | 3,645 | 1/6/79 |
| Misc-71 | 21 | 33 | 25 | 3 | 2 | 4 | | | ✓ | | ✓ | -- | -- | 3,666 | 3,662 | | 58.95 | 3,607 | 3,603 | 2/4/71 |
| USGS-798 | 21 | 33 | 28 | 4 | 2 | 1 | | ✓ | ✓ | ✓ | ✓ | -- | -- | 3,688 | 3,688 | 224 | 178.85 | 3,509 | 3,509 | 2/21/96 |
| CP 01043 | 21 | 33 | 33 | 1 | 1 | 2 | ✓ | | | | | ✓ | -- | | 3,665 | 950 | 600 | | 3,065 | 6/22/96 |
| CP 00873 | 21 | 33 | 33 | 1 | 1 | 2 | ✓ | | | | | ✓ | -- | | 3,665 | 340 | 180 | | 3,485 | 1/5/98 |
| CP 00498 | 21 | 34 | 8 | | 2 | 4 | ✓ | | | | | | | | | 145 | 120 | | | 9/30/71 |
| USGS-853 | 21 | 34 | 8 | 2 | 2 | 4 | ✓ | ✓ | ✓ | ✓ | ✓ | -- | -- | 3,705 | 3,705 | 120 | 101.3 | 3,604 | 3,604 | 2/13/96 |
| USGS-793 (1-6) | 21 | 34 | 28 | 1 | 1 | 3 | ✓ | ✓ | | | | ✓ | ✓ | 3,728 | | | 136.6 | 3,591 | | 2/13/96 |
| USGS-771 | 21 | 34 | 33 | 3 | 3 | 2 | | ✓ | ✓ | ✓ | ✓ | -- | -- | 3,641 | 3,641 | 92 | 62.6 | 3,578 | 3,578 | 2/16/96 |
| USGS-604 | 22 | 33 | 12 | 4 | 3 | 1 | | ✓ | | | | | -- | 3,531 | | 400 | 324.95 | 3,206 | | 3/13/96 |
| USGS-744 | 22 | 34 | 8 | 2 | 3 | 2 | | ✓ | ✓ | | ✓ | -- | -- | 3,578 | 3,573 | 35 | 30.84 | 3,547 | 3,542 | 2/16/96 |

✓ Indicates well was verified, (blank) indicates well not verified, and -- indicates no attempt to verify

Initially, an attempt was made to identify each well using USGS topographic maps. The surface elevation of each well identified on the topographic map was compared to the published surface elevation, if available. Wells that could not be verified using maps were searched for using current and historic satellite photographs in an effort to identify windmills, tanks, or roads associated with the present of former water well. The following comments should be noted from Figure 1 and the table:

- Well USGS-604 is properly located on Figure 1 and Figure 2 according to the USGS latitude and longitude. However, the USGS database information indicates that the well is located in T-23-S instead of T-22-S. The USGS topographic map identifies the "Allred Well" at this location. The datum elevation (3,531 feet) is consistent with the maps at both locations, so the well has been included on the table and figures for this evaluation.

- Wells USGS-853 and CP 00498 are believed to be the same well, based on satellite image and field verification.

- There are at least six closely spaced wells at the location identified as USGS-793 and CP-01041. Several of the wells are believed to have been recently installed; they are currently being used for oil well drilling supply, based on field verification.

Attempts were made to gauge wells Misc-71 and USGS-853, as they are located relatively near the temporary pit site. Both wells are operational windmills that are constructed such that access to the casing was not possible without additional equipment and landowner permission.


USGS-793


Misc-71


USGS-853

**Hydrogeology**

Two aquifers are present in the general area of the proposed pit: a localized shallow aquifer that exists east and north of the location and the regionally-extensive Chinle (red bed) aquifer.

The nearest water well, assumed to be an Ogallala or alluvium/Bolsom producer, is Misc-71, located approximately 1.2 miles to the south. The groundwater elevation from this well and other shallow wells was used to produce the potentiometric map shown in Figure 2A in order to present the most conservative possible case. Potentiometric contours shown Figure 2B (GWR-6) likely provide a more accurate interpretation of the actual groundwater conditions where the

elevation of the water table is higher than the elevation of the top of the Chinle (red bed) Formation.

Based on the potentiometric surface contours shown in Figure 2A, we conclude that the groundwater elevation at the temporary pit site is approximately 3,610 feet ASL, which is the same as the estimated elevation of the top of the Chinle Formation . With a surface elevation of 3,760 feet ASL and a maximum pit depth of 10 feet, the depth to groundwater below the pit floor should be at least 140 feet. Because, the water table aquifer potentiometric surface is essentially the same as the expected top of the Triassic red beds – this aquifer may not exist at the location.

Using the potentiometric surface contours shown in Figure 2B, we conclude that the groundwater elevation of the Triassic aquifer beneath the temporary pit site is approximately 3,340 feet ASL which would result in a depth to groundwater below the pit floor of 284 feet. This depth to groundwater is more logical for this location.

## Distance to Surface Water

**Figure 3 and the site visit demonstrates that the location is not within 300 feet of a continuously flowing watercourse, or any other significant watercourse, or within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).** No continuously flowing watercourses exist within 300 feet of the location. The nearest surface drainage feature (un-named intermittent stream identified on the USGS quadrangle map) is located 1,840 feet to the southwest.

## Distance to Permanent Residence or Structures

**Figure 4 and the site visit demonstrates that the location is not within 300 feet from a permanent residence, school, hospital, institution, church, or other structure in existence at the time of initial application.**

## Distance to Non-Public Water Supply

**Figures 1 and 3 demonstrate that the location is not within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application.**

- Figure 1 shows the locations of all area water wells; the nearest fresh water well is Misc-71, which is located 1.2 miles to the south. There are no known domestic water wells located within the mapping area.
- Figure 3 shows that no springs are identified within the mapping area.

## Distance to Municipal Boundaries and Fresh Water Fields

**Figure 5 demonstrates that the location is not within incorporated municipal boundaries or defined municipal fresh water well fields covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended.**

- The closest municipality is Eunice, NM approximately 25 miles to the east.
- The closest public well field is located approximately 30 miles to the north.

## Distance to Wetlands

**Figure 6 demonstrates the location is not within 300 feet of wetlands.**

- The nearest designated wetlands is a "Freshwater Pond" located 2,460 feet south.
- Photographs in Appendix A indicate that no water was present in the pond on the day of inspection.

## Distance to Subsurface Mines

**Figure 7 and our general reconnaissance of the area demonstrate that the nearest mines are caliche pits.**

- The nearest caliche pit is located approximately 2.5 miles to the southeast.

## Stability of Pit Area and Distance to High or Critical Karst Areas

**Figure 8 shows the location of the proposed temporary pit with respect to BLM Karst areas using the 2014 map and Figure 1 shows the regional geology.**

- The proposed temporary pit is located within a "low" potential karst area.
- The nearest "high" or "critical" potential karst area is located approximately 15 miles west of the site.
- We saw no evidence of solution voids were observed near the site during the field inspection.
- No evidence of unstable ground near the site was observed during the site inspection.

A professional geologist (Dale Littlejohn) conducted the field survey and concluded that the ground is stable.

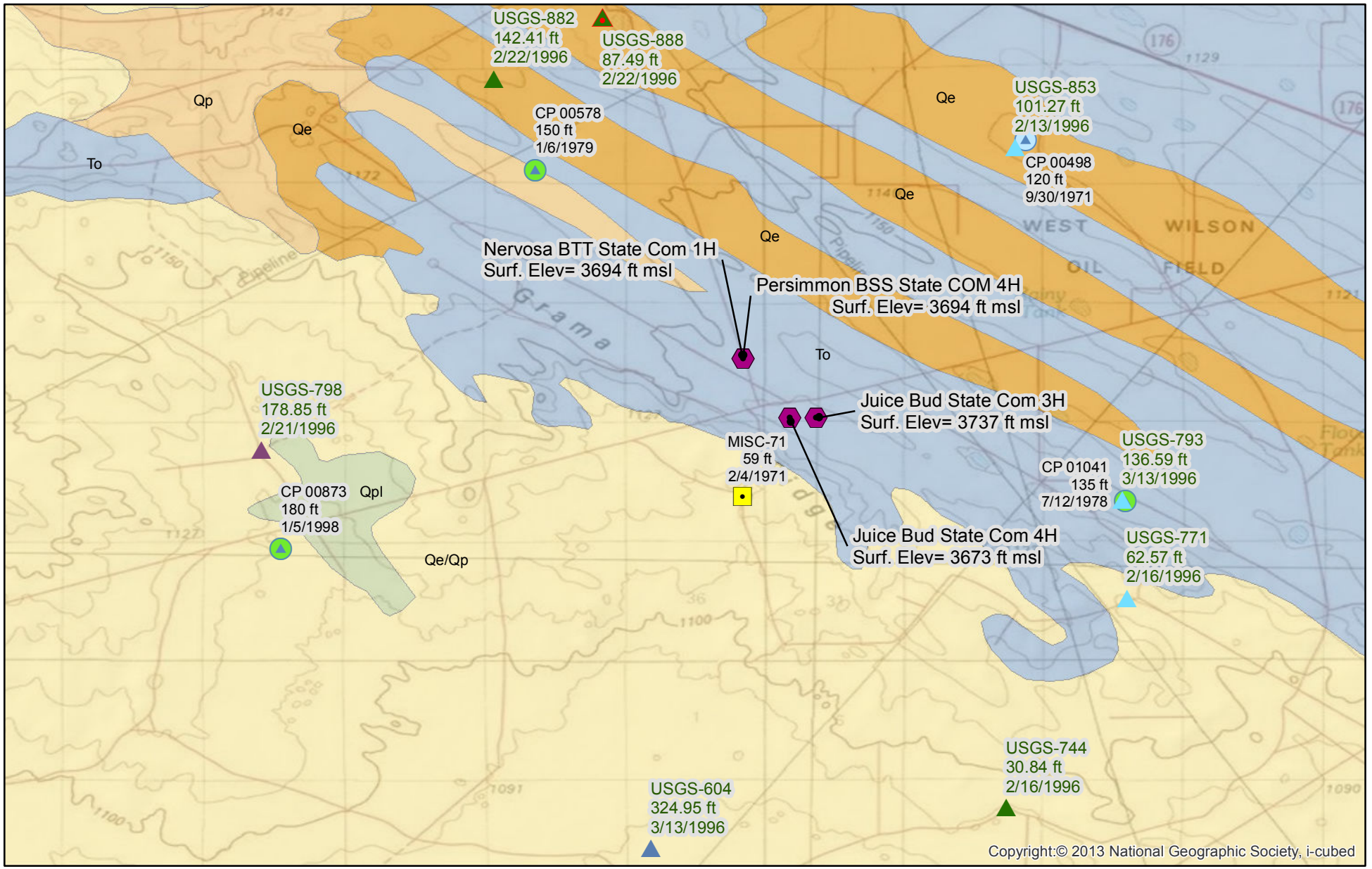
## Distance to 100-Year Floodplain

**Figure 9 demonstrates that the location is within an area that has not yet been mapped by the Federal Emergency Management Agency with respect to the Flood Insurance Rate 100-Year Floodplain.**

- Areas that are not mapped are designated as "Undetermined Flood Hazard" and are generally considered minimal flood risk.
- Our field inspection and examination of the topography permit a conclusion that the location is not within any floodplain.

# Site Specific Information
# Figures

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




0 0.5 1 Miles

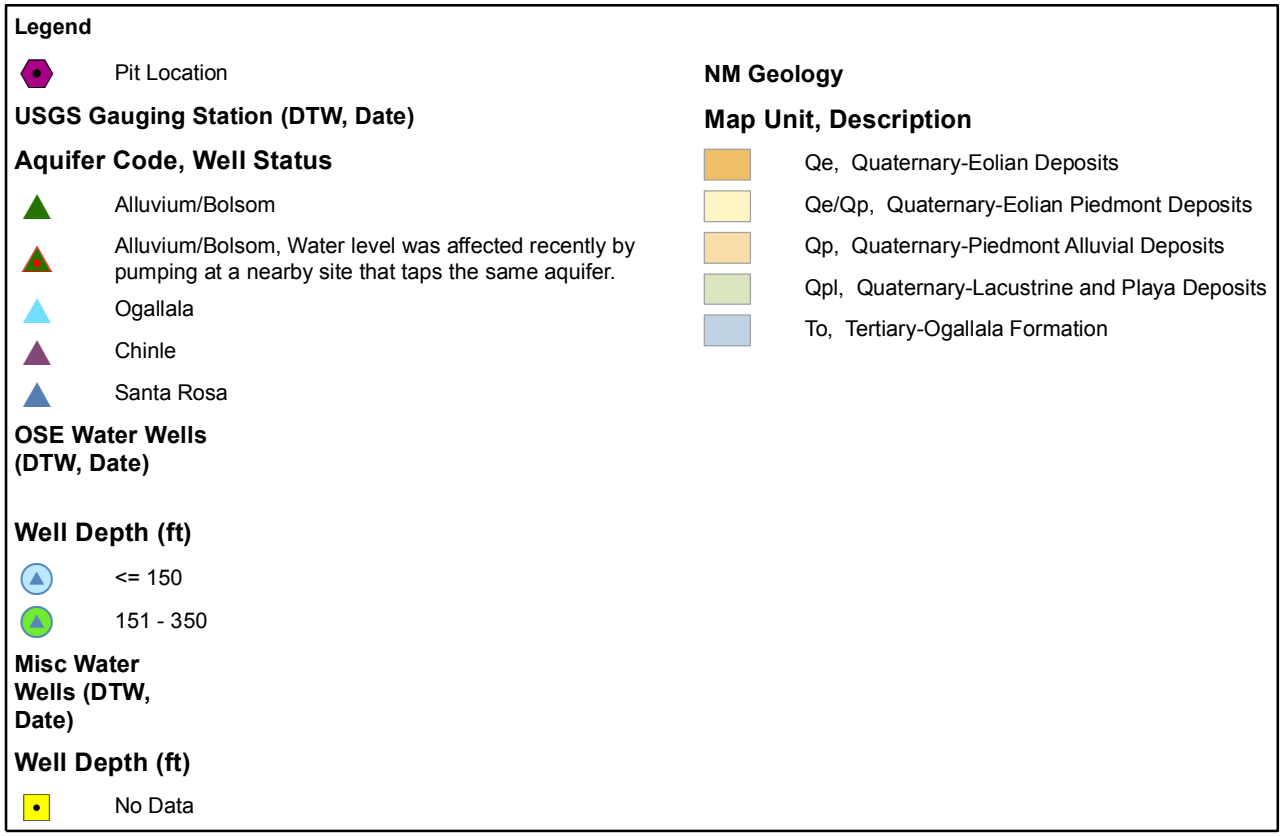
R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Depth To Water and Geology

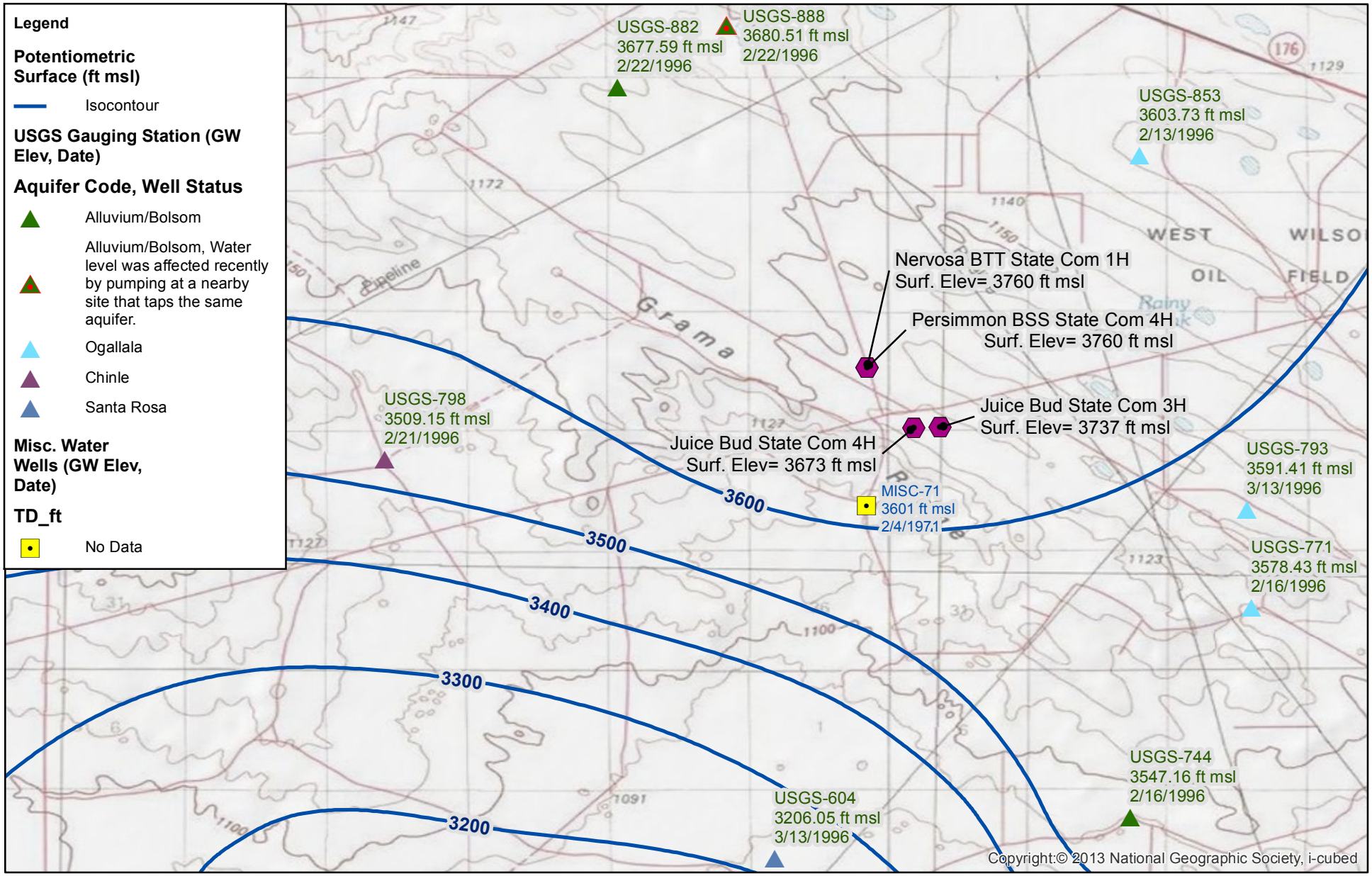
Figure 1

Yates Petroleum Corporation
Persimmon BSS State Com 4H

November 2014




| | | |
|---|---|---|
| R.T. Hicks Consultants, Ltd<br>901 Rio Grande Blvd NW Suite F-142<br>Albuquerque, NM 87104<br>Ph: 505.266.5004 | Depth To Water and Geology | Figure 1<br>Legend |
| | Yates Petroleum Corporation<br>Persimmon BSS State Com 4H | November<br>2014 |



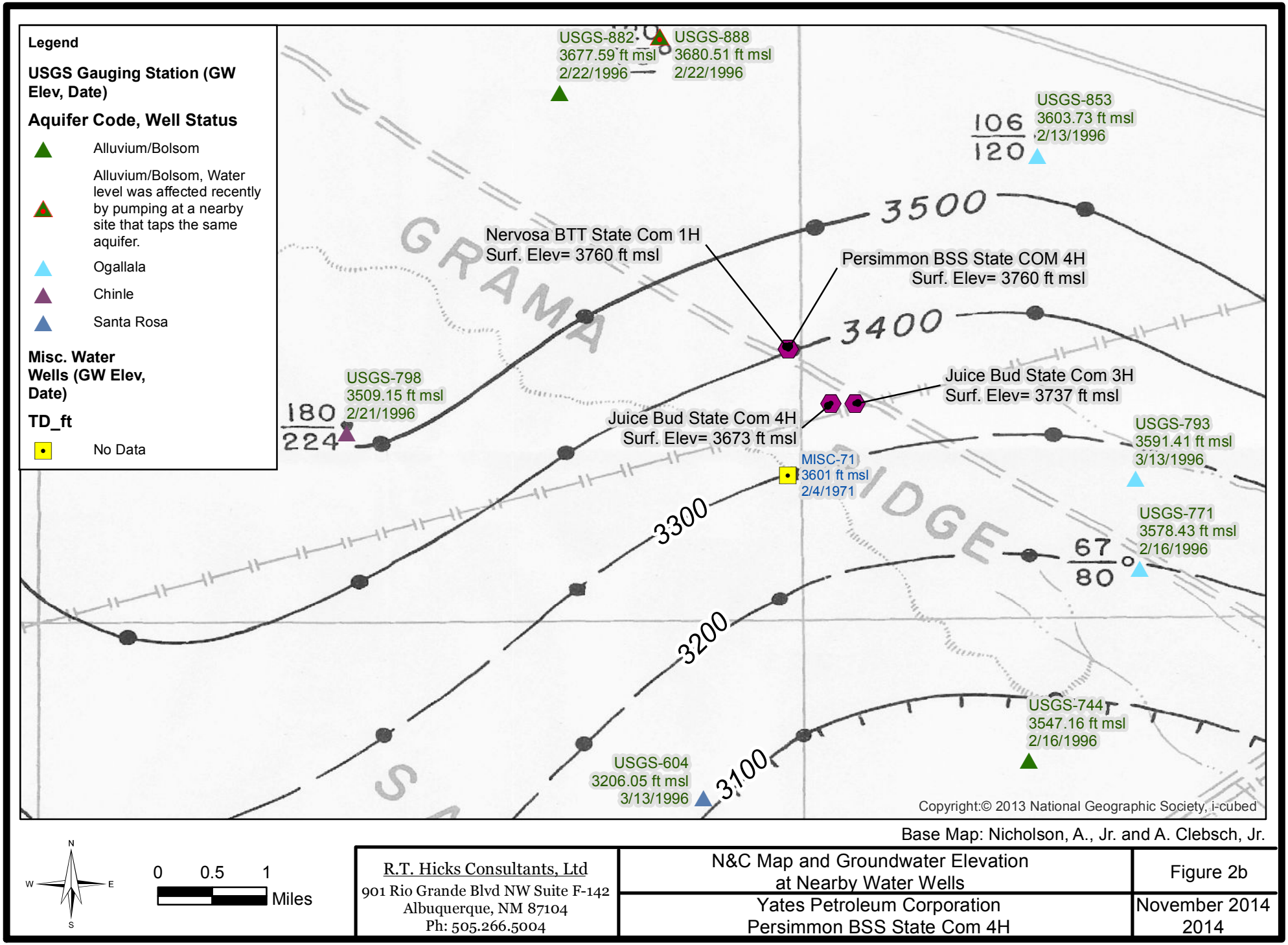

R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Potentiometric Surface and Groundwater Elevation at Nearby Water Wells

Figure 2a

Yates Petroleum Corporation
Persimmon BSS State Com 4H

November 2014




Base Map: Nicholson, A., Jr. and A. Clebsch, Jr.

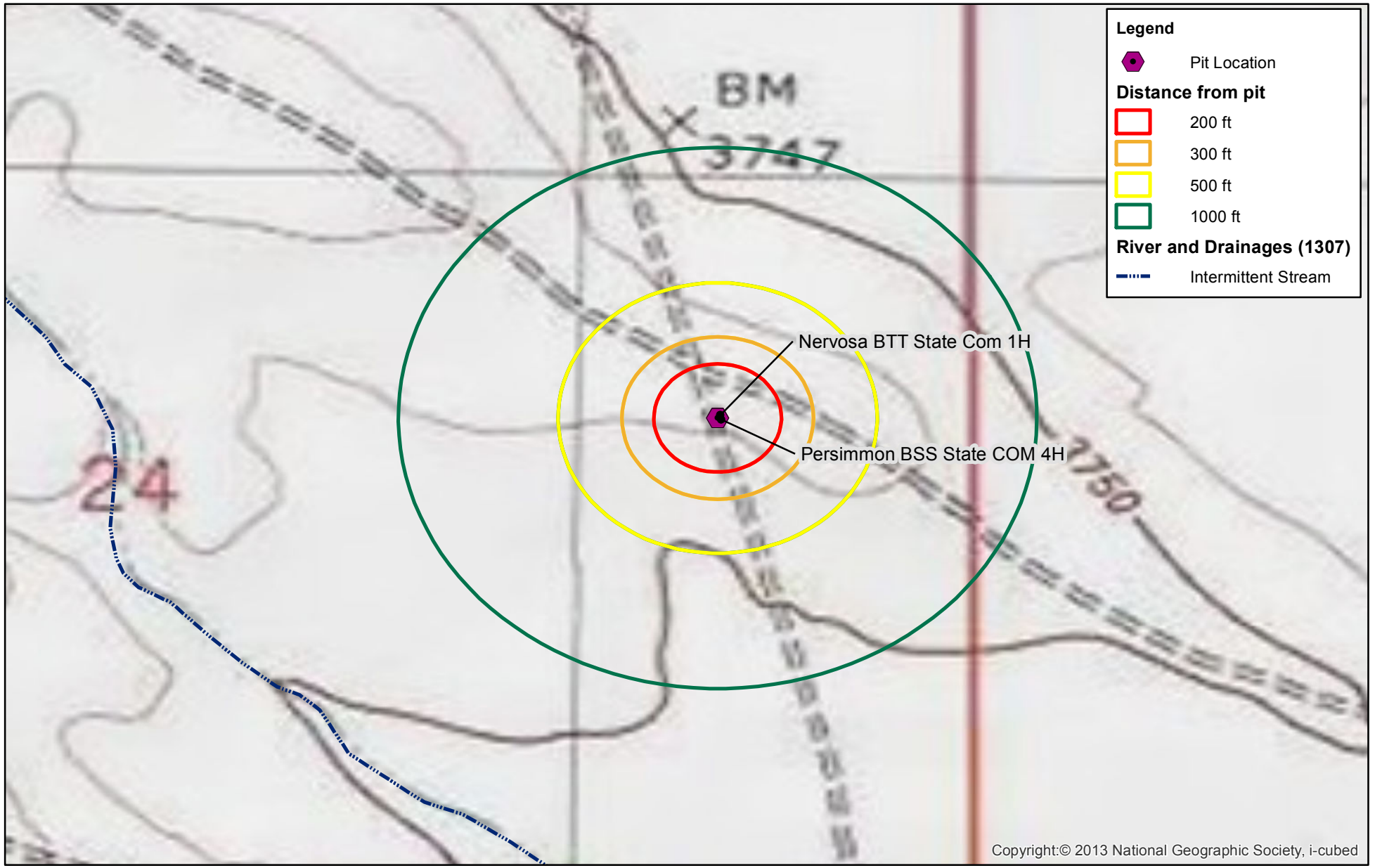
R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

N&C Map and Groundwater Elevation at Nearby Water Wells

Figure 2b

Yates Petroleum Corporation
Persimmon BSS State Com 4H

November 2014
2014




N
W E
S

0 250 500
Feet

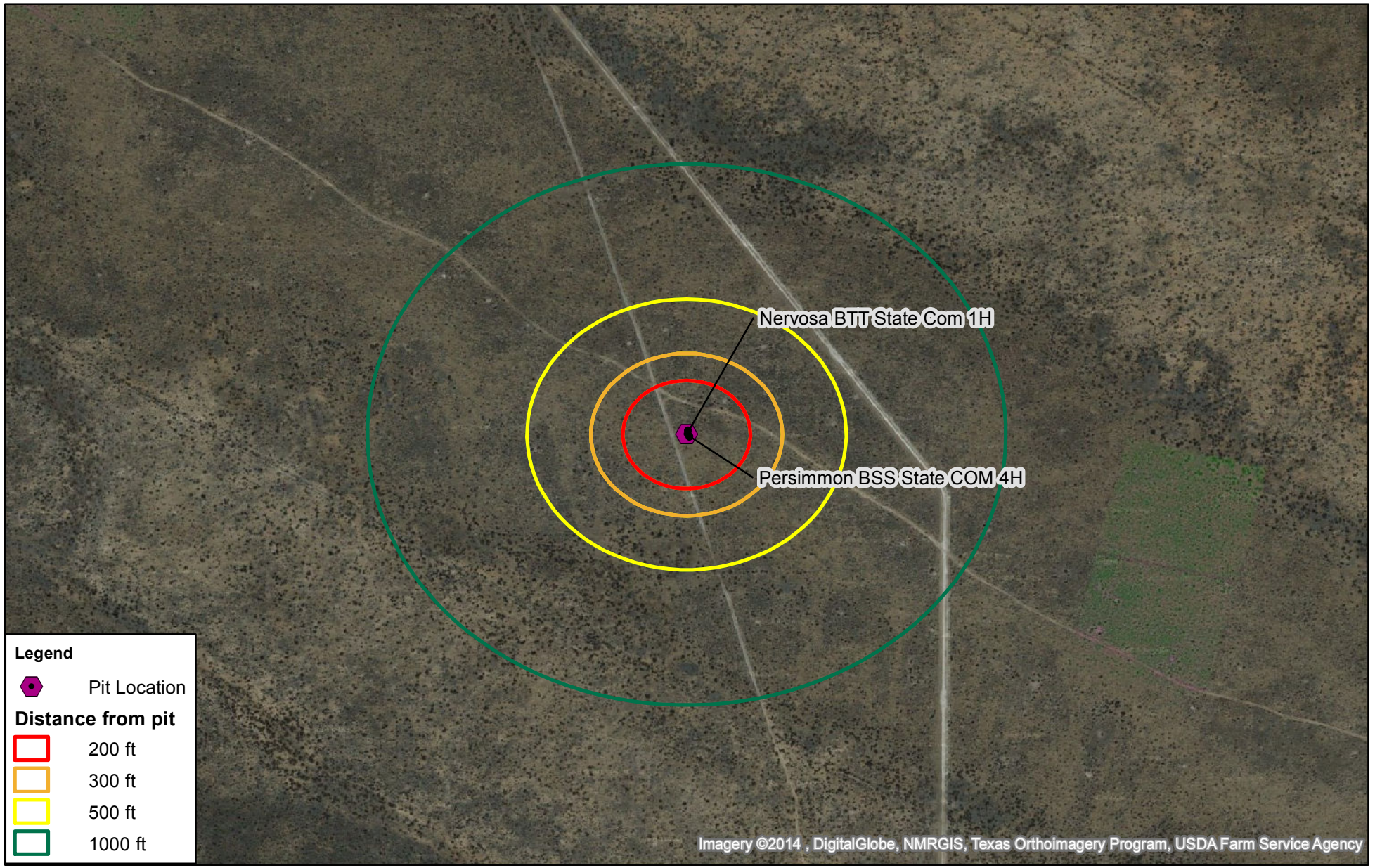
R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Surface Water and Topography

Figure 3

Yates Petroleum Corporation
Persimmon BSS State Com 4H

November 2014




N
W
E
S

0 250 500
Feet

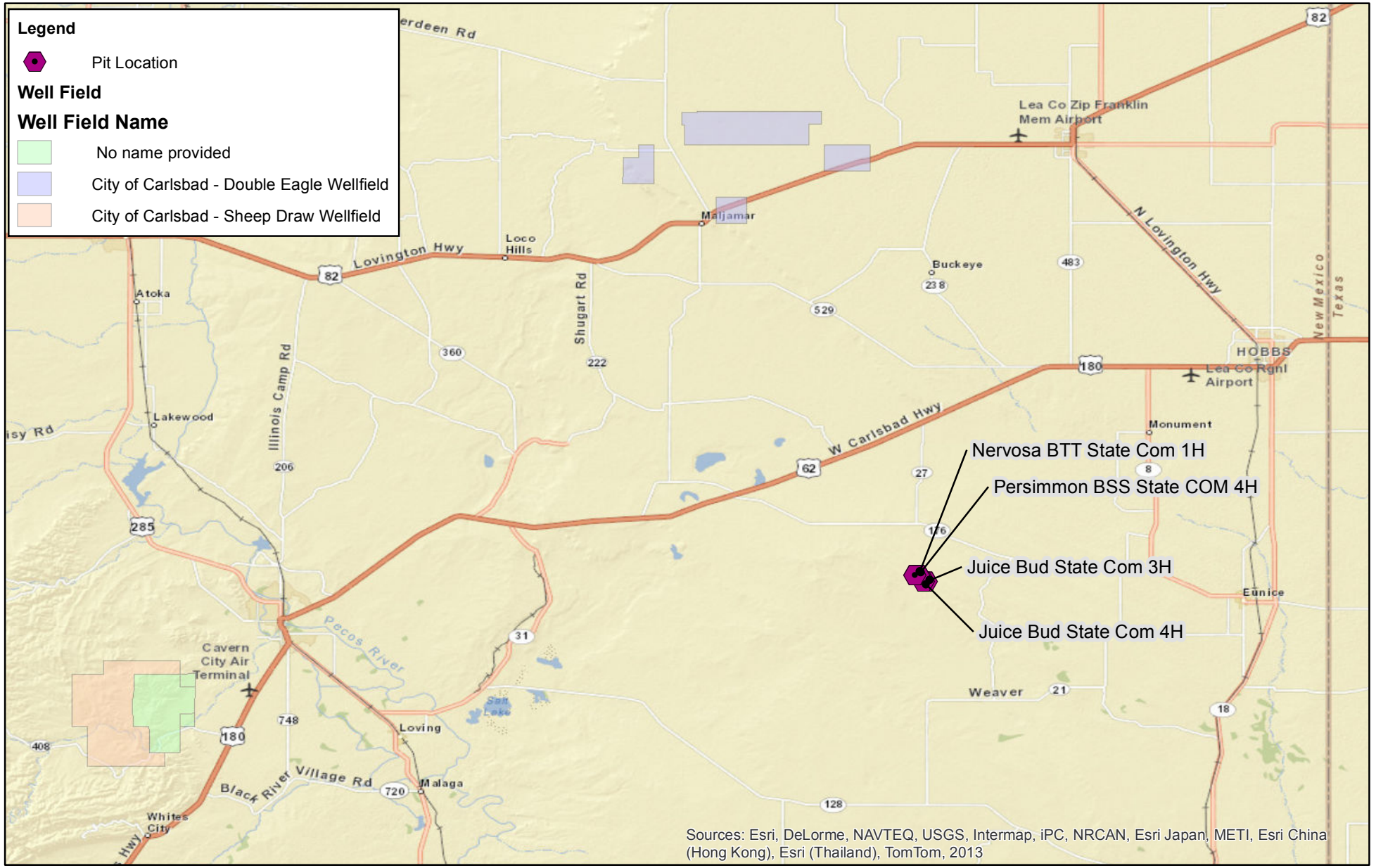
R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Nearby Structures

Figure 4

Yates Petroleum Corporation
Persimmon BSS State Com 4H

November 2014



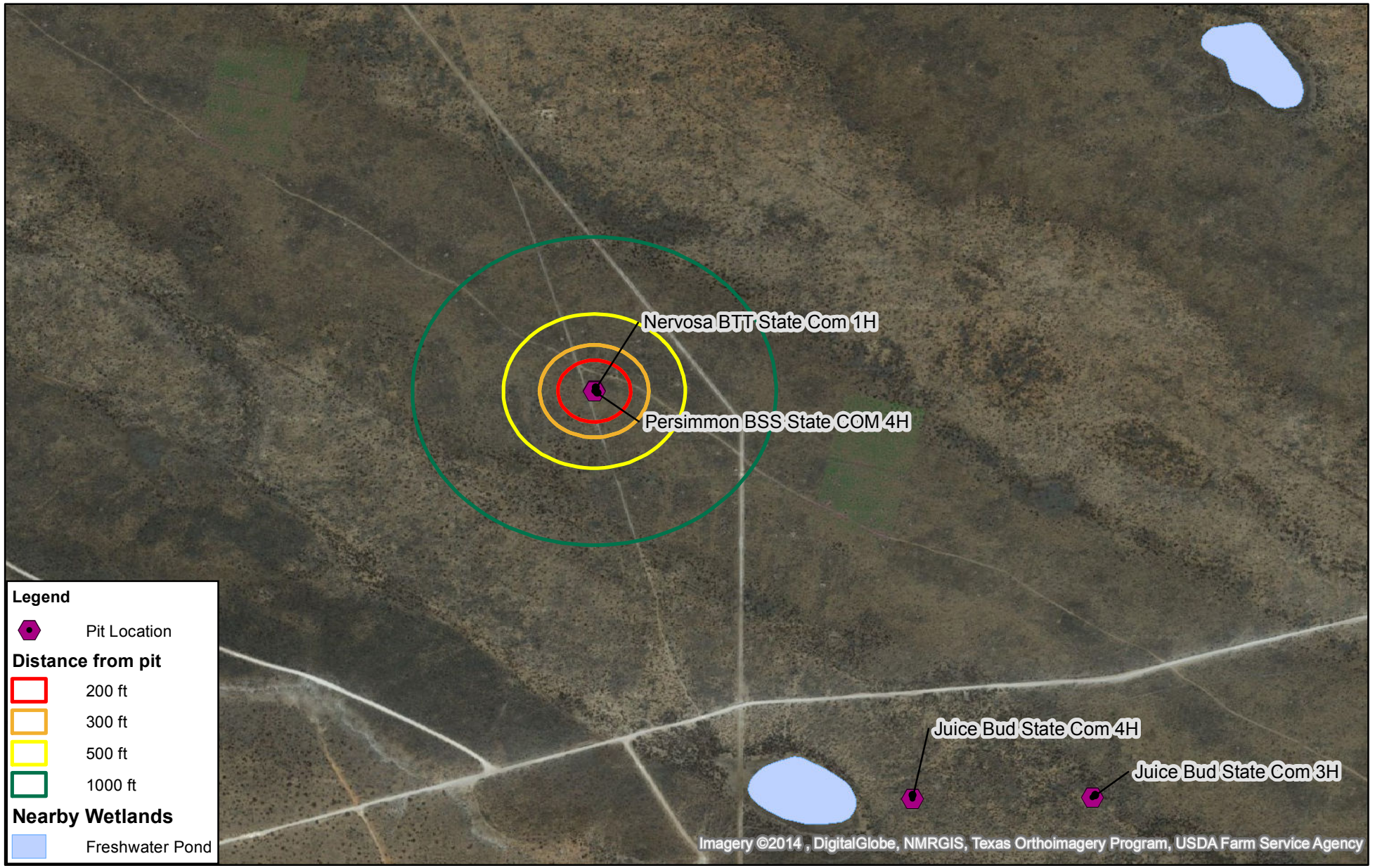

R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Nearby Municipalities and Well Fields

Figure 5

Yates Petroleum Corporation
Persimmon BSS State Com 4H

November 2014




N
W E
S

0 500 1,000
Feet

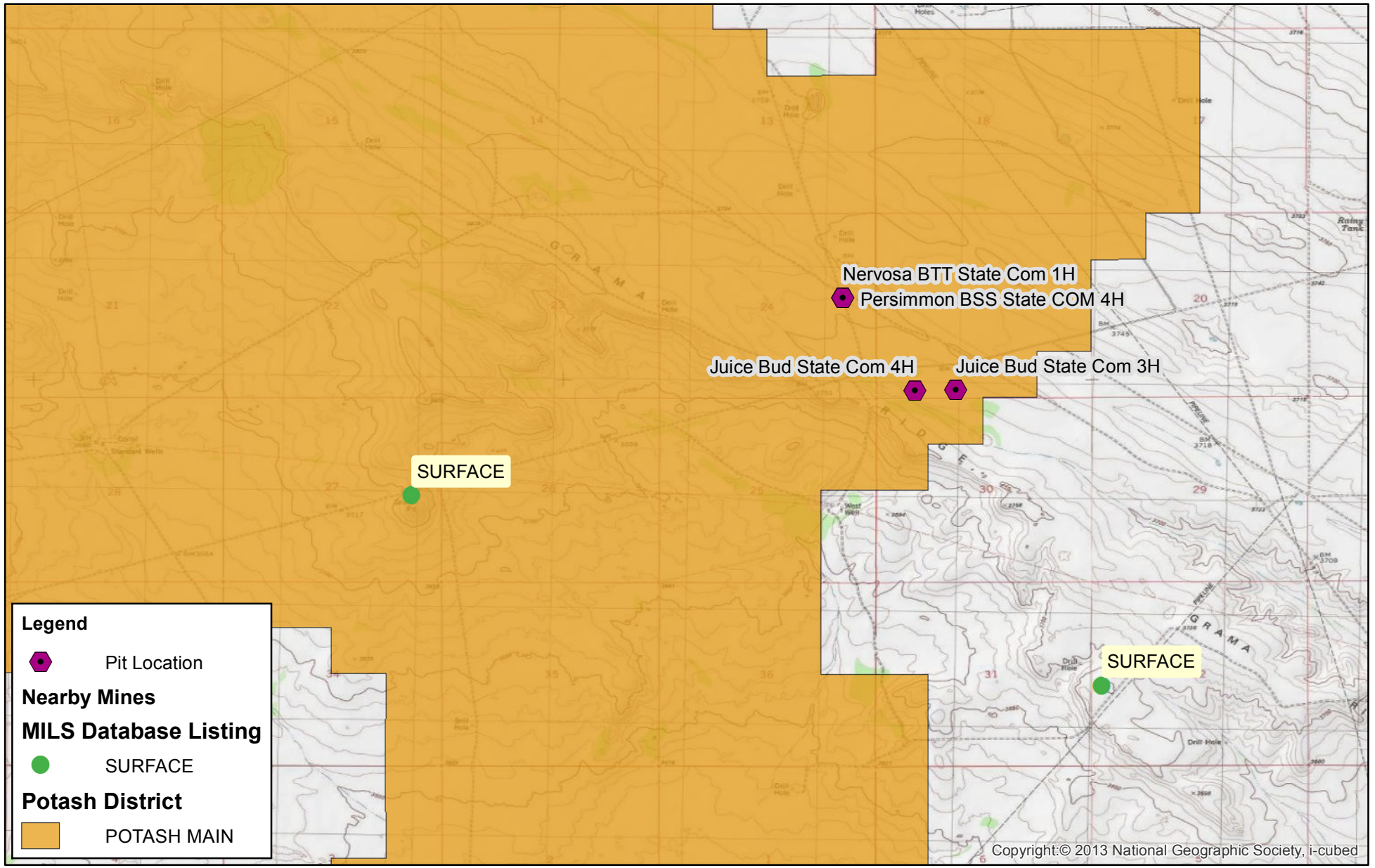
R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Nearby Wetlands

Figure 6

Yates Petroleum Corporation
Persimmon BSS State Com 4H

November 2014




N
W E
S

0 0.5 1 Miles

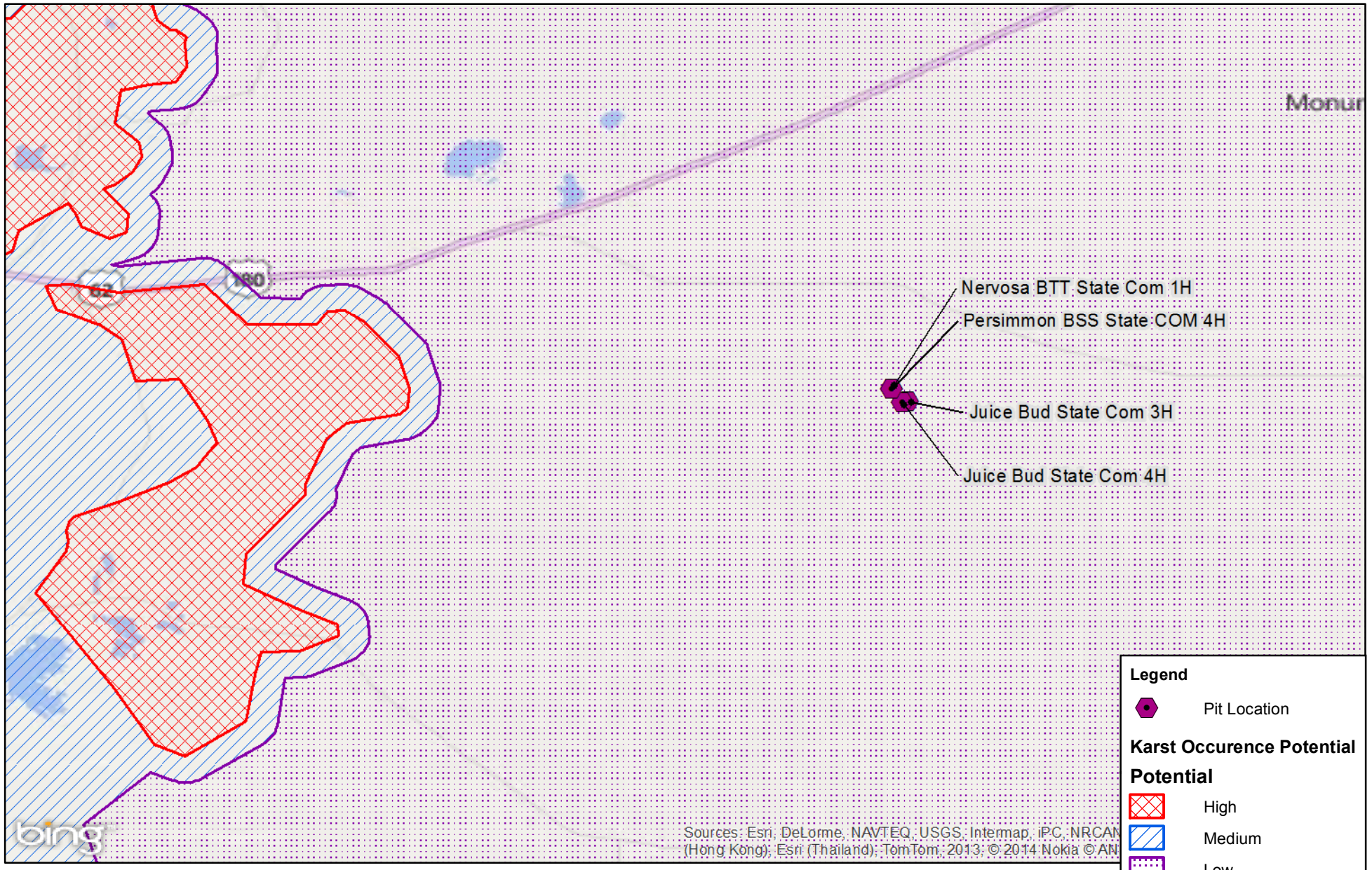
R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Nearby Mines and Minerals

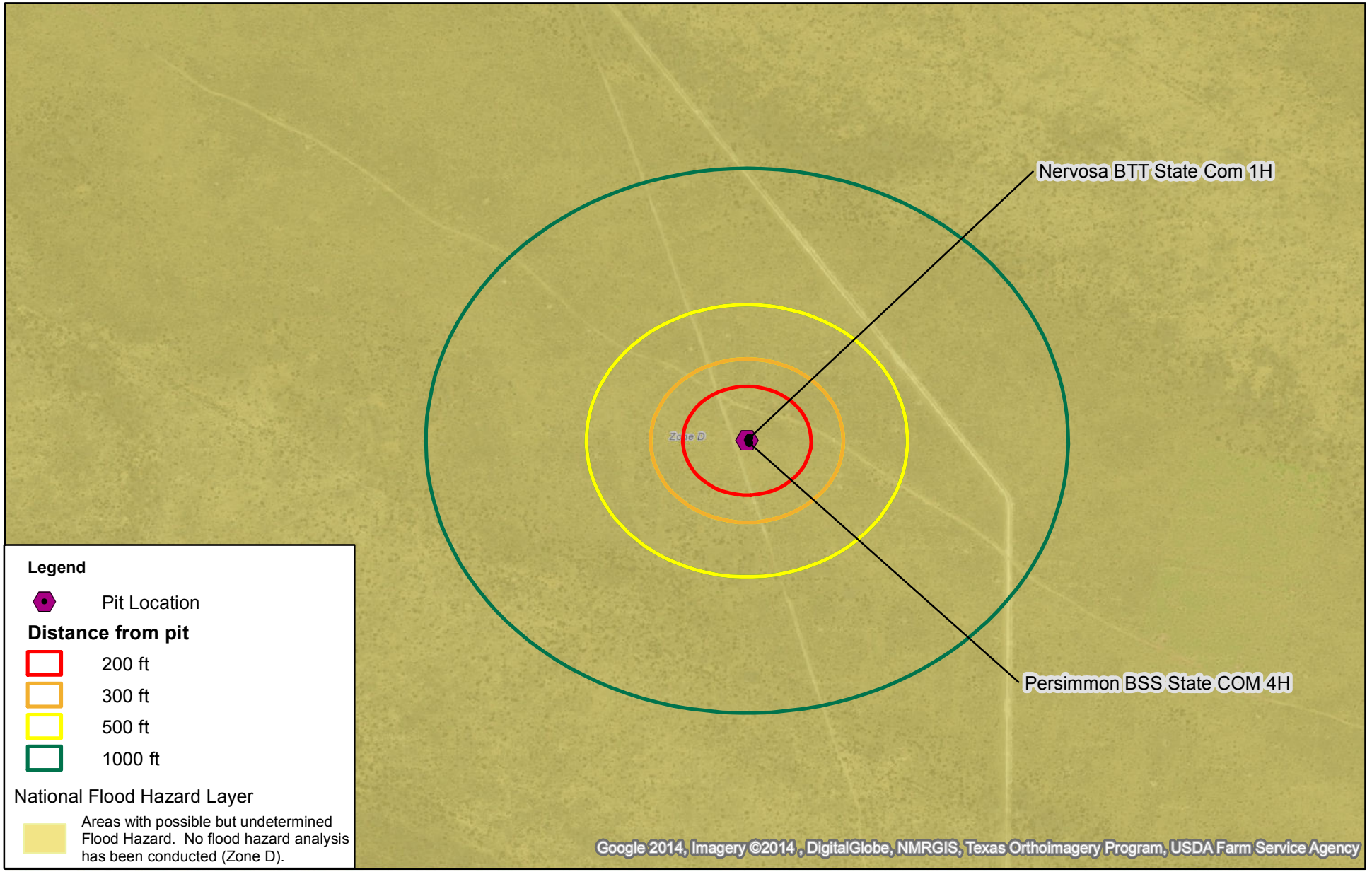
Figure 7

Yates Petroleum Corporation
Persimmon BSS State Com 4H

November 2014




| | | |
|---|---|---|
| R.T. Hicks Consultants, Ltd<br>901 Rio Grande Blvd NW Suite F-142<br>Albuquerque, NM 87104<br>Ph: 505.266.5004 | Karst Potential | Figure 8 |
| | Yates Petroleum Corporation<br>Persimmon BSS State Com 4H | November 2014 |




FEMA Source: https://hazards.fema.gov/gis/nfhl/services/public/NFHLWMS/MapServer/WMSServer

N W E S

0 250 500 Feet

R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

FEMA Flood Map

Figure 9

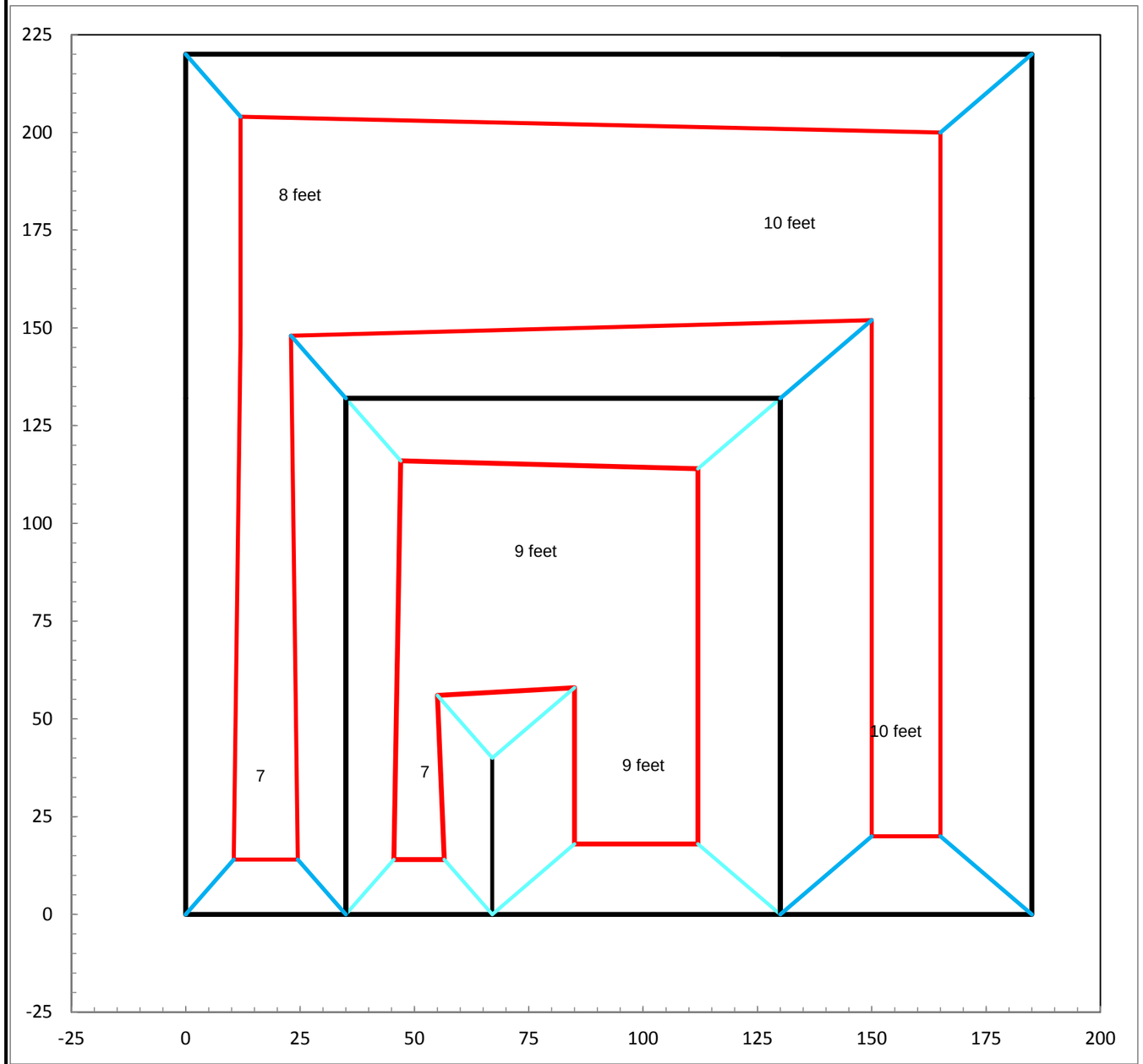
Yates Petroleum Corporation
Persimmon BSS State Com 4H

November 2014

# Site Specific Information Plates

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

**185.0 TOTAL WIDTH OF PIT** **220.0 TOTAL LENGTH OF PIT** **132.0 LENGTH OF INNER PIT**




| | | | | |
|---|---|---|---|---|
| **WIDTH** | **35.0** | **32.00** | **63.00** | **55.0** |

**TOP INNER PIT TO TOP OUTER** — **88.0**

**TOP DIVIDER TO TOP PIT** — **92.0**

**INNER PIT DIVIDER** — **40.0**

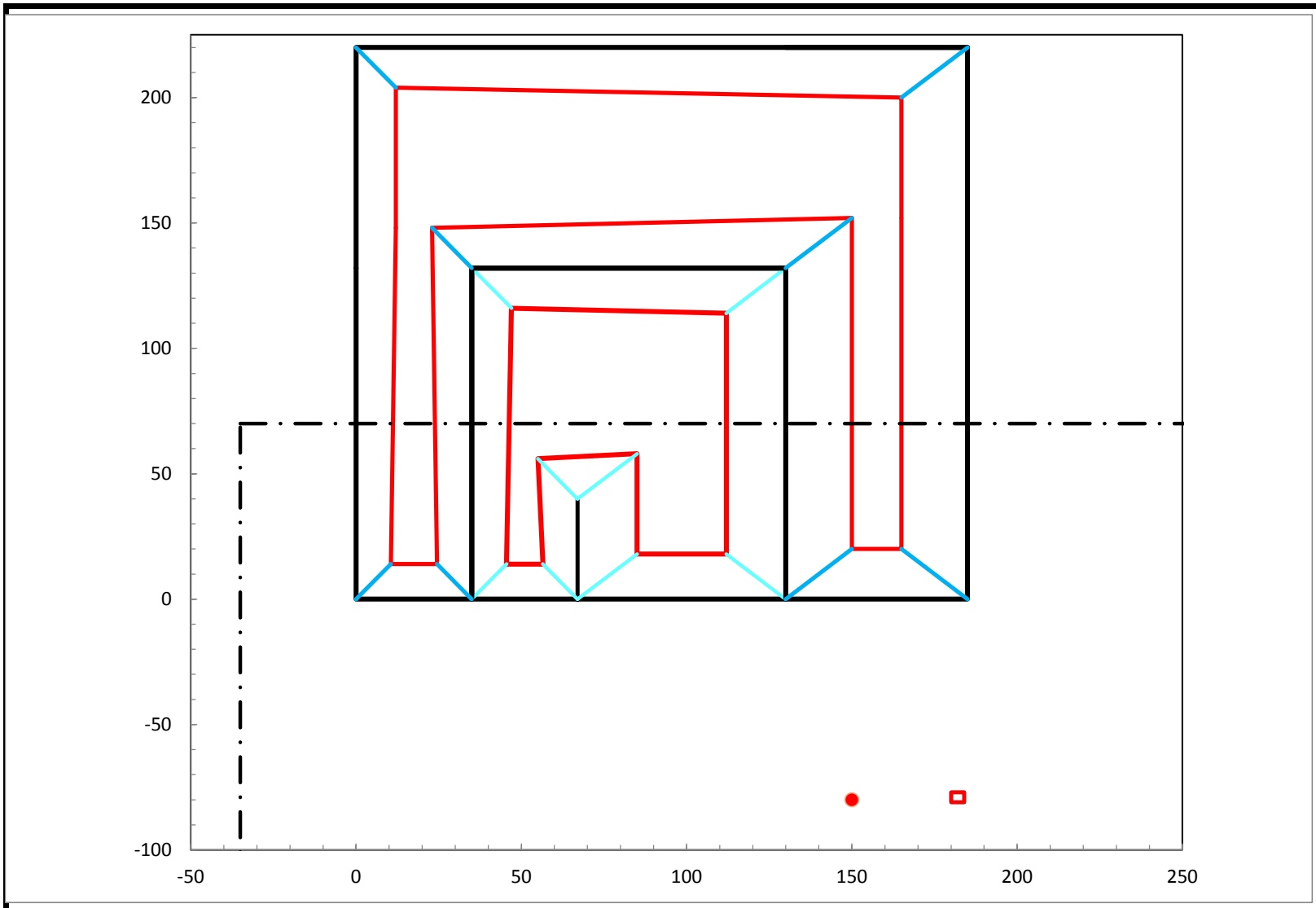
| | |
|---|---|
| **Slope Dimensions** | |
| Pit Slopes (Rise to Run) | 2H:1V |
| Inner Shoe, Suction Side, Side walls (Rise to Run) | 1.5H:1V |
| Outer Shoe, Suction Side, Side walls (Rise to Run) | 1.5H:1V |
| **Inner Horseshoe Dimensions** | |
| Total Width (left right) | 95.0 |
| Total Length (up down) | 132.0 |
| Depth Discharge Side | 9.0 |
| Depth Far Side (Discharge) | 9.0 |
| Depth Far Side (Suction) | 8.0 |
| Depth Suction Side | 7.0 |
| Length of Divider | 40.0 |
| Divider Width | 0.0 |
| Width of discharge floor | 27.0 |
| Width of suction floor | 11.0 |
| **Outer Horseshoe Dimensions** | |
| Width Discharge Side | 55.0 |
| Width Suction Side | 35.0 |
| Length Far Side (up down) | 88.0 |
| Width of discharge Floor | 15.0 |
| Width of Suction Floor | 14.0 |
| Width of Far Side Floor (right-left dimension) | 180.0 |
| Length of Far side (up-down dimension) | 56.0 |
| Depth Discharge Side | 10.0 |
| Depth Far Side (Discharge) | 10.0 |
| Depth Far Side (Suction) | 8.0 |
| Depth Suction Side | 7.0 |
| **Fluids Cell Dimensions** | |
| Width (left-right) | 0.0 |
| Length (up-down) | 0.0 |
| Depth | 0.0 |

**Inner Horseshoe Capacity 12486 bbl**
**Outer Horseshoe Capacity 32776 bbl**
**Fluid Cell Capacity 0 bbl**
**Total Capacity 45262 bbl**

**NORTH**

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

| | |
|---|---|
| **Persimmon 4H & Nervosa 1H** | **Plate 1** |
| **Yates Petroleum** | **Nov 2014** |




| | | |
|---|---|---|
| **R.T. Hicks Consultants**<br>901 Rio Grande Blvd. NW<br>Suite F-142<br>Albuquerque, N. M. 87104 | **Drawing of Temporary Pit and Well in Relation to Pad Boundary** | **Plate 2** |
| | **Persimmon 4H & Nervosa 1H** | **Nov 2014** |

# Appendix A

## Site Inspection Photographs

## & Survey Information

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

View to the west of nearest wetlands area (no water present)

Typical animal burrow located near the site

Collapsed animal burrow located 360 feet north-northwest of the site

Typical vegetation near the proposed pit location

View of twin well layout

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
Phone (575) 393-6161 Fax: (575) 393-0720
DISTRICT II
811 S. First St., Artesia, NM 88210
Phone (575) 748-1283 Fax: (575) 748-9720
DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone (505) 334-6178 Fax: (505) 334-6170
DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources Department

# OIL CONSERVATION DIVISION

*1220 South St. Francis Dr.*
*Santa Fe, New Mexico 87505*

Form C-102
Revised August 1, 2011

Submit one copy to appropriate District Office

☐ AMENDED REPORT

## WELL LOCATION AND ACREAGE DEDICATION PLAT

| API Number | Pool Code | Pool Name |
|---|---|---|
| | | |

| Property Code | Property Name | Well Number |
|---|---|---|
| | PERSIMMON BSS STATE COM | 4H |

| OGRID No. | Operator Name | Elevation |
|---|---|---|
| 025575 | YATES PETROLEUM CORPORATION | 3760 |

### Surface Location

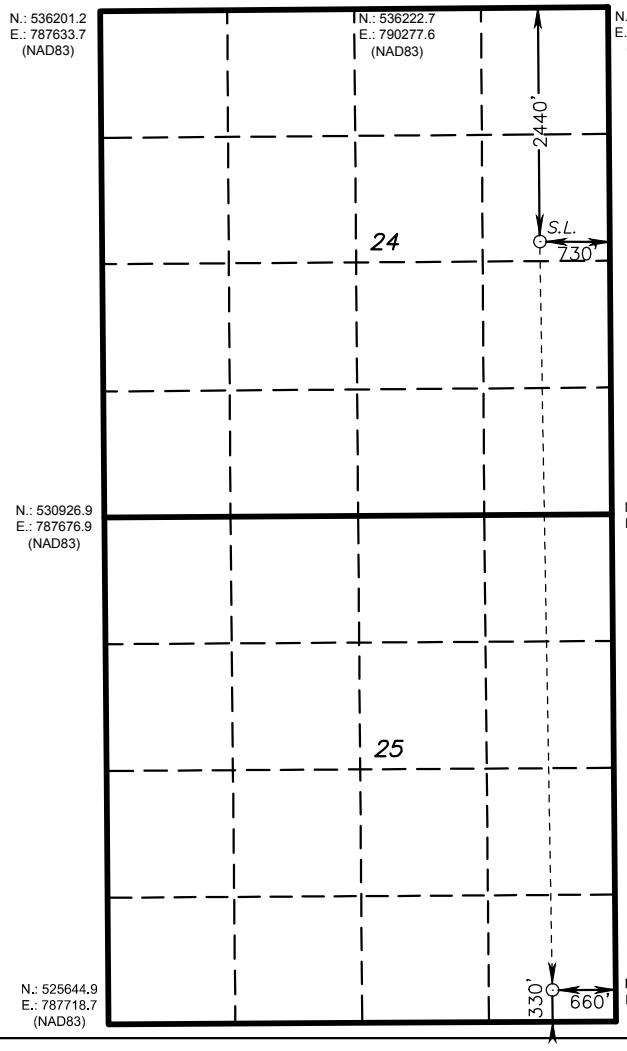
| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| H | 24 | 21 S | 33 E | | 2440 | NORTH | 730 | EAST | LEA |

### Bottom Hole Location If Different From Surface

| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| P | 25 | 21 S | 33 E | | 330 | SOUTH | 660 | EAST | LEA |

| Dedicated Acres | Joint or Infill | Consolidation Code | Order No. |
|---|---|---|---|
| | | | |

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




SURFACE LOCATION
Lat - N 32°27'53.40"
Long - W 103°31'11.69"
NMSPCE- N 533798.2
E 792210.7
(NAD-83)

BOTTOM HOLE LOCATION
Lat - N 32°26'36.31"
Long - W 103°31'10.86"
NMSPCE- N 526003.2
E 792341.6
(NAD-83)

### 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 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.*

Signature Date

Printed Name

Email Address

### 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 supervison, and that the same is true and correct to the best of my belief.*

NOVEMBER 06, 2014
Date Surveyed

Signature & Seal of Professional Surveyor

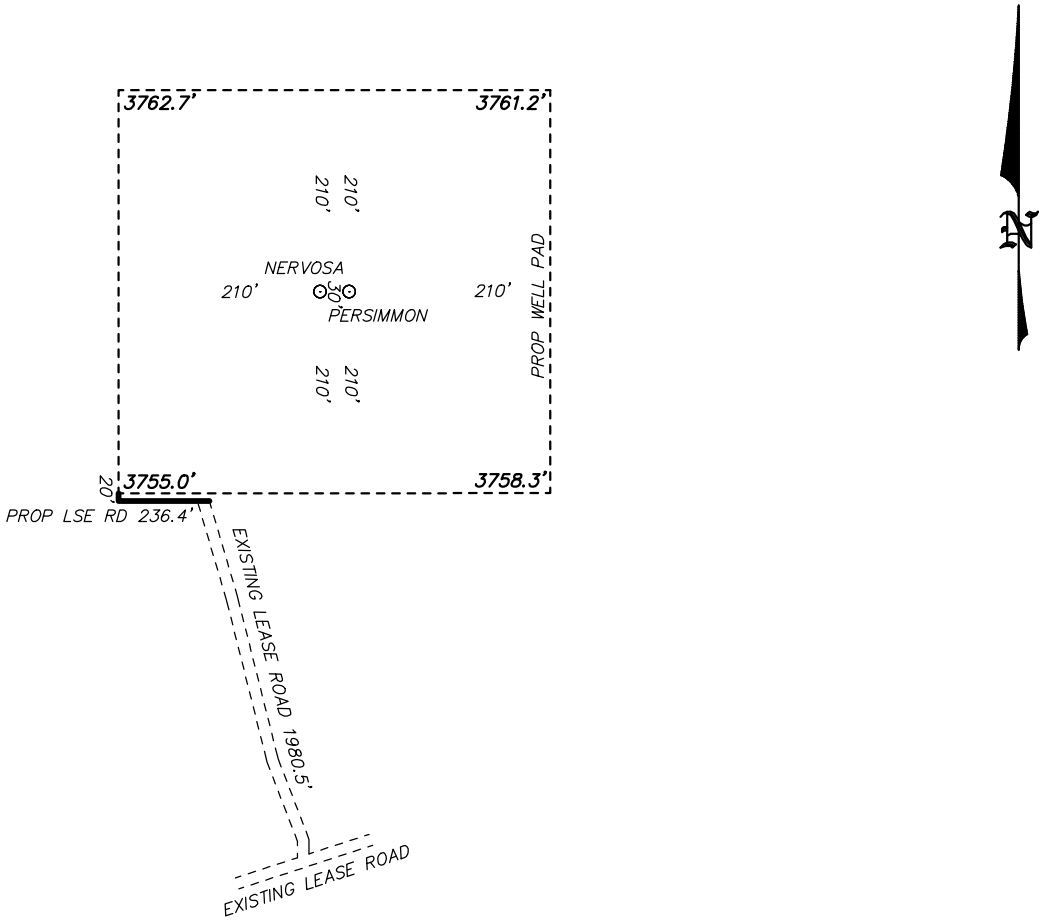
GARY L. JONES NEW MEXICO 7977 REGISTERED PROFESSIONAL LAND SURVEYOR

Certificate No. Gary L. Jones 7977
BASIN SURVEYS

0' 100' 2000' 3000' 4000'
SCALE: 1" = 2000'
WO Num.: 31159

# SECTION 24, TOWNSHIP 21 SOUTH, RANGE 33 EAST. N.M.P.M.,

**LEA COUNTY,** **NEW MEXICO.**




*YATES PETROLEUM CORPORATION*
*PERSIMMON BSS STATE COM #4H*
*ELEV. – 3760'*
Lat – N 32°27'53.40"
Long – W 103°31'11.69"
NMSPCE– N 533798.2
E 792210.7
(NAD–83)

*EUNICE, NM IS ±21 MILES TO THE EAST OF LOCATION.*

Directions to Location:

FROM HWY 176 TURN SOUTH ON LEASE ROAD FOR 5 MILES TO PROPOSED LEASE ROAD DUE NORTH.

200 0 200 400 FEET

SCALE: 1" = 200'

YATES PETROLEUM CORPORATION

REF: PERSIMMON BSS STATE COM #4H / WELL PAD TOPO

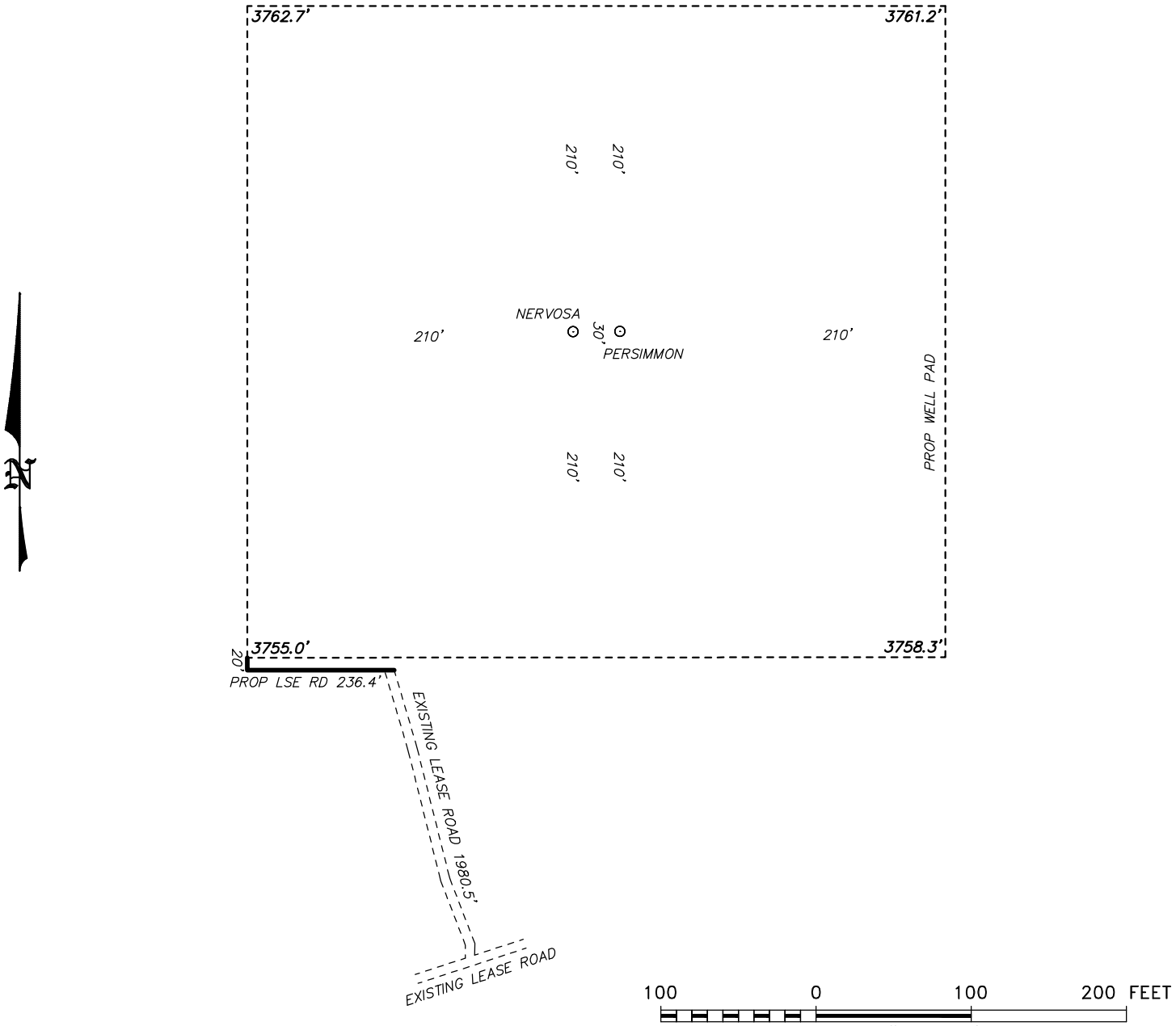
THE PERSIMMON BSS STATE COM #4H LOCATED 2440' FROM THE NORTH LINE AND 730' FROM THE EAST LINE OF SECTION 24, TOWNSHIP 21 SOUTH, RANGE 33 EAST. N.M.P.M., LEA COUNTY, NEW MEXICO.


basin surveys
focused on excellence in the oilfield
P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 – Office
(575) 392-2206 – Fax
basinsurveys.com


| W.O. Number: 31159 | Drawn By: K. NORRIS | Date: 11-14-2014 | Survey Date: 11-06-2014 | Sheet 1 of 1 Sheets |
|---|---|---|---|---|

# SECTION 24, TOWNSHIP 21 SOUTH, RANGE 33 EAST. N.M.P.M.,

**LEA COUNTY,** **NEW MEXICO.**




YATES PETROLEUM CORPORATION

REF: PERSIMMON BSS STATE COM #4H / WELL PAD TOPO

THE PERSIMMON BSS STATE COM #4H LOCATED 2440' FROM THE NORTH LINE AND 730' FROM THE EAST LINE OF SECTION 24, TOWNSHIP 21 SOUTH, RANGE 33 EAST. N.M.P.M., LEA COUNTY, NEW MEXICO.


basin surveys
focused on excellence in the oilfield
P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 – Office
(575) 392-2206 – Fax
basinsurveys.com


| W.O. Number: 31159 | Drawn By: K. NORRIS | Date: 11-14-2014 | Survey Date: 11-06-2014 | Sheet 1 of 1 Sheets |
|---|---|---|---|---|

# Generic Plans for Temporary Pits

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

# Temporary Pit Design/Construction Plan

Plates 1 and 2 show the design of the temporary pit proposed for this project. Field conditions and the drilling rig layout will determine the final configuration of the pit cells, which will consists of outer and inner drilling cells and an optional fluids cell as described below:

1. Drilling cells (reserve pit) consist of:
    a. An outer horseshoe for
        i. fresh water and cut-brine fluid and cuttings or
        ii. brine and cut-brine fluid and cuttings
    b. An inner horseshoe for
        i. brine and fluid and cuttings or
        ii. fresh water fluid and cuttings
2. The optional fluids cell may be used
    a. For storage of fresh water used in drilling or stimulation
    b. For storage of stimulation flow-back (fresh) water prior to re-use or disposal
    c. As an approved disposal site for drilling solids derived from a nearby well on the same lease. Prior to such disposal the operator will provide notice to OCD that
        i. Identifies the well(s) to be served by the fluids cell of the temporary pit
        ii. Provides the date that the drilling rig moved from the first well using the pit
        iii. Affirms that the fluids pit will be closed in conformance with the mandates of the Rule

In addition to the commitments listed below, the operator may install a system that can drain water entrained in the drilling waste of the drilling pit or rinse the solids to remove salt and/or petroleum hydrocarbons. The drainage system may be installed in the entire drilling cell or only in one horseshoe (e.g. the inner horseshoe). As described in the closure plan, this system of fabric-wrapped perforated pipe and drainage mats lie on the bottom of the drilling cells of the pit. The system will drain to the lowest corner of horseshoe where a standpipe rises from the depression to the top of the berm. The drainage system can remove water to an above-ground tank, the fluids cell of the pit, or directly to a truck for re-use or disposal. The drainage system may also be used to introduce fresher water below the residual cuttings/mud, causing the introduced fluid to move upwards through the cuttings/mud and enhance the solids rinsing process. After any rinsing process, the water can be removed from the pit for re-use via a vacuum truck or recovered from the drainage system at the bottom.

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

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

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

For any temporary storage of fluids derived from the drilling pit and placed in an above-ground tank, the following will apply:

1. Construction, operation and maintenance of the temporary storage tank(s) will adhere to all applicable NMOCD Rules including but not limited to:
    a. Safety stipulations
    b. Protection from hydrogen sulfide mandates
    c. Signage and identification requirements
    d. Secondary containment requirements for temporary tanks
    e. Applicable netting requirements
2. Any cleaning of the temporary tank(s) will adhere to NMOCD Rules relating to tank cleaning.
3. Transportation of water or drilling fluids derived from the drilling pit will adhere to all applicable NMOCD Rules relating to transportation.
4. Storage of water or drilling fluids in temporary above-ground tanks will also adhere to all applicable Federal mandates.

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

Finally, we intend to place any temporary tank used in conjunction with the pit drainage system on a 20-mil LLDPE string-reinforced liner (that meets the requirements of OCD Rules for temporary pits) with a berm around it that would allow any inadvertently released fluids to drain or be pumped back into the pit.

## *Construction/Design Plan of Temporary Pit*

### Stockpile Topsoil

Prior to constructing the pit the qualified contractor will strip and stockpile the topsoil for use as the final cover or fill at the time of closure.

### Signage

The operator will post an upright sign in a conspicuous place in compliance with 19.15.16.8 NMAC as the pit and the well are operated by the same operator. Section 19.15.16.8 states in part:

> 19.15.16.8 SIGN ON WELLS:
> B. For drilling wells, the operator shall post the sign on the derrick or not more than 20 feet from the well.
> C. The sign shall be of durable construction and the lettering shall be legible and large enough to be read under normal conditions at a distance of 50 feet.
> F. Each sign shall show the:
> (1) well number;
> (2) property name;
> (3) operator's name;
> (4) location by footage, quarter-quarter section, township and range (or unit letter can be substituted for the quarter-quarter section);

and
(5) API number.
The sign will also provide emergency telephone numbers.

### Fencing:
During drilling or workover operations, the operator will not fence the edge of the pit adjacent to the drilling or workover rig.

As the pit is not located within 1000 feet of a permanent residence, school, hospital, institution or church, the operator will fence the pit to exclude livestock with four-wire strands evenly spaced in the interval between one foot and four feet above ground level.

### Earthwork
The temporary pit will have a properly constructed foundation and interior slopes consisting of a firm, unyielding base that is smooth and free of rocks, debris, sharp edges or irregularities to prevent the liner's rupture or tear.

The slopes of the pit will be no steeper than two horizontal feet to one vertical foot (2H:1V) unless in the transmittal letter the operator requested an alternative to the slope requirement with a demonstration that the pit can be operated in a safe manner to prevent contamination of fresh water and protect public health and the environment.

A berm or ditch will surround the temporary pit to prevent run-on of surface water.

If the transmittal letter identifies 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

1. adding water to the earth material as appropriate,
2. compacting the earth by walking a crawler-type tractor down the sides and bottom of the pit
3. repeating this process with a second 6-inch lift of earth material if necessary

### Liner Installation
The geomembrane liner will consist of 20-mil string reinforced LLDPE as specified by and meets all requirements of OCD Rules.

The operator will direct the liner installation contractor to:

1. minimize liner seams and orient them up and down, not across a slope
2. use factory welded seams where possible
3. overlap liners four to six inches and orient seams parallel to the line of maximum slope, i.e., oriented along, not across, the slope, prior to any field seaming
4. minimize the number of welded field seams in comers and irregularly shaped areas
5. utilize only qualified personnel to weld field seams
6. avoid excessive stress-strain on the liner
7. place geotextile under the liner where needed to reduce localized stress-strain or

protuberances that may otherwise compromise the liner's integrity

8. anchor the edges of all liners in the bottom of a compacted earth-filled trench that is at least 18 inches deep
9. place additional material (liner, felt, etc.) to 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.

A berm or ditch will surround the temporary pit to prevent run-on of surface water. During drilling operations, the operator may elect to remove run-on protection on the pit edge adjacent to the drilling or workover rig provided that the pit is being used to collect liquids escaping from the drilling or workover rig and this additional fluid will not cause a breach of the temporary pit.

The temporary pit will not be used to vent or flare gas and the volume of the temporary drilling pit, including freeboard, will not exceed 10 acre-feet.

# Temporary Pit Operating and Maintenance Plan

The operator will maintain and operate the pit in accordance with the following plan to contain liquids and solids and maintain the integrity of the liner to prevent contamination of fresh water and protect public health and the environment.

If feasible, the operator will recycle, reuse or reclaim all drilling fluids in the temporary pit in a manner approved by division rules that prevents the contamination of fresh water and protects public health and the environment. Re-use of drilling fluids and workover fluids (stimulation flow-back) for drilling and stimulation of subsequent wells is anticipated. If re-use is not possible, fluids will be sent to disposal at a division-approved facility.

The operator will not discharge into or store any hazardous waste in the pit.

If the pit develops a leak or if any penetration of the pit liner occurs above the liquid's surface, then the operator will repair the damage or initiate replacement of the liner within 48 hours of discovery or will seek a variance from the division district office within this time period.

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 of discovery. The operator will also notify the district division office (19.15.29 NMAC) within this same 48 hours of the discovery and repair the damage or replace the pit liner.

The operator will ensure that the drilling contractor installs and uses 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 during injection or withdrawal of liquids.

During construction, the operator or qualified contractor will install diversion ditches and berms around the pit as necessary to prevent the collection of surface water run-on. As outlined in the Construction and Design Plan, during drilling operations, the edge of the temporary pit adjacent to the drilling or workover rig may not have run-on protection if the operator is using the temporary pit to collect liquids escaping from the drilling or workover rig and run-on will not result in a breach of the temporary pit.

The operator will maintain on site an oil absorbent boom to contain and remove oil from the pit's surface.

The operator will only discharge fluids or mineral solids (including cement) generated or used during the drilling, completion, or workover processes into the pit.

The operator will maintain the temporary pit free of miscellaneous solid waste or debris. Immediately after cessation of drilling or a workover operation, the operator will remove any visible or measurable layer of oil from the surface of the pit.

The operator will maintain at least two feet of freeboard for the temporary pit, except under extenuating circumstances, which will be noted on the pit inspection log as described below.

The operator will inspect the temporary pit containing drilling fluids daily while the drilling rig or workover rig is on site. After the rigs have left the site, the operator will inspect the pit weekly as long as liquids are present in the pit. The operator will maintain a log of the inspections. The operator will make the log available to the division district office upon request.

The operator will remove all free drilling fluids from the surface of the temporary pit within 60 days from the date that the last drilling or workover rig associated with the pit permit is released. The operator will note the date of this release upon Form C-105 or C-103 upon well or workover completion. The operator may request an extension up to two months from the division district office as long as this additional time does not exceed the temporary pit life span (Subsection R of 19.15.17.7 NMAC).

# Temporary Pit In-Place Closure Plan

The wastes in the temporary pit are destined for in place burial at the drilling location. However, a transmittal letter may notify OCD that drilling waste from a nearby site on the same lease may be placed in the temporary pit (e.g. placed in the drilling or fluids cells of the temporary pit). A notice will include the name of the nearby well, the date that the drilling or workover rig moved from the temporary pit, an affirmation that the temporary pit will be closed in conformance with the mandates of the Rule, including the mandated lifetime of the pit.

The operator will not begin closure operations without approval of the closure plan submitted with the permit application.

## Siting Criteria Compliance Demonstration

Compliance with siting criteria is described in the site-specific information appended to the C-144.

## Proof of Surface Owner Notice

The application package was transmitted to the surface landowner via email, which serves as notification that the operator intends on-site burial of solids.

## Construction/Design Plan of Temporary Pit

The design and construction protocols for the temporary pit are provided in the design and construction plan and in Plates 1-2. The optional drainage system described in the design and construction plan is not shown on the Plates but can be important element of the closure plan.

## General Protocols and Procedures

- All free liquids from the pit will be recycled or disposed in a manner consistent with OCD Rules.
- Residual drilling fluids will be removed from the pit within 60 days of release of the last drilling or workover rig associated with the relevant pit permit.
- Water derived from the well stimulation program (flow-back or unused fresh water) that is significantly higher quality than the residual drilling fluids *may* discharge into the pit. The fresher water *may* discharge into the drainage system to flow through the solids or onto the solids in the pit.
- A low-flow pump *may* remove water from the drainage system to a tank or the fluids cell of the temporary pit; thereby further rinsing the residual solids in the pit.
- 20-60 days after placement of fresh or flow-back water into the drilling cell, any water in the pit will be removed for re-use or disposal.
- The residual drilling mud and cuttings will be stabilized to a capacity sufficient to support the 4-foot thick soil cover.
- The residual pit solids will not be mixed at a ratio greater than 1 part pit solids to 3 parts dry earth material (e.g. subsoil).
- The pit will not be closed until the stabilized pit contents pass the paint filter liquids test.

## Waste Material Sampling Plan

Prior to closure, an eight-point composite sample of the residual solids in the drilling cell of the temporary pit and a five-point composite sample of any solids in the fluids cell of the temporary pit will be tested in a laboratory to demonstrate that the stabilized material will not exceed the contaminant concentrations listed in Table II of 19.15.17.13 NMAC after being mixed in a ratio of 3:1 with the earth material to be used for stabilization of the residual cuttings and mud. A volumetric average of the laboratory result from the drilling cell solids and any fluid cells solids will be used to determine compliance with the standards of Table II.

In-place burial is the selected on-site disposal alternative.

If a concentration of a contaminant within the material mixed at a ratio not exceeding 3:1 is higher than the concentration given in Table II, closure will proceed in accordance with Subsection C of 19.15.17.13 NMAC.

## Protocols and Procedures for Earthwork

Stabilization of the residual cuttings and mud is accomplished by mixing dry earth material within the temporary pit footprint. After stabilization the operator or qualified contractor will:

1. Place a geomembrane cover over the sloping surface of the stabilized waste material. It will be placed in a manner so as to prevent infiltration of water and so that infiltrated water does not collect on the geomembrane cover after the upper soil cover has been placed.
2. Use a geomembrane cover made of 20-mil string reinforced LLDPE liner
3. Over the sloping, stabilized material and liner, place the **Soil Cover** of:
    a. at least 3-feet of compacted, uncontaminated, non-waste containing earthen fill with chloride concentrations less than 600 mg/kg as analyzed by EPA Method 300.0.
    b. either the background thickness of topsoil or one foot of suitable material to establish vegetation at the site, whichever is greater, over the 3-foot earth material.
4. Contour the cover to
    a. blend with the surrounding topography
    b. prevent erosion of the cover and
    c. prevent ponding over the cover.

## Closure Notice

The operator will notify the surface owner by certified mail, return receipt requested, that the operator plans closure operations at least 72 hours, but not more than one week, prior to any closure operation. The notice will include the well name, API number, and location.

After approval for in-place burial, the operator shall notify the district office verbally and in writing at least 72 hours but not more than one week before any closure operation. Notice will include the operator's name and the location of the temporary pit. The location will include unit letter, section number, township and range. If the location is associated with a well, then the well's name, number and API number will be included.

Should onsite burial be on private land, the operator will file a deed notice including exact location of the burial with the county clerk of the county where the onsite burial is located.

## Closure Report

Within 60 days of closure completion, the operator will submit a

i. closure report on form C-144, with necessary attachments
ii. a certification that all information in the report and attachments is correct, that the operator has complied with all applicable closure requirements and conditions specified in the approved closure plan
iii. a plat of the pit location on form C-l05
if burial includes solids derived from a nearby well on the same lease, the report will list the name, API # and location of the well(s) from which the solids originated

Unless the permit transmittal letter requests an alternative marker to comply with surface landowner specifications, the operator will place at the center of an onsite burial a steel marker that

- is not less than four inches in diameter
- is placed at the bottom of a three-foot deep hole (minimum) that is filled with cement to secure the marker
- is at least four feet above mean ground level
- permanently displays the operator name, lease name, well number, unit letter, section, township and range in welded or stamped legible letters/numbers

## Timing of Closure

The operator will close the temporary pit within 6 months from the date the drilling rig was released from the first well using the pit. This date will be noted on form C-105 or C-103 filed with the division upon the well's completion (or re-completion in the case of a workover).

## Reclamation and Re-vegetation Plan

In addition to the area of the in-place burial, the operator will reclaim the surface impacted by the temporary pit, including access roads associated with the pit, to a safe and stable condition that blends with the surrounding undisturbed area including:
Areas not reclaimed as described herein due to their use in production or drilling operations will be stabilized and maintained to minimize dust and erosion. This includes the area of the temporary pit if a transmittal letter to OCD proposes an alternative to the re-vegetation or recontouring requirement with

- a demonstration that the proposed alternative provides equal or better prevention of erosion, and protection of fresh water, public health and the environment
- written documentation that the alternative is agreed upon by the surface owner.

As stated above, the soil cover for burial in-place

A. consists of a minimum of three feet of non-waste containing, uncontaminated, earthen material with chloride concentrations less than 600 mg/kg (or background concentration) as analyzed by EPA Method 300.0 placed over the liner and stabilized solids
B. is capped by the background thickness of topsoil or 1-foot of suitable material to establish vegetation, whichever is greater
C. blends into surrounding topography
D. is graded to prevent ponding and to minimize erosion

For all areas disturbed by the closure process that will not be used for production operations or future drilling, the operator will

I. Replace topsoils and subsoils to their original relative positions
II. Grade so as to achieve erosion control, long-term stability and preservation of surface water flow patterns
III. Reseed in the first favorable growing season following closure

Re-vegetation and reclamation plans imposed by the surface owner will be outlined in communications with the OCD.

The operator will notify the division when the surface grading work element of reclamation is complete.

The operator will notify the division when the site meets the surface owner's requirements or exhibits a uniform vegetative cover that reflects a life-form ratio of plus or minus fifty percent (50%) of pre-disturbance levels and a total percent plant cover of at least seventy percent (70%) of pre-disturbance levels, excluding noxious weeds.