Remediation Protocol
Saber Oil & Gas Ventures LLC.
Roberts Well #1

1.0 Purpose

This protocol is to provide a detailed outline of the steps employed in the remediation of the Roberts Well #1 workover pit located in Roosevelt County, New Mexico.

2.0 Scope

This protocol is site specific for the Roberts Well #1 workover pit restoration project. The workover pit was dug; according to all information that could be gathered (verbal), about 20 years ago, and was never used.

3.0 Preliminary

Whole Earth Environmental Inc. was contacted to investigate and set up procedures to close the Roberts Well #1 workover pit.

3.1 Whole Earth Environmental Inc. gathered necessary site information: location of site, driving directions, site plat map, em38 survey, soil samples.

3.2 Soil samples collected were field analyzed for CL-, and BTEX (PID meter).

3.3 Soil samples were sent to Cardinal Labs in Hobbs, NM for third party confirmation. Soil analyses requested: TPH 8015M, and CL-.

3.4 Confirmation samples of the delineated soils and backfill material were collected in accordance with WEQP-77 and sent to a certified laboratory for analysis.

4.0 Client Review

4.1 Whole Earth will email this protocol to the appointed personnel within Saber Oil & Gas LLC., to review and approve this protocol.

4.2 Changes to this protocol will be documented and submitted for final approval by Saber Oil & Gas Ventures LLC.

4.3 Upon Client approval, this protocol and supporting documentation will be submitted to the Hobbs District office of the NMOCD for approval.

5.0 Remediation

5.1 Upon approval of this protocol and the supporting documentation by the NMOCD, the work over pit will be backfilled by pushing in the side berms into the excavated pit. The surrounding area will then be contoured to background.

5.0 Site Restoration Procedure

5.1 Upon backfill and recontouring of workover pit area, the will area will be seeded using the Landowners approved seed mixture.

6.0 Closure Report

6.1 At the conclusion of the project, Whole Earth prepared a closure report that containing the following information:

- NMOCD NOV
- Photographs
- Site Plat Map
- Site Sample Pts.
- Field Titrations
- Lab Results
- TOPO Map
- TOPO Map Close up
- NMOSE Water Proxy Report
- Mines, Mills, Quarries, in NM
- Mines, Mills, Quarries, in NM Close up
- US Fish & Wildlife Wetlands Map Close up
- FEMA 100 year Flood Plain Map
- FEMA 100 year Flood Zone Designation

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON
Governor
Joanna Prukop
Cabinet Secretary

Mark E. Fesmire, P.E.
Director
Oil Conservation Division

09-Apr-10

SAGEBRUSH OIL & GAS COMPANY, LLC
400 W ILLINOIS, SUITE 950
MIDLAND TX 79701-

LETTER OF VIOLATION - Inactive Well(s)

Dear Operator:

A review of our records and recent inspection(s) indicate that the subject well(s) has been shut-in for an extended period of time. Rule 201 of the Rules and Regulation of the Oil Conservation Division provides that a well may be shut-in no longer than sixty days after suspension of drilling operations, upon determining that ther well is no longer usable (e.g., a dry hole), or one year after last production. To comply with guidelines as established in the Rules and Regulations, corrective actions must be taken immediately and the well(s) brought into compliance.

The detail section below indicates preliminary findings and/or probable nature of the violation.

The following options are available:

1. Immediately restore the well(s) to production, injection or disposal as applicable.
2. Request 'Temporary Abandoned' status pursuant to Rule 203, which requires that you set a plug and conduct a mechanical integrity test.
3. Submit a proposal to 'Plug and Abandon' the well(s) pursuant to Rule 202, proceed with plugging procedures on a timely basis after the proposal has been evaluated, amended and/or approved.

In the event that a satisfactory response is not received to this letter of direction by the "Corrective Action Due By:" date shown above, further enforcement will occur. Such enforcement may include this office applying to the Division for an order summoning you to a hearing before a Division Examiner in Santa Fe to show cause why you should not be ordered to permanently plug and abandon this well. Such a hearing may result in imposition of CIVIL PENALTIES for your violation of OCD rules.

IDLE WELL INSPECTION DETAIL SECTION

ROBERTS 001 D-9-7S-33E **30-041-20416-00-00** Inspection No. iMGB1009840706

Inspection Date: 4/8/2010 11:18:26 AM **Corrective Action Due by:** 7/12/2010

Type Inspection	Inspector	Violation?	*Significant Non-Compliance?
Routine/Periodic	Maxey Brown	Yes	No

Comments on Inspection: Idle Well (Rule 19.15.25.8). NO PROD REPORTED IN 79 MONTHS. NEED TO RETURN TO PROD, T/A OR P/A WELL. ALSO NEED CURRENT OPERATOR ON WELL SIGN. (RULE 19.15.16.8). ALSO NEED TO SUBMIT C-144 (19.15.17.13) FOR APPROVAL TO CLOSE OPEN WORKOVER PIT. THIS IS 1ST LETTER OF NON-COMPLIANCE.

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: **SABER OIL & GAS VENTURES LLC.** OGRID #: **243978**
Address: **400 West Illinois Suite #950 Midland, TX 79701**
Facility or well name: **Saber Oil & Gas Ventures LLC Roberts Well #001**
API Number: **30-041-20416** OCD Permit Number: **P1-02272**
U/L or Qtr/Qtr **NW/NW UL/D** Section **9** Township **7S** Range **33E** County: **ROOSEVELT**
Center of Proposed Design: Latitude **N33.727962** Longitude **W103.576890** NAD: ☒1927 ☐ 1983
Surface Owner: ☐ Federal ☐ State ☒ Private ☐ Tribal Trust or Indian Allotment

☒ **Pit:** Subsection F or G of 19.15.17.11 NMAC
Temporary: ☐ Drilling ☒ Workover
☐ Permanent ☐ Emergency ☐ Cavitation ☐ P&A
☐ Lined ☒ Unlined Liner type: Thickness _____mil ☐ LLDPE ☐ HDPE ☐ PVC ☐ Other _____
☐ String-Reinforced
Liner Seams: ☐ Welded ☐ Factory ☐ Other _____ Volume: **never used** bbl Dimensions: L **36'** x W **12'** x D **3'**

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_____

☐ 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

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	☐ 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	☐ 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	☐ 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	☐ 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	☐ 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

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): R. Douglas Keathley Title: V.P. Engineering

Signature: R Douglas Keathley Date: 7-29-10

e-mail address: doug@sagebrushoil.com Telephone: 432-685-0169

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

OCD Representative Signature: Geoffrey Leking Approval Date: 09/27/10

Title: Environmental Engineer **OCD Permit Number:** P1-02272

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:** 9-1-10

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: 33.727962 Longitude: -103.576890 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.

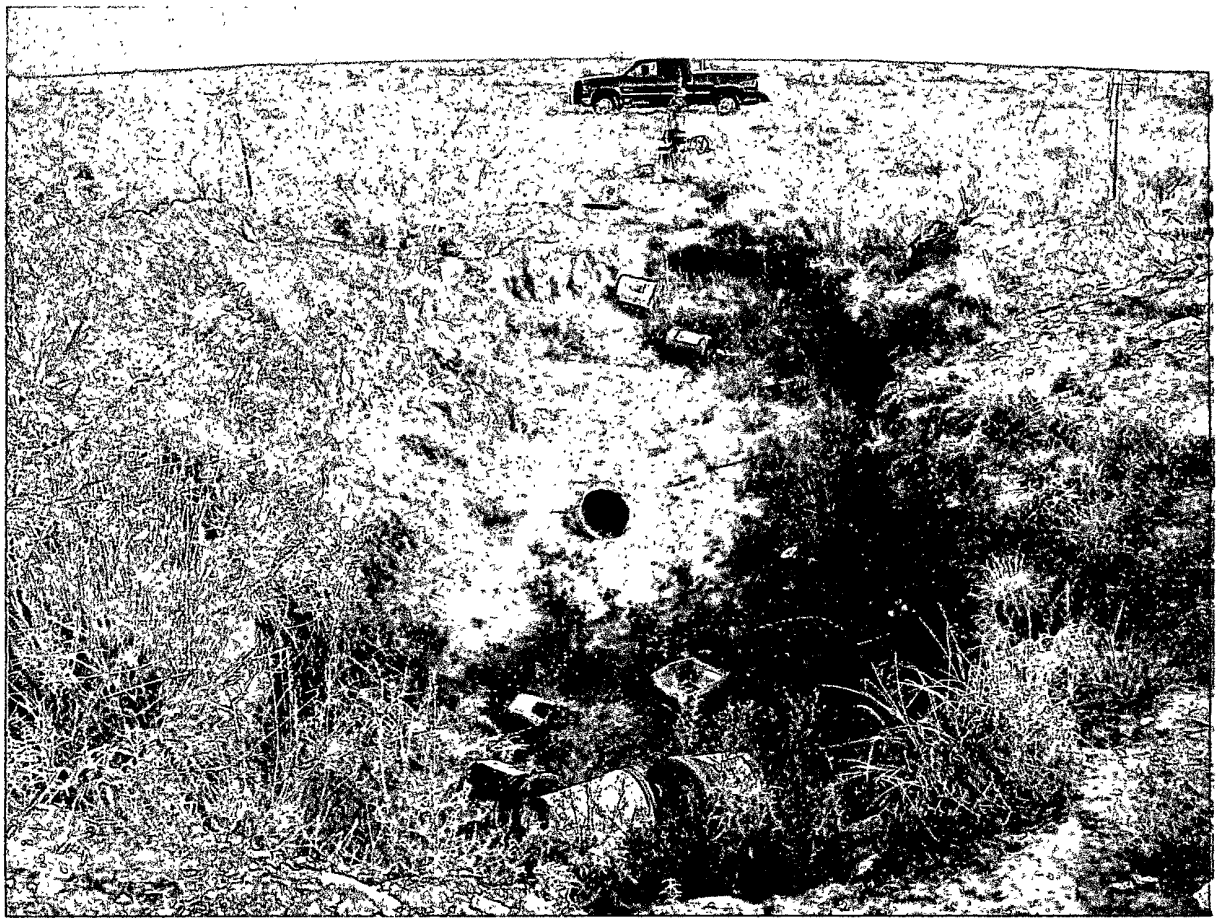
Name (Print): R. Douglas Keathley Title: V. P. Engineering

Signature: R Douglas Keathley Date: 9/14/2010

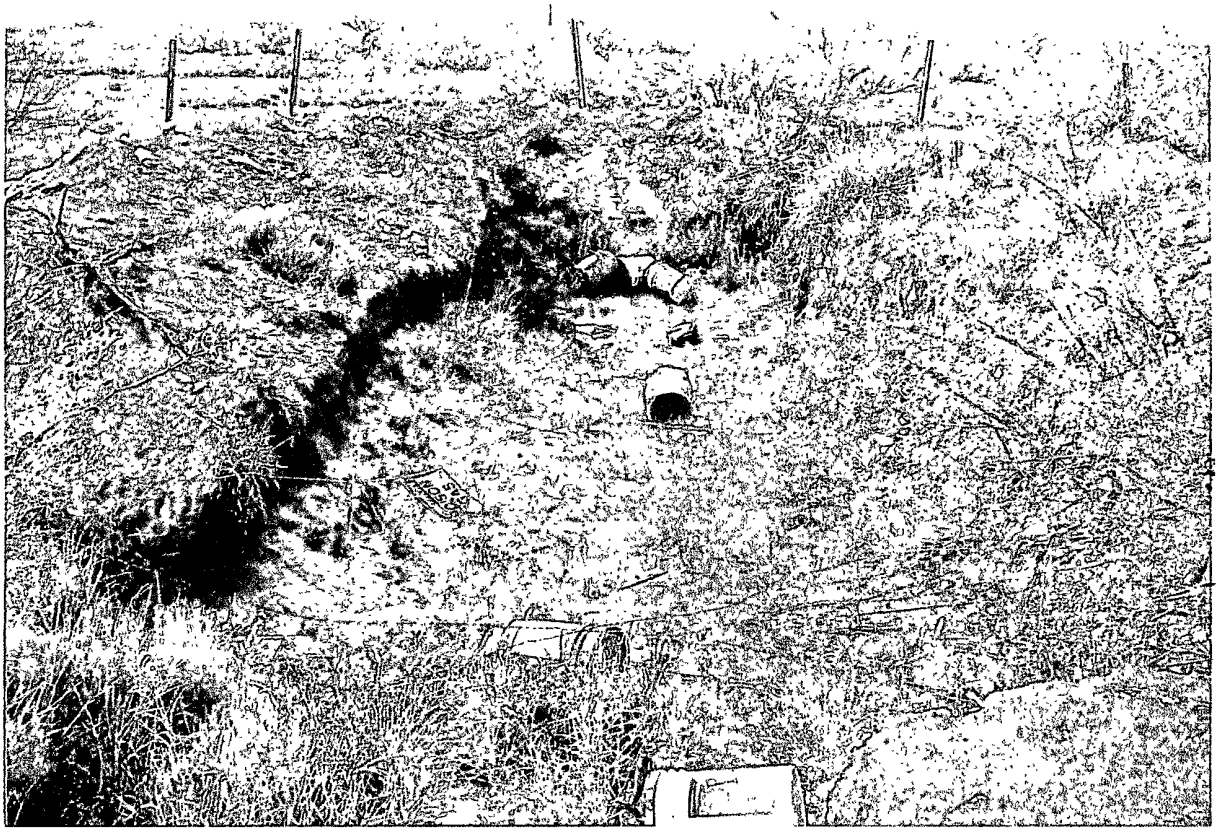
e-mail address: doug@sagebrush.com Telephone: 432-685-0169

Exhibit Index

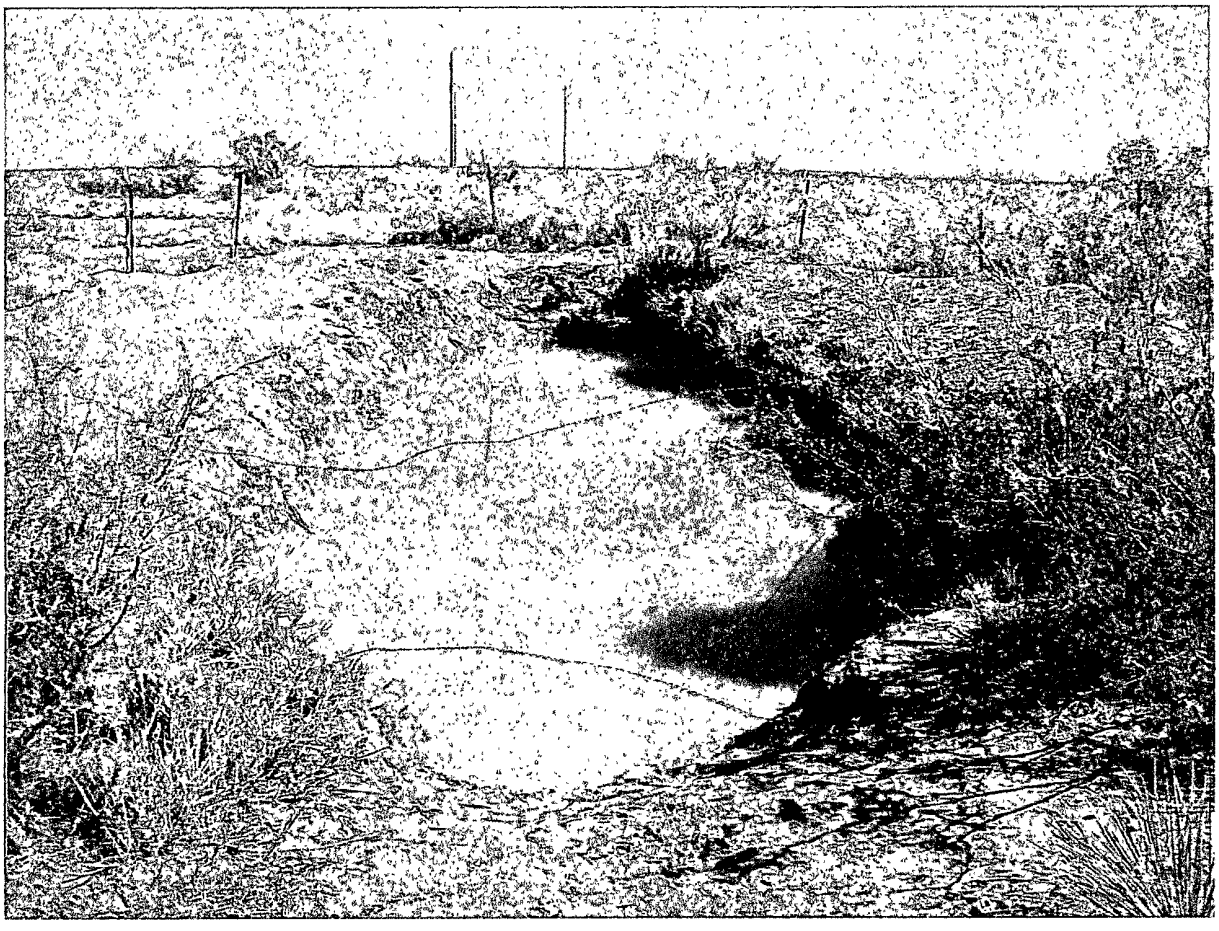
1. Photographs
2. Satellite View
3. Site Plat Map
4. Site Sample Pts.
5. Field Titration Results
6. Lab Results
7. TOPO Map
8. TOPO Map Close-Up
9. NMOSE Water Proxy Report
10. Mines, Mills, Quarries, in NM
11. Mines, Mills, Quarries, in NM Close-Up
12. U.S. Fish & Wildlife Wet Lands Map Close- Up
13. FEMA 100 Year Flood Plain Map
14. FEMA 100 Year Flood Zone Designation
15. WEE Inc. Quality Procedure QP-18A Sampling and Testing Protocol VOC in Soil
16. WEE Inc. Quality Procedure QP-96 Sampling and Testing Protocol Chloride Titration Using .1 Normal Silver Nitrate Solution
17. WEE Inc. Quality Procedure QP-77 Procedure for Obtaining Soil Samples for Transportation to a Laboratory



6-22-10
SABER ROBERTS WELL #001
INITIAL PHOTO OF SITE PRIOR TO ANY WORK
VIEWING FROM NORTH OF PIT TO SOUTH



6-22-10
SABER ROBERTS WELL #001
INITIAL PHOTO OF SITE PRIOR TO ANY WORK
VIEWING FROM SOUTH OF PIT TO NORTH



8-19-10

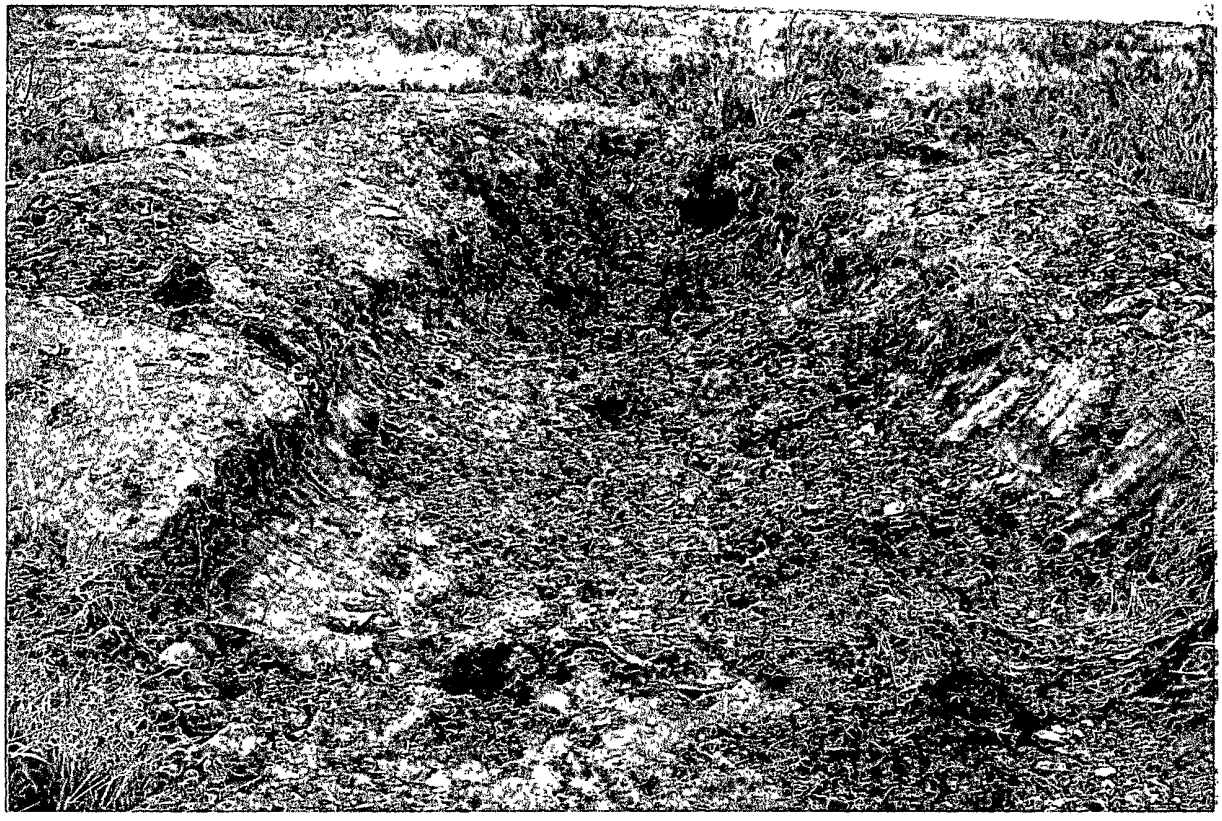
SABER ROBERTS WELL #001

Schedule backfilling site on this date. Due to the amount of water inside pit, called Geoffery Leking w/OCD. Will not allow backfilling of site until a 5pt bottom comp. soil sample can be retrieved, and must be dry to damp. Permission was granted to field titrate water from pit, if water is below 250ppm cl-, water can be bailed out into pasture. Field cl- titration = 30ppm. Water bailed out, and will wait till bottom dries out.

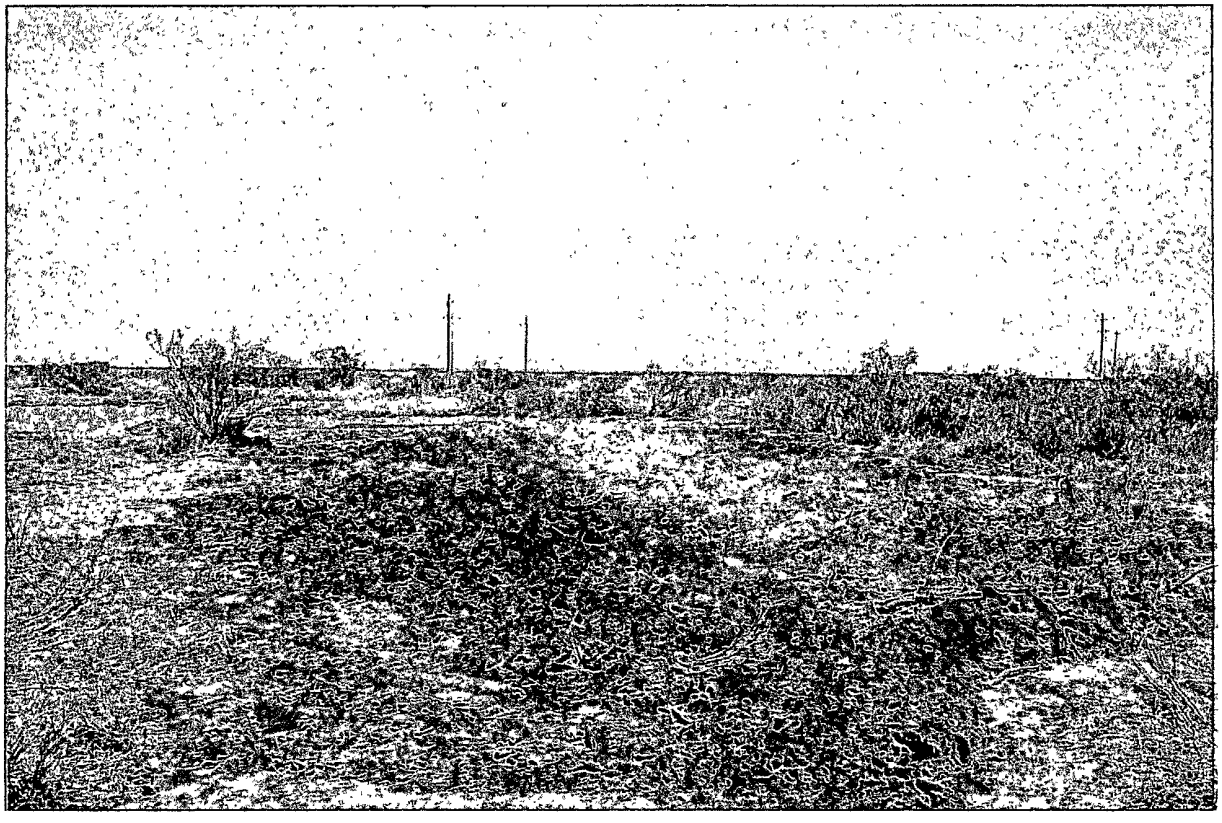
Field titration performed by Roy R. Rascon Regional Manager, Whole Earth Environmental Inc.

Viewing pit from south to north

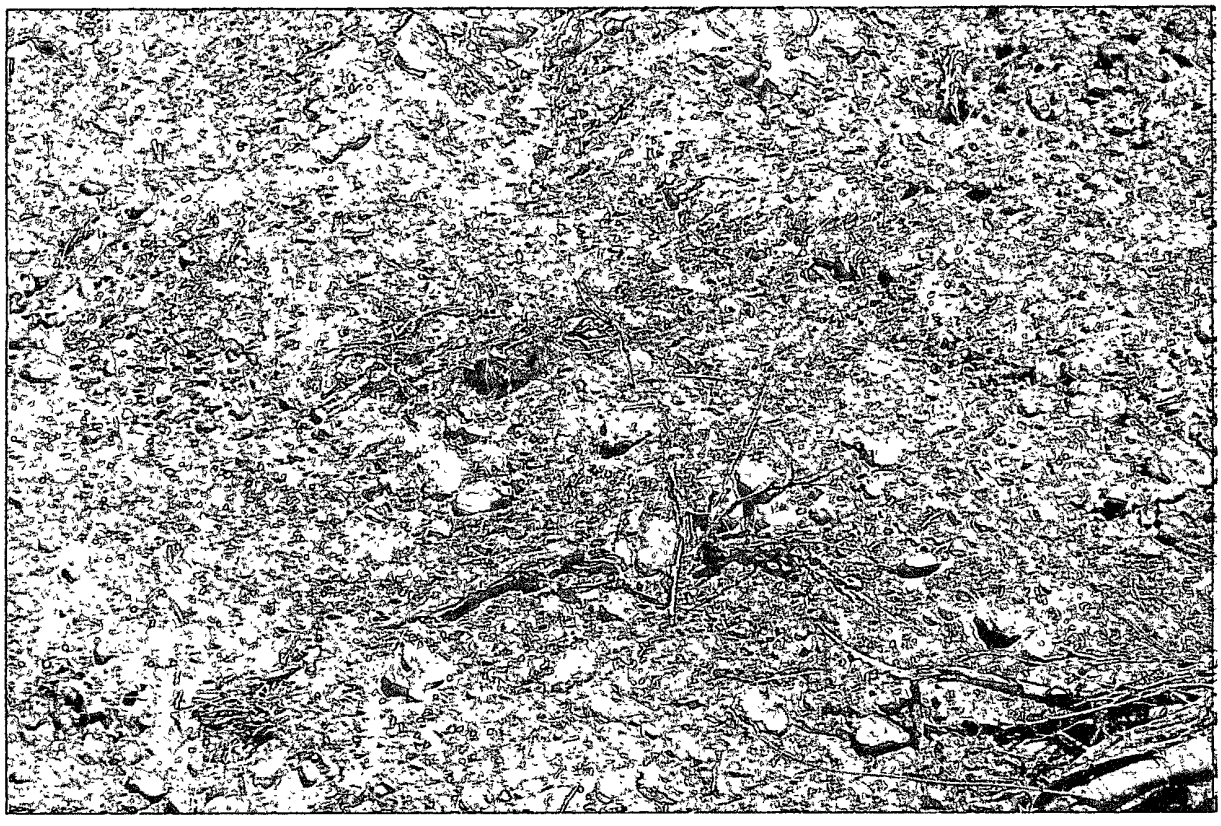
8-19-10
SABER ROBERTS WELL #001
Water bailed from pit, berm built on south end of pit to prevent rain water run-off into pit.
Viewing pit from south to north



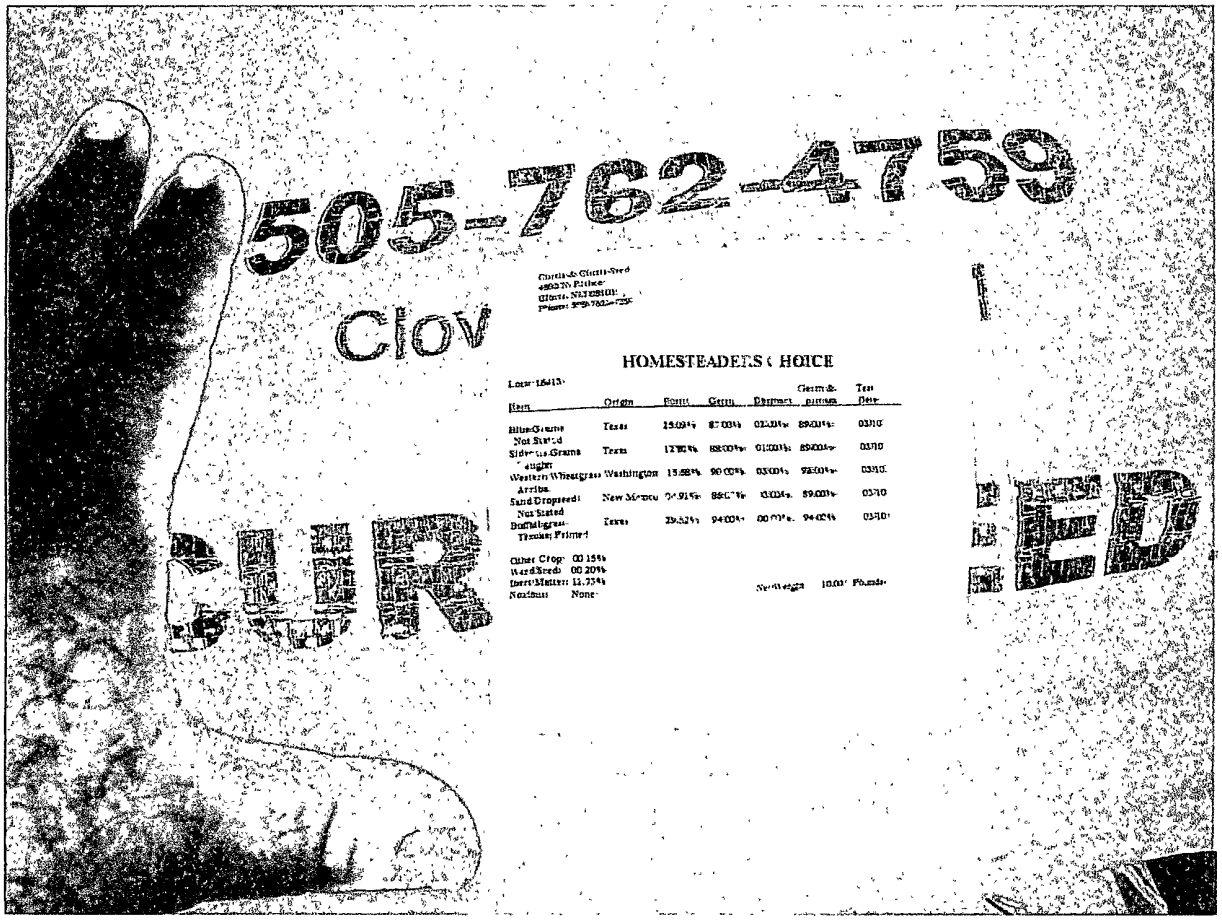
9-1-10
SABER ROBERTS WELL #001
Sample points, 5pt bottom comp. prior to backfilling.
Field cl- titration = 91ppm as required by Geoffery Leking NMOCD.
Field titration performed by: Michael C. Griffin Project Manager
Whole Earth Environmental Inc.



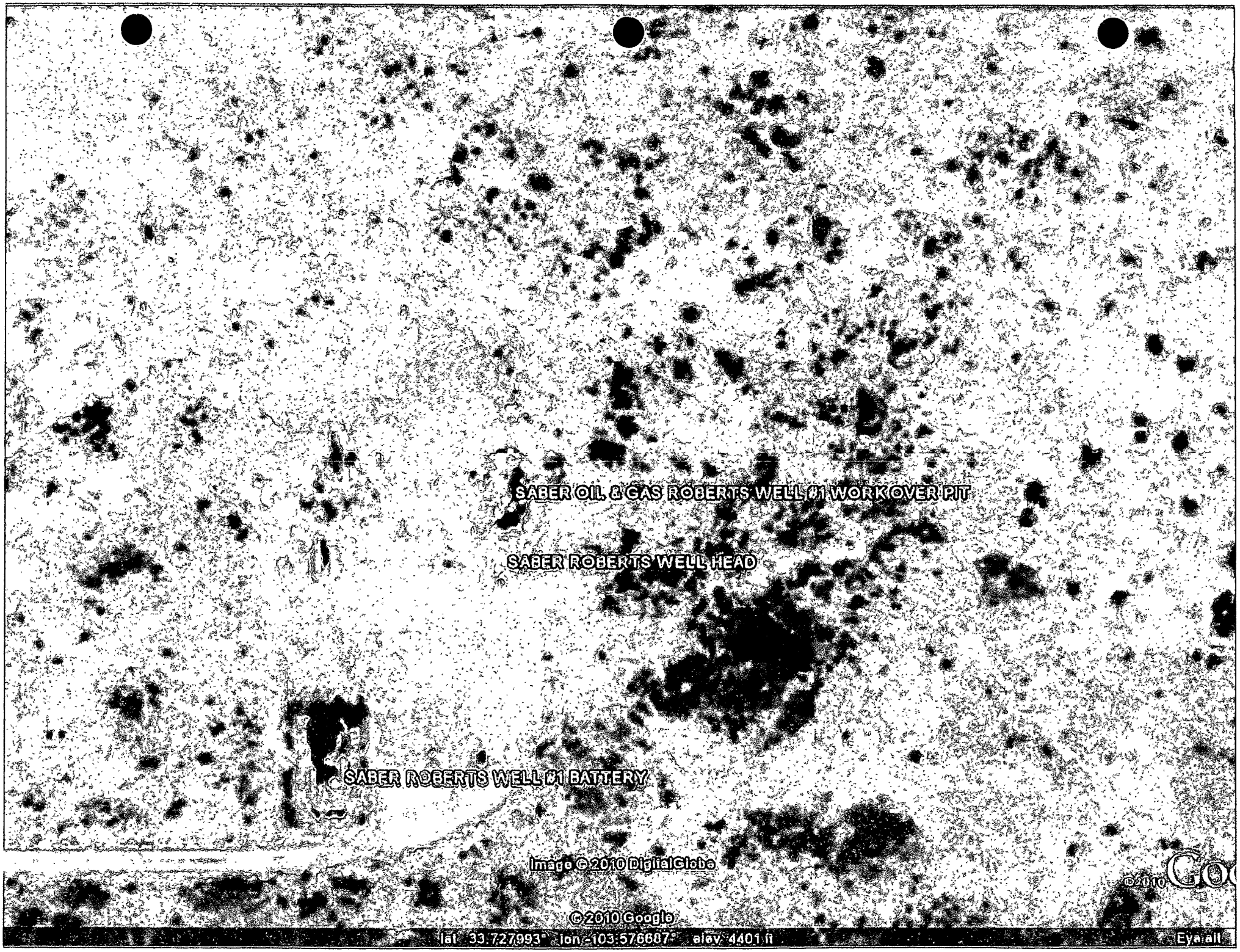
9-1-10
SABER ROBERTS WELL #001
Pit area backfilled by folding in berms into pit. Re-contour and rake area with back hoe in preparation for seeding.
Viewing from south to north



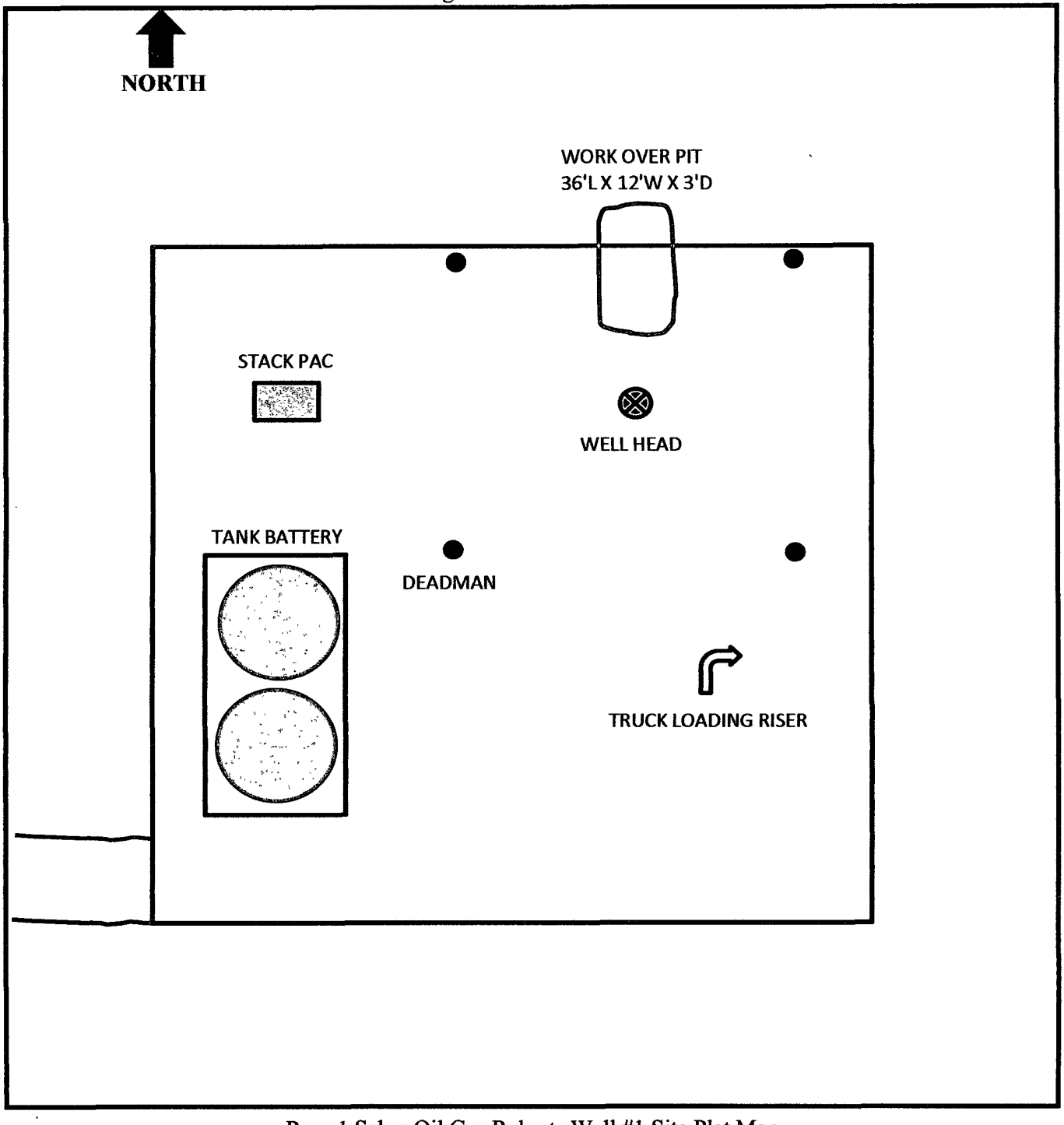
9-1-10
SABER ROBERTS WELL #001
Close up of seed.



9-1-10
Saber Roberts Well #1
Photo of seed mixture used on site for seeding.


SABER OIL & GAS ROBERTS WELL #1 WORK OVER PIT
SABER ROBERTS WELL HEAD
SABER ROBERTS WELL #1 BATTERY
Image © 2010 DigitalGlobe
© 2010 Google
lat 33.727993° lon -103.576687° elev 4401 ft
Eye alt

SABER OIL & GAS
ROBERTS WELL #1
UL/D SEC 9 - T7S - R33E
API # 30-014-20416
GPS LAT & LON NAD27 (DECIMAL) N33.727700 / W103.577010
DRIVING DIRECTIONS: N. of Tatum, NM in Milnesand @ intersection of Hwy 207 & Jct 258, turn L. go 4.8mi, turn R. go 0.9mi, curve L go 2.99mi, turn R go 3.99mi, curve L. go 1.78mi, curve R go 1.98mi, turn L go 500' to location.



Page 1 Saber Oil Gas Roberts Well #1 Site Plat Map

CL- FIELD TITRATION RESULTS

LOCATION: SABER OIL & GAS ROBERTS WELL #1								
DEPTH TO GW:							DATE: 6-25-10	
Sample pt.	DEPTH	SOIL	WATER	CF	$AGNO_3$	CL-	PID	SOIL CLASSIFICATION
SP #1 pit center	4'bgs	13.5	30.9	2.29	0.02	46	1.30	10R-5/3 weak red sandy sand dry
SP #2 pit center	5'bgs	10.8	31.5	2.92	0.02	58	1.4	10R-5/3 weak red sandy sand with caliche rocky dry
SP # 3 S. pit area	5'bgs	10.8	28.8	2.67	0.02	53	1.4	10R-5/3 weak red sandy sand dry
SP # 3 3berm 9pt. Comp.	n/a	14.7	26	1.77	0.4	707	0.9	10R-5/3 weak red sandy sand clayey with rocky caliche dry

Samples field titrated by Roy R. Rascon 6-25-10 Samples sent to Lab (Cardinal Labs) 6-28-10 analysis ran on samples TPH 8015M, & CL-

Sample pt.	DEPTH	SOIL	WATER	CF	$AGNO_3$	CL-	PID	SOIL CLASSIFICATION
5pt Bottom comp.	4'bgs	13.9	31.5	2.27	0.04	91	2.60	10R-5/3 weak red sandy sand clayey with rocky caliche damp

Samples field titrated by Michael C. Griffin 9-1-10 field cl- titration only per Geoffery Leking NMOCD

CARDINAL LABORATORIES

PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

July 2, 2010

Roy R. Rascon
Whole Earth Environmental, Inc.
2103 Arbor Cove
Katy, TX 77494

Re: Roberts Well #1

Enclosed are the results of analyses for sample number H20229, received by the laboratory on 06/28/10 at 9:10 am.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method SW-846 8260	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method TX 1005	Total Petroleum Hydrocarbons

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

Cardinal Laboratories is accredited though the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.2	Regulated VOCs (V2, V3)

Accreditation applies to public drinking water matrices.

Total Number of Pages of Report: 3 (includes Chain of Custody)

Sincerely,

Celey D. Keene
Laboratory Director

This report conforms with NELAP requirements.

CARDINAL LABORATORIES

PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
WHOLE EARTH ENVIRONMENTAL, INC.
ATTN: ROY R. RASCON
2103 ARBOR COVE
KATY, TX 77494
FAX TO: (281) 394-2051

Receiving Date: 06/28/10
Reporting Date: 06/30/10
Project Owner: SABER OIL & GAS
Project Name: ROBERTS WELL #1
Project Location: MILNESAND, NM

Sampling Date: 06/25/10
Sample Type: SOIL
Sample Condition: COOL & INTACT @ -0.5°C
Sample Received By: JH
Analyzed By: AB/CK/HM

LAB NUMBER	SAMPLE ID	GRO (C_6-C_{10}) (mg/kg)	DRO (>C_{10}-C_{28}) (mg/kg)	Cl* (mg/kg)
ANALYSIS DATE		06/30/10	06/30/10	06/29/10
H20229-1	S. PIT AREA @ 5' BGS	<10.0	<10.0	< 16
H20229-2	PIT CENTER @ 5' BGS	<10.0	<10.0	< 16
H20229-3	PIT CENTER @ 4' BGS	<10.0	<10.0	< 16
H20229-4	3 BERM 9PT. COMP	<10.0	<10.0	688
Quality Control		487	511	500
True Value QC		500	500	500
% Recovery		97.4	102	100
Relative Percent Difference		3.2	13.0	< 0.1

METHODS: TPH GRO & DRO: EPA SW-846 8015 M; Cl^-: Std. Methods 4500-Cl^-B
*Analyses performed on 1:4 w:v aqueous extracts. Reported on wet weight.
**One or more TPH surrogates outside historical limits due to matrix interference.

Lab Director

07/02/10
Date

H20229 TCL WEE

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

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2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240
(325) 673-7001 FAX (325)673-7020 (505) 393-2326 FAX (505) 393-2476

Company Name:	WHOLE EARTH ENVIRONMENTAL INC.	BILL TO	
Project Manager:	ROY R. RASCON	P.O. #:	
Address:		Company:	
City:	State: Zip:	Attn:	
Phone #:	Fax #:	Address:	
Project Owner:	SABER OIL & GAS	City:	
Project Name:	ROBERTS WELL #1	State: Zip:	
Project Location:	MILNESAND, NM	Phone #:	
Sampler Name:	ROY R. RASCON	Fax #:	

FOR LAB USE ONLY LAB ID #	SAMPLE I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	PRESERV.: OTHER :	ACID/BASE:	ICE / COOL	OTHER :	SAMPLING: DATE	TIME	CATS & ANS	PH	BTEX	CL-	TPH 418.1	8015M						
H20229-1	S. PIT AREA @ 5'BGS	G	1			X					X		6/25/10	230				X		X						
2	PIT CENTER @ 5'BGS	G	1			X					X		6/25/10	215				X		X						
3	PIT CENTER @ 4'BGS	G	1			X					X		6/25/10	210				X		X						
4	3 BERM 9PT. COMP	C	1			X					X		6/25/10	245				X		X						

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequental damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By: ROY R. RASCON	Date: 6-28-10	Received By:	Phone Result: Yes No Add'l Phone #:
Roy R. Rascon	Time: 0910		Fax Result: Yes No Add'l Fax #:
Relinquished By:	Date:	Received By: Jodi Henson	
	Time:		

REMARKS: PLEASE E-MAIL TO: royr , mikeg, elliotw, & mcgriffin@vadose.us

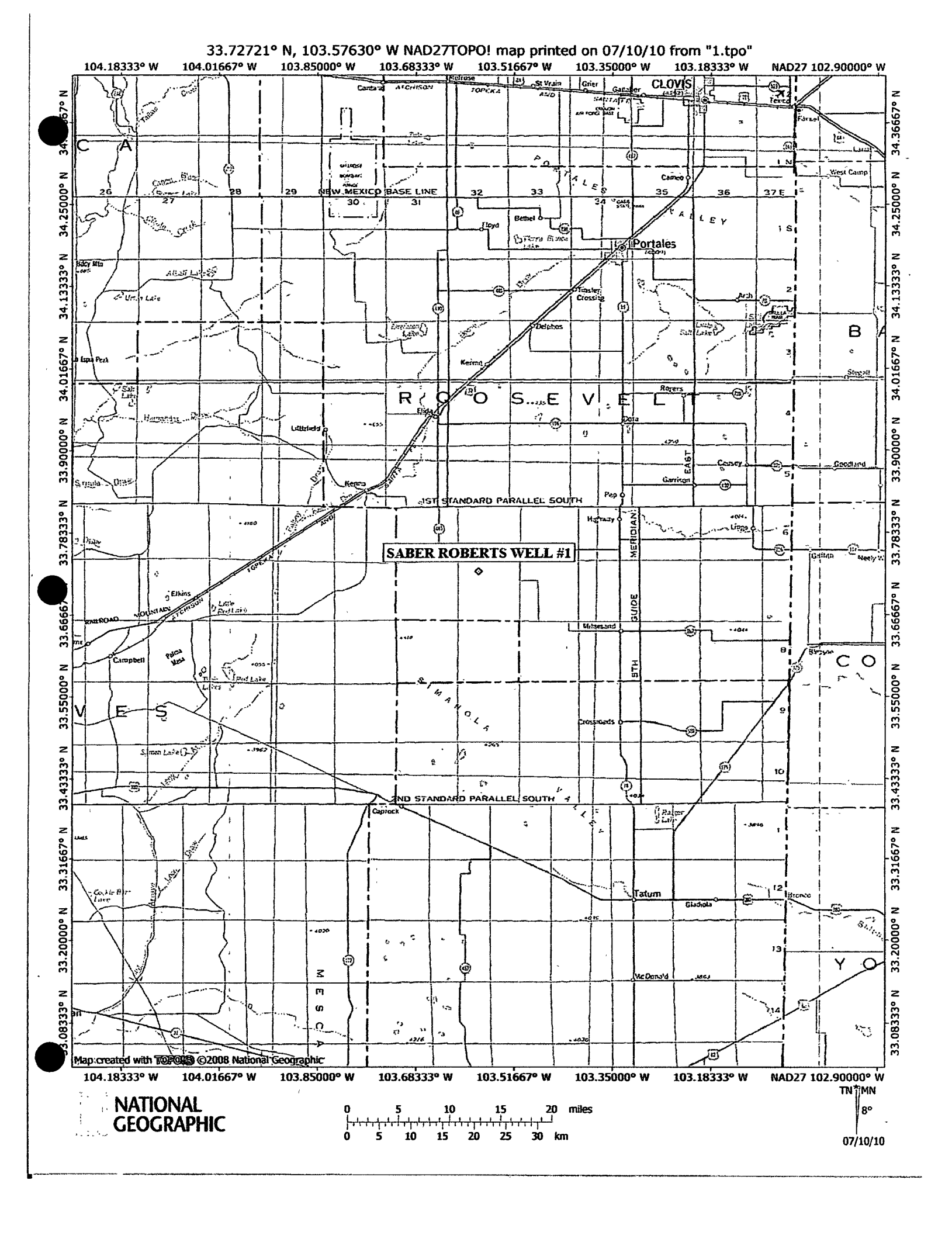
Delivered By: (Circle One) Sampler - UPS - Bus - Other: -0.5°C

Sample Condition: Cool - Yes / No; Intact - Yes / No

CHECKED BY: (Initials)

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

#26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104.01667° W
103.85000° W
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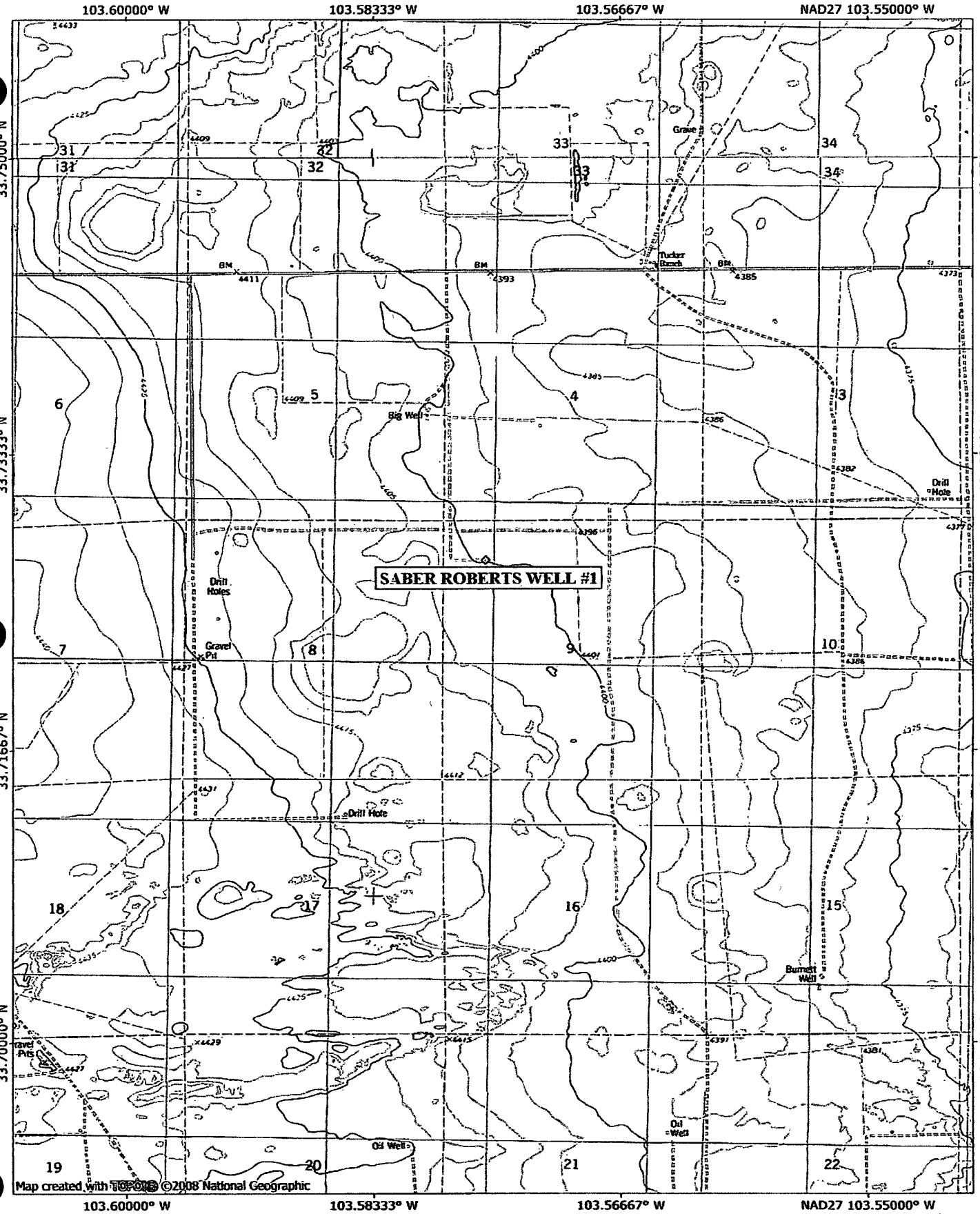
103.51667° W
103.35000° W
103.18333° W
NAD27 102.90000° W
34.36667° N
34.25000° N
34.13333° N
34.01667° N
33.90000° N
33.78333° N
33.66667° N
33.55000° N
33.43333° N
33.31667° N
33.20000° N
33.08333° N
CLOVIS
Portales
Texico
Farwell
Melrose
Grier
Gallagher
Cameo
West Camp
Floyd
Bethel
Delphos
Kenna
Elkins
Rogers
Cora
Causey
Garrison
Pep
Lingo
Milnesand
Crossroads
Caprock
Tatum
Gladiola
McDonald
Arch
Steptoe
Goodland
Griffin
Neely
Campbell
Littlefield
Roosevelt
NEW MEXICO BASE LINE
1ST STANDARD PARALLEL SOUTH
2ND STANDARD PARALLEL SOUTH
EAST
GUIDE
MERIDIAN
5TH
SABER ROBERTS WELL #1
Map created with TOPO!® ©2008 National Geographic
NATIONAL GEOGRAPHIC
0 5 10 15 20 miles
0 5 10 15 20 25 30 km
TN MN
8°
07/10/10

33.72466° N, 103.57525° W NAD27TOPO! map printed on 07/10/10 from "Untitled.tpo"



New Mexico Office of the State Engineer
Water Column/Average Depth to Water

No records found.

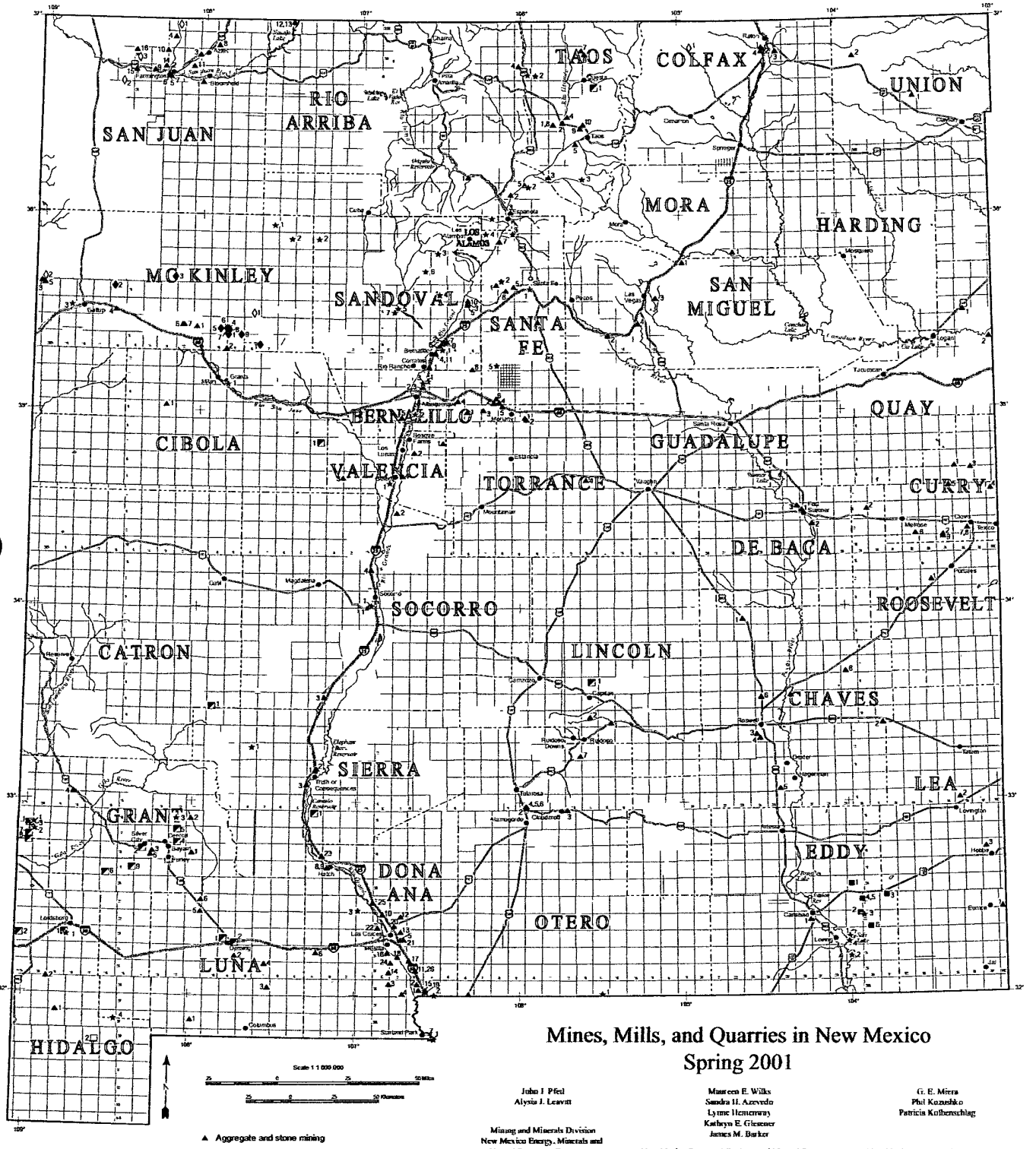
Basin/County Search:

Basin: CAUSEY LINGO **County:** Roosevelt

PLSS Search:

Section(s): 3, 4, 5, 8, 9, 10, 15, 16, 17 **Township:** 17S **Range:** 33E

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.



Mines, Mills, and Quarries in New Mexico
Spring 2001

John J. Pfeil
Alysia J. Leavitt

Mining and Minerals Division
New Mexico Energy, Minerals and
Natural Resources Department
1220 South St. Francis Drive
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Phil Kozushko
Patricia Kolbenschlag

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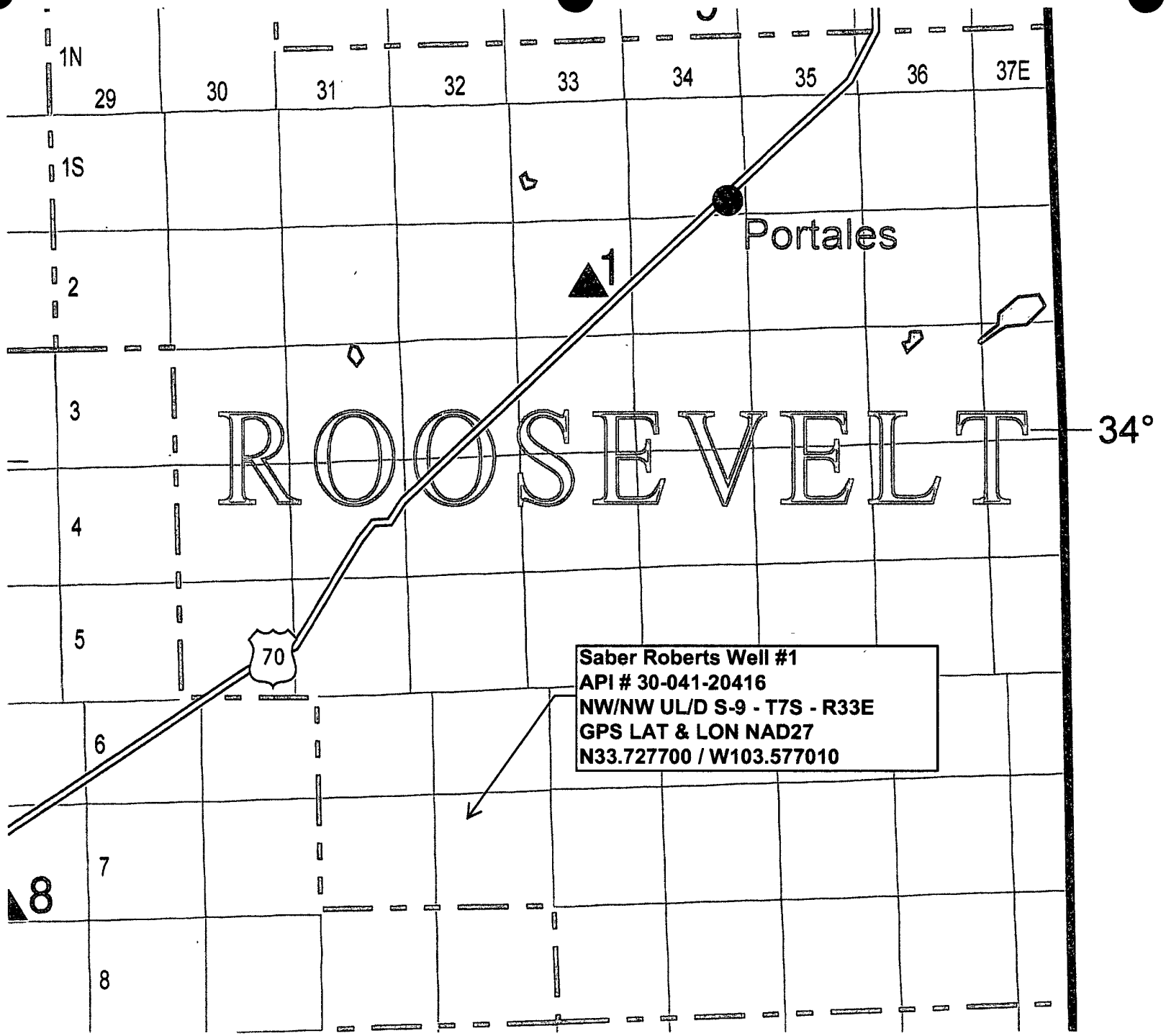
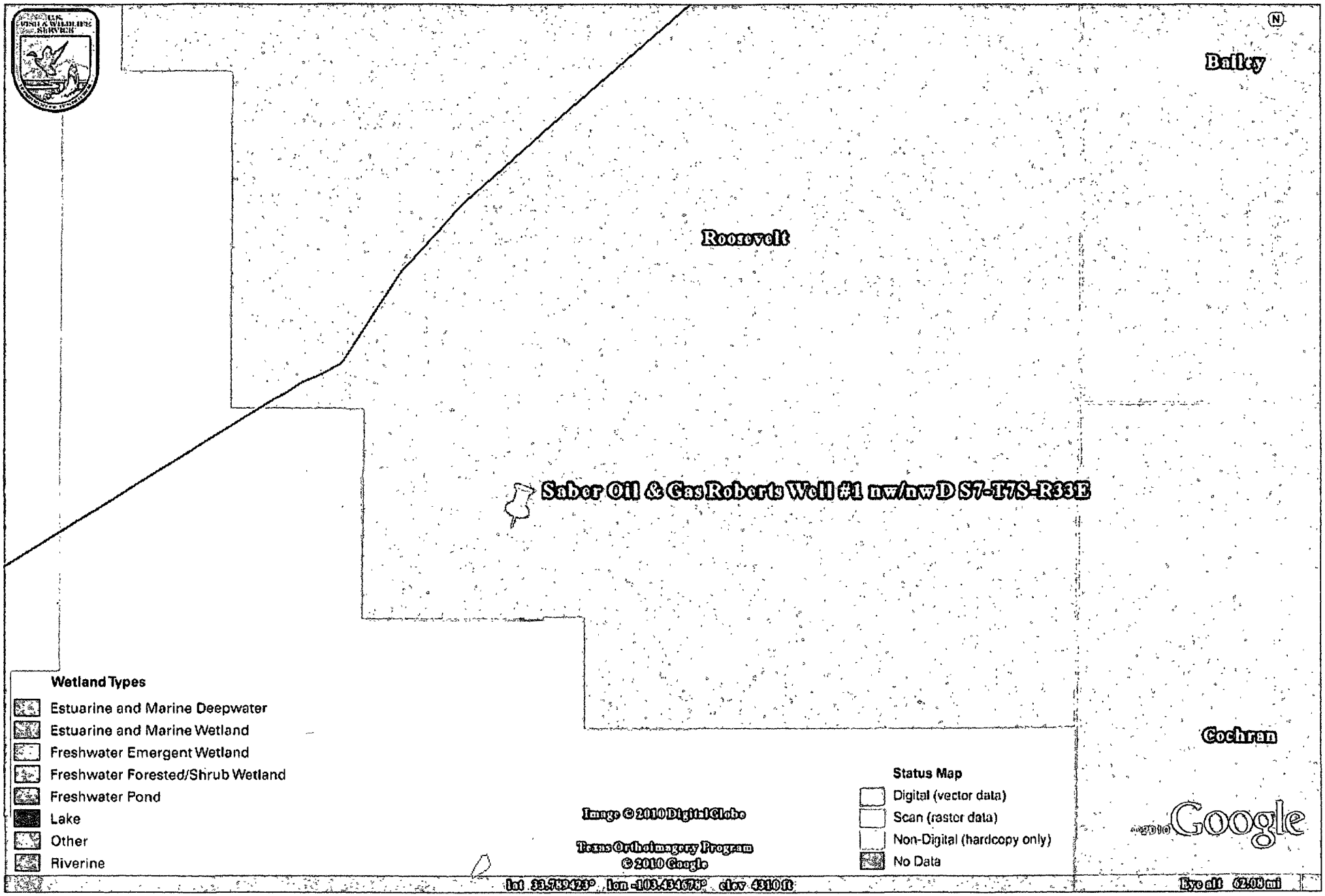
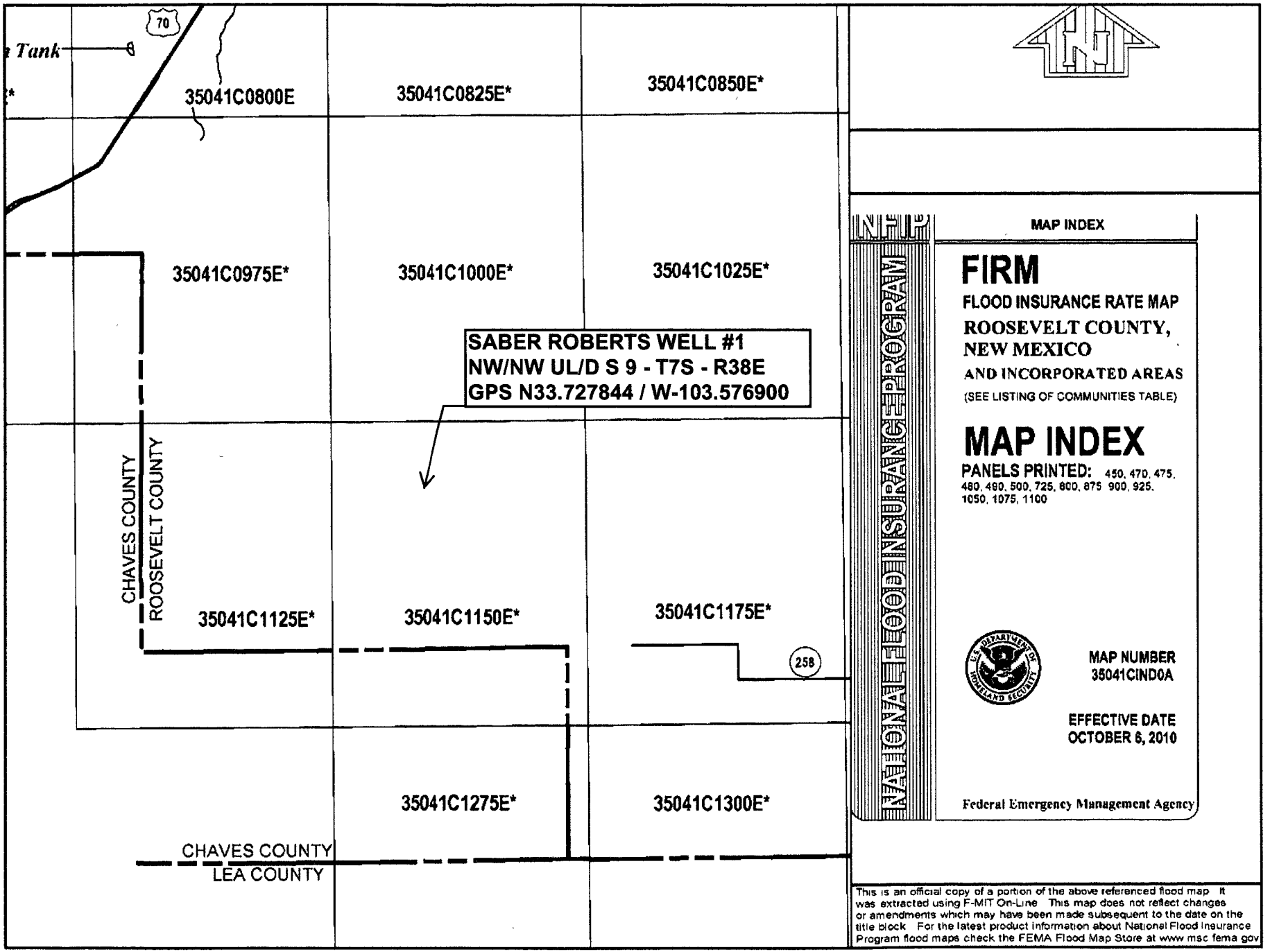
Socorro, New Mexico 87801
(505) 835-5460


1N
29
30
31
32
33
34
35
36
37E
1S
2
3
4
5
6
7
8
Portales
1
ROOSEVELT
34°
70
Saber Roberts Well #1
API # 30-041-20416
NW/NW UL/D S-9 - T7S - R33E
GPS LAT & LON NAD27
N33.727700 / W103.577010


Bailey
Roosevelt
Saber Oil & Gas Roberts Well #1 nw/nwD S7-T7S-R33E
Cochran
Wetland Types
Estuarine and Marine Deepwater
Estuarine and Marine Wetland
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Lake
Other
Riverine
Status Map
Digital (vector data)
Scan (raster data)
Non-Digital (hardcopy only)
No Data
Image © 2010 DigitalGlobe
Texas Orthoimagery Program
© 2010 Google
©2010 Google


70
Tank
35041C0800E
35041C0825E*
35041C0850E*
35041C0975E*
35041C1000E*
35041C1025E*
SABER ROBERTS WELL #1
NW/NW UL/D S 9 - T7S - R38E
GPS N33.727844 / W-103.576900
CHAVES COUNTY
ROOSEVELT COUNTY
35041C1125E*
35041C1150E*
35041C1175E*
258
35041C1275E*
35041C1300E*
CHAVES COUNTY
LEA COUNTY
NFIP
NATIONAL FLOOD INSURANCE PROGRAM
MAP INDEX
FIRM
FLOOD INSURANCE RATE MAP
ROOSEVELT COUNTY,
NEW MEXICO
AND INCORPORATED AREAS
(SEE LISTING OF COMMUNITIES TABLE)
MAP INDEX
PANELS PRINTED: 450, 470, 475, 480, 490, 500, 725, 800, 875 900, 925, 1050, 1075, 1100
MAP NUMBER
35041CIND0A
EFFECTIVE DATE
OCTOBER 6, 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

Definitions of FEMA Flood Zone Designations

Flood zones are geographic areas that the FEMA has defined according to varying levels of flood risk. These zones are depicted on a community's Flood Insurance Rate Map (FIRM) or Flood Hazard Boundary Map. Each zone reflects the severity or type of flooding in the area.

Moderate to Low Risk Areas

In communities that participate in the NFIP, flood insurance is available to all property owners and renters in these zones:

ZONE	DESCRIPTION
B and X (shaded)	Area of moderate flood hazard, usually the area between the limits of the 100-year and 500-year floods. B Zones are also used to designate base floodplains of lesser hazards, such as areas protected by levees from 100-year flood, or shallow flooding areas with average depths of less than one foot or drainage areas less than 1 square mile.
C and X (unshaded)	Area of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level. Zone C may have ponding and local drainage problems that don't warrant a detailed study or designation as base floodplain. Zone X is the area determined to be outside the 500-year flood and protected by levee from 100-year flood.

High Risk Areas

In communities that participate in the NFIP, mandatory flood insurance purchase requirements apply to all of these zones:

ZONE	DESCRIPTION
A	Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones.
AE	The base floodplain where base flood elevations are provided. AE Zones are now used on new format FIRMs instead of A1-A30 Zones.
A1-30	These are known as numbered A Zones (e.g., A7 or A14). This is the base floodplain where the FIRM shows a BFE (old format).
AH	Areas with a 1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.
AO	River or stream flood hazard areas, and areas with a 1% or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Average flood depths derived from detailed analyses are shown within these zones.
AR	Areas with a temporarily increased flood risk due to the building or restoration of a flood control system (such as a levee or a dam). Mandatory flood insurance purchase requirements will apply, but rates will not exceed the rates for unnumbered A zones if the structure is built or restored in compliance with Zone AR floodplain management regulations.
A99	Areas with a 1% annual chance of flooding that will be protected by a Federal flood control system where construction has reached specified legal requirements. No depths or base flood elevations are shown within these zones.

High Risk - Coastal Areas

In communities that participate in the NFIP, mandatory flood insurance purchase requirements apply to all of these zones:

ZONE	DESCRIPTION
V	Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. These areas have a 26% chance of flooding over the life of a 30-year mortgage. No base flood elevations are shown within these zones.
VE, V1 - 30	Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.

Undetermined Risk Areas

ZONE	DESCRIPTION
D	Areas with possible but undetermined flood hazards. No flood hazard analysis has been conducted. Flood insurance rates are commensurate with the uncertainty of the flood risk.

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Adobe Acrobat Reader required to view certain documents. Click here to download.

QP-18A

WHOLE EARTH ENVIRONMENTAL
QUALITY PROCEDURE

Sampling and Testing Protocol
VOC in Soil

Completed By: Approved By: Effective Date: / /

1.0 Purpose

This procedure is to be used to determine the concentrations of Volatile Organic Compounds in soils.

2.0 Scope

This procedure is to be used as the standard field measurement for soil VOC concentrations. It is not to be used as a substitute for full spectrographic speciation of organic compounds.

3.0 Procedure

3.1 Sample Collection and Preparation

3.1.1 Collect at least 500 g. of soil from the sample collection point. Take care to insure that the sample is representative of the general background to include visible concentrations of hydrocarbons and soil types. If necessary, prepare a composite sample of soils obtained at several points in the sample area. Take care to insure that no loose vegetation, rocks or liquids are included in the sample(s).

3.1.2 The soil sample(s) shall be immediately inserted into a one quart or larger polyethylene freezer bag and sealed. When sealed, the bag should contain a nearly equal space between the soil sample and trapped air. Record the sample name and the time that the sample was collected on the Field Report Form.

3.1.3 The sealed samples shall be allowed to set for a minimum of five minutes at a temperature of between 10-15^0 Celsius, (59-77^{0}F). The sample temperatures may be adjusted by cooling the sample in ice, or by heating the sample within a generally controlled environment such as the inside of a vehicle. The samples should not be placed directly on heated surfaces or placed in direct heat sources such as lamps or heater vents.

3.1.4 The sealed sample bag should be massaged to break up any clods, and to provide the soil sample with as much exposed surface area as practically possible.

3.2 Sampling Procedure

3.2.1 The instrument to be used in conducting VOC concentration testing shall be an RAE Systems Model PGM-7600 or equivalent. Prior to use the instrument shall be zeroed out in accordance with the appropriate maintenance and calibration procedure.

3.2.2 Carefully open one end of the collection bag and insert the probe tip into the bag taking care that the probe tip not touch the soil sample or the side walls of the bag.

3.2.3 Set the instrument to retain the highest result reading value. Record the reading onto the Field Report Form.

3.2.4 If the instrument provides a reading exceeding 100 ppm, proceed to conduct BTEX Speciation in accordance with Whole Earth **QP-19.**

4.0 After testing, the soil samples shall be returned to the sampling location, and the bags collected for off-site disposal. **IN NO CASE SHALL THE SAME BAG BE USED TWICE. EACH SAMPLE CONTAINER MUST BE DISCARDED AFTER EACH USE.**

QP-96

WHOLE EARTH ENVIRONMENTAL
QUALITY PROCEDURE

Sampling and Testing Protocol Chloride Titration Using .1 Normal Silver Nitrate Solution

Completed By: Approved By: Effective Date: / /

1.0 Purpose

This procedure is to be used to determine the concentrations of chlorides in soils.

2.0 Scope

This procedure is to be used as the standard field measurement for soil chloride concentrations.

3.0 Sample Collection and Preparation

3.1 Collect at least 80 g. of soil from the sample collection point. Take care to insure that the sample is representative of the general background to include visible concentrations of hydrocarbons and soil types. If necessary, prepare a composite sample of soils obtained at several points in the sample area. Take care to insure that no loose vegetation, rocks or liquids are included in the sample(s).

3.2 The soil sample(s) shall be immediately inserted into a one quart or larger polyethylene freezer bag. Care should be taken to insure that no cross-contamination occur between the soil sample and the collection tools or sample processing equipment.

3.3 The sealed sample bag should be massaged to break up any clods.

4.0 Sample Preparation

4.1 Tare a 40ml glass vial. Add at least 10grams of soil to vial and record weight. Tare vial again.

4.2 Add at least 25 to 30grams of distilled water to the soil sample and recored weight.

4.3 Take vial and screw on vial cap, shake vigorisouly for about 30 seconds and allow sample to settle. There is no time limit as all soils will settle differently.

4.4 After soil has settled make sure you have at least 10mls of clear water in vial.

5.0 Titration Procedure

5.1 Using a graduated pipette, remove 10 ml extract and dispense into a clean plastic cup.

5.2 Add 2-3 drops 5% potassium chromate (K_2CrO_4) to mixture.

5.3 If the sample contains any sulfides (hydrogen or iron sulfides are common to oilfield soil samples) add 2-3 drops of hydrogen peroxide (H_2O_2) to mixture. Allow the mixture to set for a minimum of five minutes.

5.4 Using a 1 ml pipette, carefully add .282 normal silver nitrate solution to sample until solution turns salmon red when viewed with yellow goggles. Be consistent with endpoint recognition.

6.0 Calculation

Multiply the amount of silver nitrate used in step 5.4 by 35450 to obtain the chloride concentration in mg/L.
Formula for calculation of CL- in soil

Amount of AGNO3 used to obtain color x .282 AGNO3 normallity stregth x 35450 = / by amount of water extracted from vial x sum of amount of water / by amount of soil = CL- results

QP-77

WHOLE EARTH ENVIRONMENTAL
QUALITY PROCEDURE

Procedure for Obtaining Soil Samples for Transportation to a Laboratory

Completed By:	Approved By:	Effective Date: / /

1.0 Purpose

This procedure outlines the methods to be employed when obtaining soil samples to be taken to a laboratory for analysis.

2.0 Scope

This procedure is to be used when collecting soil samples intended for ultimate transfer to a testing laboratory.

3.0 Preliminary

3.1 Obtain sterile sampling containers from the testing laboratory designated to conduct analyses of the soil. The shipment should include a Certificate of Compliance from the manufacturer of the collection bottle or vial and a Serial Number for the lot of containers. Retain this Certificate for future documentation purposes.

3.2 If collecting TPH, BTEX, RCRA 8 metals, cation / anions or O&G, the sample jar may be a clear 4 oz. container with Teflon lid. If collecting PAH's, use an amber 4 oz. container with Teflon lid.

4.0 Chain of Custody

4.1 Prepare a Sample Plan. The plan will list the number, location and designation of each planned sample and the individual tests to be performed on the sample. The sampler will check the list against the available inventory of appropriate sample collection bottles to insure against shortage.

4.2 Transfer the data to the Laboratory Chain of Custody Form. Complete all sections of the form except those that relate to the time of delivery of the samples to the laboratory.

4.3 Pre-label the sample collection jars. Include all requested information except time of collection. (Use a fine point Sharpie to insure that the ink remains on the label). Affix the labels to the jars.

5.0 Sampling Procedure

5.1 Go to the sampling point with the sample container. If not analyzing for ions or metals, use a trowel to obtain the soil. Do not touch the soil with your bare hands. Use new latex gloves with each sample to help minimize any cross-contamination. Try to avoid collecting rocks or vegetation.

5.2 Pack the soil tightly into the container leaving the top slightly domed. Screw the lid down tightly. Enter the time of collection onto the sample collection jar label.

5.3 Place the sample directly on ice for transport to the laboratory.

5.4 Complete the Chain of Custody form to include the collection times for each sample. Deliver all samples to the laboratory.

6.0 Documentation

6.1 The testing laboratory shall provide the following minimum information:

A. Client, Project and sample name.
B. Signed copy of the original Chain of Custody Form including data on the time the sample was received by the lab.
C. Results of the requested analyses
D. Test Methods employed
E. Quality Control methods and results