**Whole Earth Environmental, Inc.**
2103 Arbor Cove
Katy, Tx. 77494
281.394.2050
whearth@msn.com

March 4, 2010

NMOCD
1301 West Grand Ave.
Artesia, NM 88210

**Reference: 2RP-355**

Attn: Sherry Bonham

Dear Ms. Bonham:

Enclosed, please find a copy of the Melrose Conoco 7 closure report.

Thank you again for the opportunity of working with you on this very challenging project.

Warmest personal regards,

Mike Griffin
President
Whole Earth Environmental, Inc.

# Executive Summary
# Melrose Energy
# Conoco 7 State No. 3
# Spill Remediation Report

**Location**
The site is located approximately fifteen miles east of the City of Artesia, Eddy County, New Mexico on state lands. The primary land use is grazing of cattle however extensive oil and gas operations are prevalent in the area. The area is semi-arid with a net precipitation / evaporation amount of –73" per year. The legal description of the site is **Unit K, Sec. 7, T-19S, R-27E**.

**Site History**
On September 9, 2009 a small overflow was discovered within the containment berm allowing approximately 5 bbls of hydrocarbons to accumulate inside of containment. The free fluids were immediately removed and sent to disposal.

**Remediation**
The area of the spill origin was excavated to a total depth of approximately 10' below the saturation zone. In mid-December, the affected area was cored to an approximate depth of 37' below ground surface and determined to have soil concentrations of TPH, BTEX and chlorides within the acceptance range. Lateral delineation of the site was completed on December 15th.

With the depth to groundwater greater than 150', the ranking score for this site is zero. Approximately 855 cubic yards of brine contaminated soils were transported to the Lea Land commercial disposal facility near Carlsbad, New Mexico for internment. New soils were brought in to replace the excavated materials.

In accordance with the approved protocol PR-132A, a 20 mil HDPE liner was installed atop compacted clay to a depth of 5-6' bgs and covered to ground level with mixed and blended soils having a maximum 500 ppm chloride concentration. A second surface liner was installed atop a 6" clay layer and extended to cover the containment berms.

# Exhibit Index

A. C-141 Spill Report
B. NMOCD Ranking Worksheet
C. Satellite View of Location – Zoom In
D. Satellite View of Location – Zoom Out
E. USGS 7.5' Map Zoom In
F. USGS 7.5' Map Zoom Out
G. Boring Log

PR-132A

**Remediation Protocol**
**Melrose Energy Co.**
**Conoco 7 State No. 3 Battery**

## 1.0 Purpose

This protocol is to provide a detailed outline of the steps to be employed in the remediation and closure of the Conoco 7 State No. 3 location in Eddy County, New Mexico.

## 2.0 Scope

This protocol is site specific for the Conoco 7 State No. 3 remediation project.

## 3.0 Preliminary

Prior to any field operations, Whole Earth Environmental shall conduct the following activities:

### 3.1 Client Review

3.1.1 Whole Earth shall meet with cognizant personnel within Melrose and the NMOCD to review and approve this protocol.

3.1.2 Changes to this protocol will be documented and submitted for final review by all parties prior to the initiation of actual field work.

## 4.0 Safety

**4.1** Prior to work on the site, Whole Earth shall obtain the location and phone numbers of the nearest emergency medical treatment facility. We will review all safety related issues with the appropriate Client personnel, sub-contractors and exchange phone numbers.

**4.2** A tailgate safety meeting shall be held and documented each day. All sub-contractors must attend and sign the daily log-in sheet.

**4.3** Anyone allowed on to location must be wearing sleeved shirts, steel toed boots, and long pants. Each vehicle must be equipped with two way communication capabilities.

**4.4** Prior to any excavation, New Mexico One Call will be notified. If lines are discovered within the area to be excavated they shall be marked with pin flags on either side of the line at maximum five-foot intervals.

**5.0 Remediation**

**5.1** All tanks and ancillary equipment will be moved from their existing location to permit access to the affected area.

**5.2** The battery area will be cored to a depth necessary to demonstrate chloride concentrations protective of groundwater. The highly contaminated soils shall be excavated and transported to commercial disposal. The remaining soils shall be excavated to practical vertical extent and set aside to be mixed and blended with native topsoils. A 20 mil high density polyethylene liner will be installed at a minimum depth of six feet below ground surface to serve as a retardant to future vertical migration of the contaminants of concern. The areas immediately above and below the liner shall be prepared with a minimum of 4" of sand or topsoils free of any sharp protrusions capable of puncturing the liner material. The liner shall be crowned with a minimum $5^0$ slope from the center to the edge of the liner to promote positive drainage.

**5.3** The area within containment shall be backfilled with soils tested as being within the concentrations specified within paragraph <5,000 ppm TPH as measured by SW-846 8015M, BTEX of <10 ppm benzene and 50 ppm total BTEX as measured by SW-846 8021B. The initial backfill should bring the excavated area to ground level. Containment berms of sufficient dimensions to contain 1.5 times the capacity of all storage vessels and related piping shall be installed at the battery perimeter and the entire battery area will be covered with a twenty mil high density polyethylene liner.

**5.4** A light covering of caliche shall be placed atop the liner to anchor it in place.

**6.0 Closure Report**

**6.1** At the conclusion of the project, Whole Earth shall prepare a closure report that contains the following minimum information:

- Photographs of the location prior to remediation
- Photographs of the site at the point of maximum excavation
- Final photographs of the restored site
- Satellite photographs of the location
- Copies of this protocol
- Disposal manifests of all soils sent to commercial disposal
- Laboratory analytical report

# Laboratory & Field Analysis

A. H-18870 Vertical Delineation 12-15-09
B. H-18925 Lateral Delineations 12-22-09
C. H-18914 Lateral Delineations 12-23-09
D. H-19066 Blend Pile 1-14-10
E. Lateral Delineation Plat Map
F. 12-11-09 Titration Summary
G. QP-97 Field Chloride Titration Procedure
H. QP-77 Soil Sample Collection & Lab. Preparation Procedure

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

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

SEP 2 2 2009

Form C-141
Revised October 10, 2003

Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

# Release Notification and Corrective Action

## OPERATOR

☒ Initial Report ☐ Final Report

| | |
|---|---|
| Name of Company Melrose Operating Company 184860 | Contact Barry Archer |
| Address 1000 W. Wilshire Blvd., Suite 223 | Telephone No. 405-848-4012 |
| Facility Name Conoco 7 State Battery 003 | Facility Type Battery |

| Surface Owner | Mineral Owner | Lease No. |
|---|---|---|
| | | |

30-015-23694

## LOCATION OF RELEASE

| Unit Letter | Section | Township | Range | Feet from the | North/South Line | Feet from the | East/West Line | County |
|---|---|---|---|---|---|---|---|---|
| E | 7 | 19S | 29E | | | | | Eddy |

**Latitude** N32.67714 **Longitude** W104.11526

## NATURE OF RELEASE

| | | |
|---|---|---|
| Type of Release Produced oil and water | Volume of Release +5 bbls | Volume Recovered |
| Source of Release Line to heater ruptured | Date and Hour of Occurrence 09/09/09 | Date and Hour of Discovery 09/09/09 |
| Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required | If YES, To Whom? | |
| By Whom? Gary Newton, Field Supervisor | Date and Hour 9/09/09 | |
| Was a Watercourse Reached? ☐ Yes ☒ No | If YES, Volume Impacting the Watercourse. | |

If a Watercourse was Impacted, Describe Fully.*

No

Describe Cause of Problem and Remedial Action Taken.*
Line to heater ruptured causing discharge in bermed battery area Truck used to pull fluid from battery.

Describe Area Affected and Cleanup Action Taken.*
Within tank bermed area.
Work plan: Remove all vessels from battery area and haul off top 2 ½ ft of soil to Lea Land Disposal. Sample soil in and around battery with OCD present and send samples to Cardinal Labs. Remove all contaminated soil and back fill with clean soil, install liner and rebuild tank battery.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: Linda G. Terry

Printed Name: Linda G. Terry

Title: Regulatory Agent

E-mail Address: lterry@melroseenergy.com

Date: 9/23/09 Phone: 405-848-4012

## OIL CONSERVATION DIVISION

Approved by District Supervisor: R DADE

Approval Date: 10-26-09 Expiration Date: 12-26-09

Conditions of Approval: STIPULATIONS SEE ATTACHED

Remediation Actions to be completed and Final C-141 submitted with confirmation analyses/documentation on or before the Expiration Date.

Attached ☐ 2RP 355

* Attach Additional Sheets If Necessary

1SEB 0929949893
2SEB 0929950000
3SEB 0929950265

New Mexico Energy, Minerals and Natural Resources Department



October 26, 2009

Melrose Operating Co
PO Box 953
Midland, TX 79702

Reference: Conoco 7 State Battery 30-015-23694
E-7-19S-29E Eddy County, New Mexico
2RP- 355

Operator,

The New Mexico Oil Conservation Division District 2 Office (OCD) is in receipt of an Initial Report C-141 for a release of produced oil and water occurring at the above referenced facility on or about September 9, 2009. Stated on the C-141 is, "Remove all vessels from battery area and haul off top 2 ½ ft of soil to Lea Land Disposal. Sample soil in and around battery with OCD present and send samples to Cardinal Labs. Remove contaminated soil and back fill with clean soil, install liner and rebuild tank battery."

The Initial Report C-141 is accepted with the following stipulations:

- Notify the OCD 48 hours prior to obtaining samples (preliminary, confirmation, and all additional) where analyses are to be submitted to the OCD.
- Contaminated soils shall be remediated so that residual contaminant concentrations are below the site specific recommended soil remediation action levels. Confirmation delineation soil analyses reflecting chloride, TPH, and BTEX will be required.
- Remediation requirements may be subject to change as site conditions warrant.
- Results of analytical data obtained through sampling shall be forwarded to OCD for approval **prior** to any backfilling activities.
- Final remediation actions are to be completed and a Final Report C-141 with supporting documentation is to be submitted to the OCD on or before December 26, 2009.

Remediation requirements may be subject to other federal, state, and local laws or regulations.

Please be advised that NMOCD acceptance and/or approval of documents or work plans does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance and/or approval of documents or work plans do not relieve the operator of responsibility for compliance with any other federal, state, local laws and/or regulations.

If I may be of further assistance regarding this matter or if you have any questions, please feel free to contact me.

Respectfully,

Sherry Bonham
NMOCD District 2
1301 W Grand Avenue
Artesia, NM 88210
575.748.1283 ext. 109
sherry.bonham@state.nm.us

# SITE ASSESMENT CRITERIA (NMOCD)

MELROSE OPERATING
CONOCO 7 STATE #3 TANK BATTERY
UL/F SEC 7 - T19S - R29E
GPS LAT & LON NAD27 N32.67685 / W104.11491
DTW: 140'>150' according to Cheron Texaco water data map for Eddy Co.

## DEPTH TO GROUND WATER

(Vertical distance from contaminants to seasonal high water elevation of ground water.)

| | | |
|---|---|---|
| Less than 50' BGS | (20 points) | |
| 50' to 99' BGS | (10 points) | |
| Greater than 100' BGS | (0 points) | 0 |

## WELLHEAD PROTECTION AREA

(Less tan 200' from a private domestic water source, or; less than 1000' from all other water sources)

| | | |
|---|---|---|
| YES | (20 points) | |
| NO | (0 points) | 0 |

## DISTANCE TO SURFACE WATER BODY

(Horizontal distance to perennial lakes, ponds, rivers, streams, creeks, irrigation canals, and ditches)

| | | |
|---|---|---|
| Less than 200' | (20 points) | |
| 200' to 1000' | (10 points) | |
| Greater than 1000' | (0 points) | 0 |

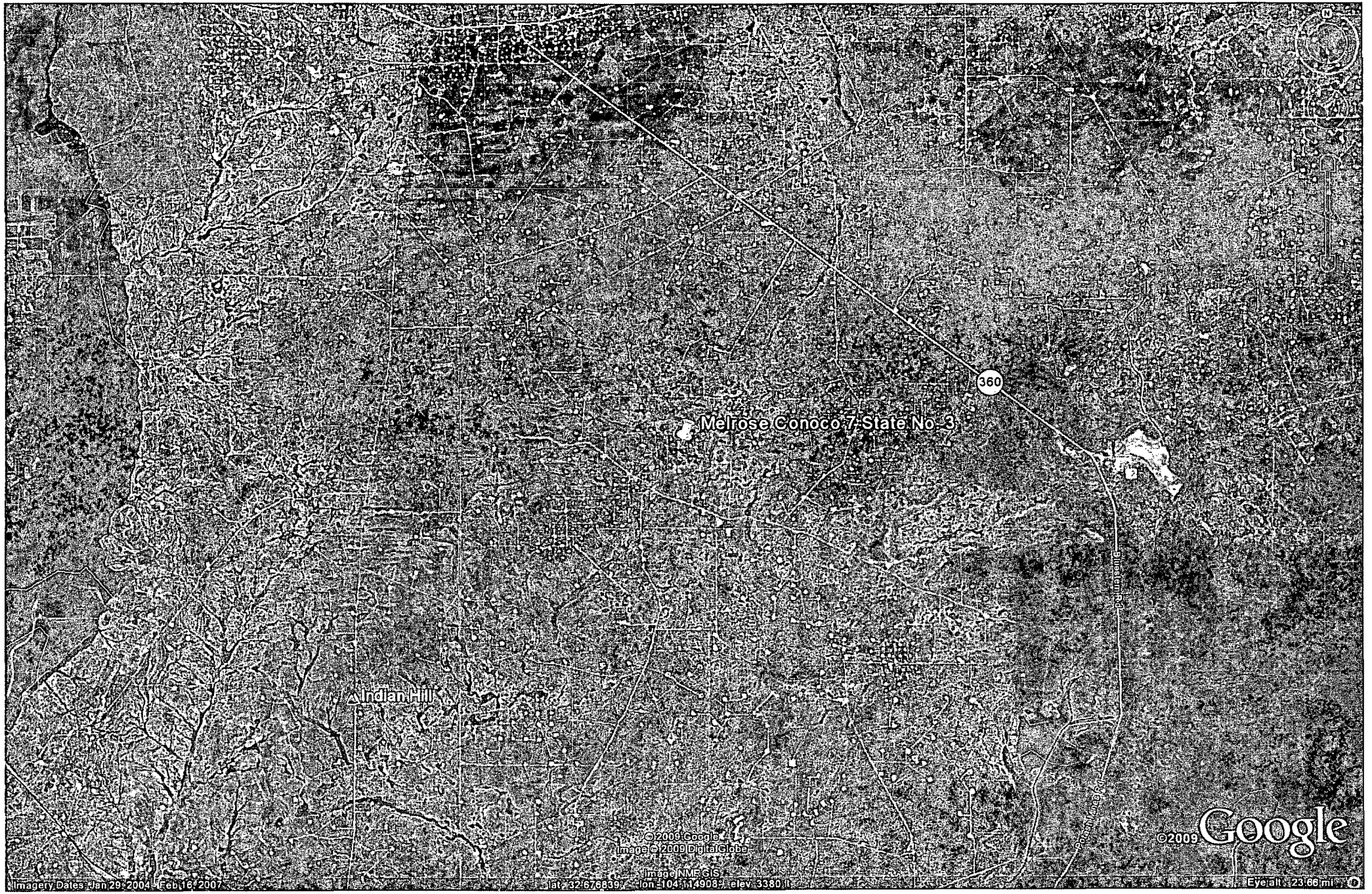
RANKING SCORE TOTAL POINTS 0

## CLEAN - UP TARGET CONCENTRATIONS FOR "SITE CLOSURE"

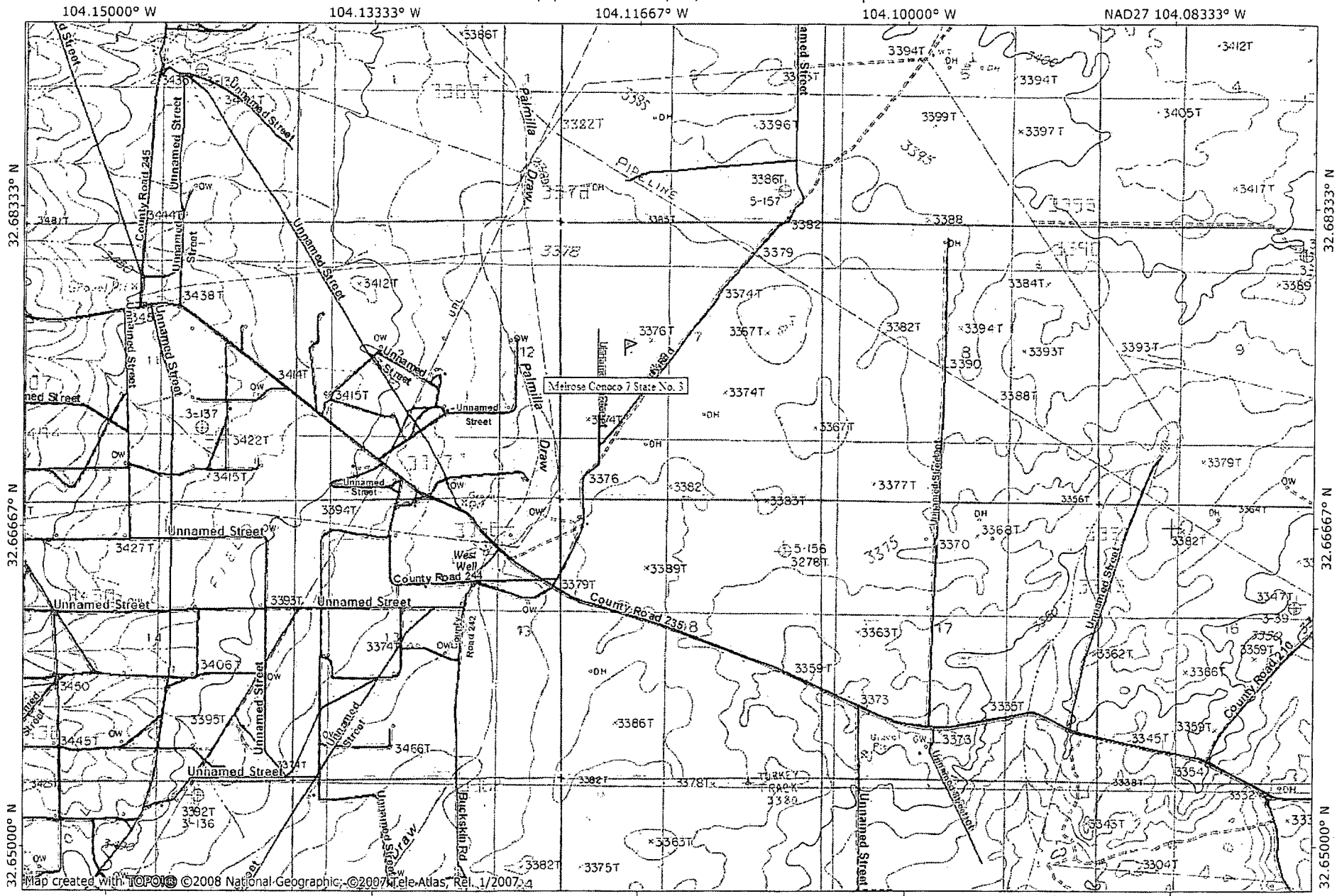
| IF RANKING SCORE IS: | > 19 | 10 - 19 | 0 - 9 |
|---|---|---|---|
| BENZENE (ppm)* | 10 | 10 | 10 |
| BTEX (ppm)* | 50 | 50 | 50 |
| TPH (ppm)** | 100 | 1000 | 5000 |

*A field vapor headspace measurement of 100 ppm may be substituted for a laboratory analysis.
** The contaminant concentration for TPH is the concentration above background levels.


Melrose Conoco 7 State No. 3
Hobbs Strip Rd
©2009 Google
©2009 Europa Technologies
Image NMRGIS
©2009 Google
Imagery Date: Jun 30, 2005
lat 32.676850° lon -104.114910° elev 3377 ft
Eye alt 6658 ft


Melrose Conoco 7 State No. 3
360
Indian Hill
©2009 Google
Imagery Dates: Jan 29, 2004 - Feb 16, 2007
lat 34.678839° lon -104.149083° elev 3380 ft
Eye alt 23.66 mi

TOPO! map printed on 12/12/09 from "Untitled.tpo"

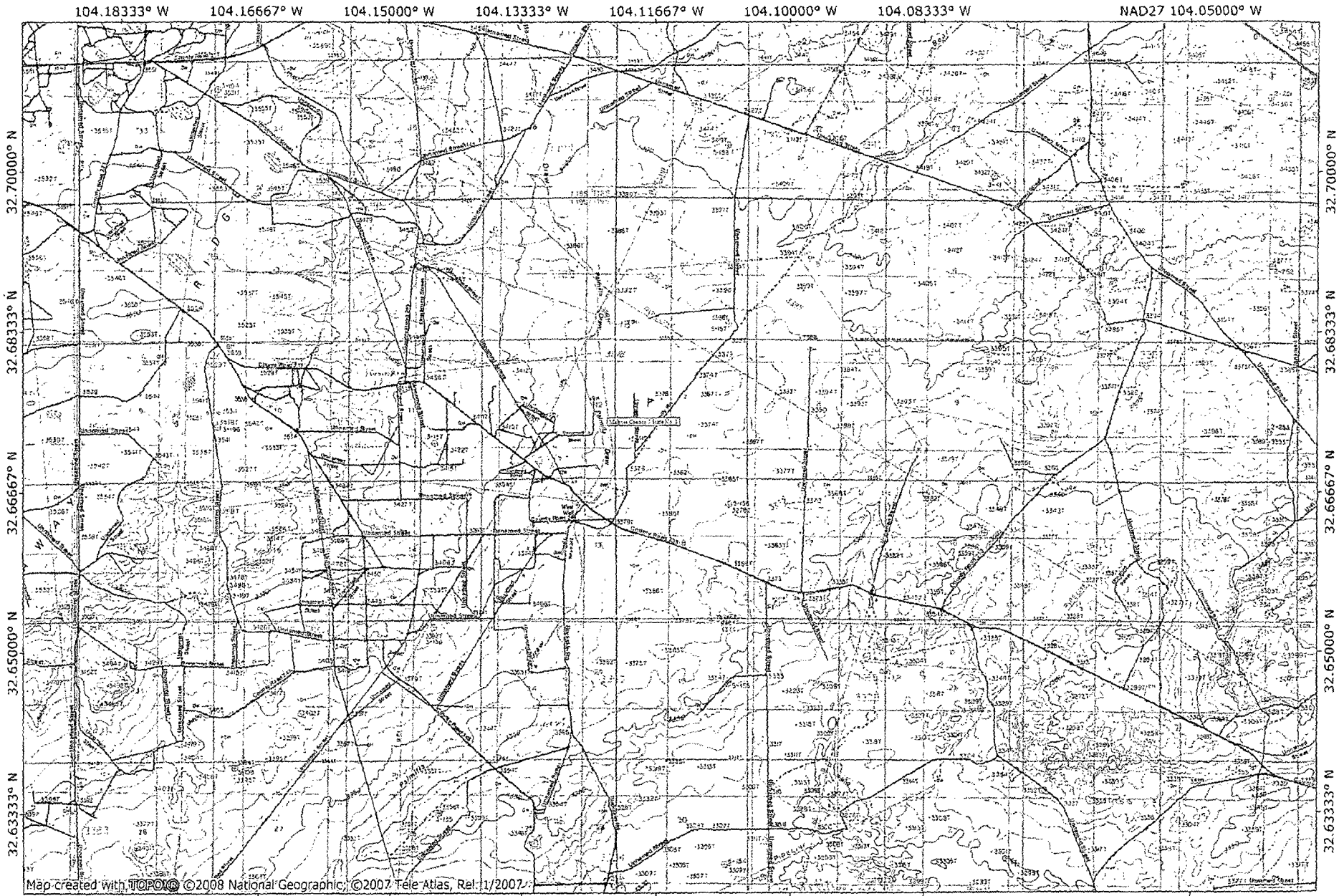



NATIONAL GEOGRAPHIC

0.0 0.5 1.0 miles
0.0 0.5 1.0 1.5 km

TN MN
8°
12/12/09

TOPO! map printed on 12/12/09 from "Untitled.tpo"




NATIONAL GEOGRAPHIC

0.0 0.5 1.0 1.5 2.0 miles

0.0 0.5 1.0 1.5 2.0 2.5 3.0 km

TN MN

8°

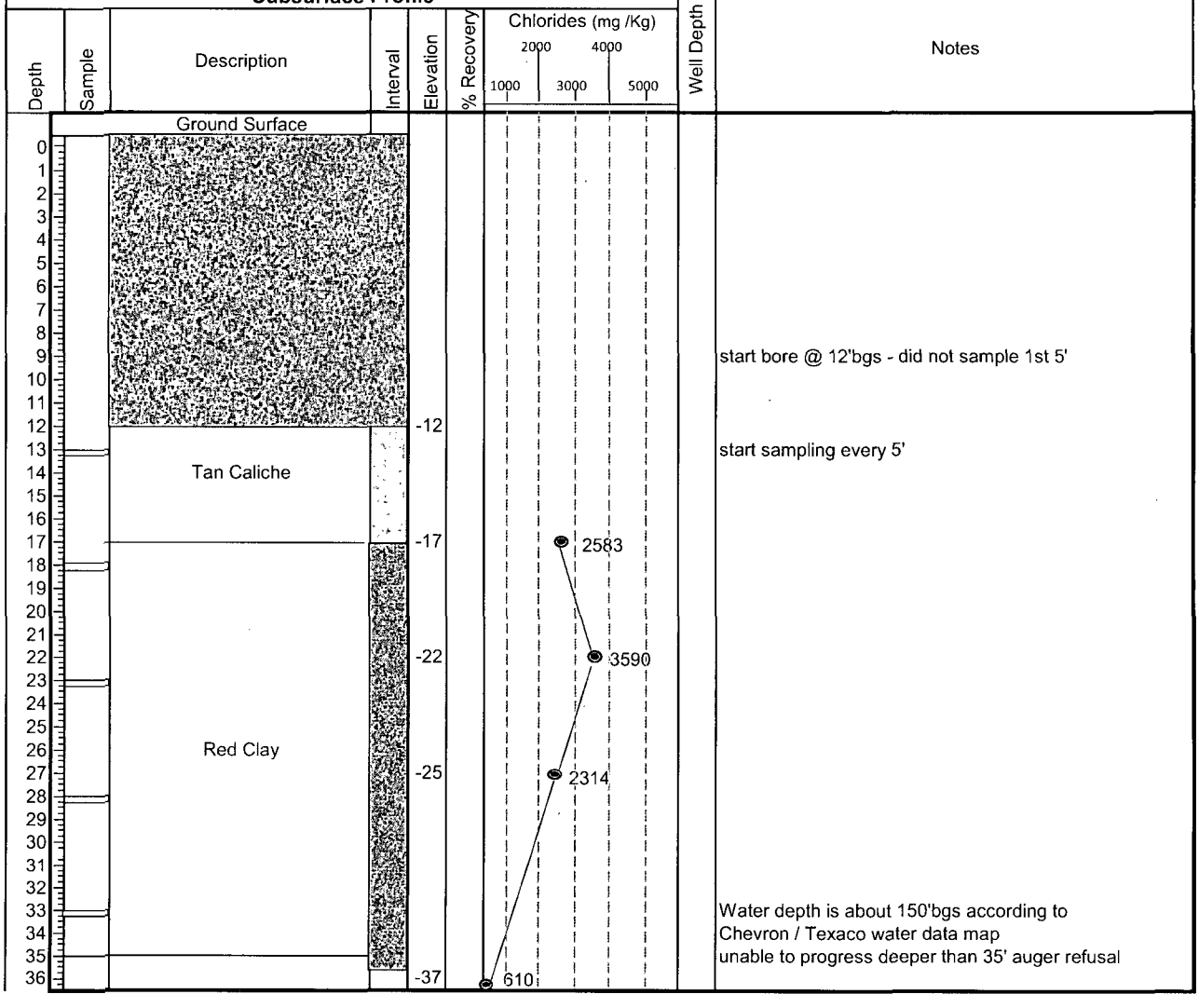
12/12/09

Whole Earth Environmental, Inc.
2103 Arbor Cove
Katy, Tx. 77494
281.394.2050
mikeg@vadosc.us

**Chloride Delineation Boring Log of Melrose Conoco 7 St. No. 3**

| | | | |
|---|---|---|---|
| Client | Isramco/Jay Mgmt | Drill Method | Solid Stem Auger |
| Project | Conoco 7 St. No. 3 | Borehole Dia. | 5 1/4" |
| Location | Lea County, N.M. | Total Depth | 35' bgs |
| Latitude | 32.67685N | Driller | Whole Earth |
| Longitude | 104.11491W | Bore Purpose | Delineation |
| Date Drilled | 12/11/2009 | Status | Grouted |
| Date Completed | 12/11/2009 | Technician | R. Rascon |

**Subsurface Profile**



CARDINAL LABORATORIES

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

December 16, 2009

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

Re: Conoco 7 St. #3 Tank Battery (Revised)

Enclosed are the results of analyses for sample number H18870, received by the laboratory on 12/14/09 at 8:05 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: 4(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: 12/14/09
Reporting Date: 12/16/09
Project Owner: MELROSE OPERATING
Project Name: CONOCO 7 ST. #3 TANK BATTERY
Project Location: CARLSBAD, NM EDDY COUNTY

Sampling Date: 12/11/09
Sample Type: SOIL
Sample Condition: COOL & INTACT @ 5.5°C
Sample Received By: CK
Analyzed By: AB

| LAB NUMBER | SAMPLE ID | 418.1 TOTAL TPH (mg/kg) |
|---|---|---|
| ANALYSIS DATE | | 12/16/09 |
| H18870-1 | BORE #1 @ 37' BGS | <100 |
| | | |
| | | |
| | | |
| | | |
| | | |
| Quality Control | | 316 |
| True Value QC | | 300 |
| % Recovery | | 105 |
| Relative Percent Difference | | 1.2 |

METHODS: EPA 418.1
Reported on wet weight.

Chemist

12/16/09
Date

H18870 418 WEE

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: 12/14/09
Reporting Date: 12/14/09
Project Owner: MELROSE OPERATING
Project Name: CONOCO 7 ST. #3 TANK BATTERY
Project Location: CARLSBAD, NM EDDY COUNTY

Analysis Date: 12/14/09
Sampling Date: 12/11/09
Sample Type: SOIL
Sample Condition: COOL & INTACT @ 5.5°C
Sample Received By: CK
Analyzed By: HM

| LAB NO. | SAMPLE ID | $Cl^-$ (mg/kg) |
|---|---|---|
| H18870-1 | BORE #1 @ 37' BGS | 944 |
| H18870-2 | BORE #2 @ 27' BGS | 4,560 |
| H18870-3 | BACKGROUND BORE @ 10' BGS | 80 |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| Quality Control | | 500 |
| True Value QC | | 500 |
| % Recovery | | 100 |
| Relative Percent Difference | | < 0.1 |

| METHOD: Standard Methods | 4500-$Cl^-$B |
|---|---|

Note: Analyses performed on 1:4 w:v aqueous extracts. Not accredited for Chloride.

Chemist

12/16/09
Date

H18870 WEE

CARDINAL LABORATORIES

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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: | MELROSE OPERATING | City: | |
| Project Name: | CONOCO 7 ST. #3 TANK BATTERY | State: Zip: | |
| Project Location: | CARLSBAD, NM EDDY COUNTY | Phone #: | |
| Sampler Name: | | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H15870-1 | BORE #1 @ 37'BGS | G | 1 | | | X | | | | | X | | 12/11/09 | 12:40 | | | | X | X | |
| -2 | BORE #2 @ 27'BGS | G | 1 | | | X | | | | | X | | 12/11/09 | 15:40 | | | | X | | |
| -3 | BACKGRD BORE @ 10'BGS | G | 1 | | | X | | | | | X | | 12/11/09 | 14:20 | | | | 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: 12/14/09 Time: 8:05 | Received By: | |
| Relinquished By: | Date: 12/14/09 Time: 8:05 | Received By: | |
| Delivered By: (Circle One) Sampler - UPS - Bus - Other: | 5.5°C | Sample Condition: Cool Yes / No; Intact Yes / No | CHECKED BY: (Initials) |

| | | | |
|---|---|---|---|
| Phone Result: | Yes | No | Add'l Phone #: |
| Fax Result: | Yes | No | Add'l Fax #: |

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

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

CARDINAL LABORATORIES

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

December 29, 2009

Kevin Womac
Whole Earth Environmental, Inc.
2103 Arbor Cove
Katy, TX 77494

Re: Melrose Conoco 7 St. #3 Tank Battery

Enclosed are the results of analyses for sample number H18925, received by the laboratory on 12/22/09 at 9:17 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: 5 (includes Chain of Custody)

Sincerely,

Aaron Berry
Chemist

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: K. WOMAC
2103 ARBOR COVE
KATY, TX 77494
FAX TO: (281) 394-2051

Receiving Date: 12/22/09
Reporting Date: 12/29/09
Project Owner: NOT GIVEN
Project Name: MELROSE CONOCO 7 ST. #3 TANK BATT.
Project Location: CARLSBAD, NM, EDDY COUNTY

Analysis Date: 12/23/09
Sampling Date: 12/21/09
Sample Type: SOIL
Sample Condition: COOL & INTACT @ 2.5°C
Sample Received By: CK
Analyzed By: HM

| LAB NO. | SAMPLE ID | $Cl^-$ (mg/kg) |
|---|---|---|
| H18925-1 | SW 70 6' | 80 |
| H18925-2 | W 320 6' | 192 |
| H18925-3 | W. PILE 12PT. | 5,200 |
| H18925-4 | E. PILE 12PT. | 3,360 |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| Quality Control | | 510 |
| True Value QC | | 500 |
| % Recovery | | 102 |
| Relative Percent Difference | | 2.0 |

| METHOD: Standard Methods | 4500-$Cl^-$B |
|---|---|

Note: Analyses performed on 1:4 w:v aqueous extracts. Not accredited for Chloride.

Chemist

12/29/09
Date

H18925 WEE

CARDINAL LABORATORIES

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

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

Receiving Date: 12/22/09
Reporting Date: 12/29/09
Project Owner: NOT GIVEN
Project Name: MELROSE CONOCO 7 ST. #3 TANK BATT.
Project Location: CARLSBAD, NM, EDDY COUNTY

Sampling Date: 12/21/09
Sample Type: SOIL
Sample Condition: COOL & INTACT @ 2.5°C
Sample Received By: CK
Analyzed By: CK/AB

| LAB NUMBER SAMPLE ID | GRO ($C_6$-$C_{10}$) (mg/kg) | DRO (>$C_{10}$-$C_{28}$) (mg/kg) | 418.1 TOTAL TPH (mg/kg) |
|---|---|---|---|
| ANALYSIS DATE | 12/23/09 | 12/23/09 | 05/20/09 |
| H18925-3 W. PILE 12PT. | 200 | 1,960 | 18,300 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| Quality Control | 416 | 471 | 306 |
| True Value QC | 500 | 500 | 300 |
| % Recovery | 83.2 | 94.2 | 102 |
| Relative Percent Difference | 18.3 | 0.4 | 3.1 |

METHODS: TPH GRO & DRO: EPA SW-846 8015 M; EPA 418.1
Reported on wet weight. Not accredited for GRO/DRO and TPH 418.1

Chemist

12/29/09
Date

H18925 TPH2 WEE

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: 12/22/09
Reporting Date: 12/29/09
Project Owner: NOT GIVEN
Project Name: MELROSE CONOCO 7 ST. #3 TANK BATTERY
Project Location: CARLBAD, NM, EDDY COUNTY

Sampling Date: 12/21/09
Sample Type: SOIL
Sample Condition: COOL & INTACT @ 2.5°C
Sample Received By: CK
Analyzed By: ZL

| LAB NO. | SAMPLE ID | BENZENE (mgkg) | TOLUENE (mgkg) | ETHYL BENZENE (mgkg) | TOTAL XYLENES (mgkg) |
|---|---|---|---|---|---|
| ANALYSIS DATE: | | 12/23/09 | 12/23/09 | 12/23/09 | 12/23/09 |
| H18925-3 | W. PILE 12PT. | 0.086 | 0.416 | 0.966 | 5.42 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| Quality Control | | 0.051 | 0.052 | 0.052 | 0.154 |
| True Value QC | | 0.050 | 0.050 | 0.050 | 0.150 |
| % Recovery | | 102 | 104 | 104 | 103 |
| Relative Percent Difference | | <1.0 | <1.0 | <1.0 | <1.0 |

METHODS: BTEX - SW-846 8021B.

TEXAS NELAP ACCREDITATION T104704398-08-TX FOR BENZENE, TOLUENE, ETHYL BENZENE, AND TOTAL XYLENES.

Chemist

12/29/09
Date

H18925 B WEE

CARDINAL LABORATORIES

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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: | KEVIN WOMAC | P.O. #: | |
| Address: | | Company: | |
| City: | State: Zip: | Attn: | |
| Phone #: | Fax #: | Address: | |
| Project Owner: | | City: | |
| Project Name: | MELROSE CONOCO 7 ST. #3 TANK BATTERY | State: Zip: | |
| Project Location: | CARLSBAD, NM EDDY CO. | Phone #: | |
| Sampler Name: | KEVIN WOMAC | 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 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H18925- | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | SW 70 6' | G | 1 | | | X | | | | | X | | 12/21/09 | 16:00 | | | | X | | | | | | | | | |
| 2 | W 320 6' | G | 1 | | | X | | | | | X | | | 15:50 | | | | X | | | | | | | | | |
| 3 | W. PILE 12PT. | C | 1 | | | X | | | | | X | | | 14:30 | | | X | X | X | X | | | | | | | |
| 4 | E. PILE 12PT. | C | 1 | | | X | | | | | X | | | 13:50 | | | | X | | X | RRR | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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: KEVIN WOMAC | Date: | Received By: | Phone Result: Yes No Add'l Phone #: |
| | Time: | | Fax Result: Yes No Add'l Fax #: |
| Relinquished By: | Date: 12/22/09 | Received By: | REMARKS: PLEASE E-MAIL TO: royr , mikeg, kwomac, elliotw, & mcgriffin@vadose.us |
| | Time: 9:17 | | |
| Delivered By: (Circle One) Sampler - UPS - Bus - Other: | 2.5°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

CARDINAL LABORATORIES

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

December 23, 2009

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

Re: Melrose Conoco 7 St. #3 Tank Battery

Enclosed are the results of analyses for sample number H18914, received by the laboratory on 12/18/09 at 4:46 pm.

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: K. WOMAC
2103 ARBOR COVE
KATY, TX 77494
FAX TO: (281) 394-2051

Receiving Date: 12/18/09
Reporting Date: 12/21/09
Project Owner: NOT GIVEN
Project Name: MELROSE CONOCO 7 ST. 3 TANK BATT.
Project Location: CARLSBAD, NM EDDY COUNTY

Analysis Date: 12/21/09
Sampling Date: 12/17/09 & 12/18/09
Sample Type: SOIL
Sample Condition: INTACT @ 16°C
Sample Received By: AB
Analyzed By: HM

| LAB NO. | SAMPLE ID | $Cl^-$ (mg/kg) |
|---|---|---|
| H18914-1 | NE 35 6' | 160 |
| H18914-2 | N 45 6' | 48 |
| H18914-3 | EAST 6' | 224 |
| H18914-4 | NW 45 6' | 160 |
| H18914-5 | S 90 6' | 224 |
| H18914-6 | SE 70 6' | 320 |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| Quality Control | | 500 |
| True Value QC | | 500 |
| % Recovery | | 100 |
| Relative Percent Difference | | < 0.1 |

| METHOD: Standard Methods | 4500-$Cl^-$B |
|---|---|

Note: Analyses performed on 1:4 w:v aqueous extracts. Not accredited for Chloride.

Chemist

Date 12/23/09

H18914 WEE

# CARDINAL LABORATORIES

101 East Marland, Hobbs, NM 88240
(575) 393-2326 Fax (575) 393-2476

Page_____ of_____

| | |
|---|---|
| Company Name: | WEE Inc |
| Project Manager: | K. WOMAC |
| Address: | |
| City: | State: Zip: |
| Phone #: | Fax #: |
| Project #: | Project Owner: |
| Project Name: | Melrose Conoco 7 St. 3 Tank Batt. |
| Project Location: | Carlsbad, NM Eddy Co. |
| Sampler Name: | K. WOMAC |

**BILL TO**

| | |
|---|---|
| P.O. #: | |
| Company: | |
| Attn: | |
| Address: | |
| City: | |
| State: Zip: | |
| Phone #: | |
| Fax #: | |

ANALYSIS REQUEST

| FOR LAB USE ONLY Lab I.D. | Sample I.D. | (G)RAB OR (C)OMP. | # CONTAINERS | MATRIX: GROUNDWATER | WASTEWATER | SOIL | OIL | SLUDGE | OTHER : | PRESERV.: ACID/BASE: | ICE / COOL | OTHER : | SAMPLING DATE | TIME | BTEX | Cl- |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H18914-1 | NE 35 6' | G | | | | X | | | | X | | | 12-17-09 | 1400 | X | X |
| -2 | N 45 6' | G | | | | | | | | | | | 121709 | 1505 | | |
| -3 | EAST 6' | G | | | | | | | | | | | 121709 | 1145 | | |
| -4 | NW 45 6' | G | | | | | | | | | | | 121809 | 900 | | |
| -5 | S 90 6' | G | | | | | | | | | | | 121809 | 1450 | | |
| -6 | SE 70 6' | G | | | | | | | | | | | 121809 | 1140 | | |

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 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.

| | | | | | |
|---|---|---|---|---|---|
| Sampler Relinquished: | Date: | Received By: | Phone Result: ☐ Yes ☐ No | Add'l Phone #: | |
| K. Womac | 12-18-09 | Ray R. Rascon | Fax Result: ☐ Yes ☐ No | Add'l Fax #: | |
| | Time: 320 | | REMARKS: | | |
| Relinquished By: | Date: 12-18-09 | Received By: | Please Email to all | | |
| Ray R. Rascon | Time: 446 | | | | |
| Delivered By: (Circle One) | Temp. | Sample Condition: Cool ☐ Yes ☒ No, Intact ☒ Yes ☐ No | CHECKED BY: (Initials) | | |
| Sampler - UPS - Bus - (Other:) | #26 | 16°C | | | |

† Cardinal cannot accept verbal changes. Please fax written changes to 575-393-2476.

CARDINAL LABORATORIES

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

January 19, 2010

Kevin Womac
Whole Earth Environmental, Inc.
2103 Arbor Cove
Katy, TX 77494

Re: Melrose Conoco 7 St. 3 T.K.

Enclosed are the results of analyses for sample number H19066, received by the laboratory on 01/14/10 at 4:24 pm.

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: KEVIN WOMAC
2103 ARBOR COVE
KATY, TX 77494
FAX TO: (281) 394-2051

Receiving Date: 01/14/10
Reporting Date: 01/19/10
Project Number: NOT GIVEN
Project Name: MELROSE CONOCO 7 ST. 3 T.K.
Project Location: NOT GIVEN

Sampling Date: 01/14/10
Sample Type: SOIL
Sample Condition: COOL & INTACT @ 4°C
Sample Received By: JH
Analyzed By: AB/HM

| LAB NUMBER SAMPLE ID | GRO ($C_6$-$C_{10}$) (mg/kg) | DRO (>$C_{10}$-$C_{28}$) (mg/kg) | Cl* (mg/kg) |
|---|---|---|---|
| ANALYSIS DATE | 01/18/10 | 01/18/10 | 01/15/10 |
| H19066-1 EAST PILE BLEND | <10.0 | <10.0 | 480 |
| | | | |
| | | | |
| | | | |
| | | | |
| Quality Control | 497 | 432 | 510 |
| True Value QC | 500 | 500 | 500 |
| % Recovery | 99.4 | 86.4 | 102 |
| Relative Percent Difference | 8.2 | 0.6 | 2.0 |

METHODS: TPH GRO & DRO: EPA SW-846 8015 M; Cl⁻: Std. Methods 4500-Cl⁻B
*Analysis performed on a 1:4 w:v aqueous extract. Reported on wet weight.

Lab Director

01/19/10
Date

H19066 TCL WEE

# CARDINAL LABORATORIES

101 East Marland, Hobbs, NM 88240
(575) 393-2326 Fax (575) 393-2476

Page____ of____

| | |
|---|---|
| Company Name: | WEE Inc |
| Project Manager: | KEVIN WOMAC |
| Address: | |
| City: | State: Zip: |
| Phone #: | Fax #: |
| Project #: | Project Owner: |
| Project Name: | Mel Rose Conoco 7 St. 3 T.K. |
| Project Location: | |
| Sampler Name: | KEVIN WOMAC |

**BILL TO**

| | |
|---|---|
| P.O. #: | |
| Company: | |
| Attn: | |
| Address: | |
| City: | |
| State: Zip: | |
| Phone #: | |
| Fax #: | |

**ANALYSIS REQUEST**

| FOR LAB USE ONLY Lab I.D. | Sample I.D. | (G)RAB OR (C)OMP. | # CONTAINERS | MATRIX: GROUNDWATER | WASTEWATER | SOIL | OIL | SLUDGE | OTHER: | PRESERV: ACID/BASE: | ICE / COOL | OTHER: | SAMPLING DATE | TIME | 8015M | Cl- |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H19066-1 | East Pile Blend | C | 1 | | | X | | | | | X | | 1-14-10 | 1355 | 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 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.

Terms and Conditions: Interest will be charged on all accounts more than 30 days past due at the rate of 24% per annum from the original date of invoice, and all costs of collections, including attorney's fees.

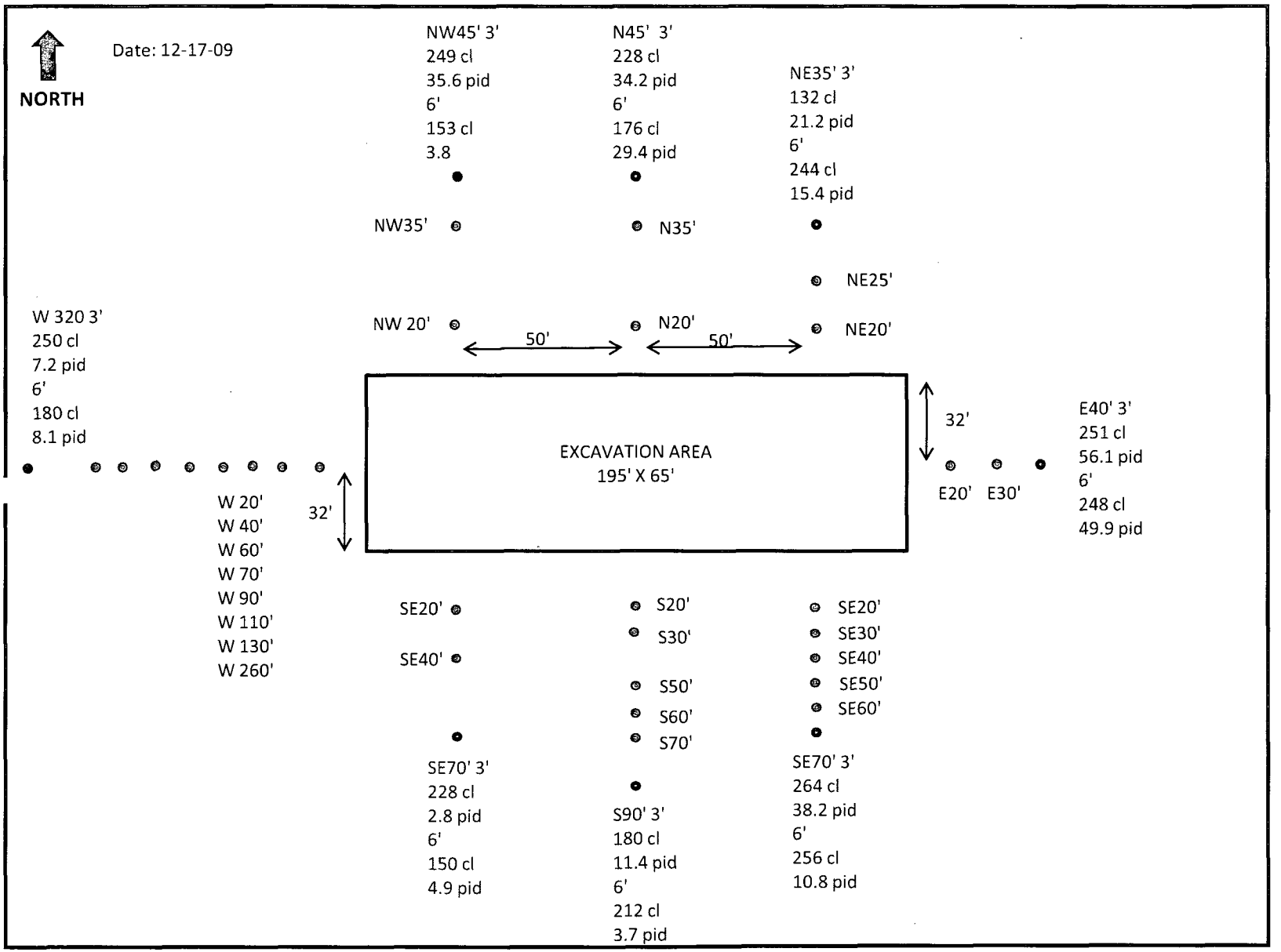
| | | | |
|---|---|---|---|
| Sampler Relinquished: | Date: 1-14-10 | Received By: | |
| K WOMAC | Time: 1400 | Roy R. Roscoe | |
| Relinquished By: | Date: 1-14-10 | Received By: | |
| Roy R. Roscoe | Time: 1424 | Nicki Henson | |
| Delivered By: (Circle One) | Temp. | Sample Condition: Cool ☑ Yes ☐ No; Intact ☑ Yes ☐ No | CHECKED BY: (Initials) |
| Sampler - UPS - Bus - Other: | 4°C | | JH |

Phone Result: ☐ No Add'l Phone #:
Fax Result: ☐ No Add'l Fax #:
REMARKS: Please Email to All.

† Cardinal cannot accept verbal changes. Please fax written changes to 575-393-2476.

#26

**Chloride Field Titration Results and Sample Points**
**Melrose Conoco 7 State 3 Tank Battery**



# CL- FIELD TITRATION RESULTS

LOCATION: MELROSE OPERATING CONOCO 7 ST. #3 TANK BATTERY

DEPTH TO GW: 140' TO 150' according to Chevron/Texaco Eddy Co. depth to gw map

| Sample pt. | DEPTH | SOIL | WATER | CF | AGNO3 | CL- | PID | Soil Lithology |
|---|---|---|---|---|---|---|---|---|
| Bore #1 W. end of excavation | 17'bgs | 14.8 | 30.2 | 2.04 | 0.38 | 2584 | 2.4 | 2.5YR-6/4 light reddish brown, silty clayey soil damp |
| | 22'bgs | 8.3 | 31.4 | 3.78 | 0.95 | 3593 | 3.6 | 2.5YR-5/4 reddish brown, sandy silty clayey soil damp |
| | 27'bgs | 13.2 | 29.5 | 2.23 | 0.31 | 2309 | 6.9 | 10R-3/3 dusky red, red bed clay damp |
| | 32'bgs | 13.2 | 29.1 | 2.20 | 0.37 | 2039 | 25.9 | 10R-3/3 dusky red, red bed clay damp |
| | 37'bgs | 10.5 | 33 | 3.14 | 0.1 | 628 | 36.8 | 10R-3/3 dusky red, red bed clay damp |
| Bore #2 Middle of excavation | 9'bgs | 5.9 | 35.3 | 5.98 | 1.12 | 6699 | 2.1 | 2.5YR-7/2 pale red sandy caliche damp |
| | 14'bgs | 7.1 | 34.3 | 4.83 | 0.82 | 3960 | 2.4 | 2.5YR-7/3 light reddish brown caliche damp |
| | 19'bgs | 8.4 | 31.6 | 3.76 | 1.11 | 4174 | 2.6 | 10R-3/4 dusky red, red bed clay damp |
| | 24'bgs | 8 | 37.4 | 4.68 | 0.95 | 4440 | 2.6 | 10R-3/4 dusky red, red bed clay damp |
| | 27'bgs | 8.4 | 35.5 | 4.23 | 0.92 | 3887 | 2.8 | 10R-3/4 dusky red, red bed clay damp |
| Back Ground Bore 200' SE | Surface | 14.7 | 24.9 | 1.69 | 0.02 | 34 | 1.2 | 2.5YR-3/3 dar, reddish brown sandy sand damp |
| | 5'bgs | 8.8 | 31.2 | 3.55 | 0.02 | 71 | 1.1 | 2.5YR-7/3 pinkish white sandy rocky caliche dry |
| | 10'bgs | 8.3 | 29 | 3.49 | 0.02 | 70 | 1.7 | 2.5YR-7/3 light reddish brown sandy rocky caliche dry |

Field titration preformed by Kevin Womac & Roy R. Rascon PID calibrated using Isobutlyene Lot # 923031 , PID Model # PGM7600, Serial # 110-007139, Calibration reading 102ppm on 12-10-09

QP-96B

**WHOLE EARTH ENVIRONMENTAL**
**QUALITY PROCEDURE**

# Sampling and Testing Protocol
# Chloride Analysis by Argentometric Titration
# Soil Water Extract or Groundwater

Completed By: Approved By: Effective Date: / /

## 1.0 Purpose

This procedure is to be used to determine the concentrations of chlorides in soils, soil water and groundwater.

## 2.0 Scope

This procedure is to be used as the standard field measurement for soil chloride concentrations in a water extract using the principle that potassium chromate ($K_2CrO_4$) can indicate the endpoint of the silver nitrate ($AgNO_3$) titration. A salmon or pinkish yellow endpoint is readily recognized before red silver chromate is formed.

## 3.0 Sample Collection and Preparation

3.1 Collect at least 250 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. Unless defined as a discrete soil boring, prepare a composite sample of soils obtained at several points in the sample area, (insuring to pull the same approximate amount of soil from ea. sample pt). 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 40 ml vial and add approximately 10gm of soil, record amount.

4.2 Tare and add approximately 30 ml of distilled water, and record volume amount.

4.3 Take 40 ml vial and cap, and shake vigorously for approximately 30 sec. Allow to stand 3 min then shake again. Repeat extraction process a total of 3 times.

4.4 Allow the sample to set for a period, (depending on type of soil approximately 3 to 20 min), or until soil and water have separated enough to extract 10 ml of clear water.

4.5 Sample may be cleared if necessary by centrifugation or vacuum filtration using 0.45 u filter.

**5.0 Titration Procedure**

5.1 Using a graduated pipette, remove sample aliquot from the 40 ml vial, dispense into a clean plastic cup, and record volume amount.

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 graduated 1/100, 1 ml pipette, carefully add $AgNO_3$ solution to salmon or pinkish yellow endpoint. Be consistent with endpoint recognition between standards and samples.

5.5 Record the amount of silver nitrate used.

**6.0 Calculation**

6.1 Soil Chloride. To obtain the chloride concentration, insert measured data into the following formula:

$$\text{mg Cl/kg} = \frac{A \times B \times C \times 35.45 \text{ mg Cl/meq} \times 1000 \text{ g/kg}}{D \times E}$$

where:

A = normality of $AgNO_3$, meq/ml

B = ml $AgNO_3$ used to titrate sample
C = total volume distilled water used to extract sample, ml
D = volume aliquot sample to be titrated, ml
E = sample wt, g

6.2 Groundwater Chloride. To obtain the chloride concentration, insert measured data into the following formula:

$$\text{mg Cl/liter} = \frac{A \times B \times 35.45 \text{ mg Cl/meq} \times 1000 \text{ ml/liter}}{\text{ml sample}}$$

where:
A = normality of $AgNO_3$, meq/ml
B = ml $AgNO_3$ used to titrate sample

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.

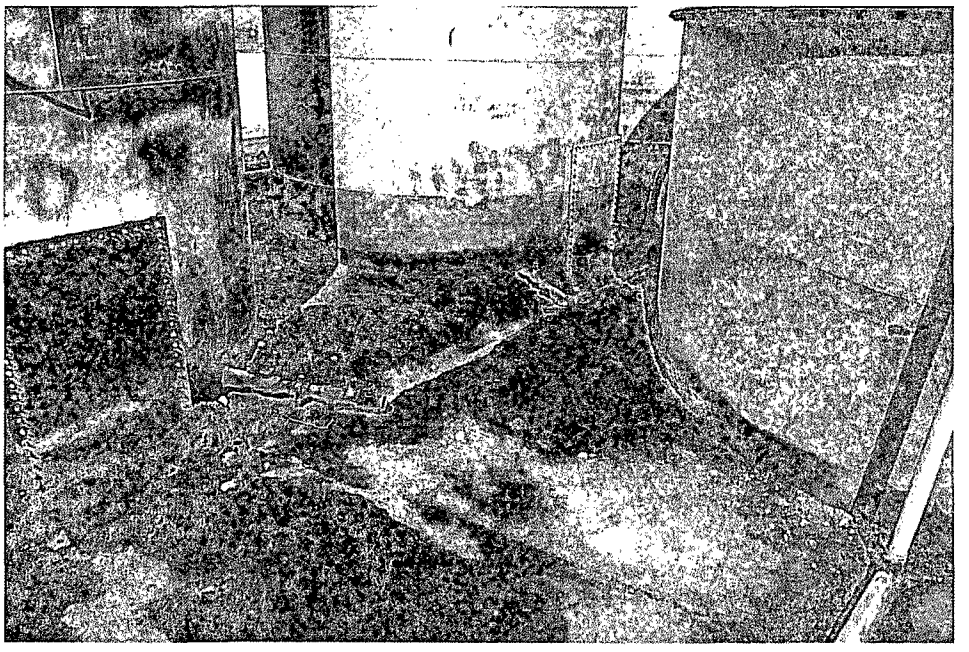
**6.0 Documentation**

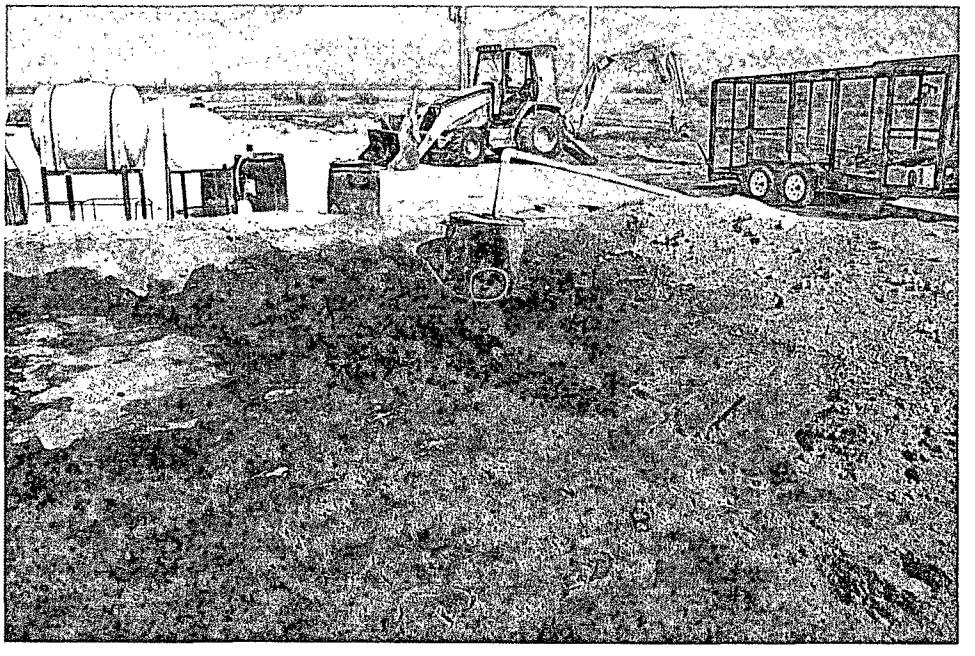
6.1 The testing laboratory shall provide the following minimum information:

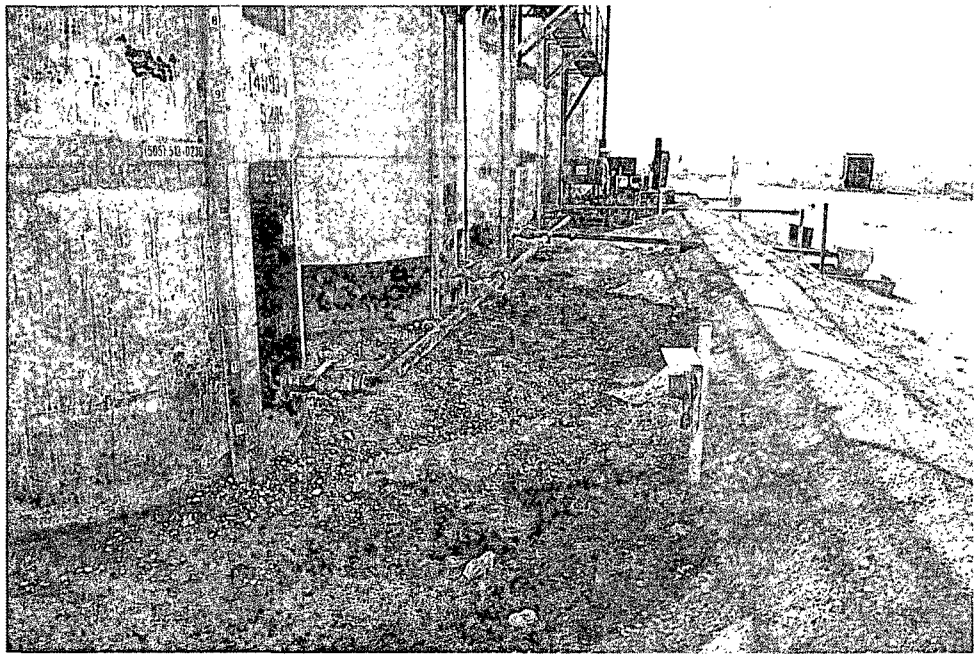
A. Client, Project and sample name.
B. Signed copy of the original Chain of Custody Form including data on the time the sample was received by the lab.
C. Results of the requested analyses
D. Test Methods employed
E. Quality Control methods and results

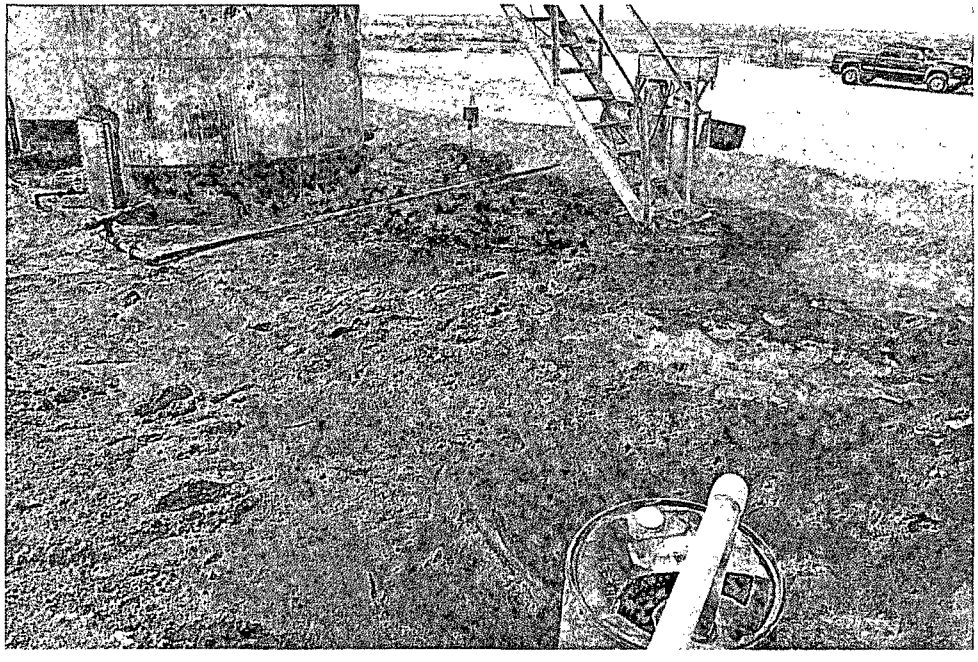
## Photographic Narrative of Significant Events

On September 9, 2009 Melrose discovered a leak caused by the failure of line to the heater-treater resulting in hydrocarbons being spilled within the containment berms.

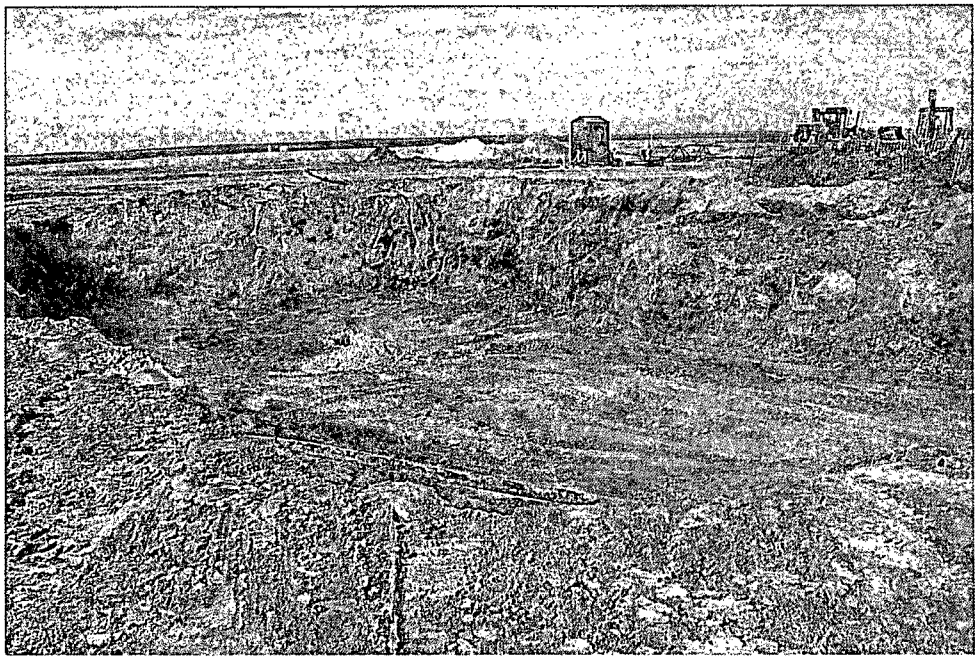




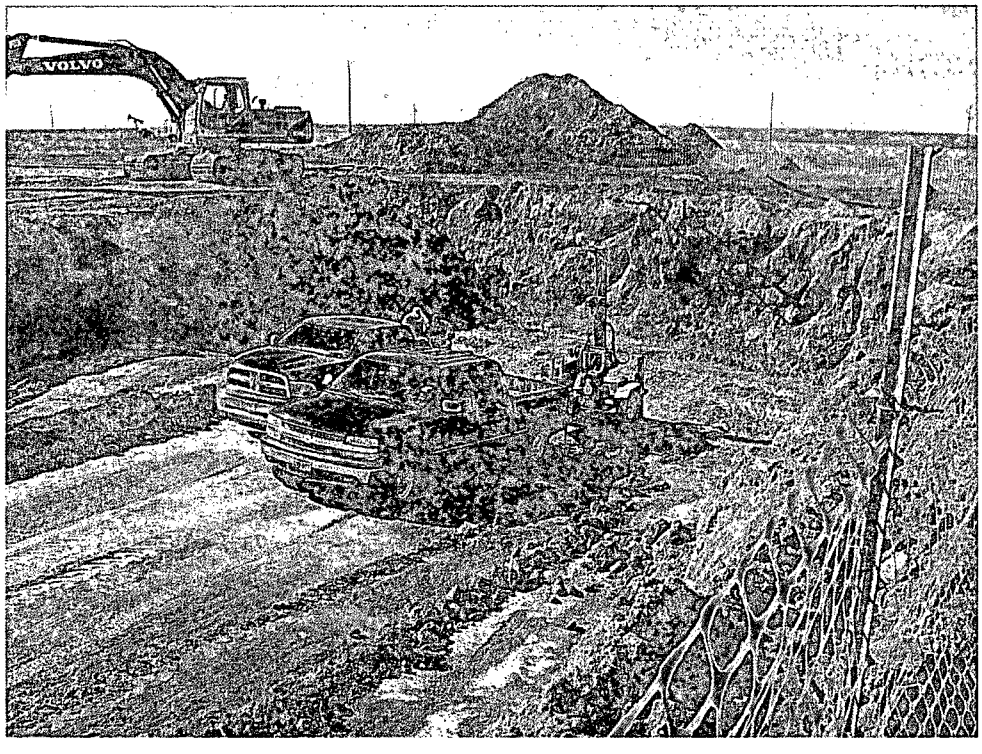




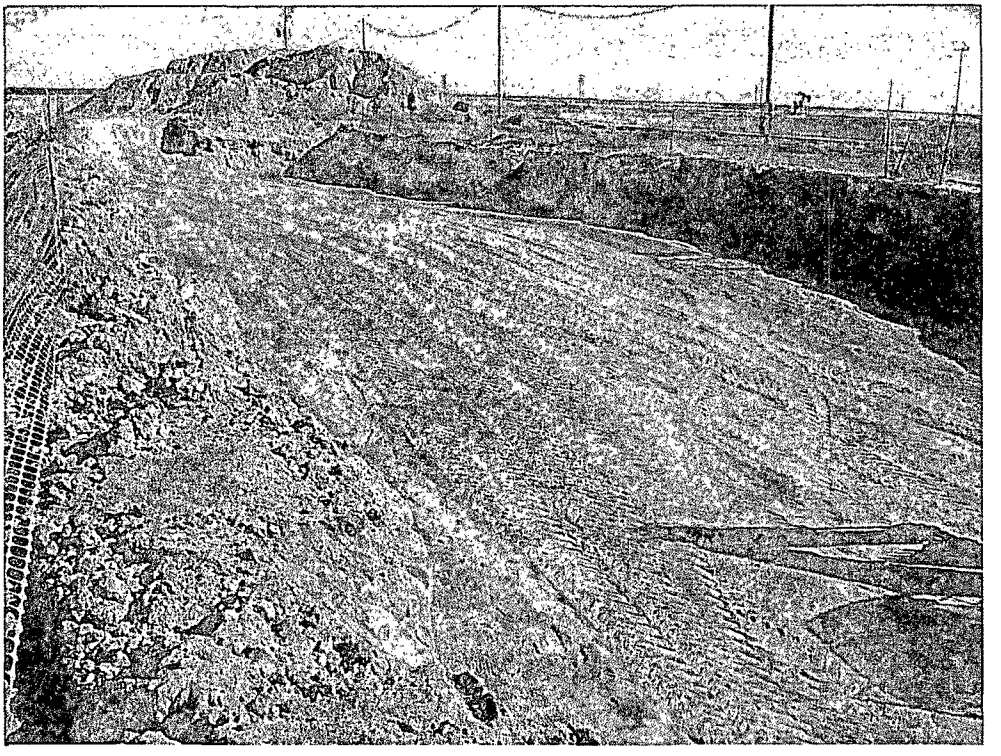
By December 9, 2009 the affected area was excavated and contaminated soils were sent to commercial disposal.



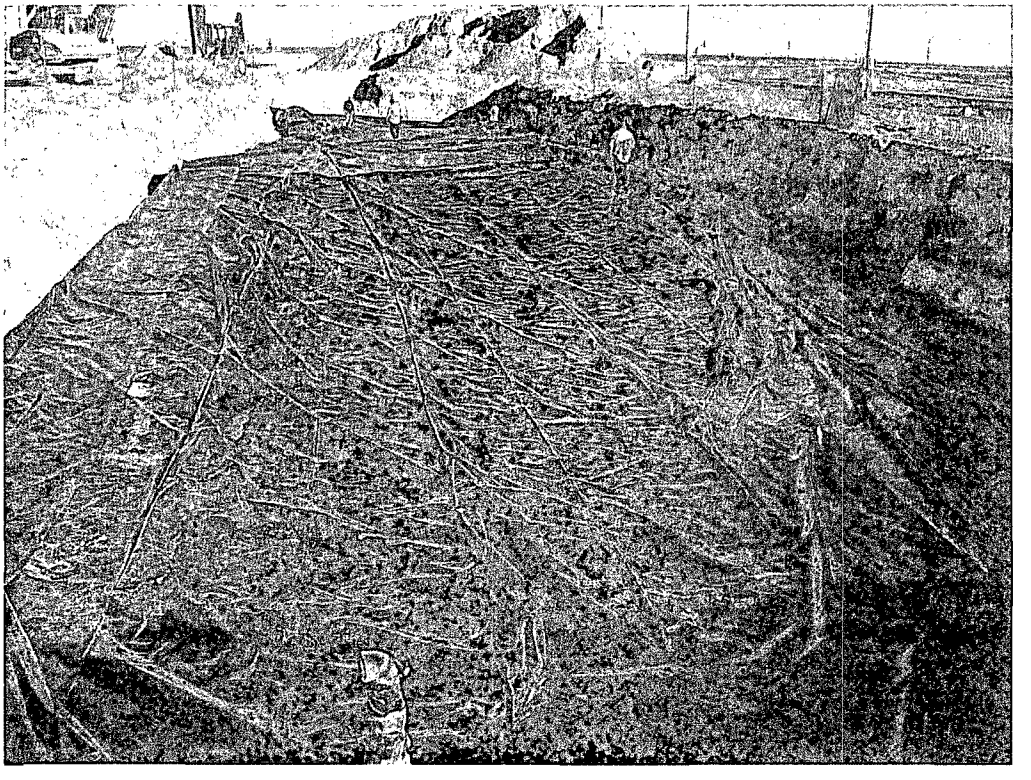
By December 13 the site was vertically and laterally delineated using deep coring and surface (3' & 6') excavations.



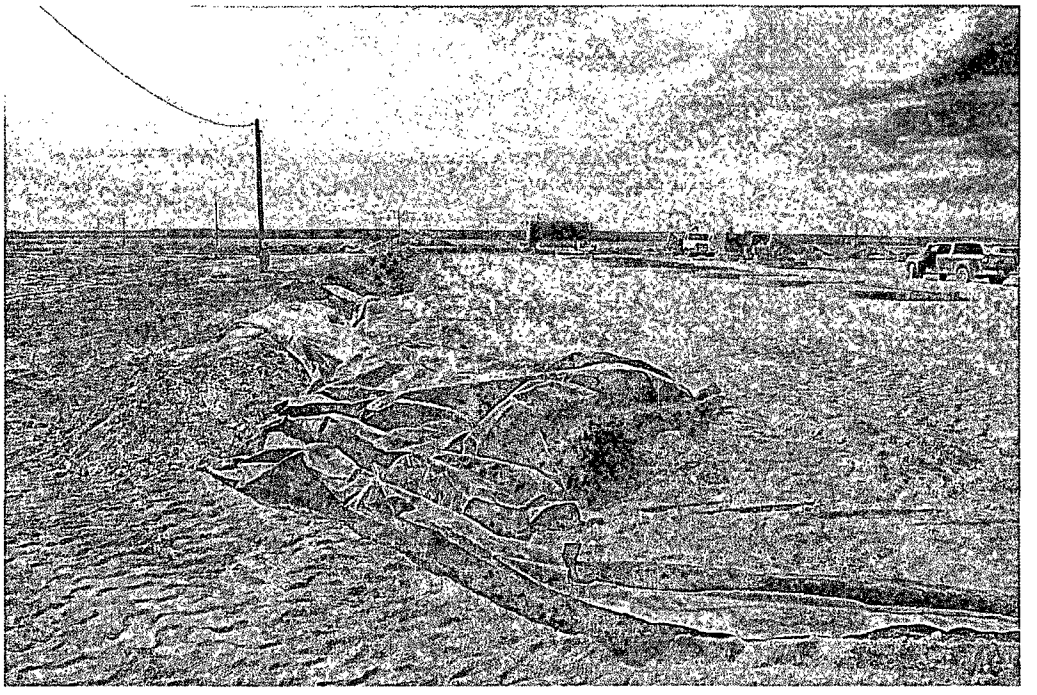
On December 15th the excavated area was prepared for lower liner installation.



The lower liner was set at an average depth of five feet below ground surface.



The upper liner was set & tied into the containment berms.



Final containment rings and gravel were placed below the newly installed tanks.