

CLOSURE DOCUMENTATION

LOU WORTHAN PRODUCED WATER RELEASE

NMOCD 1RP # 490

EPI REF: #160045

UL-D (NW¼ OF THE NW¼) OF SECTION 11 T22S R37E

~3 MILES SOUTHEAST OF EUNICE

LEA COUNTY, NEW MEXICO

LATITUDE: N 32° 24' 39.18"

LONGITUDE: W 103° 08' 23.09"

JULY 2006

PREPARED BY:

ENVIRONMENTAL PLUS, INC.

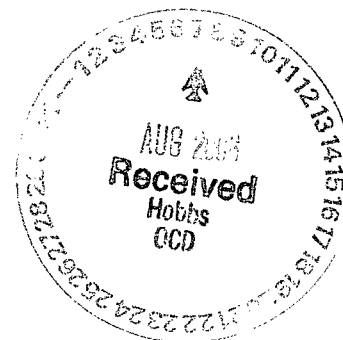
2100 AVENUE O

EUNICE, NEW MEXICO

88231

PREPARED FOR:


Chesapeake



RP# 490
application pFAC 0604 727837



NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON

Governor

Joanna Prukop

Cabinet Secretary

Mark E. Fesmire, P.E.

Director

Oil Conservation Division

August 15, 2006

Brad Blevins bblevins@chkenergy.com
Chesapeake Energy
West Bender Ave
Hobbs, NM 88240

Re: OCD Site Remediation No. 1RP-490
 Remediation Closure: Chesapeake Lou Worthan Site
 Site Reference: UL- D, Sec. 11 T-22S R-37E
 Initial C-141 Spill Date: 01-20-2006
 Closure Report Date: 08-07-2006

Dear Mr. Blevins,

The referenced **closure report** submitted to the New Mexico Oil Conservation Division (NMOCD) by Environmental Plus, Inc. as agent for Chesapeake Operating is **hereby approved**. Based on the information provided no further action is required at this time.

Please be advised that NMOCD approval of this plan does not relieve Chesapeake Operating of responsibility should remaining contaminants pose a future threat to ground water, surface water, human health or the environment. Additionally, NMOCD approval does not relieve Chesapeake Energy of responsibility for compliance with any other federal, state, or local laws and/or regulations.

If you have any questions or need assistance, please call me at (505) 393-6161, x111 or email larry.johnson@state.nm.us

Sincerely,

A handwritten signature in black ink that reads "Larry Johnson".

Larry Johnson - Environmental Engineer

Cc:

Chris Williams - District I Supervisor
Patricia Caperton - District 1 Environmental Tech



Distribution List

Site Characterization

Lou Worthan Produced Water Release

Ref. #160045

Name	Title	Company or Agency	Mailing Address	e-mail
Larry Johnson	Environmental Engineer	New Mexico Oil Conservation Division – Hobbs	1625 French Drive Hobbs, NM 88240	larry.johnson@state.nm.us
Bradley Blevins	Field Supervisor	Chesapeake Operating, Inc.	P.O. Box 190 Hobbs, NM 88240-0190	bblevins@chkenergy.com
Curtis Blake	Superintendent	Chesapeake Operating, Inc.	P.O. Box 190 Hobbs, NM 88240-0190	cblake@chkenergy.com
Harlan Brown	Senior Environmental Representative	Chesapeake Operating, Inc.	6100 N. Western Avenue Oklahoma City, OK 73118	hbrown@chkenergy.com
Irvin Boyd	Landowner	--	P.O. Box 121 Eunice, New Mexico 88231	--
File	--	Environmental Plus, Inc.	P.O. Box 1558 Eunice, NM 88231-1558	iolness@envplus.net



STANDARD OF CARE


Site Characterization

Lou Worthan Produced Water Release

Ref. #160045


The information provided in this report was collected consistent with the New Mexico Oil Conservation Division (NMOCD) *Guidelines for Remediation of Leaks, Spills and Releases* (August 13, 1993), the NMOCD *Unlined Surface Impoundment Closure Guidelines* (February, 1993) and Environmental Plus, Inc. (EPI) *Standard Operating Procedures and Quality Assurance/Quality Control Plan*. The conclusions are based on field observations and laboratory analytical reports as presented in the report. Recommendations follow NMOCD guidance and represent the professional opinions of EPI staff. These opinions were derived using currently accepted geologic, hydrogeologic and engineering practices at this time and location. The report was prepared or reviewed by a certified or registered professional with a background in engineering, environmental and/or natural sciences.

This report was prepared by:


Jason Stegemoller, M.S.
Environmental Scientist


Date

This report was reviewed by:


Iain A. Olness, P.G.
Technical Manager



Date



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1.0 PROJECT SYNOPSIS

Site Specific:

- ◆ **Company Name:** Chesapeake Operating, Inc.
- ◆ **Facility Name:** Lou Worthan Produced Water Release
- ◆ **Project Reference:** 160045
- ◆ **Company Contacts:** Bradley Blevins
- ◆ **Site Location:** WGS84 N32° 24' 39.18"; W103° 08' 23.09"
- ◆ **Legal Description:** Unit Letter-D, (NW¼ of the NW¼), Section 11, T 22 S, R 37 E
- ◆ **General Description:** Approximately 3-miles southeast of Eunice, New Mexico
- ◆ **Elevation:** 3,368-ft amsl
- ◆ **Land Ownership:** Irvin Boyd
- ◆ **EPI Personnel:** Project Consultant – Iain Olness
Site Foreman – Gil Urquidez

Release Specific:

- ◆ **Product Released:** Produced Water
- ◆ **Volume Released:** ~150-barrels **Volume Recovered:** ~130-barrels
- ◆ **Time of Occurrence:** 20 January 2006 at 02:00 **Time of Discovery:** 20 January 2006 at 08:00
- ◆ **Release Source:** Water transfer line ruptured
- ◆ **Initial Surface Area Affected:** ~ 7,800 square-feet

Remediation Specific:

- ◆ **Final Vertical extent of contamination:** 10-feet bgs (at maximum)
- ◆ **Depth to Ground Water:** Approximately 117-ft
- ◆ **Water wells within 1,000-ft:** 0
- ◆ **Private domestic water sources within 200-ft:** 0
- ◆ **Surface water bodies within 1,000-ft:** 0
- ◆ **NMOCD Site Ranking Index:** 0 points (>100-ft to top of water table and >1,000-ft to water wells and surface water bodies)
- ◆ **Remedial goals for Soil:** TPH – 5,000 mg/Kg; BTEX – 50 mg/Kg; Benzene – 10 mg/Kg; Chloride and sulfate residuals may not be capable of impacting groundwater above NMWQCC groundwater standards of 250 mg/Kg and 600 mg/Kg, respectively.
- ◆ **RCRA Waste Classification:** Exempt
- ◆ **Remediation Option Selected:** a) Excavation of contaminated soil above NMOCD remedial goals and/or NMWQCC groundwater standards with disposal at Sundance Services, Inc.; b) laboratory analyses to confirm removal of soil impacted above NMOCD remedial thresholds and NMWQCC groundwater standards in excavation bottom; and c) backfill excavation with clean soil and grade/contour to allow natural drainage
- ◆ **Disposal Facility:** Sundance Services, Inc.- Eunice, New Mexico
- ◆ **Volume disposed:** 1,820-yd³
- ◆ **Project Completion Date:** 22 March 2006



2.0 **SITE AND RELEASE INFORMATION**

2.1 ***Describe the land use and pertinent geographic features within 1,000 feet of the site.***
Land surrounding the area is rangeland in native grasses and would be utilized for livestock grazing.

2.2 ***Identify and describe the source or suspected source(s) of the release.***
Structural integrity of water transfer line was compromised.

2.3 ***What is the volume of the release? (if known):*** 150 barrels of Produced Water

2.4 ***What is the volume recovered? (if any):*** 130 barrels

2.5 ***When did the release occur? (if known):*** 20 January 2006 at 02:00 a.m.

2.6 ***Geological Description***

The United States Geological Survey (USGS) Ground-Water Report 6, "*Geology and Ground-water Conditions in Southern Lea County, New Mexico*," A. Nicholson and A. Clebsch, 1961, describes the near surface geology of southern Lea County as "an intergrade of the Quaternary Alluvium (QA) sediments (i.e., fine to medium sand) with the mostly eroded Cenozoic Ogallala (CO) formation. Typically, the QA and CO formations in the area are capped by a thick interbed of caliche and generally overlain by sandy soil."

The release site is located in the Eunice Plains physiographic subdivision, described by Nicholson & Clebsch as an area that "is underlain by a hard caliche surface and is almost entirely covered by reddish-brown dune sand. The sand cover is 2 to 5 feet thick over most of the area."

2.7 ***Ecological Description***

The area is typical of the Upper Chihuahuan Desert Biome consisting primarily of sandy soil covered with short, semi-arid grasses, interspersed with Honey Mesquite and forbs. Mammals represented include Orrd's and Merriam's Kangaroo Rats, Deer Mouse, White Throated Wood Rat, Cottontail Rabbit, Black Tailed Jackrabbit, Mule Deer, Bobcat, Red Fox and Coyote. Reptiles, amphibians and birds are numerous and typical of the area. A survey of Listed, Threatened or Endangered species was not conducted.

2.8 ***Area Groundwater***

The unconfined groundwater aquifer at this site is projected to be approximately 117-ft bgs based on water depth data obtained from the New Mexico State Engineers Office and the United States Geological Survey data base (reference *Table 1*).

2.9 ***Area Water Wells***

There are no water supply wells located within a 1,000-foot radius of the release site as indicated by USGS water well data. In addition, there are no private, domestic fresh water wells or springs used by less than five households for domestic or stock watering purposes located within a 200-foot radius of the release site (reference *Figure 2*).

2.10 ***Area Surface Water Features***

There are no surface water features within a 1,000 foot radius of the release site.



3.0 NMOCD SITE RANKING

Contaminant delineation and remedial work done at this site indicate chemical parameters of the soil and physical parameters of the groundwater were characterized consistent with the characterization and remediation/abatement goals and objectives set forth in the following New Mexico Oil Conservation Division (NMOCD) publications:

- ♦ *Guidelines for Remediation of Leaks, Spills and Releases (August 13, 1993)*
- ♦ *Unlined Surface Impoundment Closure Guidelines (February, 1993)*
- ♦ *Pit and Below-Grade Tank Guidelines (November, 2004)*

Acceptable thresholds for contaminants/constituents of concern (CoC) were determined based on the NMOCD Ranking Criteria as follows:

- ♦ *Depth to Groundwater (i.e., distance from the lower most acceptable concentration to groundwater);*
- ♦ *Wellhead Protection Area (i.e., distance from fresh water supply wells);*
- ♦ *Distance to Surface Water Body (i.e., horizontal distance to all down gradient surface water bodies).*

Based on the proximity of the site to protectable area water wells, surface water bodies, and depth to groundwater from the lower most contamination, the NMOCD ranking score for the site is zero points with the soil remedial goals highlighted in the Site Ranking table presented below:

1. GROUNDWATER	2. WELLHEAD PROTECTION AREA	3. DISTANCE TO SURFACE WATER	
Depth to GW <50 feet: 20 points	If <1,000' from water source, or <200' from private domestic water source: 20 points	<200 horizontal feet: 20 points	
Depth to GW 50 to 99 feet: 10 points		200-1,000 horizontal feet: 10 points	
Depth to GW >100 feet: 0 points	If >1,000' from water source, or >200' from private domestic water source: 0 points	>1,000 horizontal feet: 0 points	
Site Rank (1+2+3) = 0 +0 +0 = 0 points			
Total Site Ranking Score and Acceptable Remedial Goal Concentrations			
Parameter	20 or >	10	0
Benzene ¹	10 ppm	10 ppm	10 ppm
BTEX ¹	50 ppm	50 ppm	50 ppm
TPH	100 ppm	1,000 ppm	5,000 ppm

¹ A field soil vapor headspace measurement of 100 ppm can be substituted in lieu of laboratory analyses for benzene and BTEX.



4.0 **EXCAVATED SOIL INFORMATION**

4.1 ***Was soil excavated for off-site treatment or disposal?*** ☒ ***Yes*** ☐ ***No***

Date excavated: January 20 – 23, 2006

Total volume removed: Approximately 1,820 cubic yards

4.2 ***Indicated soil treatment type:***

<input checked="" type="checkbox"/>	<i>Disposal</i>
<input type="checkbox"/>	<i>Land Treatment</i>
<input type="checkbox"/>	<i>Composting/Biopiling</i>
<input type="checkbox"/>	<i>Other ()</i>

Name and location of ~~treatment~~/disposal facility:

Sundance Services, Inc. – Eunice, New Mexico



5.0 **SAMPLING INFORMATION**

5.1 ***Briefly describe the field screening methods used to distinguish contaminated from uncontaminated soil.***

Organic Vapor Concentrations – A portion of each soil sample collected was inserted into a self-sealing polyethylene bag to allow volatilization of organic vapors. After the samples equilibrated to ~70° F, they were analyzed for organic vapors utilizing a MiniRae® Photoionization Detector (PID) equipped with a 10.6 electron volt (eV) lamp.

Chloride Concentrations – A LaMotte Chloride Test Kit was utilized for field analyses of chloride concentration.

5.2 ***Briefly describe the soil analytical sampling and handling procedures used.***

Soil samples collected from the excavation were collected utilizing hand and/or mechanical excavation equipment to gather the sample from at least 6-inches below/within the surface of the excavation.

Upon collection of each sample, a portion was immediately placed in a laboratory provided container, labeled and set on ice for transport to an independent laboratory for quantification of total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene and total xylenes (BTEX), chloride and sulfate concentrations .

5.3 ***Discuss sample locations and provide rationale for their locations.***

On January 21, 2006, soil samples were collected from a background location and nine sample locations within the excavation for field analyses. Soil sample locations were chosen to provide the best representative example of soil for site delineation.

Upon completion of excavation activities, soil samples were collected on January 24, 2006 from the excavation floor (BH-1 through BH-6) for field and laboratory analyses (reference *Figure 4*). Soil sample locations were chosen to provide the best representative example of soil within the excavation floor.



6.0 ANALYTICAL RESULTS

6.1 *Describe the vertical and horizontal extent and magnitude of soil contamination.*

Field analyses of soil samples collected on January 21, 2006 from the excavation floor at one-foot bgs indicated chloride concentrations ranged from 240 to 2,160 mg/Kg. Field chloride analyses of the background sample indicated a concentration of 120 mg/Kg (reference *Table 2*).

Laboratory analyses of soil samples collected on January 24, 2006 from the excavation floor indicated TPH and BTEX constituent concentrations were non-detectable (ND) at or above laboratory method detection limits. Reported chloride concentrations ranged from ND to 699 mg/Kg. Sulfate concentrations were reported to range from 12 to 299 mg/Kg (reference *Table 2*, *Figure 4* and *Appendix I*).

6.2 *Is surface soil contamination present at the site (i.e., soil in the uppermost two feet that is visibly stained, contaminated at greater than 10 ppm (PID) or hydrocarbon saturated)?*

☐ *yes* ☒ *no*

If yes, attach a site map identifying extent(s) of surface soil contamination.

Visibly stained soil has been excavated and transported to the Sundance Services, Inc. for disposal. Field and laboratory analyses indicate hydrocarbon impacted soil has been excavated from the release area.



7.0 **DISCUSSION**

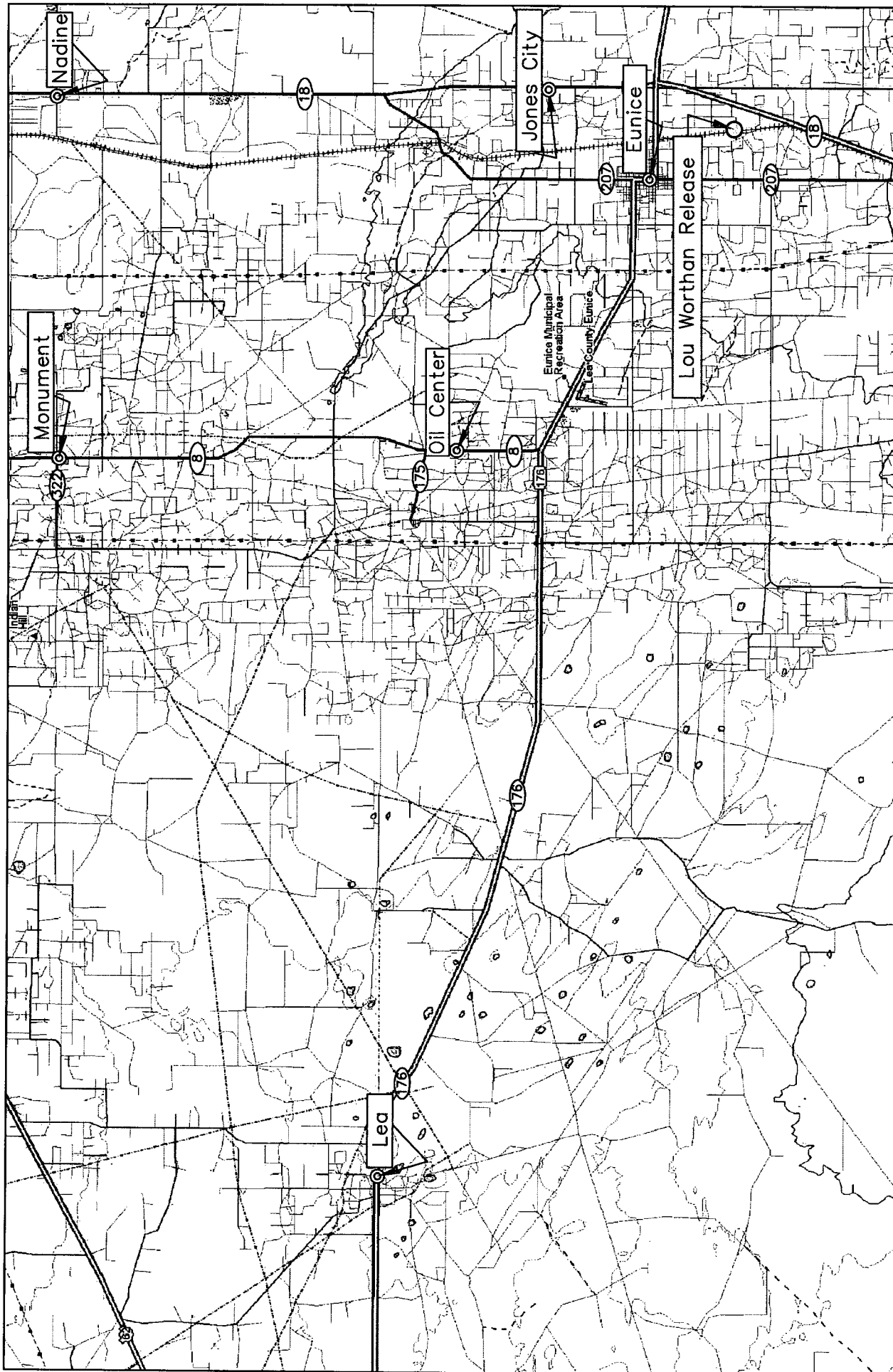
7.1 ***Discuss the risks associated with the remaining soil contamination:***

Based on depth to groundwater (approximately 117-ft bgs), chloride residuals should not be capable of impacting local groundwater above the NMWQCC groundwater standard of 250 mg/L.

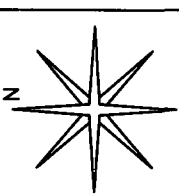
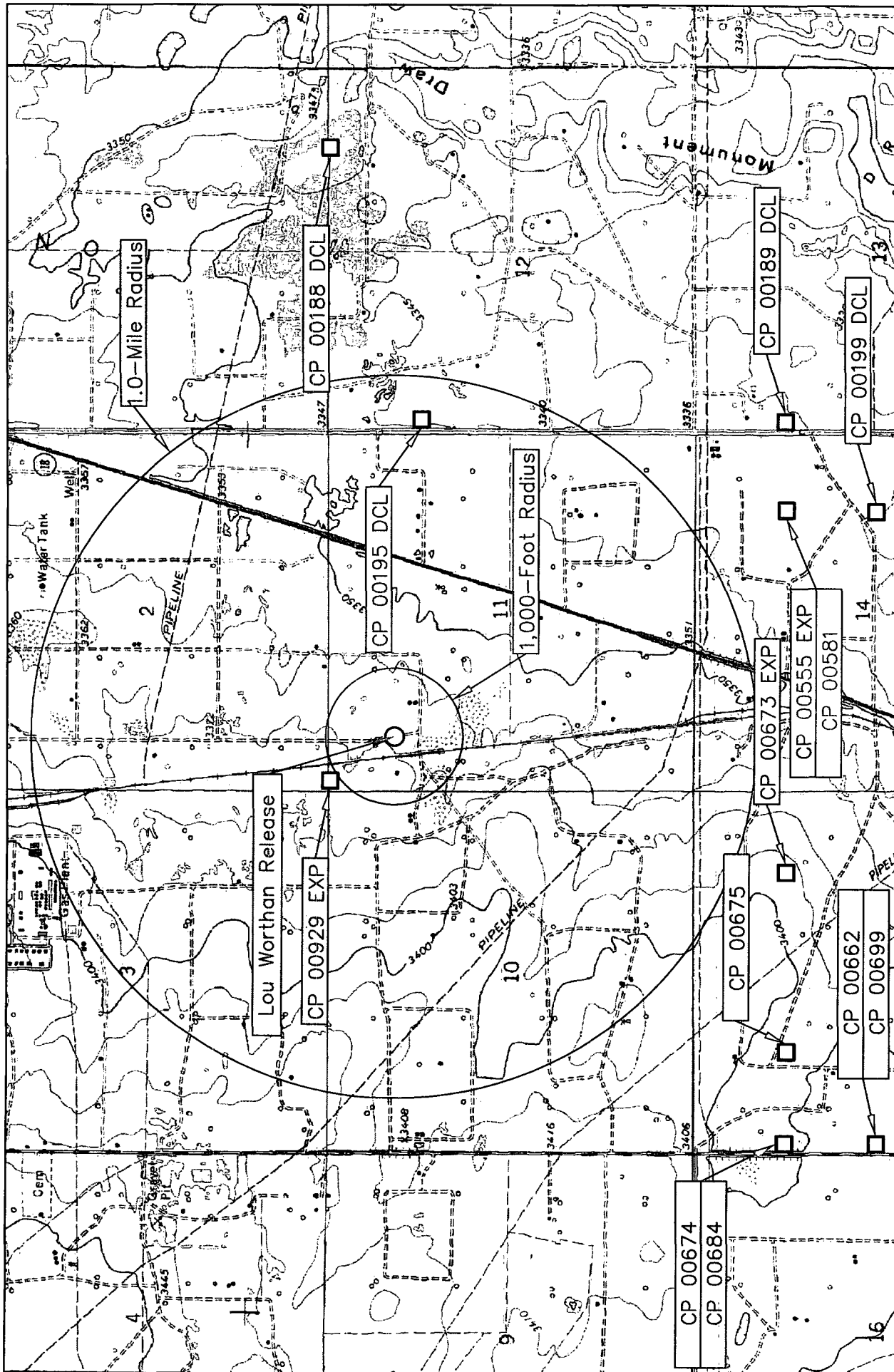
7.2 ***Discuss the risks associated with the impacted groundwater:*** Not Applicable

7.3 ***Discuss other concerns not mentioned above:*** Not Applicable

FIGURES



<p>Figure 1 Area Map Chesapeake Energy Lou Worthan Produced Water Release</p>	<p>Lea County, New Mexico NW 1/4 of the NW 1/4, Sec. 11, T22S, R37E N 32° 24' 39.18" W 103° 08' 23.09" Elevation: 3,368 feet amsl</p>	<p>DWG By: Daniel Dominguez January 2006</p> <p>REVISD:</p> <p>0 3.0 6.0 Miles</p> <p>SHEET 1 of 1</p>
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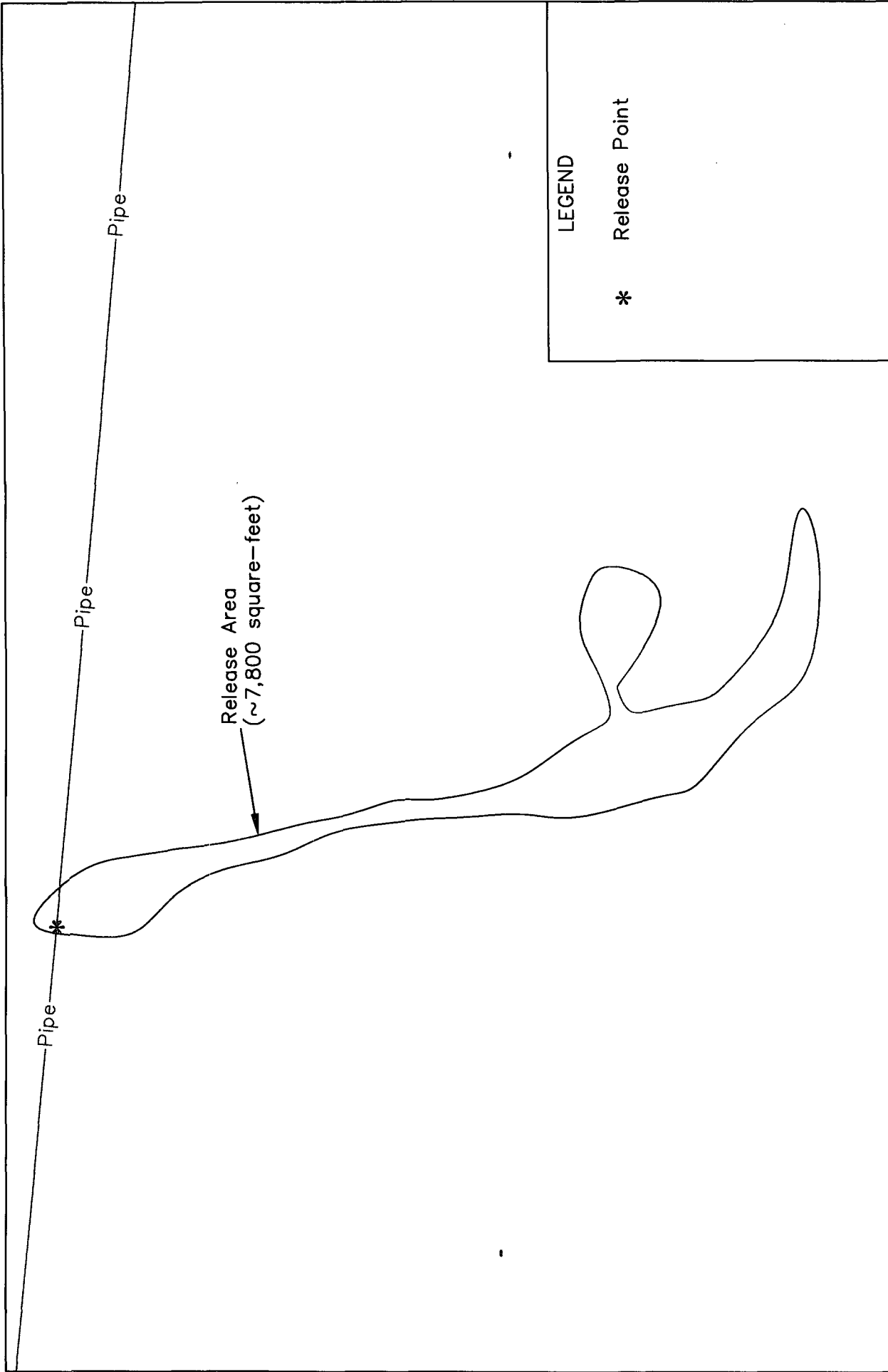


REVISED:
DWG By: Daniel Dominguez
January 2006

0 2000 4000 SHEET
1 of 1

Lea County, New Mexico
NW 1/4 of the NW 1/4, Sec. 11, T22S, R37E
N 32° 24' 39.18" W 103° 08' 23.09"
Elevation: 3,368 feet amsl

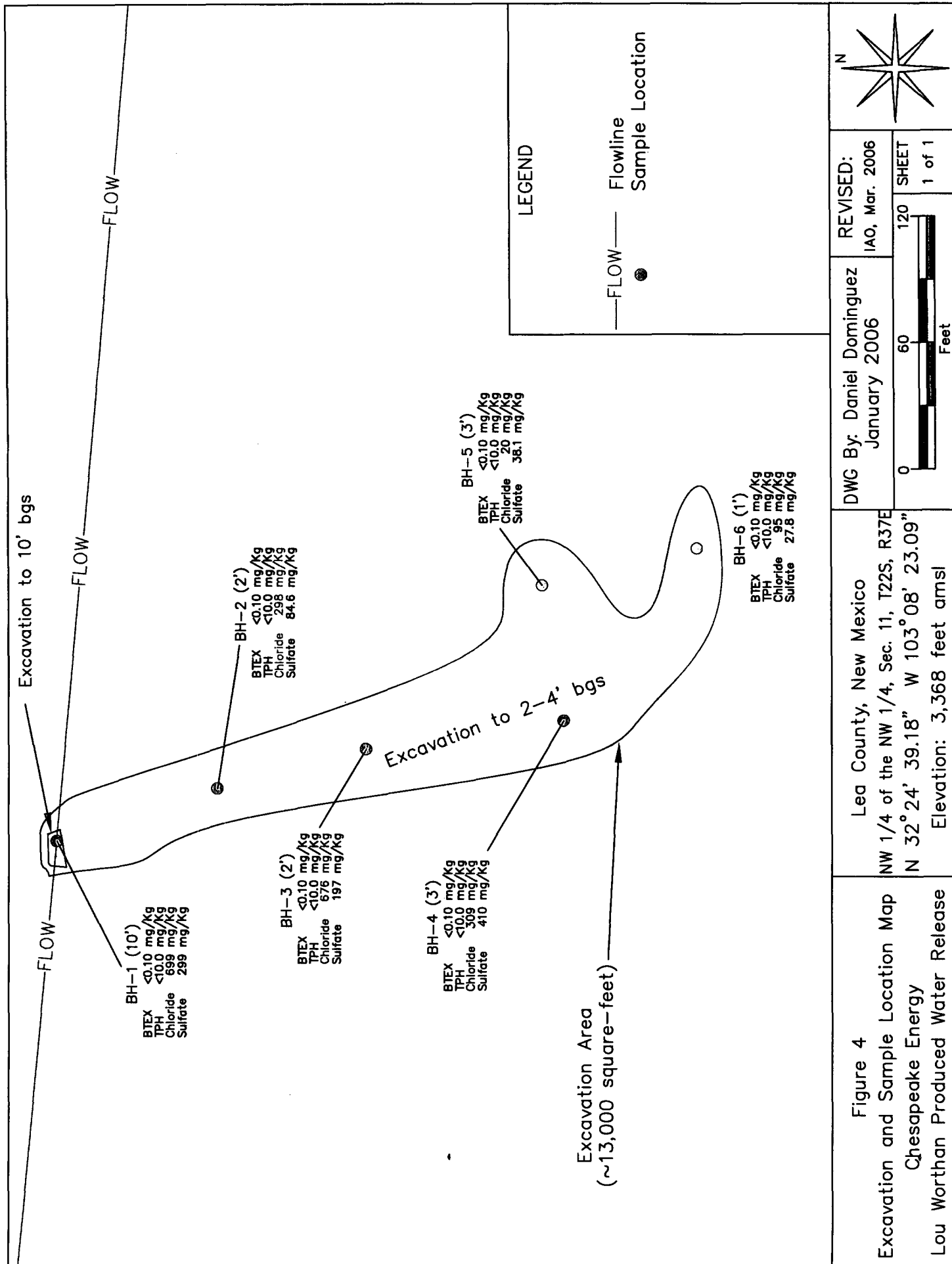
Figure 2
Site Location Map
Chesapeake Energy
Lou Worthan Produced Water Release



LEGEND

- * Release Point

<p>Figure 3 Site Map Chesapeake Energy Lou Worthan Produced Water Release</p>	<p>Lea County, New Mexico NW 1/4 of the NW 1/4, Sec. 11, T22S, R37E N 32° 24' 39.18" W 103° 08' 23.09" Elevation: 3,368 feet amsl</p>	<p>DWG By: Daniel Dominguez January 2006</p> <p>REVISID:</p> <p>0 25 50 Feet</p> <p>SHEET 1 of 1</p>	<p>N</p>
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TABLES

TABLE 1

Well Data

Chesapeake Energy - Lou Worthan Produced Water Release (Ref. # 160045)

Well Number	Diversion ^A	Owner	Use	Twsp	Rng	Sec q q q	Latitude	Longitude	Date Measured	Surface Elevation ^B	Depth to Water (ft bgs)
CP 00188 DCL	0	GEORGE W. SIMS	DOM	22S	37E	01 4 4 4	N32° 24' 48.51"	W103° 06' 42.84"		3,349	
CP 00929 EXPLORE	0	STATE OF NM STATE ENGINEER	EXP	22S	37E	02 3 3 3	N32° 24' 48.58"	W103° 08' 30.64"		3,379	
CP 00195 DCL	0	GEORGE W. SIMS	DOM	22S	37E	12 1 1 4	N32° 24' 35.52"	W103° 07' 29.08"		3,350	
CP 00189 DCL	0	GEORGE W. SIMS	DOM	22S	37E	13 1 1 4	N32° 23' 43.32"	W103° 07' 29.08"		3,340	
CP 00199 DCL	0	LEO SIMS	DOM	22S	37E	14 2 4 2	N32° 23' 30.28"	W103° 07' 44.48"		3,330	
CP 00555 EXP	0	NORTHERN NATURAL GAS CO.	SAN	22S	37E	14 2 2 2	N32° 23' 43.32"	W103° 07' 44.48"		3,337	
CP 00581	3	NORTHERN NATURAL GAS CO.	SAN	22S	37E	14 2 2 2	N32° 23' 43.32"	W103° 07' 44.48"	18-Apr-79	3,337	65
CP 00662	3	GEORGE SCHELLER	DOM	22S	37E	15 1 3 3	N32° 23' 30.26"	W103° 09' 32.15"	20-Jul-83	3,406	150
CP 00673 EXP	0	PAUL E. & MARY HUGHES	DOM	22S	37E	15 2 2	N32° 23' 43.32"	W103° 08' 46.04"		3,398	
CP 00674	3	WARREN & VERA HUGHES	DOM	22S	37E	15 1 1	N32° 23' 43.31"	W103° 09' 32.15"	27-Mar-85	3,406	75
CP 00675	3	FRED FERBRACHE	DOM	22S	37E	15 1 2 2	N32° 23' 43.31"	W103° 09' 16.78"	12-Apr-85	3,402	
CP 00684	3	WARREN & VUNA HUGHES	MUL	22S	37E	15 1 1	N32° 23' 43.31"	W103° 09' 32.15"	01-Aug-85	3,406	180
CP 00699	3	MARTIN CARRASCO	DOM	22S	37E	15 1	N32° 23' 30.26"	W103° 09' 32.15"	02-Jun-86	3,406	100
CP 00313 DCL	0	WILFRED SIMS	STK	22S	37E	15 3 3 3	N32° 23' 41.17"	W103° 09' 32.14"		3,385	
CP 00679	3	FRED FERBRACHE	DOM	22S	37E	15 3 3	N32° 23' 41.17"	W103° 09' 32.14"	20-May-85	3,385	98
CP 00708	3	ROBERTA A. GUEITO	DOM	22S	37E	15	N32° 23' 41.17"	W103° 09' 32.14"	15-Apr-87	3,385	185
CP 00709	3	JAMES D. SMITH	DOM	22S	37E	15 3 4 2	N32° 23' 41.17"	W103° 09' 16.78"	29-Apr-87	3,389	87

^B = Elevation interpolated from USGS topographical map based on referenced location.

EXP = Exploration

MUL = 72-12-1 Multiple domestic households

DOM = 72-12-1 Domestic

STK = 72-12-1 Livestock watering

SAN = Sanitary in conjunction with commercial

quarters are 1=NW, 2=NE, 3=SW, 4=SE; quarters are biggest to smallest

Shaded area indicates wells not shown in Figure 2

TABLE 2

Summary of Excavation Soil Sample Laboratory Analytical Results

Chesapeake- Lou Worthan Produced Water Release (Ref. #160045)

Soil Sample ID.	Depth (feet)	Soil Status	Sample Date	PID Reading (ppm)	Field Chloride (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Total Xylenes (mg/Kg)	Total BTEX (mg/Kg)	TPH (as gasoline) (mg/Kg)	TPH (as diesel) (mg/Kg)	Total TPH (mg/Kg)	Chloride (mg/Kg)	Sulfate (mg/Kg)
BH-1 (10')	10	In Situ	24-Jan-06	--	--	<0.0250	<0.0250	<0.0250	<0.0250	<0.10	<0.10	<0.10	<0.10	699	299
BH-2 (2')	2	In Situ	24-Jan-06	--	--	<0.0250	<0.0250	<0.0250	<0.0250	<0.10	<0.10	<0.10	<0.10	298	84.6
BH-3 (2')	2	In Situ	24-Jan-06	--	--	<0.0250	<0.0250	<0.0250	<0.0250	<0.10	<0.10	<0.10	<0.10	676	197
BH-4 (3')	3	In Situ	24-Jan-06	--	--	<0.0250	<0.0250	<0.0250	<0.0250	<0.10	<0.10	<0.10	<0.10	309	410
BH-5 (3')	3	In Situ	24-Jan-06	--	--	<0.0250	<0.0250	<0.0250	<0.0250	<0.10	<0.10	<0.10	<0.10	20	38.1
BH-6 (1')	1	In Situ	24-Jan-06	--	--	<0.0250	<0.0250	<0.0250	<0.0250	<0.10	<0.10	<0.10	<0.10	95	27.8
Background	1	In Situ	24-Jan-06	--	--	<0.0250	<0.0250	<0.0250	<0.0250	<0.10	<0.10	<0.10	<0.10	<5.00	12
NMOCD Remedial Thresholds				100		10				50			5,000	250^A	600^A

Bolded values are in excess of NMOCD Remediation Thresholds and/or NMWQCC groundwater standards.

-- = Not Analyzed

^A Chloride and sulfate residuals may not be capable of impacting local groundwater above the NMWQCC standards of 250 mg/L and 600 mg/L, respectively.

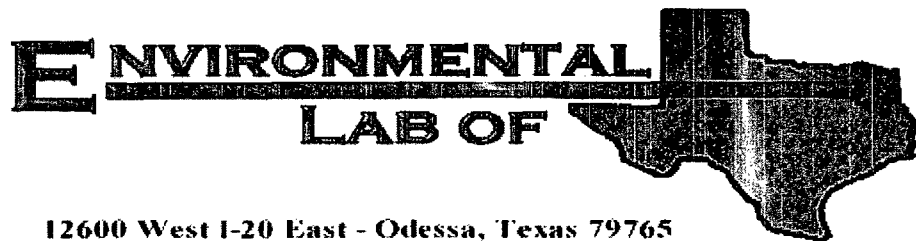
APPENDICES

APPENDIX I

LABORATORY ANALYTICAL REPORTS

AND

CHAIN-OF-CUSTODY FORM



12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Iain Olness

Environmental Plus, Incorporated

P.O. Box 1558

Eunice, NM 88231

Project: Chesapeake/ Lou Worthan Battery

Project Number: 160045

Location: UL-D, Sect. 11, T 22 S, R 37 E

Lab Order Number: 6A26011

Report Date: 02/01/06

Environmental Plus, Incorporated
P.O. Box 1558
Eunice NM, 88231

Project: Chesapeake/ Lou Worthan Battery
Project Number: 160045
Project Manager: Iain Olness

Fax: 505-394-2601

Reported:
02/01/06 15:20

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH-1 (10')	6A26011-01	Soil	01/24/06 13:50	01/26/06 12:20
BH-2 (2')	6A26011-02	Soil	01/24/06 14:00	01/26/06 12:20
BH-3 (2')	6A26011-03	Soil	01/24/06 14:10	01/26/06 12:20
BH-4 (3')	6A26011-04	Soil	01/24/06 14:20	01/26/06 12:20
BH-5 (3')	6A26011-05	Soil	01/24/06 14:30	01/26/06 12:20
BH-6 (1')	6A26011-06	Soil	01/24/06 14:40	01/26/06 12:20
Background	6A26011-07	Soil	01/21/06 07:30	01/26/06 12:20

Environmental Plus, Incorporated
P.O. Box 1558
Eunice NM, 88231

Project: Chesapeake/ Lou Worthan Battery
Project Number: 160045
Project Manager: Iain Olness

Fax: 505-394-2601

Reported:
02/01/06 15:20

Organics by GC
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BH-1 (10') (6A26011-01) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EA62802	01/28/06	01/30/06	EPA 8021B	
Toluene	ND	0.0250	"	"	"	"	"	"	
Ethylbenzene	ND	0.0250	"	"	"	"	"	"	
Xylene (p/m)	ND	0.0250	"	"	"	"	"	"	
Xylene (o)	ND	0.0250	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		89.8 %	80-120		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		83.8 %	80-120		"	"	"	"	
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EA62708	01/27/06	01/31/06	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		110 %	70-130		"	"	"	"	
Surrogate: 1-Chlorooctadecane		110 %	70-130		"	"	"	"	
BH-2 (2') (6A26011-02) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EA62802	01/28/06	01/30/06	EPA 8021B	
Toluene	ND	0.0250	"	"	"	"	"	"	
Ethylbenzene	ND	0.0250	"	"	"	"	"	"	
Xylene (p/m)	ND	0.0250	"	"	"	"	"	"	
Xylene (o)	ND	0.0250	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		83.5 %	80-120		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		85.5 %	80-120		"	"	"	"	
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EA62708	01/27/06	01/31/06	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		89.4 %	70-130		"	"	"	"	
Surrogate: 1-Chlorooctadecane		90.8 %	70-130		"	"	"	"	
BH-3 (2') (6A26011-03) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EA62802	01/28/06	01/30/06	EPA 8021B	
Toluene	ND	0.0250	"	"	"	"	"	"	
Ethylbenzene	ND	0.0250	"	"	"	"	"	"	
Xylene (p/m)	ND	0.0250	"	"	"	"	"	"	
Xylene (o)	ND	0.0250	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		87.5 %	80-120		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		89.8 %	80-120		"	"	"	"	
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EA62708	01/27/06	01/31/06	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	

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Environmental Plus, Incorporated
P.O. Box 1558
Eunice NM, 88231

Project: Chesapeake/ Lou Worthan Battery
Project Number: 160045
Project Manager: Iain Olness

Fax: 505-394-2601

Reported:
02/01/06 15:20

Organics by GC
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BH-3 (2') (6A26011-03) Soil									
Surrogate: 1-Chlorooctane		94.8 %	70-130		EA62708	01/27/06	01/31/06	EPA 8015M	
Surrogate: 1-Chlorooctadecane		97.0 %	70-130		"	"	"	"	
BH-4 (3') (6A26011-04) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EA63011	01/30/06	01/31/06	EPA 8021B	
Toluene	ND	0.0250	"	"	"	"	"	"	
Ethylbenzene	ND	0.0250	"	"	"	"	"	"	
Xylene (p/m)	ND	0.0250	"	"	"	"	"	"	
Xylene (o)	ND	0.0250	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		85.5 %	80-120		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		81.0 %	80-120		"	"	"	"	
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EA62713	01/27/06	01/31/06	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		89.8 %	70-130		"	"	"	"	
Surrogate: 1-Chlorooctadecane		90.8 %	70-130		"	"	"	"	
BH-5 (3') (6A26011-05) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EA63011	01/30/06	01/31/06	EPA 8021B	
Toluene	ND	0.0250	"	"	"	"	"	"	
Ethylbenzene	ND	0.0250	"	"	"	"	"	"	
Xylene (p/m)	ND	0.0250	"	"	"	"	"	"	
Xylene (o)	ND	0.0250	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		85.8 %	80-120		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		84.5 %	80-120		"	"	"	"	
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EA62713	01/27/06	01/31/06	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		96.2 %	70-130		"	"	"	"	
Surrogate: 1-Chlorooctadecane		106 %	70-130		"	"	"	"	

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Environmental Plus, Incorporated
P.O. Box 1558
Eunice NM, 88231

Project: Chesapeake/ Lou Worthan Battery
Project Number: 160045
Project Manager: Iain Olness

Fax: 505-394-2601

Reported:
02/01/06 15:20

Organics by GC
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BH-6 (1') (6A26011-06) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EA63011	01/30/06	01/31/06	EPA 8021B	
Toluene	ND	0.0250	"	"	"	"	"	"	
Ethylbenzene	ND	0.0250	"	"	"	"	"	"	
Xylene (p/m)	ND	0.0250	"	"	"	"	"	"	
Xylene (o)	ND	0.0250	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		86.0 %	80-120		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		85.2 %	80-120		"	"	"	"	
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EA62713	01/27/06	01/31/06	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		105 %	70-130		"	"	"	"	
Surrogate: 1-Chlorooctadecane		106 %	70-130		"	"	"	"	
Background (6A26011-07) Soil									
Benzene	ND	0.0250	mg/kg dry	25	EA63011	01/30/06	01/31/06	EPA 8021B	
Toluene	ND	0.0250	"	"	"	"	"	"	
Ethylbenzene	ND	0.0250	"	"	"	"	"	"	
Xylene (p/m)	ND	0.0250	"	"	"	"	"	"	
Xylene (o)	ND	0.0250	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		80.8 %	80-120		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		80.5 %	80-120		"	"	"	"	
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EA62713	01/27/06	01/31/06	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		96.6 %	70-130		"	"	"	"	
Surrogate: 1-Chlorooctadecane		101 %	70-130		"	"	"	"	

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Environmental Plus, Incorporated
P.O. Box 1558
Eunice NM, 88231

Project: Chesapeake/ Lou Worthan Battery
Project Number: 160045
Project Manager: Iain Olness

Fax: 505-394-2601

Reported:
02/01/06 15:20

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BH-1 (10") (6A26011-01) Soil									
Chloride	699	25.0	mg/kg	50	EA63007	01/31/06	01/31/06	EPA 300.0	
% Moisture	9.8	0.1	%	1	EA62703	01/26/06	01/27/06	% calculation	
Sulfate	299	25.0	mg/kg	50	EA63007	01/31/06	01/31/06	EPA 300.0	
BH-2 (2") (6A26011-02) Soil									
Chloride	298	10.0	mg/kg	20	EA63007	01/31/06	01/31/06	EPA 300.0	
% Moisture	7.6	0.1	%	1	EA62703	01/26/06	01/27/06	% calculation	
Sulfate	84.6	10.0	mg/kg	20	EA63007	01/31/06	01/31/06	EPA 300.0	
BH-3 (2") (6A26011-03) Soil									
Chloride	676	10.0	mg/kg	20	EA63007	01/31/06	01/31/06	EPA 300.0	
% Moisture	10.7	0.1	%	1	EA62703	01/26/06	01/27/06	% calculation	
Sulfate	197	10.0	mg/kg	20	EA63007	01/31/06	01/31/06	EPA 300.0	
BH-4 (3") (6A26011-04) Soil									
Chloride	309	10.0	mg/kg	20	EA63007	01/31/06	01/31/06	EPA 300.0	
% Moisture	15.2	0.1	%	1	EA62703	01/26/06	01/27/06	% calculation	
Sulfate	410	10.0	mg/kg	20	EA63007	01/31/06	01/31/06	EPA 300.0	
BH-5 (3") (6A26011-05) Soil									
Chloride	19.5	10.0	mg/kg	20	EA63007	01/31/06	01/31/06	EPA 300.0	
% Moisture	14.0	0.1	%	1	EA62703	01/26/06	01/27/06	% calculation	
Sulfate	38.1	10.0	mg/kg	20	EA63007	01/31/06	01/31/06	EPA 300.0	
BH-6 (1") (6A26011-06) Soil									
Chloride	94.5	5.00	mg/kg	10	EA63007	01/31/06	01/31/06	EPA 300.0	
% Moisture	12.8	0.1	%	1	EA62703	01/26/06	01/27/06	% calculation	
Sulfate	27.8	5.00	mg/kg	10	EA63007	01/31/06	01/31/06	EPA 300.0	
Background (6A26011-07) Soil									
Chloride	ND	5.00	mg/kg	10	EA63007	01/31/06	01/31/06	EPA 300.0	
% Moisture	1.1	0.1	%	1	EA62703	01/26/06	01/27/06	% calculation	
Sulfate	12.4	5.00	mg/kg	10	EA63007	01/31/06	01/31/06	EPA 300.0	

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Environmental Plus, Incorporated
P.O. Box 1558
Eunice NM, 88231

Project: Chesapeake/ Lou Worthan Battery
Project Number: 160045
Project Manager: Iain Olness

Fax: 505-394-2601

Reported:
02/01/06 15:20

Organics by GC - Quality Control
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch EA62708 - Solvent Extraction (GC)

Blank (EA62708-BLK1)

Prepared: 01/27/06 Analyzed: 01/30/06

Gasoline Range Organics C6-C12	ND	10.0	mg/kg wet							
Diesel Range Organics >C12-C35	ND	10.0	"							
Total Hydrocarbon C6-C35	ND	10.0	"							
Surrogate: 1-Chlorooctane	41.8		mg/kg	50.0		83.6	70-130			
Surrogate: 1-Chlorooctadecane	42.1		"	50.0		84.2	70-130			

LCS (EA62708-BS1)

Prepared: 01/27/06 Analyzed: 01/30/06

Gasoline Range Organics C6-C12	451	10.0	mg/kg wet	500		90.2	75-125			
Diesel Range Organics >C12-C35	494	10.0	"	500		98.8	75-125			
Total Hydrocarbon C6-C35	945	10.0	"	1000		94.5	75-125			
Surrogate: 1-Chlorooctane	57.6		mg/kg	50.0		115	70-130			
Surrogate: 1-Chlorooctadecane	46.8		"	50.0		93.6	70-130			

Calibration Check (EA62708-CCV1)

Prepared: 01/27/06 Analyzed: 01/31/06

Gasoline Range Organics C6-C12	488		mg/kg	500		97.6	80-120			
Diesel Range Organics >C12-C35	595		"	500		119	80-120			
Total Hydrocarbon C6-C35	1080		"	1000		108	80-120			
Surrogate: 1-Chlorooctane	62.3		"	50.0		125	70-130			
Surrogate: 1-Chlorooctadecane	51.5		"	50.0		103	70-130			

Matrix Spike (EA62708-MS1)

Source: 6A26011-03

Prepared: 01/27/06 Analyzed: 01/30/06

Gasoline Range Organics C6-C12	530	10.0	mg/kg dry	560	ND	94.6	75-125			
Diesel Range Organics >C12-C35	631	10.0	"	560	ND	113	75-125			
Total Hydrocarbon C6-C35	1160	10.0	"	1120	ND	104	75-125			
Surrogate: 1-Chlorooctane	61.1		mg/kg	50.0		122	70-130			
Surrogate: 1-Chlorooctadecane	50.8		"	50.0		102	70-130			

Matrix Spike Dup (EA62708-MSD1)

Source: 6A26011-03

Prepared: 01/27/06 Analyzed: 01/30/06

Gasoline Range Organics C6-C12	542	10.0	mg/kg dry	560	ND	96.8	75-125	2.24	20	
Diesel Range Organics >C12-C35	616	10.0	"	560	ND	110	75-125	2.41	20	
Total Hydrocarbon C6-C35	1160	10.0	"	1120	ND	104	75-125	0.00	20	
Surrogate: 1-Chlorooctane	62.2		mg/kg	50.0		124	70-130			
Surrogate: 1-Chlorooctadecane	50.8		"	50.0		102	70-130			

Environmental Lab of Texas

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Environmental Plus, Incorporated
P.O. Box 1558
Eunice NM, 88231

Project: Chesapeake/ Lou Worthan Battery
Project Number: 160045
Project Manager: Iain Olness

Fax: 505-394-2601

Reported:
02/01/06 15:20

Organics by GC - Quality Control
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch EA62713 - Solvent Extraction (GC)

Blank (EA62713-BLK1)

Prepared: 01/27/06 Analyzed: 01/31/06

Gasoline Range Organics C6-C12	ND	10.0	mg/kg wet							
Diesel Range Organics >C12-C35	ND	10.0	"							
Total Hydrocarbon C6-C35	ND	10.0	"							
Surrogate: 1-Chlorooctane	42.9		mg/kg	50.0		85.8	70-130			
Surrogate: 1-Chlorooctadecane	42.1		"	50.0		84.2	70-130			

LCS (EA62713-BS1)

Prepared: 01/27/06 Analyzed: 01/31/06

Gasoline Range Organics C6-C12	482	10.0	mg/kg wet	500		96.4	75-125			
Diesel Range Organics >C12-C35	561	10.0	"	500		112	75-125			
Total Hydrocarbon C6-C35	1040	10.0	"	1000		104	75-125			
Surrogate: 1-Chlorooctane	55.3		mg/kg	50.0		111	70-130			
Surrogate: 1-Chlorooctadecane	49.4		"	50.0		98.8	70-130			

Calibration Check (EA62713-CCV1)

Prepared: 01/27/06 Analyzed: 01/31/06

Gasoline Range Organics C6-C12	486		mg/kg	500		97.2	80-120			
Diesel Range Organics >C12-C35	543		"	500		109	80-120			
Total Hydrocarbon C6-C35	1030		"	1000		103	80-120			
Surrogate: 1-Chlorooctane	61.9		"	50.0		124	70-130			
Surrogate: 1-Chlorooctadecane	51.9		"	50.0		104	70-130			

Matrix Spike (EA62713-MS1)

Source: 6A26011-04

Prepared: 01/27/06 Analyzed: 01/31/06

Gasoline Range Organics C6-C12	551	10.0	mg/kg dry	590	ND	93.4	75-125			
Diesel Range Organics >C12-C35	673	10.0	"	590	ND	114	75-125			
Total Hydrocarbon C6-C35	1220	10.0	"	1180	ND	103	75-125			
Surrogate: 1-Chlorooctane	62.7		mg/kg	50.0		125	70-130			
Surrogate: 1-Chlorooctadecane	52.9		"	50.0		106	70-130			

Matrix Spike Dup (EA62713-MSD1)

Source: 6A26011-04

Prepared: 01/27/06 Analyzed: 01/31/06

Gasoline Range Organics C6-C12	554	10.0	mg/kg dry	590	ND	93.9	75-125	0.543	20	
Diesel Range Organics >C12-C35	683	10.0	"	590	ND	116	75-125	1.47	20	
Total Hydrocarbon C6-C35	1240	10.0	"	1180	ND	105	75-125	1.63	20	
Surrogate: 1-Chlorooctane	63.3		mg/kg	50.0		127	70-130			
Surrogate: 1-Chlorooctadecane	53.1		"	50.0		106	70-130			

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Organics by GC - Quality Control
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD Limit	Notes
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Batch EA62802 - EPA 5030C (GC)

Blank (EA62802-BLK1)

Prepared: 01/28/06 Analyzed: 01/30/06

Benzene	ND	0.0250	mg/kg wet					
Toluene	ND	0.0250	"					
Ethylbenzene	ND	0.0250	"					
Xylene (p/m)	ND	0.0250	"					
Xylene (o)	ND	0.0250	"					
Surrogate: a,a,a-Trifluorotoluene	37.1		ug/kg	40.0		92.8	80-120	
Surrogate: 4-Bromofluorobenzene	41.5		"	40.0		104	80-120	

LCS (EA62802-BS1)

Prepared: 01/28/06 Analyzed: 01/30/06

Benzene	0.0489	0.00100	mg/kg wet	0.0500		97.8	80-120	
Toluene	0.0501	0.00100	"	0.0500		100	80-120	
Ethylbenzene	0.0524	0.00100	"	0.0500		105	80-120	
Xylene (p/m)	0.100	0.00100	"	0.100		100	80-120	
Xylene (o)	0.0528	0.00100	"	0.0500		106	80-120	
Surrogate: a,a,a-Trifluorotoluene	37.9		ug/kg	40.0		94.8	80-120	
Surrogate: 4-Bromofluorobenzene	45.9		"	40.0		115	80-120	

Calibration Check (EA62802-CCV1)

Prepared: 01/28/06 Analyzed: 01/30/06

Benzene	51.1		ug/kg	50.0		102	80-120	
Toluene	52.5		"	50.0		105	80-120	
Ethylbenzene	53.2		"	50.0		106	80-120	
Xylene (p/m)	98.3		"	100		98.3	80-120	
Xylene (o)	53.1		"	50.0		106	80-120	
Surrogate: a,a,a-Trifluorotoluene	33.3		"	40.0		83.2	80-120	
Surrogate: 4-Bromofluorobenzene	32.4		"	40.0		81.0	80-120	

Matrix Spike (EA62802-MS1)

Source: 6A26009-04

Prepared: 01/28/06 Analyzed: 01/30/06

Benzene	1.47	0.0250	mg/kg dry	1.30	ND	113	80-120	
Toluene	1.52	0.0250	"	1.30	ND	117	80-120	
Ethylbenzene	1.56	0.0250	"	1.30	ND	120	80-120	
Xylene (p/m)	3.02	0.0250	"	2.61	ND	116	80-120	
Xylene (o)	1.56	0.0250	"	1.30	ND	120	80-120	
Surrogate: a,a,a-Trifluorotoluene	36.7		ug/kg	40.0		91.8	80-120	
Surrogate: 4-Bromofluorobenzene	43.9		"	40.0		110	80-120	

Environmental Lab of Texas

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Organics by GC - Quality Control
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch EA62802 - EPA 5030C (GC)

Matrix Spike Dup (EA62802-MSD1)		Source: 6A26009-04		Prepared: 01/28/06		Analyzed: 01/30/06				
Benzene	1.46	0.0250	mg/kg dry	1.30	ND	112	80-120	0.889	20	
Toluene	1.49	0.0250	"	1.30	ND	115	80-120	1.72	20	
Ethylbenzene	1.55	0.0250	"	1.30	ND	119	80-120	0.837	20	
Xylene (p/m)	2.93	0.0250	"	2.61	ND	112	80-120	3.51	20	
Xylene (o)	1.56	0.0250	"	1.30	ND	120	80-120	0.00	20	
Surrogate: a,a,a-Trifluorotoluene	37.7		ug/kg	40.0		94.2	80-120			
Surrogate: 4-Bromofluorobenzene	43.6		"	40.0		109	80-120			

Batch EA63011 - EPA 5030C (GC)

Blank (EA63011-BLK1)				Prepared: 01/30/06		Analyzed: 01/31/06				
Benzene	ND	0.0250	mg/kg wet							
Toluene	ND	0.0250	"							
Ethylbenzene	ND	0.0250	"							
Xylene (p/m)	ND	0.0250	"							
Xylene (o)	ND	0.0250	"							
Surrogate: a,a,a-Trifluorotoluene	36.2		ug/kg	40.0		90.5	80-120			
Surrogate: 4-Bromofluorobenzene	39.1		"	40.0		97.8	80-120			

LCS (EA63011-BS1)

				Prepared & Analyzed: 01/30/06						
Benzene	1.34	0.0250	mg/kg wet	1.25		107	80-120			
Toluene	1.38	0.0250	"	1.25		110	80-120			
Ethylbenzene	1.45	0.0250	"	1.25		116	80-120			
Xylene (p/m)	2.71	0.0250	"	2.50		108	80-120			
Xylene (o)	1.46	0.0250	"	1.25		117	80-120			
Surrogate: a,a,a-Trifluorotoluene	34.6		ug/kg	40.0		86.5	80-120			
Surrogate: 4-Bromofluorobenzene	42.7		"	40.0		107	80-120			

Environmental Plus, Incorporated
P.O. Box 1558
Eunice NM, 88231

Project: Chesapeake/ Lou Worthan Battery
Project Number: 160045
Project Manager: Iain Olness

Fax: 505-394-2601

Reported:
02/01/06 15:20

Organics by GC - Quality Control
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch EA63011 - EPA 5030C (GC)

Calibration Check (EA63011-CCV1)

Prepared: 01/30/06 Analyzed: 01/31/06

Benzene	50.6		ug/kg	50.0		101	80-120			
Toluene	53.2		"	50.0		106	80-120			
Ethylbenzene	55.0		"	50.0		110	80-120			
Xylene (p/m)	102		"	100		102	80-120			
Xylene (o)	54.2		"	50.0		108	80-120			
Surrogate: a,a,a-Trifluorotoluene	34.0		"	40.0		85.0	80-120			
Surrogate: 4-Bromofluorobenzene	34.5		"	40.0		86.2	80-120			

Matrix Spike (EA63011-MS1)

Source: 6A26011-07

Prepared: 01/30/06 Analyzed: 01/31/06

Benzene	1.26	0.0250	mg/kg dry	1.26	ND	100	80-120			
Toluene	1.28	0.0250	"	1.26	ND	102	80-120			
Ethylbenzene	1.37	0.0250	"	1.26	ND	109	80-120			
Xylene (p/m)	2.60	0.0250	"	2.53	ND	103	80-120			
Xylene (o)	1.38	0.0250	"	1.26	ND	110	80-120			
Surrogate: a,a,a-Trifluorotoluene	35.8		ug/kg	40.0		89.5	80-120			
Surrogate: 4-Bromofluorobenzene	39.9		"	40.0		99.8	80-120			

Matrix Spike Dup (EA63011-MSD1)

Source: 6A26011-07

Prepared: 01/30/06 Analyzed: 01/31/06

Benzene	1.27	0.0250	mg/kg dry	1.26	ND	101	80-120	0.995	20	
Toluene	1.31	0.0250	"	1.26	ND	104	80-120	1.94	20	
Ethylbenzene	1.38	0.0250	"	1.26	ND	110	80-120	0.913	20	
Xylene (p/m)	2.61	0.0250	"	2.53	ND	103	80-120	0.00	20	
Xylene (o)	1.38	0.0250	"	1.26	ND	110	80-120	0.00	20	
Surrogate: a,a,a-Trifluorotoluene	35.7		ug/kg	40.0		89.2	80-120			
Surrogate: 4-Bromofluorobenzene	39.9		"	40.0		99.8	80-120			

Environmental Lab of Texas

The results in this report apply to the samples analyzed in accordance with the samples received in the laboratory. This analytical report must be reproduced in its entirety, with written approval of Environmental Lab of Texas.

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Environmental Plus, Incorporated
P.O. Box 1558
Eunice NM, 88231

Project: Chesapeake/ Lou Worthan Battery
Project Number: 160045
Project Manager: Iain Olness

Fax: 505-394-2601

Reported:
02/01/06 15:20

General Chemistry Parameters by EPA / Standard Methods - Quality Control
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch EA62703 - General Preparation (Prep)

Blank (EA62703-BLK1) Prepared: 01/26/06 Analyzed: 01/27/06

% Solids 100 %

Duplicate (EA62703-DUP1) Source: 6A25027-01 Prepared: 01/26/06 Analyzed: 01/27/06

% Solids 97.9 % 98.2 0.306 20

Duplicate (EA62703-DUP2) Source: 6A26005-03 Prepared: 01/26/06 Analyzed: 01/27/06

% Solids 94.6 % 94.5 0.106 20

Duplicate (EA62703-DUP3) Source: 6A26008-03 Prepared: 01/26/06 Analyzed: 01/27/06

% Solids 87.8 % 86.8 1.15 20

Duplicate (EA62703-DUP4) Source: 6A26009-07 Prepared: 01/26/06 Analyzed: 01/27/06

% Solids 94.6 % 94.5 0.106 20

Batch EA63007 - Water Extraction

Blank (EA63007-BLK1) Prepared & Analyzed: 01/31/06

Chloride ND 0.500 mg/kg

Sulfate ND 0.500 "

LCS (EA63007-BS1) Prepared & Analyzed: 01/31/06

Sulfate 10.2 mg/L 10.0 102 80-120

Chloride 8.72 " 10.0 87.2 80-120

Calibration Check (EA63007-CCV1) Prepared & Analyzed: 01/31/06

Sulfate 9.77 mg/L 10.0 97.7 80-120

Chloride 8.92 " 10.0 89.2 80-120

Environmental Plus, Incorporated
P.O. Box 1558
Eunice NM, 88231

Project: Chesapeake/ Lou Worthan Battery
Project Number: 160045
Project Manager: Iain Olness

Fax: 505-394-2601

Reported:
02/01/06 15:20

General Chemistry Parameters by EPA / Standard Methods - Quality Control
Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch EA63007 - Water Extraction

Duplicate (EA63007-DUP1)

Source: 6A26009-05

Prepared & Analyzed: 01/31/06

Chloride	9130	200	mg/kg		9180			0.546	20	
Sulfate	675	200	"		598			12.1	20	

Environmental Lab of Texas

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Environmental Plus, Incorporated
P.O. Box 1558
Eunice NM, 88231

Project: Chesapeake/ Lou Worthan Battery
Project Number: 160045
Project Manager: Iain Olness

Fax: 505-394-2601

Reported:
02/01/06 15:20

Notes and Definitions

DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference
LCS Laboratory Control Spike
MS Matrix Spike
Dup Duplicate

Report Approved By:

Raland K. Tuttle

Date:

2/1/2006

Raland K. Tuttle, Lab Manager
Celey D. Keene, Lab Director, Org. Tech Director
Peggy Allen, QA Officer

Jeanne Mc Murrey, Inorg. Tech Director
LaTasha Cornish, Chemist
Sandra Sanchez, Lab Tech.

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If you have received this material in error, please notify us immediately at 432-563-1800.

Environmental Plus, Inc.

2100 Avenue O, Eunice, NM 88231
 (505) 394-3481 FAX: (505) 394-2601

P.O. Box 1558, Eunice, NM 88231

Chain of Custody Form

LAB: ELT

Company Name		Environmental Plus, Inc.		Bill To		ANALYSIS REQUEST																
EPI Project Manager		Iain Olness		Attn: Iain Olness																		
Mailing Address		P.O. BOX 1558		P.O. Box 1558																		
City, State, Zip		Eunice New Mexico 88231		Eunice, NM 88231																		
EPI Phone#/Fax#		505-394-3481 / 505-394-2601																				
Client Company		Chesapeake Energy																				
Facility Name		Lou Worthan Battery																				
Location		UL-D, Sect. 11, T 22 S, R 37 E																				
Project Reference		160045																				
EPI Sampler Name		George Blackburn																				
LAB I.D.	SAMPLE I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUND WATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER:	ACID/BASE	ICE/COOL	OTHER	DATE	TIME	BTEX 8021B	TPH 8015M	CHLORIDES (Cl)	SULFATES (SO ₄)	PH	TCLP	OTHER >>>	PAH
6220011	-01 BH-1 (10')	G	1			X					X		24-Jan-06	13:50	X	X	X	X				
	-02 BH-2 (2')	G	1			X					X		24-Jan-06	14:00	X	X	X	X				
	-03 BH-3 (2')	G	1			X					X		24-Jan-06	14:10	X	X	X	X				
	-04 BH-4 (3')	G	1			X					X		24-Jan-06	14:20	X	X	X	X				
	-05 BH-5 (3')	G	1			X					X		24-Jan-06	14:30	X	X	X	X				
	-06 BH-6 (1')	G	1			X					X		24-Jan-06	14:40	X	X	X	X				
	-07 Background	G	1			X					X		21-Jan-06	7:30	X	X	X	X				
	8																					
	9																					
	10																					

Sampler Relinquished By:	<i>Jan Boone</i>	Date:	1-24-06	Received By:	<i>Jan Boone</i>	e-mail results to iolness@envplus.net
Relinquished By:		Time:	1:15	Received By: (lab staff)		NOTES:
Delivered by:	<i>Jan Boone</i>	Date:	1-24-06	Received By:	<i>Jan Boone</i>	4oz glass 3.5
		Time:	4:00	Sample Cool & Intact	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Seal / Label
				Checked By:	<i>Jan Boone</i>	

1/24/06 Jan Boone

APPENDIX II

PROJECT PHOTOGRAPHS



Photograph #1 – Looking southerly across release area.



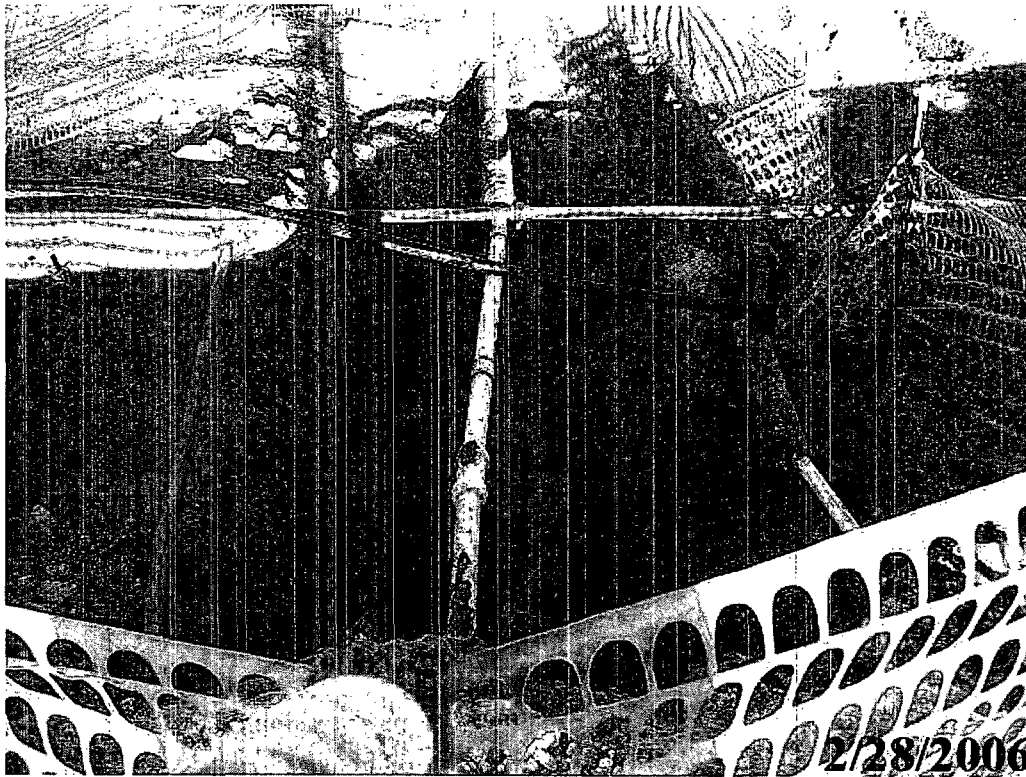
Photograph #2 – Looking northerly across release area.



Photograph #3 – Looking at point of release.



Photograph #4 – Excavation area at point of release, after repairs.



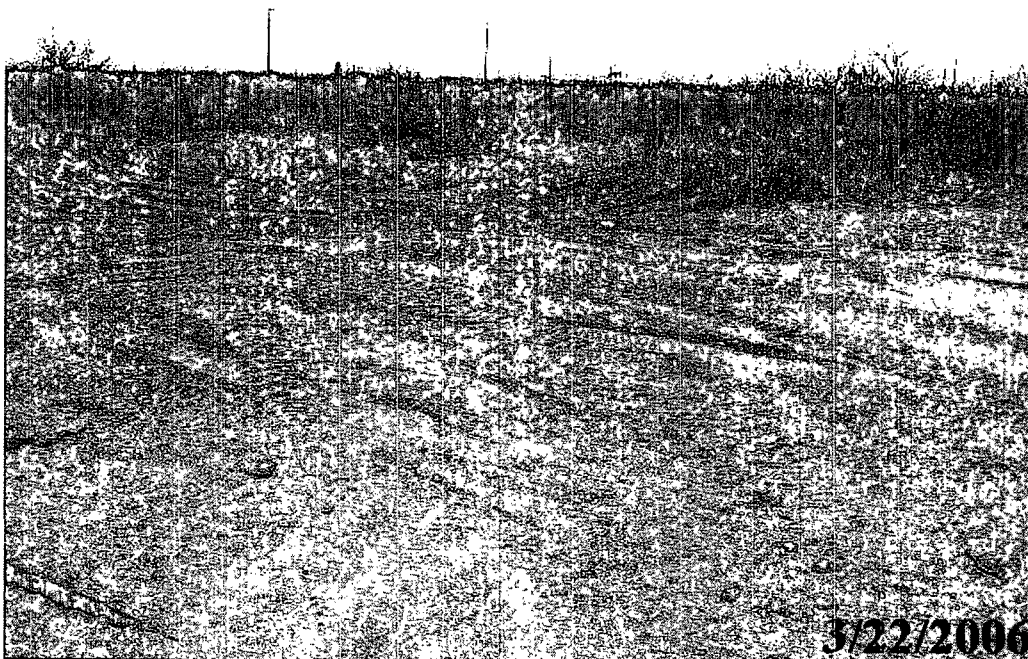
Photograph #5 – Looking down on excavation area at point of release.



Photograph #6 – Excavation area looking westerly.



Photograph #7 – Remediated area looking westerly, after backfilling.



Photograph #8 – Remediated area looking southeasterly, after backfilling.

APPENDIX III

FINAL

NMOCD C-141 FORM

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

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: Chesapeake Energy	Contact: Bradley Blevins
Address: P.O. Box 190	Telephone No.: (505) 391-1462 ext. 6224
Facility Name: Lou Worthan Produced Water Release – RP 1 # 490	Facility Type: Water transfer line

Surface Owner: Irvin Boyd	Mineral Owner:	Lease No.:
----------------------------------	-----------------------	-------------------

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
D	11	22S	37E					Lea

Latitude: N 32° 24' 39.18" **Longitude:** W 103° 08' 23.09"

NATURE OF RELEASE

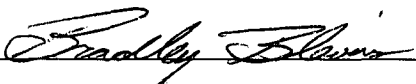
Type of Release: Produced water	Volume of Release: ~ 150 bbls	Volume Recovered: ~130 bbls
Source of Release: Water transfer line	Date and Hour of Occurrence: January 20, 2006 @ 0200	Date and Hour of Discovery: January 20, 2006 @ 0800
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Larry Johnson, NMOCD	
By Whom? Bradley Blevins	Date and Hour: January 20, 2006 @ 10:30 A.M.	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse: Not Applicable	

If a Watercourse was Impacted, Describe Fully.* Not Applicable

Describe Cause of Problem and Remedial Action Taken.* The release of approximately 150 barrels of crude oil was the result of the structural integrity of the water transfer line failing, with approximately 130 barrels were recovered from the site. The line was repaired with a pvc collar, section of pvc pipe and 3" compression dresser sleeve.

Describe Area Affected and Cleanup Action Taken.* Approximately 7,800 square-feet of surface area was impacted by the release. Impacted soil was excavated to a maximum depth of 10-ft bgs. Approximately 1,820-yd³ of excavated, impacted soil was transported to Sundance Services, Inc. for disposal. The excavation was backfilled with clean soil obtained from the landowner.

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: 		OIL CONSERVATION DIVISION	
Printed Name: Bradley Blevins		Approved by District Supervisor:	
Title: Field Supervisor		Approval Date:	Expiration Date:
E-mail Address: bblevins@chkenergy.com		Conditions of Approval:	
Date: 8-2-06 Phone: (505) 391-1462 ext. 6224		Attached <input type="checkbox"/>	

* Attach Additional Sheets If Necessary