ENVIRONMENTAL PLUS, INC. Micro-Blaze Micro-Blaze Out™
STATE APPROVED LAND FARM AND ENVIRONMENTAL SERVICES

8.18.05
CALL E - THEY TO START ON LAST WATSPOT SOON.

5 August 2005

Mr. Larry Johnson, Environmental Engineer
New Mexico Oil Conservation Division
1625 North French Drive
Hobbs, New Mexico 88240

Re: Closure Proposal Chesapeake Energy Ruth 20-2 – Reference #160011
UL-D (NW¼ of the NW¼) of Section 20, Township 16 South, Range 36 East
Latitude N 32° 54' 48.033" and Longitude W 103° 22' 57.430"

Dear Mr. Johnson:

Introduction

Environmental Plus, Inc. (EPI), on behalf of Mr. Bradley Blevins, Chesapeake Energy Corporation (Chesapeake), submits this letter report documenting the work completed at the above-referenced release site. The release site is situated on land owned by the State of New Mexico and is located approximately 2.4 miles southwest of Lovington, New Mexico (reference *Figure 1*). Information obtained from the New Mexico Office of the State Engineer's website and a United States Geological Survey (USGS) database indicates there are two water supply wells located within a 1,000-foot radius of the release site (reference Figure 2). In addition, there are more than twenty wells located within a one-mile radius of the release site. Groundwater level data for the well labeled USGS #1 was recorded at 70.5 feet below ground surface (bgs) in February 1991. The average depth to water for all wells with recorded groundwater level data is approximately 71 feet bgs (reference *Table 1*). Based on this information, it is estimated that the depth to groundwater at the site is between 50 and 100 feet bgs. The attached site information and metrics form ranks the site in accordance with the NMOCD Guidelines for Remediation of Leaks, Spills and Releases (August 13, 1993).

The release of 500 gallons of diesel fuel was the result of the fuel line located between the diesel tank and the generator being cut by vandals and the diesel fuel being allowed to flow out onto the caliche pad. Upon being notified of the release, Chesapeake retained EPI to conduct emergency response measures at the site. EPI mobilized to the site and excavated the saturated soil and stockpiled it on plastic until such time that remediation activities could commence. Upon completion of initial excavation activities, three composite samples were collected from the base of the excavation and submitted to an independent laboratory for quantification or total petroleum hydrocarbons (TPH) and benzene, ethylbenzene, toluene and total xylenes (BTEX constituents). Analytical results for these samples indicated TPH concentrations ranging from 3,440 parts per million (ppm) to 8,790 ppm with an average concentration of 5,350 ppm remaining in the excavation (reference *Table 1*). In addition, reported BTEX constituent concentrations ranged from 0.887 ppm to 3.11 ppm with an average concentration of 1.64 ppm (reference *Table 1*).

Field Work

EPI returned to the site on June 8, 2005 and initiated remediation activities. Excavation of the hydrocarbon impacted soil (approximately 100 cubic yards) continued until field analyses indicated

Chesapeake - 147179
facility - fPAC0603353567
inspect - e PAC0603354577
incident - nPAC0603354641
application - pPAC0603354705

BOX 1558 ••• 2100 WEST AVE. O ••• EUNICE, NEW MEXICO 88231
PHONE 505•394•3481 FAX 505•394•2601

ENVIRONMENTAL PLUS, INC.

remedial concentrations had been achieved. Field analyses were conducted utilizing a MiniRae© photoionization detector (PID) equipped with a 9.7 electron volt (eV) lamp. The field analyses indicated organic vapor concentrations ranged from 10.1 parts per million (ppm) to 73.5 ppm, with an average concentration of 33.5 ppm. At that time, soil samples were collected from the excavation and submitted for quantification of total petroleum hydrocarbons (TPH) and benzene, toluene, ethylbenzene and total xylenes (BTEX constituents).

Analytical results, received on July 14, 2005 indicated remedial goals had not been achieved and, as such, additional excavation activities commenced on July 25, 2005 to excavate the areas from which analytical results indicated contaminant levels exceeded NMOCD remedial guidelines. An additional 40 cubic yards of soil were excavated during this phase of the remedial activities. Excavation activities continued until field analyses utilizing a MiniRae© PID equipped with a 9.7 eV lamp indicated remedial concentrations had been achieved. The field analyses indicated organic vapor concentrations ranged from 0.5 ppm to 3.0 ppm, with an average concentration of 1.1 ppm. At that time, soil samples were collected from the excavation and submitted for quantification of TPH and BTEX constituents.

Analytical Results

Eleven soil samples were collected from the excavation on July 11, 2005 and submitted to an independent laboratory for quantification of TPH and BTEX constituents. Analytical results for two of the soil samples (SP-1 and SP-2) reported contaminant concentrations at or below each analyte's respective method detection limit (MDL). Analytical results for two additional samples (SP-4 and SP-8) reported contaminant concentrations below the NMOCD remedial guidelines. The only contaminants detected in these samples were diesel range organics (DRO) at concentrations of 90.4 milligrams per kilogram (mg/Kg) in sample SP-4 and 27.8 mg/Kg in sample SP-8.

Analytical results for the remaining seven soil samples (SP-2, SP-3, SP-5, SP-6, SP-9, SP-10 and SP-11) indicated TPH concentrations ranging from 108 mg/Kg to 3,410 mg/Kg, with an average concentration of 835 mg/Kg (reference *Table 1*). Of these samples, the only contaminants detected in three of the samples (SP-3, SP-5 and SP-11) were DRO, ranging in concentrations from 108 mg/Kg to 213 mg/Kg, with an average concentration of 163 mg/Kg (reference *Table 1*). The remaining four samples (SP-2, SP-6, SP-9 and SP-10) had gasoline range organic (GRO) concentrations ranging from 14.7 mg/Kg to 166 mg/Kg and DRO concentrations ranging from 315 mg/Kg to 3,240 mg/Kg (reference *Table 1*). BTEX constituents were not detected at or above each analyte's respective MDL in any of these seven soil samples.

Based on the fact that contaminant concentrations exceeded the NMOCD remedial goals in seven of the sampling points, additional excavation activities were completed. The additional excavation activities were completed in the areas where contaminant concentrations exceeded the NMOCD remedial goals. When field analyses indicated the successful removal of the impacted soil, five additional soil samples were collected from these areas.

Analytical results for three of these five samples (SP-5, SP-10 and SP-11) reported contaminant concentrations as ND at or above each analyte's respective MDL (reference *Table 1*). Analytical results for the remaining two samples (SP-6 and SP-9) indicated TPH concentrations of 138 mg/Kg and 276 mg/Kg, respectively (reference *Table 1*). The only contaminants detected in sample SP-6 were

DRO, while GRO and DRO were detected in sample SP-9. BTEX constituents were not detected in any sample at or above each analyte's respective MDL.

Discussion

Based on NMOCD guidelines, the remedial goals for this site are as follows:

Analyte	Remedial Goal
Benzene	10 mg/Kg
BTEX constituents	50 mg/Kg
TPH	100 mg/Kg

Based on these remedial goals, analytical results indicate four areas with contamination remaining above the remedial goals. TPH concentrations for these areas ranged from 108 mg/Kg to 861 mg/Kg (reference *Figure 4*). Contaminant concentrations in three of these areas, SP-3, SP-6 and SP-9, only slightly exceed these remedial goals. TPH concentrations for these areas are 108 mg/Kg, 138 mg/Kg and 276 mg/Kg, respectively. Analytical results for the sample collected from the fourth area, SP-2, indicate TPH concentrations of 861 mg/Kg (reference *Figure 4*).

The remedial goals for this site are based on the fact that there are two water supply wells, L 00209C and USGS #1, located within a 1,000-foot radius of the release site (reference *Figure 2* and *Table 2*). Well L 00209C is an irrigation well and is owned by The College of The Southwest and well USGS #1 is either an irrigation or stock well. However, groundwater in this area flows southeasterly and these wells area located northeast (L00209C) and northwest (USGS #1) of the release site and, thus are located upgradient and will not be impacted by the release.

Based on this and the fact that the depth to groundwater is between 50 and 100 feet below the extent of contamination and there are no bodies of surface water located within a 200-foot radius of the release site, it is suggested that there is minimal to no risk to human health or the environment. Therefore, the TPH remedial goal should be changed from 100 mg/Kg to 1,000 mg/Kg.

Conclusions and Recommendations

Based on field and laboratory analyses and the fact that there is minimal threat to human health or the environment as evidenced by the discussion presented above, it is recommended that the excavation be backfilled with caliche obtained from an off site source. Upon completion of the backfilling activities, it is further recommended the site file be closed and a *No Further Action Required* letter be issued to Chesapeake Energy.

Should you any questions or concerns, please feel free to contact me at (505) 394-3481 or via e-mail at iolness@envplus.net or Mr. Bradley Blevins at (505) 391-1462 ext. 24 or via e-mail at bblevins@chkenergy.com. All official communication should be addressed to:

Mr. Bradley Blevins
Chesapeake Energy
5014 Carlsbad Highway
Hobbs, New Mexico 88240

Sincerely,

ENVIRONMENTAL PLUS, INC.

Iain Olness, P.G.
Hydrogeologist

cc: Bradley Blevins, Chesapeake Energy – Hobbs, NM
Curtis Blake, Chesapeake Energy – Hobbs, NM
Jace Marshall, Chesapeake Energy – Oklahoma City, OK
Cody Morrow, New Mexico State Land Office, Surface Resource Division – Albuquerque, NM

Chesapeake
Information and Metrics

Incident Date: 03 June 2005	**NMOCD Notified:** 04 June 2005

Site: BRC Federal Well #1 Battery	**Assigned Site Reference #:** 160010
Company: Chesapeake Energy	
Street Address: 5014 Carlsbad Highway	
Mailing Address: 5014 Carlsbad Highway	
City, State, Zip: Hobbs, New Mexico 88240	
Representative: Bradley Blevins	
Representative Telephone: (505) 391-1462 ext. 24	
Telephone:	
Fluid volume released (bbls): 500 gallons	**Recovered (bbls):** 0 gallons

>25 bbls: Notify NMOCD verbally within 24 hrs and submit form C-141 within 15 days.
(Also applies to unauthorized releases >500 mcf Natural Gas)

5-25 bbls: Submit form C-141 within 15 days (Also applies to unauthorized releases of 50-500 mcf Natural Gas)

Leak, Spill, or Pit (LSP) Name: Ruth 20-2

Source of contamination: Fuel line supplying diesel to a generator was vandalized and all the diesel fuel was released onto the surface.

Land Owner, i.e., BLM, ST, Fee, Other: State of New Mexico

LSP Dimensions: 75 feet by 45 feet

LSP Area: ≈3,150 ft^2

Location of Reference Point (RP):

Location distance and direction from RP:

Latitude: N 32° 54' 48.033"

Longitude: W 103° 22' 57.430"

Elevation above mean sea level: 3,938

Feet from South Section Line:

Feet from West Section Line:

Location- Unit or ¼¼: NW¼ of the NW¼ **Unit Letter:** D

Location- Section: 20

Location- Township: T16S

Location- Range: R36E

Surface water body within 1000 ' radius of site: none

Domestic water wells within 1000' radius of site: none (USGS #1 as illustrated on Figure 2)

Agricultural water wells within 1000' radius of site: two (College of the Southwest irrigation well – L 00209C and USGS #1, as illustrated on Figure 2)

Public water supply wells within 1000' radius of site: none

Depth from land surface to ground water (DG): 50 to 100 feet

Depth of contamination (DC): < 10 feet

Depth to ground water (DG – DC = DtGW): 50 to 100 feet

1. Ground Water	2. Wellhead Protection Area	3. Distance to Surface Water Body
If Depth to GW <50 feet: *20 points*	If <1000' from water source, or;<200' from private domestic water source: *20 points*	<200 horizontal feet: *20 points*
If Depth to GW 50 to 99 feet: *10 points*		200-100 horizontal feet: *10 points*
If Depth to GW >100 feet: *0 points*	If >1000' from water source, or; >200' from private domestic water source: *0 points*	>1000 horizontal feet: *0 points*
Ground water Score = 10	*Wellhead Protection Area Score= 20*	*Surface Water Score= 0*

Site Rank (1+2+3) = 10

Total Site Ranking Score and Acceptable Concentrations

Parameter	>19	10-19	0-9
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]100 ppm field VOC headspace measurement may be substituted for lab analysis

8.18.05
INCIDENT nLWJ 0523036639C
INSPECTION iLWJ 0523036...

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: 5014 Carlsbad Highway	**Telephone No.:** (505) 391-1462 ext. 24
Facility Name: Ruth 20-2	**Facility Type:** Tank Battery

Surface Owner: State of New Mexico - Leased by Dale Gandy	**Mineral Owner:** State of New Mexico	**Lease No.:** V0-4719-0000

LOCATION OF RELEASE

30.025.36866

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
D	20	16 S	36 E					Lea

Latitude: N 32° 54' 48.033" **Longitude:** W 103° 22' 57.430"

NATURE OF RELEASE

Type of Release: Diesel Fuel	**Volume of Release:** 500 gallons	**Volume Recovered:** 0 gallons
Source of Release: Tank	**Date and Hour of Occurrence:** 03 June 2005, time unkown	**Date and Hour of Discovery:** 04 June 2005
Was Immediate Notice Given? ☐ Yes ☐ No ☒ Not Required	**If YES, To Whom?** Not Applicable	
By Whom? Not Applicable	**Date and Hour:** Not Applicable	
Was a Watercourse Reached? ☐ Yes ☒ 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 site was vandalized and the fuel line from the diesel tank to the generator was cut and all the diesel allowed to flow onto the caliche pad. Saturated soil was scraped up and placed on plastic pending a decision as how to remediate the site.

Describe Area Affected and Cleanup Action Taken.* Approximately 3,150 square feet of surface area was impacted by the release, all of which was on the caliche pad at the site. Saturated soil has been excavated and stockpiled on plastic on site until a remediation plan is developed. Additional soil was excavated on June 8, 2005 and, based on field analyses, it was determined that remedial guidelines had been achieved and samples were collected for laboratory analyses. Analytical results received on June 17, 2005, indicated remedial guidelines had not been achieved and additional excavation would be required for closer. Additional excavation activities should be completed by the end of June 2005 and samples will be collected to verify soil impacted above the NMOCD remedial guidelines has been excavated. The excavated soil will be transported to an approved lad treatment facility or blended with clean soil and returned to the excavation.

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.

	OIL CONSERVATION DIVISION	
Signature:		
Printed Name: Bradley Blevins	**Approved by District Supervisor:**	
Title: Field Technician	**Approval Date:**	**Expiration Date:**
E-mail Address: bblevins@chkenergy.com	**Conditions of Approval:**	**Attached** ☐
Date: **Phone:** (505) 391-1462 ext. 24		

*** Attach Additional Sheets If Necessary**

Figure 2 Site and Well Location Map Chesapeake Energy BRC Federal Well #1 Battery	Eddy County, New Mexico NE 1/4 of the NE 1/4, Sec. 03, T23S, R28E N 32° 20' 25.3" W 104° 04' 2.37" Elevation: 3,938 feet amsl	DWG By: Iain Olness June 2005 0 1.5 3.0 Miles	REVISED: SHEET 1 of 1 N

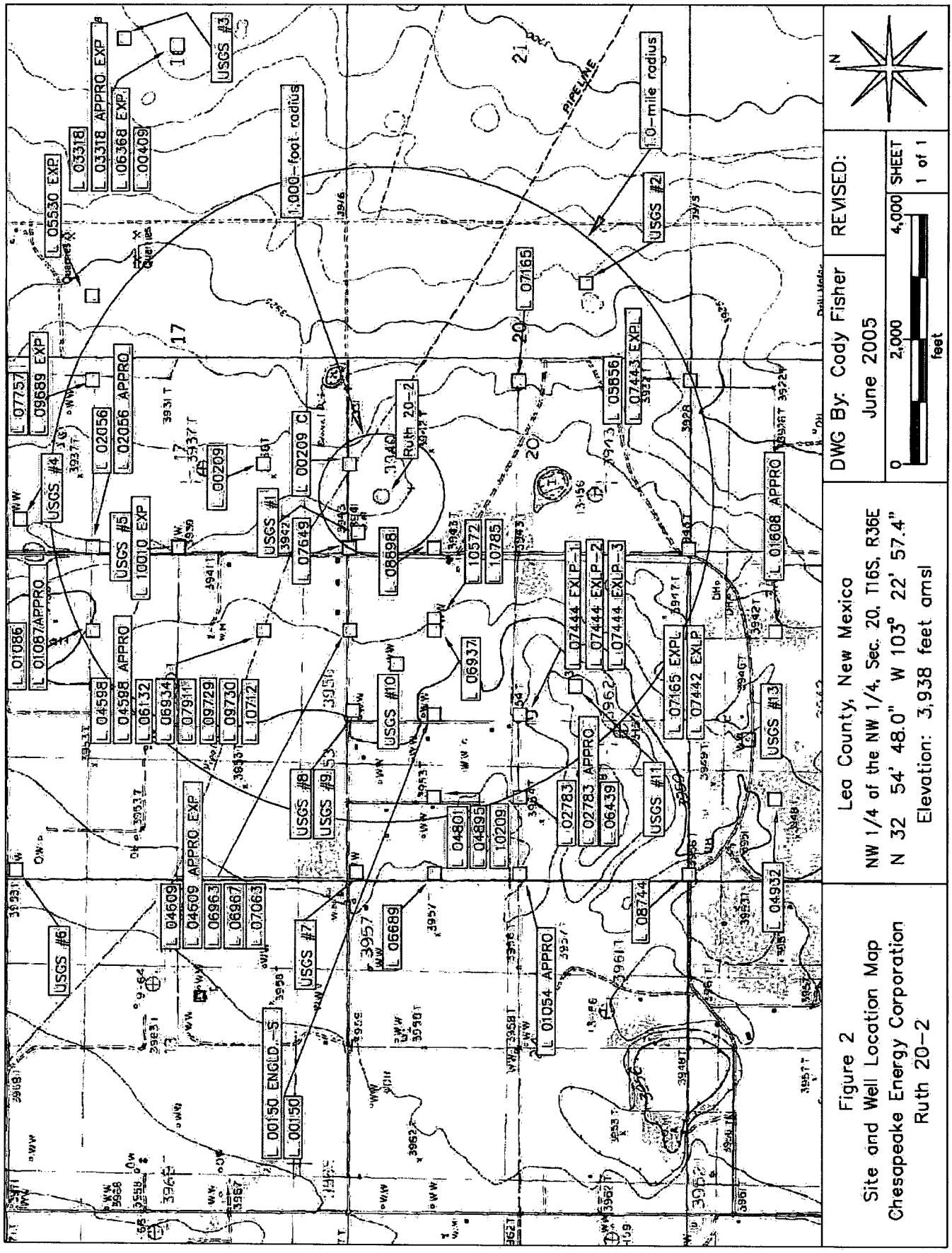


Figure 2
Site and Well Location Map
Chesapeake Energy Corporation
Ruth 20-2
Lea County, New Mexico
NW 1/4 of the NW 1/4, Sec. 20, T16S, R36E
N 32 54' 48.0" W 103° 22' 57.4"
Elevation: 3,938 feet amsl
DWG By: Cody Fisher
June 2005
REVISED:
0
2,000
4,000
feet
SHEET
1 of 1
N
Ruth 20-2
USGS #1
USGS #2
USGS #3
USGS #4
USGS #5
USGS #6
USGS #7
USGS #8
USGS #9
USGS #10
USGS #11
USGS #13
1,000-foot radius
10-mile radius
PIPELINE

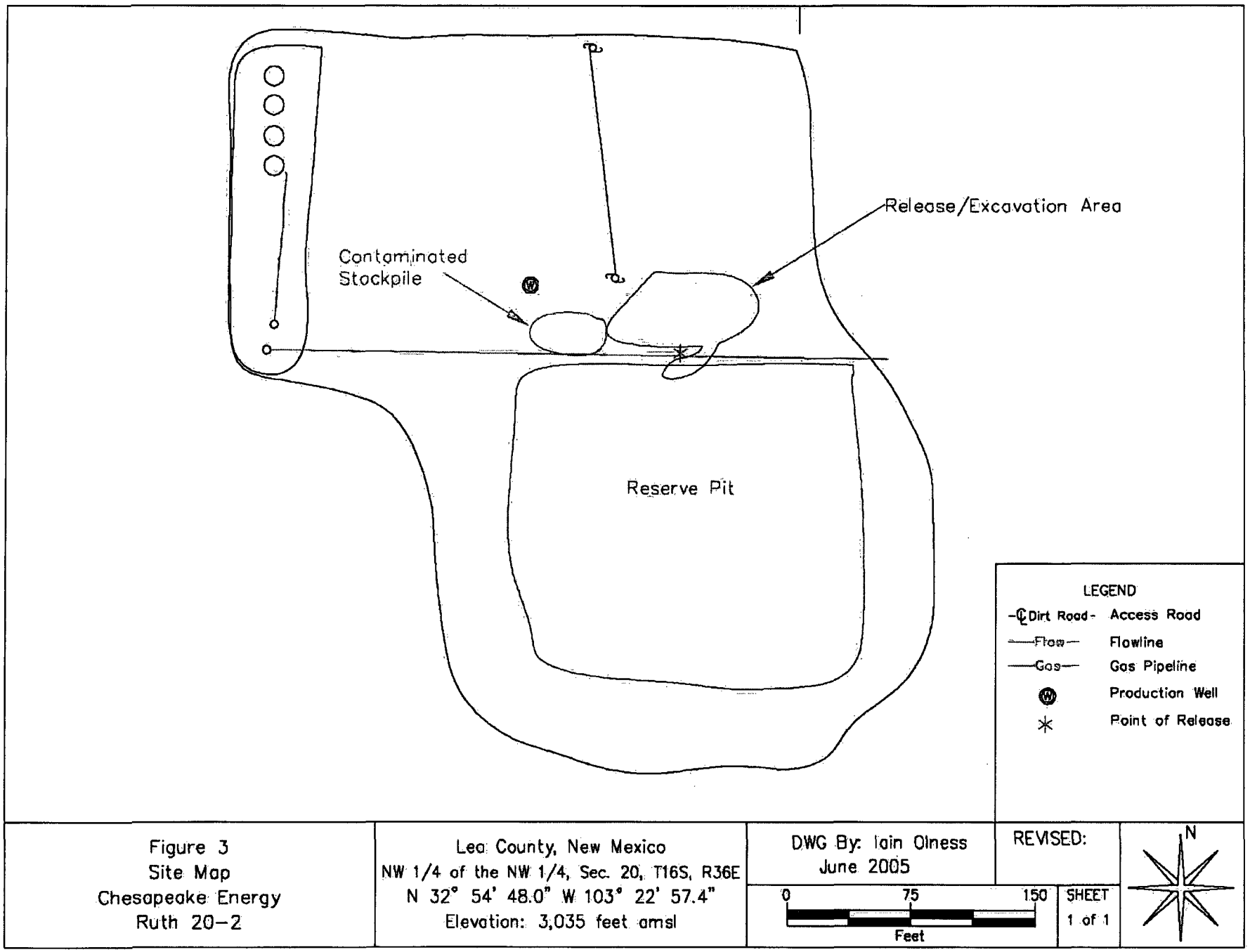


Figure 3 Site Map Chesapeake Energy Ruth 20-2	Lea County, New Mexico NW 1/4 of the NW 1/4, Sec. 20, T16S, R36E N 32° 54' 48.0" W 103° 22' 57.4" Elevation: 3,035 feet amsl	DWG By: Iain Olness June 2005	REVISED:	SHEET 1 of 1

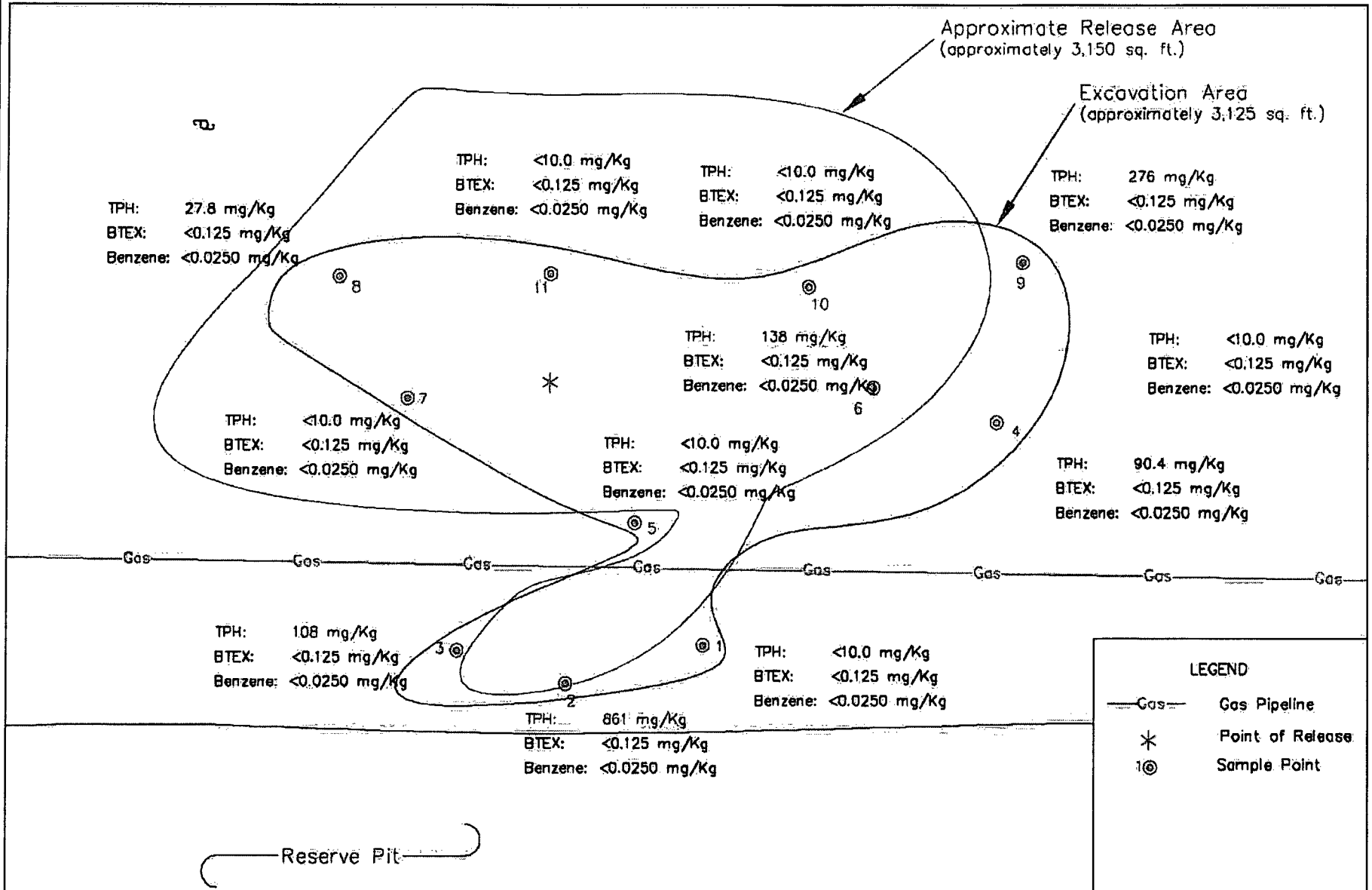


Figure 4 Sample Location Map Chesapeake Energy Ruth 20-2	Lea County, New Mexico NW 1/4 of the NW 1/4, Sec. 20, T16S, R36E N 32 54' 48.0" W 103° 22' 57.4" Elevation: 3,035 feet amsl	DWG By: Iain Olness August 2005 0 15 30 Feet	REVISED: SHEET 1 of 1	N

Chesapeake

TABLE 1

Summary of Excavation Soil Field Analyses and Laboratory Analytical Results

Chesapeake Energy Ruth 20-2 Release Site (Ref.# 160011)

Sample ID	Depth (feet)	Sample Date	PID Reading (ppm)	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)
Ruth 20-2 S. Flowpath	Comp	08-Jun-05	NA	<0.0250	0.0711	0.510	2.53	3.11	1,590	7,200	**8,790**
Ruth 20-2 W. Half Pooling Area	Comp	08-Jun-05	NA	<0.0250	0.0683	0.134	0.685	0.887	507	3,300	**3,810**
Ruth 20-2 E. Half Pooling Area	Comp	08-Jun-05	NA	<0.0250	0.0518	0.0877	0.781	0.921	470	2,970	**3,440**
SP-1	1	11-Jul-05	23.5	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	<10.0	<10.0
SP-2	1	11-Jul-05	10.1	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	14.7	846	**861**
SP-3	1	11-Jul-05	10.4	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	108	**108**
SP-4	1	11-Jul-05	24.1	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	90.4	90.4
SP-5	1	11-Jul-05	38.9	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	169	**169**
	2	26-Jul-05	0.7	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	<10.0	<10.0
SP-6	1	11-Jul-05	41.4	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	30.9	724	**755**
	6	26-Jul-05	0.9	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	138	**138**
SP-7	1	11-Jul-05	25.0	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	<10.0	<10.0

TABLE 1

Summary of Excavation Soil Field Analyses and Laboratory Analytical Results

Chesapeake Energy Ruth 20-2 Release Site (Ref.# 160011)

Sample ID	Depth (feet)	Sample Date	PID Reading (ppm)	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)
SP-8	1	11-Jul-05	39.6	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	27.8	27.8
SP-9	1	11-Jul-05	46.2	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	16.9	315	**332**
	6	26-Jul-05	3.0	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	12.4	264	**276**
SP-10	1	11-Jul-05	73.5	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	166	3,240	**3,410**
	2	26-Jul-05	0.5	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	<10.0	<10.0
SP-11	1	11-Jul-05	31.6	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	213	**213**
	2	26-Jul-05	0.6	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	<10.0	<10.0
NMOCD Remedial Thresholds			**100**	**10**				**50**			**100**

[1] *Bolded values are in excess of NMOCD Remediation Thresholds*
[2] *NA=Not Applicable*
[3] *Chloride and Sulfate residuals may not be capable of impacting local groundwater above the NMWQCC standards of 250 mg/L and 650 mg/L respectively.*

Chesapeake

Chesapeake

TABLE 2

Well Data

Chesapeake Energy Ruth 20-2 (Ref. #160011)

Well Number	Diversion[A]	Owner	Use	Twsp	Rng	Sec q q q	Latitude	Longitude	Date Measured	Well Depth (ft bgs)	Depth to Water (ft bgs)
L 05856	3	Payne Enterprise	STK	16 S	36 E	20 4	N 32° 54' 0.66"	W 103° 22' 33.46"	05-Mar-66	106	70
L 07163	3	G. Cattle Company	STK	16 S	36 E	20 2 3 1	N 32° 54' 26.63"	W 103° 22' 35.47"			
L 07165 EXPL	0	G. Cattle Company	EXP	16 S	36 E	20	N 32° 54' 0.63"	W 103° 23' 6.6"			
L 07402 EXPL	0	G. Cattle Company	EXP	16 S	36 E	20	N 32° 54' 0.63"	W 103° 23' 6.6"			
L 07443 EXPL	0	G. Cattle Company	EXP	16 S	36 E	20 4	N 32° 54' 0.66"	W 103° 22' 33.46"			
L 08898	0	Roger C. Hanks	PRO	16 S	36 E	20 1 1 4	N 32° 54' 39.88"	W 103° 23' 6.64"	01-Jul-82	147	70
L 10472	3	Yates Petroleum	OIL	16 S	36 E	20 2 2 1	N 32° 54' 39.94"	W 103° 22' 19.91"	27-Jun-96	150	70
L 10783	0	Yates Petroleum	PRO	16 S	36 E	20 2 2 1	N 32° 54' 39.94"	W 103° 22' 19.91"	27-Jun-96	150	70
USGS #1				16 S	36 E	20 1 1 1			27-Feb-91		70.47
USGS #2				16 S	36 E	20 4 2 3			31-Mar-81		75.34
L 03318	.5	T. M. Blackmon	DOM	16 S	36 E	16 2 3 1	N 32° 55' 19.33"	W 103° 21' 33.28"			
L 03318 APPRO EXP		T. M. Blackmon		16 S	36 E	16 2 3 1	N 32° 55' 19.33"	W 103° 21' 33.28"			
L 04487 APPRO	3	Kenneth Cox	DOM	16 S	36 E	16 2 2 2	N 32° 55' 32.49"	W 103° 21' 17.73"	01-Jun-60	110	82
L 05368 EXP	0	T. M. Blackmon	STK	16 S	36 E	16 2	N 32° 55' 19.33"	W 103° 21' 33.28"			
L 00409	0	Chesapeake Operating	PRO	16 S	36 E	16 2 3 1	N 32° 55' 19.33"	W 103° 21' 33.28"		193	
USGS #3				16 S	36 E	16 2 3 1			27-Feb-91		61.33
L 00209 B	203.9	College of the SW Foundation	IRR	16 S	36 E	17 3 2 3	N 32° 55' 6.07"	W 103° 22' 51.08"		127	
L 00209 C	287.7	College of the SW Foundation	IRR	16 S	36 E	17 4 3	N 32° 54' 53"	W 103° 22' 51.08"		129	
L 02056	3	Noble Drilling Company	PRO	16 S	36 E	17 1 1	N 32° 55' 32.22"	W 103° 23' 6.68"	06-Mar-53	130	60
L 02056 APPRO		Noble Drilling Company		16 S	36 E	17 1 1	N 32° 55' 32.22"	W 103° 23' 6.68"	06-Mar-53	130	60
L 04437	3	Roy Boland	DOM	16 S	36 E	17 3	N 32° 54' 52.96"	W 103° 23' 6.65"	30-May-60	120	95
L 04437 APPRO		Roy Boland		16 S	36 E	17 3	N 32° 54' 52.96"	W 103° 23' 6.65"	30-May-60	120	95
L 05330 EXP	0	Berry Lee Hobbs	DOM	16 S	36 E	17 2 2 3	N 32° 55' 32.3"	W 103° 22' 19.98"			
L 07849	0	Hilda R. Heidel	PRO	16 S	36 E	17	N 32° 54' 52.96"	W 103° 23' 6.65"	05-Feb-77	140	
L 07757	3	Berry Lee Hobbs	DOM	16 S	36 E	17 2 1 1	N 32° 55' 32.27"	W 103° 22' 35.55"	18-Jan-78	72	
L 09619 EXP	0	Calvin or Jo Ann Holloway	DOM	16 S	36 E	17 2 1 2	N 32° 55' 32.27"	W 103° 22' 35.55"			
L 10010 EXP	0	Inexco Oil Company	PRO	16 S	36 E	17 1 3	N 32° 55' 19.13"	W 103° 23' 6.67"			
USGS #4				16 S	36 E	17 1 1 1			26-Feb-91		63.24
USGS #5				16 S	36 E	17 1 3 3			16-Jan-89		67.82
L 01086	3	C.C. Chambers	DOM	16 S	36 E	18 2 2	N 32° 55' 32.19"	W 103° 23' 22.19"	02-Apr-51	75	
L 01087 APPRO	3	C.C. Chambers	DOM	16 S	36 E	18 2 2	N 32° 55' 32.19"	W 103° 23' 22.19"	02-Apr-51	75	
L 04598	3	Elmer H. Sumrall	DOM	16 S	36 E	18 4 2	N 32° 55' 6.02"	W 103° 23' 22.17"	21-Jan-62	136	75
L 04598 APPRO		Elmer H. Sumrall		16 S	36 E	18 4 2	N 32° 55' 6.02"	W 103° 23' 22.17"	21-Jan-62	136	75
L 04609	3	George Wayne Sumrall	DOM	16 S	36 E	18 4 4 3	N 32° 54' 52.93"	W 103° 23' 22.16"			
L 04609 APPRO EXP		George Wayne Sumrall		16 S	36 E	18 4 4 3	N 32° 54' 52.93"	W 103° 23' 22.16"			
L 06132	3	George Wayne Sumrall	DOM	16 S	36 E	18 4 2	N 32° 55' 6.02"	W 103° 23' 22.17"	30-May-67	95	70
L 06934	3	E. H. Sumrall	DOM	16 S	36 E	18 4 2 1	N 32° 55' 6.02"	W 103° 23' 22.17"	12-May-72	118	68
L 06963	3	Ricky Jones	DOM	16 S	36 E	18 4 4 4	N 32° 54' 52.93"	W 103° 23' 22.16"	24-Aug-72	120	90
L 06967	0	Oscar C. Neidick	DOM	16 S	36 E	18 4 4 3	N 32° 54' 52.93"	W 103° 23' 22.16"			
L 07063	3	Odell Black	DOM	16 S	36 E	18 4 4 2	N 32° 54' 52.93"	W 103° 23' 22.16"	26-Apr-60	120	80
L 07911	0	Wayne Sumrall	STK	16 S	36 E	18 4 2	N 32° 55' 6.02"	W 103° 23' 22.17"			
L 09729	0	E. H. Sumrall	EXP	16 S	36 E	18 4 2	N 32° 55' 6.02"	W 103° 23' 22.17"			
L 09730	0	E. H. Sumrall	EXP	16 S	36 E	18 4 2	N 32° 55' 6.02"	W 103° 23' 22.17"			
L 10712	0	Chesapeake Operating	PRO	16 S	36 E	18 4 2	N 32° 55' 6.02"	W 103° 23' 22.17"	01-Sep-97	165	60
USGS #6				16 S	36 E	18 1 1 1			26-Jun-96		54.95
L 01054 APPRO	3	George Spires	DOM	16 S	36 E	19 1 3	N 32° 54' 26.72"	W 103° 24' 7.41"	15-Dec-50	76	45
L 02783	3	Vernon N. Key	DOM	16 S	36 E	19 1 4 2	N 32° 54' 26.74"	W 103° 23' 53.17"	19-Feb-55	80	50
L 02783 APPRO		Vernon N. Key		16 S	36 E	19 1 4 2	N 32° 54' 26.74"	W 103° 23' 53.17"	19-Feb-55	80	50

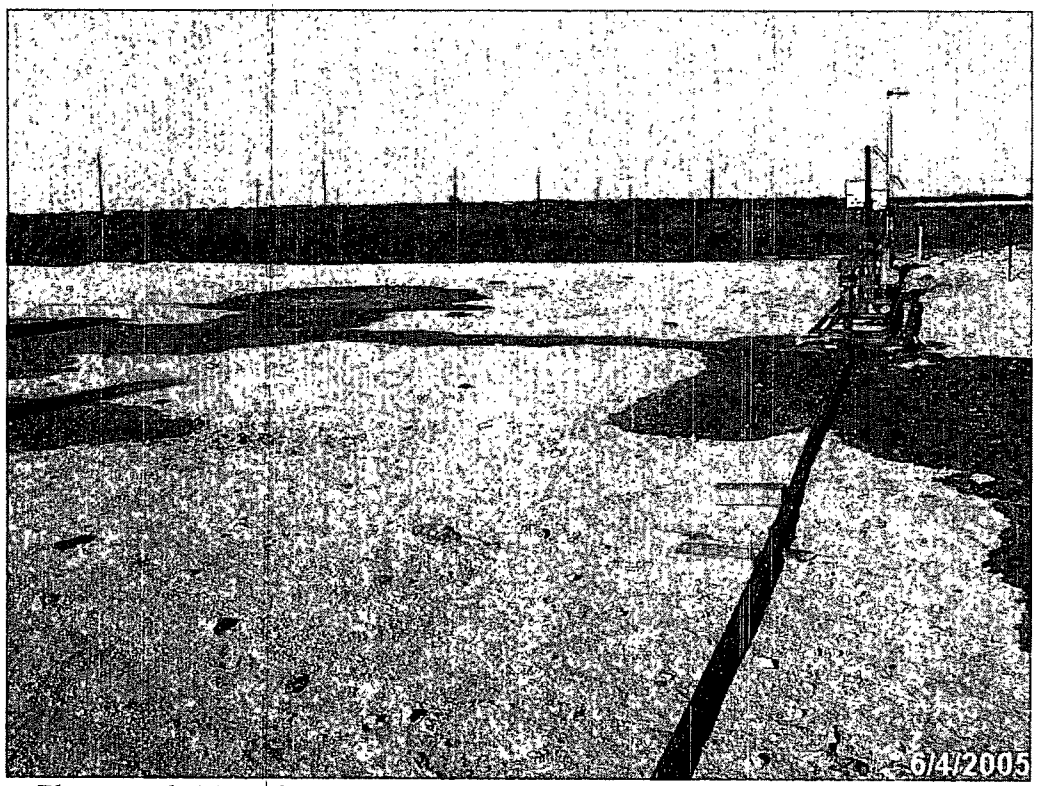
TABLE 2

Well Data

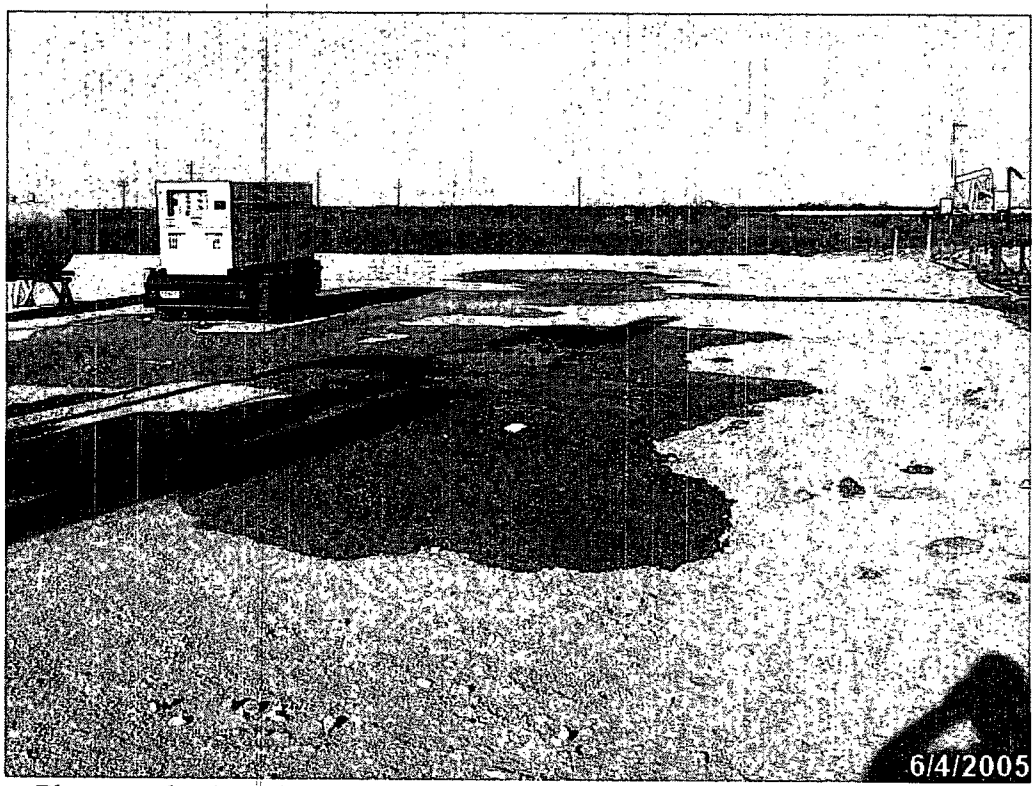
Chesapeake Energy Ruth 20-2 (Ref. #160011)

Well Number	Diversion[A]	Owner	Use	Twsp	Rng	Sec q q q	Latitude	Longitude	Date Measured	Well Depth (ft bgs)	Depth to Water (ft bgs)
L 04801	3	George Spires	DOM	16 S	36 E	19 1 2	N 32° 54' 39.81"	W 103° 23' 53.18"			
L 04895	3	George Spires	DOM	16 S	36 E	19 1 2	N 32° 54' 39.81"	W 103° 23' 53.18"	05-May-62	100	
L 06899 EXP	0	Joe Grado	DOM	16 S	36 E	19 1 4 2	N 32° 54' 26.74"	W 103° 23' 53.17"			
L 06689 EXP	0	Walter Hannan	DOM	16 S	36 E	19 1 1 4	N 32° 54' 39.78"	W 103° 24' 7.4"			
L 06937	3	Dale Gandy	DOM	16 S	36 E	19 2 2 4	N 32° 54' 39.85"	W 103° 23' 22.15"	25-Apr-72	110	69
L 07444 EXPL-1	0	G. Cattle Company	EXP	16 S	36 E	19 2 3 1	N 32° 54' 26.76"	W 103° 23' 37.64"	13-Oct-75	190	
L 07444 EXPL-2		G. Cattle Company	EXP	16 S	36 E	19 2 3 1	N 32° 54' 26.76"	W 103° 23' 37.64"	13-Oct-75	140	
L 07444 EXPL-3		G. Cattle Company	EXP	16 S	36 E	19 2 3 1	N 32° 54' 26.76"	W 103° 23' 37.64"	14-Oct-75	178	120
L 08744	3	Roger Price	DOM	16 S	36 E	19 2 3 3	N 32° 54' 0.49"	W 103° 24' 7.42"		108	79
L 10209	3	Kenny Jackson	DOM	16 S	36 E	19 1 2 2	N 32° 54' 39.81"	W 103° 23' 53.18"	03-Aug-91	128	94
L 00159 UNGLD-8	0	Chesapeake Operating	PRO	16 S	36 E	19 2 1 3	N 32° 54' 39.83"	W 103° 23' 37.66"		80	
L 00139	0	Northern Producing Company	PRO	16 S	36 E	19 2 1 1	N 32° 54' 39.83"	W 103° 23' 37.66"		125	
USGS #7				16 S	36 E	19 1 1 1			31-Mar-81		59.95
USGS #8				16 S	36 E	19 2 1 1			16-Feb-61		59.9
USGS #9				16 S	36 E	19 2 1 1			03-Mar-76		64.9
USGS #10				16 S	36 E	19 2 1 4			15-Feb-71		64.05
USGS #11				16 S	36 E	19 4 1 3			30-Sep-81		66.84
L 03966	3	Robert Ralph Sims	DOM	16 S	36 E	21 2 4 4	N 32° 54' 26.96"	W 103° 21' 17.68"	18-Aug-58	95	60
L 03966 APPRO				16 S	36 E	21 2 2 4	N 32° 54' 40.06"	W 103° 21' 17.68"	18-Aug-58	95	60
L 05269	3	Ralph E. Collins	DOM	16 S	36 E	21 2 2 4	N 32° 54' 40.06"	W 103° 21' 17.68"	19-Oct-63	110	90
USGS #12				16 S	36 E	21 2 3 2			01-Feb-96		66.58
L 01608 APPRO	3	Lawton Oil Group	PRO	16 S	36 E	30 2 2	N 32° 53' 47.54"	W 103° 23' 22.07"	24-Oct-52	145	80
L 04932	3	George Spires	DOM	16 S	36 E	30 1 2	N 32° 53' 47.53"	W 103° 23' 53.08"	12-Jul-62	104	90
L 06334	0	Marcum Drilling Company	PRO	16 S	36 E	30 3 1 1	N 32° 53' 21.38"	W 103° 24' 7.28"	02-Jun-68	135	75
L 06334 (E) 1	0	Humble Oil & Refining Co.	PRO	16 S	36 E	30 3 1 1	N 32° 53' 21.38"	W 103° 24' 7.28"			
USGS #13				16 S	36 E	30 1 2 4			10-Mar-76		75.23

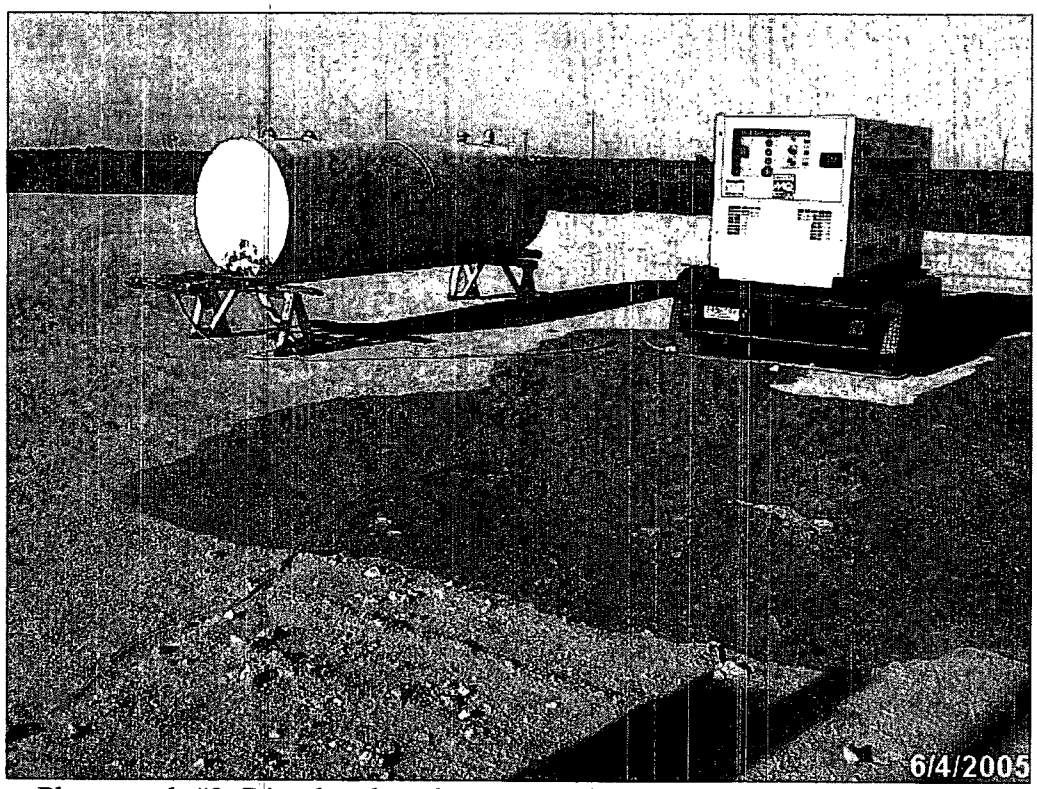
*.= Data obtained from the New Mexico Office of the State Engineer Website (http://iwaters.ose.state.nm.us:7001/iWATERS/wr_RegisServlet1)
Well locations shown on Figure 2
[A] = in acre feet per annum
IND = Industrial
IRR = Irrigation
DOM = Domestic
EXP = Exploration
quarters are 1=NW, 2=NE, 3=SW, 4=SE; quarters are biggest to smallest



Photograph #1: Release area, looking easterly.

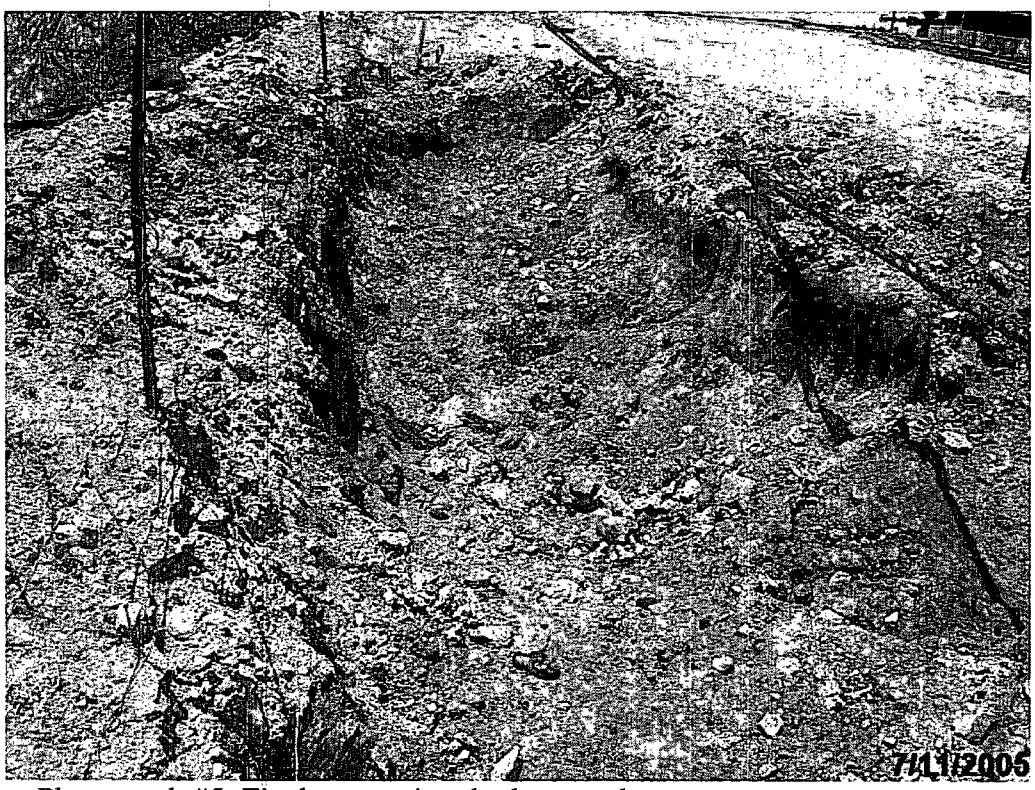


Photograph #2: Release area, looking easterly.

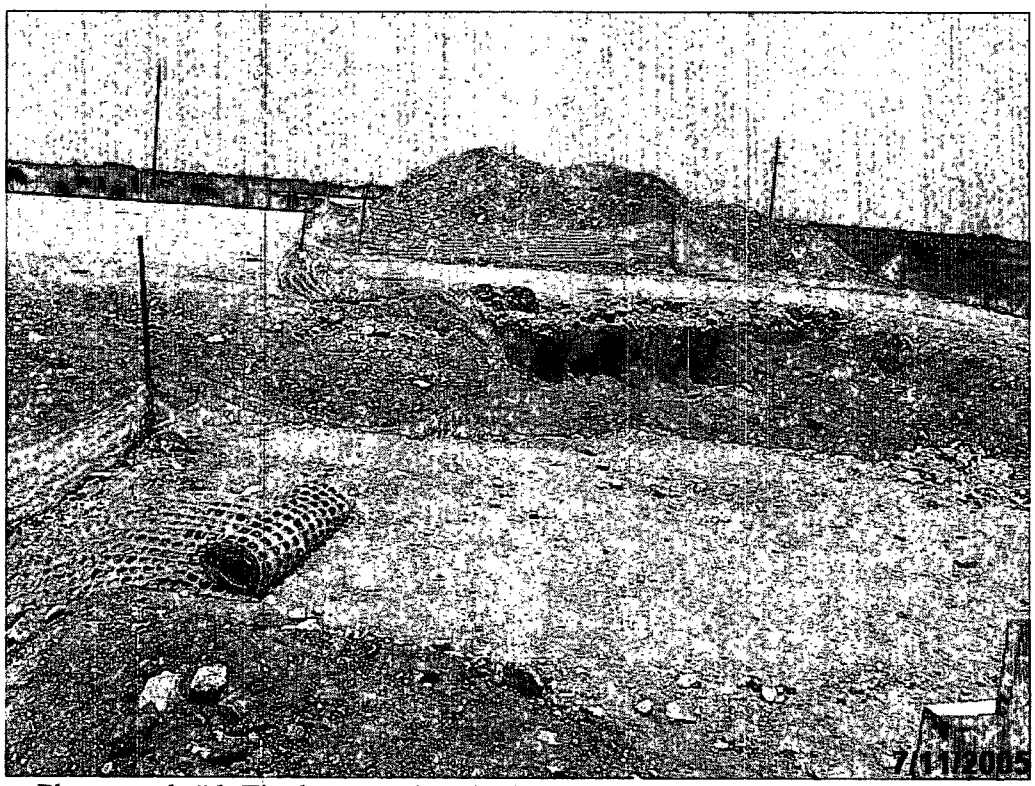


Photograph #3: Diesel tank and generator, looking northeasterly. Note cut fuel line between diesel tank and generator.

Photograph #4: Saturated soil stockpiled on plastic and fenced.



Photograph #5: Final excavation, look westerly.



Photograph #6: Final excavation, looking northeasterly.

LETTER OF TRANSMITTAL

ENVIRONMENTAL PLUS, INC.

Date:	11 August 2005
To:	**Larry Johnson**
Company Name:	NMOCD
Address:	1625 North French
City / State / Zip:	Hobbs, NM 88240
From:	Iain Olness
CC:	Brad Blevins, Chesapeake-Hobbs, NM Curtis Blake, Chesapeake-Hobbs, NM Jace Marshall, Chesapeake-Tulsa, OK
Project #:	160012
Project Name:	Ruth 20-2
Subject:	**Closure Proposal**

# of originals	# of copies	Description
1		Closure Proposal

Dear Mr. Johnson:

Enclosed is the *Closure Proposal* for the above-referenced site amended to include the changes the NMOCD required. Upon your approval, the proposal will be implemented and final *Closure Documentation* will be submitted upon the successful removal of the remaining impacted soil.

Should you have any questions or concerns, please feel free to contact me at (505) 394-3481 or via e-mail at iolness@envplus.net.

Signed: IAO

P. O. Box 1558
Eunice, NM 88240
(505) 394-3481
Fax: (505) 394-2601

11 August 2005

Mr. Larry Johnson, Environmental Engineer
New Mexico Oil Conservation Division
1625 North French Drive
Hobbs, New Mexico 88240

Re: Closure Proposal Chesapeake Energy Ruth 20-2 – Reference #160011
UL-D (NW¼ of the NW¼) of Section 20, Township 16 South, Range 36 East
Latitude N 32° 54' 48.033" and Longitude W 103° 22' 57.430"

Dear Mr. Johnson:

Introduction

Environmental Plus, Inc. (EPI), on behalf of Mr. Bradley Blevins, Chesapeake Energy Corporation (Chesapeake), submits this letter report documenting the work completed at the above-referenced release site. The release site is situated on land owned by the State of New Mexico and is located approximately 2.4 miles southwest of Lovington, New Mexico (reference *Figure 1*). Information obtained from the New Mexico Office of the State Engineer's website and a United States Geological Survey (USGS) database indicates there are two water supply wells located within a 1,000-foot radius of the release site (reference Figure 2). In addition, there are more than twenty wells located within a one-mile radius of the release site. Groundwater level data for the well labeled USGS #1 was recorded at 70.5 feet below ground surface (bgs) in February 1991. The average depth to water for all wells with recorded groundwater level data is approximately 71 feet bgs (reference *Table 1*). Based on this information, it is estimated that the depth to groundwater at the site is between 50 and 100 feet bgs. The attached site information and metrics form ranks the site in accordance with the NMOCD Guidelines for Remediation of Leaks, Spills and Releases (August 13, 1993).

The release of 500 gallons of diesel fuel was the result of the fuel line located between the diesel tank and the generator being cut by vandals and the diesel fuel being allowed to flow out onto the caliche pad. Upon being notified of the release, Chesapeake retained EPI to conduct emergency response measures at the site. EPI mobilized to the site and excavated the saturated soil and stockpiled it on plastic until such time that remediation activities could commence. Upon completion of initial excavation activities, three composite samples were collected from the base of the excavation and submitted to an independent laboratory for quantification or total petroleum hydrocarbons (TPH) and benzene, ethylbenzene, toluene and total xylenes (BTEX constituents). Analytical results for these samples indicated TPH concentrations ranging from 3,440 parts per million (ppm) to 8,790 ppm with an average concentration of 5,350 ppm remaining in the excavation (reference *Table 1*). In addition, reported BTEX constituent concentrations ranged from 0.887 ppm to 3.11 ppm with an average concentration of 1.64 ppm (reference *Table 1*).

Field Work

EPI returned to the site on June 8, 2005 and initiated remediation activities. Excavation of the hydrocarbon impacted soil (approximately 100 cubic yards) continued until field analyses indicated

ENVIRONMENTAL PLUS, INC.

remedial concentrations had been achieved. Field analyses were conducted utilizing a MiniRae® photoionization detector (PID) equipped with a 9.7 electron volt (eV) lamp. The field analyses indicated organic vapor concentrations ranged from 10.1 parts per million (ppm) to 73.5 ppm, with an average concentration of 33.5 ppm. At that time, soil samples were collected from the excavation and submitted for quantification of total petroleum hydrocarbons (TPH) and benzene, toluene, ethylbenzene and total xylenes (BTEX constituents).

Analytical results, received on July 14, 2005 indicated remedial goals had not been achieved and, as such, additional excavation activities commenced on July 25, 2005 to excavate the areas from which analytical results indicated contaminant levels exceeded NMOCD remedial guidelines. An additional 40 cubic yards of soil were excavated during this phase of the remedial activities. Excavation activities continued until field analyses utilizing a MiniRae© PID equipped with a 9.7 eV lamp indicated remedial concentrations had been achieved. The field analyses indicated organic vapor concentrations ranged from 0.5 ppm to 3.0 ppm, with an average concentration of 1.1 ppm. At that time, soil samples were collected from the excavation and submitted for quantification of TPH and BTEX constituents.

Analytical Results

Eleven soil samples were collected from the excavation on July 11, 2005 and submitted to an independent laboratory for quantification of TPH and BTEX constituents. Analytical results for two of the soil samples (SP-1 and SP-2) reported contaminant concentrations at or below each analyte's respective method detection limit (MDL). Analytical results for two additional samples (SP-4 and SP-8) reported contaminant concentrations below the NMOCD remedial guidelines. The only contaminants detected in these samples were diesel range organics (DRO) at concentrations of 90.4 milligrams per kilogram (mg/Kg) in sample SP-4 and 27.8 mg/Kg in sample SP-8.

Analytical results for the remaining seven soil samples (SP-2, SP-3, SP-5, SP-6, SP-9, SP-10 and SP-11) indicated TPH concentrations ranging from 108 mg/Kg to 3,410 mg/Kg, with an average concentration of 835 mg/Kg (reference *Table 1*). Of these samples, the only contaminants detected in three of the samples (SP-3, SP-5 and SP-11) were DRO, ranging in concentrations from 108 mg/Kg to 213 mg/Kg, with an average concentration of 163 mg/Kg (reference *Table 1*). The remaining four samples (SP-2, SP-6, SP-9 and SP-10) had gasoline range organic (GRO) concentrations ranging from 14.7 mg/Kg to 166 mg/Kg and DRO concentrations ranging from 315 mg/Kg to 3,240 mg/Kg (reference *Table 1*). BTEX constituents were not detected at or above each analyte's respective MDL in any of these seven soil samples.

Based on the fact that contaminant concentrations exceeded the NMOCD remedial goals in seven of the sampling points, additional excavation activities were completed. The additional excavation activities were completed in the areas where contaminant concentrations exceeded the NMOCD remedial goals. When field analyses indicated the successful removal of the impacted soil, five additional soil samples were collected from these areas.

Analytical results for three of these five samples (SP-5, SP-10 and SP-11) reported contaminant concentrations as ND at or above each analyte's respective MDL (reference *Table 1*). Analytical results for the remaining two samples (SP-6 and SP-9) indicated TPH concentrations of 138 mg/Kg and 276 mg/Kg, respectively (reference *Table 1*). The only contaminants detected in sample SP-6 were

DRO, while GRO and DRO were detected in sample SP-9. BTEX constituents were not detected in any sample at or above each analyte's respective MDL.

Discussion

Based on NMOCD guidelines, the remedial goals for this site are as follows:

Analyte	Remedial Goal
Benzene	10 mg/Kg
BTEX constituents	50 mg/Kg
TPH	100 mg/Kg

Based on these remedial goals, analytical results indicate four areas with contamination remaining above the remedial goals. TPH concentrations for these areas ranged from 108 mg/Kg to 861 mg/Kg (reference *Figure 4*). Contaminant concentrations in three of these areas, SP-3, SP-6 and SP-9, only slightly exceed these remedial goals. TPH concentrations for these areas are 108 mg/Kg, 138 mg/Kg and 276 mg/Kg, respectively. Analytical results for the sample collected from the fourth area, SP-2, indicate TPH concentrations of 861 mg/Kg (reference *Figure 4*).

The remedial goals for this site are based on the fact that there are two water supply wells, L 00209C and USGS #1, located within a 1,000-foot radius of the release site (reference *Figure 2* and *Table 2*). Well L 00209C is an irrigation well and is owned by The College of The Southwest and well USGS #1 is either an irrigation or stock well. However, groundwater in this area flows southeasterly and these wells area located northeast (L00209C) and northwest (USGS #1) of the release site and, thus are located upgradient and will not be impacted by the release.

Conclusions and Recommendations

Based on field and laboratory analyses, it is recommended that the northern portion of the excavation be backfilled with caliche obtained from an off site source. The southern portion of the excavation located near the pit will remain open until such time that the pit is closed according to the State of New Mexico Rules. At the time the pit is closed, soil impacted above the NMOCD remedial guidelines will be excavated and transported to an off site treatment/disposal facility. Soil samples will be collected from the area where additional excavation activities will occur and submitted to verify the removal of the impacted soil. Upon receipt of analytical results confirming the removal of the impacted soil, the final excavation will be backfilled with caliche obtained from an off site source. Upon completion of the additional excavation and subsequent backfilling activities, it is recommended the site file be closed and a *No Further Action Required* letter be issued to Chesapeake Energy. A letter documenting the successful removal of the additional impacted soil will be submitted prior to final backfilling activities at the site.

Should you any questions or concerns, please feel free to contact me at (505) 394-3481 or via e-mail at iolness@envplus.net or Mr. Bradley Blevins at (505) 391-1462 ext. 24 or via e-mail at bblevins@chkenergy.com. All official communication should be addressed to:

Mr. Bradley Blevins
Chesapeake Energy
5014 Carlsbad Highway
Hobbs, New Mexico 88240

Sincerely,

ENVIRONMENTAL PLUS, INC.

Iain Olness, P.G.
Hydrogeologist

cc: Bradley Blevins, Chesapeake Energy – Hobbs, NM
Curtis Blake, Chesapeake Energy – Hobbs, NM
Jace Marshall, Chesapeake Energy – Oklahoma City, OK
Cody Morrow, New Mexico State Land Office, Surface Resource Division – Albuquerque, NM

Chesapeake Information and Metrics	**Incident Date:** 03 June 2005	**NMOCD Notified:** 04 June 2005

Site: BRC Federal Well #1 Battery	**Assigned Site Reference #:** 160010
Company: Chesapeake Energy	
Street Address: 5014 Carlsbad Highway	
Mailing Address: 5014 Carlsbad Highway	
City, State, Zip: Hobbs, New Mexico 88240	
Representative: Bradley Blevins	
Representative Telephone: (505) 391-1462 ext. 24	
Telephone:	
Fluid volume released (bbls): 500 gallons	**Recovered (bbls):** 0 gallons
>25 bbls: Notify NMOCD verbally within 24 hrs and submit form C-141 within 15 days. (Also applies to unauthorized releases >500 mcf Natural Gas)	
5-25 bbls: Submit form C-141 within 15 days (Also applies to unauthorized releases of 50-500 mcf Natural Gas)	
Leak, Spill, or Pit (LSP) Name: Ruth 20-2	
Source of contamination: Fuel line supplying diesel to a generator was vandalized and all the diesel fuel was released onto the surface.	
Land Owner, i.e., BLM, ST, Fee, Other: State of New Mexico	
LSP Dimensions: 75 feet by 45 feet	
LSP Area: ≈3,150 ft^2	
Location of Reference Point (RP):	
Location distance and direction from RP:	
Latitude: N 32° 54' 48.033"	
Longitude: W 103° 22' 57.430"	
Elevation above mean sea level: 3,938	
Feet from South Section Line:	
Feet from West Section Line:	
Location- Unit or ¼¼: NW¼ of the NW¼	**Unit Letter:** D
Location- Section: 20	
Location- Township: T16S	
Location- Range: R36E	
Surface water body within 1000 ' radius of site: none	
Domestic water wells within 1000' radius of site: none (USGS #1 as illustrated on Figure 2)	
Agricultural water wells within 1000' radius of site: two (College of the Southwest irrigation well – L 00209C and USGS #1, as illustrated on Figure 2)	
Public water supply wells within 1000' radius of site: none	
Depth from land surface to ground water (DG): 50 to 100 feet	
Depth of contamination (DC): < 10 feet	
Depth to ground water (DG – DC = DtGW): 50 to 100 feet	

1. Ground Water	2. Wellhead Protection Area	3. Distance to Surface Water Body
If Depth to GW <50 feet: *20 points*	If <1000' from water source, or;<200' from private domestic water source: *20 points*	<200 horizontal feet: *20 points*
If Depth to GW 50 to 99 feet: *10 points*		200-100 horizontal feet: *10 points*
If Depth to GW >100 feet: *0 points*	If >1000' from water source, or; >200' from private domestic water source: *0 points*	>1000 horizontal feet: *0 points*
Ground water Score = 10	*Wellhead Protection Area Score= 20*	*Surface Water Score= 0*
Site Rank (1+2+3) = 10		

Total Site Ranking Score and Acceptable Concentrations

Parameter	>19	10-19	0-9
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]100 ppm field VOC headspace measurement may be substituted for lab analysis

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: 5014 Carlsbad Highway	**Telephone No.:** (505) 391-1462 ext. 24
Facility Name: Ruth 20-2	**Facility Type:** Tank Battery

Surface Owner: State of New Mexico - Leased by Dale Gandy	**Mineral Owner:** State of New Mexico	**Lease No.:** V0-4719-0000

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
D	20	16 S	36 E					Lea

Latitude: N 32° 54' 48.033" **Longitude:** W 103° 22' 57.430"

NATURE OF RELEASE

Type of Release: Diesel Fuel	**Volume of Release:** 500 gallons	**Volume Recovered:** 0 gallons
Source of Release: Tank	**Date and Hour of Occurrence:** 03 June 2005, time unkown	**Date and Hour of Discovery:** 04 June 2005
Was Immediate Notice Given? ☐ Yes ☐ No ☒ Not Required	**If YES, To Whom?** Not Applicable	
By Whom? Not Applicable	**Date and Hour:** Not Applicable	
Was a Watercourse Reached? ☐ Yes ☒ 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 site was vandalized and the fuel line from the diesel tank to the generator was cut and all the diesel allowed to flow onto the caliche pad. Saturated soil was scraped up and placed on plastic pending a decision as how to remediate the site.

Describe Area Affected and Cleanup Action Taken.* Approximately 3,150 square feet of surface area was impacted by the release, all of which was on the caliche pad at the site. Saturated soil has been excavated and stockpiled on plastic on site until a remediation plan is developed. Additional soil was excavated on June 8, 2005 and, based on field analyses, it was determined that remedial guidelines had been achieved and samples were collected for laboratory analyses. Analytical results received on June 17, 2005, indicated remedial guidelines had not been achieved and additional excavation would be required for closer. Additional excavation activities should be completed by the end of June 2005 and samples will be collected to verify soil impacted above the NMOCD remedial guidelines has been excavated. The excavated soil will be transported to an approved lad treatment facility or blended with clean soil and returned to the excavation.

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 Technician	**Approval Date:**	**Expiration Date:**
E-mail Address: bblevins@chkenergy.com	**Conditions of Approval:**	**Attached** ☐
Date: **Phone:** (505) 391-1462 ext. 24		

*** Attach Additional Sheets If Necessary**

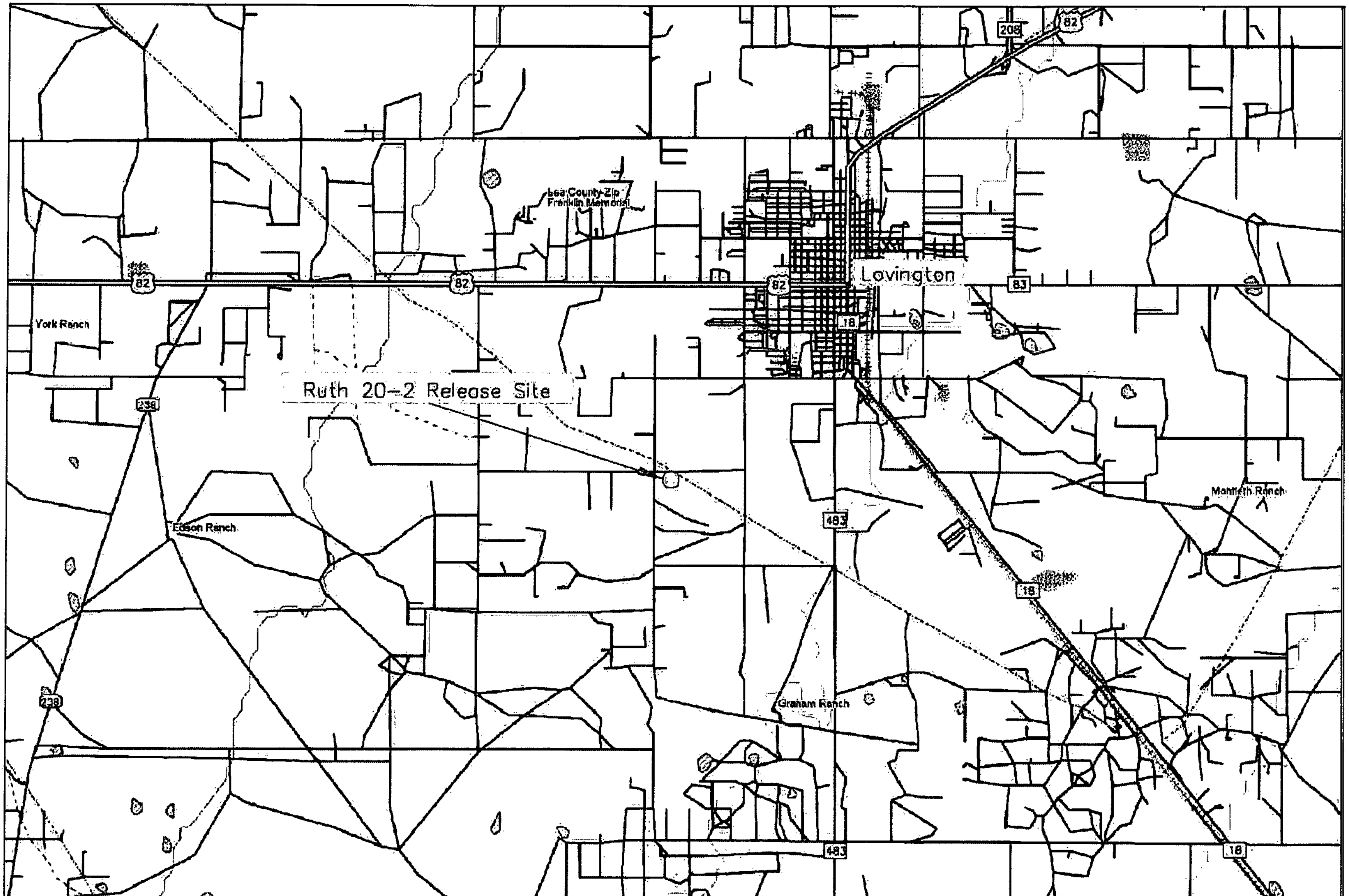


Figure 2 Site and Well Location Map Chesapeake Energy BRC Federal Well #1 Battery	Eddy County, New Mexico NE 1/4 of the NE 1/4, Sec. 03, T23S, R28E N 32° 20' 25.3" W 104° 04' 2.37" Elevation: 3,938 feet amsl	DWG By: Iain Olness June 2005 0 1.5 3.0 Miles	REVISED: SHEET 1 of 1	N

Chesapeake

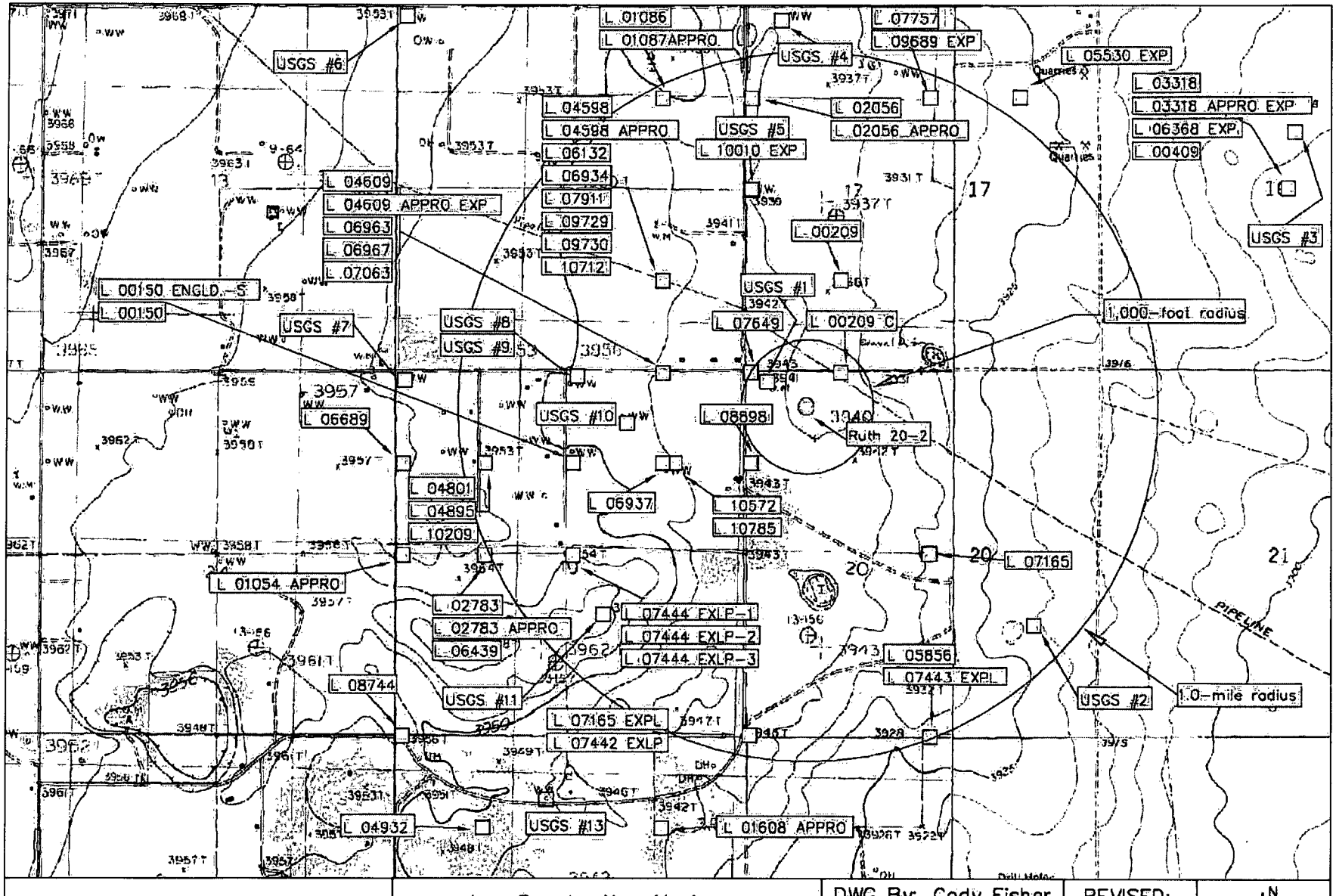
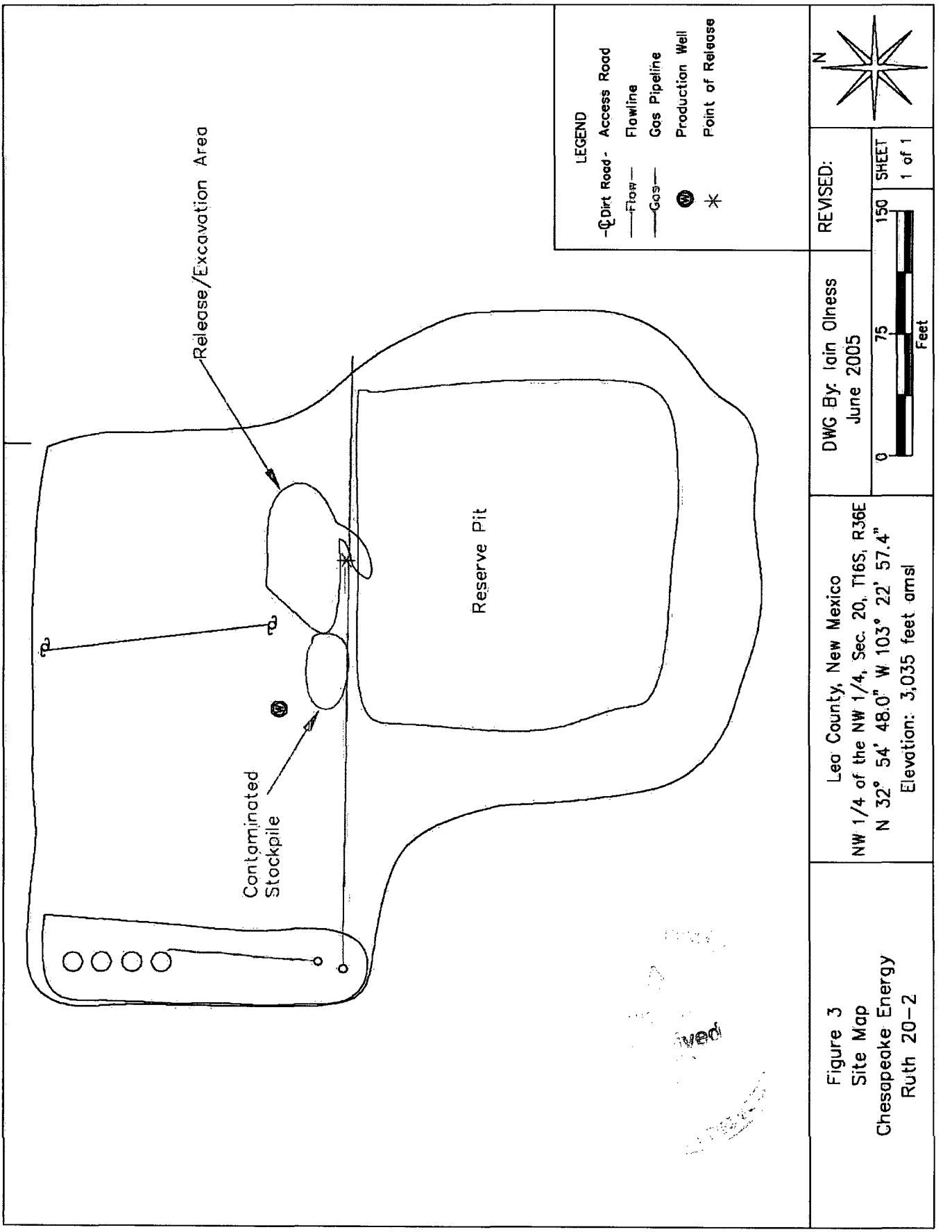


Figure 2 Site and Well Location Map Chesapeake Energy Corporation Ruth 20-2	Lea County, New Mexico NW 1/4 of the NW 1/4, Sec. 20, T16S, R36E N 32 54' 48.0" W 103° 22' 57.4" Elevation: 3,938 feet amsl	DWG By: Cody Fisher June 2005 REVISED: 0 2,000 4,000 feet	SHEET 1 of 1


LEGEND
Dirt Road- Access Road
Flow— Flowline
Gas— Gas Pipeline
Production Well
Point of Release
Release/Excavation Area
Reserve Pit
Contaminated Stockpile
N
REVISED:
DWG By: Iain Olness
June 2005
0
75
150
Feet
SHEET
1 of 1
Figure 3
Site Map
Chesapeake Energy
Ruth 20-2
Lea County, New Mexico
NW 1/4 of the NW 1/4, Sec. 20, T16S, R36E
N 32° 54' 48.0" W 103° 22' 57.4"
Elevation: 3,035 feet amsl

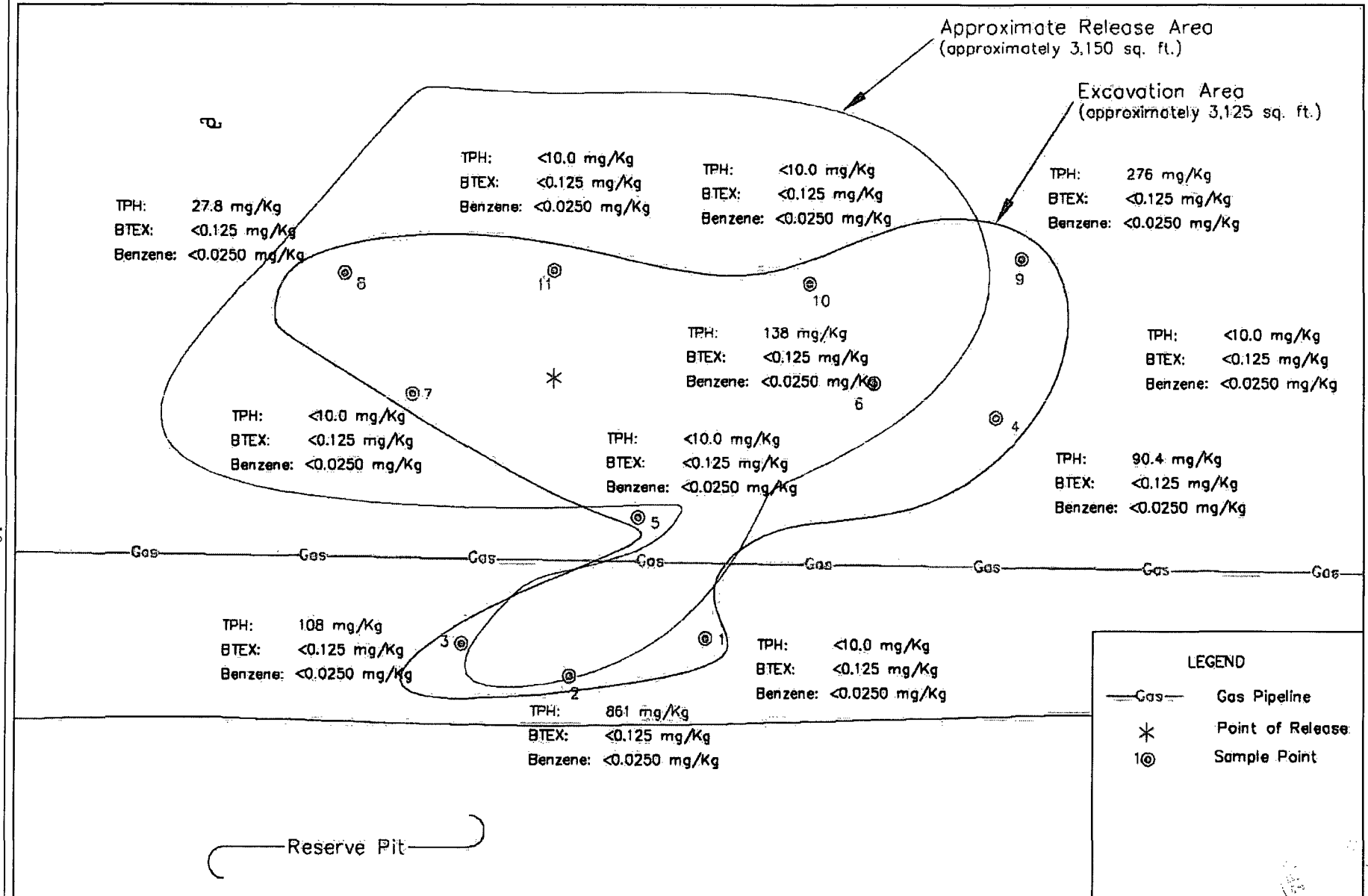


Figure 4 Sample Location Map Chesapeake Energy Ruth 20-2	Lea County, New Mexico NW 1/4 of the NW 1/4, Sec. 20, T16S, R36E N 32 54' 48.0" W 103° 22' 57.4" Elevation: 3,035 feet amsl	DWG By: Iain Olness August 2005	REVISED:
		0 15 30 Feet	SHEET 1 of 1

TABLE 1

Summary of Excavation Soil Field Analyses and Laboratory Analytical Results

Chesapeake Energy Ruth 20-2 Release Site (Ref.# 160011)

Sample ID	Depth (feet)	Sample Date	PID Reading (ppm)	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)
Ruth 20-2 S. Flowpath	Comp	08-Jun-05	NA	<0.0250	0.0711	0.510	2.53	3.11	1,590	7,200	**8,790**
Ruth 20-2 W. Half Pooling Area	Comp	08-Jun-05	NA	<0.0250	0.0683	0.134	0.685	0.887	507	3,300	**3,810**
Ruth 20-2 E. Half Pooling Area	Comp	08-Jun-05	NA	<0.0250	0.0518	0.0877	0.781	0.921	470	2,970	**3,440**
SP-1	1	11-Jul-05	23.5	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	<10.0	<10.0
SP-2	1	11-Jul-05	10.1	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	14.7	846	**861**
SP-3	1	11-Jul-05	10.4	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	108	**108**
SP-4	1	11-Jul-05	24.1	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	90.4	90.4
SP-5	1	11-Jul-05	38.9	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	169	**169**
	2	26-Jul-05	0.7	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	<10.0	<10.0
SP-6	1	11-Jul-05	41.4	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	30.9	724	**755**
	6	26-Jul-05	0.9	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	138	**138**
SP-7	1	11-Jul-05	25.0	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	<10.0	<10.0

Chesapeake

TABLE 1

Summary of Excavation Soil Field Analyses and Laboratory Analytical Results

Chesapeake Energy Ruth 20-2 Release Site (Ref.# 160011)

Sample ID	Depth (feet)	Sample Date	PID Reading (ppm)	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)
SP-8	1	11-Jul-05	39.6	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	27.8	27.8
SP-9	1	11-Jul-05	46.2	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	16.9	315	**332**
	6	26-Jul-05	3.0	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	12.4	264	**276**
SP-10	1	11-Jul-05	73.5	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	166	3,240	**3,410**
	2	26-Jul-05	0.5	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	<10.0	<10.0
SP-11	1	11-Jul-05	31.6	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	213	**213**
	2	26-Jul-05	0.6	<0.0250	<0.0250	<0.0250	<0.0500	<0.125	<10.0	<10.0	<10.0
NMOCD Remedial Thresholds			**100**	**10**				**50**			**100**

[1] ***Bolded*** *values are in excess of NMOCD Remediation Thresholds*
[2] *NA=Not Applicable*
[3] *Chloride and Sulfate residuals may not be capable of impacting local groundwater above the NMWQCC standards of 250 mg/L and 650 mg/L respectively.*

Chesapeake

Chesapeake

TABLE 2

Well Data

Chesapeake Energy Ruth 20-2 (Ref. #160011)

Well Number	Diversion[A]	Owner	Use	Twsp	Rng	Sec q q q	Latitude	Longitude	Date Measured	Well Depth (ft bgs)	Depth to Water (ft bgs)
L 05856	3	Payne Enterprise	STK	16 S	36 E	20 4	N 32° 54' 0.66"	W 103° 22' 35.46"	05-Mar-66	106	70
L 07165	3	G. Cattle Company	STK	16 S	36 E	20 2 3 1	N 32° 54' 26.83"	W 103° 22' 35.47"			
L 07165 EXPL	0	G. Cattle Company	EXP	16 S	36 E	20	N 32° 54' 0.63"	W 103° 23' 6.6"			
L 07442 EXPL	0	G. Cattle Company	EXP	16 S	36 E	20	N 32° 54' 0.63"	W 103° 23' 6.6"			
L 07443 EXPL	0	G. Cattle Company	EXP	16 S	36 E	20 4	N 32° 54' 0.66"	W 103° 22' 35.48"			
L 08898	0	Roger C. Hanks	PRO	16 S	36 E	20 1 1 4	N 32° 54' 39.88"	W 103° 23' 6.64"	31-Jul-82	147	70
L 10672	3	Yates Petroleum	OIL	16 S	36 E	20 2 2 1	N 32° 54' 39.94"	W 103° 22' 19.91"	27-Jun-96	150	70
L 10785	0	Yates Petroleum	PRO	16 S	36 E	20 2 2 1	N 32° 54' 39.94"	W 103° 22' 19.91"	27-Jun-96	130	70
USGS #1				16 S	36 E	20 1 1 1			27-Feb-91		70.47
USGS #2				16 S	36 E	20 4 2 3			31-Mar-81		75.34
L 03318	3	T. M. Blackmon	DOM	16 S	36 E	16 2 3 1	N 32° 55' 19.33"	W 103° 21' 33.28"			
L 03318 APPRO EXP		T. M. Blackmon		16 S	36 E	16 2 3 1	N 32° 55' 19.33"	W 103° 21' 33.28"			
L 04487 APPRO	3	Kenneth Cox	DOM	16 S	36 E	16 2 2 2	N 32° 55' 32.49"	W 103° 21' 17.73"	01-Jun-60	110	82
L 06368 EXP	0	T. M. Blackmon	STK	16 S	36 E	16 2	N 32° 55' 19.33"	W 103° 21' 33.28"			
L 00409	0	Chesapeake Operating	PRO	16 S	36 E	16 2 3 1	N 32° 55' 19.33"	W 103° 21' 33.28"		193	
USGS #3				16 S	36 E	16 2 3 1			27-Feb-91		61.33
L 00209 B	303.9	College of the SW Foundation	IRR	16 S	36 E	17 3 2 3	N 32° 55' 6.07"	W 103° 22' 51.08"		127	
L 00209 C	287.7	College of the SW Foundation	IRR	16 S	36 E	17 4 3	N 32° 54' 53"	W 103° 22' 51.08"		128	
L 02056	3	Noble Drilling Company	PRO	16 S	36 E	17 1 1	N 32° 55' 32.22"	W 103° 23' 6.68"	06-Mar-53	130	60
L 02056 APPRO		Noble Drilling Company		16 S	36 E	17 1 1	N 32° 55' 32.22"	W 103° 23' 6.68"	06-Mar-53	130	60
L 04437	3	Roy Boland	DOM	16 S	36 E	17 3	N 32° 54' 52.96"	W 103° 23' 6.65"	30-May-60	120	95
L 04437 APPRO		Roy Boland		16 S	36 E	17 3	N 32° 54' 52.96"	W 103° 23' 6.65"	30-May-60	120	95
L 03590 EXP	0	Berry Lee Hobbs	DOM	16 S	36 E	17 2 2 2	N 32° 55' 32.3"	W 103° 22' 19.98"			
L 07649	0	Hilda R. Heidel	PRO	16 S	36 E	17	N 32° 54' 52.96"	W 103° 23' 6.65"	03-Feb-77	140	
L 07757	3	Berry Lee Hobbs	DOM	16 S	36 E	17 2 1 1	N 32° 55' 32.27"	W 103° 22' 35.55"	18-Jan-78	72	
L 09689 EXP	0	Calvin or Jo Ann Holloway	DOM	16 S	36 E	17 2 1 2	N 32° 55' 32.27"	W 103° 22' 35.55"			
L 10010 EXP	0	Inexco Oil Company	PRO	16 S	36 E	17 1 3	N 32° 55' 19.13"	W 103° 23' 6.67"			
USGS #4				16 S	36 E	17 1 1 1			26-Feb-91		63.24
USGS #5				16 S	36 E	17 1 3 3			16-Jun-99		67.82
L 01086	3	C.C. Chambers	DOM	16 S	36 E	18 2 2	N 32° 55' 32.19"	W 103° 23' 22.19"	02-Apr-51	75	
L 01087 APPRO	3	C.C. Chambers	DOM	16 S	36 E	18 2 2	N 32° 55' 32.19"	W 103° 23' 22.19"	02-Apr-51	75	
L 04598	3	Elmer H. Sumrold	DOM	16 S	36 E	18 4 2	N 32° 55' 6.02"	W 103° 23' 22.17"	21-Jan-62	136	75
L 04598 APPRO		Elmer H. Sumrold		16 S	36 E	18 4 2	N 32° 55' 6.02"	W 103° 23' 22.17"	21-Jan-62	136	75
L 04609	3	George Wayne Sumrold	DOM	16 S	36 E	18 4 4 3	N 32° 54' 52.93"	W 103° 23' 22.16"			
L 04609 APPRO EXP		George Wayne Sumrold		16 S	36 E	18 4 4 3	N 32° 54' 52.93"	W 103° 23' 22.16"			
L 06132	3	George Wayne Sumrold	DOM	16 S	36 E	18 4 2	N 32° 55' 6.02"	W 103° 23' 22.17"	30-May-67	95	70
L 06934	3	E. H. Sumrold	DOM	16 S	36 E	18 4 2 1	N 32° 55' 6.02"	W 103° 23' 22.17"	12-May-72	118	68
L 06953	3	Ricky Jones	DOM	16 S	36 E	18 4 4 4	N 32° 54' 52.93"	W 103° 23' 22.16"	24-Aug-72	120	80
L 06967	0	Oscar V. Neidlich	DOM	16 S	36 E	18 4 4 3	N 32° 54' 52.93"	W 103° 23' 22.16"			
L 07063	3	Odell Black	DOM	16 S	36 E	18 4 4 2	N 32° 54' 52.93"	W 103° 23' 22.16"	26-Apr-60	120	80
L 07911	0	Wayne Sumrold	STK	16 S	36 E	18 4 2	N 32° 55' 6.02"	W 103° 23' 22.17"			
L 09729	0	E. H. Sumrold	EXP	16 S	36 E	18 4 2	N 32° 55' 6.02"	W 103° 23' 22.17"			
L 09739	0	E. H. Sumrold	EXP	16 S	36 E	18 4 2	N 32° 55' 6.02"	W 103° 23' 22.17"			
L 10712	0	Chesapeake Operating	PRO	16 S	36 E	18 4 2	N 32° 55' 6.02"	W 103° 23' 22.17"	01-Sep-97	163	60
USGS #6				16 S	36 E	18 1 1 1			26-Jun-96		54.96
L 01054 APPRO	3	George Spires	DOM	16 S	36 E	19 1 3	N 32° 54' 26.72"	W 103° 24' 7.41"	15-Dec-30	76	45
L 02783	3	Vernon N. Key	DOM	16 S	36 E	19 1 4 2	N 32° 54' 26.74"	W 103° 23' 53.17"	19-Feb-55	80	50
L 02783 APPRO		Vernon N. Key		16 S	36 E	19 1 4 2	N 32° 54' 26.74"	W 103° 23' 53.17"	19-Feb-55	80	50

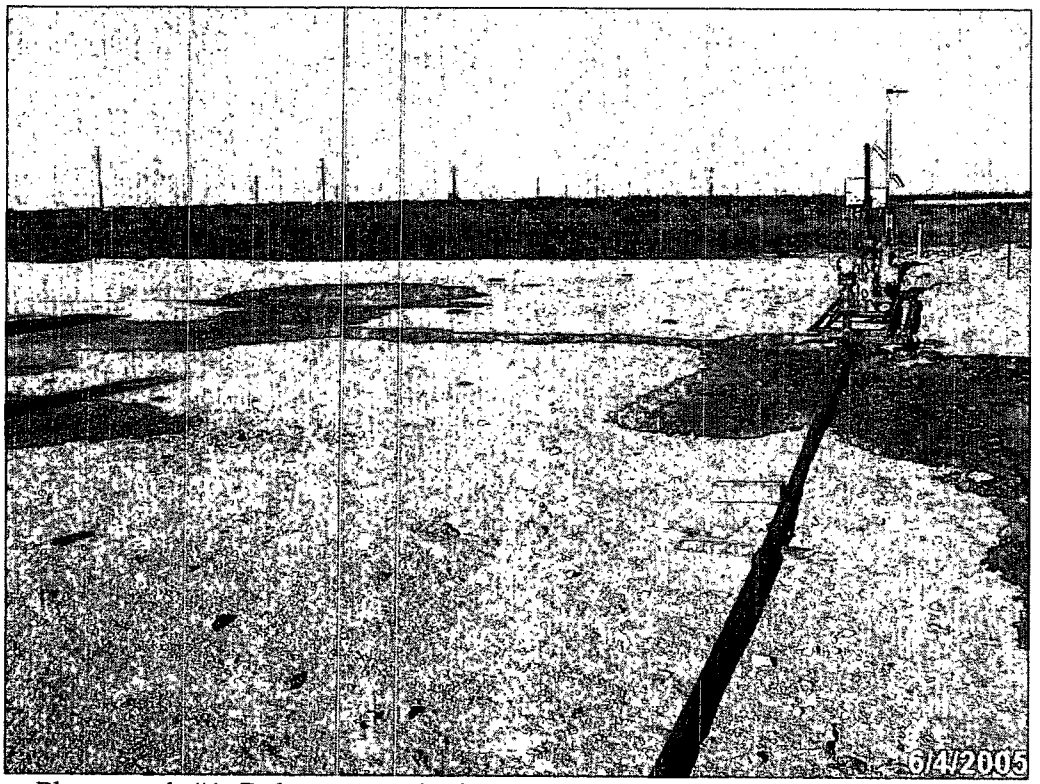
TABLE 2

Well Data

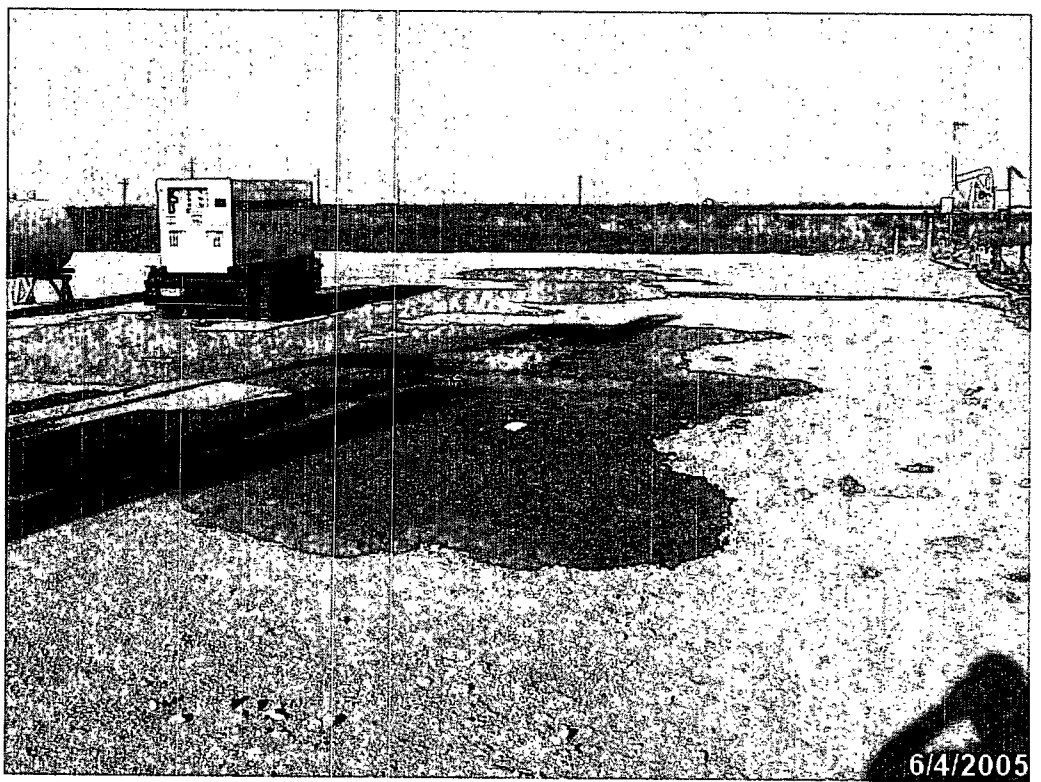
Chesapeake Energy Ruth 20-2 (Ref. #160011)

Well Number	Diversion[A]	Owner	Use	Twsp	Rng	Sec q q q	Latitude	Longitude	Date Measured	Well Depth (ft bgs)	Depth to Water (ft bgs)
L 04801	3	George Spires	DOM	16 S	36 E	19 1 2	N 32° 54' 39.81"	W 103° 23' 53.18"			
L 04895	3	George Spires	DOM	16 S	36 E	19 1 2	N 32° 54' 39.81"	W 103° 23' 53.18"	05-May-82	100	
L 06639 EXP	0	Joe Grado	DOM	16 S	36 E	19 1 4 2	N 32° 54' 26.74"	W 103° 23' 45.17"			
L 06689 Exp	0	Walter Hannan	DOM	16 S	36 E	19 1 1 4	N 32° 54' 39.78"	W 103° 24' 7.4"			
L 06937	3	Dale Gandy	DOM	16 S	36 E	19 2 2 4	N 32° 54' 39.85"	W 103° 23' 22.15"	24-Apr-72	110	60
L 07444 EXPL-1	0	G Cattle Company	EXP	16 S	36 E	19 2 3 1	N 32° 54' 26.76"	W 103° 23' 37.64"	13-Oct-75	130	
L 07444 EXPL-2		G Cattle Company	EXP	16 S	36 E	19 2 3 1	N 32° 54' 26.76"	W 103° 23' 37.64"	13-Oct-75	140	
L 07444 EXPL-3		G Cattle Company	EXP	16 S	36 E	19 2 3 1	N 32° 54' 26.76"	W 103° 23' 37.64"	14-Oct-75	178	120
L 08744	3	Roger Price	DOM	16 S	36 E	19 3 3	N 32° 54' 0.59"	W 103° 24' 7.42"		108	79
L 10209	3	Kenny Jackson	DOM	16 S	36 E	19 1 2 2	N 32° 54' 39.81"	W 103° 23' 53.18"	03-Aug-91	128	94
L 00159 ENGLD-S	0	Chesapeake Operating	PRO	16 S	36 E	19 2 1 3	N 32° 54' 39.83"	W 103° 23' 37.66"		80	
L 00159	0	Newburg Producing Company	PRO	16 S	36 E	19 2 1 1	N 32° 54' 39.83"	W 103° 23' 37.66"		125	
USGS #7				16 S	36 E	19 1 1 1			31-Mar-81		59.25
USGS #8				16 S	36 E	19 2 1 1			16-Feb-61		59.9
USGS #9				16 S	36 E	19 2 1 1			03-Mar-76		64.9
USGS #10				16 S	36 E	19 2 1 4			15-Feb-71		64.03
USGS #11				16 S	36 E	19 4 1 3			30-Sep-81		66.54
L 03966	3	Robert Ralph Sims	DOM	16 S	36 E	21 2 4 4	N 32° 54' 26.96"	W 103° 21' 17.68"	18-Aug-58	95	60
L 03966 APPRO				16 S	36 E	21 2 2 4	N 32° 54' 40.06"	W 103° 21' 17.68"	18-Aug-58	95	60
L 05269	3	Ralph E. Collins	DOM	16 S	36 E	21 2 2 4	N 32° 54' 40.06"	W 103° 21' 17.68"	19-Oct-63	110	90
USGS #12				16 S	36 E	21 2 3 2			01-Feb-96		66.58
L 01608 APPRO	3	Lawton Oil Group	PRO	16 S	36 E	30 2 2	N 32° 53' 47.54"	W 103° 23' 22.07"	24-Oct-52	145	80
L 04932	3	George Spires	DOM	16 S	36 E	30 1 2	N 32° 53' 47.53"	W 103° 23' 53.08"	12-Jul-62	104	90
L 06334	0	Marcum Drilling Company	PRO	16 S	36 E	30 3 1 1	N 32° 53' 21.38"	W 103° 24' 7.28"	02-Jun-68	135	75
L 06334 (E) 1	0	Humble Oil & Refining Co.	PRO	16 S	36 E	30 3 1 1	N 32° 53' 21.38"	W 103° 24' 7.28"			
USGS #13				16 S	36 E	30 1 2 4			10-Mar-76		75.23

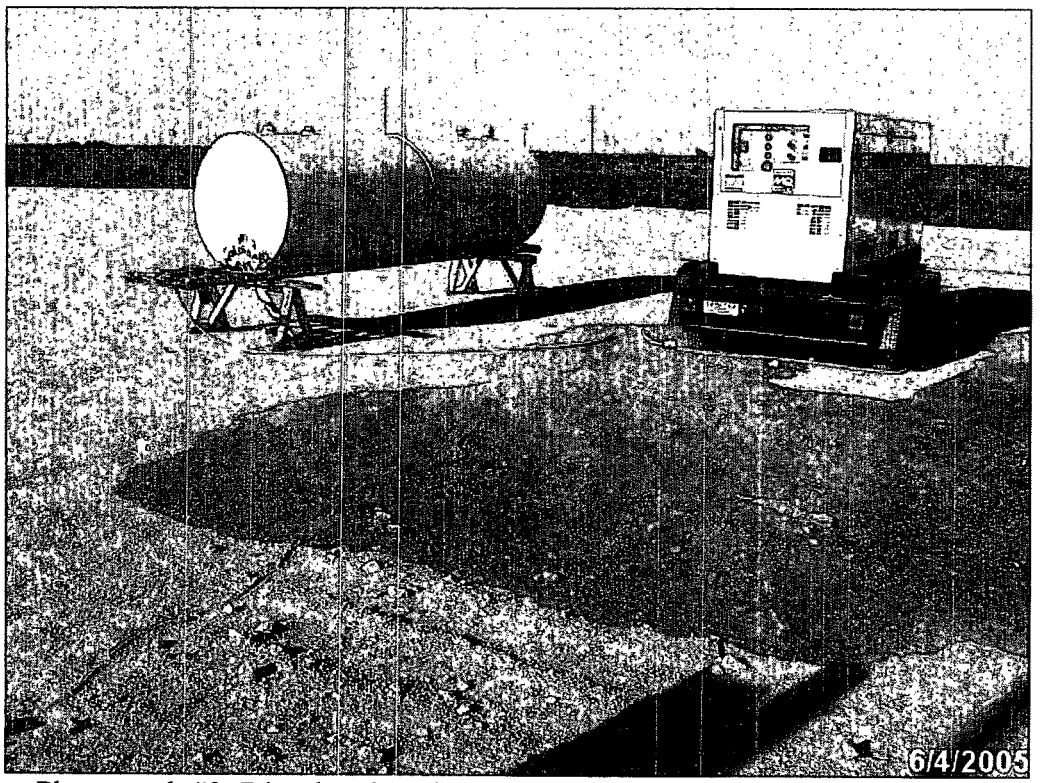
*= Data obtained from the New Mexico Office of the State Engineer Website (http://iwaters.ose.state.nm.us:7001/iWATERS/wr_RegisServlet1)
Well locations shown on Figure 2
[A] = in acre feet per annum
IND = Industrial
IRR = Irrigation
DOM = Domestic
EXP = Exploration
quarters are 1=NW, 2=NE, 3=SW, 4=SE; quarters are biggest to smallest



Photograph #1: Release area, looking easterly.



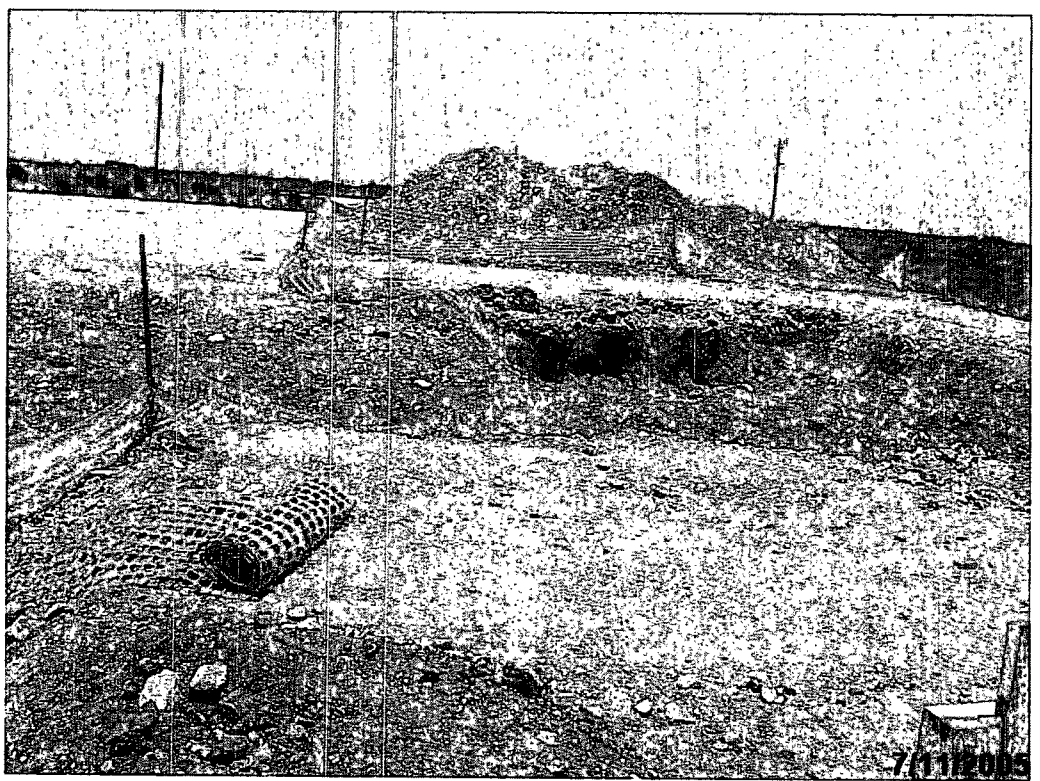
Photograph #2: Release area, looking easterly.



Photograph #3: Diesel tank and generator, looking northeasterly. Note cut fuel line between diesel tank and generator.

Photograph #4: Saturated soil stockpiled on plastic and fenced.

Photograph #5: Final excavation, look westerly.



Photograph #6: Final excavation, looking northeasterly.